HYDAC INTERNATIONAL

Compact Hydraulics
Product Catalogue

E 53.000.1/01.13

HYDAC COMPACT HYDRAULICS

HYDAC was founded in 1963 in Sulzbach /Neuweiler, where the Group Headquarters are still located today.
With over 7,000 employees, HYDAC is one of the leading suppliers of fluid technology, hydraulic and electronic equipment.

The corporation is made up of 15 independent companies. Furthermore, you can contact HYDAC easily via its network of 10 sales offices in Germany, 50 overseas companies covering all continents and over 500 service partners worldwide.

Our wide range of cartridge valves ensures the best manifold configuration. The complete product range encompasses nearly all functions of hydraulic control technology and covers a range of up to 600 l/min and 630 bar.

From the early development stage, we optimise our products and hydraulic control tasks through the use of computer-aided design technology and simulation tools to convert them into the right solution for the user. During the development stage, the product is continuously tested and enhanced in our laboratory. Application-specific limit tests are just as much a part of the development programme as service life tests and fatigue tests, in order to attain the high standards demanded of our products.

The latest machinery and systems enable HYDAC to achieve cost-effective series production as well as the flexibility to manufacture to specific customer requirements. The special manufacturing processes required in hydraulics such as, for example, high-precision machining, special deburring processes, online contamination control, etc. are technologically safeguarded by superior production methods.

The assembly, combined with 100% individual testing, ensures optimum performance with consistently high quality.

All organisational procedures are subject to an effective quality management system. HYDAC is certified to DIN ISO 9001, ISO 14001 and OHSAS 18001.

HYDAC COMPACT HYDRAULICS COMPONENTS AND SYSTEMS FOR ALMOST EVERY APPLICATION

The wide range of components as well as the high vertical range of manufacture for hydraulics and electronics – as individual components or complete system solutions – provides an almost endless range of application possibilities.

The following examples are only a small selection of our world-wide applications:

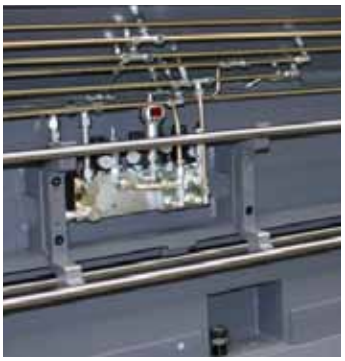
– agricultural and forestry machines
– construction machinery/ equipment
– lifting/working platforms
– municipal machines
– wind power turbines
– machine tools
– side and tail lifts
– rail vehicles
– ship-building
– plastic injection moulding machines
– heavy duty trucks
– transmissions
– materials handling

Quality assurance and cost-effectiveness, active participation in research projects together with receptiveness to individual requirements and the best solutions, are opening up more and more new applications world-wide.

HYDAC
COMPACT HYDRAULICS

Components, modules, sub-systems, drive units and controls including electronics in both mobile and industrial hydraulics.

- Range of valves in cartridge technology. Pressure, flow control, shut-off, directional poppet and spool valves, proportional and special valves in nominal sizes 3 - 20, with bodies for inline mounting, manifold mounting and sandwich-plate mounting
- Industrial valve range in manifold and sandwich-plate design. Pressure, flow control, shut-off, directional poppet and spool valves, proportional and control valves with standard interfaces in nominal sizes 6 - 32.
- 2-way cartridge valves (logic valves) in nominal sizes 16 - 100 in standard cavities – for industrial applications with high flow-rates
- Manifolds, modules and subsystems of hydraulic control and feedback control systems in compact and modular design – for standard and customized applications
- Manifolds with commercially available standard controls – convenient and readily available
- Modular manifold systems for almost all hydraulic controls in the mobile and stationary sector – economic even for small quantities
- Individual manifold systems with accumulators, filters, sensors and other components from Hydac – as compact and ready-to-install solutions
- Integrated system solutions consisting of hydraulic controls, energy storage, filtration, sensors and electronics – everything from one supplier
- Medium pressure power units in compact design up to 250 bar in DC or AC versions. Can be selected from a wide catalogue range or designed for a specific application - can be used in both mobile and stationary applications.
- High pressure power units up to 500 bar with piston pumps and oil-immersed AC motors - with flexible options for control module combinations.
- DC power units for complex and challenging forklift applications with built-in pressure filters, proportional and sensor technology - forward-looking and with high energy efficiency.



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NOTE
The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

HYDAC INTERNATIONAL

Compact Hydraulik
Compact Hydraulics
Hydraulique Compacte
Produktübersicht
Product Overview
Gamme de Produits

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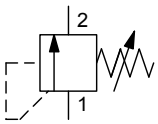
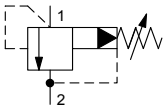
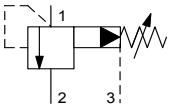
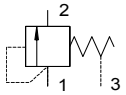
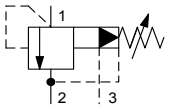
Compact Hydraulik
Compact Hydraulics
Hydraulique Compacte

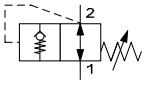
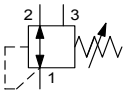
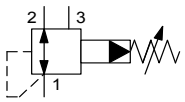
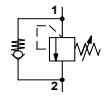
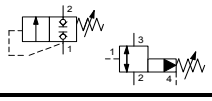
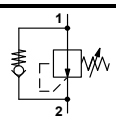
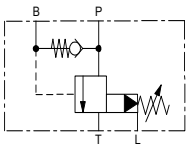
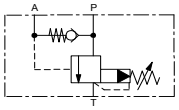
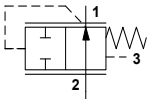
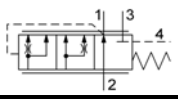
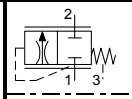
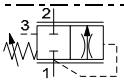
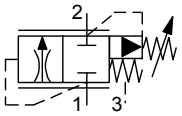
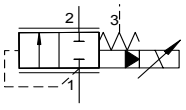
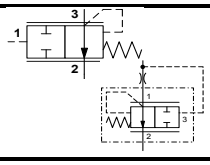
cf = Werk anrufen Call factory Contactez le siège

M = ISO/metrischer Einbauraum ISO/metric Cavity Implantation ISO/métrique /
U = UNF Einbauraum UNF Cavity Implantation UNF /
I = Inch (GB) Einbauraum Imperial Cavity Implantation Inch (GB) /
( ) = Max. Regeldruck oder max. Druck an port x
Max. regulated pressure or max. press. at port x Max. pression reglé où max pression à port x

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Typ** Type Type	Q_{max} [l/min]	p_{max} [bar]	**Einbauraum** Cavity Implantation		**Prospekt Nr.** Brochure no. Fiche technique n▪	**Seite** page
Druckventile Pressure valves Valves de pression								
Druckbegrenzungs-ventil direkt gesteuert Pressure relief valve direct acting Limiteur de pression à pilotage direct		**DB3E**	15	350	**M**	05220	5.165	74
		DB06A-01	15	350	**U**	FC06-2	5.140.0	606
		DB06C-01	20	350	**U**	FC06-2	5.141.0	608
		DB4E-CE	28	360	**M**	06020	5.163	78
		DB4E	30	630	**M**	06020	5.161	82
		DB4E-25X	30	350	**M**	06020	5.161.1	86
		DB08A-01	38	420	**U**	FC08-2	5.922	90
		DB10-01	60	350	**U**	FC10-2	cf	-
		DB10120A-13X	60	48	**M**	10120A	5.922.4	92
		DB12120A	120	420	**M**	12120A	5.169.1	94
		DB12120A-CE	110	400	**M**	12120A	5.169	98
Druckbegrenzungs-ventil vorgesteuert Pressure relief valve pilot operated Limiteur de pression piloté		**DB08P-01**	60	350	**U**	FC08-2	5.922.1	102
		DB10P-01	120	420	**U**	FC10-2	5.954	104
		DB12P-01	200	350	**U**	FC12-2	5.922.2	106
		DB16P-01	300	350	**U**	FC16-2	5.922.3	108
		DB10120A	100	350	**M**	10120A	5.167	110
Druckbegrenzungs-ventil vorgesteuert - Vorsteuerölablauf extern		**DB10SPE**	120	350	**U**	FC10-S3	5.994.1	114
		DB12121PE	200	350	**M**	12121	5.996	116
		DB16121PE	300	350	**M**	16221	cf	-
Pressure relief valve pilot operated - external vented Limiteur de pression piloté avec drainage des fuites externe		**DB10SE-12**	*120*	50 (35)	**U**	FC10-3	cf	-
		DB16621E-10	*300*	350 (16)	**M**	16621	5.922.6	118
Druckbegrenzungs-ventil vorgesteuert fernsteuerbar Pressure relief valve pilot operated - ventable Limiteur de pression piloté avec orifice pour pilotage à distance		**DB12121PF**	200	350	**M**	12121	5.997	120
		DB16SPF	300	350	**U**	FC16-S3	5.922.5	122

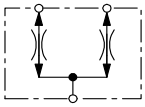
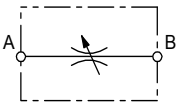
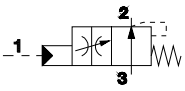
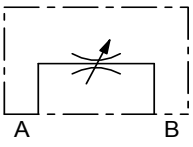
Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Einschraubventile
Cartridge valves
Valves à cartouche

Bezeichnung Description Désignation	Symbol Symbole	Typ Type Type	Q_{max} [l/min]	p_{max} [bar]	Einbauraum Cavity Implantation		Prospekt Nr. Brochure no. Fiche technique n▪	Seite page
Druckregelventil direkt gesteuert Pressure reducing		**DMM10121**	30	450	**M**	10121	5.169.9	124
valve direct operated		**DR08-01**	15	420 (207)	**U**	FC08-3	5.920	126
Régulateur de pression		**DR10-01**	60	420 (131)	**U**	FC10-3	5.950	128
à pilotage direct		**DMVE**	30	500 (140)	**M**	08030	5.162	130
Druckregelventil vorgesteuert Pressure reducing valve pilot operated Régulateur de pression		**DR08P-01**	60	350 (345)	**U**	FC08-3	5.920.1	134
		DR10P-01	100	350 (345)	**U**	FC10-3	5.982	136
		DRM10130P-01	150	350 (350)	**M**	10130	5.950.1	138
Druckzuschaltventil		**DZ5E**	20	350 (350)	**M**	06020	5.166	140
Pressure sequence valve		**DZM06020-01**	30	350 (210)	**M**	06020	5.950.2	144
Valve de séquence		**DZM12131PE**	200	350 (350)	**M**	12131	5.950.3	146
Druckschließventil Pressure sequence valve Valve d'isolement		**DSR5E**	15	500 (350)	**M**	06020	5.169.8	150
Speicherladeventil Accumulator charging valve Conjoncteur disjoncteur		**DLHSD**	30	350	**Montage auf Lochbild A6 DIN 24340** Assembly to interface A6 DIN 24340 Montage sur impact A6 DIN 24341		5.190.1	152
		**DLHSR**	30	350	**Rohrleitungs-montage** Inline mounting Montage sur tuyauterie		5.190.1	152
Zulauf Druckwaage		**DW05830V-01**	10	250	**M**	5830	5.195	156
Pressure Compensator upstream		**DW10V**	*57*	*350*	**U**	FC10-S3	cf	-
Balance de pression primeur		**DW16V**	*114*	*350*	**U**	FC16-S3	cf	-
Prioritäts-Druckwaage Priority pressure compensator Balance de pression de priorité		**DW12P-22**	*100*	*350*	**U**	FC12-4	cf	-
Umlauf-Druckwaage		**DWM08130Z**	40	250	**M**	05830	5.196	158
Pressure compensator		**DWM12130Z**	90	250	**M**	12130	5.191.0	160
balcance de pression de mise à vide		**DWM12121Z B / H**	120	350	**M**	12121	5.191.2	-
mit integrierter DB Funktion On/OFF oder Prop. with integrated PR function on/off or prop avec limiteur de pression integ.		**DWM12121Z D**	120	350	**M**	12121	5.191.1	-
mit integrierter DB Funktion with integrated PR function avec limiteur de pression integ. On/off ou Prop.		**DWM12121Z MD /PD /MDZ / PDZ**	*120*	*350*	**M**	12121	cf	-
Ablauf-Druckwaage		**DWM12130Y**	130	250	**M**	12130	5.192	162
Pressure compensator downstream		**DWM10130R**	60	250	**M**	10130	cf	-
Balance de pression secondaire		**DWM12130R**	150	350	**M**	12130	cf	-

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Einschraubventile
Cartridge valves
Valves à cartouche

Bezeichnung Description Désignation	Symbol Symbole	Typ Type Type	Q_{max} [l/min]	p_{max} [bar]	Einbauraum Cavity Implantation		Prospekt Nr. Brochure no. Fiche technique n°	Seite page
Stromventile Flow valves Valves de débit								
Stromteiler Flow divider Diviseur de débit		**ST10-01**	45	350	**U**	FC10-4	5.967	164
		ST16-01	*150*	350	**U**	FC16-4	5.967.1	166
		ST12230-01	60	350	**M**	12230	5.122	168
Drosselventile Needle valve Limiteur de débit		**SD08-01**	60	420	**U**	FC08-2	5.928	170
		SD10-01	160	420	**U**	FC10-2	5.989	172
		DV5E	30	350	**M**	06020	5.113	174
		DVE08920	50	350	**M**	08920	5.115	178
		DVE10920	80	350	**M**	10920		
		DVE12920	160	350	**M**	12920		
		DVE16920	160	350	**M**	16920		
		SD10120	80	350	**M**	10120	5.114	182
Drosselventile Needle valve Limiteur de débit		**DV-06**	20	350	**Für Verschraubungen mit Einschraubzapfen Form A, B und E nach DIN 3852 Teil 2 und 11** For threaded connections with male thread. Fittings must be Form A, B or E to DIN 3852, Part 2 & 11 Pour raccord avec implantation Form A, B et E suivant DIN 3852, Partie 2 et 11		5.119	186
		DV-08	50	350				
		DV-10	60	350				
		DV-12	90	350				
		DV-16	180	350				
		DV-20	300	350			5.119.1	190
		DV-25	300	350				
		DV-30	300	350				
		DV-40	300	350				
Drosselventil hydr. Gesteuert Needle valve hydraulically operated Limiteur de débit à pilotage hydraulique		**SDH05330**	20	250	**M**	05330	5.128	194
Drosselventile Needle valve Limiteur de débit		**DVP-06**	20	350	**Plattenanschluss** Manifold connection Valves à flasquer		5.120	196
		DVP-08	50	350				
		DVP-10	60	350				
		DVP-12	90	350				
		DVP-16	180	350				
		DVP-20	300	350				
		DVP-25	300	350				
		DVP-30	300	350				
		DVP-40	300	350				

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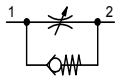
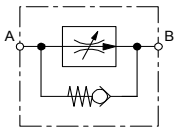
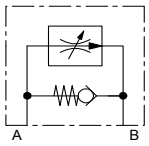
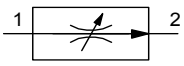
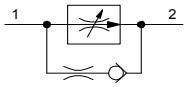
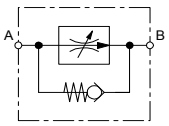
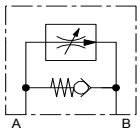
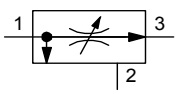
Einschraubventile
Cartridge valves
Valves à cartouche

Bezeichnung Description Désignation	Symbol Symbol Symbole	Typ Type Type	Q_{max} [l/min]	p_{max} [bar]	Einbauraum Cavity Implantation		Prospekt Nr. Brochure no. Fiche technique n°	Seite page
Drosselrück-schlagventil Needle valve with reverse flow check Limiteur de débit unidirectionnel		**SDR10A-01**	160	350	**U**	FC10-2	5.988	-
		SDR10A-11	100	350	**U**	FC10-2	5.988.1	200
		**DRV-06**	20	350	**Für Verschraubungen mit Einschraubzapfen Form A, B und E nach DIN 3852 Teil 2 und 11** For threaded connections with male thread. Fittings must be Form A, B or E to DIN 3852, Part 2 & 11 Pour raccord avec implantation Form A, B et E suivant DIN 3852, Partie 2 et 11		5.119	186
		DRV-08	50	350				
		DRV-10	60	350				
		DRV-12	90	350				
		DRV-16	180	350				
		DRV-20	300	350			5.119.1	190
		DRV-25	300	350				
		DRV-30	300	350				
		DRV-40	300	350				
		**DRVP-06**	20	350	**Plattenanschluss** Manifold connection Valves à flasquer		5.120	196
		DRVP-08	50	350				
		DRVP-10	60	350				
		DRVP-12	90	350				
		DRVP-16	180	350				
		DRVP-20	300	350				
		DRVP-25	300	350				
		DRVP-30	300	350				
		DRVP-40	300	350				
2-Wege-Stromregelventil Flow regulator 2-way pressure compensated Régulateur de débit 2 voies compensé		**SR06-01**	15	350	**U**	FC06-2	5.142.0	610
		SR08-01	30	350	**U**	FC08-2	5.930	202
		SR10-01	38	350	**U**	FC10-2	5.958	204
		**SR5E**	20	350	**M**	06020	5.117	206
		SRE1	10	350	**I**	05520	5.118	210
		SRE2	20	350	**I**	08520		
		SRE3	48	350	**I**	10520		
		SRE4	97	350	**I**	12520		
		SRE1-12	12	350	**I**	05520	cf	-
		SRE2-12	20	350	**I**	08520	cf	-
2-Wege-Stromregelventil Flow regulator 2-way pressure compensated Régulateur de débit 2 voies compensé		**SRVR-08**	12	210	**Rohrleitungsmontage** Inline mounting Montage sur tuyauterie		5.116	214
		SRVR-10	22	210				
		SRVR-12	55	210				
		SRVR-16	90	210				
		SRVR-20	160	210				
		**SRVRP-08**	12	210	**Plattenaufbau** Manifold mounting Montage sur embase		5.116	214
		SRVRP-10	22	210				
		SRVRP-12	55	210				
		SRVRP-16	90	210				
3-Wege-Stromregelventil Flow regulator 3-way Régulateur de débit 3 voies		**SRP08-01**	30	350	**U**	FC08-3	5.929	218
		SRA10130	100 / 60	250	**M**	10130	284857	-
		SRP12	*120 / 80*	*350*	**U**	FC12-3	cf	-

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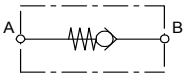
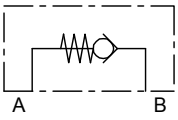
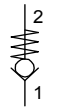
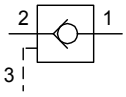
Einschraubventile
Cartridge valves
Valves à cartouche

Bezeichnung Description Désignation	Symbol Symbole	Typ Type Type	Q_{max} [l/min]	p_{max} [bar]	Einbauraum Cavity Implantation		Prospekt Nr. Brochure no. Fiche technique n°	Seite page
Sperrventile Shut-off valves Valves d'arrêt								
Rückschlagventil **01 = Kugelsitz** **51 = Kegelsitz** 01 = ball type 51 = poppet type 01 = siège avec bille 51 = siège avec cône		**RV06A-01**	20	350	**U**	FC06-2	5.143	612
		RV08A-01	38	420	**U**	FC08-2	5.912	220
		RV08A-51	38	420	**U**	FC10-2	5.912.1	222
		RV10A-01	80	420	**U**	FC10-2	5.953.1	224
		RV10A-51	80	350	**U**	FC10-2	cf	226
		RV12A-01	120	420	**U**	FC12-2	5.952	228
		RV16A-01	165	420	**U**	FC16-2	5.951	230
		RVM06020-01 /-06	38	350	**M**	06020	5.193	232
		RVM06020-51	*38*	*350*	**M**	06020	5.197	234
		RVM10120-01	100	350	**M**	10120	5.999	236
		RVM10120-51	100	350	**M**	10120	5.999.1	238
Check valve		**RV-06**	20	350	**Rohrleitungsmontage** Inline mounting Montage sur tuyauterie		5.171	240
		RV-08	40	350				
		RV-10	70	350				
		RV-12	160	350				
		RV-16	200	350				
		RV-20	350	350				
		RV-25	550	350				
		RV-30	600	350				
		RV-40	600	350				
Clapet anti-retour		**RVP-06**	20	350	**Plattenaufbau** Manifold mounting Montage sur embase		5.171	240
		RVP-08	40	350				
		RVP-10	70	350				
		RVP-12	160	350				
		RVP-16	200	350				
		RVP-20	350	350				
		RVP-25	550	350				
		RVP-30	600	350				
		RVP-40	600	350				
		**RVE-R 1/8**	10	350	**I**	04020	5.176	244
		RVE-R 1/4	10	350	**I**	04220		
		RVE-R 3/8	30	350	**I**	06320		
		RVE-R 1/2	60	350	**I**	08220		
Rückschlagventil hydraulisch entsperrbar Pilot operated check valve Clapet anti-retour piloté		**RP08A-01**	38	420	**U**	FC08-3	5.923	248
		RP10A-01	60	420	**U**	FC10-3	5.932	250
		RP16A-01	150	420	**U**	FC16-3	5.931	252
		ERVE08021	30	350	**I**	08021	5.172	254
		ERVE16021	150	350	**I**	16021		
		ERVE20021	300	350	**I**	20021		
		ERVM	30	350	**I**	08021	283843	-
		RP10121	80	350	**M**	10121	5.932.1	258

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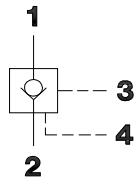
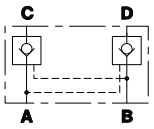
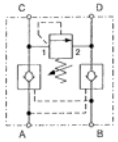
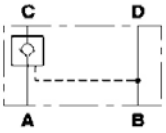
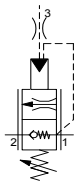
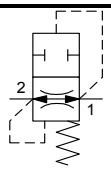
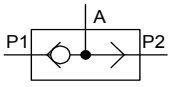
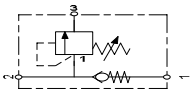
Einschraubventile
Cartridge valves
Valves à cartouche

Bezeichnung Description Désignation	Symbol Symbol Symbole	Typ Type Type	Q_{max} [l/min]	p_{max} [bar]	Einbauraum Cavity Implantation		Prospekt Nr. Brochure no. Fiche technique n▪	Seite page
Rückschlagventil **hydraulisch entsperrb.** **mit Leckölanschluss** Pilot operated check valve with leak-oil-connection Clapet anti-retour piloté avec drainage		**RPL10121**	80	350	**M**	10121	5.176.1	260
Zwillings-Rückschlag-ventil **hydr. entsperrbar** Pilot operated check valve double Clapet antiretour piloté double		**RPDR06**	30	350	**Rohrleitungs-montage** Inline mounting Montage sur tuyauterie		5.171.2	262
		RPDR08	40	210				
		RPDR10	100	350				
		**RPDR08**	40	350				
Rückschlagventil hydraulisch entsperrbar Pilot operated check valve Clapet anti-retour piloté		**RPER06**	30	350	**Rohrleitungs-montage** Inline mounting Montage sur tuyauterie		5.171.1	266
		RPER08	40	350				
Senkbrems-sperrventil Counter balance valve Valve d'équilibrage		**RS08-01**	38	350	**U**	FC08-3	5.933	268
		SBVE-R1/2	30	350	**I**	08021	5.177	272
		SBVE-R1	100	350	**I**	16021		
		RSM10121	60	420	**M**	10121	5.933.1.0	276
		RSM12121	120	420	**M**	12121	cf	-
Rohrbruchventil Hose break valves Soupape parachute		**RBE-R 1/4**	25	350	**I**	05520	5.174	280
		RBE-R 3/8	50	350	**I**	08520		
		RBE-R 1/2	75	350	**I**	10520		
		RBE-R 3/4	150	350	**I**	12520		
Wechsel-Ventile Shuttle change-over valves Sélecteur de circuit Sélecteur de circuit		**WVE-R 1/8**	10	350	**I**	03030	5.173.1	284
		WVE-R 1/4	20	350	**I**	05030		
		WVE-R 1/2	70	350	**I**	08730		
		WVG-06	50	420	Rohrleitungsmontage Inline mounting Montage sur tuyauterie		5.173.2	288
		WVT	80	350 (80)			5.178	290
Rückschlagventil mit integr. Begrenzung Check valve with integral relief Clapet avec limiteur		**RV06B-01**	15	350	**U**	FC06-3	5.144	614
		RV06C-01	20	275	**U**	FC06-3	5.145	616
Motoranlaufventil Motor start valve Valve p. moteur		**MAV**	*20*	350	**I**	HN28-2	cf	-

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Einschraubventile
Cartridge valves
Valves à cartouche

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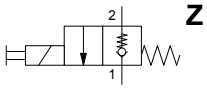
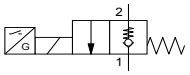
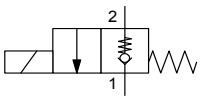
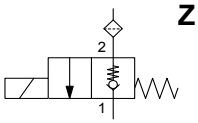
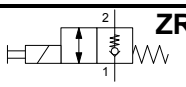
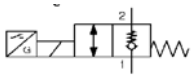
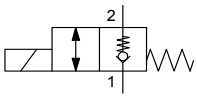
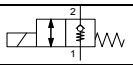
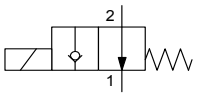
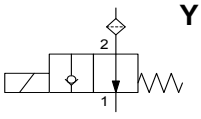
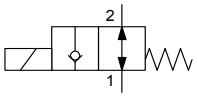
Wegeventile - magnetbetätigt Directional valves - solenoid operated Electrovalves							
2/2-Sitzventil normal geschlossen	 **Z**	**WS08Z-01J**	38	350	**U**	FC08-2	5.983	292
		WSM06020Z-01J	40	350	**M**	06020	5943.2	294
mit Schaltstellungs überwachung / with position monitoring / avec surveillance de position		**WS08Z-01E**	40	350	**U**	FC08-2	5.907.2	296
2/2-Poppet valve normally closed Valve à clapet 2/2 NF normallement fermé	 **Z**	**WS06Z-01**	20	350	**U**	FC06-2	5.146	618
		WS08Z-01	38	350	**U**	FC08-2	5.907	298
		WS10Z-01	75	350	**U**	FC10-2	5.926	300
		WS12Z-01	110	350	**U**	FC12-2	5.998	302
		WS16Z-01	150	350	**U**	FC16-2	5.945	304
		WSM06020Z	40	350	**M**	06020	5.943	306
		WSM06020Z-70	3	350	**M**	06020	5.943.3	308
		WSM10120Z-01	75	350	**M**	10120	5.943.1	310
		WSM12120Z-01	110	350	**M**	12120	5.948.3	312
2/2-Sitzventil norm. geschl. mit Sieb 2/2-Poppet valve normal closed with screen filter Valve à clapet 2/2 NF avec tamis de protect.	 **Z**	**WS08Z-30**	30	350	**U**	FC08-2	5.993	314
		WS06Z-30	20	350	**U**	FC06-2	cf	-
2/2-Sitzventil normal geschlossen mit Not-hand für Drahtzug	 **ZR**	**WS06ZR-01J**	20	350	**U**	FC06-2	cf	-
		WS08ZR-01J	38	350	**U**	FC08-2	5.984	316
		WSM06020ZR-01J	40	350	**M**	06020	5.946.2	318
mit Schaltstellungs-überwachung with position monitoring / avec surveillance de position		**WS08ZR-01E**	40	350	**U**	FC08-2	5.984.1	320
		WS10ZR-01E	*75*	*350*	**U**	FC10-2	cf	-
2/2-Poppet valve normally closed with reverse flow Valve à clapet 2/2 NF avec passage inverse	 **ZR**	**WS06ZR-01**	20	350	**U**	FC06-2	cf	-
		WS08ZR-01	38	350	**U**	FC08-2	5.911	322
		WS10ZR-01	75	350	**U**	FC10-2	5.927	324
		WS12ZR-01	110	350	**U**	FC12-2	5.998.1	326
		WS16ZR-01	150	350	**U**	FC16-2	5.941	328
		WSM06020ZR-01	40	350	**M**	06020	5.946	330
		WSM10120ZR-01	75	350	**M**	10120	5.946.1	332
		WSM12120ZR-01	110	350	**M**	12120	5.948.5	334
	 **BR**	**WS08BR-31**	40	350	**U**	FC08-2	5.911.1	336
2/2-Sitzventil normal offen 2/2-Poppet valve normally open Valve à clapet 2/2 normallement ouvert	 **Y**	**WS06Y-01**	20	350	**U**	FC06-2	5.147	620
		WS08Y-01	38	350	**U**	FC08-2	5.917	338
		WS10Y-01	75	350	**U**	FC10-2	5.914	340
		WS12Y-01	110	350	**U**	FC12-2	5.998.2	342
		WS16Y-01	150	350	**U**	FC16-2	5.940	344
		WSM06020Y	40	350	**M**	06020	5.947	346
		WSM06020Y-70	3	350	**M**	06020	5.943.4	348
		WSM10120Y-01	75	350	**M**	10120	5.947.1	350
		WSM12120Y-01	110	350	**M**	12120	5.948.2	352
2/2-Sitzventil, offen, mit Schmutzsieb 2/2-Poppet valve norm. open, with screenfilter Valve à clapet 2/2 NO, avec tamis de protection	 **Y**	**WS08Y-30**	30	350	**U**	FC08-2	5.992	354
		WS06Y-30	20	350	**U**	FC06-2	cf	-
2/2-Sitzventil normal offen mit Rückfluss 2/2-Poppet valve normally open with reverse flow Valve à clapet 2/2 NO avec passage inverse	 **YR**	**WS06YR-01**	20	350	**U**	FC06-2	cf	-
		WS08YR-01	38	350	**U**	FC08-2	5.908	356
		WS10YR-01	75	350	**U**	FC10-2	5.921	358
		WS12YR-01	110	350	**U**	FC12-2	5.998.3	360
		WS16YR-01	150	350	**U**	FC16-2	5.944	362
		WSM06020YR-01	40	350	**M**	06020	5.948	364
		WSM10120YR-01	75	350	**M**	10120	5.948.1	366
		WSM12120YR-01	110	350	**M**	12120	5.948.4	368

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Einschraubventile
Cartridge valves
Valves à cartouche

Bezeichnung Description Désignation	Symbol Symbole	Typ Type	Q_{max} [l/min]	p_{max} [bar]	Einbauraum Cavity Implantation		Prospekt Nr. Brochure no. Fiche technique n°	Seite page
2/2-Sitzventil	**W**	**WS08W-01**	19	250	**U**	FC08-2	5.924	370
normal geschlossen		**WS10W-01**	40	350	**U**	FC10-2	5.965	372
beidseitig gesperrt		**WSM06020W**	19	250	**M**	06020	5.949	374
2/2-Poppet valve		**WSM06020W-61**	25	350	**M**	06020	5.949.3	376
normally closed		**WSM10120W**	40	350	**M**	10120	cf	-
bidirectional		**WSM12120W**	110	350	**M**	12120	5.948.7	378
Valve à clapet 2/2 NF		**WSM16520W**	100	210	**M**	16520	5.949.5	380
bi-étanche		**WSM20121W**	*350*	*420*	**M**	12120	cf	-
m. Positionsüberwach. with position monitoring surveillance de position		**WSM12120W-01E**	*100*	*350*	**M**	12120	cf	-
mit Sieb with screen filter avec tamis de protection		**WS08W-30**	20	250	**U**	FC08-2	5.994	382
2/2-Sitzventil	**V**	**WS08V-01**	20	350	**U**	FC08-2	5.917.1	384
normal offen		**WS10V-01**	40	350	**U**	FC10-2	cf	-
2/2-Poppet valve		**WSM06020V**	20	350	**M**	06020	5.949.1	386
normally open		**WSM10120V**	40	350	**M**	10120	cf	-
		WSM12120V	110	350	**M**	12120	5.948.6	388
Valve à clapet 2/2		**WSM16520V**	100	210	**M**	16520	5.949.4	390
normallement ouvert		**WSM20121V**	350	420	**M**	20121	cf	-
m. Positionsüberwach. with position monitoring surveillance de position		**WSM12120V-01E**	*100*	*350*	**M**	12120	cf	-
3/2-Sitzventil,	**C**	**WSM03230C**	12	500	**M**	03230	5.203.1	
normal geschlossen		**WS08C-01**	*22*	*350*	**U**	FC08-3	cf	-
3/2-Poppet valve		**WSM08130C**	22	350	**M**	08130	5.977.2	392
normally closed								
Valve à clapet 3/2 NF								
3/2-Sitzventil,	**D**	**WSM03230D**	12	500	**M**	03230	5.203.2	-
normal offen		**WS08D-01**	23	350	**U**	FC08-3	5.907.3	394
3/2-Poppet valve		**WS08D-51**	20	280	**U**	FC08-3	5.907.1	396
normally open		**WSM08130D**	22	350	**M**	08130	5.977.1	398
Valve à clapet 2/2 NO								
2/2-Schieberventil,	**W**	**WK06W-01**	10	350	**U**	FC06-2	5.148	622
normal geschlossen		**WK08W-01**	19	350	**U**	FC08-2	5.925	400
2/2-Spoolvalve		**WK10W-01**	35	350	**U**	FC10-2	5.969	402
normally closed								
Valve à tiroir 2/2 NF								
2/2-Schieberventil,	**V**	**WK06V-01**	15	350	**U**	FC06-2	5.156	624
normal offen		**WK08V-01**	19	350	**U**	FC08-2	5.918	404
2/2-Spoolvalve		**WK10V-01**	35	350	**U**	FC10-2	5.970	406
Valve à tiroir 2/2 NO								
3/2-Schieberventil	**L**	**WK07L-01**	10	350	**U**	FC07-3	5.955	408
3/2-Spoolvalve		**WK08L-01**	17	350	**U**	FC08-3	5.913	410
Valve à tiroir 3/2		**WK10L-01**	32	350	**U**	FC10-3	5.959	412
3/2-Schieberventil	**C**	**WK06C-01**	10	350	**U**	FC06-3	5.149.0	626
		WK08C-01	19	350	**U**	FC08-3	5.906	414
3/2-Spoolvalve		**WK08C-13**	19	350	**U**	FC08-3	5.906.1	416
		WK10C-01	32	350	**U**	FC10-3	5.963	418
Valve à tiroir 3/2		**WK10C-40**	32	350	**U**	FC10-3	5.995	420
		WKC05S30C	25	60 (10)	**Compact**	05S30	5.955.2	422
		WK06430C	*20*	*200*	**M**	06430	cf	-
		WKM08130C	25	350	**M**	08130	5.976	424

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Cartridge valves
Valves à cartouche

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3/2-Schieberventil 3/2-Spoolvalve Valve à tiroir 3/2	D	**WK08D-01**	19	350	**U**	FC08-3	5.915	426
		WK10D-13	19	350	**U**	FC10-3	cf	-
		WK10D-01	32	350	**U**	FC10-3	5.964	428
		WKM08130D-01	25	350	**M**	08130	5.977	430
		WKM08130D-13	25	350	**M**	08130	cf	-
4/2-Schieberventil 4/2-Spoolvalve Valve à tiroir 4/2	Y	**WK06Y-01**	15	350	**U**	FC06-4	5.150.0	628
		WK08Y-01	19	350	**U**	FC08-4	5.905	432
		WK10Y-01	32	350	**U**	FC10-4	5.971	434
		WKM08140Y	25	350	**M**	08140	5.942	436
4/2-Schieberventil 4/2-Spoolvalve Valve à tiroir 4/2	X	**WK08X-01**	17	350	**U**	FC08-4	5.919	438
		WK10X-01	32	350	**U**	FC10-4	5.961	440
		WKM08140X	25	350	**M**	08140	5.985	442
4/2-Schieberventil 4/2-Spoolvalve Valve à tiroir 4/2	A	**WK08A-01**	19	350	**U**	FC08-4	5.910	444
		WK10A-01	32	350	**U**	FC10-4	5.968	446
4/2-Schieberventil 4/2-Spoolvalve Valve à tiroir 4/2	Z	**WK08Z-01**	19	350	**U**	FC08-4	5.916	448
		WK10Z-01	32	350	**U**	FC10-4	5.960	450
4/2-Schieberventil 4/2-Spoolvalve Valve à tiroir 4/2	EB	**WKM08140EB**	25	350	**M**	08140	5.981	452
4/2-Schieberventil 4/2-Spoolvalve Valve à tiroir 4/2	K	**WK08K-01**	15	350	**U**	FC08-4	5.904	454
		WK10K-01	32	350	**U**	FC10-4	5.966	456
4/2-Schieberventil 4/2-Spoolvalve Valve à tiroir 4/2	N	**WK10N-01**	32	350	**U**	FC10-4	5.974	458
4/2-Schieberventil 4/2-Spoolvalve Valve à tiroir 4/2	P	**WK08P-01**	15	350	**U**	FC08-4	5.909	460
		WK10P-01	32	350	**U**	FC10-4	5.972	462
4/2-Schieberventil 4/2-Spoolvalve Valve à tiroir 4/2	R	**WK08R-01**	19	350	**U**	FC08-4	5.973	464
		WK10R-01	32	350	**U**	FC10-4	5.962	466
4/3-Schieberventil 4/3-Spoolvalve Valve à tiroir 4/3	G	**WK06G-01**	7	350	**U**	FC06-4	5.151.0	632
		WK10G-01	23	350	**U**	FC10-4	5.938	468
4/3-Schieberventil 4/3-Spoolvalve Valve à tiroir 4/3	E	**WK06E-01**	11	350	**U**	FC06-4	5.152.0	630
		WK10E-01	23	350	**U**	FC10-4	5.937	470
4/3-Schieberventil 4/3-Spoolvalve Valve à tiroir 4/3	H	**WK06H-01**	9	350	**U**	FC06-4	5.153.0	634
		WK10H-01	23	350	**U**	FC10-4	5.936	472
4/3-Schieberventil 4/3-Spoolvalve Valve à tiroir 4/3	J	**WK06J-01**	11	350	**U**	FC06-4	5.154.0	636
		WK10J-01		350	**U**	FC10-4	5.939	474
Wegeventile - hydraulisch betätigt Directional valves - hydraulic operated Distributeurs à commande hydraulique								
3/2-Schieberventil, hydr. betätigt 3/2-Spoolvalve hydraulically actuated Valve à tiroir 3/2 à commande hydraulique		**WKH05330**	15	250	**M**	05330	5.995.1	476
		WKH10C-01	10	250	**U**	FC10-4	5.995.4	478
3/3 Schieberventil / spoolvalve / valve à tiroir		**WKH10DC-01**	45	350	**U**	FC10-4	5.995.3	480
2/2 Schieberventil / spoolvalve / valve à tiroir		**WKH10V/14-01**	40	350	**U**	FC10-4	5.995.6	482
2/2 Schieberventil / spoolvalve / valve à tiroir		**WKH10W/14-01**	40	350	**U**	FC10-4	5.995.5	484

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Cartridge valves
Valves à cartouche

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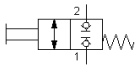
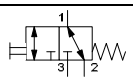
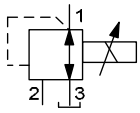
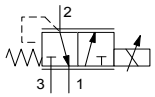
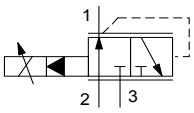
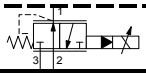
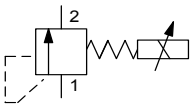
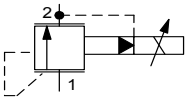
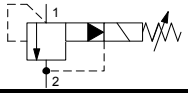
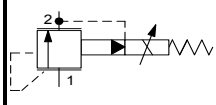
Wegeventile - manuell betätigt Directional valves - manual operated Distributeurs à commande manuelle								
2/2-Sitzventil 2/2-Poppet valve Valve à clapet 2/2		**WS08W...M**	20	250	**U**	FC08-2	5.924.1	486
		WSM06020W...M	*20*	*250*	**M**	06020	5.949.2	488
3/2 Schieberventil 3/2 spool valve 3/2 valve à clapet		**WK08C...M**	*19*	350	**U**	FC08-3	cf	-
Proportionalventile Proportional valves Valves proportionnel								
Proportional **Druckregelventil** Proportional pressure reducing valve Régulateur de pression proportionnel		**PDR08-01**	12	350 (138)	**U**	FC08-3	5.990.2	490
		PDR08-02 / -02T	17	350 (138)	**U**	FC08-3	5.990.3	494
		PDR08-11	18	350 (228)	**U**	FC08-3	cf	-
		PDR08-20	5	350 (40)	**U**	FC08-3	cf	-
		PDM08130	10	250 (170)	**M**	08130	5.168	-
Compact		**PDMC04S30D-01**	4	60 (32)	**Compact**	04S30D	5.978.5	498
Compact		**PDMC05S30A-11**	12	60 (35)	**Compact**	05S30A	5.978.2	502
Compact		**PDMC05S30A-50**	20	60 (20)	**Compact**	05S30A	5.978.4	506
		PDR08-50	25	50 (18)	**U**	FC08-3	3196658	-
Proportional **Druckregelventil** **vorgesteuert** Proportional pressure reducing valve pilot operated Régulateur de pression proportionnel		**PDR08P-01**	60	350 (350)	**U**	FC08-3	5.990.1	510
		PDR10P-01	100	350 (350)	**U**	FC10-3	5.990	512
Compact		**PDMC10S30P**	40	60 (35)	**Compact**	10S30	5.978.3	514
inverse		**PDR10PZ**	*100*	*350 (350)*	**U**	FC10-3	cf	-
Proportional **Druckbegrenzungsventil** Proportional pressure relief valve Limiteur de pression proportionnel		**PDBM06020**	10	350	**M**	06020	5.978.1	518
Proportional **Druckbegrenzungs** **ventil vorgesteuert** Proportional pressure relief valve pilot operated Limiteur de pression piloté proportionnel		**PDB08P-01**	60	350	**U**	FC08-2	5.991.1	522
		PDBM10120AP	120	350	**M**	10120A	5.978	524
		PDB10P-01	120	350	**U**	FC10-2	5.991	526
		PDB12P-01	200	350	**U**	FC12-2	5.991.2	528
		PDB16P-01	300	350	**U**	FC16-2	5.991.3	530
elektrisch entlastbar electrically ventable pilotage à distance		**PDBM12120APZ**	200	350	**M**	12120A	5.169.2	-
Proportional Druck- **begrenzungsventil** **vorgesteuert invers** Proportional pressure relief valve pilot operated inverse Limiteur de pression piloté proportionnel inversé		**PDB08PZ-08**	60	350	**U**	FC08-2	5.991.5	532
		PDB10PZ-08	120	350	**U**	FC10-2	5.991.4	536
		PDB12PZ-08	200	350	**U**	FC12-2	5.991.6	540
		PDB16PZ-08	300	350	**U**	FC16-2	5.991.7	544

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
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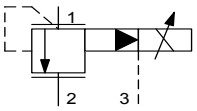
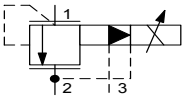
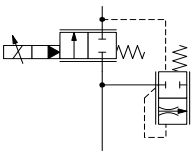
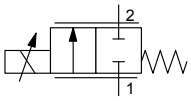
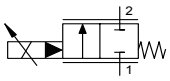
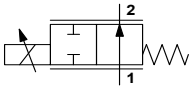
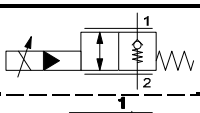
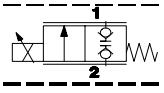
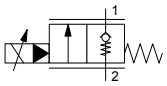
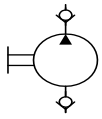
Les produits avec caractéristiques en italique sont en préparation

Einschraubventile
Cartridge valves
Valves à cartouche

Bezeichnung Description Désignation	Symbol Symbole	Typ Type Type	Q_{max} [l/min]	p_{max} [bar]	Einbauraum Cavity Implantation		Prospekt Nr. Brochure no. Fiche technique n°	Seite page
Proportional Druckbegrenzungs ventil entlastbar Proportional pressure relief valve Limiteur de pression proportionnel		**PDB10SPE**	*120*	*350*	**U**	FC10-S3	cf	-
		PDB12121PE	200	350	**M**	12121	cf	-
		PDB16121PE	*300*	*350*	**M**	16221	cf	-
Proportional Druckbegrenzungs ventil fernsteuerbar Proportional pressure relief valve remote controled Limiteur de pression proportionnel à télécommande		**PDB12121PF**	200	350	**M**	12121	cf	-
		PDB16SPF	*300*	*350*	**U**	FC16-S3	cf	-
Proportional Stromregler Proportional flow controller Régulateur de débit proportionnel		**PSRW12-301**	*55*	*200*	**Rohrleitungsmontage** Inline mounting Montage sur tuyauterie		cf	-
Proportional Strom-Drosselventil Schieberbauweise Proportional flow controller Étrangleur à commande proportionnelle à tiroir		**PWK06020W**	10	350	**M**	06020	5.991.11	548
		PWK10120W	*50*	*250*	**M**	10120	cf	-
		PWK12120W	70	250	**M**	12120	5.991.9	550
vorgesteuert pilot operated piloté		**PWK12120WP**	200	280	**M**	12120	5.991.8	554
Proportional Strom-Drosselventil Schieberbauweise Prop. flow control valve Étrangleur à commande proportionnelle à tiroir		**PWK06020V**	10	350	**M**	06020	5.991.10	556
		PWK10120V	*40*	*280*	**M**	10120	cf	-
Proportional Strom-Drosselventil Sitzbauweise Prop. flow control valve poppet type Étrangleur à commande proportionnelle à clapet		**PWS10ZR**	*100*	*350*	**U**	FC10-2	cf	-
		**PWSM06020W**	*25*	*350*	**M**	06020	cf	-
		**PWS08Z-01**	55	350	**U**	FC08-2	5.127	558
		PWS10Z-11	100	350	**U**	FC10-2	5.126	560
		PWS16Z-01	200	350	**U**	FC16-2	5.125	562
Verschiedene Ventile Various valves Différentes valves								
Handpumpe Hand pump Pompe à main		**PU10720-01**	1,6 (Hub stroke 32mm)	30 (Hand F = 190 N)	**M**	10720	3037142	-
		MP10	0,75	210 (Hand F = 176 Nm)	**U**	FC10-2	5.199.6	564

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Spulen 40 mm lang, Ø36 für Schaltventile

Coils 40 mm long, Ø36 for solenoid valves

Bobines 40 mm longue, Ø36 pour électrovalves

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40-1836

Bezeichnung Description Désignation	**Typ** Type Type	**Nennspannung** Nominal voltage Tension nominale	**Elektrischer Anschluss** Electrical connection Connection électrique	**Prospekt-Nr.** Brochure No. No. du prospectus	**Passend für Schaltventile** Suitable for solenoid valves Convenant pour électrovalves	**Seite** page
Metallspulen für Schaltventile Metallic coils for solenoid valves Bobines en acier pour électrovalves						
Anschlussstecker Typ G Connector type G Connecteur type G	**12DG-40-1836**	**12 VDC**	**Anschlussstecker nach EN 175301,** Connector EN 175301 Connecteur EN 175301	**5.207**	WSM06020... WSM10120... WSM12120... WSM16120... WSM20121… WS08... WS10...(außer WS10W) WS12... WS16... WK07L... WK08... WK10E,F,G,H,J-01 WK10L-50... WKM08120... WKM08130... WKM08140... PDBM12120APZ...	566
	24DG-40-1836	**24 VDC**				
	115AG-40-1836	**115 VAC**				
	230AG-40-1836	**230 VAC**				
Anschlussstecker Typ T Connector type T Connecteur type T	**12DT-40-1836**	**12 VDC**	**Anschluss Junior Timer 2-polig, radial,** Connector Junior Timer 2 poles, radial Connecteur Junior Timer, 2 pôles, radial			
	24DT-40-1836	**24 VDC**				
Anschlussstecker Typ K Connector type K Connecteur type K	**12DK-40-1836**	**12 VDC**	**Kostal-SchraubAnschluss,** Kostal screwed Connector Connecteur Kostal			
	24DK-40-1836	**24 VDC**				
Anschlussstecker Typ L Connector type L Connecteur type L	**12DL-40-1836**	**12 VDC**	**Spule mit 2 freien Litzen, 0,75mm²,** Connector 2 free cables 0,75mm² Bobine avec 2 conducteurs 0,75mm²			
	24DL-40-1836	**24 VDC**				
Anschlussstecker Typ N Connector type N Connecteur type N	**12DN-40-1836**	**12 VDC**	**Deutsch-Stecker,** Connector "Deutsch" Connecteur "Deutsch"			
	24DN-40-1836	**24 VDC**				

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Spulen 50 mm lang, Ø36 für Schaltventile
Coils 50 mm long, Ø36 for solenoid valves
Bobines 50 mm longue, Ø36 pour électrovalves

50-1836

Bezeichnung Description Désignation	**Typ** Type Type	**Nennspannung** Nominal voltage Tension nominale	**Elektrischer Anschluss** Electrical connection Connection électrique	**Prospekt-Nr.** Brochure No. No. du prospectus	**Passend für Schaltventile** Suitable for solenoid valves Convenant pour électrovalves	**Seite** page
Metallspulen für Schaltventile Metallic coils for solenoid valves Bobines en acier pour électrovalves						
Anschlussstecker Typ G Connector type G Connecteur type G	**12DG-50-1836**	**12 VDC**	**Anschlussstecker nach EN 175301,** Connector EN 175301 Connecteur EN 175301	**5.207**	WK10A,C,D,K,L, N,S,V,W,X,Y,Z... WS10W... WSM08130... WKM10120... WKM10130... WKM10140...	566
	24DG-50-1836	**24 VDC**				
	115AG-50-1836	**115 VAC**				
	230AG-50-1836	**230 VAC**				
Anschlussstecker Typ T Connector type T Connecteur type T	**12DT-50-1836**	**12 VDC**	**Anschluss Junior Timer 2-polig, radial,** Connector Junior Timer 2 poles, radial Connecteur Junior Timer, 2 pôles, radial			
	24DT-50-1836	**24 VDC**				
Anschlussstecker Typ K Connector type K Connecteur type K	**12DK-50-1836**	**12 VDC**	**Kostal-SchraubAnschluss,** Kostal screwed Connector Connecteur Kostal			
	24DK-50-1836	**24 VDC**				
Anschlussstecker Typ L Connector type L Connecteur type L	**12DL-50-1836**	**12 VDC**	**Spule mit 2 freien Litzen, 0,75mm²,** Connector 2 free cables 0,75mm² Bobine avec 2 conducteurs 0,75mm²			
	24DL-50-1836	**24 VDC**				
Anschlussstecker Typ N Connector type N Connecteur type N Connecteur type N	**12DN-50-1836**	**12 VDC**	**Deutsch-Stecker,** Connector "Deutsch" Connecteur "Deutsch"			
	24DN-50-1836	**24 VDC**				

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Spulen 40 mm lang, Ø36 für Proportionalventile
Coils 40 mm long, Ø36 for proportional valves
Bobines 40 mm longue, Ø36 pour valves proportionelles

40-1836

Bezeichnung Description Désignation	**Typ** Type Type	**Nennspannung** Nominal voltage Tension nominale	**Elektrischer Anschluss** Electrical connection Connection électrique	**Prospekt-Nr.** Brochure No. No. du prospectus	**Passend für Prop.ventile** Suitable for solenoid valves Convenant pour électrovalves	**Seite** page
Metallspulen für Prop-Ventile Metallic coils for prop. valves Bobines en acier pour distributeurs prop.						
Anschlussstecker Typ G Connector type G Connecteur type G	**12PG-2.2-40-1836**	**12 VDC**	**Anschlussstecker nach EN 175301,** Connector EN 175301 Connecteur EN 175301	**5.215**	PDR08P-01... PDR10P-01... PDB08-01… PDB08P-01… PDB10P-01… /SPE…	568
	24PG-8.8-40-1836	**24 VDC**				
Anschlussstecker Typ T Connector type T Connecteur type T	**12PT-40-1836**	**12 VDC**	**Anschluss Junior Timer 2-polig, radial,** Connector Junior Timer 2 poles, radial Connecteur Junior Timer, 2 pôles, radial		PDB12P-01.. PDB16P-01... PDB08PZ-01.. PDB10PZ-01..	
	24PT-40-1836	**24 VDC**				
Anschlussstecker Typ L Connector type L Connecteur type L	**12PL-2.2-40-1836**	**12 VDC**	**Spule mit 2 freien Litzen, 0,75mm²,** Connector 2 free cables 0,75mm² Bobine avec 2 conducteurs 0,75mm²		PDB12PZ-01... PDB16PZ-01... PDBM10120AP...	
	24PL-8.8-40-1836	**24 VDC**				
Anschlussstecker Typ N Connector type N Connecteur type N Connecteur type N	**12PN-2.2-40-1836**	**12 VDC**	**Deutsch-Stecker,** Connector "Deutsch" Connecteur "Deutsch"		PDB12121PE… PF… PDB16221PE… PDR08-01 / -02 / -50 PDR08-02T... PWK12120WP...	
	24PN-8.8-40-1836	**24 VDC**				

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Spulen 50 mm lang, Ø36 für Proportionalventile
Coils 50 mm long, Ø36 for proportional valves
Bobines 50 mm longue, Ø36 pour valves proportionelles

50-1836

Bezeichnung Description Désignation	**Typ** Type Type	**Nennspannung** Nominal voltage Tension nominale	**Elektrischer Anschluss** Electrical connection Connection électrique	**Prospekt-Nr.** Brochure No. No. du prospectus	**Passend für Prop.ventile** Suitable for solenoid valves Convenant pour électrovalves	**Seite** page
Metallspulen für Prop. Ventile Metallic coils für prop. valves Bobines en acier pour valves proportionelles						
Anschlussstecker Typ G Connector type G Connecteur type G	**12PG-4.1-50-1836**	**12 VDC**	**Anschlussstecker nach EN 175301,** Connector EN 175301 Connecteur EN 175301	**5.215**	PDR08-11... PDR08-20... PDBM06020... PWK06020V... PWK06020W... PWK10120... PWK12120W... PWS08Z...	568
	24PG-18-50-1836	**24 VDC**				
Anschlussstecker Typ T Connector type T Connecteur type T	**12PT-4.1-50-1836**	**12 VDC**	**Anschluss Junior Timer 2-polig, radial,** Connector Junior Timer 2 poles, radial Connecteur Junior Timer, 2 pôles, radial			
	24PT-18-50-1836	**24 VDC**				
Anschlussstecker Typ L Connector type L Connecteur type L	**12PL-4.1-50-1836**	**12 VDC**	**Spule mit 2 freien Litzen, 0,75mm²,** Connector 2 free cables 0,75mm² Bobine avec 2 conducteurs 0,75mm²			
	24PL-18-50-1836	**24 VDC**				
Anschlussstecker Typ N Connector type N Connecteur type N Connecteur type N	**12PN-4.1-50-1836**	**12 VDC**	**Deutsch-Stecker,** Connector "Deutsch" Connecteur "Deutsch"			
	24PN-18-50-1836	**24 VDC**				

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Spulen 32 mm lang, Ø29
Coils 32 mm long, Ø29
Bobines 30 mm longue, Ø29

32-1329

Bezeichnung Description Désignation	**Typ (Mat.-Nr.)** Type (Part No.) Type (no. du pièce)	**Nennspannung** Nominal voltage Tension nominale	**Elektrischer Anschluss** Electrical connection Connection électrique	**Prospekt-Nr.** Brochure No. No. du prospectus	**Passend für Schaltventile** Suitable for solenoid valves Convenant pour électrovalves	**Seite** page
Metallspulen für Schaltventile Metallic coils for solenoid valves Bobines en acier pour électrovalves						
Anschlussstecker Typ G Connector type G Connecteur type G	**2610160** **2610161** **2610156** **2610159**	**12 VDC** **24 VDC** **105 VDC** **205 VDC**	**Anschlussstecker nach EN 175301-803** Connector EN 175301-803 Connecteur EN 17530-803	**5.155.0**	für Miniventile	638
***Leitungsdose mit Gleichrichter** *Connector with rectifier diode *Connecteur avec diode	**2610156 + 2600582*** **2610159 + 2600582***	**120 VAC** **230 VAC**			WS06… Wk06... for	
Anschlussstecker Typ N Connector type N Connecteur type N	**2610149** **2610150**	**12 VDC** **24 VDC**	**Deutsch-Stecker,** Connector "Deutsch" Connecteur "Deutsch"		Minivalves pour programme	
Anschlussstecker Typ L Connector type L Connecteur type L	**2610151** **2610162**	**12 VDC** **24 VDC**	**Spule mit 2 freien Litzen, 0,75mm²,** Connector 2 free cables Bobine avec 2 conducteurs		Minivalves	
Leitungsdose Connector Connecteur	**2600570**		Stecker nach EN 175301-803 Form B Connector EN 175301-803 Connecteur EN 17530-803			
Leitungsdose mit Gleichrichter with rectifier diode avec diode	**2600582**					

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
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Les produits avec caractéristiques en italique sont en préparation

Anschlussgehäuse ISO/metrisch
Connection Housings ISO/metric
Blocs de Raccordement ISO métrique

Achtung: Alugehäuse nur bis 210 bar!
Attention: Aluminium housings only up to 210 bar!
Attention: Blocs en Aluminium seulement 210 bar!

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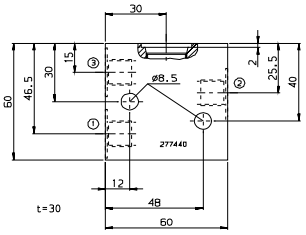
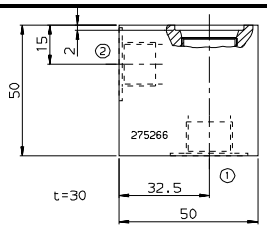
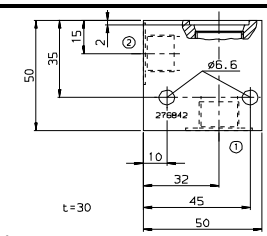
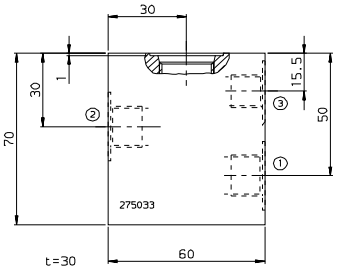
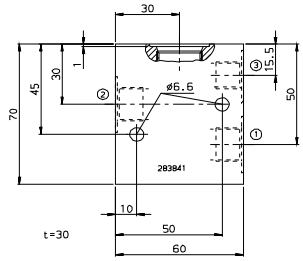
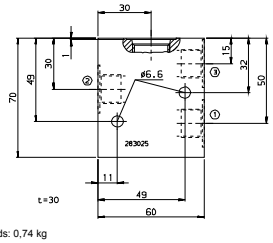
Best.-Nr. Order-No. Code article	**Typ** Type Type	**Anschlussgewinde** Threads Raccordement	**Abmessungen** Dimensions Dimensions	**Ventile** Valves Valves	**Prospekt/ Datenblatt-Nr.** Brochure/ Data Sheet-No. Cataloque/ Fiche technique n▪	**Seite** page
Rohranschlussgehäuse Standard inline bodies Blocs de raccordement sur tuyauterie						571
277440	**R03230-01X-01**	① G 1/4 ② G 1/4 ③ G 1/4	 Masse, weight, poids: 0,67 kg	**WSM03230**	**5.203**	574
277372	**R05220**	① G 3/8	Stahl, bis 420 bar	**DB3E**	**5.165**	-
3364559	**R05S30-010-01**	① G 3/8	Aluminium, bis 60 bar	**PDMC05S30A**	**cf**	-
275266	**R06020-01X-01** *= bei Einsatz des DB4E nur bis 350 bar! * 350 bar only by using DB4E * par utilisage du DB4E seulement 350 bar!	① G 3/8 ② G 3/8	 Masse, weight, poids: 0,45 kg	**DB4E (-25X)** **DSR5E** **DZ5E** **DV5E** **SR5E** **RVM06020** **WSM06020Z** **WSM06020ZR** **PDBM06020** **WSM06020W M** **DZM06020**	 **5.169.8** **5.166** **5.113** **5.117** **5.193** **5.943** **5.946** **5.978** **5.949.2 5.943.3** **5.950.2**	574
276842	**R06020-10X-01**	① G 3/8 ② G 3/8	 Masse, weight, poids: 0,44 kg	**WSM06020Y** **WSM06020YR** **WSM06020W** **WSM06020V** **WSM06020ZR-01J** **PDBM06020** **WSM06020W-61** **WSM06020WM** **PWK06020V / W**	**5.947** **5.948** **5.949** **5.949.1** **5.946** **5.978** **5.949.3** **5.942.2** **5.991.11**	574
275033	**R08021-01X-01** Anschluss 3 verschließen bei Verwendung ERVM-G1/2 Port 3 should be plugged on use ERVM-G1/2 Obturer l'orifice 3 lors d'une utilisation ERVM-G1/2	① G 3/8 ② G 3/8 ③ G 1/4	 Masse, weight, poids: 0,77 kg	**ERVE08021** **SBVE-R 1/2** **RPR08021** **ERVM-G1/2**	**5.172** **5.177** **396487** **283843**	574
283841	**R08021-10X-01** Anschluss 3 verschließen bei Verwendung ERVM-G1/2 Port 3 should be plugged on use ERVM-G1/2 Obturer l'orifice 3 lors d'une utilisation ERVM-G1/2	① G 3/8 ② G 3/8 ③ G 1/4	 Masse, weight, poids: 0,76 kg	**ERVE08021** **SBVE-R 1/2** **RPR08021** **ERVM-G1/2**	**5.172** **5.177** **396487** **283843**	574
283025	**R08030-01X-01**	① G 3/8 ② G 3/8 ③ G 3/8	 Masse, weight, poids: 0,74 kg	**DMVE-G 1/2**	**5.162**	575

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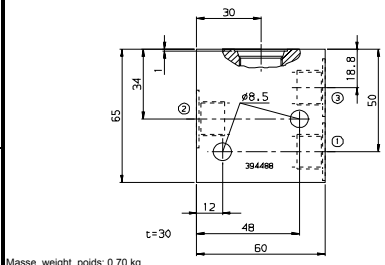
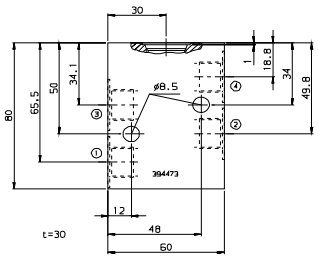
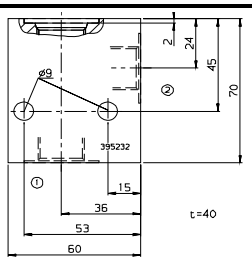
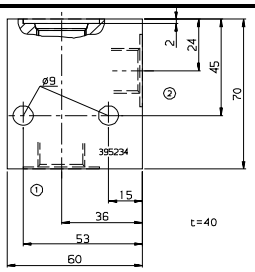
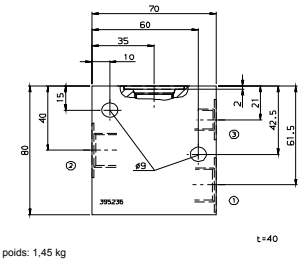
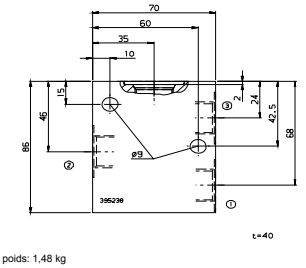
Anschlussgehäuse ISO/metrisch

Connection Housings ISO/metric
Blocs de Raccordement ISO métrique

Best.-Nr. Order-No. Code article	Typ Type Type	Anschlussgewinde Threads Raccordement	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique n ▪	Seite page
394488	R08130-01X-01	① G 3/8 ② G 3/8 ③ G 3/8	 Masse, weight, poids: 0,70 kg	WSM08130C WSM08130D WKM08130C WKM08130D… DWM08130Z DWM08130Y	5.977.2 5.977.1 5.976 5.977 5.196.1 5.194.1	575
394378	R08130-01X-02	① M 14 x 1,5 ② M 14 x 1,5 ③ M 14 x 1,5				
394473	R08140-01X-01	① G 3/8 ② G 3/8 ③ G 3/8 ④ G 3/8	 Masse, weight, poids: 0,86 kg	WKM08140Y WKM08140X WKM08140EB	5.942 5.985 5.981	575
393535	R08140-01X-02	① M 14 x 1,5 ② M 14 x 1,5 ③ M 14 x 1,5 ④ M 14 x 1,5				
395232	R10120A-01X-01	① G 1/2 ② G 1/2	 Masse, weight, poids: 1,04 kg	DB10120A DB10120A-13X	5.167 5.922.4	575
395233	R10120A-01X-02	① M 22 x 1,5 ② M 22 x 1,5				
395234	R10120-01X-01	① G 1/2 ② G 1/2	 Masse, weight, poids: 1,04 kg	RVM10120 SD10120 WSM10120Z WSM10120ZR WSM10120Y WSM10120YR PWK10120 V / W WSM10120 V / W	5999.1 5.114 5943.1 5946.1 5947.1 5948.1	575
395235	R10120-01X-02	① M 22 x 1,5 ② M 22 x 1,5				
395236	R10121-01X-01	① G 1/2 ② G 1/2 ③ G 1/4	 Masse, weight, poids: 1,45 kg	RP10121 RPL10121 DMM10121 RSM10121	5.923.1 5.176.1 5.169.9	576
395237	R10121-01X-02	① M 22 x 1,5 ② M 22 x 1,5 ③ M 14 x 1,5				
395238	R10130-01X-01	① G 1/2 ② G 1/2 ③ G 1/2	 Masse, weight, poids: 1,48 kg	DRM10130P SRA10130 DWM10130R	5.950 284857	576
395239	R10130-01X-02	① M 22 x 1,5 ② M 22 x 1,5 ③ M 22 x 1,5				

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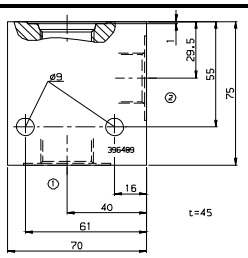
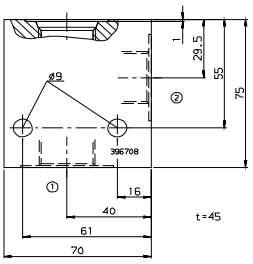
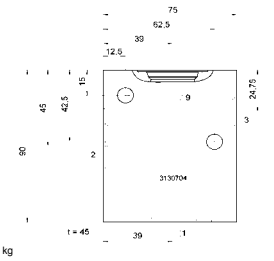
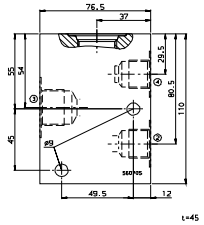
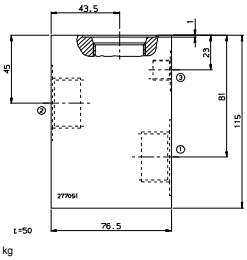
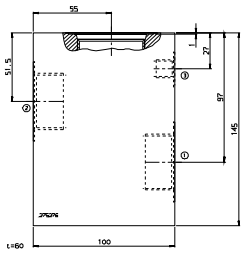
Anschlussgehäuse ISO/metrisch

Connection Housings ISO/metric
Blocs de Raccordement ISO métrique

Best.-Nr. Order-No. Code article	Typ Type Type	Anschlussgewinde Threads Raccordement	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique n ▪	Seite page
3426652	R10S30-010-01	① G 3/8	Stahl, bis 60 bar	PDMC10S30P	5.978.3	576
396489	R12120A-01X-01	① G 3/4 ② G 3/4	 Masse, weight, poids: 1,40 kg	DB12120A	5.169.1	576
				PDBM12120APZ	5.169.2	
				PWK12120W	5.991.9	
				PWK12120WP	5.991.8	
396708	R12120-10X-01	① G 3/4 ② G 3/4	 Masse, weight, poids: 1,39 kg	WSM12120Z	5.948.3	577
				WSM12120ZR	5.948.5	
				WSM12120Y	5.948.2	
				WSM12120YR	5.948.4	
				WSM12120W (01E)	5.948.7	
				WSM12120V (01E)	5.948.6	
396707	R12120-10X-02	① M 27 x 2 ② M 27 x 2		PWK12120 V W		
3130704	R12121-01X-01	① G 3/4 ② G 3/4 ③ G 3/8	 Masse, weight, poids: 1,89 kg	DB12121PE	5.996	577
				DB12121PF	5.997	
				PDB12121PE		
				PDB12121PF		
				DWM12121Z B/H	5.191.2	
				DWM12121ZD	5.191.1	
				DWM12121Z MD…		
				RSM12121	5.933	
560705	R12230-01X-01	② G 1/2 ③ G 3/4 ④ G 1/2	 Masse, weight, poids: 2,40 kg	ST12230	5.122	578
277051	R16021-01X-01	① G 1 ② G 1 ③ G 1/4	 Masse, weight, poids: 2,52 kg	ERVE16021	5.172	578
				SBVE-R1	5.177	578
275276	R20021-01X-01	① G 1 1/4 ② G 1 1/4 ③ G 1/4	 Masse, weight, poids: 4,6 kg	ERVE20021	5.172	578

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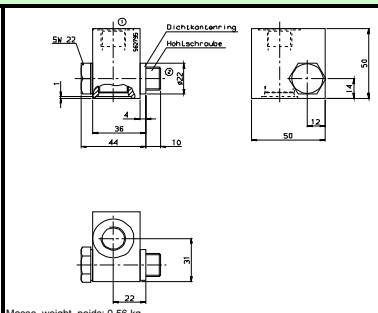
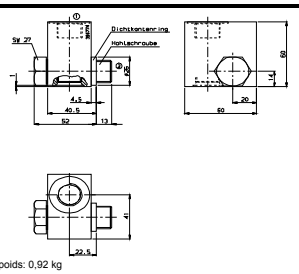
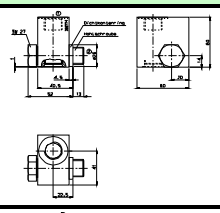
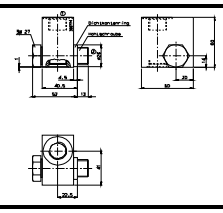
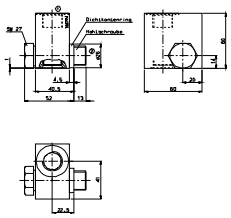
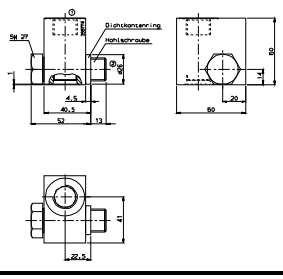
Anschlussgehäuse ISO/metrisch

Connection Housings ISO/metric
Blocs de Raccordement ISO métrique

Best.-Nr. Order-No. Code article	Typ Type Type	Anschlussgewinde Threads Raccordement	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique n ▪	Seite page
Zylinderanschlussgehäuse Cylinder connection housing Bloc de Raccordement sur vérin						
562795	A06020-04X-01	① G 3/8 ② G 3/8	 Masse, weight, poids: 0,56 kg	WSM06020Z	5.943	579
				WSM06020ZR	5.946	
				WSM06020Y	5.947	
				WSM06020YR	5.948	
				WSM06020W M	5.949.2 5.943.3	
				WSM06020V	5.949.1	
				WSM06020ZR-J	5.946	
				PDBM06020	5.978	
				DB4E* (-25X)	5.161	
396774	A06020-14X-01	① G 1/2 ② G 1/2	 Masse, weight, poids: 0,92 kg	WSM06020Z	5.943	579
				WSM06020ZR	5.946	
				WSM06020Y	5.947	
				WSM06020YR	5.948	
				WSM06020W M	5.949.2 5.943.3	
				WSM06020V	5.949.1	
				WSM06020ZR-J	5.946	
				WSM06020Z-J	5.943	
				PDBM06020	5.978	
				DB4E* (-25X)		
3364559	R05S30A-010-01	① G 3/4 ② G 3/4		PDMC05S30		-
Zylinderanschlussgehäuse mit Hohlschraube und Stromregler Cylinder connection housings with hollow screw and flow control valve Bloc de Raccordement sur vérin avec vis creux et régulateur de débit						
395364	ASR06020-01X-01/4 Q=4,0-5,0 l/min Baugruppe ohne Schaltventil	① G 3/8		WSM06020Z	5.943	-
				WSM06020ZR	5.946	
				WSM06020Y	5.947	
				WSM06020YR	5.948	
				WSM06020W M	5.949.2 5.943.3	
				WSM06020V	5.949.1	
				WSM06020ZR-J	5.946	
				WSM06020Z-J	5.943	
561220	ASR06020-11X-01-5 Q=5,0-7,5 l/min Baugruppe ohne Schaltventil	M14 x 1,5		WSM06020Z	5.943	-
				WSM06020ZR	5.946	
				WSM06020Y	5.947	
				WSM06020YR	5.948	
				WSM06020W M	5.949.2 5.943.3	
				WSM06020V	5.949.1	
				WSM06020ZR-J	5.946	
				WSM06020Z-J	5.943	
3230559	ASR082-01X-01-1,5 Q=1,5-2,4 Baugruppe ohne Schaltventil	M14 x 1,5		WS08ZR -J	5.984	-
				DB08A	5.922	
				DB08P	5.922.1	
				RV08A	5.912	
				SD08	5.928	
				SR08	5.930	
				WS08Z	5.907	
				WS08ZR	5.911	
				WS08Y	5.917	
3013989	ASR082-01X-01-5 Q=5,0-7,5 l/min Baugruppe ohne Schaltventil	M14 x 1,5		WS08YR	5.908	-
				WS08W	5.924	
				WK08W	5.925	
				WK08V	5.918	
				WS08WM	5.924.1	
				WS08Z-J	5.983	
				PDB08P	5.991.1	
				WS08Z	5.993	
				WS08Y	5.992	
				WS08W	5.994	
				WS08W	5.994	

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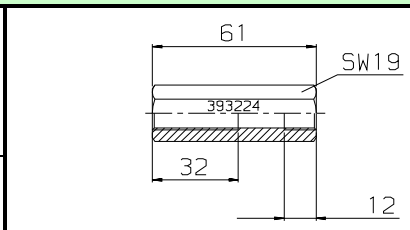
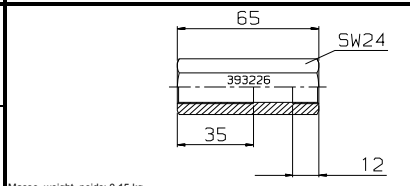
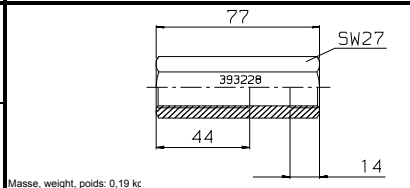
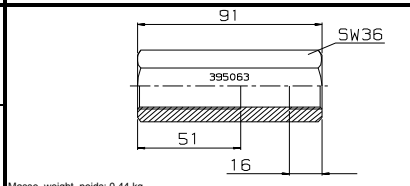
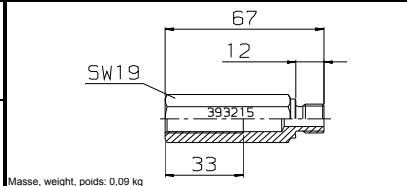
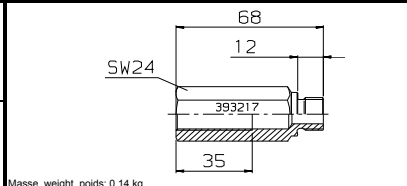
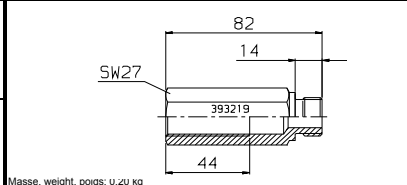
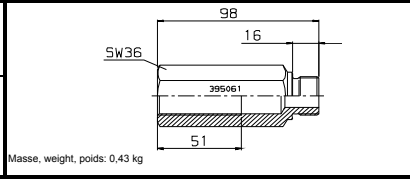
Anschlussgehäuse ISO/metrisch

Connection Housings ISO/metric
Blocs de Raccordement ISO métrique

Best.-Nr. Order-No. Code article	Typ Type Type	Anschlußgewinde Threads Raccordement	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique n ▪	Seite page
Leitungsgehäuse Internal valve housing Bloc de raccordement						
393224	**XX05520-01X**	**G 1/4**	 Masse, weight, poids: 0,09 kg	**SRE1**	**5.118**	580
				RBE-R 1/4	**5.174**	
	Auf Anfrage On request Sur demande	**M 14x1,5**				
393226	**XX08520-01X**	**G 3/8**	 Masse, weight, poids: 0,15 kg	**SRE2**	**5.118**	580
				RBE-R 3/8	**5.174**	
	Auf Anfrage On request Sur demande	**M 18x1,5**				
393228	**XX10520-01X**	**G 1/2**	 Masse, weight, poids: 0,19 kg	**SRE3**	**5.118**	580
				RBE-R 1/2	**5.174**	
	Auf Anfrage On request Sur demande	**M 22x1,5**				
395063	**XX12520-01X**	**G 3/4**	 Masse, weight, poids: 0,44 kg	**SRE4**	**5.118**	580
				RBE-R 3/4	**5.174**	
	Auf Anfrage On request Sur demande	**M 27x2**				
393215	**XB05520-01X**	**G 1/4**	 Masse, weight, poids: 0,09 kg	**SRE1**	**5.118**	580
				RBE-R 1/4	**5.174**	
	Auf Anfrage On request Sur demande	**M 14x1,5**				
393217	**XB08520-01X**	**G 3/8**	 Masse, weight, poids: 0,14 kg	**SRE2**	**5.118**	580
				RBE-R 3/8	**5.174**	
	Auf Anfrage On request Sur demande	**M 18x1,5**				
393219	**XB10520-01X**	**G 1/2**	 Masse, weight, poids: 0,20 kg	**SRE3**	**5.118**	580
				RBE-R 1/2	**5.174**	
	Auf Anfrage On request Sur demande	**M 22x1,5**				
395061	**XB12520-01X**	**G 3/4**	 Masse, weight, poids: 0,43 kg	**SRE4**	**5.118**	580
				RBE-R 3/4	**5.174**	
	Auf Anfrage On request Sur demande	**M 27x2**				

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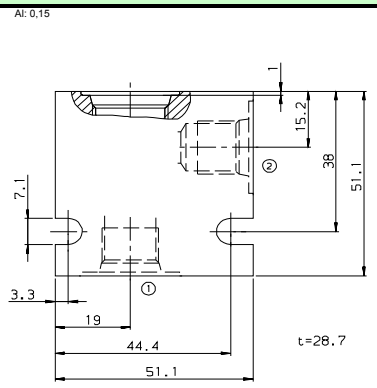
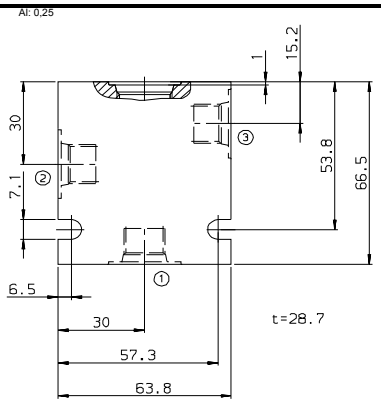
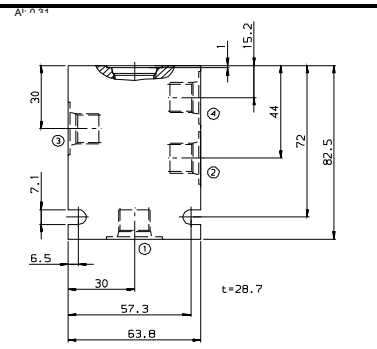
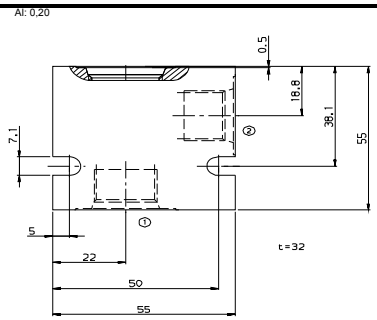
Anschlussgehäuse ISO/metrisch

Connection Housings ISO/metric
Blocs de Raccordement ISO métrique

Best.-Nr. Order-No. Code article	Typ Type Type	Anschlussgewinde Threads Raccordement	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique n ▪	Seite page
Rohranschlussgehäuse Standard inline bodies Blocs de raccordement sur tuyauterie						
3011423	FH082-AB3	① 3/8"BSP ② 3/8"BSP		WS08ZR-J	5.984	583
				DB08A DB08P	5.922 5.922.1	
560919	FH082-SB3					
				RV08A	5.912	
				SD08 SR08	5.928 5.930	
				WS08Z (-01E)	5.907 5.907.2	
				WS08ZR (-01E)	5911 5.994.1	
				WS08Y (-30)	5.917 5.992	
				WS08YR (BR)	5908 5.911.1	
				WS08W (-30)	5.924 5.994	
				WK08V W	5.925 5.918	
				WS08WM	5.924.1	
				WS08Z-J	5.983	
				WS08V	5.917.1	
				PDB08P (PZ)	5.991.1 5.991.5	
				PWS08Z	5.127	
3011427	FH083-AB3	① 3/8"BSP ② 3/8"BSP ③ 3/8"BSP		DR08	5.920	583
560922	FH083-SB3			RP08A	5.923	
				RS08	5.933	
				SRP08	5.929	
				WK08L	5.913	
				WK08C (-13)	5906 5.906.1	
				WK08D	5.915	
				DR08P	5.920.1	
				PDR08P	5.990.1	
				PDR08-01	5.990.2	
				PDR08-11 / -20		
				WS08D	5.907.1	
3116230	FH083-SM14F	① M14x1,5 ② M14x1,5 ③ M14x1,5		PDR08-50		
				WS08C WK08C	..... 5.906	
				PDR08-02	5.990.3	
3011407	FH084-AB3	① 3/8"BSP ② 3/8"BSP ③ 3/8"BSP ④ 3/8"BSP		WK08Y	5.905	583
563383	FH084-SB3			WK08X	5.919	
				WK08A	5.910	
				WK08Z	5.916	
				WK08K	5.904	
				WK08P	5.909	
				WK08R	5.973	
3037777	FH102-AB4	① 1/2"BSP ② 1/2"BSP		DB10 DB10P	5.954	584
3037594	FH102-SB4			RV10A RV10A-51	5.953	
				SR10	5.958	
				SD10	5.989	
				SDR10A	5.988	
				WS10Z WS10V	5.926	
				WS10ZR (-01E)	5.927	
				WS10Y	5.914	
				WS10YR	5.921	
				WK10W	5.969	
				WK10V	5.970	
				WS10W		
				PDB10P	5.991	
				PDB10PZ	5.991.4	
				PWS10Z /ZR		

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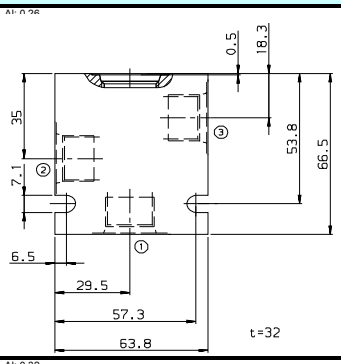
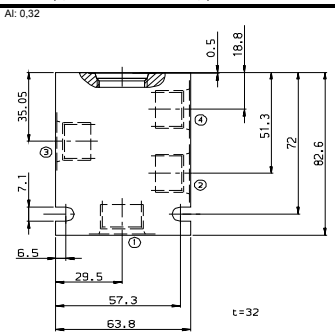
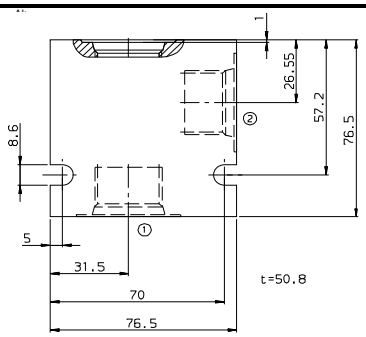
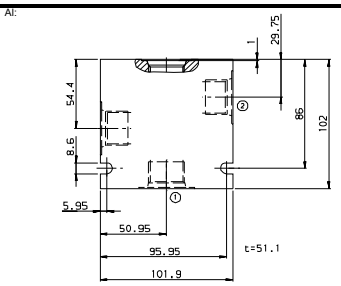
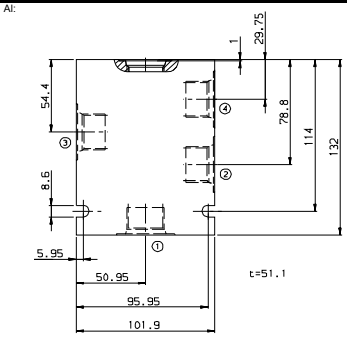
Anschlussgehäuse ISO/metrisch

Connection Housings ISO/metric
Blocs de Raccordement ISO métrique

Best.-Nr. Order-No. Code article	Typ Type Type	Anschlussgewinde Threads Raccordement	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique n ▪	Seite page
3038092	FH103-AB4	① 1/2"BSP ② 1/2"BSP ③ 1/2"BSP		DR10	5.950	584
3037697	FH103-SB4			RP10A	5.932	
				WK10L	5.957	
				WK10C (-40)	5.963 5.995	
				WK10D	5.964	
				DR10P	5.982	
				WK10C	5.963	
				PDR10P	5.990	
				PDR10PZ		
				DB10SE-12		
3038097	FH104-AB4	① 1/2"BSP ② 1/2"BSP ③ 1/2"BSP ④ 1/2"BSP		ST10	5.967	584
3037784	FH104-SB4			WK10G WK10E	5.938 5.937	
				WK10H WK10J	5.936 5.939	
				WK10Y	5.971	
				WK10X	5.961	
				WK10A	5.968	
				WK10Z	5.960	
				WK10K	5.966	
				WK10P	5.972	
				WKH10C	5.995.4	
				WKH10DC	5.995.3	
				WK10R	5.962	
				WK10N		
				WKH10V/12 W/14		
3053843	FH122-AB6	① 3/4"BSP ② 3/4"BSP		RV12A	5952	585
3053782	FH122-SB6			WS12Z	5998	
				WS12ZR	5.998.1	
				WS12Y	5.998.2	
				WS12YR	5.998.3	
				DB12P	5.922.2	
				PDB12P	5.991.2	
				PDB12PZ	5.991.6	
3053872	FH123-AB6	① 3/4"BSP ② 3/4"BSP ③ 3/4"BSP		SRP12		585
3053908	FH123-SB6					
3054099	FH124-AB6	① 3/4"BSP ② 3/4"BSP ③ 3/4"BSP ④ 3/4"BSP		DW12P-22		585
3054097	FH124-SB6					

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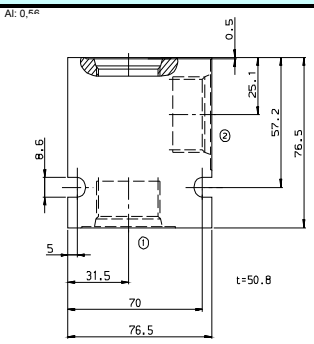
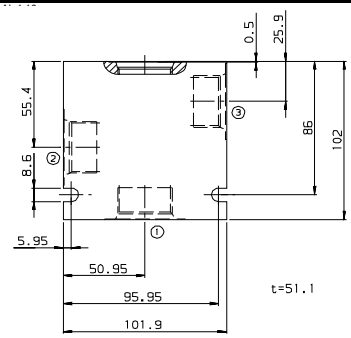
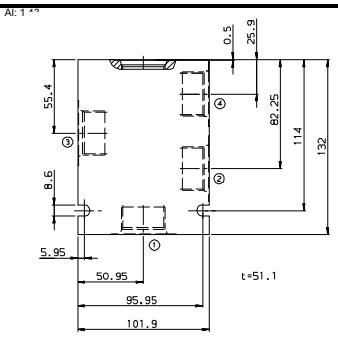
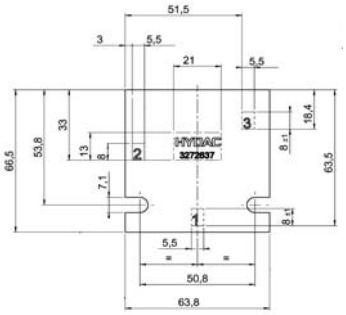
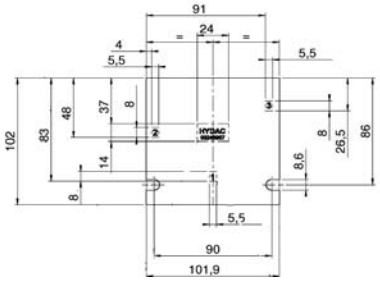
Anschlussgehäuse ISO/metrisch

Connection Housings ISO/metric
Blocs de Raccordement ISO métrique

Best.-Nr. Order-No. Code article	Typ Type Type	Anschlussgewinde Threads Raccordement	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique n ▪	Seite page
3037193	FH162-AB8	① 1"BSP ② 1"BSP		RV16A	5.951	585
3032496	FH162-SB8			WS16Z	5.945	
				WS16ZR	5.941	
				WS16Y	5.940	
				WS16YR	5.944	
				DB16P	5.922.3	
				PDB16P	5.991.3	
				PDB16PZ	5.991.7	
3037208	FH163-AB8	① 1"BSP ② 1"BSP ③ 1"BSP		RP16A	5.931	585
3036257	FH163-SB8					
3037213	FH164-AB8	① 1"BSP ② 1"BSP ③ 1"BSP ④ 1"BSP		ST16	5.967.1	585
3032902	FH164-SB8					
3272637	FH10S3-AB4	① 1/2"BSP ② 1/2"BSP ③ 1/4"BSP		DB10SPE	5.594.1	585
3310162	FH10S3-SB4			DW10V		
3246967	FH16S3-SB8	① 1"BSP ② 1"BSP ③ 1/4"BSP		DB16SPF	5.922.5	585
				DW16V		

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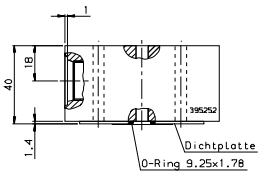
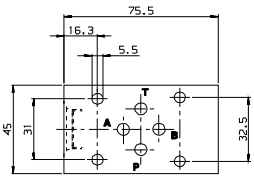
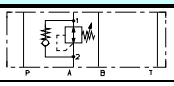
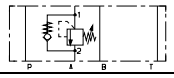
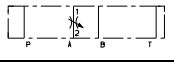
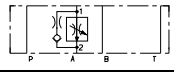
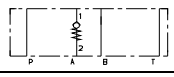
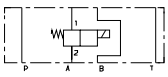
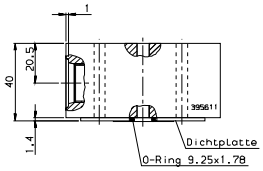
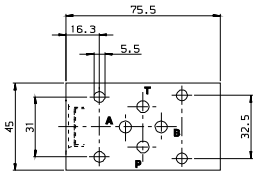
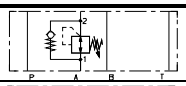
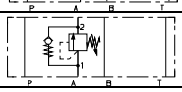
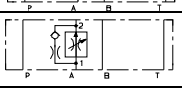
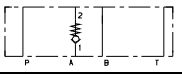
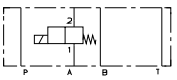
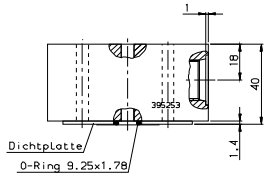
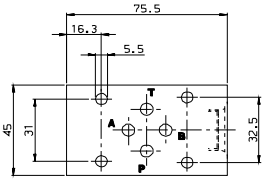
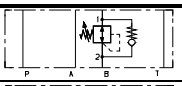
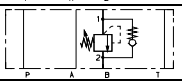
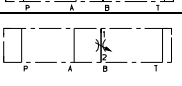
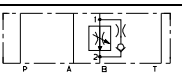
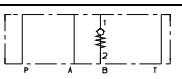
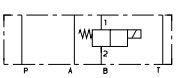
Zwischenplattengehäuse

Stand 01-2013

Sandwich Plate Housings

Plaques pour montage sandwich

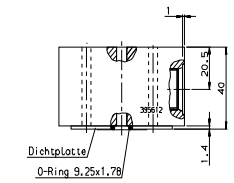
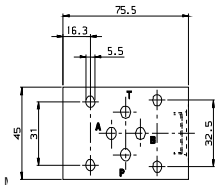
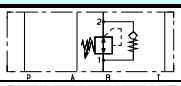
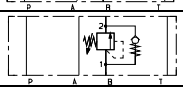
Best.-Nr. Order-No. Code article	Typ Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique no.	Symbol Symbol Symbole	Seite page
395252	**ZA06020-01X** **Einschraubventil in Leitung A** Cartridge valve in line A Valve à visser sur A	  Masse: 0,92 kg	**DSR5E** **DZ5E** **DZM06020** **DV5E** **DV5E** **SR5E** **RVM06020** **WSM06020W-61** **WSM06020Z** **WSM06020ZR (-J)** **WSM06020Y** **WSM06020YR** **WSM06020W** **WSM06020V** **WSM06020W M**	**5.169.8** **5.166** **5.950.2** **5.113** **5.113** **5.117** **5.193** **5.949.3** **5.943** **5.946** **5.947** **5.948** **5.949** **5.949.1** **5.949.2 5.943.3**	     	587
395611	**ZA06020-10X** **Einschraubventil in Leitung A** Cartridge valve in line A Valve à visser sur A	  Masse: 0,92 kg	**DSR5E** **DZ5E** **WSM06020W-61** **SR5E** **RVM06020** **WSM06020W M** **WSM06020Z** **WSM06020ZR (-J)** **WSM06020Y** **WSM06020YR** **WSM06020V**	**5.169.8** **5.166** **5.949.3** **5.117** **5.193** **5.949.2 5.943.3** **5.943** **5.946** **5.947** **5.948** **5.949.1**	    	587
395253	**ZB06020-01X** **Einschraubventil in Leitung B** Cartridge valve in line B Valve à visser sur B	  Masse: 0,92 kg	**DSR5E** **DZ5E** **WSM06020W-61** **DV5E** **SR5E** **RVM06020** **WSM06020W M** **WSM06020Z** **WSM06020ZR (-J)** **WSM06020Y** **WSM06020YR** **WSM06020V**	**5.169.8** **5.166** **5.949.3** **5.113** **5.117** **5.193** **5.949.2 5.943.3** **5.943** **5.946** **5.947** **5.948** **5.949.1**	     	588

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung

Products with hydraulic datas in italic letters are in preparation

Les produits avec caractéristiques en italique sont en préparation

Zwischenplattengehäuse
Sandwich Plate Housings
Plaques pour montage sandwich

Best.-Nr. Order-No. Code article	Typ Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique no.	Symbol Symbole	Seite page
395612	**ZB06020-10X** **Einschraubventil in Leitung B** Cartridge valve in line B Valve à visser sur B	 	**DSR5E**	**5.169.8**		588
			DZ5E	**5.166**		
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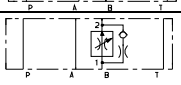
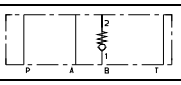
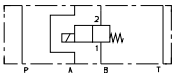
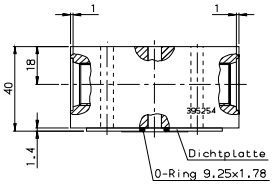
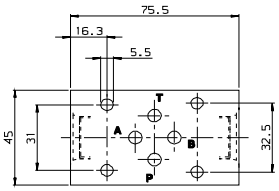
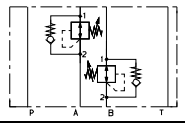
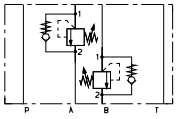
			SR5E	**5.117**		
			RVM06020	**5.193**		
			WSM06020W M	**5.949.2 5.943.3**		
			WSM06020Z	**5.943**		
			WSM06020ZR (-J)	**5.946**		
			WSM06020Y	**5.947**		
			WSM06020YR	**5.948**		
			WSM06020V	**5.949.1**		
395254	**ZAB06020-01X** **Einschraubventil in Leitung A und B** Cartridge valve in line A and B Valve à visser sur A et B	  Masse: 0,87 kg	**DSR5E**	**5.169.8**		589
			DZ5E	**5.166**		
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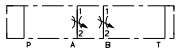
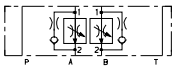
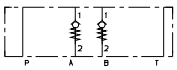
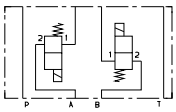
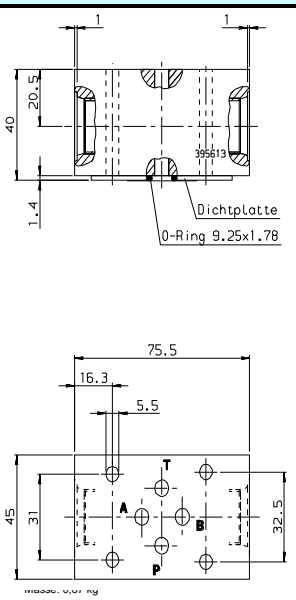
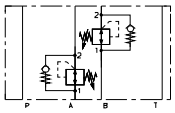
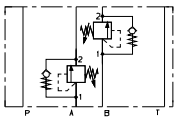
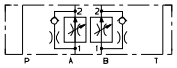
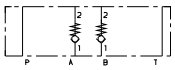
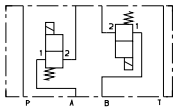
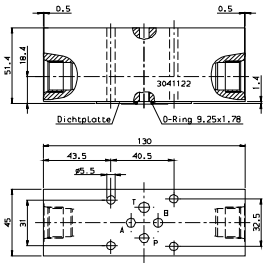
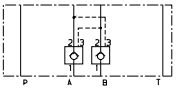
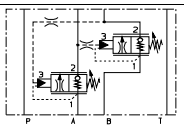
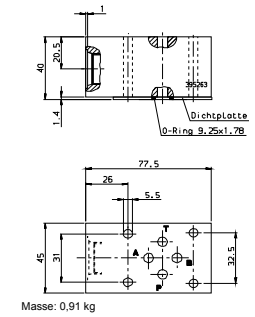
			WSM06020W M	**5.949.2 5.943.3**		
			DV5E	**5.113**		
			SR5E	**5.117**		
			RVM06020	**5.193**		
			WSM06020Z	**5.943**		
			WSM06020ZR (-J)	**5.946**		
			WSM06020Y	**5.947**		
			WSM06020YR	**5.948**		
			WSM06020V	**5.949.1**		

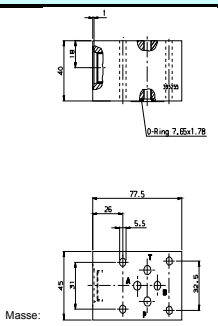
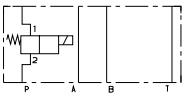
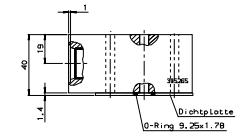
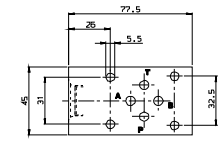
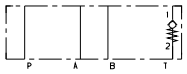
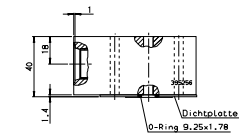
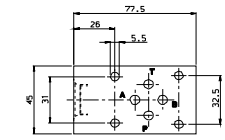
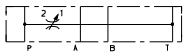
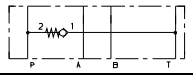
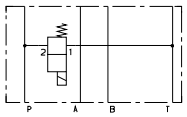
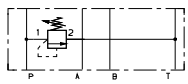
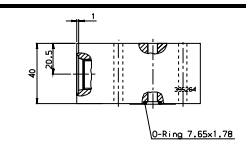
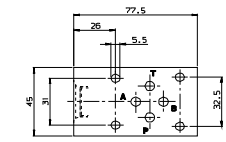
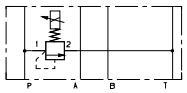
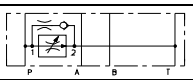
Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Zwischenplattengehäuse
Sandwich Plate Housings
Plaques pour montage sandwich

Best.-Nr. Order-No. Code article	Typ Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique no.	Symbol Symbol Symbole	Seite page
395613	**ZAB06020-10X** **Einschraubventil in Leitung A und B** Cartridge valve in line A and B Valve à visser sur A et B		**DSR5E**	**5.169.8**		589
			DZ5E	**5.166**		
			DZM06020	**5.950.2**		
			SR5E	**5.117**		
			RVM06020	**5.193**		
			WSM06020Z	**5.943**		
			WSM06020ZR (-J)	**5.946**		
			WSM06020Y	**5.947**		
			WSM06020YR	**5.948**		
			WSM06020W	**5.949**		
			WSM06020W-61	**5.949.3**		
			WSM06020W M	**5.949.2 5.943.3**		
3041122	**ZAB08021-02X** **Einschraubventil in Leitung A und B** Cartridge valve in line A and B Valve à visser sur A et B	 Werkstoff : Aluminium max.Druck : p_{max} = 250 bar Masse: 0,69 kg	**ERVE08021**	**5.172**		590
			SBVE-R1/2	**5.177**		
395263	**ZP06020-01X** **Einschraubventil in Leitung P** Cartridge valve in line P Valve à visser sur P	 Masse: 0,91 kg	**SR5E**	**5.117**		590
			RVM06020 /-06	**5.193**		

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Zwischenplattengehäuse
Sandwich Plate Housings
Plaques pour montage sandwich

Best.-Nr. Order-No. Code article	Typ Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique no.	Symbol Symbole	Seite page
395255	**ZP06020-10X** **Einschraubventil in Leitung P** Cartridge valve in line P Valve à visser sur P	 Masse:	**DV5E**	**5.113**		590
			WSM06020Z	**5.943**		
			WSM06020ZR	**5.946**		
			WSM06020Y	**5.947**		
			WSM06020YR	**5.948**		
			WSM06020V	**5.949.1**		
			WSM06020W-61	**5.949.3**		
			WSM06020W M	**5.949.2 5.943.3**		
395265	**ZT06020-01X** **Einschraubventil in Leitung T** Cartridge valve in line T Valve à visser sur T	  Masse: 0,91 kg	**RVM06020 /-06**	**5.175**		591
395256	**ZPT06020-01X** **Einschraubventil zwischen Leitung P und T** Cartridge valve between lines P and T Valve à visser entre P et T	  Masse: 0,91 kg	**DV5E**	**5.113**		591
			RVM06020 /-06	**5.175**		
			WSM06020Z	**5.943**		
			WSM06020ZR	**5.946**		
			WSM06020Y	**5.947**		
			WSM06020YR	**5.948**		
			WSM06020V	**5.949.1**		
			WSM06020W M	**5.949.2 5.943.3**		
			DB4E*	**5.161**		
			DB4E (-25X)	**5161.1**		
395264	**ZPT06020-10X** **Einschraubventil zwischen Leitung P und T** Cartridge valve between lines P and T Valve à visser entre P et T *= bei Einsatz des DB4E nur bis 350 bar! * 350 bar only by using DB4E * par utilisage du DB4E seulement 350 bar!	  Masse: 0,91 kg				591
			PDBM06020	**5.978**		
			SR5E	**5.117**		

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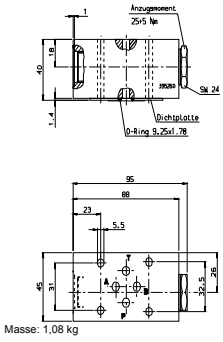
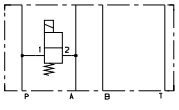
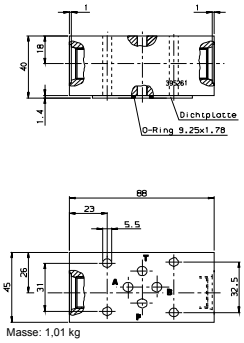
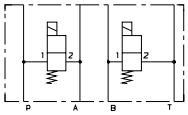
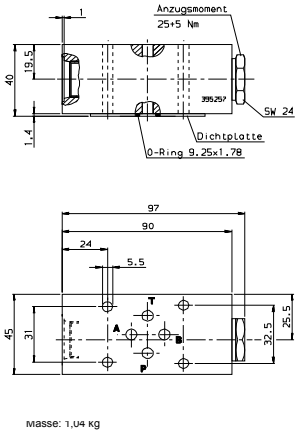
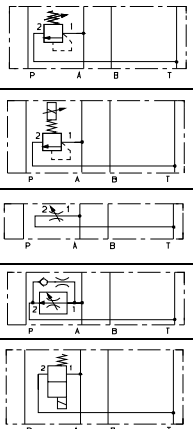
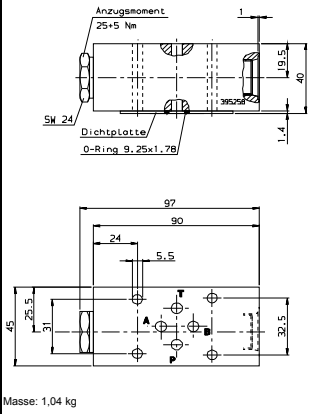
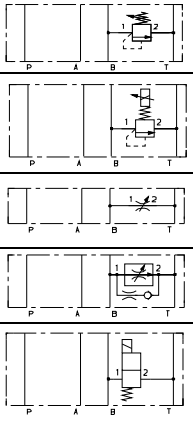
Zwischenplattengehäuse
Sandwich Plate Housings
Plaques pour montage sandwich

Best.-Nr. Order-No. Code article	Typ Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique no.	Symbol Symbol Symbole	Seite page
395260	**ZAP06020-01X** **Einschraubventil zwischen Leitung A und P** Cartridge valve between lines A and P Valve à visser entre A et P		**WSM06020W** **WSM06020W M**	**5.949** **5.949.2 5.943.3**		592
395261	**ZAPBT06020-01X** **Einschraubventil zwischen Leitung A und P und zwischen Leitung B und T** Cartridge valve between lines A and P and lines B and T Valve à visser entre A et P et entre B et T		**WSM06020V** **WSM06020W M**	**5.949.1** **5.949.2 5.943.3**		592
395257	**ZAT06020-01X** **Einschraubventil zwischen Leitung A und T** Cartridge valve between lines A and T Valve à visser entre A et T *= bei Einsatz des DB4E nur bis 350 bar! * 350 bar only by using DB4E * par utilisage du DB4E seulement 350 bar!		**DB4E*** **DB4E (-25X)** **PDBM06020** **DV5E** **SR5E** **WSM06020V** **WSM06020W M**	**5.161** **5161.1** **5.978** **5.113** **5.117** **5.949.1** **5.949.2 5.943.3**		592
395258	**ZBT06020-01X** **Einschraubventil zwischen Leitung B und T** Cartridge valve between lines B and T Valve à visser entre B et T *= bei Einsatz des DB4E nur bis 350 bar!		**DB4E*** **DB4E (-25X)** **PDBM06020** **DV5E** **SR5E** **WSM06020V** **WSM06020W M**	**5.161** **5.161.1** **5.978** **5.113** **5.117** **5.949.1** **5.949.2 5.943.3**		593

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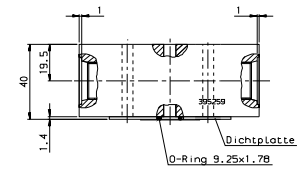
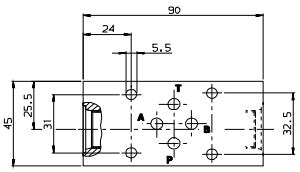
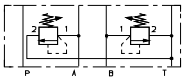
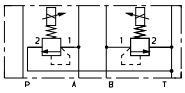
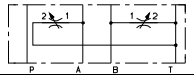
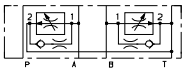
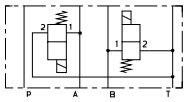
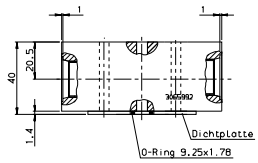
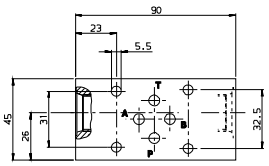
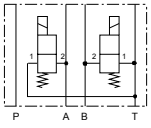
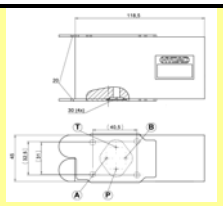
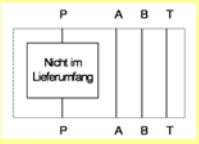
Zwischenplattengehäuse
Sandwich Plate Housings
Plaques pour montage sandwich

Best.-Nr. Order-No. Code article	Typ Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique no.	Symbol Symbol Symbole	Seite page
395259	**ZABT06020-01X** **Einschraubventil zwischen Leitung A und T und zwischen Leitung B und T** Cartridge valve between lines A and T and lines B and T Valve à visser entre A et T et entre B et T *= bei Einsatz des DB4E nur bis 350 bar! * 350 bar only by using DB4E * par utilisage du DB4E seulement 350 bar!	  Masse: 0,99 kg	**DB4E***	**5.161**		593
			DB4E (-25X)			
			PDBM06020	**5.978**		
			DV5E	**5.113**		
			SR5E	**5.117**		
			WSM06020V	**5.949.1**		
			WSM06020W M	**5.949.2 5.943.3**		
3065992	**ZABT06020-02X** Einschraubventil zwischen Leitung A und T und zwischen Leitung B und T Cartridge valve between lines A and T and lines B and T Valve à visser entre A et T et entre B et T	  Masse: 0,98 kg	**WSM06020Z**	**5.943**		594
			WSM06020ZR	**5.946**		
			WSM06020Y	**5.947**		
			WSM06020YR	**5.948**		
			WSM06020V	**5.949.1**		
			WSM06020W M	**5.949.2 5.943.3**		
3578184	**ZP10121**		**DMM10121**	**5.169.9**		594

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
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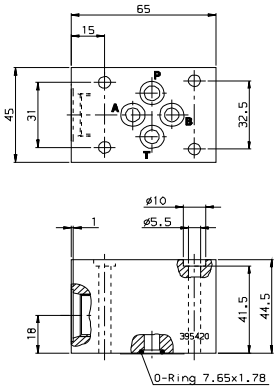
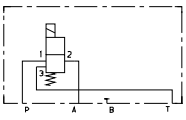
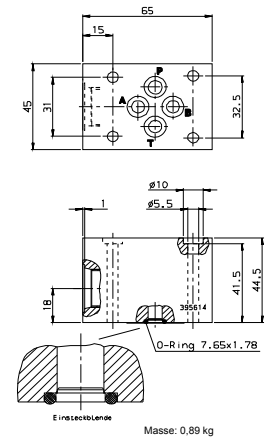
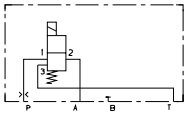
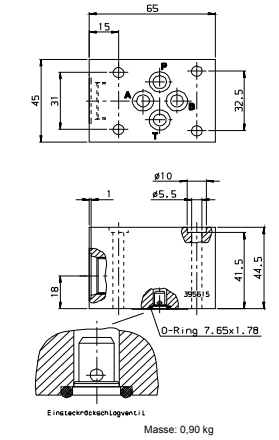
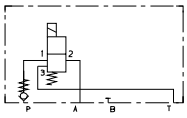
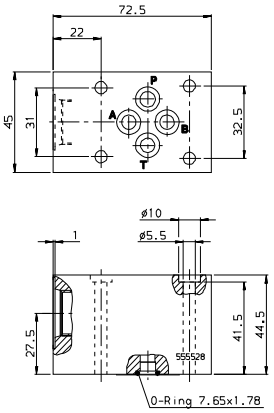
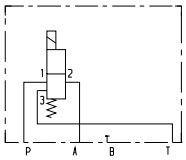
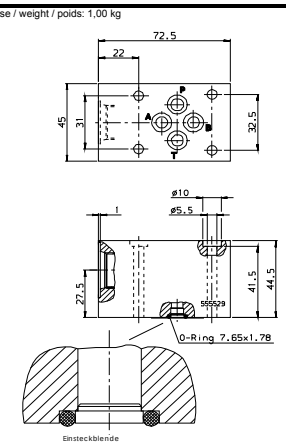
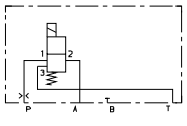
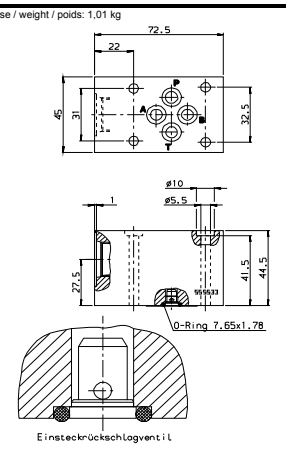
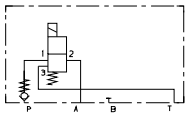
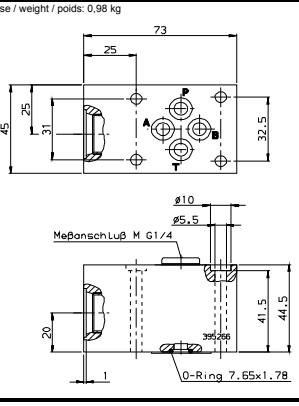
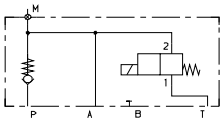
Plattenaufbaugehäuse
Subplate bodies
Blocs flasquables

Stand 01-2013

Best.-Nr. Order-No. Code article	Typ Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique no.	Symbol Symbol Symbole	Seite page
395420	**D03230-01X**	 Masse: 0,89 kg	**WSM03230** *= bei Einsatz des WSE3 nur bis 350 bar! * 350 bar only by using WSE3 * par utilisage du WSE3 seulement 350 bar!	**5.203**		596
395614	**D03230-11X** Achtung: P-Bohrung im Lochbild muß < 6,5mm sein! Attention: P-hole in hole-pattern has to be < 6,5mm! Attention: P-alesage dans l'image de percage doit êetre < 6,5mm!	 Masse: 0,89 kg	**WSM03230** *= bei Einsatz des WSE3 nur bis 350 bar! * 350 bar only by using WSE3 * par utilisage du WSE3 seulement 350 bar!	**5.203**	 mit Blende with orifice avec jigleur	596
395615	**D03230-30X** Achtung: P-Bohrung im Lochbild muß < 6,5mm sein! Attention: P-hole in hole-pattern has to be < 6,5mm! Attention: P-alesage dans l'image de percage doit êetre < 6,5mm!	 Masse: 0,90 kg	**WSM03230** *= bei Einsatz des WSE3 nur bis 350 bar! * 350 bar only by using WSE3 * par utilisage du WSE3 seulement 350 bar!	**5.203**	 mit Rückschlagventil with check valve avec clapet anti-retour	596

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Plattenaufbaugehäuse
Subplate bodies
Blocs flasquables

Best.-Nr. Order-No. Code article	Typ Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique no.	Symbol Symbol Symbole	Seite page
555528	D08130-01X	Masse / weight / poids: 1,00 kg 	WSM08130C WKM08130C WKM08130D WSM08130D /-13	5.935 5.976 5.977 5.977.1		597
555529	D08130-11X Achtung: P-Bohrung im Lochbild muß < 6,5mm sein! Attention: P-hole in hole-pattern has to be < 6,5mm! Attention: P-alesage dans l'image de percage doit êetre < 6,5mm!	Masse / weight / poids: 1,00 kg 	WSM08130C WKM08130C WKM08130D WSM08130D /-13	5.935 5.976 5.977 5.977.1		597
555533	D08130-30X Achtung: P-Bohrung im Lochbild muß < 6,5mm sein! Attention: P-hole in hole-pattern has to be < 6,5mm! Attention: P-alesage dans l'image de percage doit êetre < 6,5mm!	Masse / weight / poids: 1,01 kg 	WSM08130C WKM08130C WKM08130D WSM08130D /-13	5.935 5.976 5.977 5.977.1		597
395266	DA06020-01X Einschraubventil zwischen Leitung A und T mit Rückschlagventil in Leitung P Cartridge valve between lines A and T with check valve in line P Valve à visser entre A et T avec clapet anti-retour sur P	Masse / weight / poids: 0,98 kg 	WSM06020Z WSM06020ZR (-J) WSM06020Y WSM06020YR WSM06020V WSM06020W M	5.943 5.946 5.947 5.948 5.949.1 5.949.2 5.943.3		598

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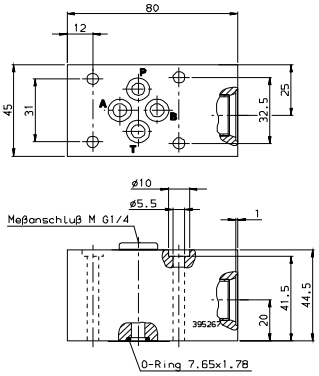
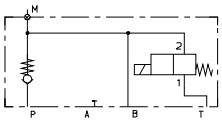
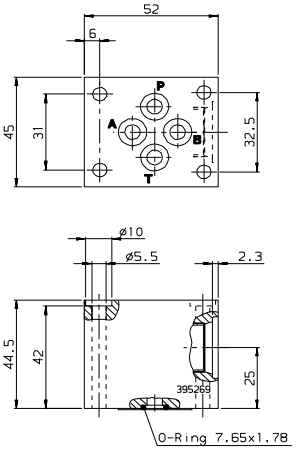
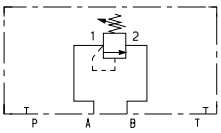
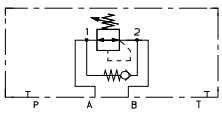
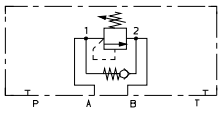
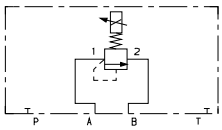
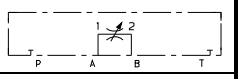
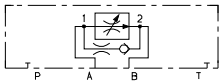
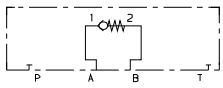
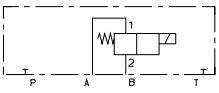
Plattenaufbaugehäuse
Subplate bodies
Blocs flasquables

Best.-Nr. Order-No. Code article	Typ Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique no.	Symbol Symbol Symbole	Seite page
395267	**DB06020-01X** Einschraubventil zwischen Leitung B und T mit Rückschlagventil in Leitung P Cartridge valve between lines B and T with check valve in line P Valve à visser entre B et T avec clapet anti-retour sur P	Masse / weight / poids: 0,98 kg 	**WSM06020Z**	**5.943**		598
			WSM06020ZR (-J)	**5.946**		
			WSM06020Y	**5.947**		
			WSM06020YR	**5.948**		
			WSM06020V	**5.949.1**		
			WSM06020W M	**5.949.2 5.943.3**		
395269	**DAB06020-01X** **Einschraubventil** **Leitung A und B** Cartridge valve between lines A and B Valve à visser entre A et B *= bei Einsatz des DB4E nur bis 350 bar! * 350 bar only by using DB4E * par utilisage du DB4E seulement 350 bar!	Masse, weight, poids: 0,69 kg 	**DB4E***	**5.161**		598
			DB4E (-25X)			
			DSR5E	**393400**		
			DZ5E	**5.166**		
			DZM06020	**5.950.2**		
			PDBM06020			
			DV5E	**5.113**		
			SR5E	**5.117**		
			RVM06020	**5.193**		
			WSM06020Z	**5.943**		
			WSM06020ZR (-J)	**5.946**		
			WSM06020Y	**5.947**		
			WSM06020YR	**5.948**		
			WSM06020V	**5.949.1**		
			WSM06020W M	**5.949.2 5.943.3**		

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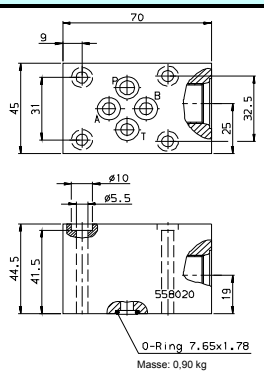
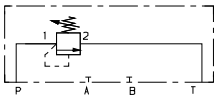
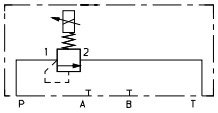
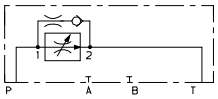
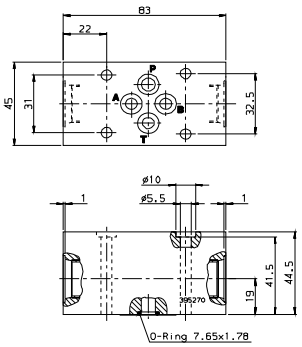
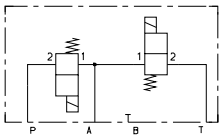
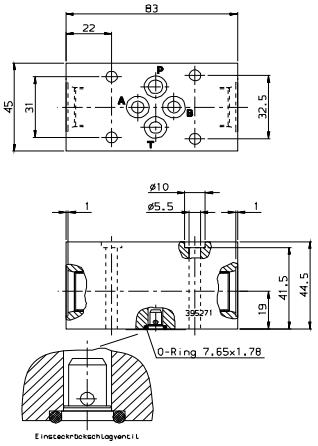
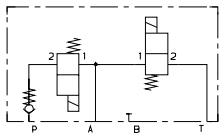
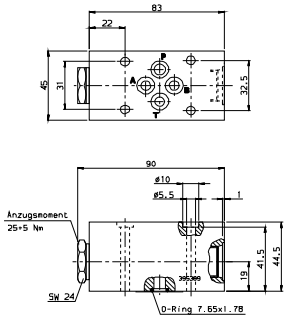
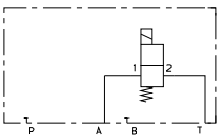
Plattenaufbaugehäuse
Subplate bodies
Blocs flasquables

Best.-Nr. Order-No. Code article	Typ Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Cataloque/ Fiche technique no.	Symbol Symbol Symbole	Seite page
558020	**DPT06020-01X** **Einschraubventil** **Leitung P und T** Cartridge valve betw. lines P and T Valve à visser entre P et T *= bei Einsatz des DB4E nur bis 350 bar! * 350 bar only by using DB4E * par utilisage du DB4E seulement 350 bar!	 Masse: 0,90 kg	**DB4E*** **DB4E (-25X)**	**5.161**		600
			PDBM06020	**5.978**		
			SR5E	**5.117**		
395270	**DPAT06020-01X** **Einschraubventil** **zwischen** **Leitung P und A** **und** **zwischen A und T** Cartridge valve between lines P and A and lines A and T Valve à visser entre P et A et entre A et T	 Masse: 1,10 kg	**WSM06020Z**	**5.943**		600
			WSM06020ZR (-J)	**5.946**		
			WSM06020Y	**5.947**		
			WSM06020YR	**5.948**		
			WSM06020V	**5.949.1**		
			WSM06020W M	**5.949.2 5.943.3**		
			zwischen A und T **nur Symb. V und W** between A and T only symb. V and W entre A et T symb. V et W uniquement			
395271	**DPRAT06020-01X** Einschraubventil zwischen P und A und zwischen A und T Cartridge valve between lines P and A and lines A and T with check valve in line P Valve à visser entre P et A et entre A et T clapet anti-retour en P Achtung: P-Bohrung im Lochbild muß < 6,5mm sein! Attention: P-hole in hole-pattern has to be < 6,5mm! Attention: P-alesage dans l'image de percage doit êetre < 6,5mm!		**WSM06020Z**	**5.943**		600
			WSM06020ZR (-J)	**5.946**		
			WSM06020Y	**5.947**		
			WSM06020YR	**5.948**		
			WSM06020V	**5.949.1**		
			WSM06020W M	**5.949.2 5.943.3**		
			zwischen A und T **nur Symb. V und W** between A and T only symb. V and W entre A et T symb. V et W uniquement			
395389	**DAT06020-01X** **Einschraubventil** **zwischen** **Leitung A und T** Cartridge valve between lines A and T Valve à visser entre A et T		**WSM06020Z**	**5.943**		601
			WSM06020ZR (-J)	**5.946**		
			WSM06020Y	**5.947**		
			WSM06020YR	**5.948**		
			WSM06020V	**5.949.1**		
			WSM06020W M	**5.949.2 5.943.3**		

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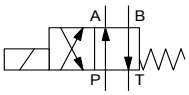
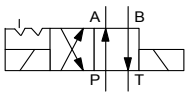
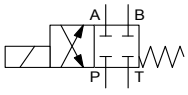
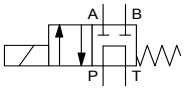
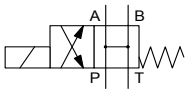
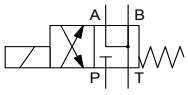
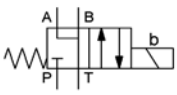
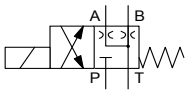
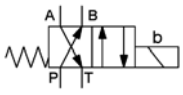
Industrieventile
Industrial valves
Valve industrielles

Stand 01-2013

Bezeichnung Description Désignation	Symbol Symbole	Typ Type	Q_{max} [l/min]	p_{max} [bar]	Montage Assembly Montage	Prospekt Nr. Brochure no. Fiche technique n°	Seite page
Wegeschieberventile Plattenaufbau direktgesteuert Directional spool valves plate mounted direct acting Distributeurs à tiroir montage sur embase action directe							
4/2-Wege Schieberventil Plattenaufbau 4/2-directional spool valve plate mounted Valve à tiroir 4/2 montage sur embase		**4WE6D**	80	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.213**	646
		4WE10D	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.219**	676
		**4WE6D/OF**	80	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.216**	648
		4WE10D/OF	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.243**	678
		**4WE6EA**	80	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.214**	652
		4WE10EA	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.222.1**	682
		**4WE6GA**	60	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.209.1**	656
		4WE10GA	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.244**	686
		**4WE6HA**	80	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.240**	660
		4WE10HA	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.242**	690
		**4WE6JA**	60	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.211.1**	662
		4WE10JA	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.224.1**	694
		**4WE6JB**	60	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.240.1**	666
		4WE10JB	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.240.2**	696
		**4WE6QA**	60	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.239.1**	672
		4WE10QA	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.241.1**	700
		**4WE6Y**	80	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.244.1**	674
		4WE10Y	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.244.2**	702

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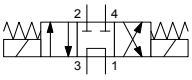
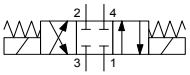
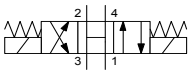
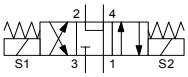
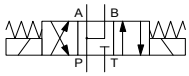
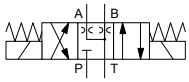
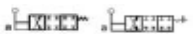
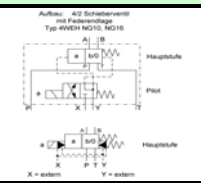
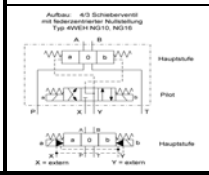
Industrieventile
Industrial valves
Valves industrielles

Bezeichnung Description Désignation	Symbol Symbole	Typ Type	Q_{max} [l/min]	p_{max} [bar]	Montage Assembly Montage	Prospekt Nr. Brochure no. Fiche technique n°	Seite page
4/3-Wege Schieberventil Plattenaufbau 4/3-directional spool valve plate mounted Valve à tiroir 4/3 montage sur embase		**4WE6E**	80	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.212**	650
		4WE10E	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.220**	680
		**4WE6G**	60	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.209**	654
		4WE10G	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.222**	684
		**4WE6H**	80	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.210**	658
		4WE10H	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.223**	688
		**4WE6J**	60	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.211**	662
		4WE10J	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.224**	692
		**4WE6M**	80	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.218.1**	668
		**4WE6Q**	60	320	**Montage auf Lochbild A6 DIN 24340** Assembl. to interface A6 Montage sur impact A6	**5.239**	670
		4WE10Q	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.241**	698
Wegeventil mit Handhebel Directional valves with hand lever		**4WMH6**	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.227.4**	704
Valve à tiroir à main		**4WMH10**	120	320	**Montage auf Lochbild A10 DIN 24340** Assembl. to interface A10 Montage sur impact A10	**5.227.5**	706
Wegeschieberventile Plattenaufbau vorgesteuert Directional valves plate mounted piloted Distributeurs à tiroir piloté montage sur embase							
4/3-Wege Schieberventil elektrohydr. vorgesteuert Plattenaufbau 4/3-directional spoolvalve electrohydraulically piloted plate mounted Valve à tiroir 4/3 piloté éléctrohyraulique		**4WEHI10 / 4WEHEI10**	150	320	**Montage auf Lochbild ISO4401-05** Assembl. to interface 05 Montage sur impact 05	**5.249.13**	724
		4WEHI16 / 4WEHEI16	300	320	**Montage auf Lochbild ISO4401-07** Assembl. to interface 07 Montage sur impact 07	**5.227.1**	728
		**4WEHI25 / 4WEHEI25**	600	320	**Montage auf Lochbild ISO4401-08** Assembl. to interface 08 Montage sur impact 08	**5.227.0**	732
		4WEHI32 / 4WEHEI32	1100	320	**Montage auf Lochbild ISO4401-10** Assembl. to interface 10 Montage sur impact 10	**5.227.3**	736
4/3-Wege Schieberventil hydr. vorgesteuert Plattenaufbau 4/3-directional spoolvalve hydraulically piloted plate mounted Valve à tiroir 4/3 piloté hyraulique		**4WHE10**	150	320	**Montage auf Lochbild ISO4401-05** Assembl. to interface 05 Montage sur impact 05	**5.249.12**	708
		4WHE16	300	320	**Montage auf Lochbild ISO4401-07** Assembl. to interface 07 Montage sur impact 07	**5.225**	712
		4WHE25	600	320	**Montage auf Lochbild ISO4401-08** Assembl. to interface 08 Montage sur impact 08	**5.226**	716
		4WHE32	1100	320	**Montage auf Lochbild ISO4401-10** Assembl. to interface 10 Montage sur impact 10	**5.227**	720

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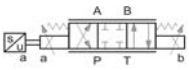
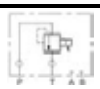
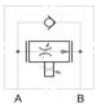
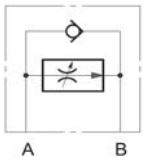
Industrieventile
Industrial valves
Valve industrielles

Bezeichnung Description Désignation	**Symbol** Symbole	**Typ** Type Type	**Q_{max}** **[l/min]**	**p_{max}** **[bar]**	**Montage** Assembly Montage	**Prospekt Nr.** Brochure no. Fiche technique n°	
Proportional Druck-, Strom-, Wegeventile Plattenaufbau Proportional pressure, flow, directional valves, plate mounted Valves proportionelles de pression, de débit, distributeurs, montage sur embase							
4/3 Proportional Wegeventil direktgesteuert 4/3 proportional valve direct acting 4/3 valve proportionelle opération directe		**P4WE06**	40	350	**Montage auf Lochbild ISO4401-03** Assembl. to interface 03 Montage sur impact 03	**5.228**	804
		P4WE10	90	320	**Montage auf Lochbild ISO4401-05** Assembl. to interface 05 Montage sur impact 05	**5.229**	824
4/3 Proportional Wegeventil direktgesteuert mit Wegaufnehmer 4/3 prop. valve direct acting with position transducer 4/3 valve prop. opération directe avec détecteur		**P4WR06**	40	350	**Montage auf Lochbild ISO4401-03** Assembl. to interface 03 Montage sur impact 03	**5.245**	808
4/3 Proportional Wegeventil direktgesteuert mit Elektronik 4/3 proportional directional valve with electronics 4/3 valve proportionelle éléctron.		**P4WEE06**	40	350	**Montage auf Lochbild ISO4401-03** Assembl. to interface 03 Montage sur impact 03	**5.230**	812
		P4WEE10	90	320	**Montage auf Lochbild ISO4401-05** Assembl. to interface 05 Montage sur impact 05	**5.231**	828
4/3 Proportional Wegeventil mit Elektronik u. Wegaufnehmer 4/3 prop. direct. valve w. electronics + position transd. / 4/3 valve prop. éléctron. + détecteur		**P4WRE06**	80	350	**Montage auf Lochbild ISO4401-03** Assembl. to interface 03 Montage sur impact 03	**5.231.2**	818
		P4WRE10	180	320	**Montage auf Lochbild ISO4401-05** Assembl. to interface 05 Montage sur impact 05	**5.231.1**	834
Proportional Druckbegrenzungs-ventil Proportional pressure relief vale Limiteur de pression proportionnel		**VP-PDB6**	5	350	**Montage auf Lochbild ISO4401-03** Assembl. to interface 03 Montage sur impact 03	**5.249.5**	784
		VP-PDBP10	200	350	**Montage auf Lochbild ISO6264-06** Assembl. to interface 06 Montage sur impact 06	**5.249.6**	800
Proportional Druckregelventil Proportional pressure reducing valve		**VP-PDRP6**	60	350	**Montage auf Lochbild ISO24340-A6** Assembl. to interface A6 Montage sur impact A6	**5.249.14.0**	788
Proportional Stromregelventil Proportional flow control Regulateur de débit proportionelle		**VP-P2SRE6**	25	250	**Montage auf Lochbild ISO6263-03** Assembl. to interface 03 Montage sur impact 03	**5.249.1**	792
Proportional Stromregelventil mit Wegaufnehmer		**VP-P2SRR6**	16	250	**Montage auf Lochbild ISO6263-03** Assembl. to interface 03 Montage sur impact 03	**5.249.3**	796
Druck-, Strom-, Sperrventile Plattenaufbau Pressure-, flow-, check valves, plate mounted Valves de pression, de débit, clapets, à montage sur embase							
Stromregelventil Flow regulator Régulateur de débit		**VP-2SR6**	30	250	**Montage auf Lochbild ISO6263-03** Assembl. to interface 03 Montage sur impact 03	**5.249.9**	772
		VP-2SR10	70	320	**Montage auf Lochbild ISO6263-06** Assembl. to interface 06 Montage sur impact 06	**5.249.10**	780

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Industrieventile
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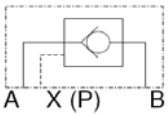
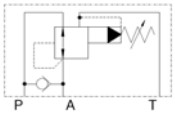
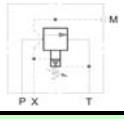
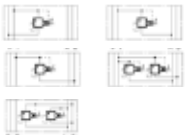
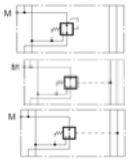
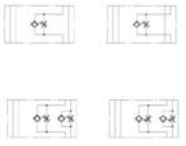
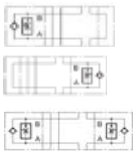
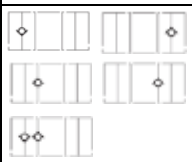
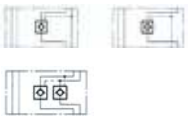
Valve industrielles

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Typ** Type Type	**Q_{max} [l/min]**	**p_{max} [bar]**	**Montage** Assembly Montage	**Prospekt Nr.** Brochure no. Fiche technique n°	**Seite** page
Druck-, Strom-, Sperrventile Plattenaufbau Pressure-, flow-, check valves, plate mounted Valves de pression, de débit, clapets, à montage sur embase							
Rückschlagventil hyd. entsperrbar Checkvalve pilot-to-open Clapet antir retour piloté		**VP-RP6**	60	350	**Montage auf Lochbild ISO24340-A6** Assembl. to interface A6 Montage sur impact A6	**5.249.16**	774
		VP-RP10	100	320	**Montage auf Lochbild ISO24340-A6** Assembl. to interface A6 Montage sur impact A6	**5.249.15**	782
Druckregelventil vorgesteuert Pressure reducing valve Régulateur de pression		**VP-DRP6**	60	350	**Montage auf Lochbild ISO24340-A6** Assembl. to interface A6 Montage sur impact A6	**5.249.15**	770
		VP-DRP10	110	250	**Montage auf Lochbild ISO5781-06** Assembl. to interface 06 Montage sur impact 06	**5.249.8**	778
Druckbegrenzungs-ventil vorgesteuert Pressure relief valve piloted Limiteur de pression		**VP-DBP10**	200	350	**Montage auf Lochbild ISO6264-06** Assembl. to interface 06 Montage sur impact 06	**5.249.16**	776
Zwischenplattenventile (Druck-, Strom-, Sperrventile) Pressure-, flow-, check valves sandwich plate Valves de pression, de débit, clapets, à montage sandwich							
Druckbegrenzungs-ventil vorgesteuert Pressure relief valve piloted Limiteur de pression		**ZW-DB06**	75	350	**Montage auf Lochbild ISO4401-03** Assembl. to interface 03 Montage sur impact 03	**5.169.4**	740
		ZW-DB10	100	350	**Montage auf Lochbild ISO4401-05** Assembl. to interface 05 Montage sur impact 05	**5.169.5**	756
Druckregelventil direktgesteuert (10er vorgesteuert) Pressure reducing valve direct acting Régulateur de pression à pilotage direct (10 size piloted)		**ZW-DM06**	50	350	**Montage auf Lochbild ISO4401-03** Assembl. to interface 03 Montage sur impact 03	**5.169.3**	742
		ZW-DM10	100	320	**Montage auf Lochbild ISO4401-05** Assembl. to interface 05 Montage sur impact 05	**5.199.5**	758
Druckwaage Pressure Compensator Balance de pression		**ZW-DW06**	40	350	**Montage auf Lochbild ISO4401-03** Assembl. to interface 03 Montage sur impact 03	**5.1997**	744
		ZW-DW10	100	320	**Montage auf Lochbild ISO4401-05** Assembl. to interface 05 Montage sur impact 05	**5.999.8**	760
Drosselrückschlag-ventil Needle valve with reverse flow check Limiteur de débit unidirectionnel		**ZW-SDR06**	50	350	**Montage auf Lochbild ISO4401-03** Assembl. to interface 03 Montage sur impact 03	**5.123**	748
		ZW-SDR10	100	350	**Montage auf Lochbild ISO4401-05** Assembl. to interface 05 Montage sur impact 05	**5.124**	762
Stromregelventil Flow regulator Régulateur de débit		**ZW-2SR06**	30	250	**Montage auf Lochbild ISO4401-03** Assembl. to interface 03 Montage sur impact 03	**5.249.9**	750
		ZW-2SR10	30	250	**Montage auf Lochbild ISO4401-05** Assembl. to interface 05 Montage sur impact 05	**5.199.4**	764
Rückschlagventil Check valve Clapet anti-retour		**ZW-RV06**	50	350	**Montage auf Lochbild ISO4401-03** Assembl. to interface 03 Montage sur impact 03	**5.198**	752
		ZW-RV10	100	350	**Montage auf Lochbild ISO4401-05** Assembl. to interface 05 Montage sur impact 05	**5.199.1**	766
Rückschlagventil hyd. entsperrbar Checkvalve pilot-to-open Clapet antir retour piloté		**ZW-RP06**	50	350	**Montage auf Lochbild ISO4401-03** Assembl. to interface 03 Montage sur impact 03	**5.199**	754
		ZW-RP10	100	350	**Montage auf Lochbild ISO4401-05** Assembl. to interface 05 Montage sur impact 05	**5.199.2**	768

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
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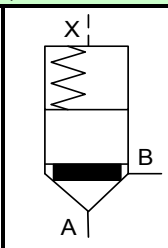
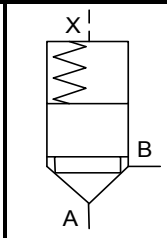
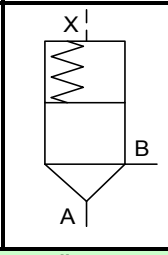
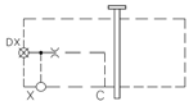
Industrieventile
Industrial valves
Valve industrielles

Bezeichnung Description Désignation	Symbol Symbol Symbole	Typ Type Type	Q_{max} [l/min]	p_{max} [bar]	Verwendung Use Usage	Strömungsrichtung Flow direction Direction du débit	Prospekt Nr. Brochure no. Fiche technique no▪	Seite page
2-Wege Einbauventile und Deckel 2-port slip-in cartridge valves with covers Élemnts logiques avec plaque de fermeture								
Einbauventil mit Wegefunktion mit Dämpfung 2-port slip-in cartridge valve with directional function with damping Éléments logiques fonction 2/2 avec amortissement		**L-CEE 16 C**	130	350	**1:1,6**	A<-->B	**5.234**	844
		L-CEE 25 C	380	350	**1:1,6**	A<-->B		
		L-CEE 32 C	840	350	**1:1,6**	A<-->B		
		L-CEE 40 C	1350	350	**1:1,6**	A<-->B		
		L-CEE 50 C	2000	350	**1:1,6**	A<-->B		
		L-CEE 63 C	2700	350	**1:1,6**	A<-->B		
Einbauventil mit Wegefunktion 2-port slip-in cartridge valve with directional function Éléments logiques, fonction de direction 2/2		**L-CEE 16 B**	280	350	**1:1,6**	A<-->B	**5.233**	842
		L-CEE 25 B	600	350	**1:1,6**	A<-->B		
		L-CEE 32 B	1080	350	**1:1,6**	A<-->B		
		L-CEE 40 B	1800	350	**1:1,6**	A<-->B		
		L-CEE 50 B	2700	350	**1:1,6**	A<-->B		
		L-CEE 63 B	3600	350	**1:1,6**	A<-->B		
Einbauventil mit Druckbegrenzungsfunktion 2-port slip-in cartridge valve with pressure relief function Éléments logiques, fonction limitation de pression		**L-CEE 16 A**	300	350	**1:1**	A-->B	**5.232**	840
		L-CEE 25 A	850	350	**1:1**	A-->B		
		L-CEE 32 A	1200	350	**1:1**	A-->B		
		L-CEE 40 A	2500	350	**1:1**	A-->B		
		L-CEE 50 A	4000	350	**1:1**	A-->B		
		L-CEE 63 A	6000	350	**1:1**	A-->B		
Steuerdeckel für Einbauventile **Covers for 2-port slip-in cartridge valves** **Couvercles pour valves logiques**								
Funktion 1D Function 1D Fonction 1D		**LD-CCE16**		350	**für Ventile Kegel B und C** For valves with cone B, C Pour valves cône B, C	A<-->B	**5.235**	846
		LD-CCE25		350		A<-->B		
		LD-CCE32		350		A<-->B		
		LD-CCE40		350		A<-->B		
		LD-CCE50		350		A<-->B		
		LD-CCE63		350		A<-->B		
Funktion 1H Function 1H Fonction 1H		**LD-CCE16**		350	**für Ventile Kegel C** For valves with cone C Pour valves cône C	A<-->B	**5.236**	848
		LD-CCE25		350		A<-->B		
		LD-CCE32		350		A<-->B		
		LD-CCE40		350		A<-->B		
		LD-CCE50		350		A<-->B		
		LD-CCE63		350		A<-->B		

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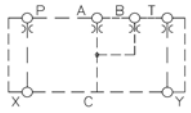
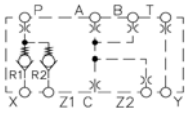
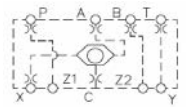
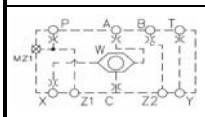
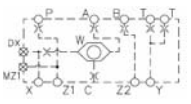
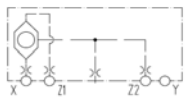
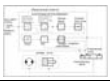
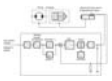
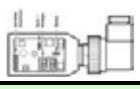
Industrieventile
Industrial valves
Valve industrielles

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Typ** Type Type		**p_{max} [bar]**	**Verwendung** Use Usage	**Strömungsrichtung** Flow direction Direction du débit	**Prospekt Nr.** Brochure no. Fiche technique no▪	**Seite** page
Steuerdeckel für Einbauventile **Covers for 2-port slip-in cartridge valves** **Couvercles pour valves logiques**								
Funktion RM Function 1RM Fonction 1RM		**LD-CCE16**		350	**für Ventile Kegel B und C** For valves with cone B, C Pour valves cône B, C	A<-->B	**5.237**	850
		LD-CCE25		350		A<-->B		
		LD-CCE32		350		A<-->B		
		LD-CCE40		350		A<-->B		
		LD-CCE50		350		A<-->B		
		LD-CCE63		350		A<-->B		
Funktion 4W Function 4W Fonction 4W		**LD-CCE16**		350	**für Ventile Kegel B und C** For valves with cone B, C Pour valves cône B, C	A<-->B	**5.238**	852
		LD-CCE25		350		A<-->B		
		LD-CCE32		350		A<-->B		
		LD-CCE40		350		A<-->B		
		LD-CCE50		350		A<-->B		
		LD-CCE63		350		A<-->B		
Funktion 2WR Function 2WR Fonction 2WR		**LD-CCE16**		350	**für Ventile Kegel B und C** For valves with cone B, C Pour valves cône B, C	A-->B	**5.249.18**	854
		LD-CCE25		350		A-->B		
		**LD-CCE32**		350		A-->B		
		LD-CCE40		350		A-->B		
		LD-CCE50		350		A-->B		
		**LD-CCE63**		350		A-->B		
Funktion 2DR Function 2DR Fonction 2DR		**LD-CCE16**		350		A<-->B	**5.249.17**	856
		LD-CCE25		350		A<-->B		
		LD-CCE32		350		A<-->B		
Ansteuerelektroniken für Proportionalventile Electronic controls for proportional valves Commandes éléctroniques pour valve proportionelles			**Volt**	**Watt**				
Ansteuerelektronik für Proportionalventile Electronic control for proportional valves Contrôle éléctronique pour valve proportionelles		**PEK-SRA**	22-30 VDC	20-45 W	**Europakartenformat**		**5.249.4.1**	1054
		**PEK-WAR**	22-30 VDC	45 W	**Europakartenformat**		**5.249.1**	1058
		**PEM-XD**	10-30 VDC	20-40 W	**Einbau nach DIN EN 50022**		**5.249.2.1**	1062
		**PES-XD-D**	10-30 VDC	20-40 W	**Steckerverstärker zum Anbau an DIN Spule**		**5.249.2.20**	1068
Zubehör Industrieventile Accessories for industrial valves Accessoires pour valves industrielles							**5.249.19**	858

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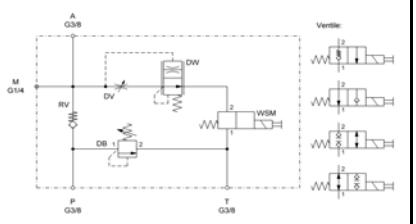
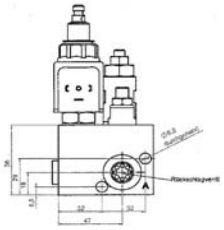
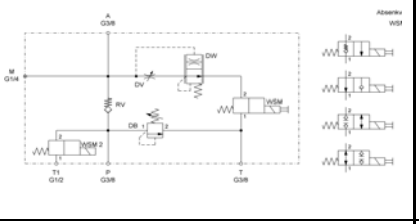
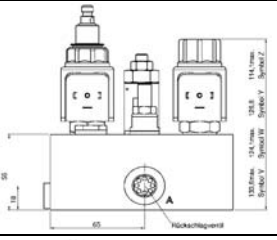
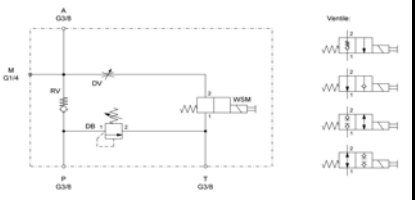
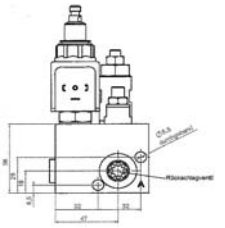
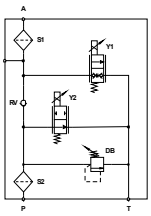
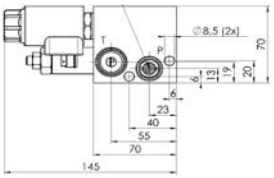
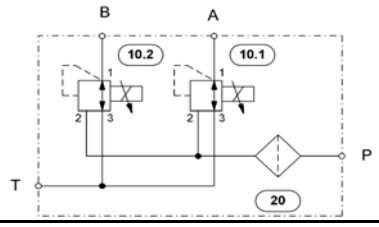
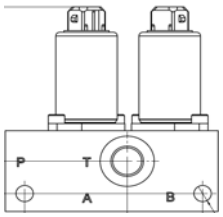
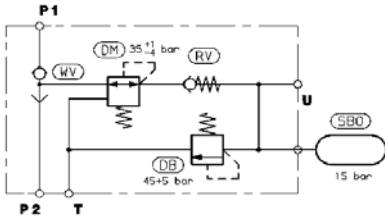
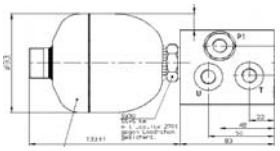
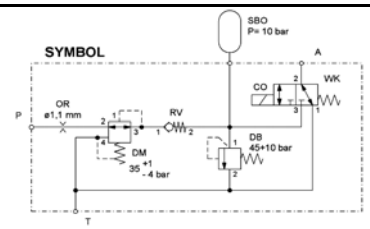
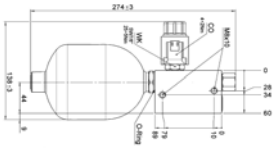
Standard Steuerblöcke

Stand 01-2013

Standard manifolds hydraulic integrated circuits

Blocs de commande standard pour vérins

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Maße** Measurem. Mesurem.	**Type**	**Q_{max}** **[l/min]**	**p_{max}** **[bar]**	**Prospekt Nr.** Brochure no. Fiche technique no.	**Seite** page
Hub-Senk-Steuerung Lift-lowering circuit Bloc de descente			**HSB-Z-010**	40	350	**5.255.0**	868
Hub-Senk-Steuerung Lift-lowering circuit Bloc de descente			**HSB-Z-020**	40	350	**5.255.0**	866
Hub-Senk-Steuerung Lift-lowering circuit Bloc de descente			**HSB-Z-030** / **HSB-Z-040**	40	350	**5.255.0**	864
Hub-Senk-Steuerung **Proportional** Lift-lowering circuit proportional Bloc de descente proportionnel			**HSB-P-010**	25	250	**5.255.0**	870
Vorsteueröleinheit **proportional** Supply unit proportional Bloc de pilotage proportionelle			**B-BM-** **Z-2x** **PDMC** **04S30D**	10	50	**3482029**	-
Vorsteueröleinheit **mit 2 Eingängen** Supply unit with 2 inlet ports Bloc de pilotage avec 2 entrées			**HPSU-2P**	10	250	**cf**	-
Vorsteueröleinheit **mit Speicher** Supply unit Bloc de pilotage			**HPSU-1P**	4	250	**3149049** **3146033** **cf** **3464303**	-

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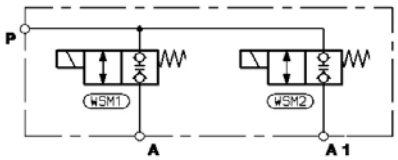
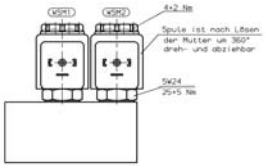
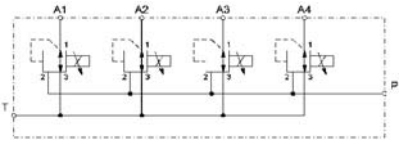
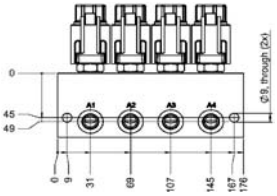
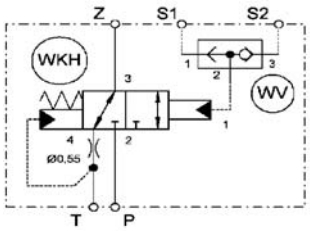
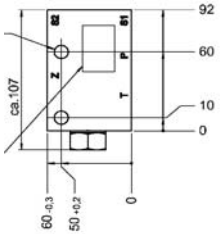
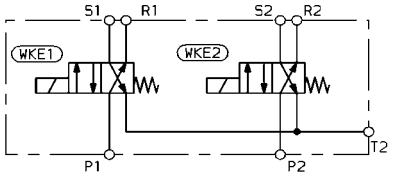
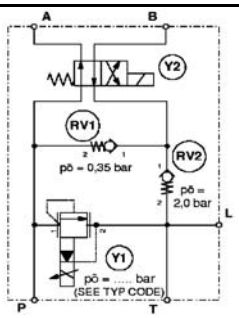
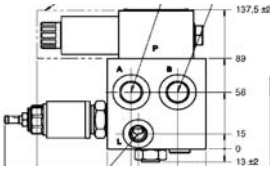
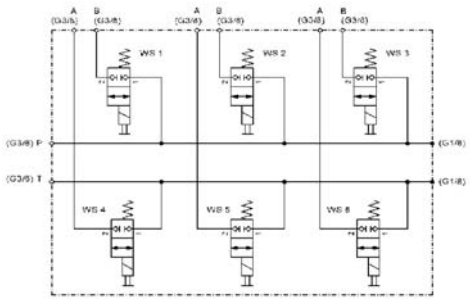
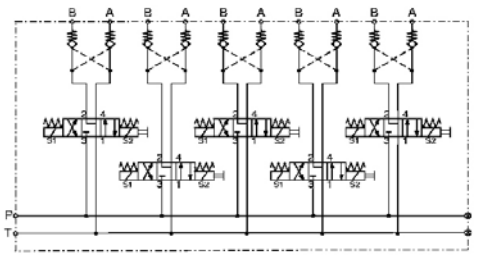
Standard Steuerblöcke
Standard manifolds hydraulic integrated circuits
Blocs de commande standard pour vérins

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Maße** Measurem. Mesurem.	**Type**	**Q_{max} [l/min]**	**p_{max} [bar]**	**Prospekt Nr.** Brochure no. Fiche technique no.	**Seite** page
Steuerblock 2fach **2/2 Wege 06020** Manifold double 2/2 solenoid 06020 Bloc double 2/2 solenoides 06020			**B-BM** **555254**	19	250	**cf**	-
Steuerblock 4fach **proportional FC08-3** Manifold 4times prop. cavity FC08-3 Bloc quadruple proportionnel FC08-3				18	50	**cf**	-
Umschaltblock **mit** **3/2 Schieberventil** Switch-over manifold with 3/2 spool valve Bloc d'inversion avec distributeur 3/2			**USE-1WV**	20	210	**cf**	-
Umschalteinheit Switching unit Bloc d`inversion			**USE-2WV**	15	100	**cf**	-
Lüftersteuerung Fan control unit Bloc de ventilateur			**B-BM**	50	210	**cf**	-

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Standard Steuerblöcke
Standard manifolds hydraulic integrated circuits
Blocs de commande standard pour vérins

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Maße** Measurem. Mesurem.		**Q_{max}** **[l/min]**	**p_{max}** **[bar]**	**Prospekt Nr.** Brochure no. Fiche technique no.	**Seite** page
B-LM Verteiler 6-fach Blöcke für Zylinder Stellfunktionen B-LM distributor 6-times Cylinder function manifolds B-LM distributeur 6-fois Bloque de commande pour vérins		2/2 Wege Sitzventile Solenoids Solenoides WS08W **(Anwahl über externes 4/3 Wege-Schieberventil)** (Choice by external 4/3 solenoid valve (Choix par 4/3 distributeur externe		19	210	**3435956**	-
W-LM Verteiler 5-fach Blöcke für Zylinder-Stellfunktionen - landtechnische Anwendungen W-LM distributor 5-times Cylinder function manifold W-LM distributeur 5-fois Bloque de commande pour vérins		**4/3 Wege Schieberventile** Solenoids Solenoides WK10J **Weiter bestellbar mit Anzahl Ventilen:** Furthermore to order with number of valves: En plus à commander avec numeró des valves: 4, 6, 7, 8, 9, 10		23	210	**cf**	-

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
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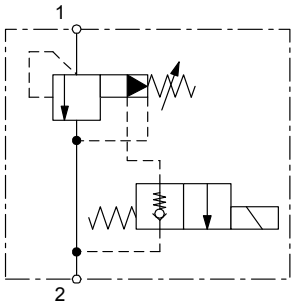
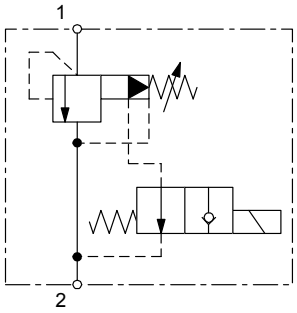
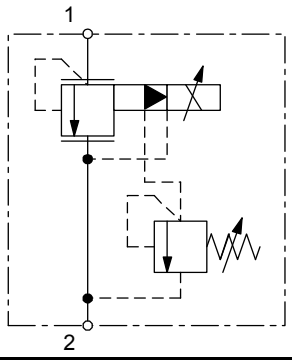
Standard Steuerblöcke
Standard manifolds hydraulic integrated circuits
Blocs de commande standard pour vérins

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Ventile** Valves Valves	**Q_{max}** **[l/min]**	**p_{max}** **[bar]**		**Prospekt Nr.** Brochure no. Fiche technique no.	**Seite** page
Umschaltung mittels elektrischem Steuersignal auf drucklosen Umlauf Solenoid vented relief - normally closed By-pass par signal électrique		**DB12121PF-01** **WSM06020Z-01**	**200**	**350**		**cf**	-
Umschaltung mittels elektrischem Steuersignal von drucklosen Umlauf auf Systemdruck Solenoid vented relief - normally open Commutation de by-pass á la pression système par signal électrique		**DB12121PF-01** **WSM06020Y-01**	**200**	**350**		**cf**	-
Proportionaldruckbegrenzung mit Maximaldruckbegrenzung Proportional pressure relief with maximum pressure relief function Limitation de pression proportionelle avec limitation á une valeur maxi		**PDB12121PF-01** **DB4E**	**200**	**350**		**cf**	-

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
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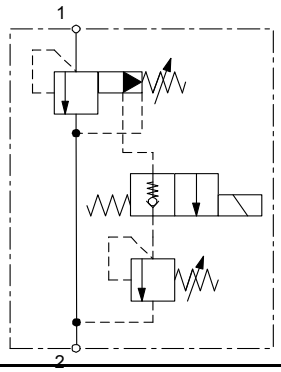
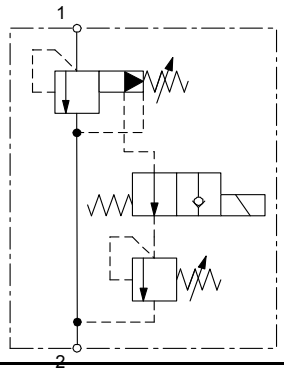
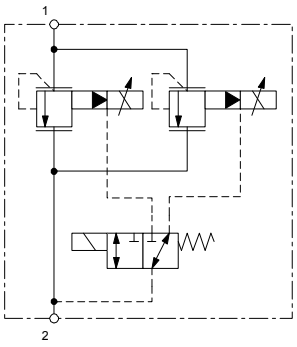
Ventil-Kombinationen
Valve combinations
Combinaison de valves

Bezeichnung Description Désignation	Symbol Symbol Symbole	Ventile Valves Valves	Q_{max} [l/min]	p_{max} [bar]		Prospekt Nr. Brochure no. Fiche technique no.	Seite page
Umschaltung mittels elektrischem Steuersignals von einem höheren Systemdruck auf einen niedrigeren Systemdruck Combination to switch with a control signal from a high system pressure to a lower system pressure Commutation par signal électrique d'une haute pression à une basse pression		**DB12121PF-01** **WSM06020Z-01** **DB4E**	**200**	**350**		**cf**	-
Umschaltung mittels elektrischem Steuersignals von einem niedrigeren Systemdruck auf einen höheren Systemdruck Combination to switch with a control signal from a lower system pressure to a higher system pressure Commutation par signal électrique d'une basse pression à une haute pression		**DB12121PF-01** **WSM06020Y-01** **DB4E**	**200**	**350**		**cf**	-
Druckbereichs-wechsel Pressure range change Commutation entre 2 plages de pression		**PDB12121PE-01** **WK08C-01**	**200**	**P1 : 3 - 350** **P2 : 3 - 350**		**cf**	-

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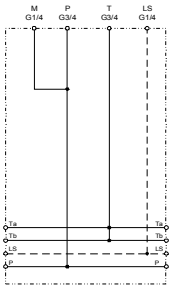
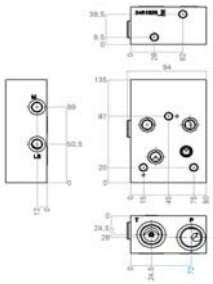
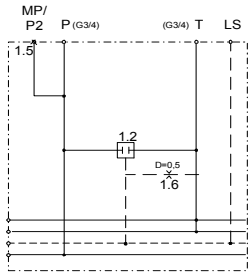
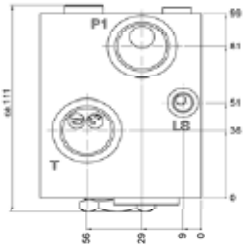
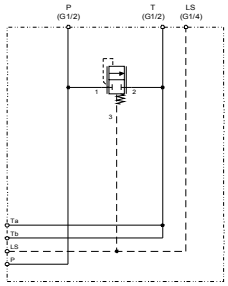
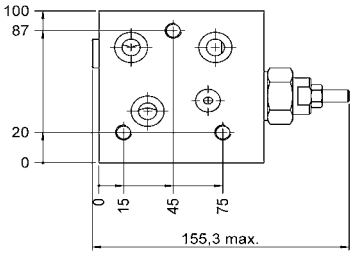
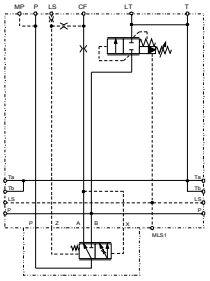
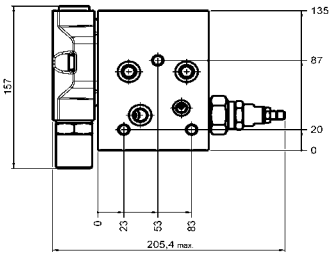
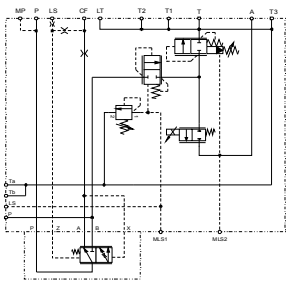
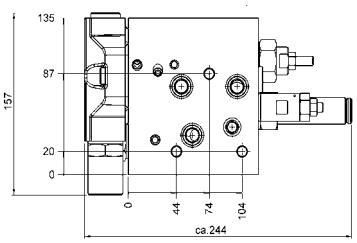
Modulares Steuerblocksystem
Modular manfold system
Système modulaire de bloc de commande

Stand 01-2013

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Abmessungen** dimensions dimensions	**Q_{max}** **[l/min]**	**p_{max}** **[bar]**	**Prospekt Nr.** Brochure no. Fiche technique no.	**Seite** page
Eingangsmodule Inlet modules Modules d'entrée		**Pumpenanschluss zur Versorgung von Funktionsmodulen /** Pump connection for the supply of function modules / Raccordement de pompe pour modules de fonction				873
Eingangsmodul **Standard** E2-O Inlet module standard Module d'entrée standard			100	350	**5.256.0**	886
Eingangsmodul **Standard plus** E2-O/O-O Inlet module standard plus Module d'entrée standard plus			100	350	**5.256.0**	887
Eingangsmodul **mit Druckwaage** E1 BD13/200-O/O-O Inlet module with pressure compensator Module d'entrée avec balance de pression			100	350	**5.256.0**	888
Eingangsmodul **mit Druckwaage** **und Prioventil** E2 P2-DD8/200-LV Inlet module with pressure compensator and priority valve Module d'entrée avec valve de priorité et balance de pression			90	0 350	**5.256.0**	889
Eingangsmodul **mit Prioventil und** **1 Hauptverbraucher** E1 P3-ZD8/0–BD6/200-LV… Inlet module with priority valve +1 main consumer Module d'entrée avec valve de prorité et 1 recepteur principale			90	350	**5.256.0**	890

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
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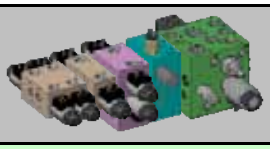
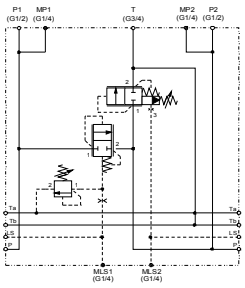
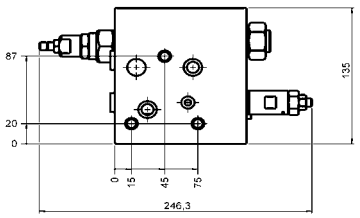
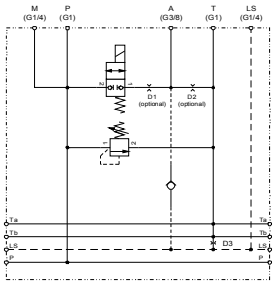
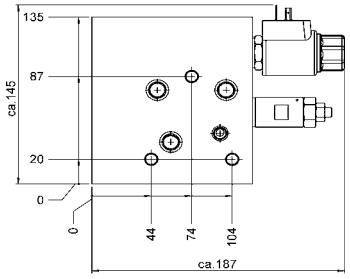
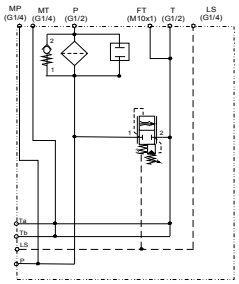
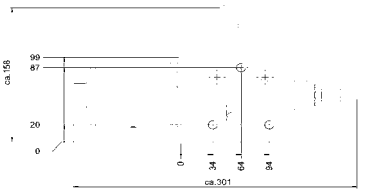
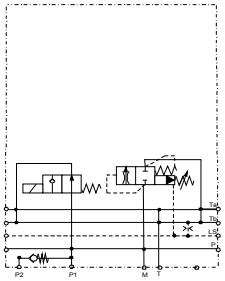
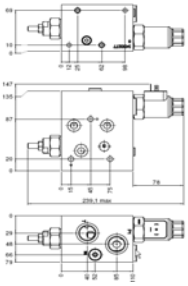
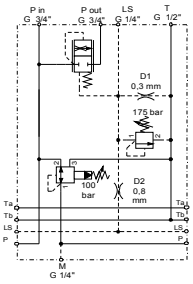
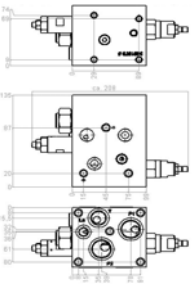
Modulares Steuerblocksystem
Modular manfold system
Système modulaire de bloc de commande



Eingangsmodule
Inlet modules
Modules d'entrée

Pumpenanschluss zur Versorgung von Funktionsmodulen /
Pump connection for the supply of function modules /
Raccordement de pompe pour modules de fonction

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Abmessungen** dimensions dimensions	**Q_{max}** **[l/min]**	**p_{max}** **[bar]**	**Prospekt Nr.** Brochure no. Fiche technique no.	**Seite** page
Eingangsmodul **für 2 Pumpen/ Prioritäten** E2 P2-ZD8/O-DD14/200-O Inlet module for 2 pumps / priorities Module d'entrée pour 2 pompes / prioritées			120	350	**5.256.0**	891
Eingangsmodul **mit Druckbegrenzungs-** **und Umlaufventil** E2-DB-WS-XXDG Inlet module with pressure relief and circuit valve Module d'entrée			100	350	**5.256.0**	893
Eingangsmodul **mit Filter** E1-DD10/200-FZ Inlet module with filter Module d'entrée avec filtre			100	350	**5.256.0**	894
Eingangsmodul **m. Druckumlaufschaltung** E2-DD14/200-DU-XXDG Inlet module with unpressurized flow Module d'entrée avec passage sans pression			100	350	**5.256.0**	895
Eingangsmodul **mit Vorrangschaltung** E2-DR-ZD8/O-DU Inlet module with selectional Module d'entrée avec selection			100	350	**5.256.0**	896

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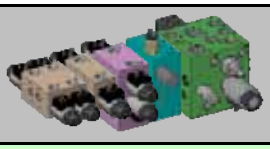
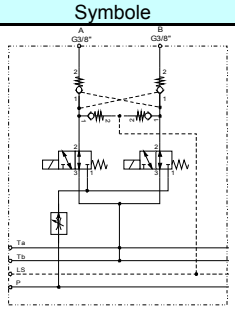
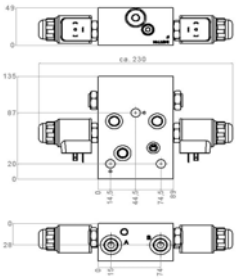
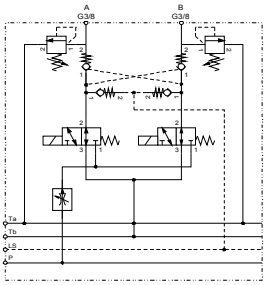
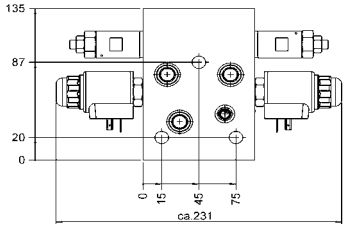
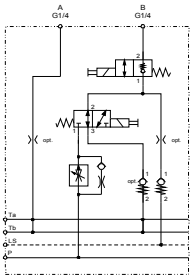
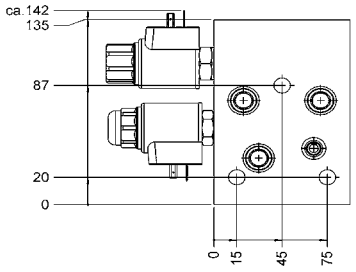
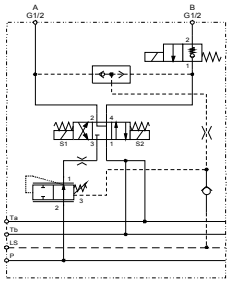
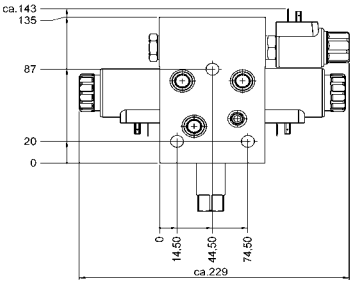
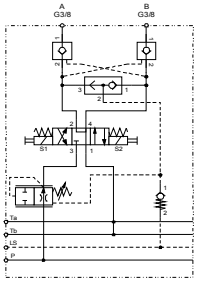
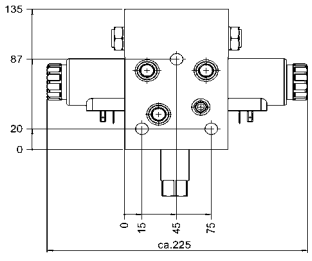
Modulares Steuerblocksystem
Modular manfold system
Système modulaire de bloc de commande



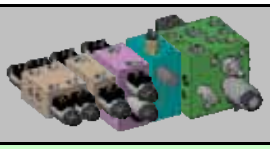
Funktionsmodule
Function modules
Modules de fonction

Direkte Verbraucheransteuerung , Pumpenzulauf über Blende oder Stromregler, proportional / Direct consumer control, pump supply over orifice or flow control valve / Controle de recepteur directe, alimentation par orifice ou regulateur de débit

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Abmessungen** dimensions dimensions	**Q_{max}** **[l/min]**	**p_{max}** **[bar]**	**Prospekt Nr.** Brochure no. Fiche technique no.	**Seite** page
Funktionsmodul **19L mit RPDR** FS19D-SR-2WK-2RP-XXDG Function module 19L flow controls Module de fonction 19L régulateur de débit			19	250	**5.256.0**	897
Funktionsmodul **19L sw mit RPDR und DB** FS19D-SR-2RP-2DB-XXDG Function module 19L sw with RPDR and DB Module de fonction 19L sw avec RPDR et DB			19	250	**5.256.0**	898
Funktionsmodul **20L sw einseitig** FS20D-SR-WS-XXDG Function module 20L sw single side Module de fonction 20L sw			20	250	**5.256.0**	899
Funktionsmodul **38L sw 1xWS Ventil** FS38J-ID-WS-XXDG Function module 38L sw 1x solenoid valve Module de fonction 38L sw 1x solenoide			38	250	**5.256.0**	900
Funktionsmodul **38L sw** **+ RPDR** FS38J-ID-2RP-XXDG Function module 38L sw + RPDR Module de fonction 38L sw + RPDR			38	250	**5.256.0**	901

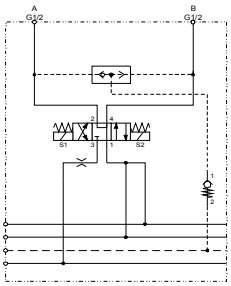
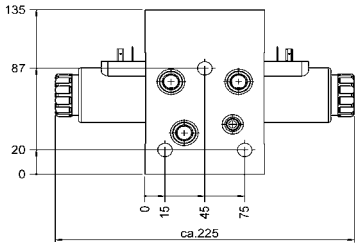
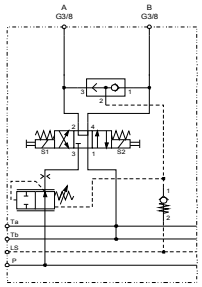
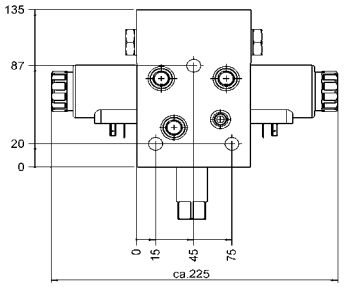
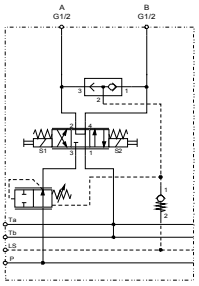
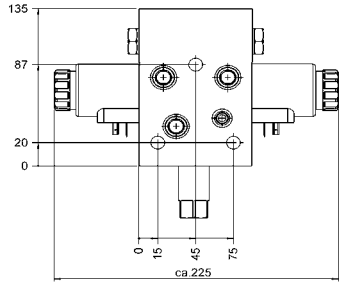
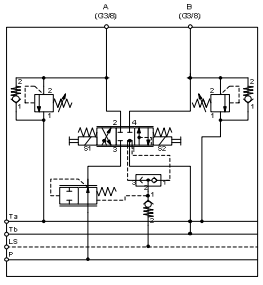
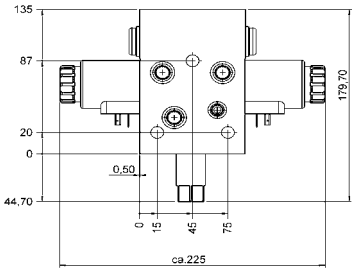
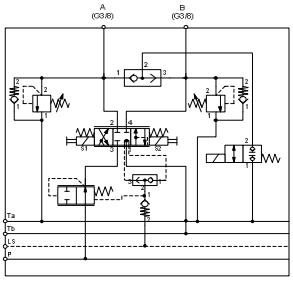
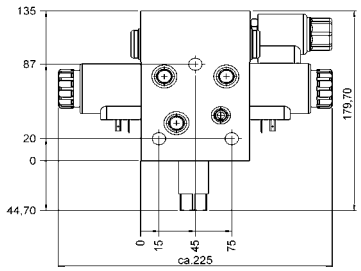
Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Modulares Steuerblocksystem
Modular manfold system
Système modulaire de bloc de commande



Funktionsmodule
Function modules
Modules de fonction

Direkte Verbraucheransteuerung , Pumpenzulauf über Blende oder Stromregler, proportional / Direct consumer control, pump supply over orifice or flow control valve / Controle de recepteur directe, alimentation par orifice ou regulateur de débit

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Abmessungen** dimensions dimensions	**Q_{max}** **[l/min]**	**p_{max}** **[bar]**	**Prospekt Nr.** Brochure no. Fiche technique no.	**Seite** page
Funktionsmodul **70L sw J / E** FS70E-BL-O-XXDG Function module 70L sw J / E Module de fonction 70L sw J / E			70	250	**5.256.0**	903
Funktionsmodul **70L sw + Stromregler** FS70J-ID-O-XXDG Function module 70L sw + flow control Module de fonction 70L sw + regulateur débit			70	250	**5.256.0**	902
Funktionsmodul **35L prop J / E** FP35J-ID-O-XXPG Function module 35L prop J / E Module de fonction 35L prop J / E			35	250	**5.256.0**	905
Funktionsmodul **35L prop +Antikav** FP35E-ID-2AK210/210-XXPG Function module 35L prop + Antikav Module de fonction 35L prop + Antikav			35	250	**5.256.0**	907
Funktionsmodul **35L prop +Antikav** **+Schwimmstellung** FP35E-ID-2AK210/175-SS-… Function module 35L prop + Antikav + floating position Module de fonction 35L prop + Antikav + position flottante			35	250	**5.256.0**	906

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
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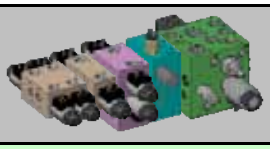
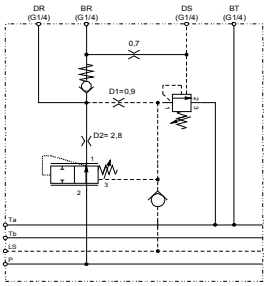
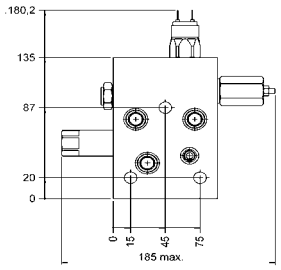
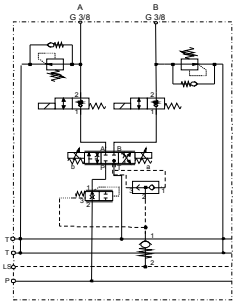
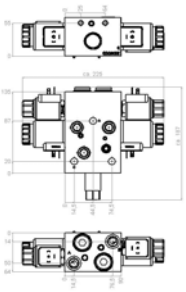
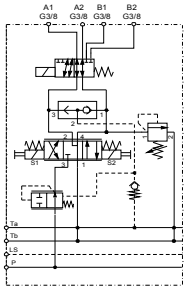
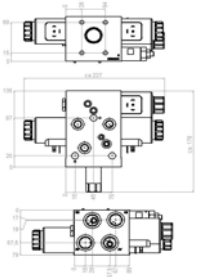
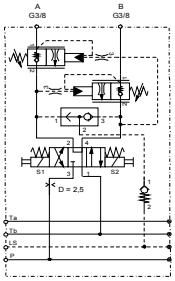
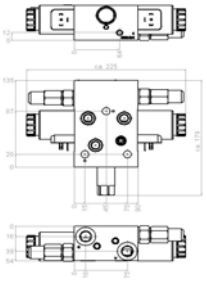
Modulares Steuerblocksystem
Modular manfold system
Système modulaire de bloc de commande



Funktionsmodule
Function modules
Modules de fonction

Direkte Verbraucheransteuerung , Pumpenzulauf über Blende oder Stromregler, proportional / Direct consumer control, pump supply over orifice or flow control valve / Controle de recepteur directe, alimentation par orifice ou regulateur de débit

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Abmessungen** dimensions dimensions	**Q_{max}** **[l/min]**	**p_{max}** **[bar]**	**Prospekt Nr.** Brochure no. Fiche technique no.	**Seite** page
Funktionsmodul **Speicherladung** FS38-ID-DL Function module accumulator charg. Module de fonction chargeur d'accumulateur			38	250	**5.256.0**	909
Funktionsmodul **25L prop +Antikav** FP25E-ID-2AK150/100-2WS-… Function module 25L prop + Antikav Module de fonction 25L prop + Antikav			25	250	**5.256.0**	908
Funktionsmodul **32L prop. Umschaltung** FP32J-ID-UV-DB-XXPG Function module 32L prop. switch-over Module de fonction 32L prop. pour commutater			32	250	**5.256.0**	911
Funktionsmodul **10L Hubsenk (35 l max)** FS10J-ID-2SB-XXDG Function module 10L lift-lowering Module de fonction 10L pour éléver / abaisser			10 (max. 35)	250	**5.256.0**	912

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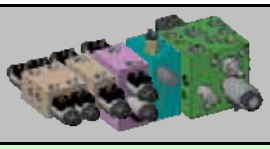
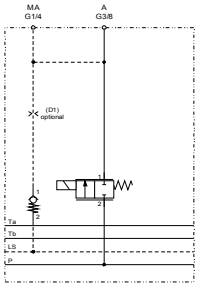
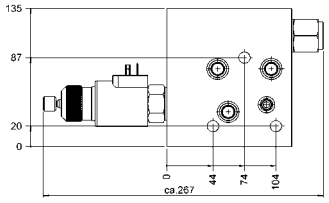
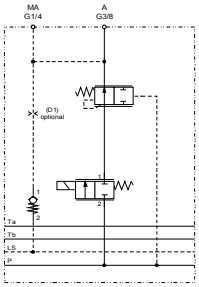
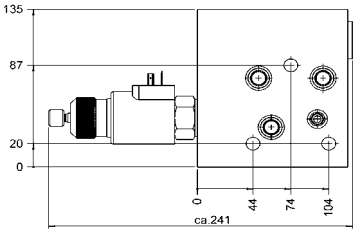
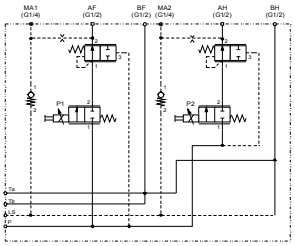
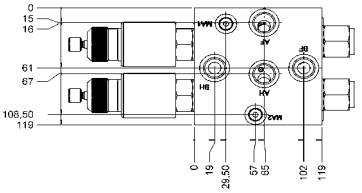
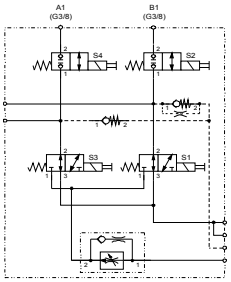
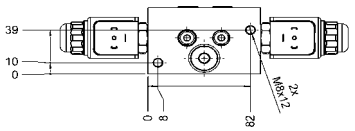
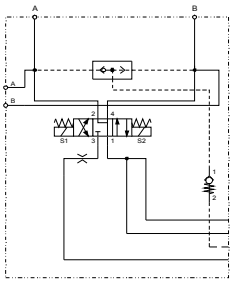
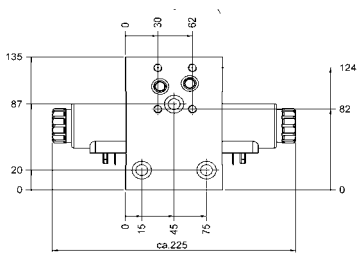
Modulares Steuerblocksystem
Modular manfold system
Système modulaire de bloc de commande



Hauptverbrauchermodule
Main consumermodules
Modules principales

Bezeichnung Description Désignation	Symbol Symbol Symbole	Abmessungen dimensions dimensions	Q_{max} [l/min]	p_{max} [bar]	Prospekt Nr. Brochure no. Fiche technique no.	Seite page
Hauptverbrauchermodul ohne Druckwaage H1-PWK-O-XXPG Main consumer module without pressure compensator Module principale sans balance de pression			60 (max. 80)	250	**5.256.0**	913
Hauptverbrauchermodul mit 1 Druckwaage H1-PWK-RD15-XXPG Main consumer module with 1 pressure compens. Module principale avec 1 balance de pression			60 (max. 80)	250	**5.256.0**	914
Hauptverbrauchermodul zweifach H2-2PWK-2RD15-XXPG Main consumer module double Module principale double			2 x 60	250	**5.256.0**	915

Bezeichnung Description Désignation	Symbol Symbol Symbole	Abmessungen dimensions dimensions	Q_{max} [l/min]	p_{max} [bar]	Prospekt Nr. Brochure no. Fiche technique no.	Seite page
Weichenmodule Pre-Selection modules Modules de préselection		**Zur Ansteuerung der Stellfunktionsmodule /** For the control of cylinder function modules / Pour le contrôle des modules de commande pour vérins				
Weichenmodul sw 19L mit Stromregler WS19D-SR-2WS-XXDG Pre-selection module sw 19L with flow control valve Module de preselection sw 19L avec régulateur de débit			19	250	**5.256.0**	916
Weichenmodul sw 70L WS70J-BL-O-XXDG Pre-selection module sw 70L Module de preselection sw 70L			70	250	**5.256.0**	917

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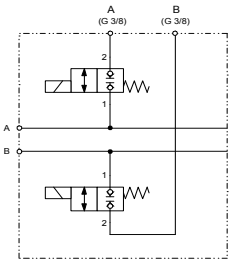
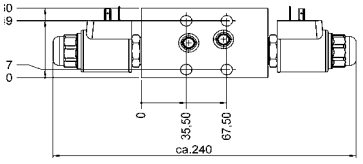
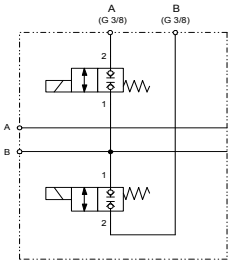
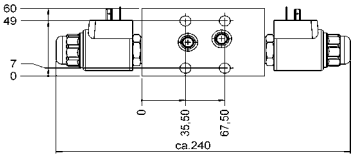
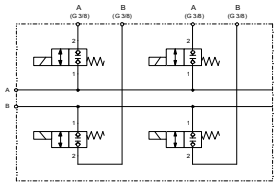
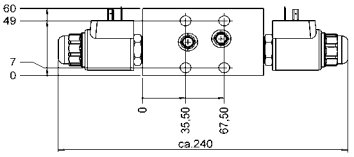
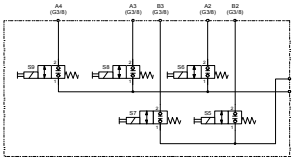
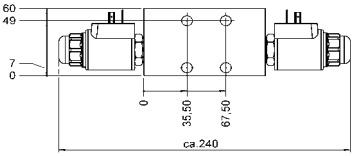
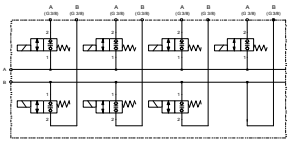
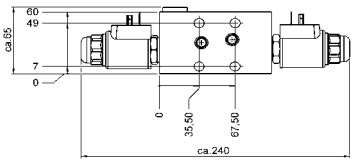
Modulares Steuerblocksystem
Modular manfold system
Système modulaire de bloc de commande

Bezeichnung Description Désignation	Symbol Symbol Symbole	Abmessungen dimensions dimensions	Q_{max} [l/min]	p_{max} [bar]	Prospekt Nr. Brochure no. Fiche technique no.	Seite page
Stellfunktionsmodule Cylinder function modules Modules de commande pour vérins						
Stellfunktionsmodul **2-fach, Sonder** S02-02-W-XXDG Cylinder function module double, special Module de commande pour vérins 2 fois, spéicale			19	250	**5.256.0**	918
Stellfunktionsmodul **2-fach einseitig** S02-02-W-XXDG Cylinder function module double, single side Module de commande pour vérins 2 fois, une côté			19	250	**5.256.0**	919
Stellfunktionsmodul **4-fach** S04-04-W-XXDG Cylinder function module 4 times Module de commande pour vérins 4 fois			19	250	**5.256.0**	920
Stellfunktionsmodul **5-fach** **(nur als Endmodul!)** S05-05-W-XXDG Cylinder function module 5 times (only as endmodule!) Module de commande pour vérins 5 fois (Seulement module finale!)			19	250	**5.256.0**	921
Stellfunktionsmodul **7-fach** S08-07-W-XXDG Cylinder function module 7 times Module de commande pour vérins 7 fois			19	250	**5.256.0**	922

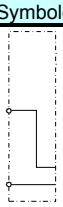
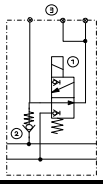
Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Längsverkettung L

Stand 01-2013

Modular Stacking System L

Modules longitudinaux L

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Typ** Type Type	**Qmax** **[l/min]**	**pmax** **[bar]**	**Prospekt Nr.** Brochure no. Fiche technique n°	**Seite** page
Grundmodule Base Module **S** Modules de base		**div. Ausführungen (verrohrbar)** Diff. Types (for inline mounting) Modèles différentes (à flasquer)	**bis**/to/à 12,0	500	**5.304.2**	963
Funktionsmodule mit 2/2-Wege-Sitzventil Function Modules with 2/2-directional valve Modules avec distributeur 2/2		**div. Ausführungen (flanschbar)** errohrbar) Diff. Types (flange mounting) Modèles différentes (à flasquer)	**bis**/to/à 12,0	500	**5.304.2**	963
Endmodule End Modules Modules de fermeture		**div. Ausführungen (flanschbar)** errohrbar) Diff. Types (flange mounting) Modèles différentes (à flasquer)	**bis**/to/à 12,0	500	**5.304.2**	963

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung

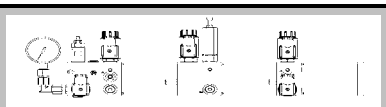
Products with hydraulic datas in italic letters are in preparation

Les produits avec caractéristiques en italique sont en préparation

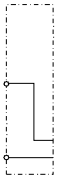
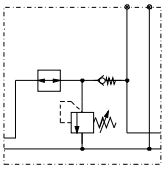
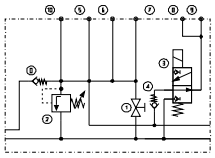
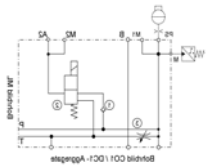
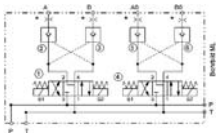
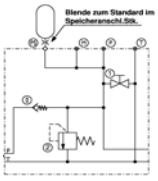
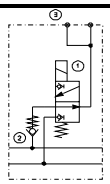
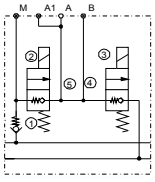
Längsverkettung ML

Modular Stacking System ML

Modules longitudinaux ML



Stand 01-2013

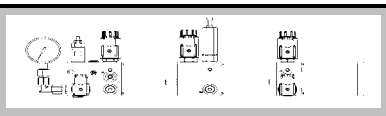
Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Typ** Type Type	**Qmax** **[l/min]**	**pmax** **[bar]**	**Prospekt Nr.** Brochure no. Fiche technique n°	**Seite** page
Grundmodul Base Module Module de base		**ML-MRL...** (verrohrbar) (for inline mounting) (à tuyauter)	bis/to/à 20,0	350	**5.308.0**	
Grundmodul Base Module Module de base		**ML-2RV...** (flanschbar an Aggregate mit Bohrbild 20X) (flange mounting to power units w/ interface 20X) (à flasquer sur centrale avec plan de pose 20X)	bis/to/à 12,0	350	**5.308.0**	
Grundmodul Base Module Module de base		**ML-ML...** (flanschbar an Aggregate mit Bohrbild 20X) (flange mounting to power units w/ interface 20X) (à flasquer sur centrale avec plan de pose 20X)	bis/to/à 12,0	350	**5.308.0**	925
Grundmodul Base Module Module de base		**ML-B1/GML** (flanschbar an Aggregate mit Bohrbild B1) (flange mounting to power units w/ interface B1) (à flasquer sur centrale avec plan de pose B1)	bis/to/à 12,0	350	**5.308.0**	ff.
Grundmodul Base Module Module de base		**B1/ML-2xSC...** (flanschbar an Aggregate mit Bohrbild B1) (flange mounting to power units w/ interface B1) (à flasquer sur centrale avec plan de pose B1)	bis/to/à 15,0	250	**5.308.0**	
Grundmodul Base Module Module de base		**ML-GMS (flanschbar an Aggregate mit Bohrbild 20X)** (flange mounting to power units w/ interface 20X) (à flasquer sur centrale avec plan de pose 20X)	bis/to/à 20,0	250	**5.308.0**	
Funktionsmodul mit 3/2-Wege-Ventil Function Module with 3/2-directional valve Module avec distributeur 3/2		**ML-C...** **oder/or/ou** **ML-D...** (flanschbar) (flange mounting) (à flasquer)	bis/to/à 12,0	350	**5.308.0**	
Funktionsmodul mit 2 x 2/2-Wege-Ventil Function Module with 2 x 2/2-directional valve Module avec 2 x distributeur 2/2		**ML-E...** (flanschbar) (flange mounting) (à flasquer) unterschiedl. Symbole möglich different functions available différentes symboles possible	bis/to/à 12,0	350	**5.308.0**	

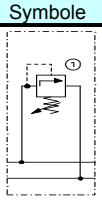
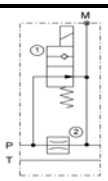
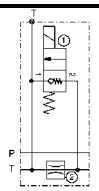
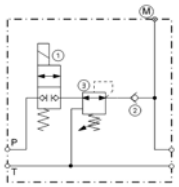
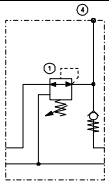
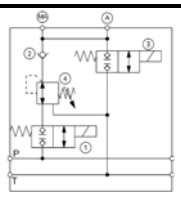
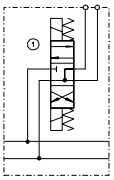
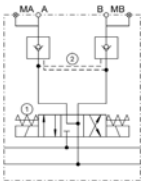
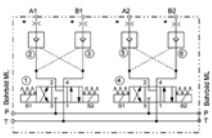
Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung

Products with hydraulic datas in italic letters are in preparation

Les produits avec caractéristiques en italique sont en préparation

Längsverkettung ML
Modular Stacking System ML
Modules longitudinaux ML



Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Typ** Type Type	**Qmax** **[l/min]**	**pmax** **[bar]**	Prospekt Nr. Brochure no. Fiche technique n°	Seite page
Funktionsmodul mit Druckbegrenzungsventil zur Druckabsicherung Function Module for pressure relief Module de fonction pour la decompression		**ML-M...** (flanschbar) (flange mounting) (à flasquer) unterschiedl. Symbole möglich different functions available différentes symboles possible	bis/to/à 20,0	350	**5.308.0**	
Funktionsmodul für Eil-Schleichgang (gedrosselter Zulauf) Function Module for dual speed Module pour vitesse rapide et lente		**ML-P...** (flanschbar) (flange mounting) (à flasquer) unterschiedl. Symbole möglich different functions available différentes symboles possible	bis/to/à 12,0	350	**5.308.0**	
Funktionsmodul für Eil-Schleichgang (gedrosselten Ablauf) Function Module for dual speed Module pour vitesse rapide et lente		**ML-T...** (flanschbar) (flange mounting) (à flasquer)	bis/to/à 20,0	350	**5.308.0**	
Funktionsmodul mit 2/2-Wege-Ventil + Druckregelventil Function Module with 2/2-directional valve + pressure reducing valve Module avec distributeur 2/2 et régulateur de pression		**ML-DM1** (flanschbar) (flange mounting) (à flasquer)	bis/to/à 12,0	350 (W-Symbol = 250 bar)	**5.308.0**	941 ff.
Funktionsmodul zur Druckminderung Function Module for pressure reducing Module de fonction pour la reduction de pression		**ML-DM2-S-R...** (flanschbar) (flange mounting) (à flasquer)	bis/to/à 12,0	345	**5.308.0**	
Funktionsmodul mit 2 x 2/2-Wege-Ventilen + 1 x Druckminderventil Function Module with 2 x 2/2-directional valve + 1 x pressure reducing valve Module avec 2 x distributeur 2/2 + 1 x réducteur de pression		**ML-DM3...** (flanschbar) (flange mounting) (à flasquer) unterschiedl. Symbole möglich different functions available différentes symboles possible	bis/to/à 12,0	350 (W-Symbol = 250 bar)	**5.308.0**	
Funktionsmodul mit 4/3 oder 4/2-Wege-Ventil Function Module with 4/3 or 4/2-directional valve Module avec distributeur 4/3 ou 4/2		**ML-U...** (flanschbar) (flange mounting) (à flasquer) unterschiedl. Symbole möglich different functions available différentes symboles possible	bis/to/à 20,0	350	**5.308.0**	
Funktionsmodul mit 4/3-Wege-Ventil + entsperrb. RV Function Module with 4/3-directional valve + pilot op. Check valve Module avec distributeur 4/3 et clapet anti-retour piloté		**ML-SC...** (flanschbar) (flange mounting) (à flasquer)	bis/to/à 20,0	350	**5.308.0**	
Funktionsmodul mit 2x 4/3-Wege-Ventil + entsperrb. RV Function Module with 2x 4/3-directional valve + pilot op. Check valve Module avec distributeur 2x 4/3 et clapet anti-retour piloté		**ML-2xSC1...** (flanschbar) (flange mounting) (à flasquer)	bis/to/à 15,0	350	**5.308.0**	

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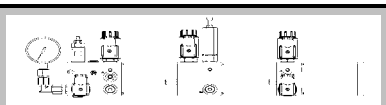
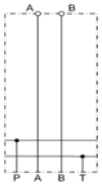
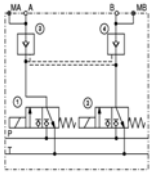
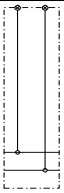
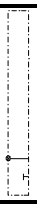
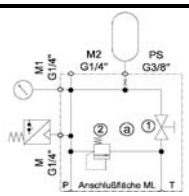
Längsverkettung ML
Modular Stacking System ML
Modules longitudinaux ML



Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Typ** Type Type	**Qmax** **[l/min]**	**pmax** **[bar]**	Prospekt Nr. Brochure no. Fiche technique n°	Seite page
Funktionsmodul mit 4/3 oder 4/2-Wege-Ventil Function Module with 4/3 or 4/2-directional valve Module avec distributeur 4/3 ou 4/2		**ML-MA6...** (flanschbar) (flange mounting) (à flasquer)	bis/to/à 20,0	350	**5.308.0**	945 ff.
Funktionsmodul mit 3/2-Wege-Ventil + 2x entsperrb. RV Function Module with 3/2-directional valve + 2x pilot op. Check valve Module avec distributeur 3/2 et 2x clapet anti-retour piloté		**ML-K...** (flanschbar) (flange mounting) (à flasquer)	bis/to/à 20,0	350	**5.308.0**	
Befestigungsmodul Fixing Module Plaque de fixation		**ML-BM** (flanschbar) (flange mounting) (à flasquer)	bis/to/à 12,0	350	**5.308.0**	
Endmodul End Module Plaque de fermeture		**ML-EM** (flanschbar) (flange mounting) (à flasquer)	bis/to/à 20,0	350	**5.308.0**	956
Endmodul mit Anschluss G3/8" End Module with 3/8" port Plaque avec continuité avec port 3/8"		**ML-EMS** (flanschbar) (flange mounting) (à flasquer)	bis/to/à 20,0	350	**5.308.0**	ff.
Endmodul für Speicheranbau End Module for accumulator Plaque de fermeture pour accumulateur		**ML-EMD** (flanschbar) (flange mounting) (à flasquer)	bis/to/à 20,0	350	**5.308.0**	

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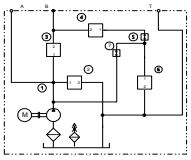
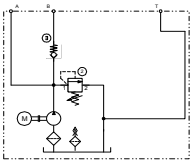
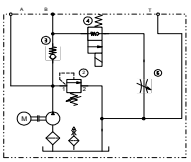
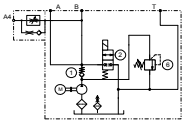
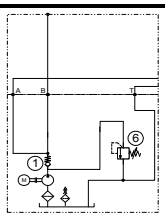
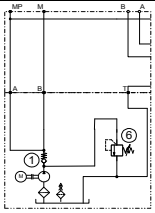
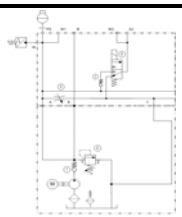
Wechselstromaggregate

Stand 01-2013

Power Units AC

Centrales hydrauliques pour courant alternatif

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Typ** Type Type	**Q_{max} [l/min]**	**p_{max} [bar]**	**Tank (l)** Tank Réservoir	**Betriebsart** Type of operation Facteur de marche		**Prospekt Nr.** Brochure no. Fiche technique n▪	**Seite** page
						S2	S3		
CO1 - Mitteldruck Pumpenaggregat Compact Power Unit CO1 Centrale moyenne pression CO1		**CO1...**	1,3 bis/to/à 20,0	250	3,0 bis/to/à 12,0 **Kunststoff** plastic plastique	x	x	**5.306.0**	
CO1 - Aggregat - Steuerung mit 1 x DB + 1 x RV CO1 - Power Unit - control with 1x relief valve + 1 check valve Centrale hydraulique CO1 avec 1 x lim.de pression + 1 x CAR		**CO1...-M23**	1,3 bis/to/à 20,0	250	3,0 bis/to/à 12,0 **Kunststoff** plastic plastique	x	x	**5.306.0**	
CO1 - Aggregat mit Hub-Senk-Steuerung (Drossel im Ablauf) CO1 - Power Unit with lift-lowering circuit (throttle in tank line) Centrale hydraulique CO1 avec bloc de descente (étrangleur sur le retour)		**CO1...-M23Z-DV...+XXX-XX**	1,3 bis/to/à 20,0	250	3,0 bis/to/à 12,0 **Kunststoff** plastic plastique	x	x	**5.306.0**	993
CO1 - Aggregat mit Hub-Senk-Steuerung (Stromregelfunktion im Rücklauf) CO1 - Power Unit with lift-lowering circuit (flow control valve in tank line) Centrale hydraulique CO1 avec bloc de descente (regulatur de Q sur le retour)		**CO1...-M61W-A4/S...+XXX-XX**	1,3 bis/to/à 20,0	250	3,0 bis/to/à 12,0 **Kunststoff** plastic plastique	x	x	**5.306.0**	
CO1 - Aggregat mit Adapterblock ML (weitere siehe Prospekt ML) CO1 - Power Unit with adaptorblock ML (more see brochure ML) Centrale hydraulique CO1 avec adapteur ML (dépliant ML)		**CO1...-M61+B1/ML+...**	1,3 bis/to/à 20,0	250	3,0 bis/to/à 12,0 **Kunststoff** plastic plastique	x	x	**5.306.0**	
CO1 - Aggregat mit Adapterblock Lochbild A6 nach DIN 24340 CO1 - Power Unit with adaptorblock w/ interface A6 DIN 24340 Centrale hydraulique CO1 avec bloc adapteur A6 DIN 24340		**CO1...-M61+B1/A6+...**	1,3 bis/to/à 20,0	250	3,0 bis/to/à 12,0 **Kunststoff** plastic plastique	x	x	**5.306.0**	
CO1 - Aggregat mit Grundblock GML CO1 - Power Unit with basic block GML Centrale hydraulique CO1 avec bloc de base GML		**CO1...-M21+B1/GML+...**	1,3 bis/to/à 12,0	250	3,0 bis/to/à 12,0 **Kunststoff** plastic plastique	x	x	**5.306.0**	

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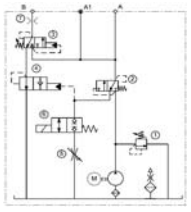
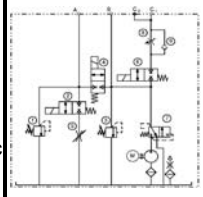
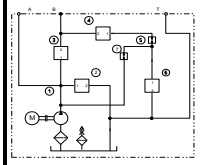
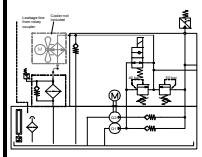
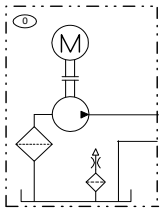
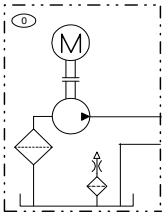
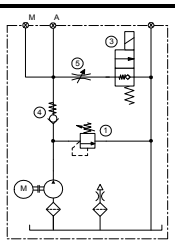
Wechselstromaggregate
Power Units AC
Centrales hydrauliques pour courant alternatif

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Typ** Type Type	**Q_{max} [l/min]**	**p_{max} [bar]**	**Tank (l)** Tank Réservoir	**Betriebsart** Type of operation Facteur de marche		**Prospekt Nr.** Brochure no. Fiche technique n▪	
						S2	S3		
CO1 - Aggregat mit SO-Flansch Klappkeilsteuerung CO1- Power Unit with special flange for tilting lip Centrale hydraulique CO1 avec bloc spécial pour de rampe de chargement		**CO1...-99X+ Klappkeil**	1,3 bis/to/à 8,6	160	3,0 bis/to/à 12,0 **Kunststoff** plastic plastique	x	x	**5.306.0**	993
CO1 - Aggregat mit SO-Flansch Vorschubsteuerung CO1 - Power Unit with special flange for sliding lip Centrale hydraulique CO1 avec bloc spécial pour de rampe de chargement		**CO1...-99X+ VS+xxx-xx**	1,3 bis/to/à 8,6	160	3,0 bis/to/à 12,0 **Kunststoff** plastic plastique	x	x	**5.306.0**	993
CO2 - Aggregat CO2 - Power Unit Centrale hydraulique CO2		**CO2...**	1,3 bis/to/à 20,0	250	3,0 bis/to/à 12,0 **Stahl** steel acier	x	x	**cf**	-
CO3 - Mitteldruck Pumpenaggregat Compact Power Unit CO3 Centrale moyenne pression CO3		**CO3...-**	1,3 bis/to/à 30,0	250	20,0 bis/to/à 70,0 **Aluminium** alu aluminium	x	x	**5.310.0**	1003
Wechselstromaggregate mit Unterölmotor Power Units AC with oil immersed motor Centrales hydrauliques pour courant alternatif avec moteur immergé						S2	S3		
HP - Hochdruck Pumpenaggregat High Pressure Power Unit HP Centrale hydraulique haute pression HP		**HP**	0,3 bis/to/à 5,25	500	1,1 bis/to/à 7,0 **Stahl** steel acier	x	x	**5.301**	1015
CA - Mitteldruck Pumpenaggregat Compact CA Power Unit Centrale hydraulique moyenne pression CA		**CA2...**	1,3 bis/to/à 12,6	250	5,0 7,0 9,0 12,0 **Stahl** steel acier	x	x	**5.305**	1007
CA2 - Aggregat mit Hub-Senk-Steuerung (Drossel im Ablauf) CA2 - Power Unit with lift-lowering circuit (throttle in tank line) Centrale hydraulique CA2 avec bloc de descente (étrangleur sur le retour)		**CA2...99X+ HSDZ+XXX-XX**	1,3 bis/to/à 12,6	250	5,0 7,0 9,0 12,0 **Stahl** steel acier	x	x	**5.305**	1007

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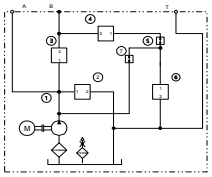
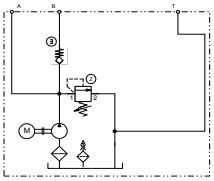
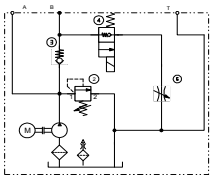
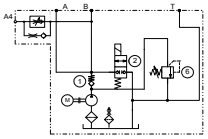
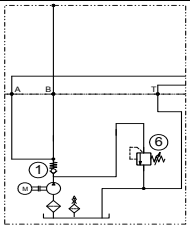
Gleichstromaggregate

Stand 01-2013

DC Power Units

Centrales hydrauliques pour courant continu

Bezeichnung Description Désignation	Symbol Symbol Symbole	Typ Type Type	Q_{max} [l/min]	p_{max} [bar]	Tank (l) Tank Réservoir	Betriebsart Type of operation Facteur de marche		Prospekt Nr. Brochure no. Fiche technique n°	Seite page
						S2	S3		
Mitteldruck Pumpenaggregat DC1 Compact Power Unit DC1 Centrale moyenne pression DC1		**DC1...**	2,7 bis/to/à 18,4	250	3,0 bis/to/à 12,0 Kunststoff plastic plastique	x	x	**5.307.0**	981
DC1 - Aggregat - Steuerung mit 1 x DB + 1 x RV DC1 - Power Unit - control with 1x relief valve + 1 check valve Centrale hydraulique - DC1 avec 1 x lim. de pression + 1 x CAR		**DC1...-M23**	2,7 bis/to/à 18,4	250	3,0 bis/to/à 12,0 Kunststoff plastic plastique	x	x	**5.307.0**	
DC1 - Aggregat mit Hub-Senk-Steuerung (Drossel im Ablauf) DC1 - Power Unit with lift-lowering circuit (throttle in tank line) Centrale hydraulique DC1 avec bloc de descente (étrangleur sur le retour)		**DC1...-M23Z-DV...+XXX-XX**	2,7 bis/to/à 18,4	250	3,0 bis/to/à 12,0 Kunststoff plastic plastique	x	x	**5.307.0**	
DC1 - Aggregat mit Hub-Senk-Steuerung (Stromregler im Ablauf) DC1 - Power Unit with lift-lowering circuit (flow control valve in tank line) Centrale hydraulique DC1 avec bloc de descente (régulateur de Q sur le retour)		**DC1...-M61W-A4/S...+XXX-XX**	2,7 bis/to/à 18,4	250	3,0 bis/to/à 12,0 Kunststoff plastic plastique	x	x	**5.307.0**	
DC1 - Aggregat mit Adapterblock ML DC1 - Power Unit with adaptorblock ML Centrale hydraulique DC1 avec adapteur ML		**DC1...M61+B1/ML+...**	2,7 bis/to/à 18,4	250	3,0 bis/to/à 12,0 Kunststoff plastic plastique	x	x	**5.307.0**	

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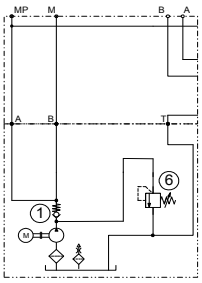
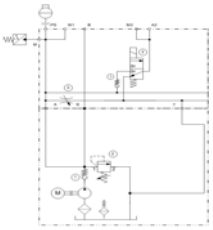
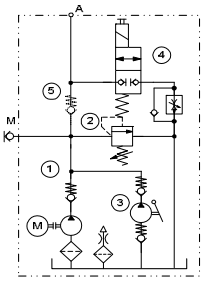
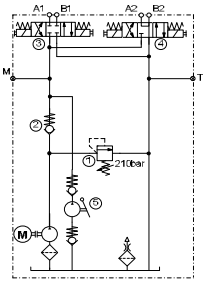
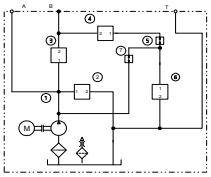
Gleichstromaggregate
DC Power Units
Centrales hydrauliques pour courant continu

Bezeichnung Description Désignation	Symbol Symbole	Typ Type Type	Q_{max} [l/min]	p_{max} [bar]	Tank (l) Tank Réservoir	Betriebsart Type of operation Facteur de marche		Prospekt Nr. Brochure no. Fiche technique n°	Seite page
						S2	S3		
DC1 - Aggregat mit Adapterblock Lochbild A6 nach DIN 24340 DC1 - Power Unit with adaptorblock w/ interface A6 DIN 24340 Centrale hydraulique DC1 avec bloc adapteur A6 DIN 24340		**DC1...M61+ B1/A6**	2,7 bis/to/à 18,4	250	3,0 bis/to/à 12 Kunststoff plastic plastique	x	x	**5.307.0**	
DC1 - Aggregat mit Grundblock GML DC1 - Power Unit with basic block GML Centrale hydraulique DC1 avec bloc de base GML		**DC1...M21 +B1/GML+...**	2,7 bis/to/à 18,4	250	3,0 bis/to/à 12,0 Kunststoff plastic plastique	x	x	**5.307.0**	980
DC1 - Aggregat mit Hub-Senksteuerung und Handpumpe DC1 - Power Unit with lift-lowering control + handpump Centrale hydraulique DC1 avec commande pour élever abaisser avec pompe à main		**DC1…HB08T ... +HPU...**	2,7 bis/to/à 18,4	250	3,0 bis/to/à 12,0 Kunststoff plastic plastique	x	x	**5.307.0**	
DC1 - Aggregat mit 2x 4/3 Schieber und Handpumpe DC1 - Power Unit with 2x 4/3 spool valve and handpump Centrale hydraulique DC1 avec 2x 4/3 valves avec pompe à main		**DC1…HB05L ... +HP...**	2,7 bis/to/à 18,4	250	3,0 bis/to/à 12,0 Kunststoff plastic plastique	x	x	**5.307.0**	
DCM - Aggregat DCM - Power Unit Centrale hydraulique DCM		**DCM…**	2,5 bis/to/à 5,6	250	4,0 bis/to/à 7,5 Kunststoff plastic plastique	x	x	**5.309.0**	977

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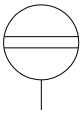
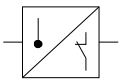
Zubehör
Equipment
Accessoires

Stand 01-2013

Bezeichnung Description Désignation	Symbol Symbol Symbole	Anschlussdaten Connection Data Données de raccordement	Prospekt-Nr. Brochure no. Fiche technique no.	Seite page
Flüssigkeitsstandanzeige Fluid level gauge Indicateur de niveau		**Anschluss** Banjo bolts Raccordement M10 M12	**5.050**	-
Flüssigkeitsstandkontrolle Fluid level sensor Contrôleur de niveau		**Anschluss** Banjo bolts Raccordement M10 M12	**5.050**	-
Thermoschalter Temperature switch Thermocontacteur		**Anschluss** Banjo bolts Raccordement M12	**5.050**	-

Speicher
Accumulators
Accumulateurs

Bezeichnung Description Désignation	Symbol Symbol Symbole		Prospekt-Nr. Brochure no. Fiche technique no.	Seite page
Hydro-Blasenspeicher Bladder accumulators Accumulateurs hydropneumatiques à vessie			**3.201**	-
Hydro-Membranspeicher Diaphragm accumulators Accumulateurs hydropneumatiques à membrane			**3.100**	-
Hydro-Kolbenspeicher Hydraulic piston accumulators Accumulateurs hydropneumatiques à piston			**3.301**	-

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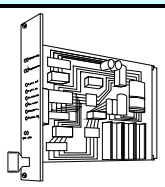
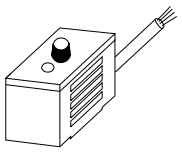
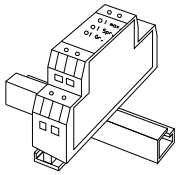
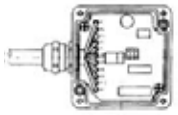
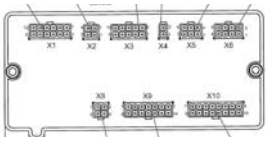
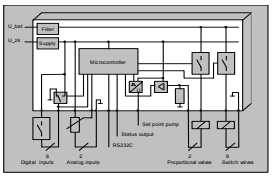
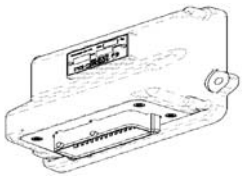
Elektronik
Electronics
Éléctroniques

Stand 01-2013

Bezeichnung Description Désignation	**Symbol** Symbol Symbole	**Technische Daten** Technical Datas Données techniques	**Prospekt-Nr.** Brochure no. Fiche technique no.	**Seite** page
PEK 19" Einschubsystem zur Ansteuerung von Proportionalventilen PEK 19" Euro card system for the control of proportional valves PEK Carte embrochable 19 pour la controle des valves proportionelles		**Versorgungsspannung: 24V** Supply Voltage Tension d'alimentation	**5.168** **5.164**	- -
PES Steckerverstärker zum direkten Aufbau auf Ventilmagneten PES Plug amplifier for fitting directly onto the coil of proportional valves PES Connecteur amplificateur de commande pour montage direct sur valves proportionelles		**Versorgungsspannung: 12V /24V** Supply Voltage Tension d'alimentation	**5.168** **5.164**	- -
PEM Verstärkermodul zur Ansteuerung von Proportionalventilen PEM Amplifier module for the control of proportional valves PEM Module amplificateur des commande pour la controle des valves proportionelles		**Versorgungsspannung: 24V** Supply Voltage Tension d'alimentation	**5.168** **5.164**	- -
MPA 1000 Elektronik zur Ansteuerung von Anbauhydrauliken (kundenspez.) MPA 1000 Electronics to control extented hydraulics (customer spec.) MPA 1000 pour commander un appareil hydraulique additionnel (spec. client)		**Versorgungsspannung: 12 V** Supply Voltage Tension d'alimentation	**cf**	-
V22 Elektronik zur Ansteuerung einer Ladebordwand (kundenspez.) V22 Electronics to control a tail lift (customer spec.) V22 pour controller un haillon élévateur (spec. client)		**Versorgungsspannung: 24 V** Supply Voltage Tension d'alimentation	**cf**	-
MVC Elektronik zur Ansteuerung des Hubmasts eines Gehstaplers (kundenspez.) MVC Electronics to control the lift hydraulics of a walky stacker (customer spec.) MVC pour controller l'hydraulique d'un gerbeur (spec. client)		**Versorgungsspannung: 12 V** Supply Voltage Tension d'alimentation	**cf**	-
UMC 1000 Elektronik zur Ansteuerung von Fahrwerken (kundenspez.) UMC 1000 Electronics to control the chassis suspension (customer spec.) UMC 1000 pour controler l'hydraulique d'un chassis (spec. client)		**Versorgungsspannung: 12/24 V** Supply Voltage Tension d'alimentation	**cf**	-

Amplifiers and Controllers for proportional valves
see page 1053

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Einsatzbedingungen und Hinweise für Ventile

Stand 01-2013

Conditions and instructions for valves

Conditions et instructions pour valves

	Deutsch	English	Français
	Generell gibt es verschiedene Randbedingungen, unter denen HYDAC Ventile in der Hydraulik eingesetzt werden können.	In general there are different conditions existing under which HYDAC valves could be used in hydraulics.	En genéral il y a des conditions limites différentes pour lesquelles les valves HYDAC peuvent être utilisées.
	Im Einzelnen sind diese Bedingungen vom Ventil abhängig und auf dem jeweiligen Prospektblatt genau beschrieben.	These conditions are depending on the corresponding valve and described on the depending datasheet in detail.	Ces conditions sont spécifiques à chaque valve et sont décrites en détail dans la fiche technique correspondante.
	Diese Bedingungen sind:	**These conditions are:**	**Ces conditions sont :**
	1. Druck	1. Pressure	1. Pression
	2. Volumenstrom	2. Flow rate	2. Débit
	3. Art der Druckflüssigkeit	3. Type of hydraulic fluid	3. Type de fluide hydraulique
	4. Umgebungstemperatur	4. Ambient temperature range	4. Température ambiante
	5. Druckflüssigkeitstemperatur	5. Media operating temperature range	5. Température du fluide
	6. Viskosität der Druckflüssigkeit	6. Viscosity of the fluid	6. Viscosité du fluide
	7. Verschmutzungsgrad (Filtration) der Druckflüssigkeit	7. Contamination level (filtration) of the operating fluid	7. Niveau de contamination du fluide (filtration)
	8. Nennstrom und Nennspannung (bei Magnet- und Proportionalventilen)	8. Nominal current and voltage (proportional and solenoid operated valves)	8. Courant et tension nominale (pour électrovalves et valves proportionnelles)
1	**Druck**	**Pressure**	**Pression**
	Jedes Ventil ist auf einen bestimmten Maximaldruck ausgelegt, bei dem es ohne Risiko für Umwelt und Leben noch betrieben werden darf. Für diesen Wert übernehmen wir eine Gewährleistung, da wir diesen in Tests nachgewiesen haben. Er ist von Ventil zu Ventil unterschiedlich.	Each valve is designed for a certain maximum pressure at which it can be operated without risk to the environment and life. For this value, we assume the warranty, as we have demonstrated in tests. It varies from valve to valve.	Chaque type de valve est prévu pour fonctionner sans danger pour l'environnement et le personnel à une valeur de pression maxi. Nous garantissons cette valeur, car elle résulte de tests que nous avons réalisés. Cette valeur est différente pour chaque type de valve.
2	**Volumenstrom**	**Flow rate**	**Débit**
	Jedes Ventil ist aufgrund seiner Nenngröße für einen bestimmten maximalen Volumenstrom ausgelegt, bei dem es noch sinnvoll ist, es zu betreiben. Ein Betrieb über diesem Betriebsparameter würde die Verlustleistung in die Höhe treiben. Er ist ebenfalls von Ventil zu Ventil unterschiedlich.	Each valve is designed for a certain maximum flow - due to its nominal size. At ths flow it is still reasonable to operate the valve. An operation above this value will boost the power dissipation This value also varies from valve to valve.	En fonction de sa taille nominale, chaque type de valve est prévu pour fonctionner à un débit maxi pour lequel il est raisonnable de l'utiliser. Pour une utilisation au-delà de cette valeur, les pertes de charge deviennent très importantes. Cette valeur dépend de chaque type de valve.
3	**Art der Druckflüssigkeit**	**Type of hydraulic fluid**	**Type de fluide hydraulique**
	Die Art der verwendeten Druckflüssigkeit ist eng mit dessen Viskosität verknüpft. HYDAC lässt hier nur Hydraulikflüssigkeiten nach DIN 51524 Teil 1 und 2 zu und gewährleistet für diese auch die Funktion der Ventile.	The type of operating fluid is closely linked to its viscosity. HYDAC can only recommend hydraulic fluids according to DIN 51524 Part 1 and 2. For these fluids the function of the valves is warranted.	La viscosité dépend du fluide hydraulique utilisé. Seule l'utilisation de fluides hydrauliques suivant DIN 51524 partie 1 et 2 est autorisée, et la fonction de la valve est garantie par HYDAC.
4	**Umgebungstemperatur**	**Ambient temperature range**	**Température ambiante**
	Die Umgebungstemperatur hat einen direkten Einfluss auf die verwendeten Materialien im Ventil, z.B. auf deren mech. Festigkeit. Generell ist die zulässige Temperatur in erster Linie von den Dichtmaterialien abhängig. HYDAC definiert hier: NBR: von -30°C bis +60°C (Magnetventile -20°C) FPM: von -20°C bis +80°C (teilweise bis +100°C) Es gibt aber auch Tieftemperaturventile (TT), bei denen die Dichtungen speziell auf niedrige Temperaturen ausgelegt sind. Weitere Einflüsse der Temperatur: - Sprödbruchverhalten von Stahl bei Niedrigtemperaturen - Relaxation von Federn aus Federstahl bei höheren Temperaturen - Durchbrennen von Spulen bei Dauerbestromung und hohen Temperaturen	The ambient temperature has a direct effect on the used materials in the valve, e.g. their mech. strength. Generally, the maximum temperature depends primarily on the sealing materials. HYDAC defines here: NBR: from -30 ° C to +60 ° C (solenoid valves -20 ° C) FPM: -20 ° C to +80 ° C (sometimes up to +100 ° C) There are also deep temperature valves (TT), where the seals are specially designed for low temperatures. Other influences of temperature: - brittle fracture of steel at low temperatures - relaxation of springs made of spring steel at higher temperatures - fusing of coils at continous operation under high current and at high temperatures	La température ambiante a une influence directe sur les matières utilisées dans les valves, p.ex. leur résistance mécanique. Généralement, la température maximum dépend des matériaux des joints. Indications HYDAC : NBR : de -30°C à +60°C (electrovalves -20°C) FPM : -20°C à +80°C (+100°C sous certaines conditions). Il existe des valves basse température TT) avec des joints adaptés. Autres paramètres sur lesquels la température influe : - risque de rupture des aciers en cas de températures basses - relaxation de l'acier des ressorts en cas de températures élevées - risque de destruction des bobines en cas d'excitation permanente et de températures élevées.

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung

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Einsatzbedingungen und Hinweise für Ventile

Conditions and instructions for valves

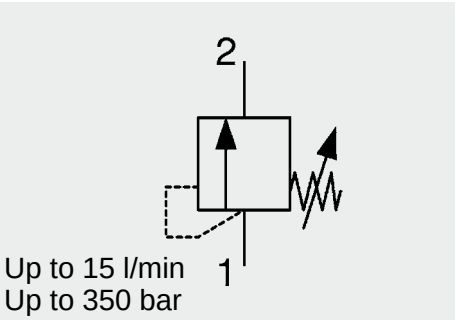
Conditions et instructions pour valves

	Deutsch	English	Français
5	**Druckflüssigkeitstemperatur** So wie die Umgebungstemperatur hat die Druckflüssigkeitstemperatur einen direkten Einfluss auf die verwendeten Materialien im Ventil, z.B. auf deren mech. Festigkeit. Generell ist die zulässige Temperatur in erster Linie von den Dichtmaterialien abhängig. HYDAC definiert hier: NBR: von -30°C bis +100°C (Magnetventile -20°C) FPM: von -20°C bis +120°C (alle anderen Einflüsse siehe Punkt 4)	**Media operationg temperature range** Like the ambient temperature the media temp. range has a direct effect on the used materials in the valve, e.g. their mech. strength. Generally, the maximum temperature depends primarily on the sealing materials. HYDAC defines here: NBR: from -30 ° C to +100 ° C (solenoid valves -20 ° C) FPM: -20 ° C to +120 ° C (all other influences see point 4)	**Température du fluide** La température du fluide a une influence directe sur les matières utilisées dans les valves, en particulier leur résistance mécanique. C'est principalement la résistance à la température des joints qui limite la température maxi du fluide. Indications Hydac sur ce point : NBR : de -30°C à +100°C (électrovalves -20°C) FPM: -20°C à +120°C voir paragraphe 4 pour autres paramètres d'influence.
6	**Viskosität**	**Viscosity**	**Viscosité**
	Hydac Ventile dürfen generell nur in bestimmten Viskositätsbereichen betrieben werden, da bei zu dünn- oder dickflüssigen Medien, die zugesicherten Eigenschaften nicht mehr eingehalten werden können. Diese sind ebenfalls bei den einzelnen Ventilen unterschiedlich, liegen im Mittel aber im Bereich von 10 mm²/s bis 420 mm²/s.	Hydac valves may be used generally only in specific viscosity ranges, as in too thin or thick liquids, the assured features can not be fulfilled. These viscosities are also different for the different valves, but in average in the range of 10 mm² /s to 420 mm²/ s.	Les valves Hydac ne doivent être utilisées que dans des plages de viscosité bien définies. Pour des fluides pas assez ou trop visqueux, les caractéristiques des valves ne sont plus garanties. Ces plages sont spécifiques à chaque valve. En moyenne elles vont de 10 mm^2/s à 420 mm^2/s.
7	**Verschmutzungsgrad**	**Contamination level (filtration)**	**Niveau de contamination**
	Filtration oder die damit verbundene Partikelgröße von Verunreinigungen im Hydrauliköl ist der wichtigste Punkt beim Betrieb einer Hydraulikanlage. Ein Überschreiten der angegebenen Partikelgröße in den Filtrationsklassen 21/19/16 bis 18/16/13 kann zum sofortigen Ausfall der Einzelteile im Hydrauliksystem führen, wenn diese Partikel sich in kritischen Bereichen festsetzen.	Filtration and the associated particle size of contaminants in the hydraulic oil is the most important point in the operation of a hydraulic system. Exceeding the specified particle size in the filtration classes 21/19/16 to 18/16/13 may cause immediate failure of the parts in the hydraulic system when these particles are accumulated in critical areas.	La filtration, et par là-même la taille des particules de contaminant dans l'huile, est le critère le plus important pour le bon fonctionnement d'un circuit hydraulique. Un dépassement de la taille des particules dans la classe de filtration 21/19/16 et 18/16/13 peut entraîner une destruction immédiate de certains composants du système si ces particules ce déposent à des endroits critiques.
8	**Nennstrom- und spannung**	**Nominal tension and voltage**	**Courant et tension nominale**
	Bei Magnetventilen werden Magnetspulen benutzt, die so ausgelegt sind, dass sie im Spannungsbereich von +/- 15% der Nennspannung bei max. 60° Umgebungstemperatur sicher funktionieren. Die Kombination aus stetiger Überspannung und sehr heißen Temperaturen kann im Extremfalls zu Ausfällen der Magnetspule führen, daher ist stets für eine gute Wärmeabfuhr und die Spannung auf einem gewissen Niveau zu sorgen.	In solenoid valves coils are used which are designed to operate safely in the voltage range of + / - 15% of nominal voltage at max. 60 ° ambient temperature. The combination of steady surge and very hot temperatures can result in extreme cases to failure of the solenoid. Therefore always a good heat dissipation and voltage level has to be assured.	Les bobines de nos valves sont prévues pour fonctionner dans une plage de tension de +/- 15% de la tension nominale à 60°C. Le fonctionnement avec surtension permanente combiné avec des températures très élevées risque d'entraîner la destruction des bobines. Il est important de prévoir une évacuation suffisante des calories et de contrôler le niveau de la tension.
9	**MTTFd Werte**	**MTTFd values**	**MTTFd valeurs**
	Wir bestätigen die Verwendung der grundlegenden und bewährten Sicherheitsprinzipien nach ISO 13849-2:2003; Tabellen C.1 und C.2 für die Konstruktion unserer Hydraulikventile. (Bestätigung im Datenblatt des Ventils) Der Kunde ist verantwortlich für die Implementierung und den Betrieb der Ventile nach o.g. Norm, sowie die Einhaltung der Betriebsbedingungen unter "Kenngrössen" des jew. Datenblatts.	We confirm the usage of basically and approved safety principals to ISO 13849-2:2003; charts C.1 and C.2 for the design of our hydraulic valves. (Confirmation in each datasheet of the valve) The customer is responsible for the implementation and the operation of our valves due to th a.m. standard as well as the adherence of the operation conditions under "Specifications" of each datasheet.	Nous confirmens l'usage des principales de sécurité fondamentales et épreuvés après ISO 13849-2:2003; chapitres C.1 et C.2 pour la construction des valves hydrauliques. (Confirmation à la fiche téchnique de la valve) Le client est responsable pour l'implementation et l' opération des nos valves après les principalees mentionné ci-dessus et l'adherence des conditions de l'operation sous "Specifications" des chaque fiche technique.

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung

Products with hydraulic datas in italic letters are in preparation

Les produits avec caractéristiques en italique sont en préparation

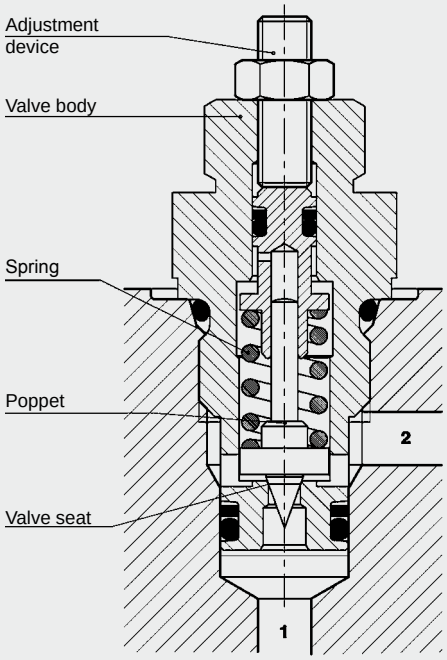


Up to 15 l/min
Up to 350 bar

Pressure Relief Valve Poppet Type, Direct-Acting Metric Cartridge – 350 bar

DB3E

FUNCTION



The pressure relief valve DB3E is a direct-acting, spring-loaded poppet valve. Its function is to relieve pressure in the system. The spring exerts a force on the poppet and presses it on the valve seat. On the opposite side, the system pressure exerts force on port 1 of the valve. If the hydraulic pressure is below the pre-set spring tension, the valve is closed. Only if the hydraulic force exceeds the pre-set spring tension does the valve open and flow is diverted to tank via port 2.

Important: Pressures at port 2 are additive to the opening pressure!
If the connections are incorrect or if the pressure has been set above the operating pressure, the safety function of the valve is disabled.

FEATURES

- Low hysteresis and accurate pressure control
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Adjustable throughout flow range
- Various pressure ranges up to 350 bar
- Guided poppet

SPECIFICATIONS

Operating pressure:	max. 350 bar max. 100 bar at port 2 (tank)	
Nominal flow:	15 l/min	
Operating pressure ranges:	5 to 50 bar 10 to 100 bar 10 to 250 bar 20 to 350 bar	
Leakage:	leakage-free	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	Hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +100 °C)
	Back-up rings:	PTFE
Cavity:	05220	
Weight:	0.053 kg	

MODEL CODE

DB3E – 02 X – 350 V 250

Basic model
Pressure relief valve, metric

Type
02 = standard

Series
(determined by manufacturer)

Pressure setting range
30 = up to 30 bar
100 = up to 100 bar
250 = up to 250 bar
350 = up to 350 bar
Other pressure ranges on request

Type of adjustment
V = Allen head (standard)
F = fixed setting, cannot be adjusted
P = can be lead-sealed, adjustable with tool
Other types of adjustment on request

Opening pressure setting
No details.= no setting, spring relaxed
250 = opening pressure in bar pre-set by manufacturer
Setting on request

Standard models

Model code	Part No.
DB3E-02X-50V	716125
DB3E-02X-100V	716147
DB3E-02X-250V	716146
DB3E-02X-350V	397405

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R05220-01X-01	277372	Steel, zinc-plated	G3/8	420 bar

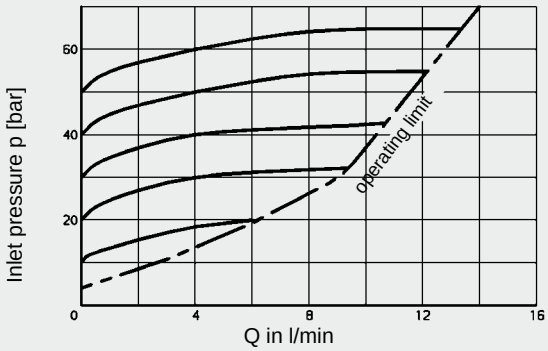
Other line bodies on request

Seal kits

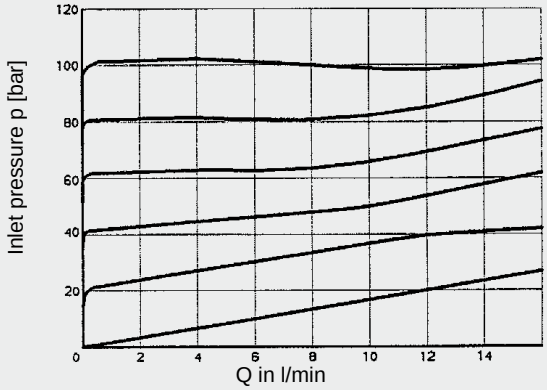
Code	Part No.
SEAL KIT DB3E...FKM	715797

PERFORMANCE

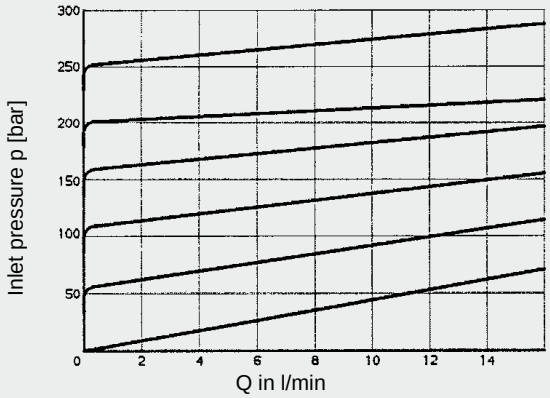
Pressure range ... 50 bar



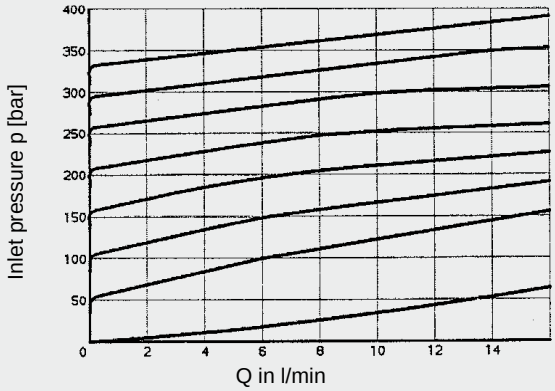
Pressure range ... 100 bar



Pressure range ... 250 bar

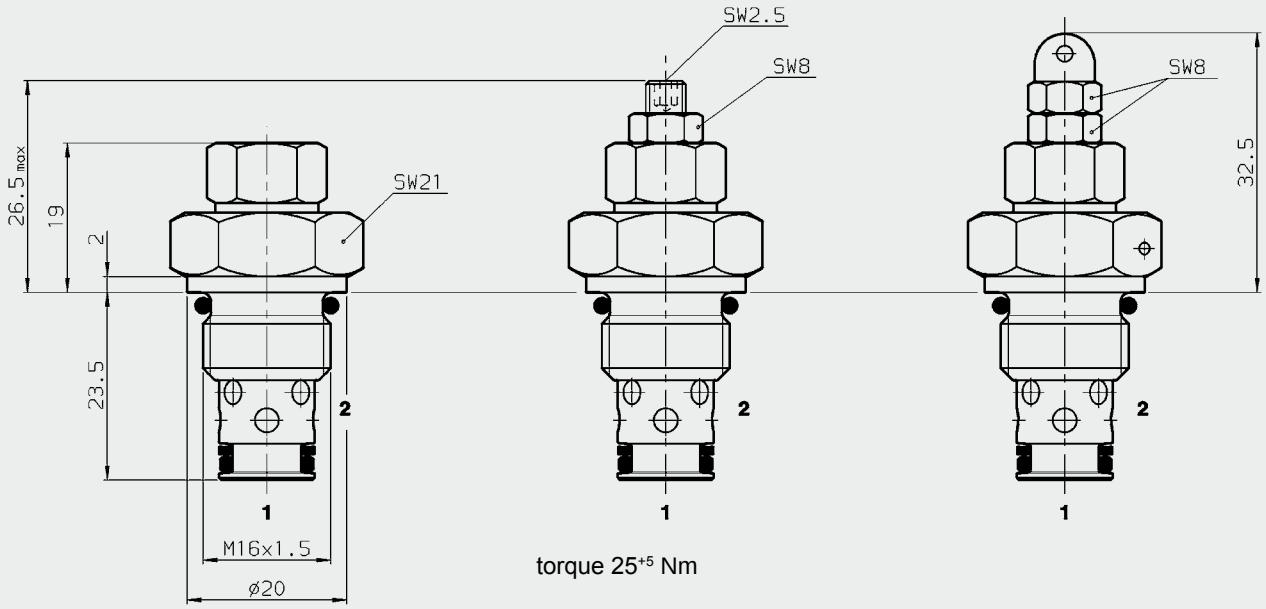


Pressure range ... 350 bar



DIMENSIONS

Type of adjustment F V P

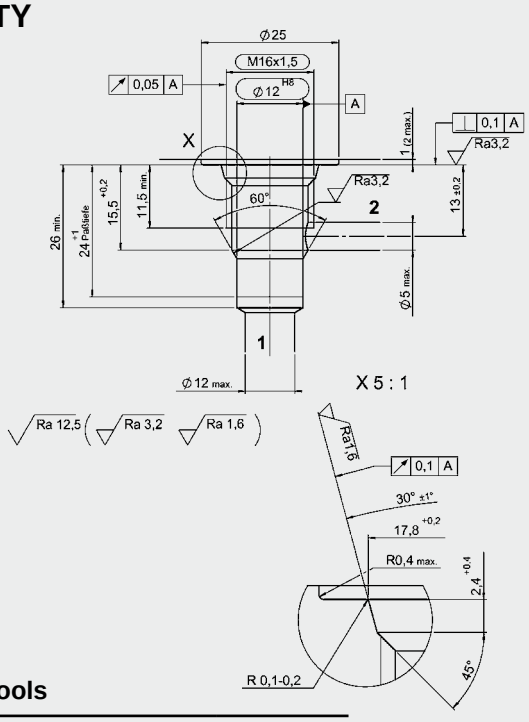


torque 25^{+5} Nm

Millimeter
Subject to technical modifications

CAVITY

05220



Form tools

Tool	Part No.
Countersink	170040
Reamer	1014203
Tap	1002605
Plug gauge	172827

Millimeter
Subject to technical modifications

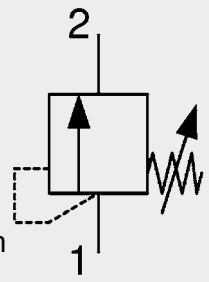
NOTE

The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDACFluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

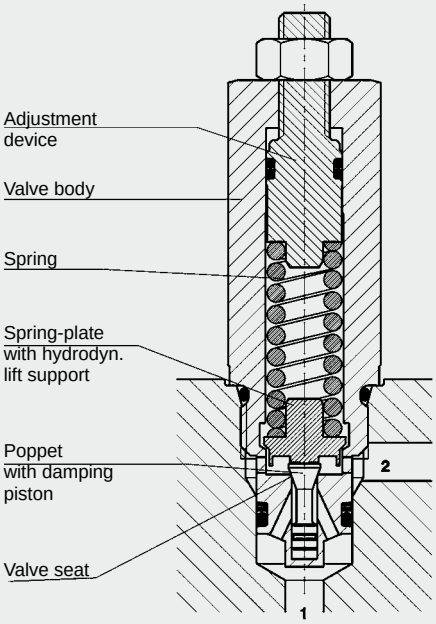
Pressure Relief Valve Poppet Type, Direct-Acting Metric Cartridge – 360 bar

DB4E-CE + TÜV Type Approved



Up to 28 l/min
Up to 360 bar

FUNCTION



The pressure relief valve DB4E-CE is a direct-acting, spring-loaded poppet valve with CE mark and TÜV SV approval. The spring exerts a force on the poppet and presses it on the valve seat. If the hydraulic pressure is below the pre-set spring tension, the valve is closed. Only if the hydraulic force exceeds the pre-set spring tension does the valve open and flow is diverted to tank via port 2. This continues until the system pressure is equal to the spring tension and the valve closes again.

Caution: The valve DB4E-CE is classified as a safety valve according to PED and AD 2000. Always follow the operating instructions supplied with the valve!
The key points are stated below:

– Tank pressure (port 2) must be $p_{2\ max}$ = 0 bar!
– If the connections are incorrect, the safety function of the valve is disabled!
– The pressure setting must not be altered!
– The valve must not be tampered with!

FEATURES

- CE valve according to Pressure Equipment Directive (PED) 97/23/EC
- Excellent stability throughout flow range
- Low hysteresis and accurate pressure control
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop by CFD optimized flow path
- Various pressure ranges up to 360 bar
- TÜV type approved

SPECIFICATIONS

Operating pressure:	max. 360 bar max. 0 bar at port 2 (tank)
Nominal flow:	28 l/min
Control accuracy:	+/- 10%
Operating pressure ranges:	2 to 150 bar 30 to 250 bar 39 to 360 bar
Leakage:	leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)
Media operating temperature range:	min. -20 °C to max. +80 °C
Ambient temperature range:	min. -20 °C to max. +80 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Installation:	No orientation restrictions
Materials:	Valve body: high tensile steel Piston: hardened and ground steel Seals: FKM (standard) Back-up rings: PTFE
Cavity:	06020
Weight:	0.14 kg

MODEL CODE

DB4E – 013 – CE1637.ENISO4126.4L. 11. 280

Basic model
Pressure relief valve
with CE mark

Series
(determined by manufacturer)

Type approval code
CE to ENISO 4126.4L

Max. permitted flow rate
11 = 11 l/min
Rate depends on the pressure range
(see performance curves)

Opening pressure setting
280 = 280 bar, opening pressure in bar, factory-set
(See Application Range chart)

Standard models

Model code	Part No.
DB4E-013-CE1637.ENISO4126.4L.13.100	3108508
DB4E-013-CE1637.ENISO4126.4L.15.140	3108511
DB4E-013-CE1637.ENISO4126.4L.18.160	3108513
DB4E-013-CE1637.ENISO4126.4L.24.200	3108517
DB4E-013-CE1637.ENISO4126.4L.20.250	3108519
DB4E-013-CE1637.ENISO4126.4L.16.350	3108568

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G3/8	420 bar

Other line bodies on request

Seal kits

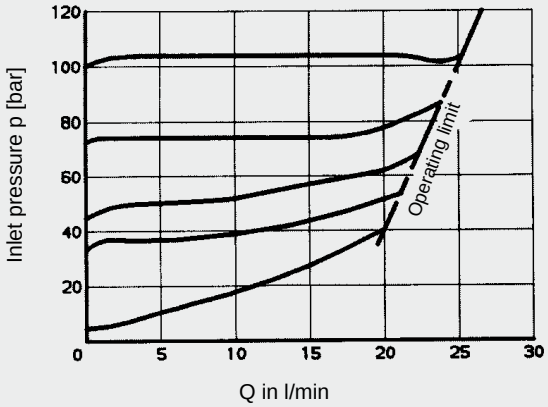
Code	Part No.
SEAL KIT 06020-FKM	3262477

DOCUMENTATION

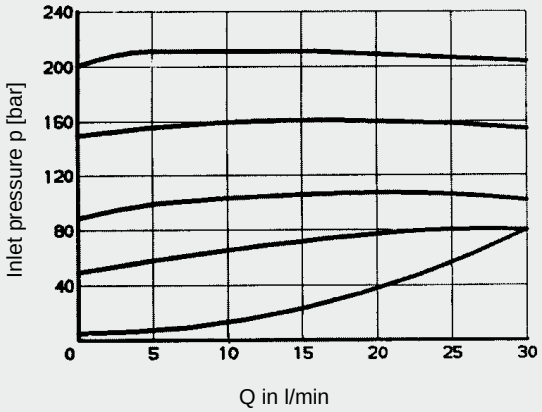
Each valve is supplied with an Operating Manual in accordance with the Pressure Equipment Directive.

PERFORMANCE

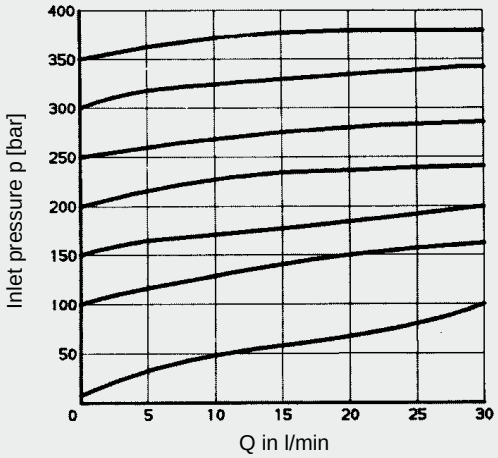
Pressure range ... 100 bar



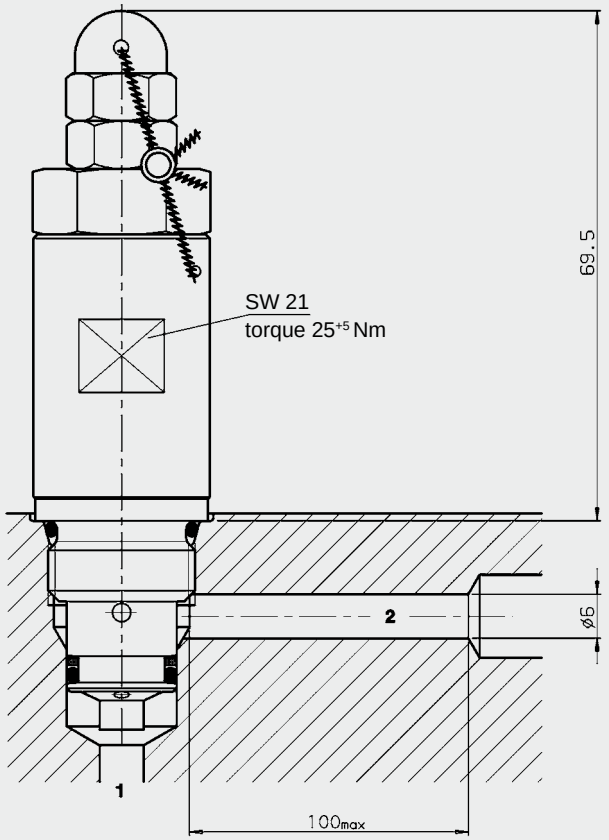
Pressure range ... 200 bar



Pressure range ... 360 bar

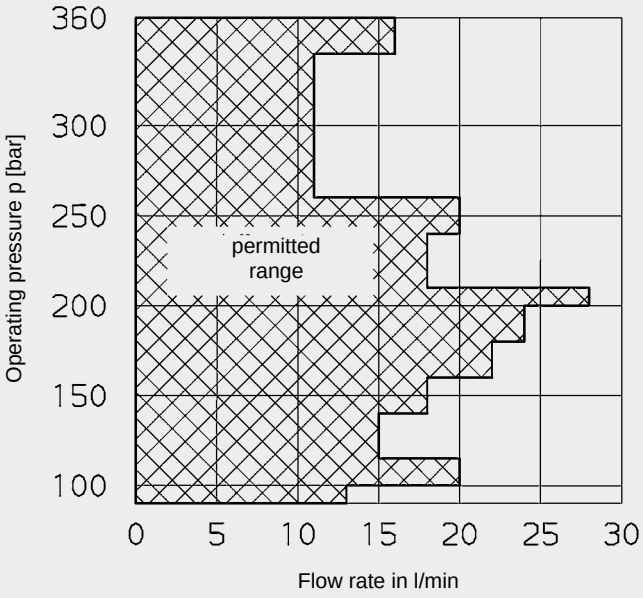


DIMENSIONS



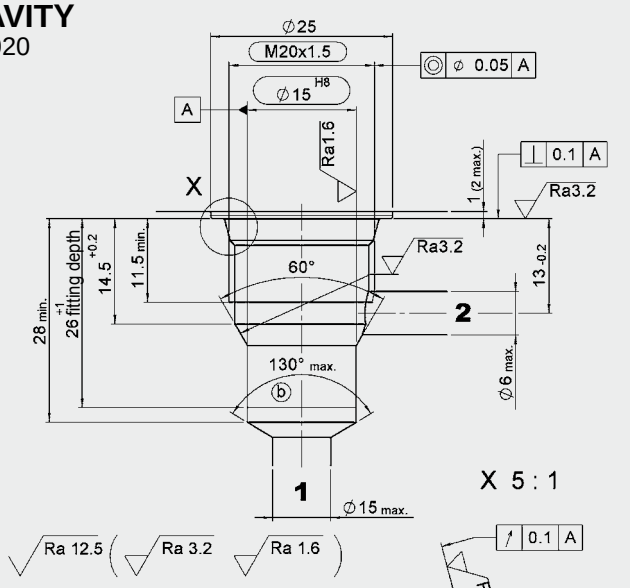
Millimeter
Subject to technical modifications

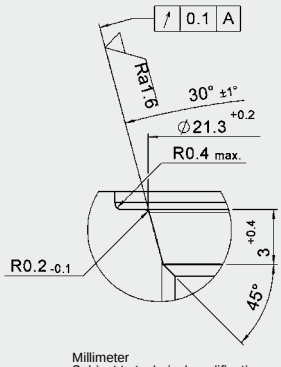
APPLICATION RANGE



CAVITY

06020





Millimeter
Subject to technical modifications

Form tools

Tool	Part No.
Countersink	170033
Reamer	1000768
Tap	1002648
Plug gauge	168840

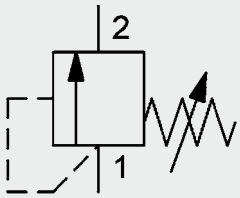
NOTE

The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

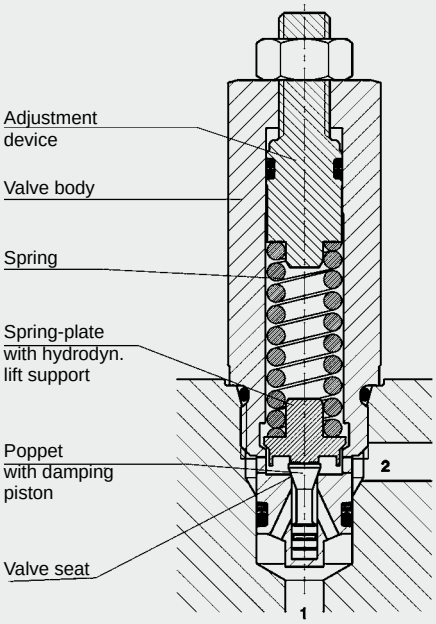
Pressure Relief Valve Poppet Type, Direct-Acting Metric Cartridge – 630 bar

DB4E



Up to 30 l/min
Up to 630 bar

FUNCTION



The pressure relief valve DB4E is a direct-acting, spring-loaded poppet valve. Its function is to relieve pressure in the system. The spring exerts a force on the poppet and presses it onto the valve seat. If the hydraulic pressure is below the pre-set spring tension, the valve is closed. When the hydraulic force exceeds the pre-set spring tension, the valve opens and allows flow to the tank via port 2

Important: Pressures at port 2 are additive to the opening pressure! If the connections are incorrect or if the pressure has been set above the operating pressure, the safety function of the valve is disabled.

To ensure that stable operation is maintained, the poppet is securely located in the damping piston which produces a damping force, opposing the direction of movement, and this has a stabilizing effect.

FEATURES

- Excellent stability throughout the entire flow range
- Low hysteresis and accurate pressure control
- External surfaces zinc-plated
- Hardened and ground valve components to ensure minimal wear and extended service life
- Low pressure drop by CFD optimized flow path
- Adjustable throughout flow range
- Various pressure ranges up to 630 bar

SPECIFICATIONS

Operating pressure:	max. 630 bar max. 100 bar at port 2 (tank)	
Nominal flow:	30 l/min	
Operating pressure ranges:	4 to 30 bar 10 to 100 bar 10 to 200 bar 10 to 250 bar 20 to 350 bar 30 to 630 bar	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +100 °C)
	Back-up rings:	PTFE
Cavity:	06020	
Weight:	0.14 kg	

MODEL CODE

DB4E – 01 X – 350 F 315

Basic model
Pressure relief valve, metric

Type
01 = standard

Series
(to be determined by manufacturer)

Setting pressure range
30 = to 30 bar
100 = to 100 bar
200 = to 200 bar
250 = to 250 bar
350 = to 350 bar
630 = to 630 bar
Other pressure ranges on request

Type of adjustment
V = Allen head (standard)
F = fixed setting, cannot be adjusted
P = can be lead-sealed, adjustable with tool
M = maximum pressure relief, adjustable with tool
S = scaled knob, adjustable by hand
Other types of adjustment on request

Opening pressure setting
No details = no setting , spring relaxed
315 = opening pressure in bar, factory pre-set, Setting on request

Standard models

Code	Part No.
DB4E-01X-30V	716000
DB4E-01X-100V	716001
DB4E-01X-200V	716002
DB4E-01X-250V	716143
DB4E-01X-350V	716003
DB4E-01X-630V	716004

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G 3/8	420 bar

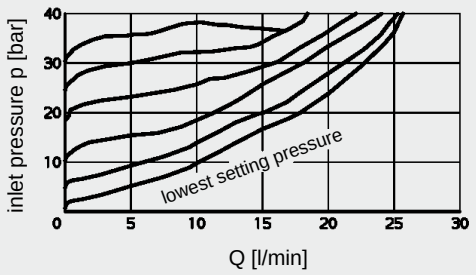
Other line bodies on request

Seal kits

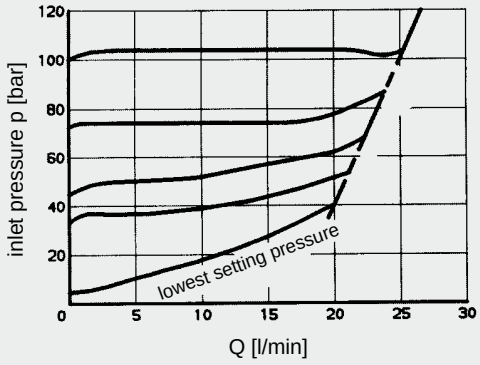
Code	Part No.
SEAL KIT 06020-FKM	3262477
SEAL KIT 06020-NBR	3119017

PERFORMANCE

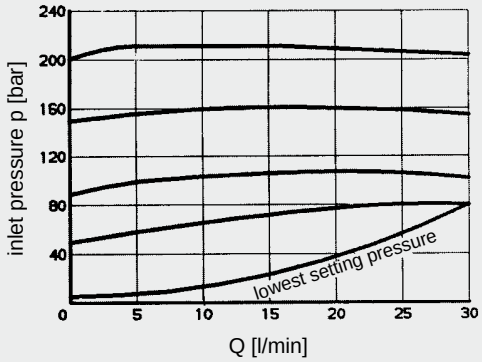
Pressure range ... 30 bar



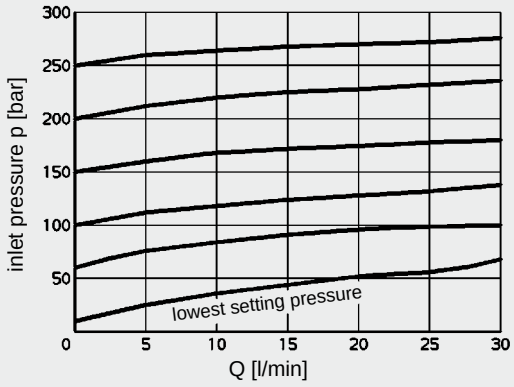
Pressure range ... 100 bar



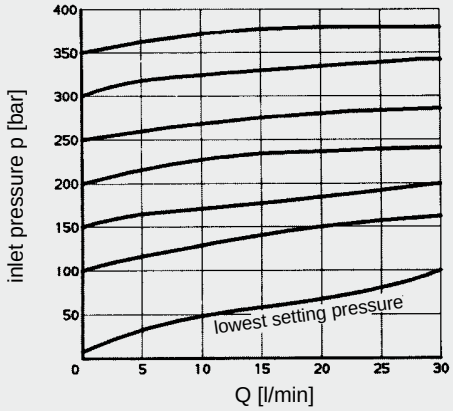
Pressure range ... 200 bar



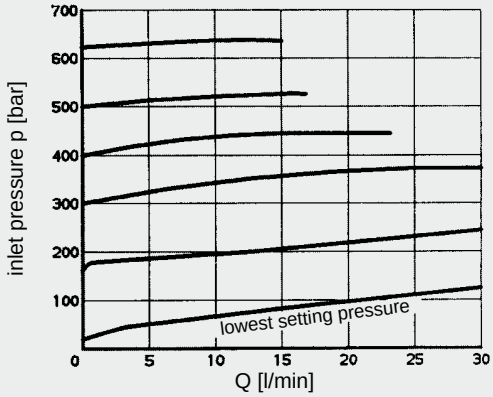
Pressure range ... 250 bar



Pressure range ... 350 bar

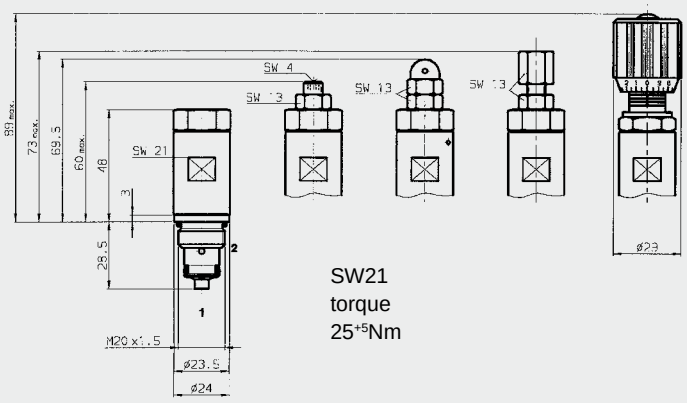


Pressure range ... 630 bar



DIMENSIONS

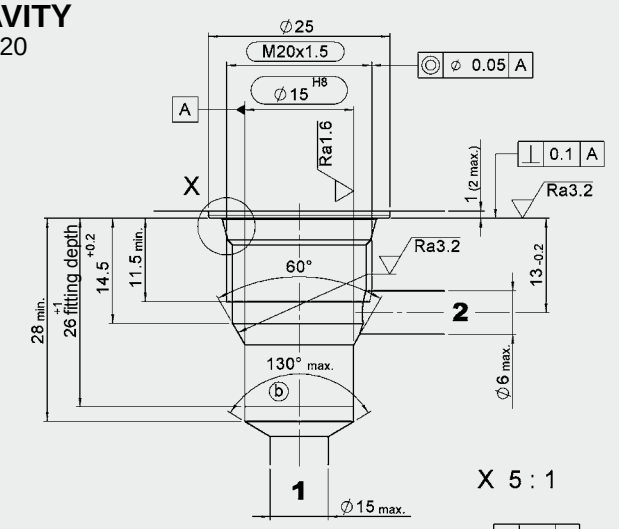
Type of adjustment

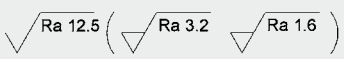


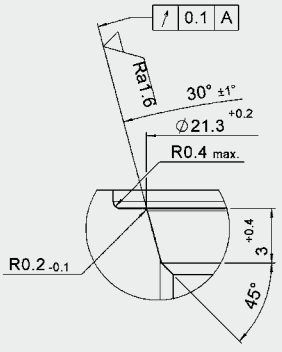
SW21
torque
25^{+5}Nm

Millimeter
Subject to technical modifications

CAVITY
06020







Millimeter
Subject to technical modifications

Form tools

Tool	Part No.
Countersink	170033
Reamer	1000768
Tap	1002648
Plug gauge	168840

NOTE

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For applications or operating conditions not described, please contact the relevant technical department.
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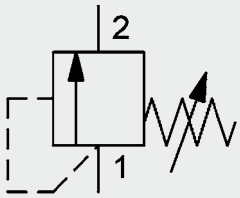
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

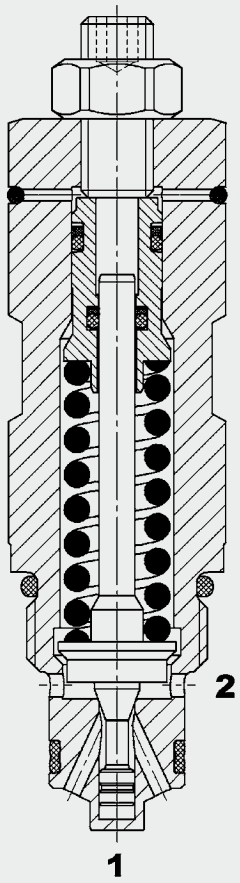
Pressure Relief Valve Poppet Type, Direct-Acting with Atmospheric Relief Metric Cartridge – 350 bar

DB4E-25X



Up to 30 l/min
Up to 350 bar

FUNCTION



The pressure relief valve DB4E-25X is a direct-acting, spring-loaded poppet valve with atmospheric relief.The spring exerts a force on the poppet and presses it on the valve seat. On the opposite side, the system pressure exerts force on port 1 of the valve. If the hydraulic pressure is below the pre-set spring tension, the valve is closed. When the hydraulic force exceeds the pre-set spring tension the valve opens and allows flow to tank via port 2. This continues until the system pressure is equal to the spring tension and the valve closes again.

The pressures at port 2 have practically no effect on the opening pressure as the valve is vented to atmosphere in the spring chamber.

To ensure that stable operation is maintained, the poppet is securely located in the damping piston which produces a damping force, opposing the direction of movement, and this has a stabilizing effect.

FEATURES

- Excellent stability throughout flow range
- Low hysteresis and accurate pressure control
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground valve components to ensure minimal wear and extended service life
- Adjustable throughout flow range
- Various pressure ranges up to 350 bar
- Pressure-resistant up to 350 bar at port 2

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	30 l/min	
Pressure setting ranges:	20 to 350 bar	
Leakage:	leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +100 °C)
	Seal ring:	PU
Cavity:	06020	
Weight:	0.24 kg	

MODEL CODE

DB4E – 25 X – 350 F 315

Basic model
Pressure relief valve, metric

Type
25 = standard with atmospheric relief

Series
(determined by manufacturer)

Pressure setting range
350 = up to 350 bar
Other pressure ranges on request

Type of adjustment
V = Allen head (standard)
F = fixed setting, cannot be adjusted
P = can be lead-sealed, adjustable with tool
M = maximum pressure relief, adjustable with tool
Other types of adjustment on request

Opening pressure setting
No details = no setting, spring relaxed
315 = opening pressure in bar, factory pre-set, Setting on request

Standard models

Code	Part No.
DB4E-25X-350V	3475344

Other models on request

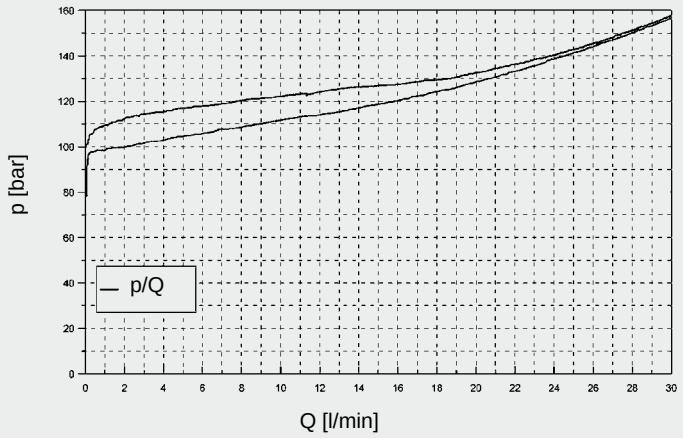
Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G 3/8	420 bar

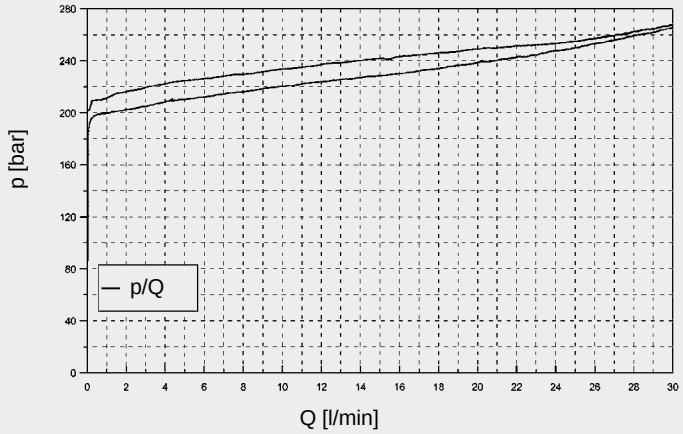
Other line bodies on request

PERFORMANCE

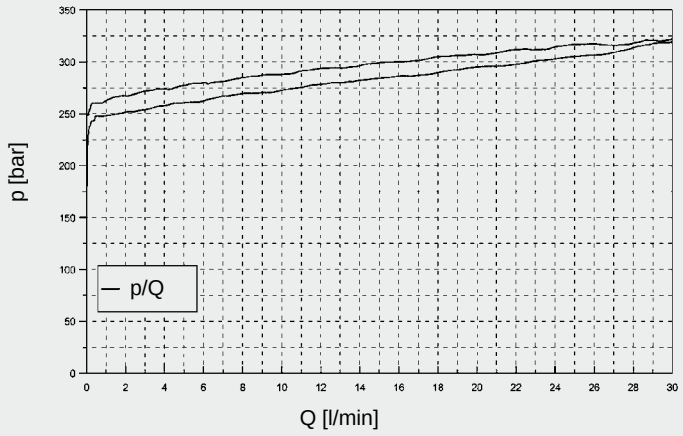
p_o = 100 bar, tank pressure = 100 bar, ν = 33 mm²/s



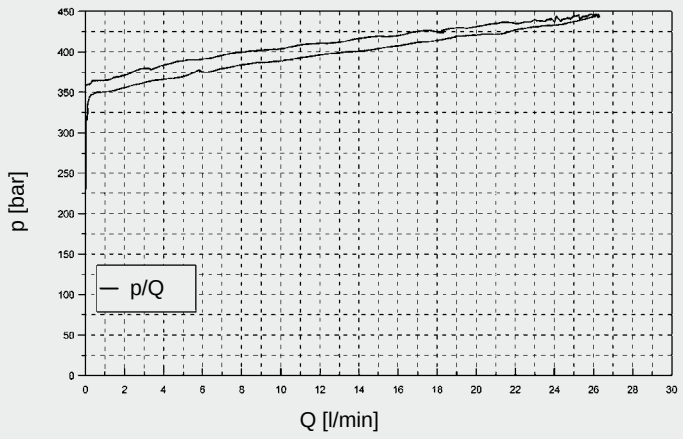
p_o = 200 bar, tank pressure = 200 bar, ν = 33 mm²/s



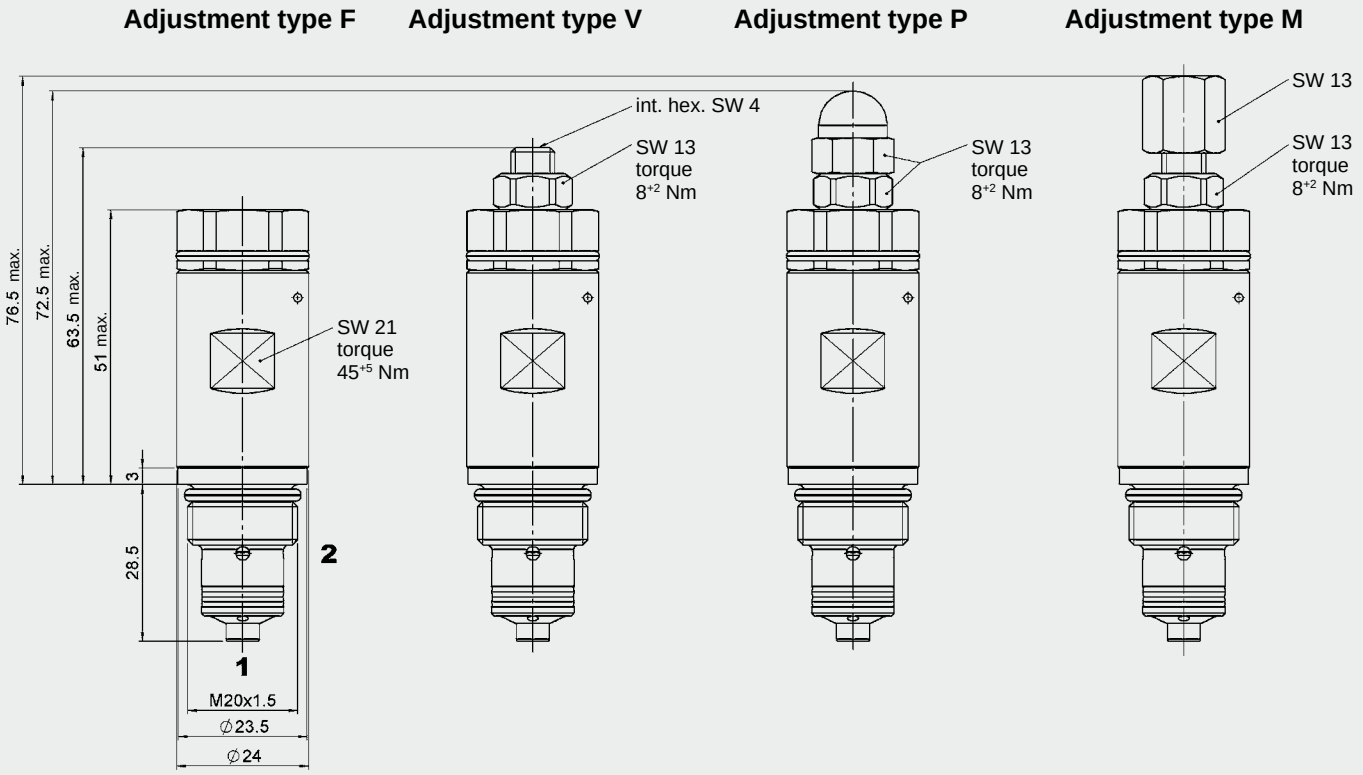
p_o = 250 bar, tank pressure = 250 bar, ν = 33 mm²/s



p_o = 350 bar, tank pressure = 350 bar, ν = 33 mm²/s

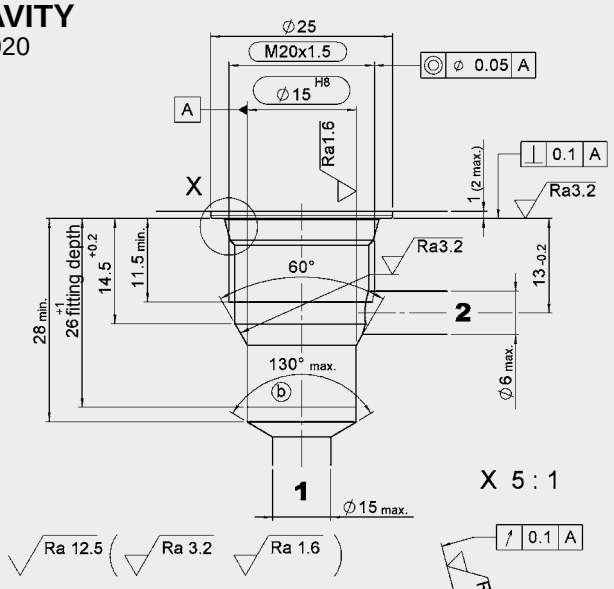


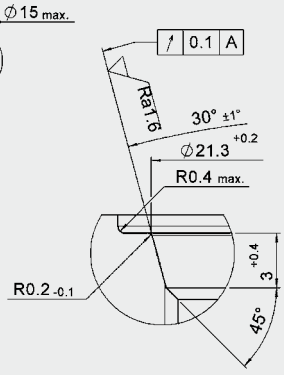
DIMENSIONS



Millimeter
Subject to technical modifications

CAVITY
06020





Millimeter
Subject to technical modifications

Form tools

Tool	Part No.
Countersink	170033
Reamer	1000768
Tap	1002648
Plug gauge	168840

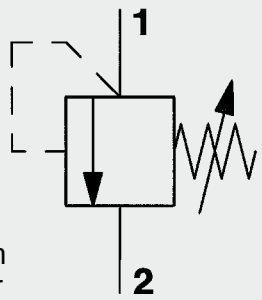
NOTE

The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

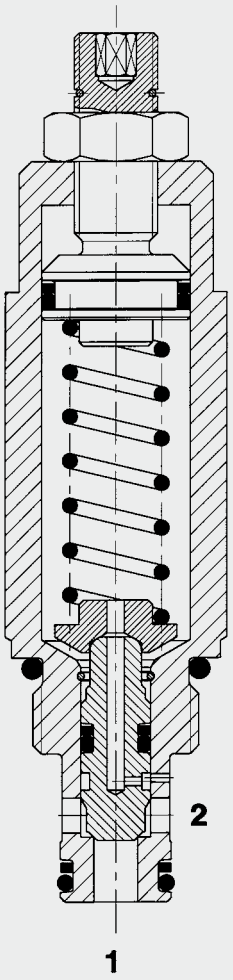
Pressure Relief Valve Poppet Type, Direct-Acting SAE-8 Cartridge – 420 bar DB08A-01

UNF



38 l/min
420 bar

FUNCTION



The pressure relief valve DB08A is a direct-acting, spring-loaded poppet valve. Its function is to relieve pressure in the system. The spring exerts a force on the poppet and presses it on the valve seat. On the opposite side, the system pressure exerts force on port 1 of the valve. Only if the hydraulic force exceeds the pre-set spring tension does the valve open and flow is diverted to tank via port 2. This continues until the system pressure is equal to the spring tension and the valve closes again. Important: Pressures at port 2 are additive to the opening pressure!

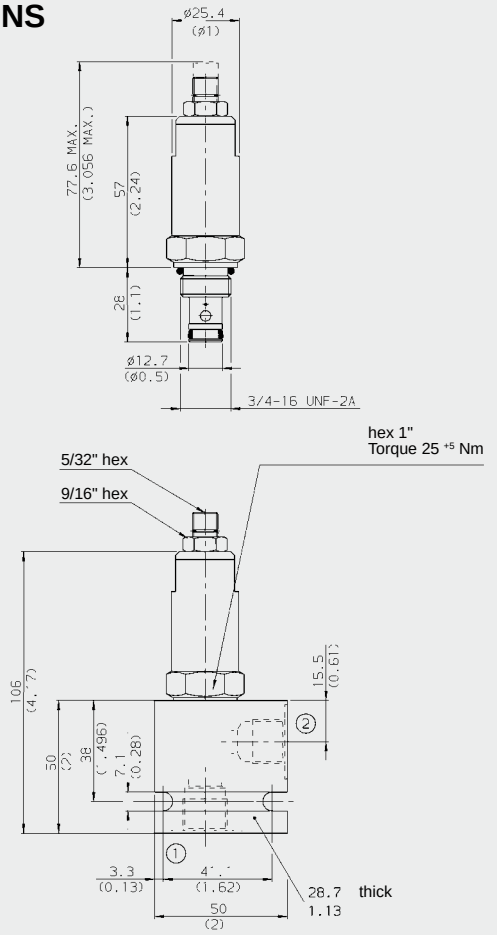
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Max. stroke limiter
- Adjustable throughout flow range
- Optional spring ranges up to 420 bar
- Quick response
- Compact design
- Hardened and ground internal valve components to ensure minimal wear and extended service life

SPECIFICATIONS

Operating pressure:	max. 420 bar	
Nominal flow:	max. 38 l/min	
Operating pressure ranges:	up to 35 bar up to 62 bar up to 124 bar up to 228 bar up to 345 bar up to 420 bar	
Leakage:	leak-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	FC08-2	
Weight:	0.22 kg	

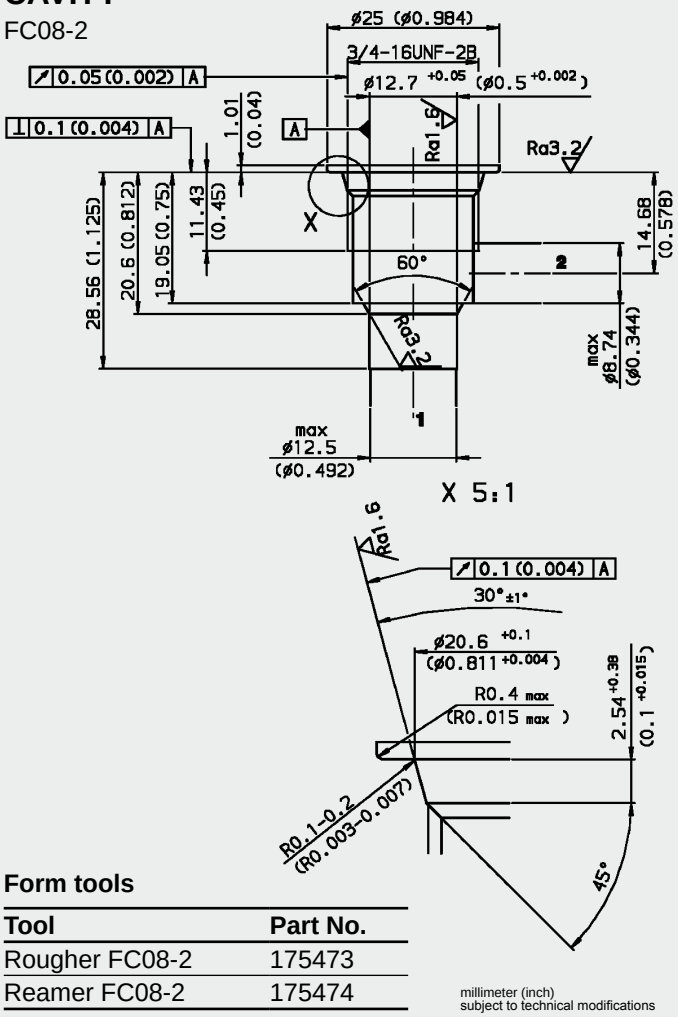
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-2



Form tools

Tool	Part No.
Rougher FC08-2	175473
Reamer FC08-2	175474

millimeter (inch)
subject to technical modifications

MODEL CODE

DB08A-01 – C – N – 330 V 300

Basic model
Pressure relief valve, UNF

Body and ports*
C = Cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR
V = FKM

Setting pressure range
050 = to 35 bar (500 PSI)
090 = to 62 bar (900 PSI)
180 = to 124 bar (1800 PSI)
330 = to 228 bar (3300 PSI)
500 = to 345 bar (5000 PSI)
600 = to 420 bar (6000 PSI)
Other pressure ranges on request

Adjustment option
V = Allen head (hex 5/32")
H = Knob adjustment
F = Factory preset, non adjustable

Opening pressure setting
No details = no setting, spring relaxed
... = opening pressure in bar pre-set by manufacturer
Setting on request

Standard models

Model code	Part No.
DB08A-01-C-V-50V	560416
DB08A-01-C-V-90V	560417
DB08A-01-C-V-1800V	560418
DB08A-01-C-V-330V	560419
DB08A-01-C-V-500V	560420
DB08A-01-C-V-600V	560421

*Standard in-line bodies

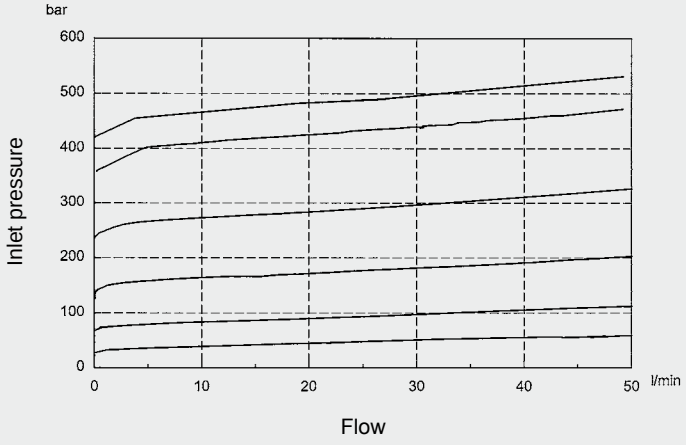
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

Seal kits

Code	Material	Part No.
FS082-N Seal Kit	NBR	3033920
FS082-V Seal Kit	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



Note

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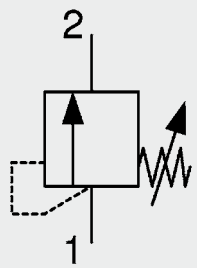
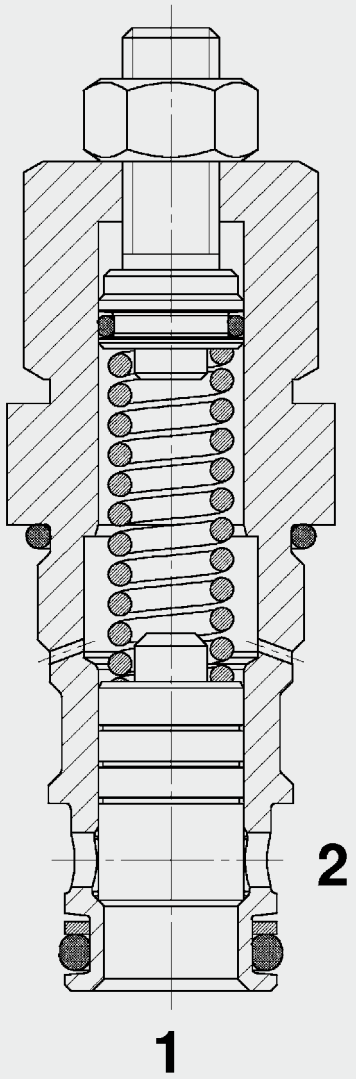
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



60 l/min
48 bar

Pressure Relief Valve Poppet Type, Direct Acting Metric Cartridge – 48 bar DB10120A-13X

FUNCTION



The pressure relief valve DB10120A-13X is a direct-acting, spring-loaded poppet valve. If the hydraulic pressure is below the pre-set spring tension, the valve is closed. If the hydraulic pressure exceeds the pre-set spring tension, the valve opens and the oil can flow to tank via port 2

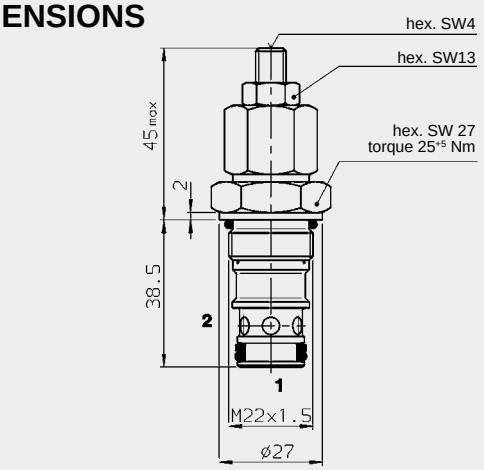
FEATURES

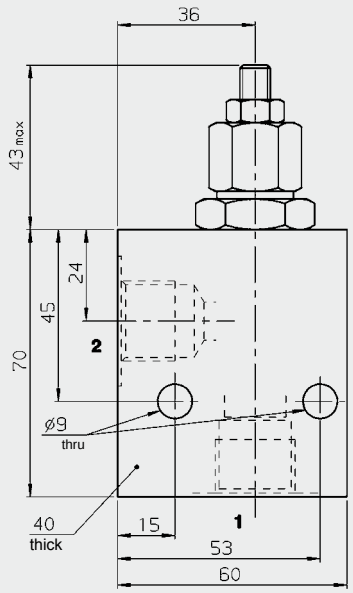
- Characteristics designed for low pressure applications up to max. 50 bar
- Excellent stability throughout the entire flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground valve components to ensure minimal wear and extended service life
- Adjustable throughout flow range
- Various pressure ranges up to 48 bar

SPECIFICATIONS

Operating pressure:	0 to max. 48 bar, adjustable	
Nominal flow:	max. 60 l/min	
Operating pressure:	up to 11 bar up to 29 bar up to 34 bar up to 48 bar	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range	min. 2.8 mm²/s to max. 380 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	high tensile steel
	Poppet:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +100 °C)
	Back-up rings:	PTFE
Cavity:	10120A	
Weight:	0.13 kg	

DIMENSIONS

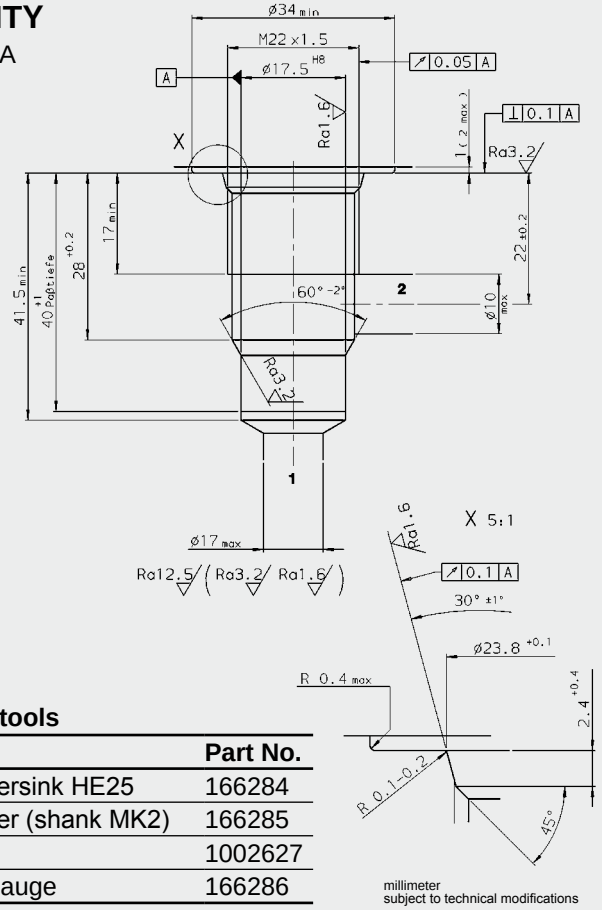




millimeter
subject to technical modifications

CAVITY

10120A



millimeter
subject to technical modifications

Form tools

Tool	Part No.
Countersink HE25	166284
Reamer (shank MK2)	166285
Tap	1002627
Plug gauge	166286

MODEL CODE

DB 10120A – 13 X – 11 V 11

Basic model
Pressure relief valve, metric

Cavity
according to ISO

Type
13 = direct-acting, zinc-plated

Series
(determined by manufacturer)

Operating pressure ranges
11 = 0 to 11 bar
29 = 0 to 29 bar
34 = 0 to 34 bar
48 = 0 to 48 bar

Type of adjustment
V = adjustable using tool
Other types of adjustment on request

Opening pressure setting
No details = No setting, spring relaxed
Other settings on request

Standard models

Model code	Part No.
DB10120A-13X-11V	3028008
DB10120A-13X-29V	3028007
DB10120A-13X-34V	560992
DB10120A-13X-48V	561942

Other models on request

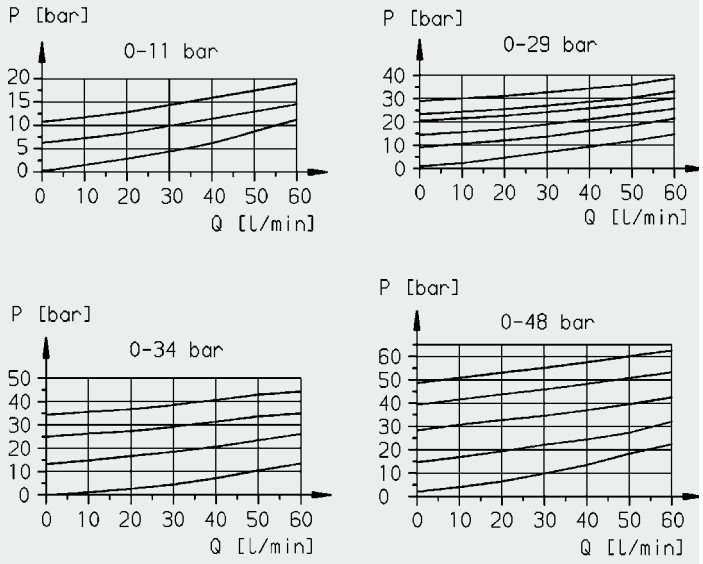
Standard in-line bodies

Code	Part No.	Material	Ports
R10120A-01X-01	395232	Steel, zinc-plated	G1/2
R10120A-01X-02	395233	Steel, zinc-plated	M 22 x 1.5

Seal kits

Code		Material	Part No.
DB10120A...	NBR	NBR	3085499
DN10120A...	FKM	FKM	560222

PERFORMANCE



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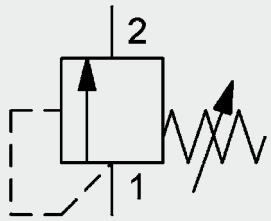
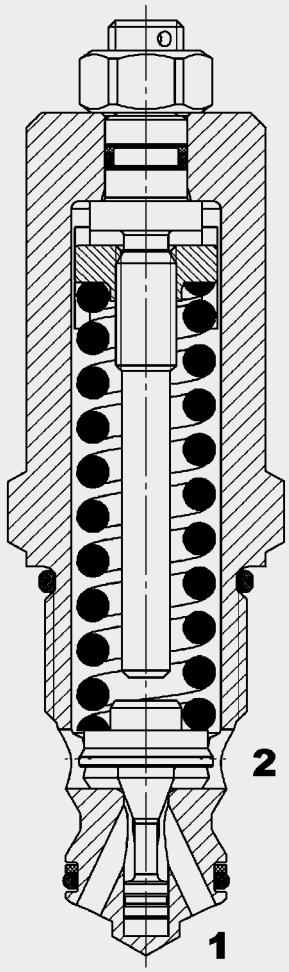
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

Pressure Relief Valve
Poppet Type, Direct-Acting
Metric Cartridge – 420 bar
DB12120A



Up to 120 l/min
Up to 420 bar

FUNCTION



The pressure relief valve DB12120A is a direct-acting, spring-loaded poppet valve. Its function is to relieve pressure in the system. It is normally closed. If the pressure at port 1 exceeds the pre-set spring tension, the poppet is lifted off the seat and oil flows from port 1 to port 2.

This continues until the system pressure is equal to the spring tension and the valve closes again.

Important: Pressures at port 2 are additive to the opening pressure! If the connections are incorrect or if the pressure has been set above the operating pressure, the safety function of the valve is disabled.

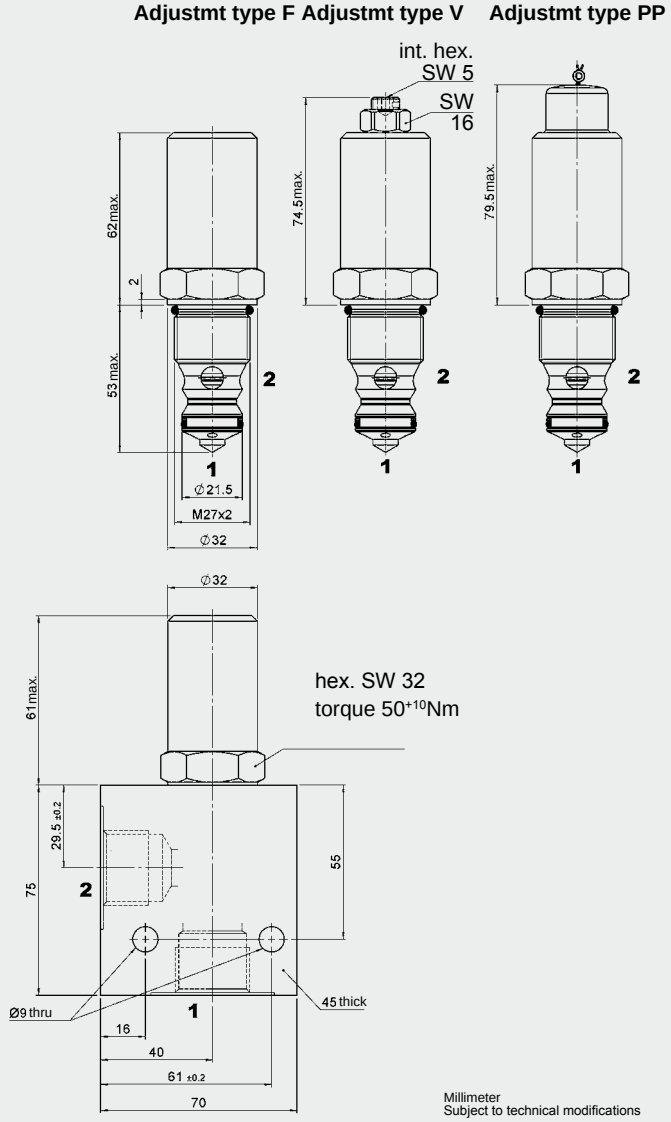
FEATURES

- Excellent stability throughout the entire flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop by CFD optimized flow path
- Various pressure ranges up to 420 bar

SPECIFICATIONS

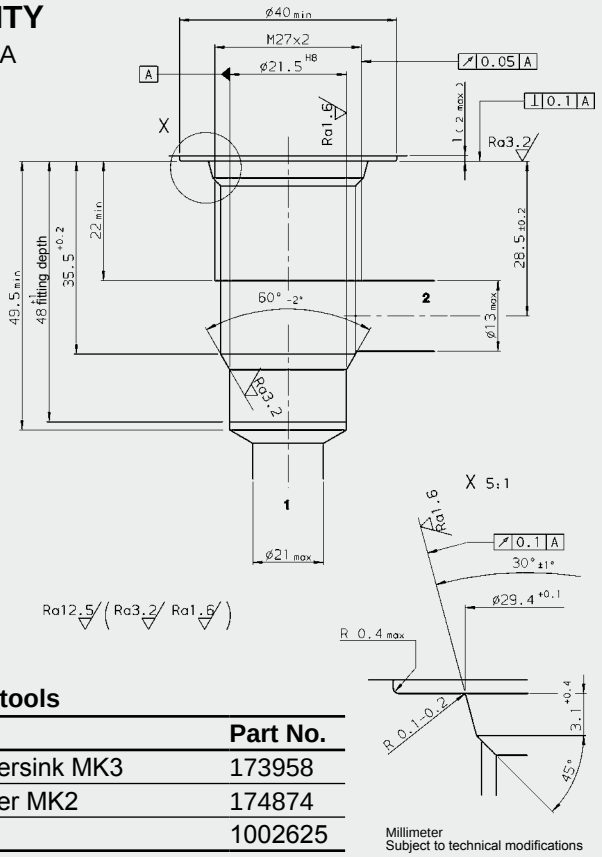
Operating pressure:	max. 420 bar max. 100 bar at port 2 (tank)	
Nominal flow:	max. 120 l/min	
Pressure setting ranges:	5 to 30 bar 30 to 55 bar 55 to 90 bar 10 to 150 bar 10 to 250 bar 10 to 350 bar 10 to 420 bar	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Piston:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +100 °C)
	Back-up rings:	PTFE
Cavity:	12120A	
Weight:	0.42 kg	

DIMENSIONS



CAVITY

12120A



Form tools

Tool	Part No.
Countersink MK3	173958
Reamer MK2	174874
Tap	1002625

MODEL CODE

DB 12120A – 01 X – 250 V 210

Basic model
Pressure relief valve

Cavity to ISO
12120A = 2-way, metric

Type
01 = standard, zinc-plated

Series
(determined by manufacturer)

Pressure setting range
30 = 5 to 30 bar
55 = 30 to 55 bar
90 = 55 to 90 bar
150 = 10 to 150 bar
250 = 10 to 250 bar
350 = 10 to 350 bar
420 = 10 to 420 bar
Other pressure ranges on request

Type of adjustment
V = Allen head
P = can be lead-sealed, adjustable with tool (with plug)
Other types of adjustment on request

Opening pressure setting
No details = no setting, spring relaxed
210 = opening pressure in bar, factory-set
Other pressure settings on request

Standard models

Model code	Part No.
DB12120A-01X-030V	555785
DB12120A-01X-055V	3117096
DB12120A-01X-090V	3494786
DB12120A-01X-150V	552805
DB12120A-01X-250V	552806
DB12120A-01X-350V	552807
DB12120A-01X-420V	552836

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R12120A-01X-01	396489	Steel, zinc-plated	G 3/4	420 bar

Other line bodies on request

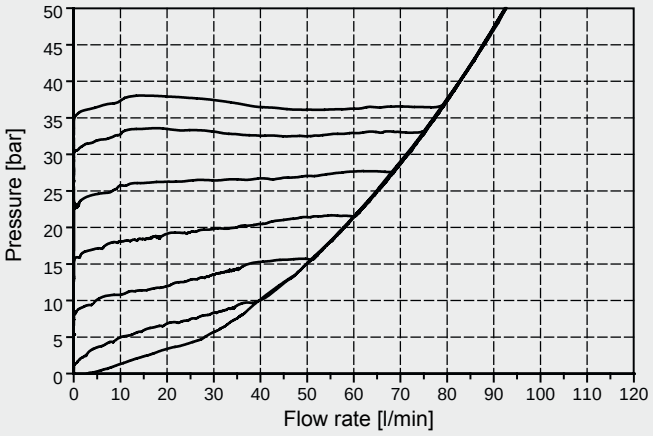
Seal kits

Code	Material	Part No.
SEAL KIT DB12120A-01X-...V	FKM	557399

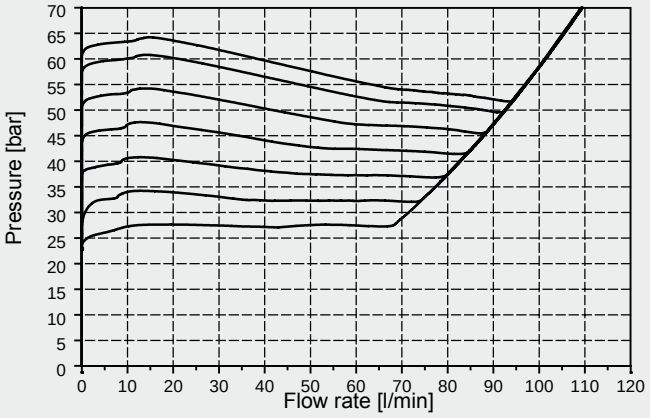
PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C

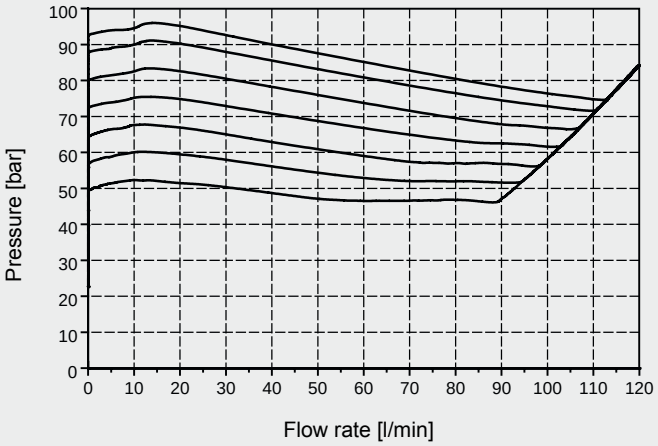
Pressure range ... 30 bar



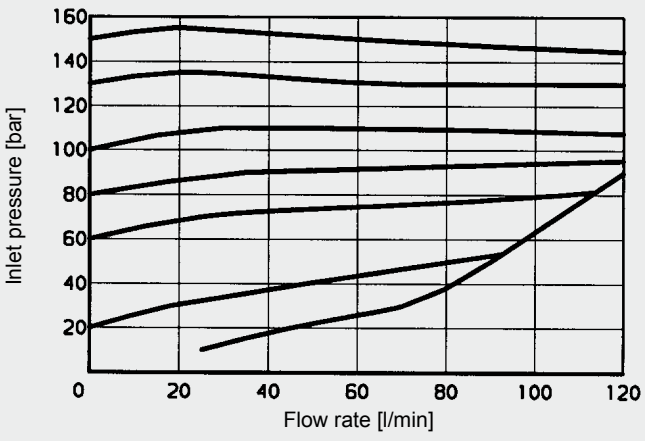
Pressure range ... 55 bar



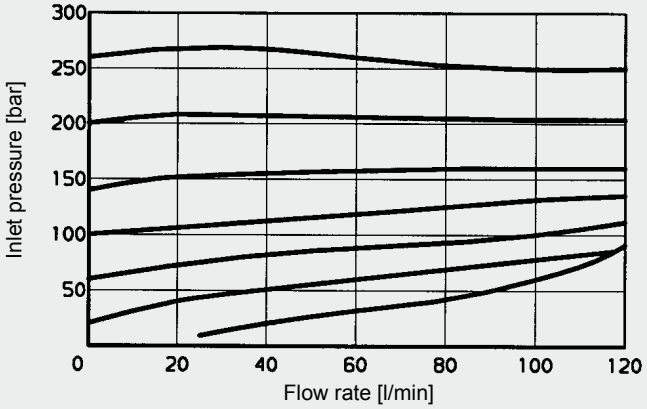
Pressure range ... 90 bar



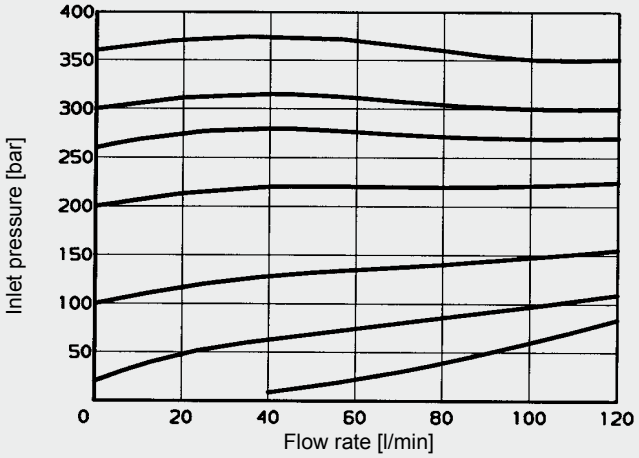
Pressure range ... 150 bar



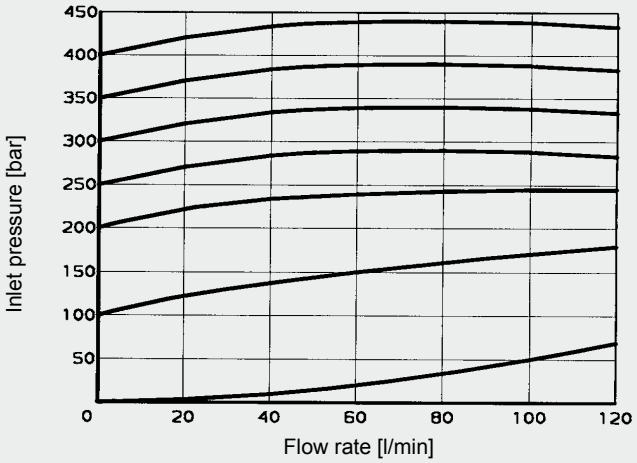
Pressure range ... 250 bar



Pressure range ... 350 bar



Pressure range ... 420 bar



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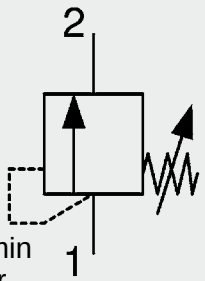
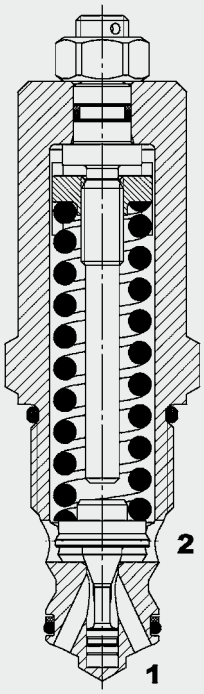
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

Pressure Relief Valve
Poppet Type, Direct-Acting
Metric Cartridge – 400 bar
DB12120A-CE + TÜV Type Approved



Up to 110 l/min
Up to 400 bar

FUNCTION



The pressure relief valve DB12120A-CE is a direct-acting, spring-loaded poppet valve with CE mark and TÜV SV.
Its function is to relieve pressure in the system. The spring exerts a force on the poppet and presses it on the valve seat. If the hydraulic pressure is below the pre-set spring tension, the valve is closed. Only if the hydraulic force exceeds the pre-set spring tension does the valve open and flow is diverted to tank via port 2. To ensure that stable operation is maintained, the poppet is securely located in the damping piston which produces a damping force, opposing the direction of movement, and this has a stabilizing effect.

Caution:
The valve DB12120A-CE is classified as a safety valve according to PED. Always follow the operating instructions supplied with the valve!
The key points are stated below:
– Tank pressure (port 2) must be $p_{2\,max}$ = 0 bar!
– If the connections are incorrect, the safety function of the valve is disabled!
– The pressure setting must not be altered!
– The valve must not be tampered with!

FEATURES

- CE valve according to Pressure Equipment Directive (PED) 97/23/EC
- Excellent stability throughout the entire flow range
- Low hysteresis and accurate pressure control
- External surfaces zinc-plated
- Hardened and ground valve components to ensure minimal wear and extended service life
- Low pressure drop by CFD optimized flow path
- Various pressure ranges up to 400 bar
- TÜV type approved

SPECIFICATIONS

Operating pressure:	max. 400 bar max. 0 bar at port 2 (tank)	
Nominal flow:	max. 110 l/min (depending on the pressure range - see flow curves)	
Pressure setting ranges:	10 to 150 bar 20 to 250 bar 30 to 350 bar 40 to 400 bar	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +80 °C	
Ambient temperature range:	min. -20 °C to max. +80 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard)
	Back-up rings:	PTFE
Cavity:	12120A	
Weight:	0.42 kg	

MODEL CODE

DB12120A – 01 1 – CExxxx.ENISO4126.6L. xxx. xxx

Basic model
Pressure relief valve

Type

Series
(determined by manufacturer)

Type approval code
xxx stands for the identification number of the notified body and CE to EN ISO 4126

Max. permitted flow rate
065 = 65 l/min
Rate depends on the pressure range
(see performance curves)

Opening pressure setting
030 = 30 bar, opening pressure in bar, factory-set
(See Application Range chart)

TYPE APPROVAL CODE

TÜV.SV.XX-981.6.F. XXX. XXX

Type approval code

Year of type approval test

Flow rate (l/min)

Opening pressure setting, bar

Standard models

Model code	Part No.
DB12120A-011-CExxxx.ENISO4126.6L.065.030	3109740
DB12120A-011-CExxxx.ENISO4126.6L.095.100	3108618
DB12120A-011-CExxxx.ENISO4126.6L.110.150	3108621
DB12120A-011-CExxxx.ENISO4126.6L.110.200	3108625
DB12120A-011-CExxxx.ENISO4126.6L.110.250	3108629
DB12120A-011-CExxxx.ENISO4126.6L.110.300	3108632
DB12120A-011-CExxxx.ENISO4126.6L.110.350	3087728
DB12120A-011-CExxxx.ENISO4126.6L.110.400	3108636

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R12120A-01X-01	396489	Steel, zinc-plated	G 3/4	420 bar

Other line bodies on request

Seal kits

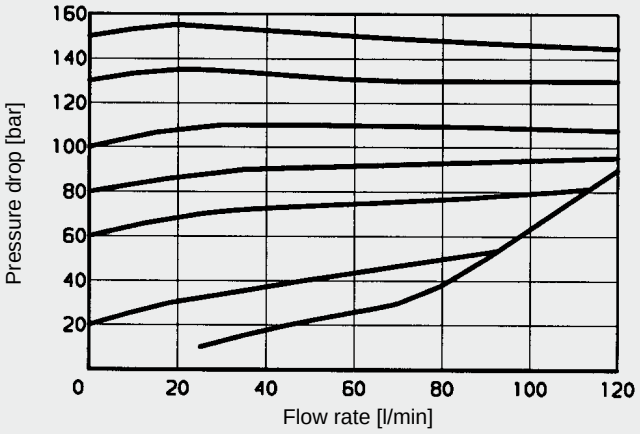
Code	Material	Part No.
SEAL KIT DB12120A-01X-...V	FKM	557399

DOCUMENTATION

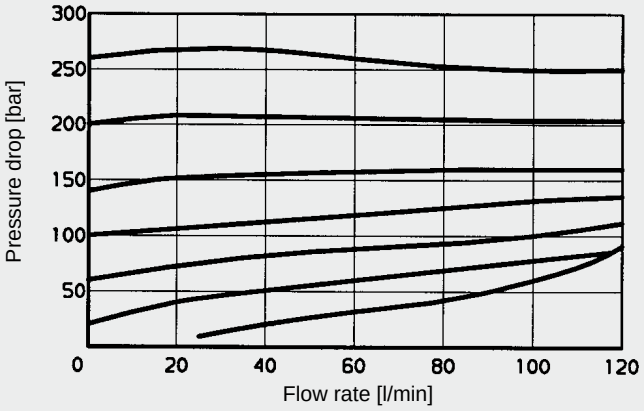
Each valve is supplied with an Operating Manual in accordance with the Pressure Equipment Directive.

PERFORMANCE

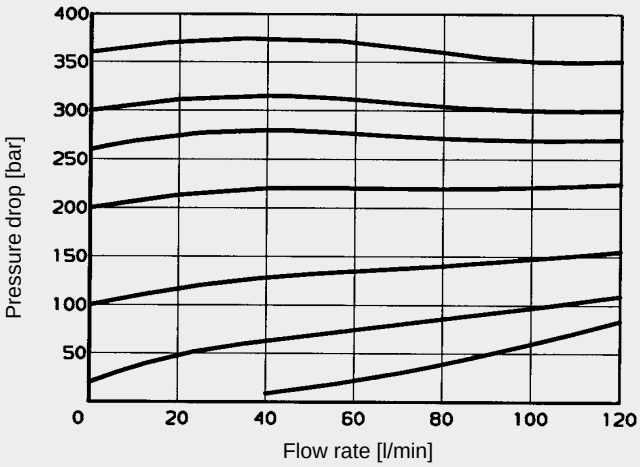
Pressure range ... 150 bar



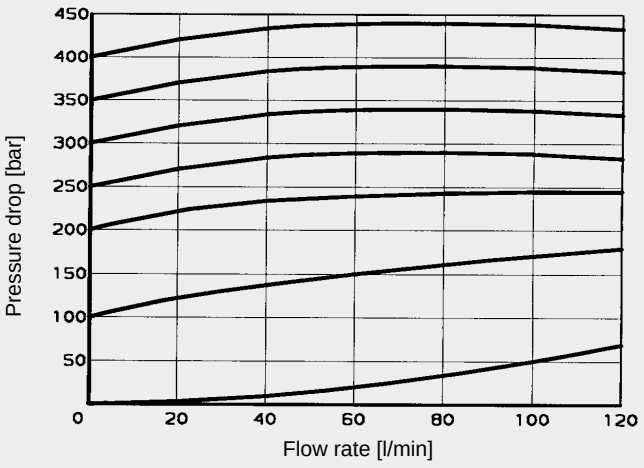
Pressure range ... 250 bar



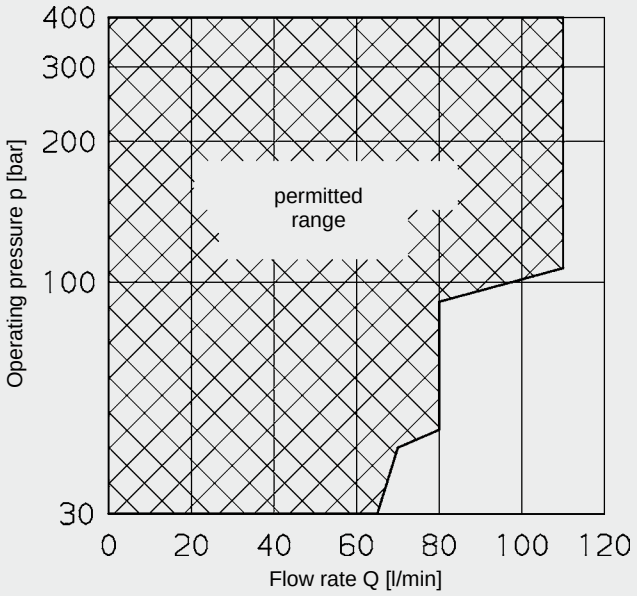
Pressure range ... 350 bar



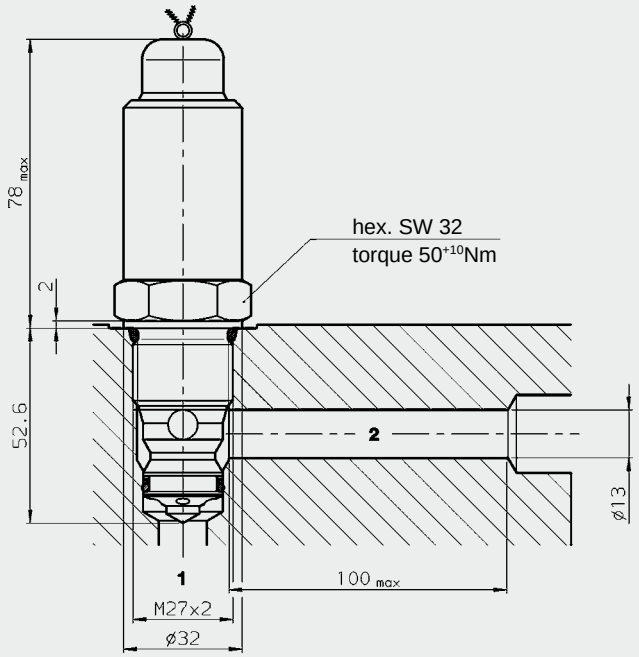
Pressure range ... 400 bar



APPLICATION RANGE



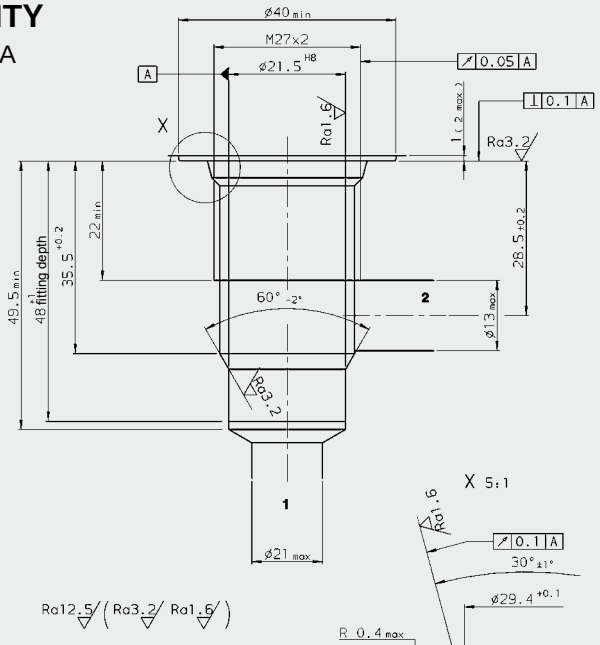
DIMENSIONS

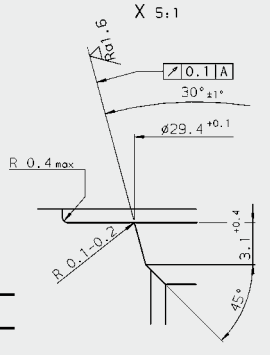


Millimeter
Subject to technical modifications

CAVITY

12120A





Form tools

Tool	Part No.
Countersink	173958
Reamer	174874
Tap	1002625

Millimeter
Subject to technical modifications

NOTE

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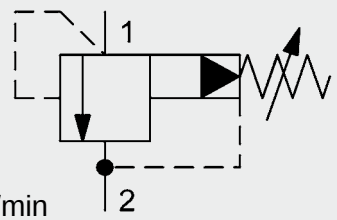
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

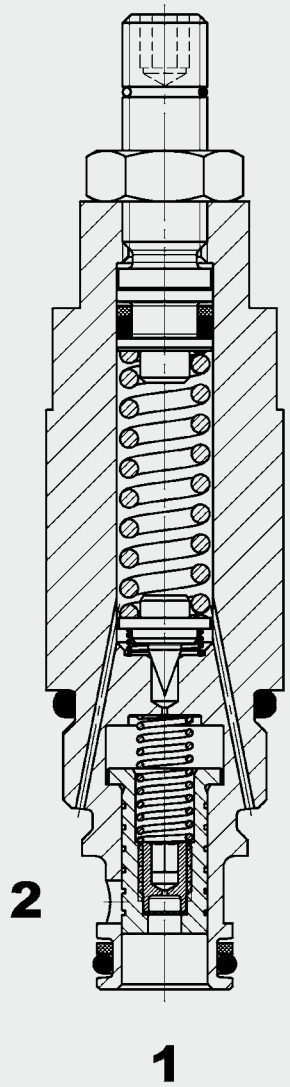
Pressure Relief Valve Spool Type, Pilot-Operated SAE-8 Cartridge – 350 bar DB08P

UNF



60 l/min
350 bar

FUNCTION



The DB08P is a pilot-operated, spool type pressure relief valve. If the pressure at port 1 exceeds the pressure setting, the pilot poppet opens, creating a small flow over the orifice of the pilot stage to the tank. The pressure drop across the orifice lifts the main spool against a light spring, opening the connection between port 1 and port 2.

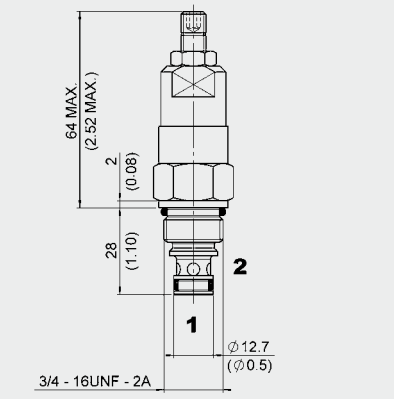
FEATURES

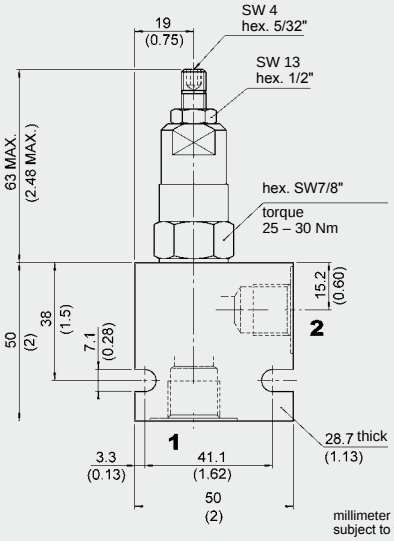
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Excellent stability throughout the entire flow range
- Low pressure drop due to CFD optimized flow path
- Screen protected metering orifice enhances safety
- Optional spring ranges up to 345 bar
- Adjustable throughout flow range
- Quick response
- Compact design

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 60 l/min
Setting pressure ranges:	up to 35 bar up to 60 bar up to 125 bar up to 230 bar up to 345 bar
Internal leakage:	less than 0.5 l/min at 350 bar
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +100 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s
Filtration:	Class 21/19/16 to ISO 4406 or cleaner
Installation:	No orientation restrictions
Materials:	Valve body: free-cutting steel Spool: hardened and ground steel Seals: NBR (standard) FKM (optional, media temperature range -20 °C to 120 °C)
Cavity:	FC08-2
Weight:	0.14 kg

DIMENSIONS

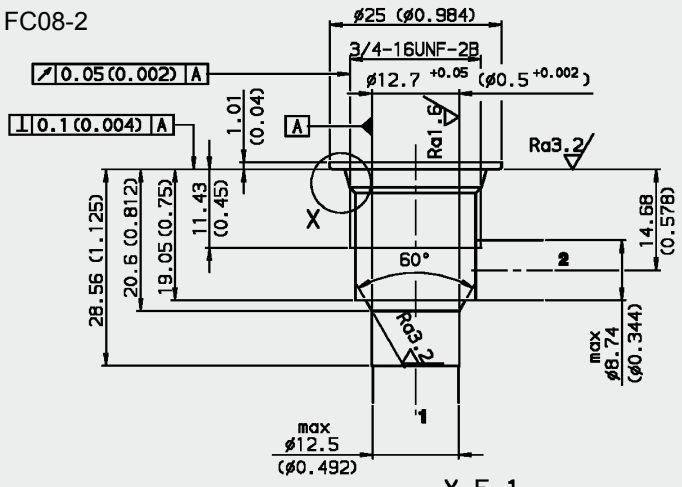


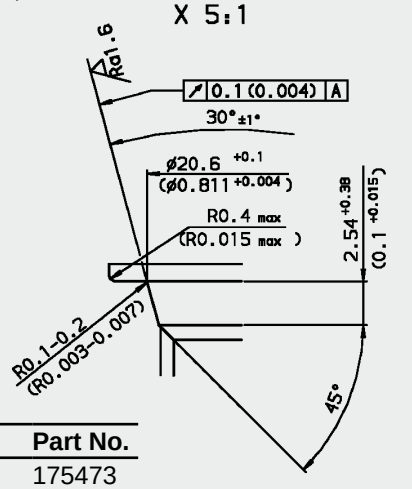


millimeter (inch)
subject to technical modifications

CAVITY

FC08-2





Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

millimeter (inch)
subject to technical modifications

MODEL CODE

DB08P-01 – C – N – 180 V 100

Basic model
Pressure relief valve, UNF

Body and ports*
C = Cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR
V = FKM

Setting pressure range
050 = to 35 bar
090 = to 62 bar
180 = to 124 bar
330 = to 228 bar
500 = to 345 bar
Other pressure ranges on request

Type of adjustment
V = Allen head (hex. 5/32")
H = Knob adjustment
F = Factory preset, non adjustable
K = Allen head (hex. 5/32") with protective cap

Opening pressure setting
No details = no setting, spring relaxed
Pressure value = customer-specific opening pressure on request

Standard models

Model code	Part No.
DB08P-01-C-N-090V	3141198
DB08P-01-C-N-330V	3141200
DB08P-01-C-N-500V	3141201

*Standard in-line bodies

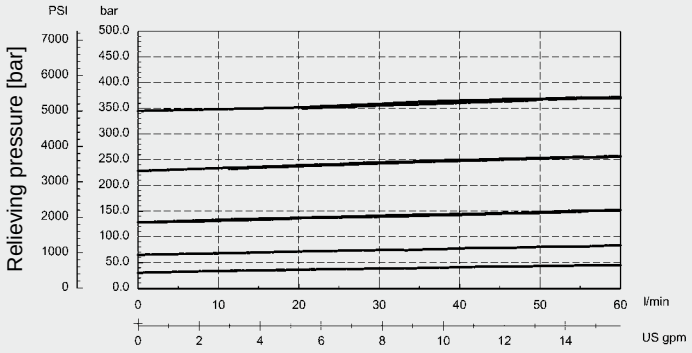
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, anodized	G3/8	210 bar

Seal kits

Code	Material	Part No.
FH082-N	NBR	3033920
FH082-V	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



Note

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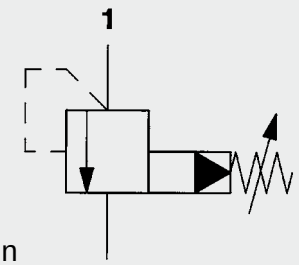
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



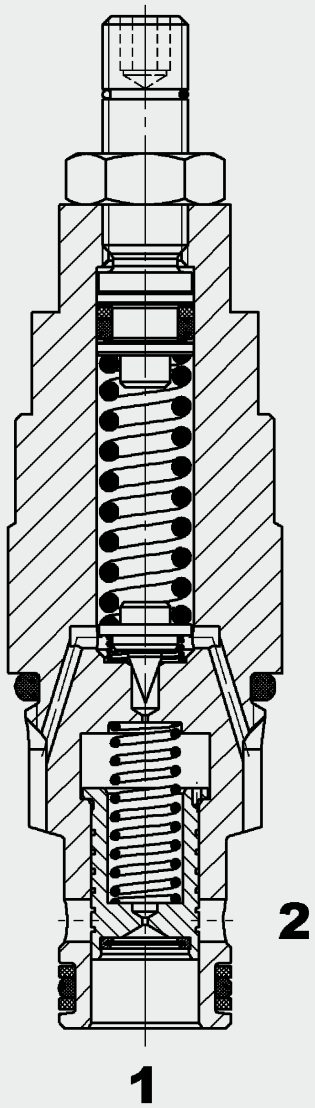
120 l/min
420 bar

Pressure Relief Valve Spool Type Pilot-Operated SAE-10 Cartridge – 420 bar

UNF

DB10P

FUNCTION



The DB10P is a pilot-operated, spool type pressure relief valve. If pressure at port 1 exceeds the pressure setting, the pilot poppet opens and oil flows from behind the main spool to tank port 2. The resulting pressure differential causes the main spool to lift against the return spring and allows flow from port 1 to port 2.

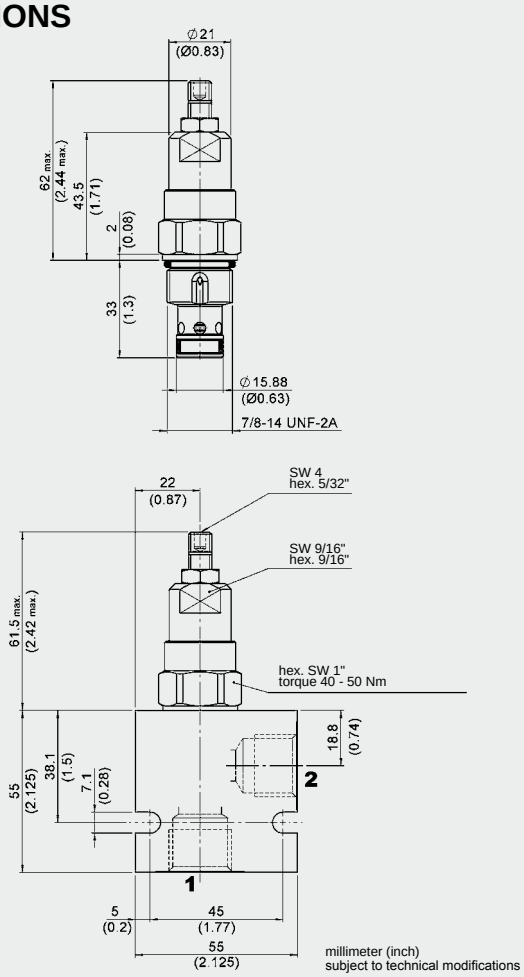
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Screen protected metering orifice enhances safety
- Adjustable throughout flow range
- Guided pilot poppet
- Optional spring ranges up to 420 bar
- Quick response

SPECIFICATIONS

Operating pressure:	max. 420 bar	
Nominal flow:	max. 120 l/min	
Operating pressure ranges:	5 to 35 bar 5 to 62 bar 5 to 124 bar 5 to 228 bar 5 to 345 bar 5 to 420 bar	
Internal leakage:	< 500 ml/min from 1 to 2 at 80% of p_{nom}	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
$MTTf_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	FC10-2	
Weight:	0.20 kg	

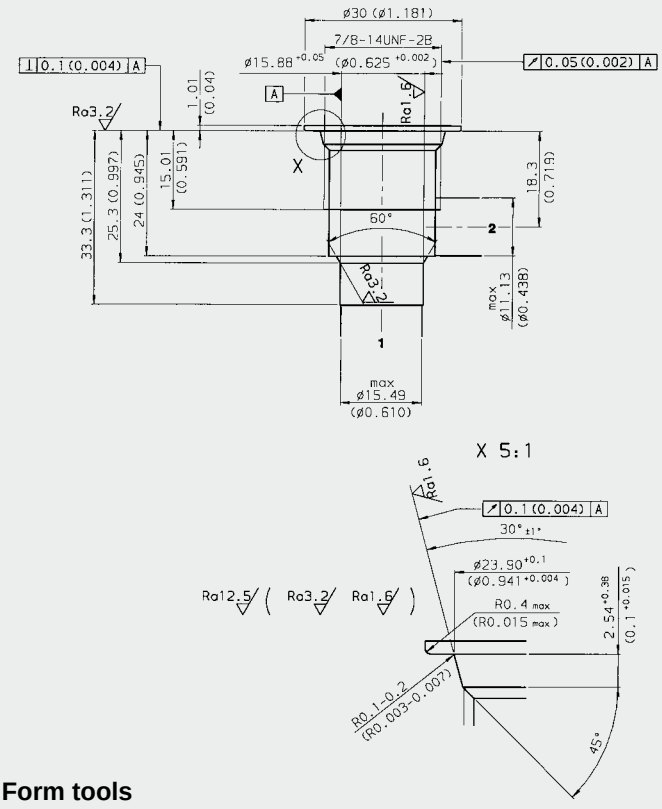
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC10-2



Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter (inch)
subject to technical modifications

MODEL CODE

DB10P-01 – C – N – 180 V 100

Basic model
Pressure relief valve, UNF

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Setting pressure range
050 = up to 35 bar (500 PSI)
090 = up to 62 bar (900 PSI)
180 = up to 124 bar (1800 PSI)
330 = up to 228 bar (3300 PSI)
500 = up to 345 bar (5000 PSI)
600 = up to 420 bar (6000 PSI)
Other pressure ranges on request

Adjustment option
V = Allen head (SW 4)
H = Knob adjustment
F = Factory preset, non adjustable
K = Allen head (SW 4) with protective cap

Opening pressure setting
No details = no setting
100 = customer-specific opening pressure on request

Standard models

Model code	Part No.
DB10P-01-C-N-050V	3010838
DB10P-01-C-N-090V	3010839
DB10P-01-C-N-180V	3010843
DB10P-01-C-N-330V	3010842
DB10P-01-C-N-500V	3010840

*Standard in-line bodies

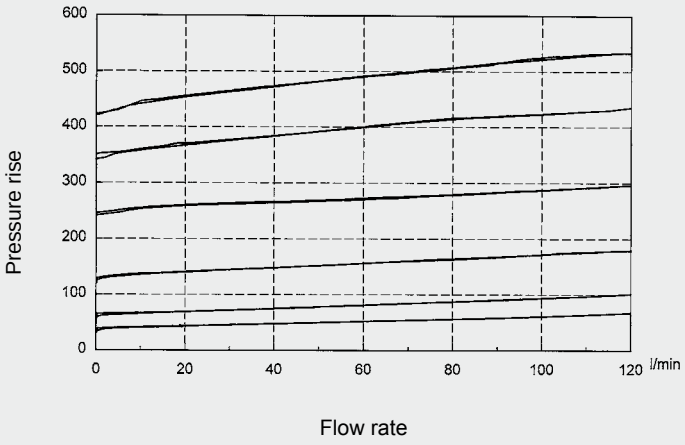
Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, anodized	G1/2	210 bar

Seal kits

Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

PERFORMANCE

Measured at ν = 34 mm²/s
$T_{Öl}$ = 46 °C



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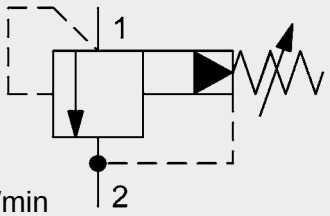
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

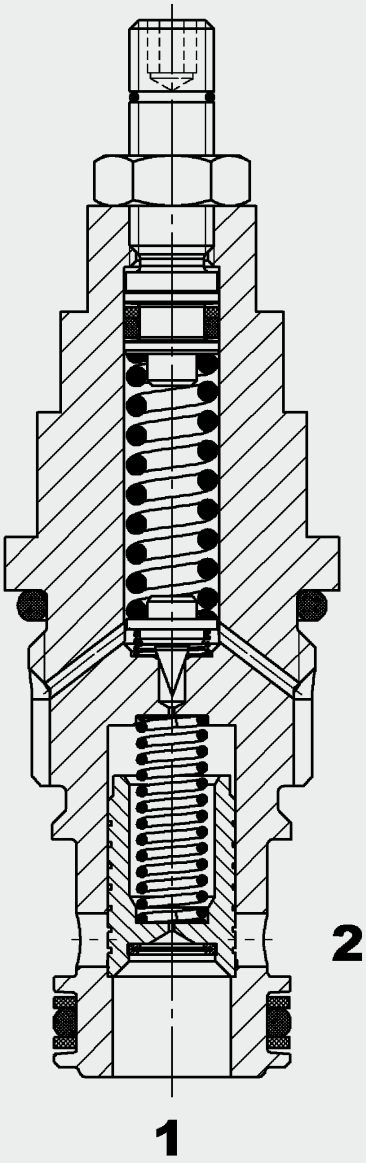
Pressure Relief Valve Spool Type, Pilot-Operated SAE-12 Cartridge – 350 bar DB12P

UNF



200 l/min
350 bar

FUNCTION



The DB12P is a pilot-operated, spool type pressure relief valve. If the pressure at port 1 exceeds the pressure setting, the pilot poppet opens, creating a small flow over the orifice of the pilot stage to the tank. The pressure drop across the orifice lifts the main spool against a light spring, opening the connection between port 1 and port 2.

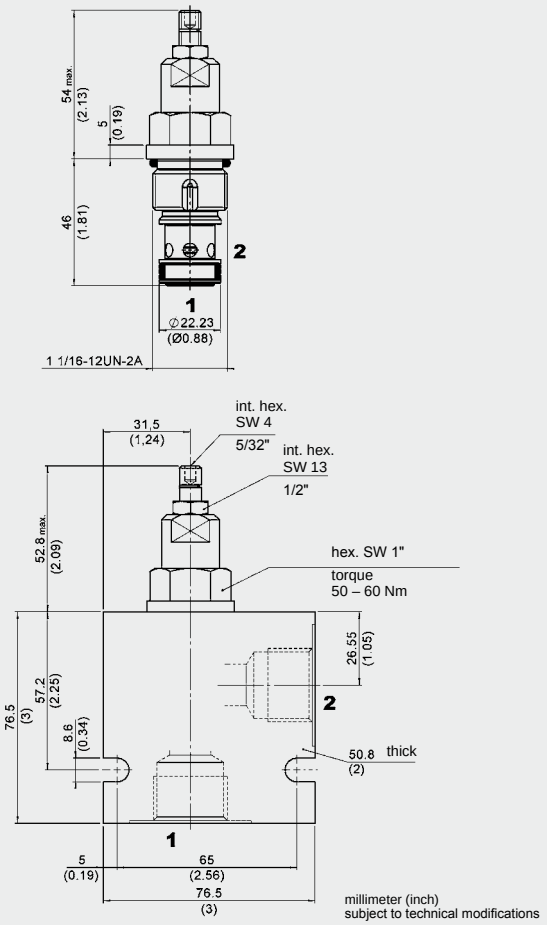
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Excellent stability throughout the entire flow range
- Low pressure drop due to CFD optimized flow path
- Screen protected metering orifice enhances safety
- Optional spring ranges up to 345 bar
- Adjustable throughout flow range
- Quick response
- Compact design

SPECIFICATIONS

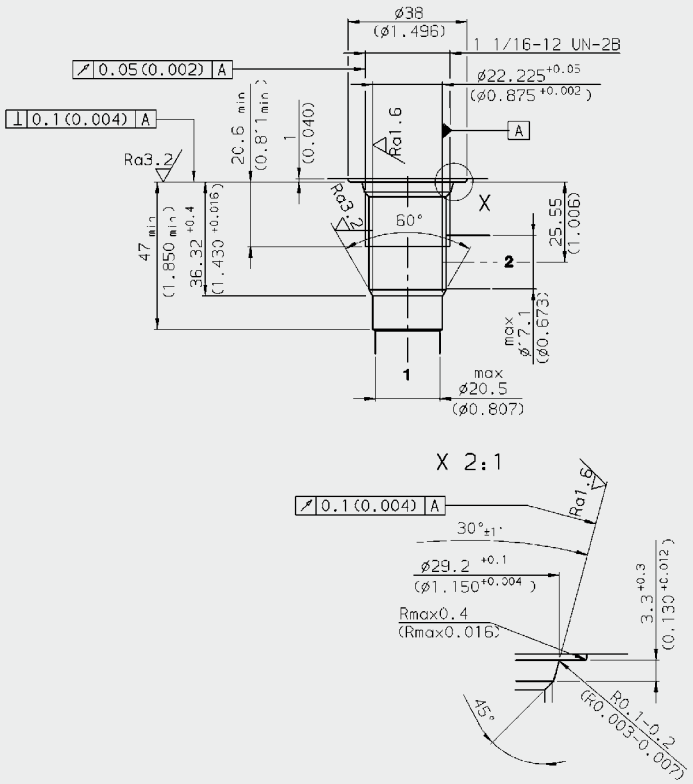
Operating pressure:	max. 350 bar
Nominal flow:	max. 200 l/min
Setting pressure ranges:	up to 35 bar up to 63 bar up to 125 bar up to 230 bar up to 345 bar
Internal leakage:	less than 0.5 l/min at 350 bar
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +100 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s
Filtration:	Class 21/19/16 to ISO 4406 or cleaner
Installation:	No orientation restrictions
Materials:	Valve body: free-cutting steel Spool: hardened and ground steel Seals: NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
Cavity:	FC12-2
Weight:	0.26 kg

DIMENSIONS



CAVITY

FC12-2



Form tools

Tool	Part No.
Countersink FC12-2	176951
Reamer FC12-2	176952

millimeter (inch)
subject to technical modifications

MODEL CODE

DB12P-01 – C – N – 180 V 100

Basic model
Pressure relief valve, UNF

Body and ports*
C = cartridge only
SB6 = G3/4 ports, steel body
AB6 = G3/4 ports, aluminium body

Seals
N = NBR
V = FKM

Setting pressure range
050 = to 35 bar
090 = to 62 bar
180 = to 125 bar
330 = to 230 bar
500 = to 345 bar
Other pressure ranges on request

Type of adjustment
V = Allen head (hex. 5/32")
H = Knob adjustment
F = Factory preset, non adjustable
K = Allen head (hex. 5/32") with protective cap

Opening pressure setting
No details = no setting, spring relaxed
Pressure value = customer-specific opening pressure on request

Standard models

Model code	Part No.
DB12P-01-C-N-090V	3047311
DB12P-01-C-N-330V	3047313
DB12P-01-C-N-500V	3047314

*Standard in-line bodies

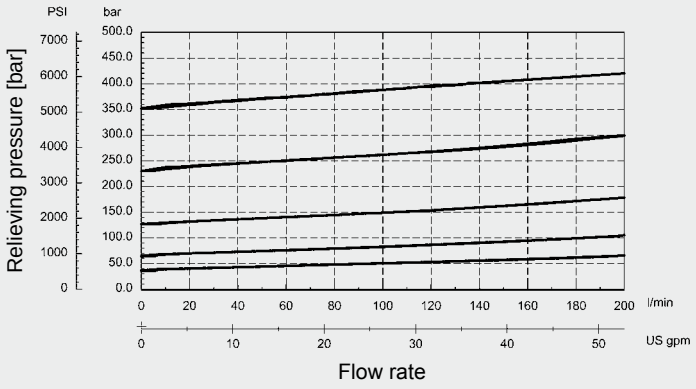
Code	Part No.	Material	Ports	Pressure
FH122-SB6	3053782	Steel, zinc-plated	G3/4	420 bar
FH122-AB6	3053843	Aluminium, anodized	G3/4	210 bar

Seal kits

Code	Material	Part No.
FH122-N Seal kit	NBR	3071298
FH122-F Seal Kit	FKM	3071299

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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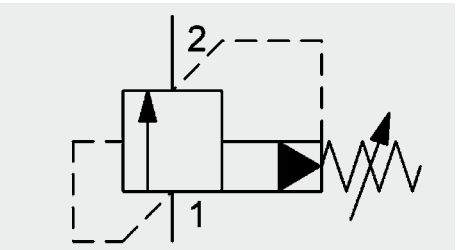
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

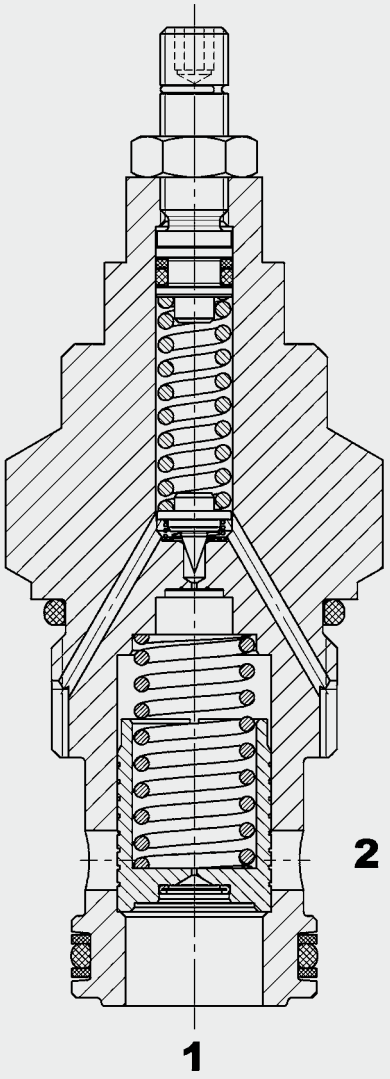
Pressure Relief Valve Spool Type, Pilot-Operated SAE-16 Cartridge – 350 bar DB16P

UNF



300 l/min
350 bar

FUNCTION



The DB16P is a pilot-operated, spool type pressure relief valve. If the pressure at port 1 exceeds the pressure setting, the pilot poppet opens, creating a small flow over the orifice of the pilot stage to the tank. The pressure drop across the orifice lifts the main spool against a light spring, opening the connection between port 1 and port 2.

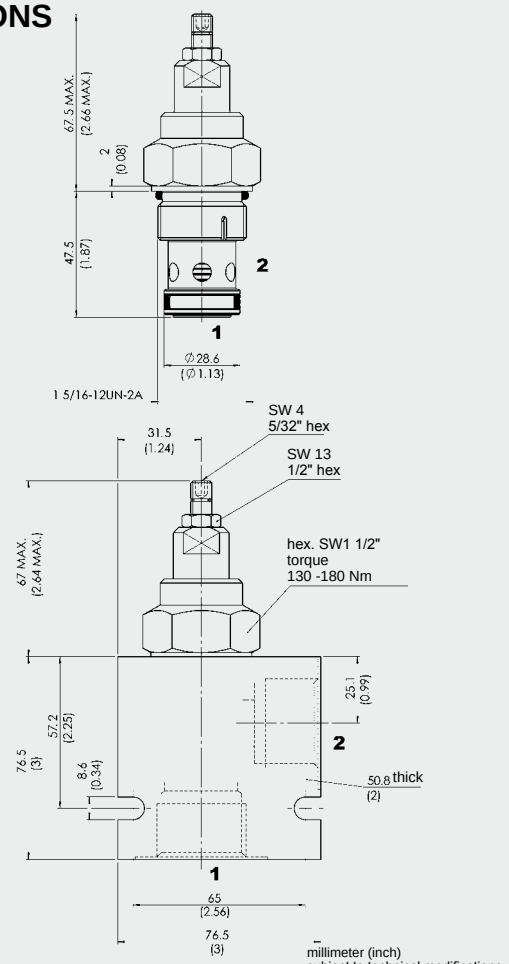
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Excellent stability throughout the entire flow range
- Low pressure drop due to CFD optimized flow path
- Screen protected metering orifice enhances safety
- Optional spring ranges up to 345 bar
- Adjustable throughout flow range
- Quick response

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 300 l/min	
Operating pressure ranges:	5 to 35 bar 5 to 60 bar 5 to 125 bar 5 to 230 bar 5 to 345 bar	
Internal leakage:	max. 1300 ml/min at 80 % of $p_{Nom.\ pressure}$	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Support rings	PTFE
Cavity:	FC16-2	
Weight:	0.47 kg	

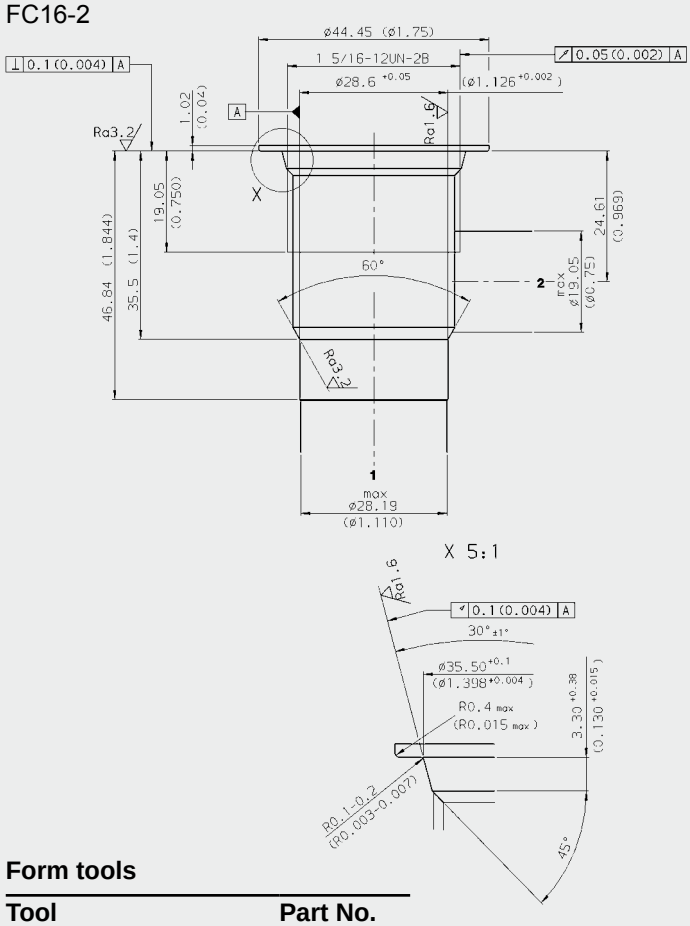
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC16-2



Form tools

Tool	Part No.
Rougher FC16-2	176218
Reamer FC16-2	176219

millimeter (inch)
subject to technical modifications

MODEL CODE

DB16P-01 – C – N – 180 V 100

Basic model
Pressure relief valve, UNF

Body and Ports*
C = Cartridge only
SB8 = G1 ports, steel body
AB8 = G1 ports, aluminium body

Seals
N = NBR
V = FKM

Setting pressure range
050 = 5 to 35 bar
090 = 5 to 62 bar
180 = 5 to 124 bar
330 = 5 to 228 bar
500 = 5 to 345 bar
Other pressure ranges on request

Type of adjustment
V = Allen head (hex. 5/32")
H = Knob adjustment
F = Factory preset, non adjustable
K = Allen head (hex. 5/32") with protective cap

Opening pressure setting
No details = no setting, spring relaxed
100 = customer-specific opening pressure on request

Standard models

Model code	Part No.
DB16P-01-C-N-090V	3010799
DB16P-01-C-N-330V	3010800
DB16P-01-C-N-500V	3010794

*Standard in-line bodies

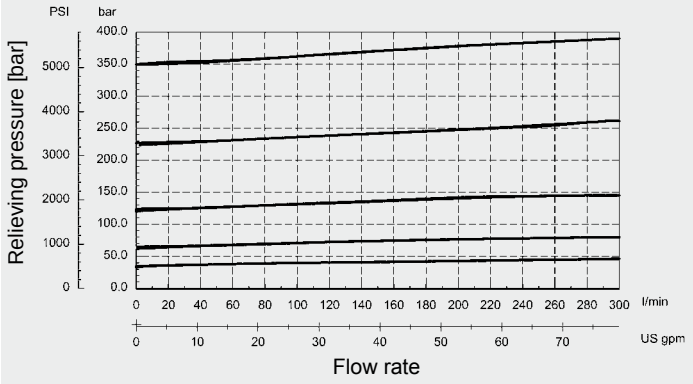
Code	Part No.	Material	Ports	Pressure
FH162-SB8	3032496	Steel, zinc-plated	G1	420 bar
FH162-AB8	3037193	Aluminium, anodized	G1	210 bar

Seal kits

Code	Material	Part No.
FS162-N Seal Kit	NBR	3052427
FH162-V Seal kit	FKM	3051758

PERFORMANCE

Measured at ν = 34 mm²/s, T_{Oil} = 46 °C



Note

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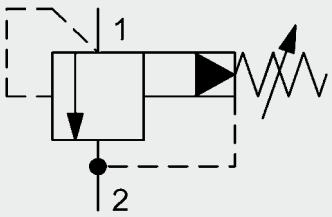
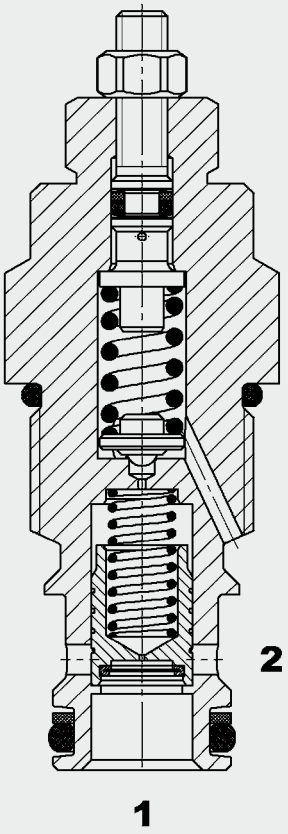
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



Up to 100 l/min
Up to 350 bar

Pressure Relief Valve Poppet Type, Pilot-Operated Metric Cartridge – 350 bar DB10120A

FUNCTION



The pressure relief valve DB10120A is a pilot-operated, spring-loaded poppet valve.
Its function is to relieve pressure in the system. It is normally closed. If the pressure at port 1 exceeds the pre-set spring tension, the pilot stage opens and oil flows from behind the main piston to tank port 2. The resulting pressure differential causes the main piston to move against the return spring and allows oil to flow from port 1 to port 2.
This continues until the system pressure is equal to the spring tension and the valve closes again.
Important: Pressures at port 2 are additive to the opening pressure! If the connections are incorrect or if the pressure has been set above the operating pressure, the safety function of the valve is disabled.

FEATURES

- Excellent stability throughout the entire flow range
- Low hysteresis and accurate pressure control
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop by CFD optimized flow path
- Various pressure ranges up to 350 bar

SPECIFICATIONS

Operating pressure:	min. 5 to max. 350 bar max. 100 bar at port 2 (tank)	
Nominal flow:	max. 100 l/min	
Pressure setting ranges:	5 to 100 bar 5 to 250 bar 5 to 350 bar	
Leakage:	Leakage-free	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +100 °C)
	Back-up rings:	PTFE
Cavity:	10120A	
Weight:	0.13 kg	

MODEL CODE

DB 10120A – 02 X – 250 V 210

Basic model
Pressure relief valve

Cavity to ISO
10120A = 2-way, metric

Type
02 = standard, zinc-plated

Series
(determined by manufacturer)

Pressure setting range
100 = 5 to 100 bar
250 = 5 to 250 bar
350 = 5 to 350 bar
Other pressure ranges on request

Type of adjustment
V = Allen head
P = can be lead-sealed, adjustable with tool
Other types of adjustment on request

Opening pressure setting
No details.= no setting, spring relaxed
210 = opening pressure in bar, factory-set
Other pressure settings on request

(Pre-set versions are factory-set at a flow rate of 6 l/min)

Standard models

Model code	Part No.
DB10120A-02X-100V	561040
DB10120A-02X-250V	561041
DB10120A-02X-350V	561076

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R10120A-01X-01	395232	Steel, zinc-plated	G1/2	420 bar
R10120A-01X-02	395233	Steel, zinc-plated	M 22 x 1.5	420 bar

Other line bodies on request

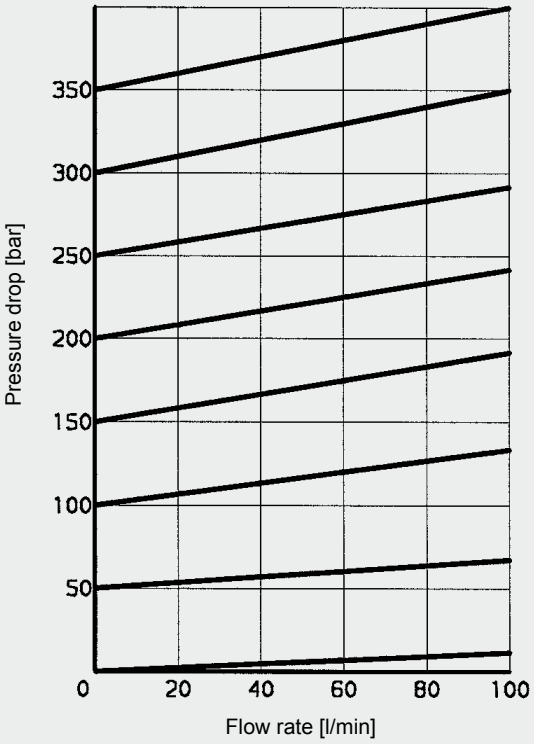
Seal kits

Code	Material	Part No.
SEAL KIT DB10120A	NBR	3085499
SEAL KIT DB10120A	FKM	560222

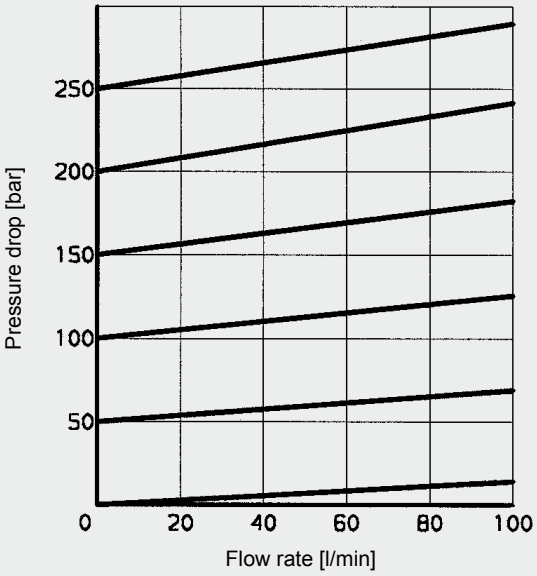
PERFORMANCE

Measured at ν= 36 mm²/s, T_{oil} = 50 °C

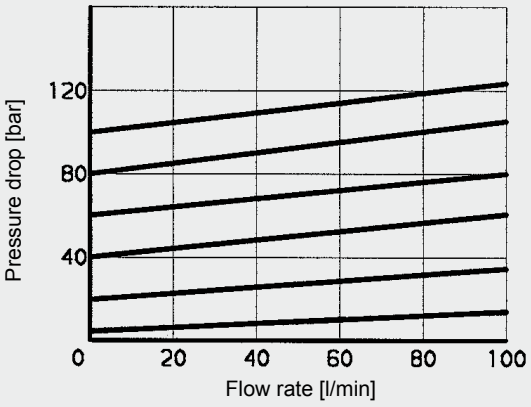
350 V



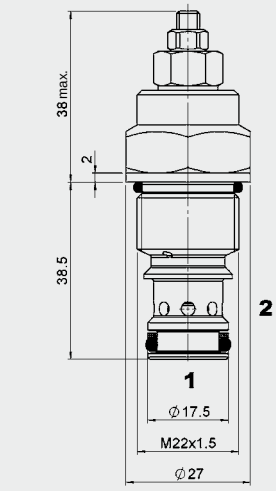
250 V

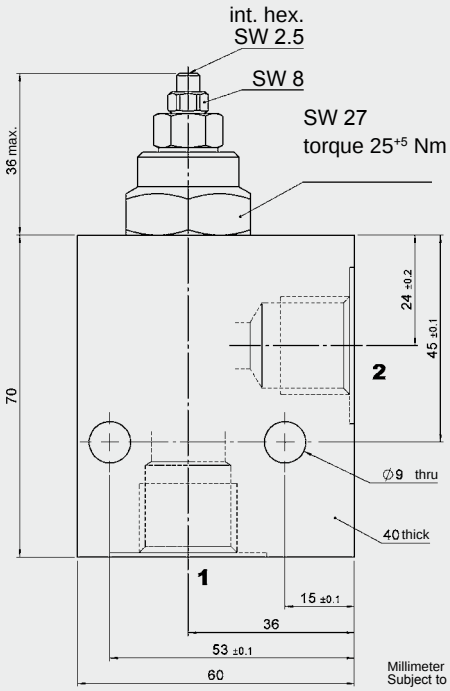


100 V



DIMENSIONS

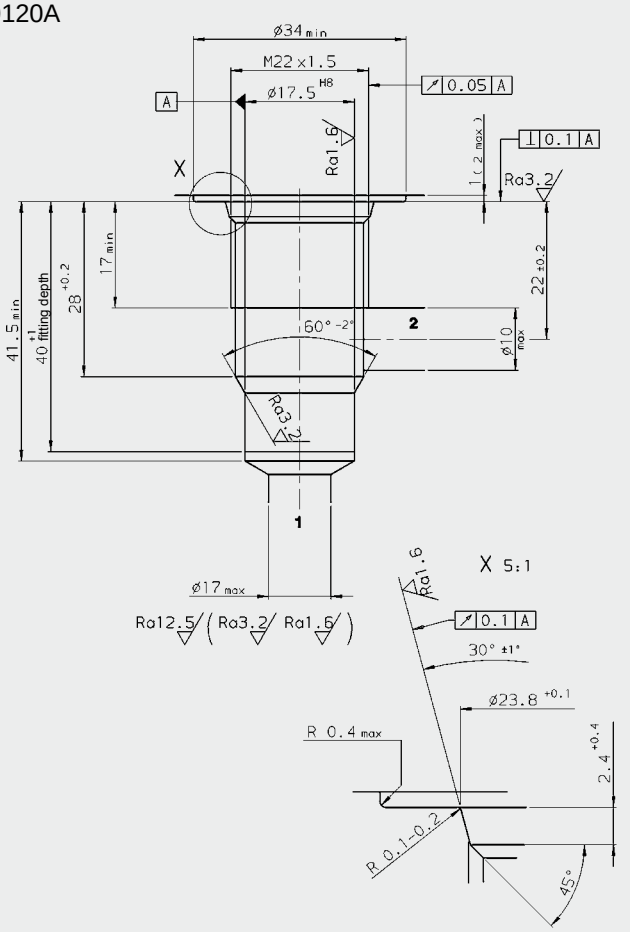




Millimeter
Subject to technical modifications

CAVITY

10120A



Form tools

Tool	Part No.
Countersink HE25	166284
Reamer MK2	166285
Tap	1002627
Plug gauge	166286

Millimeter
Subject to technical modifications

NOTE

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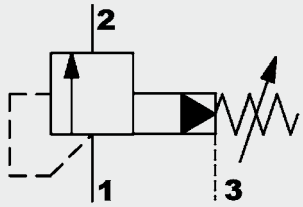
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com



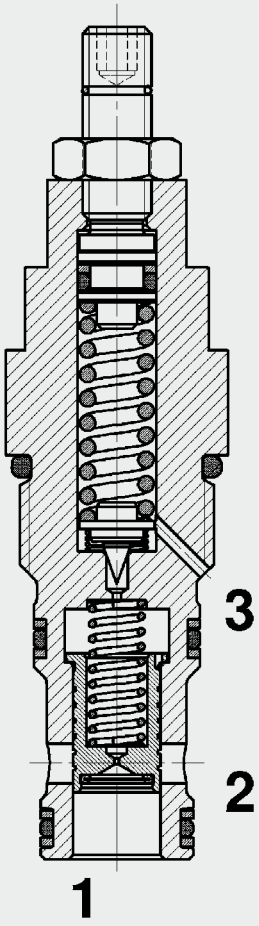
120 l/min
350 bar

Pressure Relief Valve Spool Type, Pilot-Operated With Pilot Drain SAE-10 Cartridge – 350 bar

UNF

DB10SPE

FUNCTION



The pressure relief valve DB10SPE is a pilot operated, spring loaded spool valve with pilot drain at port 3. This means that any pressure at port 2 has no influence on pressure adjustment.

If the pressure across port 1 rises and exceeds the pre-set value, the pilot-stage opens and oil flows from behind the main spool to the tank port 3. The resulting pressure differential causes the main spool to move against the reset-spring and allows oil to flow from port 1 to port 2.

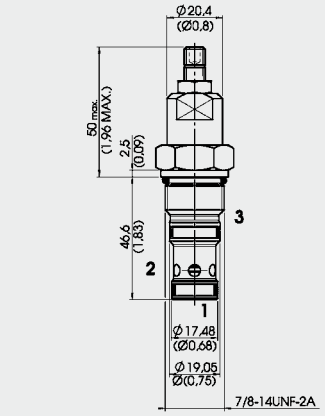
FEATURES

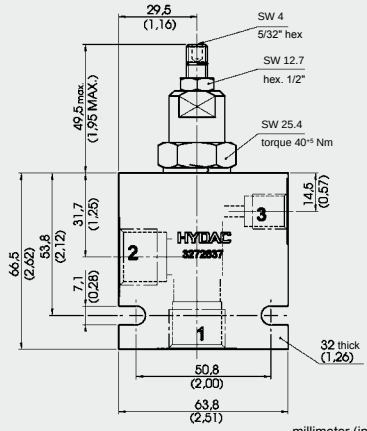
- Additional tank connection to drain the pilot stage
- Additional use as a pilot operated pressure compensator
- Quick response
- Good stability across the whole pressure and flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground control piston to ensure minimal wear and extended service life
- Adjustable throughout flow range
- Different pressure ranges up to 350 bar available
- Flat p-Q curve achieved by having separate line for pilot oil (port 3)

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 120 l/min	
Setting pressure range:	5 to 35 bar 5 to 60 bar 5 to 125 bar 5 to 230 bar 5 to 345 bar	
Leakage:	max. 500 ml/min at 80 % of $p_{Nom.\ pressure}$	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to 120 °C)
	Back-up rings:	PTFE
Cavity:	FC10-S3	
Weight:	0.17 kg	

DIMENSIONS

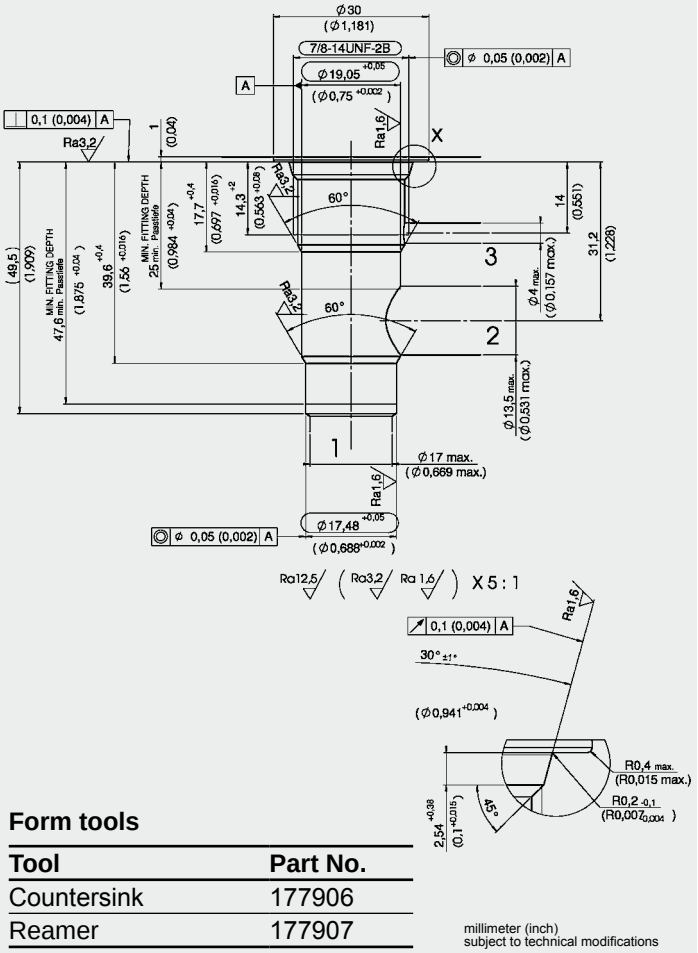




millimeter (inch)
subject to technical modifications

CAVITY

FC10-S3



Form tools

Tool	Part No.
Countersink	177906
Reamer	177907

millimeter (inch)
subject to technical modifications

MODEL CODE

DB10 SPE - 01 - C - N - 050 V 029

Basic model
Pressure relief valve, UNF

Function
PE = pilot-operated with pilot drain

Type
01 = standard

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM (optional)

Pressure ranges
050 = 5 to 35 bar (500 PSI)
090 = 5 to 62 bar (900 PSI)
180 = 5 to 124 bar (1800 PSI)
330 = 5 to 228 bar (3300 PSI)
500 = 5 to 345 bar (5000 PSI)
Other pressure ranges on request

Type of adjustment
V = Allen head
Other adjustment types on request

Setting
No details = no setting, spring relaxed
029 = 20 bar, specific opening pressure on request

Standard models

Model code	Part No.
DB10SPE-01-C-N-050V	3408654
DB10SPE-01-C-N-090V	3433849
DB10SPE-01-C-N-180V	3433850
DB10SPE-01-C-N-330V	3433851
DB10SPE-01-C-N-500V	3408666

Other models on request

*Standard in-line bodies

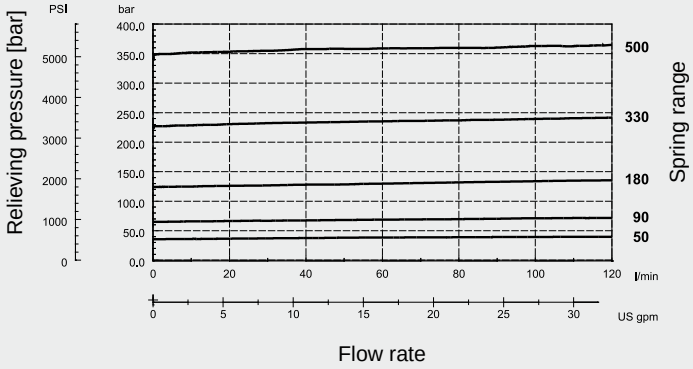
Code	Part No.	Material	Ports	Pressure
FH10S3-AB4	3272637	Aluminium, anodized	G1/2	210 bar
FH10S3-SB4	3310162	Steel, zinc-plated	G1/2	350 bar

Seal kits

Code	Material	Part No.
FS10S3-N	NBR	3468413

PERFORMANCE

Measured at v = 34 mm²/s
T_{oil} = 46 °C



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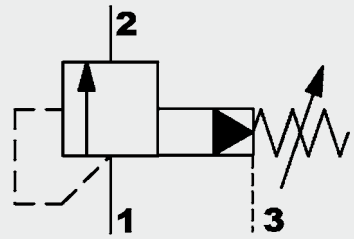
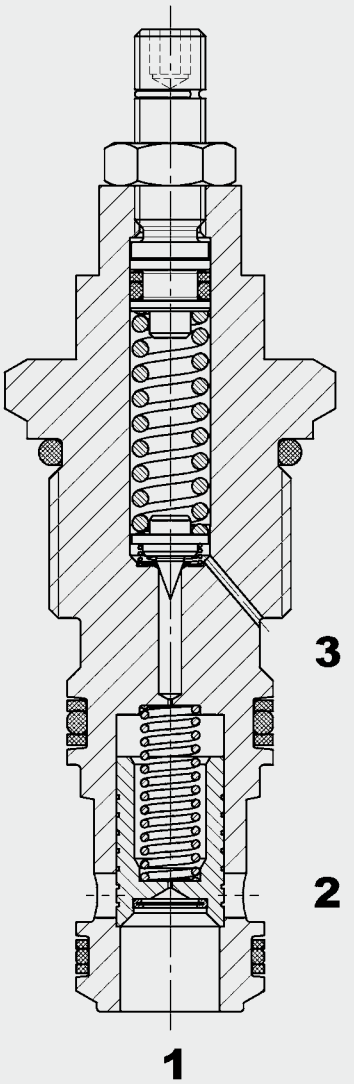


Up to 200 l/min
Up to 350 bar

Pressure Relief Valve Spool Type, Pilot-Operated With Pilot Drain Metric Cartridge – 350 bar

DB12121PE-01

FUNCTION



The DB12121PE is a pilot-operated, spring-loaded spool valve with a pilot drain at port 3. This means that any pressure at port 2 has no influence on pressure adjustment. If the pressure at port 1 exceeds the pre-set spring tension, the pilot-stage opens and oil flows from behind the main spool to tank port 3. The resulting pressure differential causes the main spool to move against the reset-spring and allows oil to flow from port 1 to port 2.

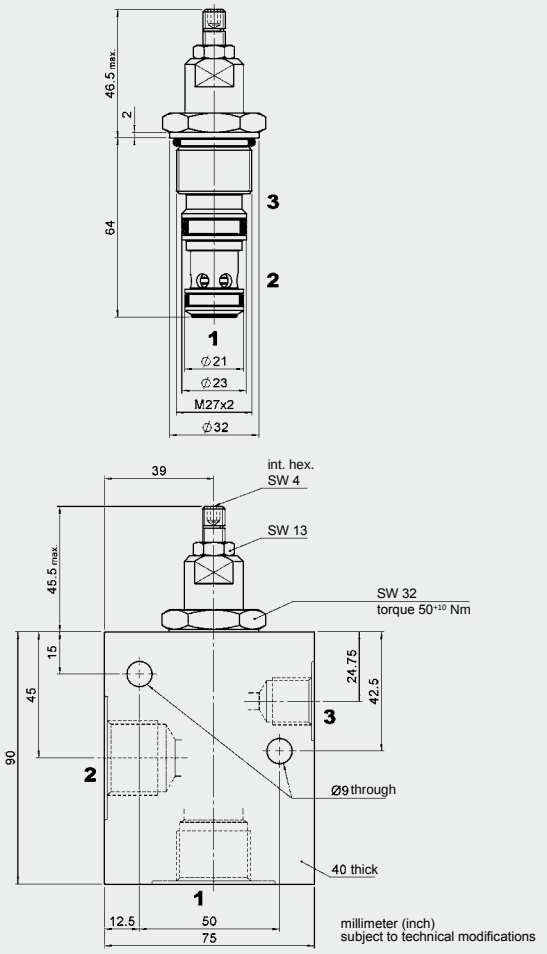
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground control spool to ensure minimal wear and extended service life
- Various pressure ranges up to 350 bar
- Quick response
- Increased operating reliability due to protective strainer
- Low hysteresis and excellent stability throughout the flow range
- Compact design enables space-saving installation in connection housings and control blocks
- Additional tank connection to drain the pilot stage

SPECIFICATIONS

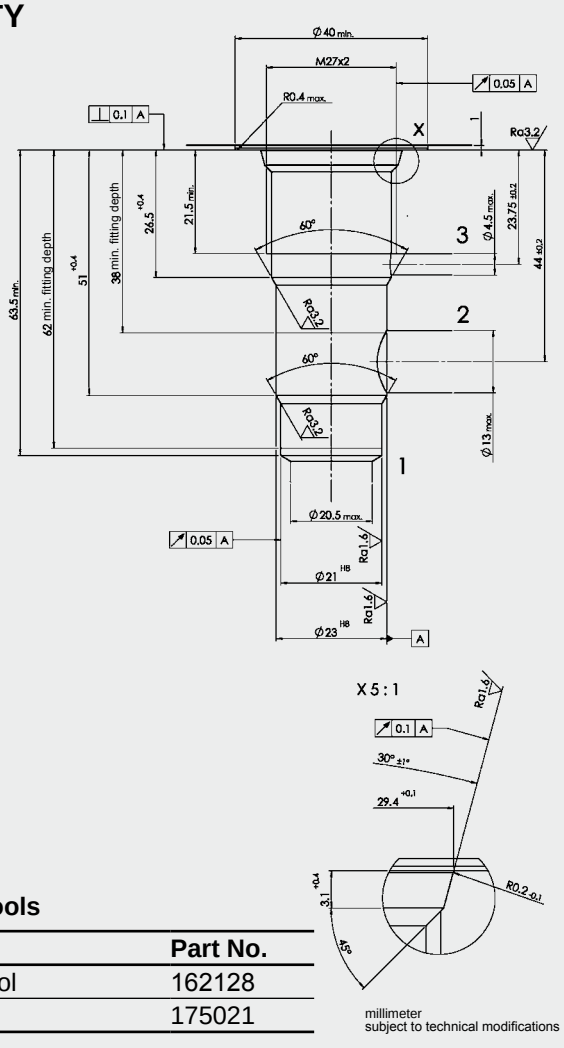
Operating pressure:	max. 350 bar	
Nominal flow:	max. 200 l/min	
Operating pressure ranges:	5 to 35 bar 5 to 60 bar 5 to 125 bar 5 to 230 bar 5 to 350 bar	
Internal leakage:	max. 320 cm³/min at 350 bar	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	12121	
Weight:	0.26 kg	

DIMENSIONS



CAVITY

12121



Form tools

Tool	Part No.
Form tool	162128
Reamer	175021

MODEL CODE

DB 12121 - PE - 01 - C - N - 350 V 230

Basic model
Pressure relief valve, metric

Cavity
12121 = 3-way cavity

Function
PE = pilot-operated with pilot drain

Type
01 = standard

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Pressure range
035 = 5 to 35 bar
060 = 5 to 60 bar
125 = 5 to 125 bar
230 = 5 to 230 bar
350 = 5 to 350 bar

Type of adjustment
V = Allen head
H = knob adjustment
F = factory preset, non adjustable
K = Allen head, with protective cap

Opening pressure setting
No details = no setting, spring relaxed
Pressure value = opening pressure specified by customer (on request)

Standard models

Model code	Part No.
DB12121PE-01-C-N-035V	3132639
DB12121PE-01-C-N-060V	3132640
DB12121PE-01-C-N-125V	3132641
DB12121PE-01-C-N-230V	3132642
DB12121PE-01-C-N-350V	3132643

*Standard in-line bodies

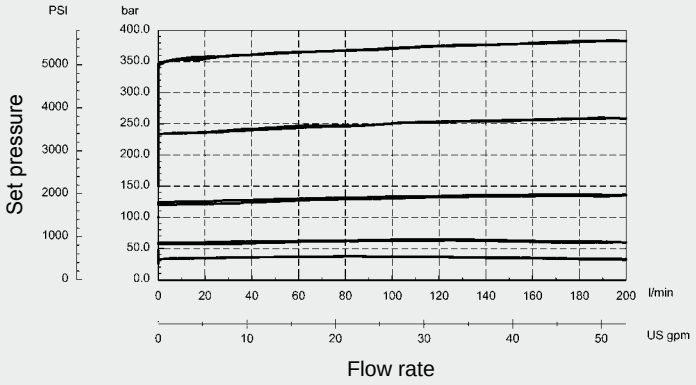
Code	Part No.	Material	Ports	Pressure
R12121-01X-01	3130704	Steel, zinc-plated	G3/4, G3/8	420 bar

Seal kits

Code	Material	Part No.
SEAL KIT 12121-NBR	NBR	3269389
SEAL KIT 12121-FKM	FKM	3269390

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
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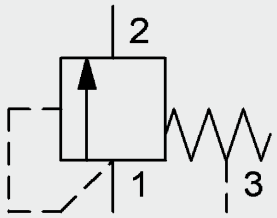
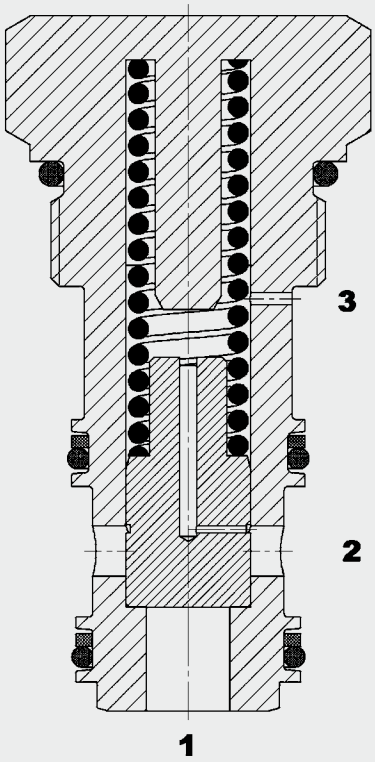


Up to 300 l/min
Up to 350 bar

Pressure Relief Valve Spool Type, Direct Acting with Spring Chamber Venting Metric Cartridge – 350 bar DB16621E-10

FUNCTION



The DB16621E is a direct acting, spool type pressure relief valve with additional spring-chamber venting. When the pressure at port 1 exceeds the pre-set value, the spool opens and oil flows from port 1 to tank port 2. When the valve opens, the leakage bore to port 2 is shut-off. The additional spring chamber venting at port 3 to tank ensures that the valve is independent of pressures at port 2.

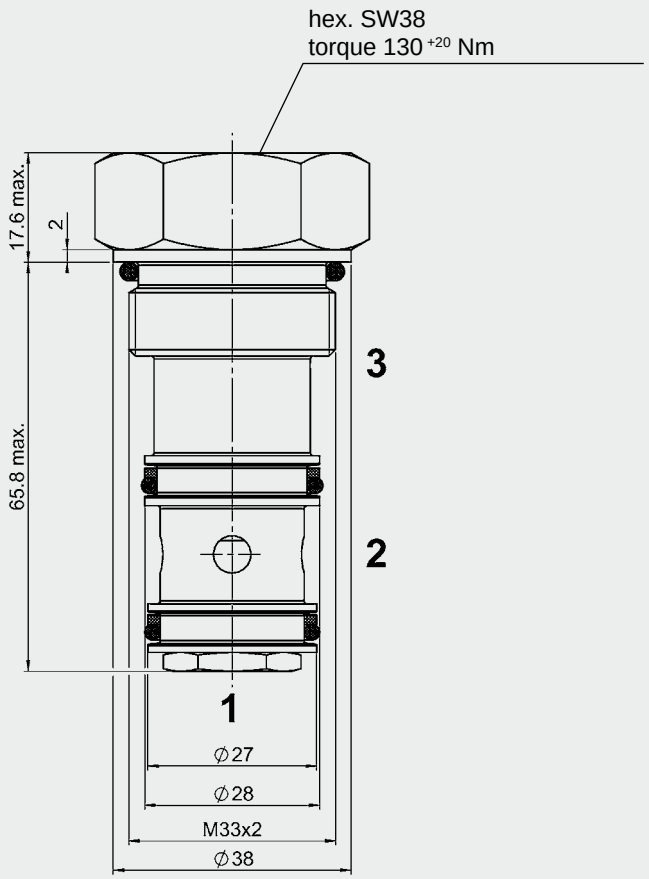
FEATURES

- Pressure relief function with external venting of spring chamber
- Good, flat curve characteristics throughout the flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- Adjustable throughout flow range
- Can also be used as a logic element or unloader valve
- Spool orifice available as an option

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Spring force:	max. 16 bar	
Nominal flow:	max. 300 l/min	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions, preferably horizontal	
Materials:	Valve body:	high tensile steel
	Spool:	hardened steel
	Seals:	FKM (standard) NBR (optional, media temperature range to -30 °C)
	Back-up rings:	PTFE
Cavity:	16621	
Weight:	0.386 kg	

DIMENSIONS



Millimeter
Subject to technical modifications

MODEL CODE

DB 16621E – 10 – C – V – 16 F

Basic model
Pressure relief valve, metric

Cavity to ISO
16621 = 3-way cavity

Type
10 = standard

Body and ports
C = cartridge only
*Combinations with body on request

Seals
V = FKM (standard)
N = NBR (optional)

Setting pressure range
16 = up to 16 bar

Type of adjustment
V = adjustable using tool
F = fixed setting, cannot be adjusted

Standard models

Model code	Part No.
DB16621E-01-C-V-16F	3147711

Other models on request

***Standard in-line bodies**

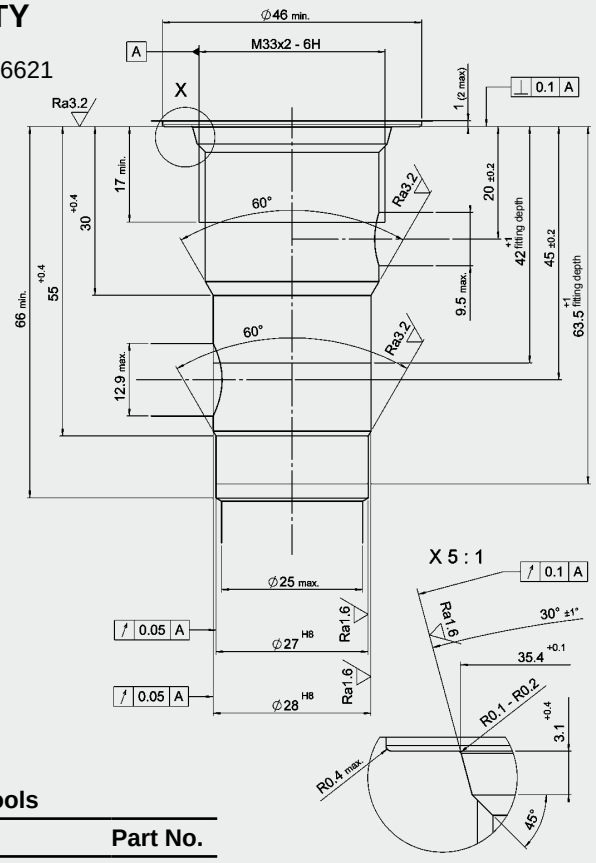
Code	Part No.	Material	Ports	Pressure
R16621-01X-01	3477778	Steel	G1, G1/4	420 bar

Seal kits

Code	Part No.
SEAL KIT 16621-FKM	3178282
SEAL KIT 16621-NBR	3506920

CAVITY

Metric 16621



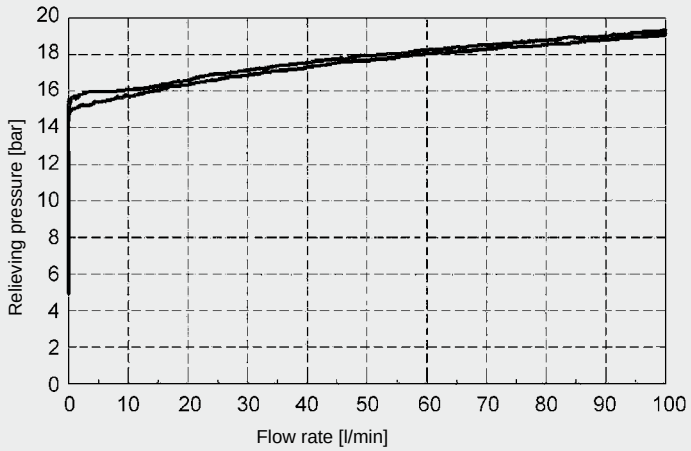
Form tools

Tool	Part No.
In preparation	

Millimeter
Subject to technical modifications

PERFORMANCE

Measured at ν = 33 mm²/s , T_{oil} = 46 °C



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D-66280 Sulzbach/Saar
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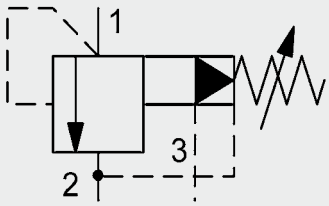
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

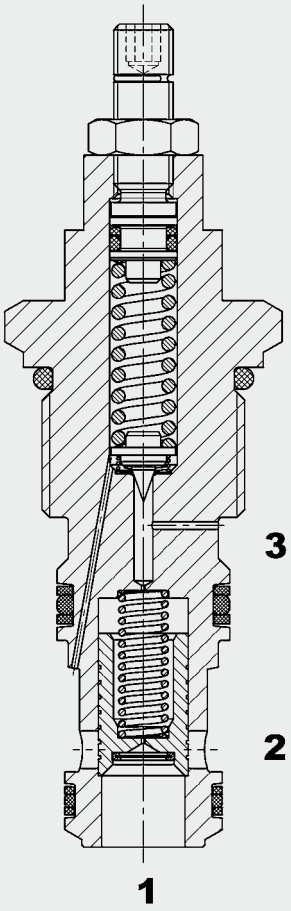


Up to 200 l/min
Up to 350 bar

Pressure Relief Valve Spool Type, Pilot-Operated With Remote Control Option Metric Cartridge – 350 bar

DB12121PF-01

FUNCTION



The pressure relief valve DB12121PF is a pilot operated, spool valve with a remote control option via the additional port 3.

If the pressure across port 1 exceeds the pre-set value, the pilot-stage opens and oil flows from behind the main spool to the tank port 2. The resulting pressure differential allows the main spool to lift against the reset-spring and allows oil to flow from port 1 to port 2. Additionally the valve may switch the system to unpressurized flow by draining a flow over port 3.

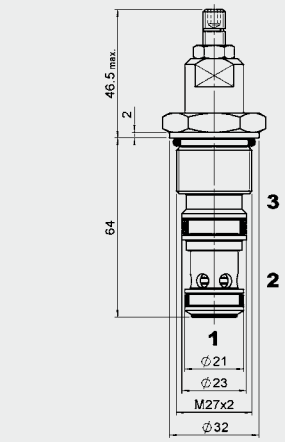
FEATURES

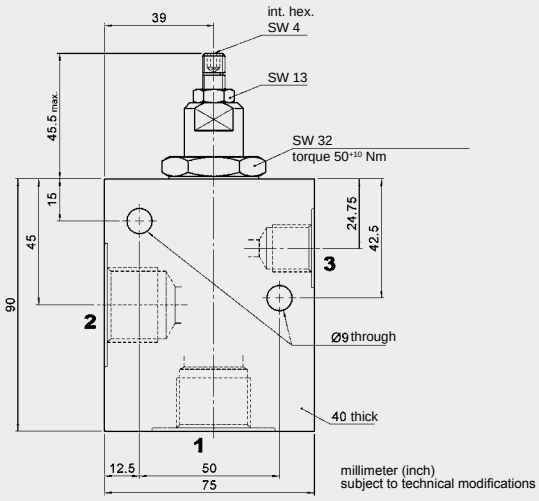
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground control spool to ensure minimal wear and extended service life
- Various pressure ranges up to 350 bar
- Quick response
- Increased operating reliability due to protective strainer
- Low hysteresis and excellent stability throughout the flow range
- Compact design enables space-saving installation in connection housings and control blocks
- Valve can be operated via its remote control line in combination with a directional valve

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 200 l/min	
Operating pressure ranges:	up to 35 bar up to 60 bar up to 125 bar up to 230 bar up to 345 bar	
Required remote control flow rate:	0.2 l/min to 0.6 l/min (depending on pressure and flow rate)	
Internal leakage:	320 cm³/min at 350 bar	
Media operating temperature range:	min. -30 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to +80 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material	Valve body:	high tensile steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	12121	
Weight:	0.26 kg	

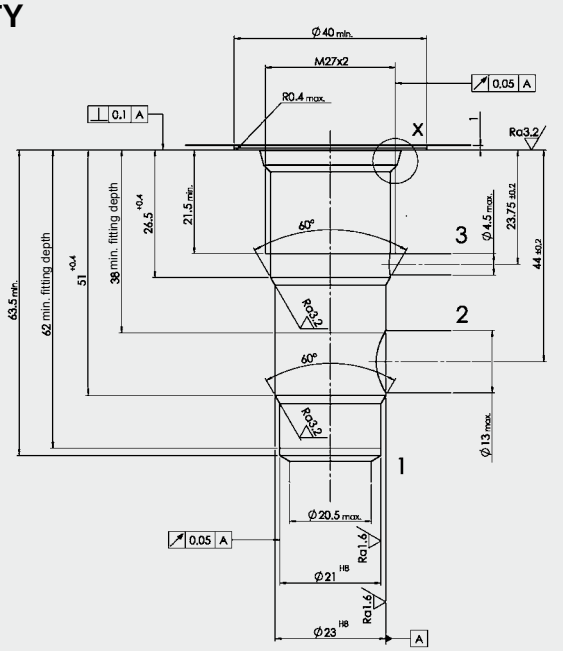
DIMENSIONS

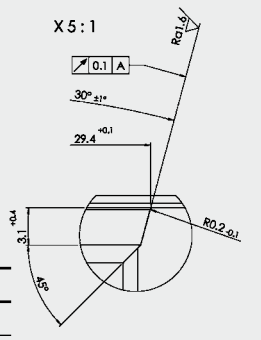




CAVITY

12121





millimeter
subject to technical modifications

Form tools

Tool	Part No.
Form tool	162128
Reamer	175021

MODEL CODE

DB 12121 - PF - 01 - C - N - 350 V 230

Basic model
Pressure relief valve
metric

Cavity
12121 = 3-way cavity

Function
PF = pilot operated,
with remote control option

Type
01 = standard

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Pressure range
035 = up to 35 bar
060 = up to 60 bar
125 = up to 125 bar
230 = up to 230 bar
350 = up to 350 bar

Type of adjustment
V = Allen head (hex. 5/32")
H = knob adjustment
F = fixed setting
Other adjustment types on request

Opening pressure setting
No details = no setting, spring relaxed
Pressure value = opening pressure specified by customer

Standard models

Model code	Mat.-Nr.
DB12121PF-01-C-N-060V	3126912
DB12121PF-01-C-N-230V	3126914
DB12121PF-01-C-N-350V	3126915

*Standard in-line bodies

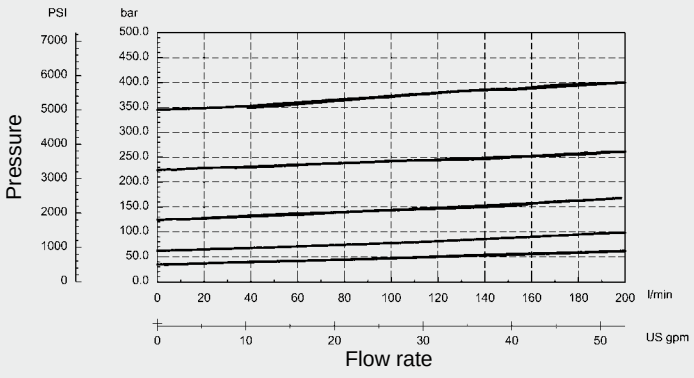
Code	Part No.	Material	Ports	Pressure
R12121-01X-01	3130704	Steel, zinc-plated	G3/4, G3/8	420 bar

Seal kits

Code	Material	Part No.
SEAL KIT 12121-NBR	NBR	3269389
SEAL KIT 12121-FKM	FKM	3269390

PERFORMANCE

Measured at
v = 34 mm²/s,
Toil = 46 °C



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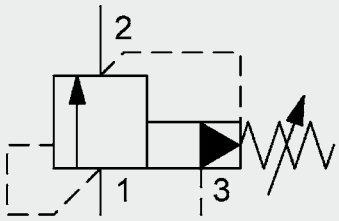
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

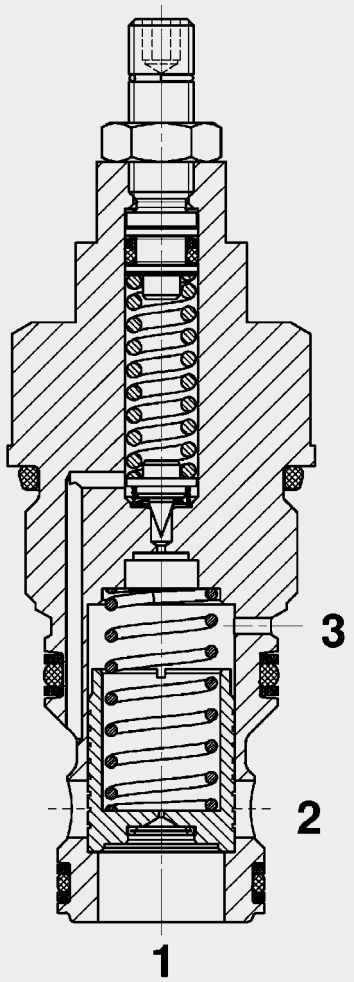


300 l/min
350 bar

Pressure Relief Valve Spool Type, Pilot-Operated With Remote Control Option SAE-16 Cartridge Valve – 350 bar DB16SPF

UNF

FUNCTION



The pressure relief valve DB16SPF is a pilot operated, spool valve with a remote control option via the additional port 3. If the pressure across port 1 exceeds the pre-set value, the pilot-stage opens and oil flows from behind the main spool to the tank port 2. The resulting pressure differential allows the main spool to lift against the reset-spring and allows oil to flow from port 1 to port 2. Additionally the valve may switch the system to unpressurized flow by draining a flow over port 3.

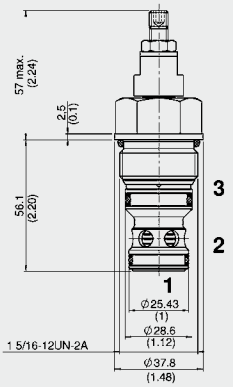
FEATURES

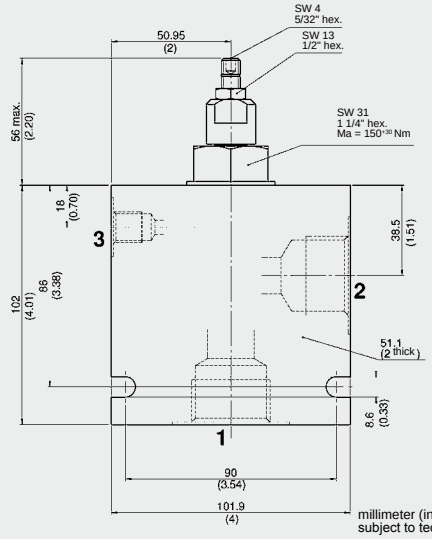
- Additional port for remote control option, e.g. in combination with a solenoid valve the system may be switched to unloaded flow
- Quick response
- Good stability across the whole pressure and flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground control piston to ensure minimal wear and extended service life
- Adjustable throughout flow range
- Different pressure ranges up to 350 bar available

SPECIFICATIONS

Operating pressure:	min. 5 to max. 350 bar	
Nominal flow:	max. 300 l/min	
Operating pressure ranges:	5 to 35 bar 5 to 60 bar 5 to 125 bar 5 to 230 bar 5 to 345 bar	
Internal leakage:	max. 1800 ml/min at 80 % $p_{Nom.}$	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	UNF FC16S-3	
Weight:	0.5 kg	

DIMENSIONS

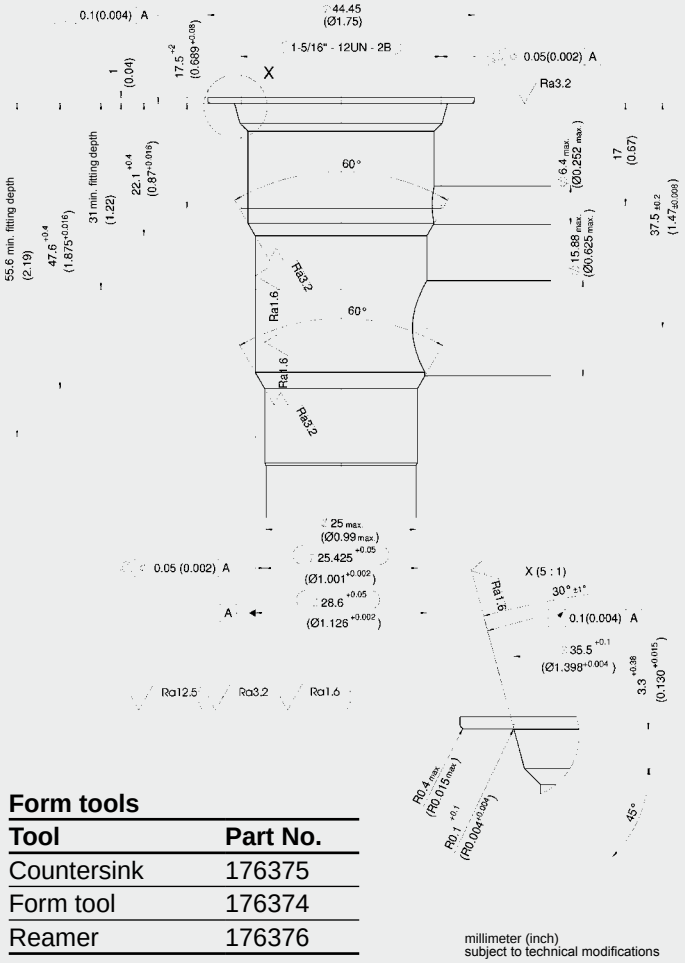




millimeter (inch)
subject to technical modifications

CAVITY

UNF FC16S-3



Form tools

Tool	Part No.
Countersink	176375
Form tool	176374
Reamer	176376

millimeter (inch)
subject to technical modifications

MODEL CODE

DB16S PF – 01 – C – N – 500 V 327

Basic model
Pressure relief valve, UNF

Function
PF = pilot operated, with remote control option

Type
01 = standard

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Setting pressure range
050 = 5 to 35 bar
090 = 5 to 62 bar
180 = 5 to 125 bar
330 = 5 to 230 bar
500 = 5 to 345 bar
Other pressure ranges on request

Type of adjustment
V = Allen head
Other adjustment types on request

Opening pressure setting
No details = no setting, spring relaxed
327 = 210 bar (3270 psi)
Customer-specific opening pressure on request

Standard models

Model code	Part No.
DB16SPF-01-C-N-050V	3476292
DB16SPF-01-C-N-090V	3476291
DB16SPF-01-C-N-180V	3476290
DB16SPF-01-C-N-330V	3476289
DB16SPF-01-C-N-500V	3476288

Other models on request

*Standard in-line bodies

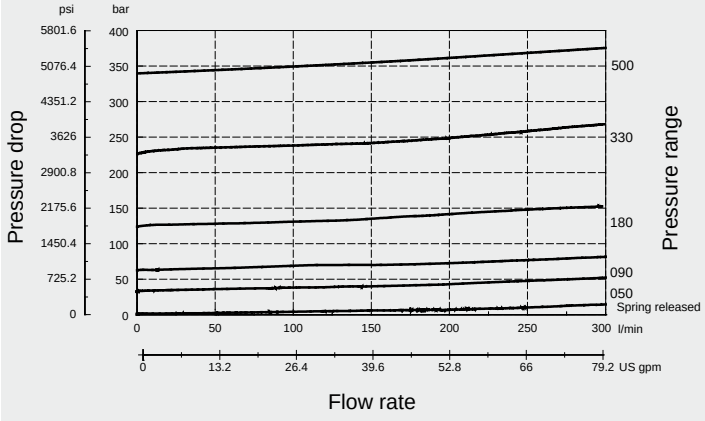
Code	Part No.	Material	Ports	Pressure
FH163S3-SB8	3246967	Steel, zinc-plated	G1	420 bar

Seal kits

Code	Material	Part No.
FS163-N SEAL KIT	NBR	3071303
FS163-V SEAL KIT	FKM	3071304

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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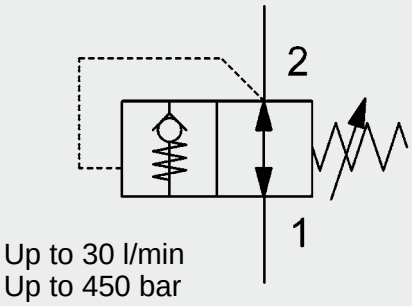
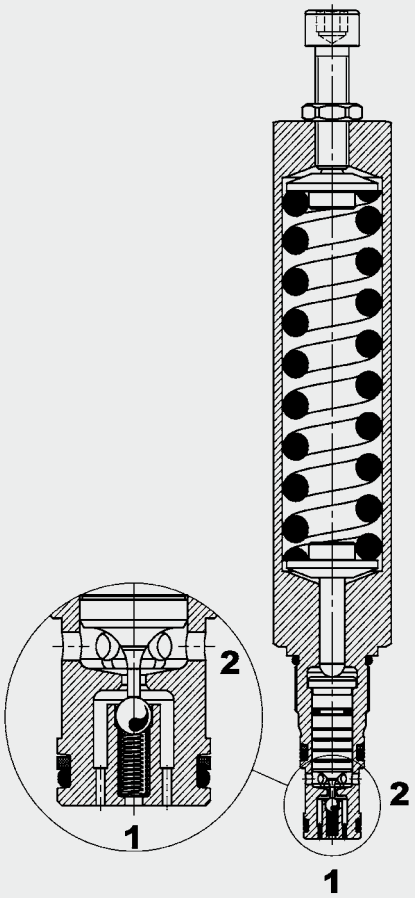
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



Up to 30 l/min
Up to 450 bar

Pressure Reducing Valve Poppet Type, Direct-Acting, Normally Open, with Spring Chamber Relief Metric Cartridge – 450 bar DMM10121

FUNCTION



The pressure reducing valve DMM10121 is a direct-acting, spring-loaded poppet valve which is leakage-free. Its function is to control the pressure at port 2. In the normal position, the main piston pushes the ball off the seat and there is free flow from port 1 to port 2. When the pre-set pressure is achieved at port 2, the pressure increase forces the main piston up, the ball moves with it and seals leakage-free. When the pressure at port 1 falls below the pressure at port 2, the poppet valve opens and oil can flow from port 2 to port 1.

FEATURES

- Automatic readjustment if there is a pressure drop in the cylinder
- External surfaces zinc-plated
- Hardened and ground valve components to ensure minimal wear and extended service life
- Adjustable throughout flow range
- Various pressure ranges up to 450 bar

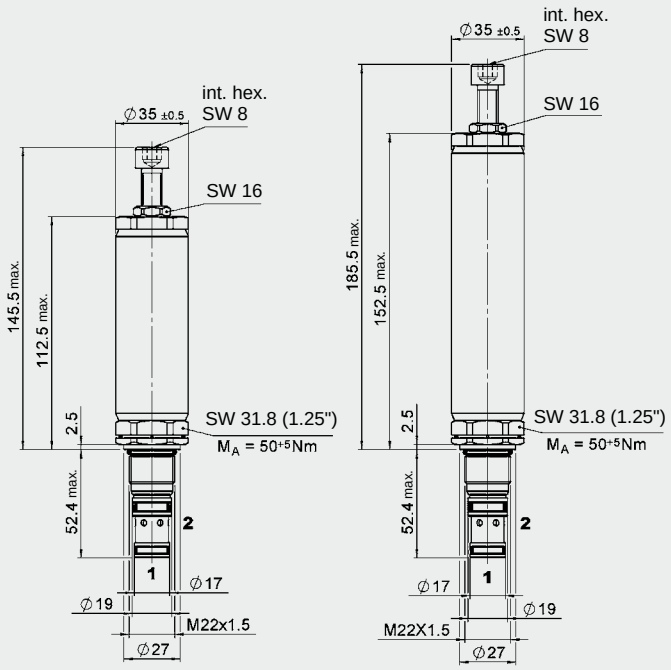
SPECIFICATIONS

Operating pressure:	min. 0 to max. 450 bar	
Nominal flow:	max. 30 l/min	
Pressure setting ranges:	Up to 110, 250, 50 - 410 bar, 50 - 450 bar	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +100 °C)
	Back-up rings:	PTFE
Cavity:	10121 (port 3 not used)	
Weight:	0.9 kg	

DIMENSIONS

110 bar Pressure range
250 bar Pressure range

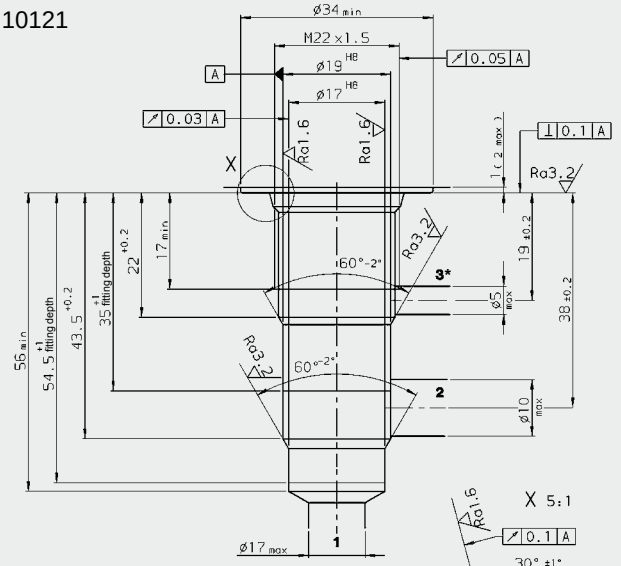
410 bar Pressure range
450 bar Pressure range



Millimeter (Inch)
Subject to technical modifications

CAVITY

10121



***Note:**
Port 3 is not used!

Form tools

Tool	Part No.
Countersink MK4	163910
Reamer MK2	163911

Millimeter (Inch)
Subject to technical modifications

MODEL CODE

DMM 10121 – 01 – C – V – 450 V 420

Basic model
2-way pressure reducing valve

Cavity
10121 = 3-way cavity, metric

Type
01 = standard
02 = increased sealing (special requirement)

Body and ports
C = cartridge only

Seals
V = FKM (standard)
N = NBR (optional)

Pressure setting range
110 = 0 – 110 bar
250 = 0 – 250 bar
410 = 50 – 410 bar
450 = 50 – 450 bar

Type of adjustment
V = adjustable using tool
Other types of adjustment on request

Cracking pressure setting
No details = no setting, spring relaxed
Pressure value = customer-specific cracking pressure

Standard models

Model code	Part No.
DMM10121–01–C–V–110V	3479985
DMM10121–01–C–V–250V	3479986
DMM10121–01–C–V–410V	3480034
DMM10121–01–C–V–450V	3465581

Other models on request

Inline connection housings

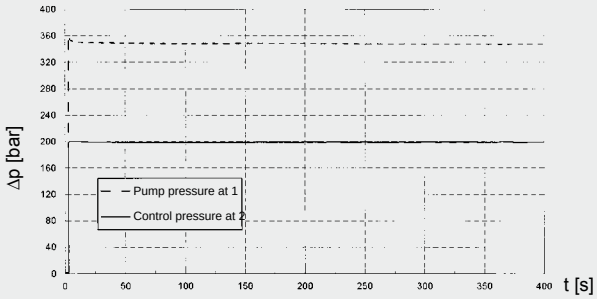
Code	Part No.	Material	Ports	Pressure
R10121	395236	Steel	G1/2	420 bar

Seal kits

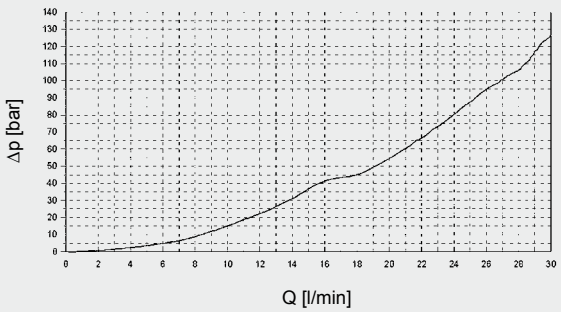
Code	Part No.
In preparation	

PERFORMANCE

ν = 33 mm²/s, T_{oil} = 46 °C



ν = 44 mm²/s, T_{oil} = 40 °C



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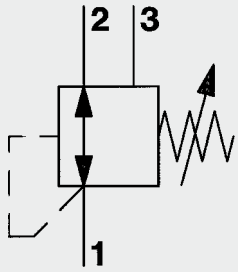
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com



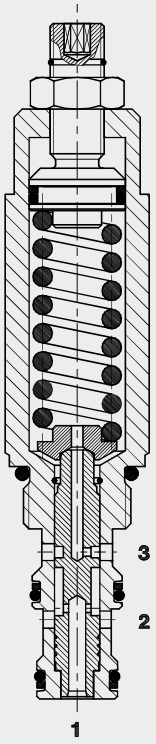
15 l/min
420 bar

Pressure Reducing Valve Spool Type, Direct Acting SAE-8 Cartridge – 420 bar

UNF

DR08-01

FUNCTION



The DR08 is a direct-acting, spring-loaded, spool type pressure reducing valve. Its function is to maintain a constant pressure at the consumer.
In the normal position, the pressure port 2 is connected to the consumer port 1. The pressure building at the consumer acts on the face of the control spool and moves it upwards against the set spring force. Therefore the flow at port 2 is restricted enough to satisfy the consumer's demand without increasing the pressure.
In addition the valve has a pressure relieving function: If the pressure across consumer port 1 rises above the control pressure due to external force, the control piston is pushed further against the spring and relieves the consumer to tank port 3.

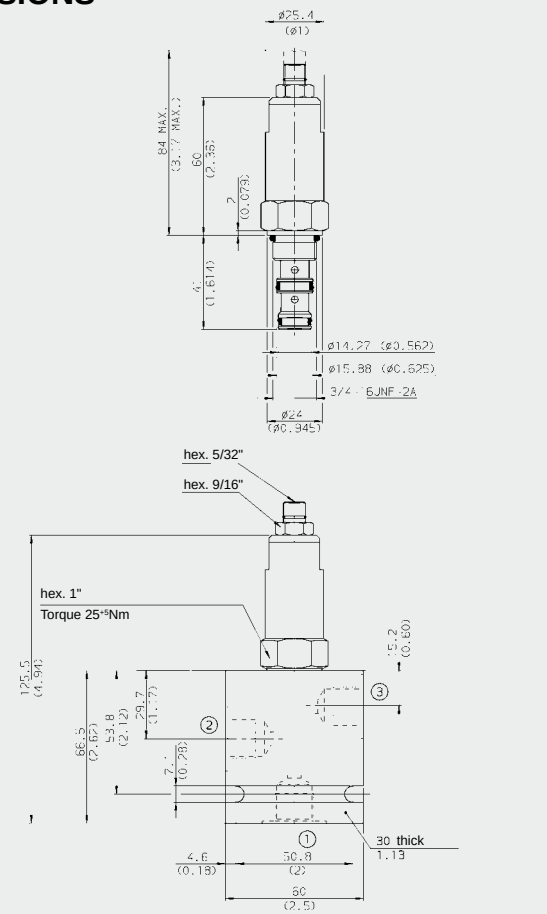
FEATURES

- External surfaces zinc-plated and corrosion-proof with integral maximum stroke limitation
- Adjustable throughout flow range
- Hydrodynamic damping
- Optional spring ranges up to 207 bar
- Quick response
- Compact design
- Hardened and ground internal valve components to ensure minimal wear and extended service life

SPECIFICATIONS

Operating pressure:	max. 420 bar	
Nominal flow:	max. 15 l/min	
Operating pressure ranges:	to 35 bar to 83 bar to 152 bar to 207 bar	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to 120 °C)
Cavity:	FC08-3	
Weight:	0.24 kg	

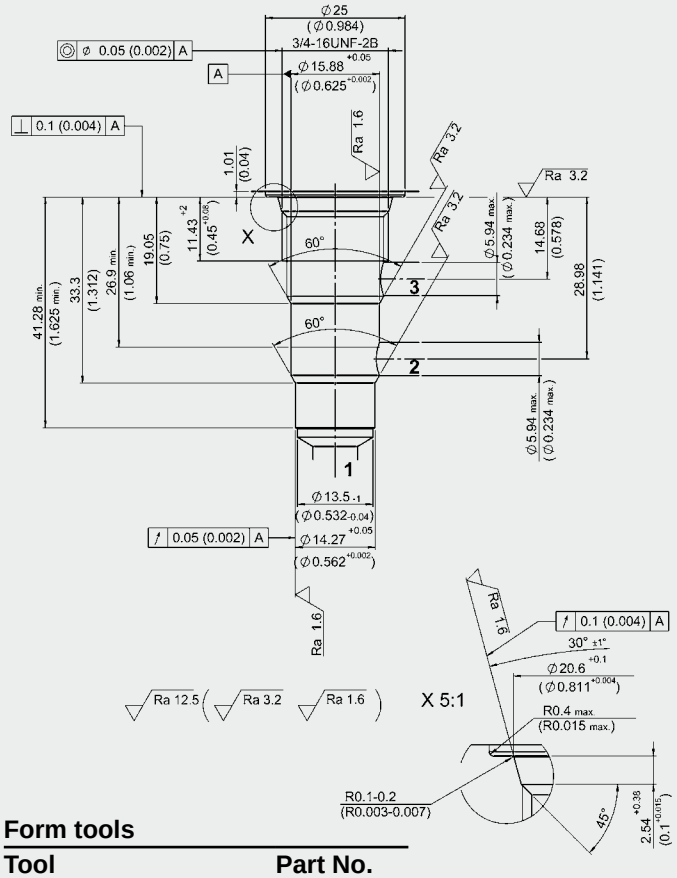
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-3



Form tools

Tool	Part No.
Countersink FC08-3	175644
Reamer FC08-3	175645

millimeter (inch)
subject to technical modifications

MODEL CODE

DR08-01 – C – N – 220 V 180

Basic model
Pressure reducing valve UNF

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR
V = FKM

Setting pressure range
027 = 2 to 19 bar
050 = 3 to 35 bar
120 = 11 to 83 bar
220 = 15 to 152 bar
300 = 20 to 207 bar
Other pressure ranges on request

Adjustment option
V = Allen head (HEX 5/32")
H = knob adjustment
F = factory preset, non adjustable
K = with protective cap

Pressure setting
No details = no setting, spring relaxed
Pressure value = setting specified by customer

Standard models

Model code	Part No.
DR08-01-C-N-027V	3107709
DR08-01-C-N-050V	560752
DR08-01-C-N-120V	560456
DR08-01-C-N-220V	560454
DR08-01-C-N-300V	3022444

*Standard in-line bodies

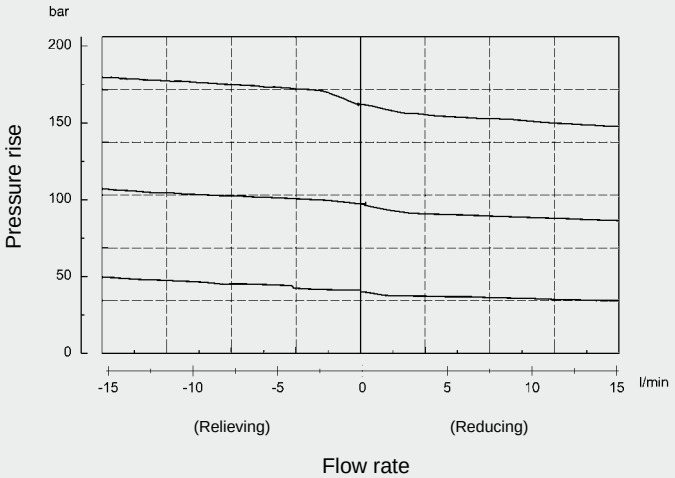
Code	Part No.	Material	Ports	Pressure
FH083-SB3	560922	Steel, zinc-plated	G3/8	420 bar
FH083-AB3	3011427	Aluminium, clear anodized	G3/8	210 bar

Seal kits

Code	Material	Part No.
FS083-N SEAL KIT	NBR	3054795
FS083-V SEAL KIT	FKM	2591059

PERFORMANCE

Measured at v = 34 mm²/s, T_{oil} = 46 °C



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D-66280 Sulzbach/Saar
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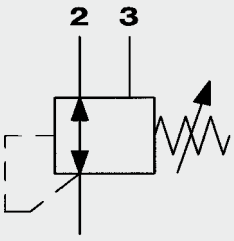
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



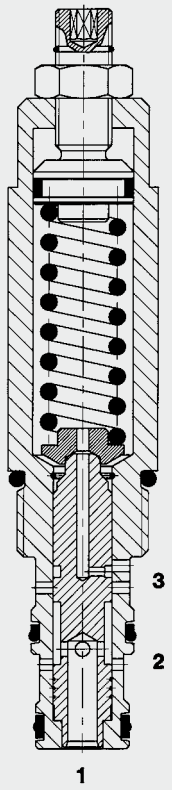
60 l/min
420 bar

Pressure Reducing Valve Spool Type, Direct-Acting SAE-10 Cartridge – 420 bar

UNF

DR10-01

FUNCTION



The DR10 is a direct-acting, spring-loaded, spool type pressure reducing valve. Its function is to maintain a constant pressure at the consumer.
In the normal position, the pressure port 2 is connected to the consumer port 1. The pressure building at the consumer acts on the face of the control spool and moves it upwards against the set spring force. Therefore the flow at port 2 is restricted enough to satisfy the consumer's demand without increasing the pressure.
In addition the valve has a pressure relieving function: If the pressure across consumer port 1 rises above the control pressure due to external force, the control spool is pushed further against the spring and vents the consumer to tank port 3.
Any pressure at port 3 is additive to the spring setting.

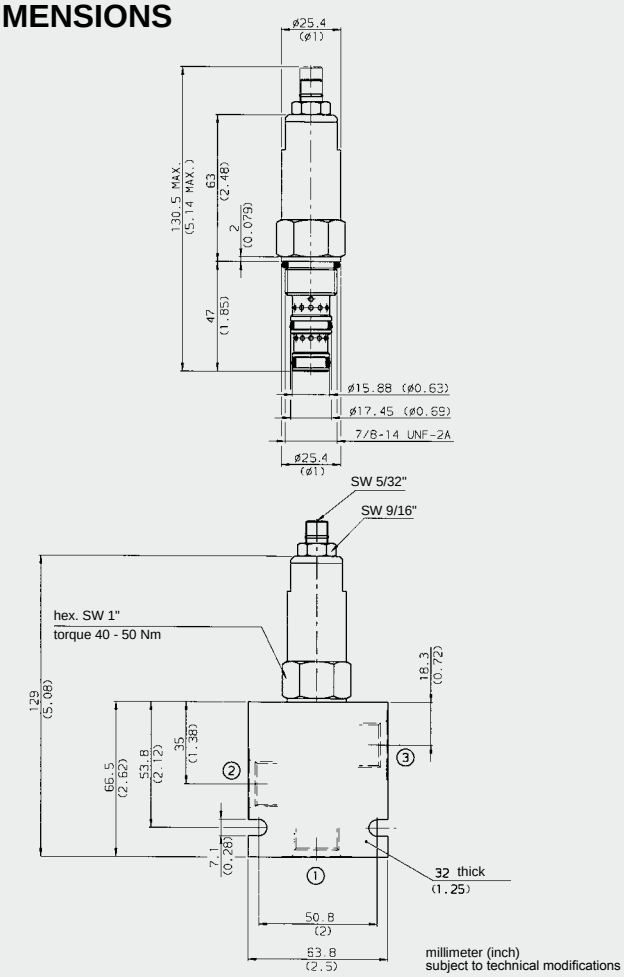
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Excellent stability throughout the entire flow range
- Hardened and ground valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- Max. stroke limiter
- Hydrodynamic damping
- Quick response
- Optional spring ranges up to 131 bar

SPECIFICATIONS

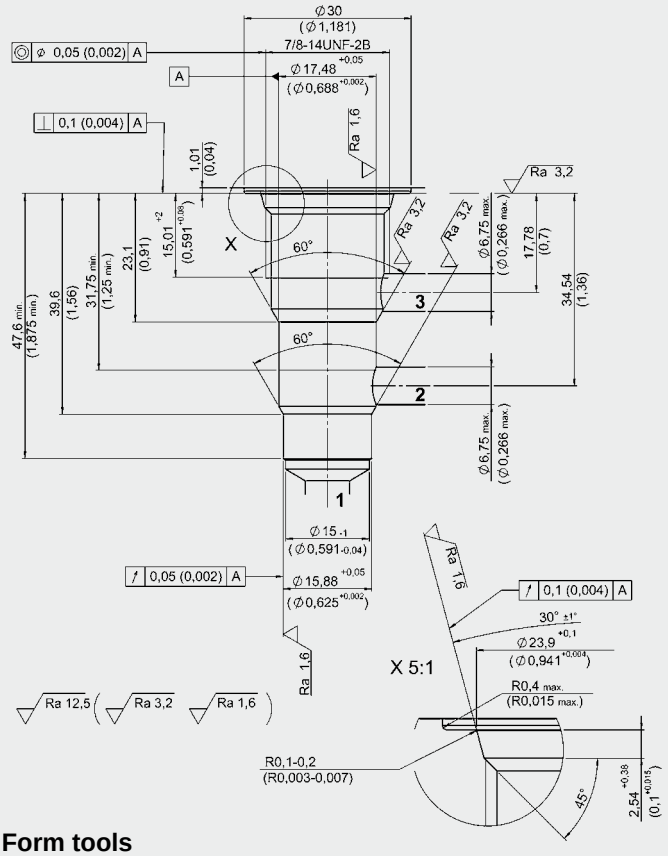
Operating pressure:	max. 420 bar	
Nominal flow:	max. 60 l/min	
Operating pressure ranges:	Up to 20 bar Up to 48 bar Up to 96 bar Up to 131 bar	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Support rings	PTFE
Cavity:	FC10-3	
Weight:	0.26 kg	

DIMENSIONS



CAVITY

FC10-3



Form tools

Tool	Part No.
Countersink FC10-3	176282
Finisher FC10-3	176283

MODEL CODE

DR10-01 – C – N – 070 V 050

Basic model
Pressure reducing valve UNF

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR
V = FKM

Pressure setting range
030 = up to 20 bar
070 = up to 48 bar
140 = up to 96 bar
190 = up to 131 bar

Type of adjustment
V = Allen head (hex. 5/32")
H = Handwheel
F = Factory preset, non adjustable

Pressure setting
No details = no setting, spring relaxed
Pressure value = setting specified by customer

Standard models

Model code	Part No.
DR10-01-C-N-030V	3140403
DR10-01-C-N-070V	3026815
DR10-01-C-N-140V	3026816
DR10-01-C-N-190V	3026817

*Standard in-line bodies

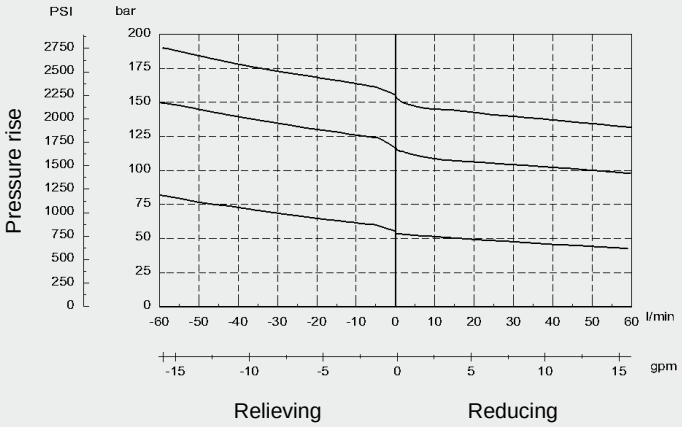
Code	Part No.	Material	Ports	Pressure
FH103-SB4	3037697	Steel, zinc-plated	G1/2	420 bar
FH103-AB4	3038092	Aluminium, anodized	G1/2	210 bar

Seal kits

Code	Material	Part No.
FS103-N Seal Kit	NBR	3071274
FS103-V SEAL KIT	FKM	3049443

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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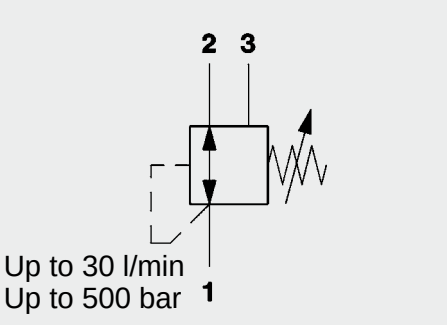
Subject to technical modifications.

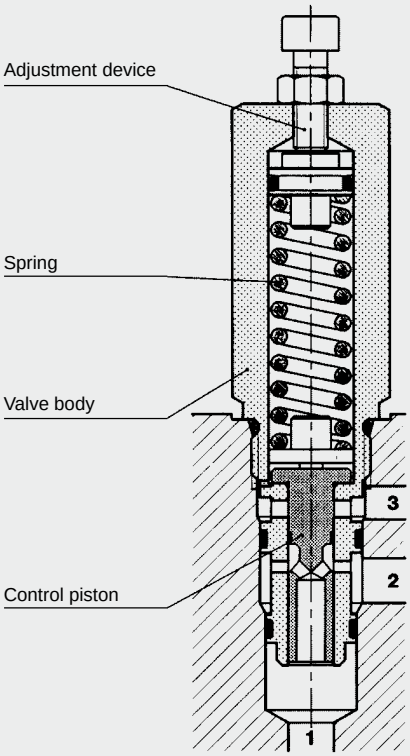
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



Up to 30 l/min
Up to 500 bar

Pressure Reducing Valve Spool Type, Direct-Acting Metric Cartridge – 500 bar DMVE

FUNCTION



The pressure reducing valve DMVE is a direct-acting, spring-loaded spool valve. Its function is to maintain a constant pressure at the consumer.
In the normal position, pressure port 2 is connected to consumer port 1. The pressure build-up at the consumer acts on the face of the control piston and moves it upwards against the set spring force. Therefore the inflow is throttled at port 2 just enough to satisfy the consumer's demand - without pressure increase.
There is an additional function of outlet pressure relief: if the pressure across consumer port 1 rises above the control pressure due to external force, the control piston is pushed further against the spring and relieves the consumer to tank port 3.

FEATURES

- Excellent dynamic performance
- Hardened and ground valve components to ensure minimal wear and extended service life
- Low pressure drop by CFD optimized flow path
- Low hysteresis and excellent stability throughout the flow range

SPECIFICATIONS

Operating pressure:	max. 500 bar (port 2)	
Nominal flow:	30 l/min (pressure-dependent - > 350 bar = 6 l/min)	
Pressure ranges:	50 bar 140 bar	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 380 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	no orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +100 °C)
	Back-up rings:	PTFE
Cavity:	08030	
Weight:	0.23 to 0.45 kg, depending on model	

MODEL CODE

DMVE – G1/2 – 01 X – 140 V 40

Basic model
Pressure reducing valve

Size
G 1/2

Type
01 = standard

Series
(to be determined by manufacturer)

Pressure setting range
50 = to 50 bar
140 = to 140 bar

Type of adjustment
V = Allen head
Other adjustment types on request

Outlet pressure setting
No details = valve not set, spring relaxed
40 = factory pre-set cracking pressure in bar
Setting on request

Standard models

Model code	Part No.
DMVE-G1/2-01X-50V	710254
DMVE-G1/2-01X-140V	710250

Standard in-line bodies

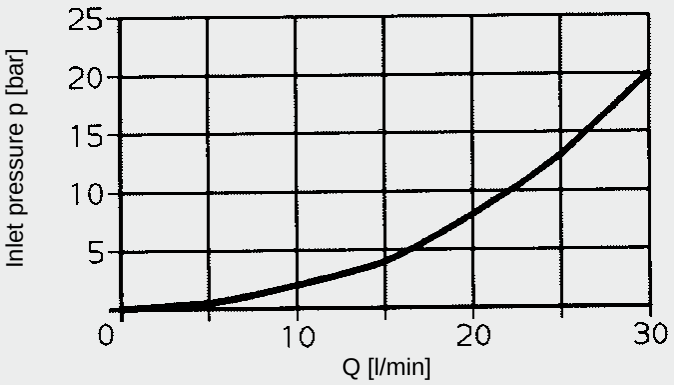
Code	Part No.	Material	Ports	Pressure
R08030-01X-01	283025	Steel, zinc-plated	G3/8	420 bar

Seal kits

Code	Material	Part No.
SEAL KIT DMVE-G1/2-...	FKM	715873

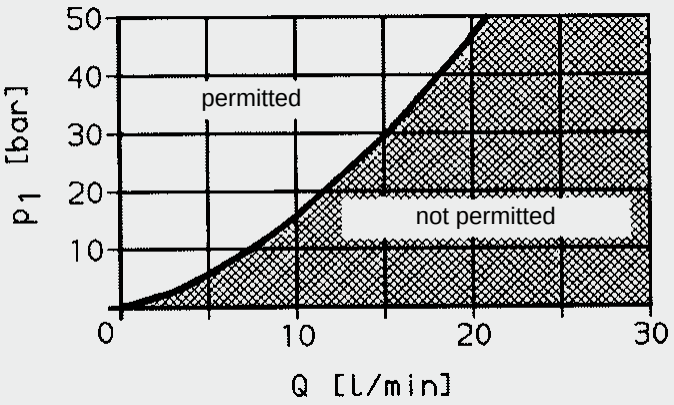
PERFORMANCE

Pressure drop, dependent on flow rate

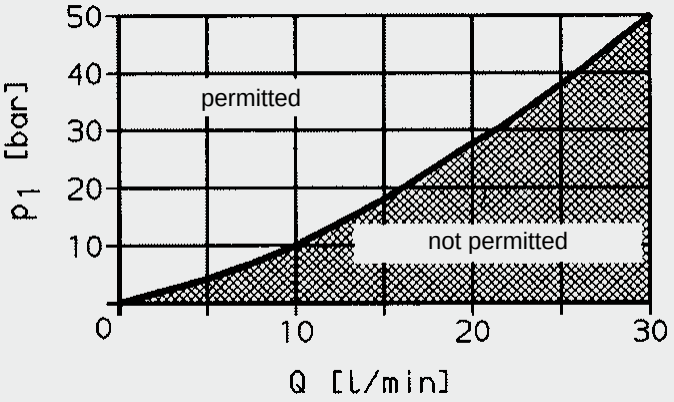


Permitted flow rate from 1 to 2
(free return flow)
p1 = outlet pressure setting
p1 > 50 bar... 30 l/min
p1 ≤ 50 bar... see curve

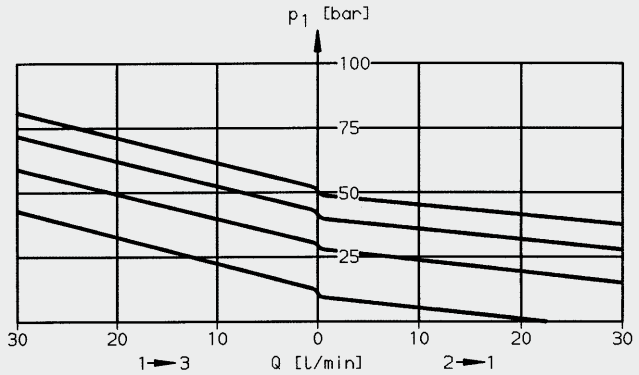
DMVE-G1/2-01X-50



DMVE-G1/2-01X-140

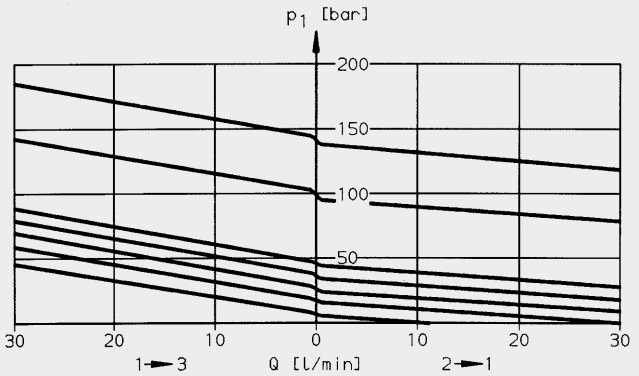


DMVE-G1/2-01X-50



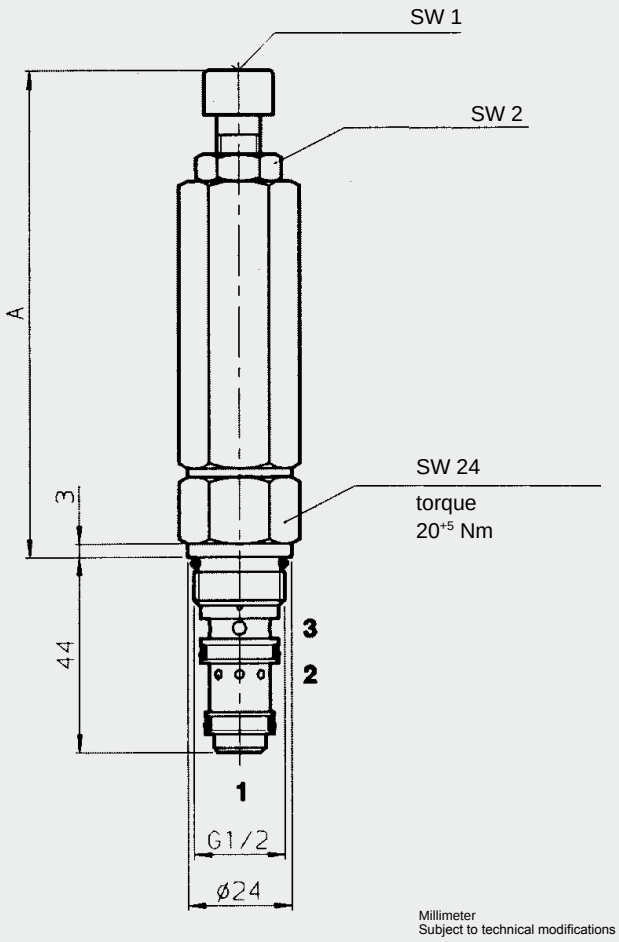
(relieving) (reducing)

DMVE-G1/2-01X-140



(relieving) (reducing)

DIMENSIONS

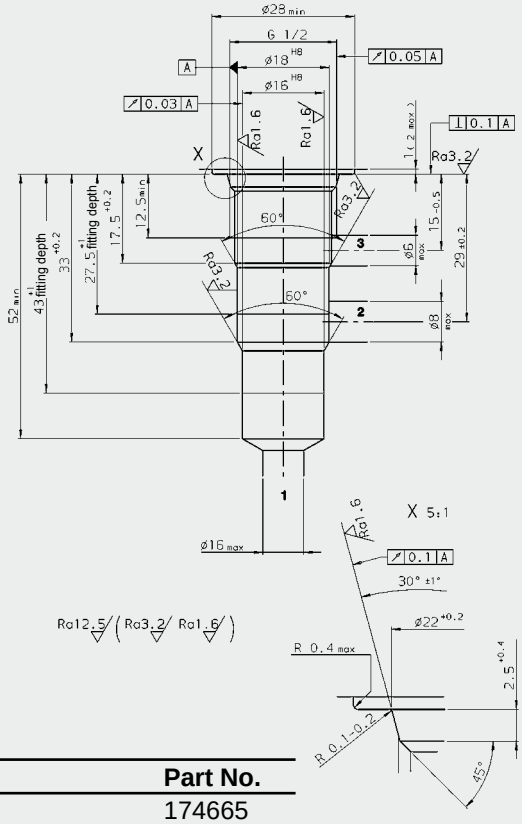


Millimeter
Subject to technical modifications

Type	A_{max}	B_{max}	SW 1	SW 2
DMVE-G1/2-01X–50	80	99	5	8
DMVE-G1/2-01X–140	110	134	10	17

CAVITY

08030



Form tools

Tool	Part No.
Countersink	174665
Reamer	169962
Tap	1002667

Millimeter
Subject to technical modifications

NOTE

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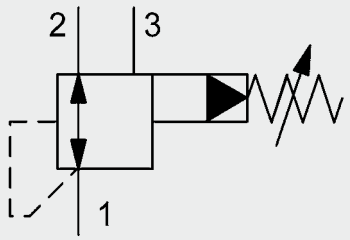
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

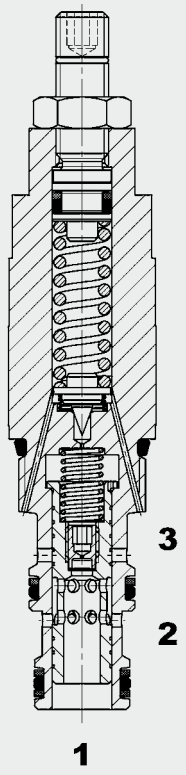


60 l/min
350 bar

Pressure Reducing Valve Spool Type, Pilot-Operated SAE-8 Cartridge – 350 bar DR08P-01

UNF

FUNCTION



The DR08P is a pilot operated, spring-loaded, spool type pressure reducing valve. It maintains a constant outlet pressure at port 1 regardless of pressure variations at the inlet port 2.
If the pressure across port 1 rises and exceeds the pre-set value, the pilot-stage opens and oil flows from behind the main spool to the tank port 3. The resulting pressure differential causes the main spool to move against the reset-spring and allows oil to flow from port 2 to port 1. This continues until the system pressure is equal to the spring tension and the valve closes again.
If the pressure at port 1 suddenly rises due to external force the valve is relieved to tank port 3 (maximum pressure relief).
Any pressure at port 3 is directly additive to the valve pressure setting.

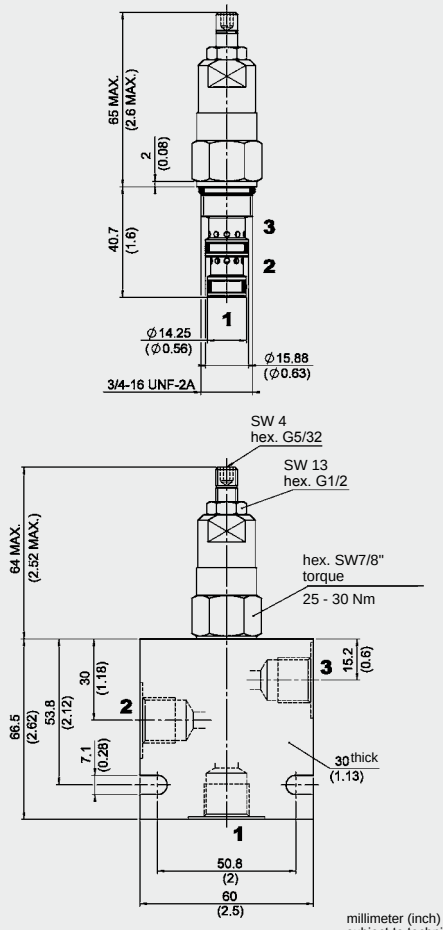
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Excellent stability throughout the entire flow range
- Low pressure drop due to CFD optimized flow path
- Screen protected metering orifice enhances safety
- Optional spring ranges up to 345 bar
- Adjustable throughout flow range
- Quick response
- Compact design

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 60 l/min	
Operating pressure ranges:	up to 35 bar up to 60 bar up to 125 bar up to 230 bar up to 345 bar	
Internal leakage:	< 0.5 l/min at 350 bar	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Support rings:	PTFE
Cavity:	FC08-3	
Weight:	0.17 kg	

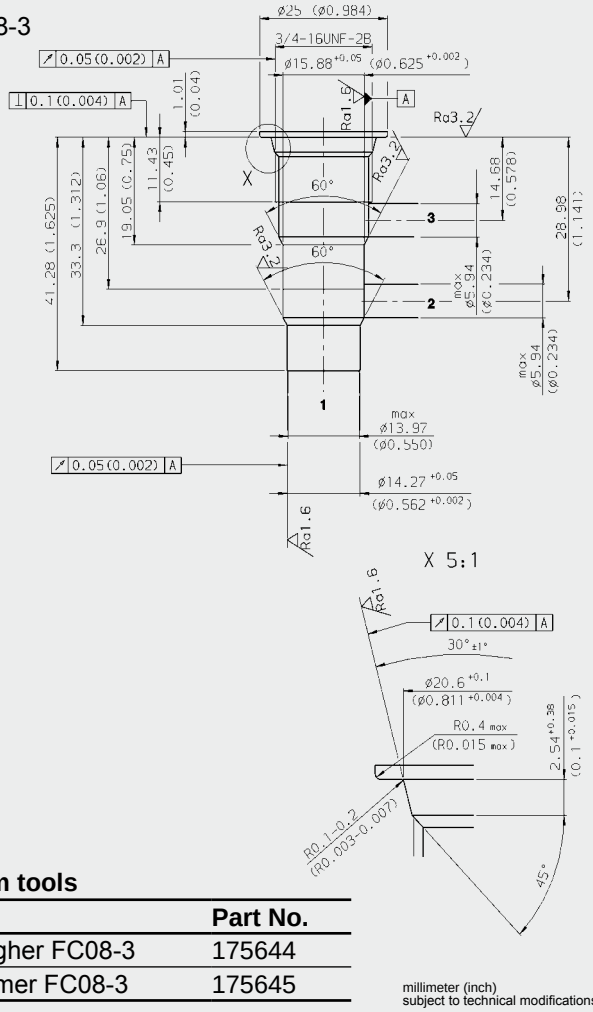
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-3



Form tools

Tool	Part No.
Rougher FC08-3	175644
Reamer FC08-3	175645

millimeter (inch)
subject to technical modifications

MODEL CODE

DR08P-01 – C – N – 180 V 100

Basic model
Pressure reducing valve UNF

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR
V = FKM

Setting pressure range
050 = 6 to 35 bar
090 = 6 to 62 bar
180 = 6 to 125 bar
330 = 6 to 228 bar
500 = 6 to 345 bar
Other pressure ranges on request

Adjustment option
V = Allen head (HEX 5/32")
H = Knob adjustment
F = Factory preset, non adjustable
K = Allen head (HEX 5/32") with protective cap

Cracking pressure setting
No details = no setting, spring relaxed
Pressure value = customer-specific cracking pressure on request

Standard models

Model Code	Part No.
DR08P-01-C-N-090V	3120532
DR08P-01-C-N-330V	3120534
DR08P-01-C-N-500V	3120535

*Standard in-line bodies

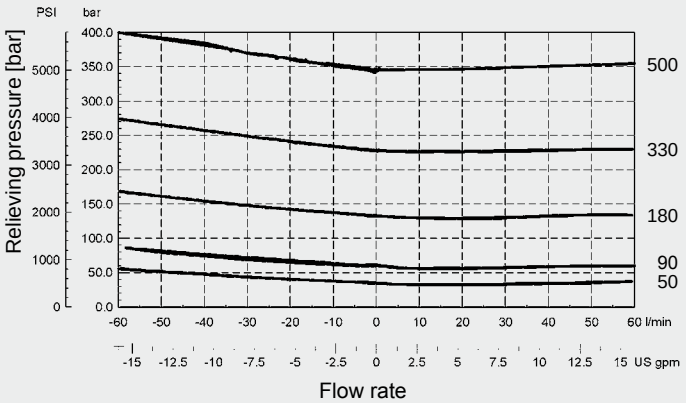
Code	Part No.	Material	Ports	Pressure
FH083-SB3	560922	Steel, zinc-plated	G3/8	420 bar
FH083-AB3	3011427	Aluminium, anodized	G3/8	210 bar

Seal kits

Code	Material	Part No.
FS083-N SEAL KIT	NBR	3054795
FS083-V SEAL KIT	FKM	2591059

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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D-66280 Sulzbach/Saar
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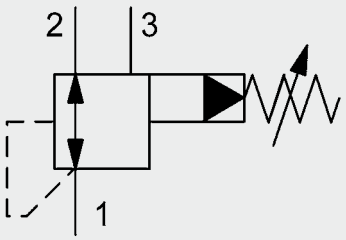


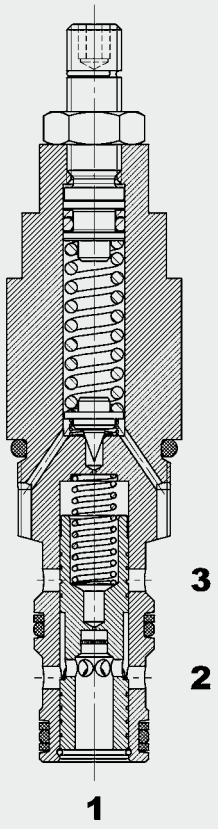
100 l/min
350 bar

Pressure Reducing Valve Spool Type, Pilot-Operated SAE-10 Cartridge – 350 bar

UNF

DR10P-01

FUNCTION



The DR10P is a pilot-operated, spring-loaded, spool type pressure reducing valve.
If the pressure across port 1 exceeds the pre-set spring tension, the pilot-stage opens and oil flows from behind the main spool to the tank port 3. The resulting pressure differential causes the main spool to move against the reset-spring and allows oil to flow from port 2 to port 1. This continues until the system pressure is equal to the spring tension and the valve closes again.
If the pressure at port 1 suddenly rises due to external force the valve is relieved to tank port 3 (maximum pressure relief).
Any pressure at port 3 is additive to the valve pressure setting.

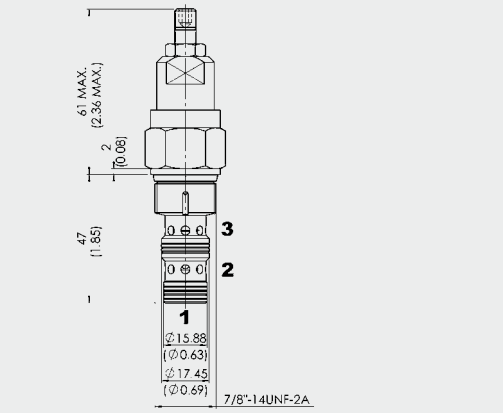
FEATURES

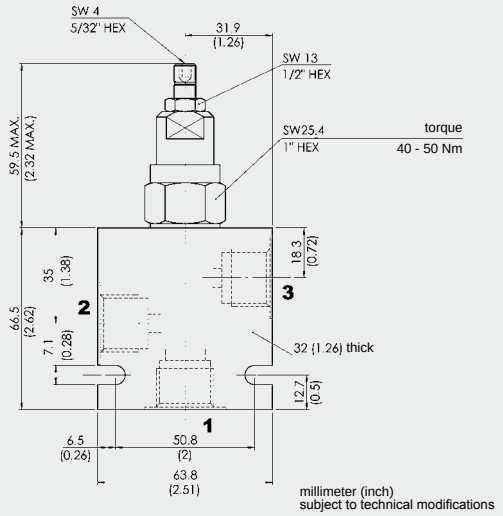
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Excellent stability across the whole flow range
- Screen-protected metering orifice enhances safety
- Optional pressure ranges up to 345 bar
- Quick response
- Compact design

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 100 l/min	
Operating pressure ranges:	up to 35 bar up to 62 bar up to 124 bar up to 228 bar up to 345 bar	
Internal leakage:	< 0.5 l/min at 350 bar	
Media operating temperature range:	min. -30 °C to max. +120 °C	
Ambient temperature range:	min. -30 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	FC10-3	
Weight:	0.2 kg	

DIMENSIONS

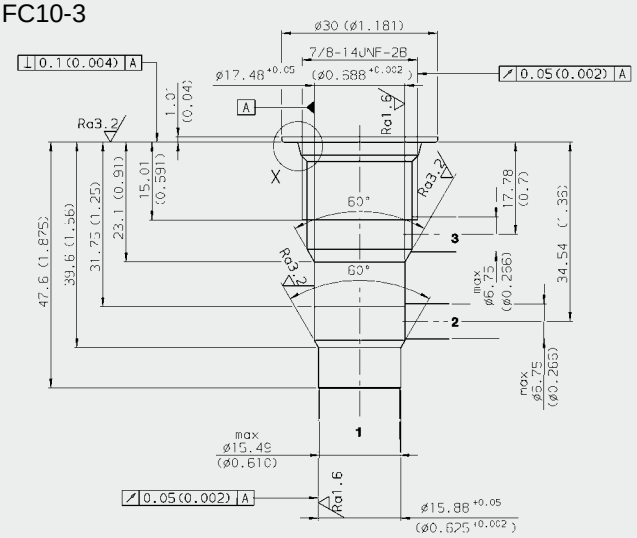


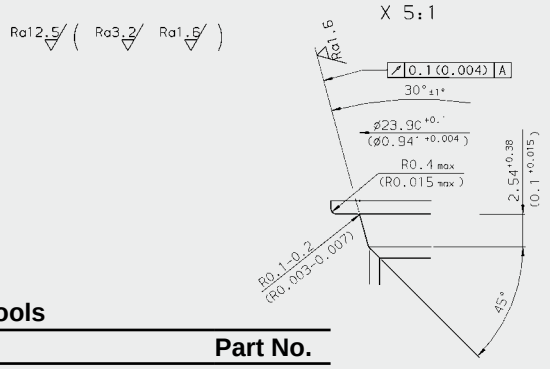


millimeter (inch)
subject to technical modifications

CAVITY

FC10-3





Form tools

Tool	Part No.
Countersink FC10-3	176282
Reamer FC10-3	176283

millimeter (inch)
subject to technical modifications

MODEL CODE

DR10P-01 – C – N – 180 V 100

Basic model
Pressure reducing valve, UNF

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Pressure range
050 = to 35 bar
090 = to 62 bar
180 = to 124 bar
330 = to 228 bar
500 = to 345 bar
Other pressure ranges on request

Type of adjustment
V = Allen head (hex. 5/32")
H = Knob adjustment
F = Factory preset, non adjustable
K = Allen head (hex. 5/32") with protective cap

Cracking pressure setting
No details = no setting
100 = 100 PSI customer-specific cracking pressure, on request

Standard models

Model code	Part No.
DR10P-01-C-N-050V	3024308
DR10P-01-C-N-090V	3024309
DR10P-01-C-N-180V	3024310
DR10P-01-C-N-330V	3024311
DR10P-01-C-N-500V	3024333

*Standard in-line bodies

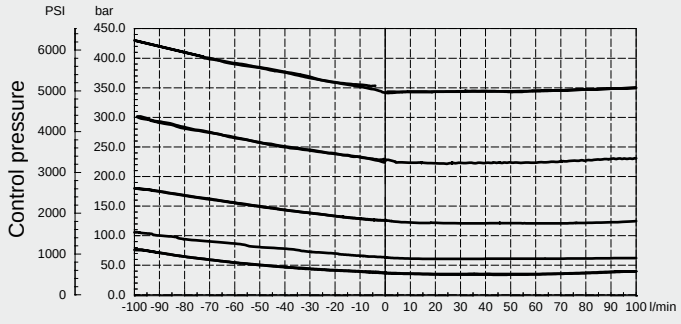
Code	Part No.	Material	Ports	Pressure
FH103-SB4	3037697	Steel, zinc-plated	G1/2	420 bar
FH103-AB4	3038092	Aluminium, anodized	G1/2	210 bar

Seal kits

Code	Material	Part No.
FS103-N SEAL KIT	NBR	3071274
FS103-V SEAL KIT	FKM	3049443

PERFORMANCE

Measured at
ν = 34 mm²/s, T_{Oil} = 46 °C



Flow rate

NOTE

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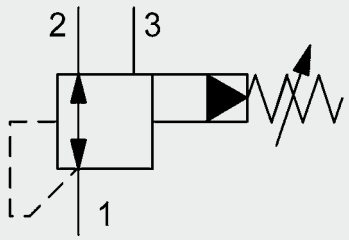
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

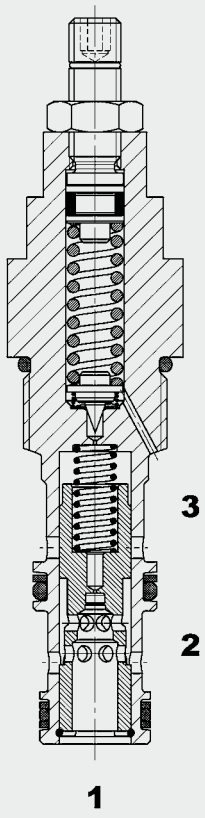


Up to 150 l/min
Up to 350 bar

Pressure Reducing Valve Spool Type, Pilot Operated Metric Cartridge Valve – 350 bar

DRM10130P-01

FUNCTION



The pressure reducing valve DRM10130P is a pilot-operated, 3-way spool-type valve.
If the pressure across port 1 exceeds the pre-set value, the pilot-stage opens and oil flows from behind the main spool to the tank port 3. The resulting pressure differential causes the main spool to move against the reset-spring and allows oil to flow from port 2 to port 1. This continues until the system pressure is equal to the spring tension and the valve closes again.
If the pressure at port 1 suddenly rises due to external force the valve is relieved to tank port 3 (maximum pressure relief).

Any pressure at port 3 is additive to the pressure setting.

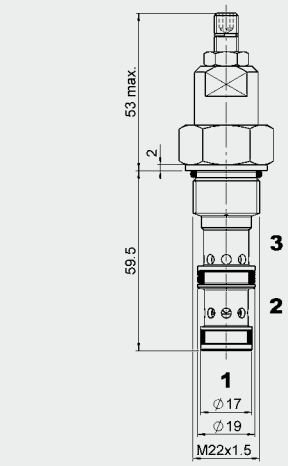
GENERAL

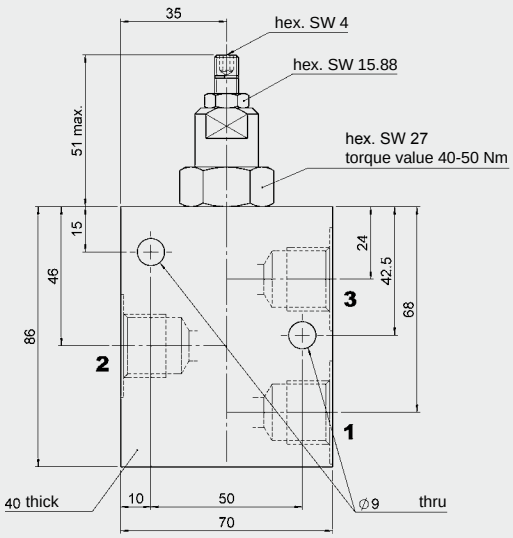
- Excellent stability throughout the entire flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- Adjustable throughout flow range
- Screen protected metering orifice enhances safety
- Optional spring ranges up to 350 bar

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 150 l/min	
Operating pressure ranges:	4 to 35 bar 4 to 60 bar 4 to 125 bar 4 to 230 bar 4 to 350 bar	
Pilot flow:	< 500 cm³/min at 350 bar	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Coil:	steel / polyamide
Cavity:	10130	
Weight:	0.25 kg	

DIMENSIONS

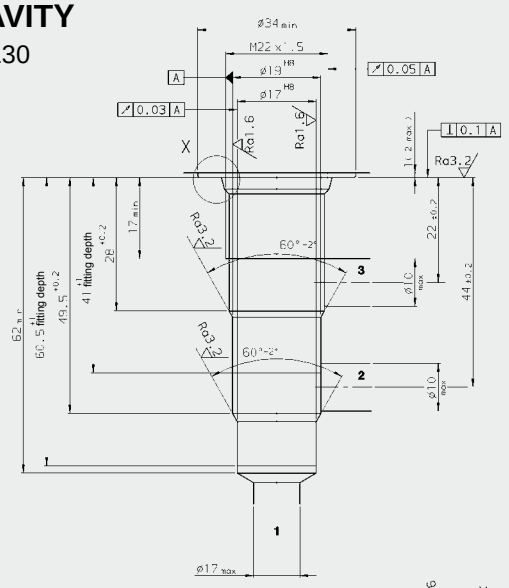


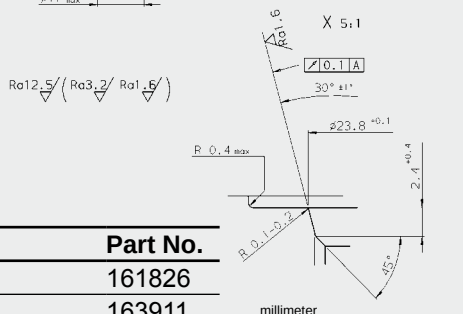


millimeter
subject to technical modifications

CAVITY

10130





Form tools

Tool	Part No.
Countersink	161826
Reamer	163911

millimeter
subject to technical modifications

MODEL CODE

DRM10130P – 01 – C – N – 350 – V 230

Basic model
Pressure reducing valve, metric

Type
01 = standard

Body and ports*
C = cartridge only
Combinations with body on request

Seals
N = NBR (standard)
V = FKM

Pressure setting range
035 = 4 to 35 bar
060 = 4 to 60 bar
125 = 4 to 125 bar
230 = 4 to 230 bar
350 = 4 to 350 bar

Type of adjustment
V = Allen head (hex. 5/32")
H = Knob adjustment
F = Factory preset, non adjustable
K = Allen head (hex. 5/32") with protective cap

Cracking pressure setting
No details = no setting, spring relaxed
Pressure value = cracking pressure specified by customer (on request)

Standard models

Model code	Part No.
DRM10130P-01-C-N-060V	3124335
DRM10130P-01-C-N-230V	3124337
DRM10130P-01-C-N-350V	3124348

*Standard in-line bodies

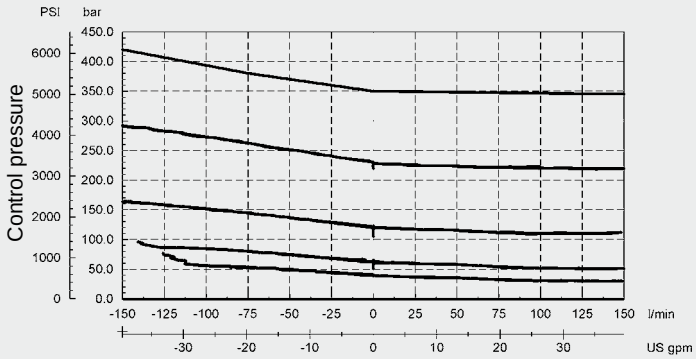
Code	Part No.	Material	Ports	Pressure
R10130-01X-01	395238	Steel, zinc-plated	G 1/2	420 bar
R10130-01X-01	395239	Steel, zinc-plated	M 22 x 1.5	420 bar

Seal kits

Code	Material	Part No.
Seal kit 10130	NBR	3231327
Seal kit 10130	FKM	3506050

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



Flow rate

NOTE

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D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
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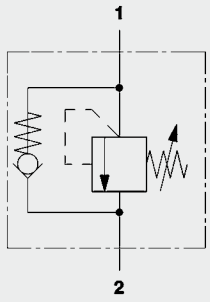
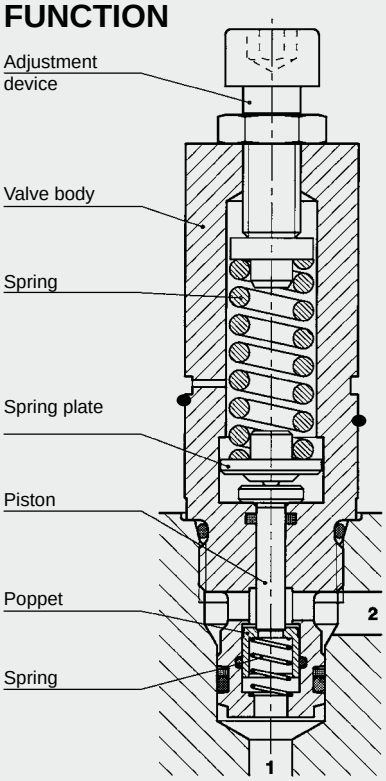


Up to 20 l/min
Up to 350 bar

Pressure Sequence Valve Poppet Type, Direct-Acting Metric Cartridge – 350 bar

DZ5E

FUNCTION



The pressure sequence valve DZ5E is a direct-acting, spring-loaded poppet valve with built-in check valve. In the normal position, the path from port 1 to port 2 is blocked.
If the pressure exceeds the pre-set spring tension, the piston and poppet move together in a closed condition to the upper limit of the poppet. If the pressure continues to rise, the piston unblocks the path from 1 to 2 (consumer) so that oil can flow.
This opens the connection to the additional consumers from port 2. In the return direction from port 2 to 1, the main piston is pushed back by the spring into its initial position and the poppet opens against the corresponding spring and allows free flow from port 2 to port 1.
The spring chamber pressure is vented to atmosphere.

FEATURES

- To connect additional consumers once certain pressures are reached
- To connect cylinders in sequence circuits
- As a pressure relief valve if free flow is required in the opposite direction
- Excellent dynamic performance
- Excellent stability throughout flow range
- Hardened and ground valve components to ensure minimal wear and extended service life
- Adjustable throughout flow range
- Various pressure ranges up to 350 bar
- Optional zinc-plated version available

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 20 l/min	
Pressure setting ranges:	100 / 200 / 250 / 350 bar	
Sequence pressure tolerance:	± 5 bar below 100 bar, above 100 bar ±5%	
Leakage:	leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Cracking pressure from 2→1:	0.5 bar	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions, preferably horizontal	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +100 °C)
	Back-up rings:	PTFE
Cavity:	06020	
Weight:	0.22 kg	

MODEL CODE

DZ5E – 01X – 200 V 180

Basic model
Pressure sequence valve, metric

Type
01 = standard

Pressure setting range
100 = to 100 bar
200 = to 200 bar
250 = to 250 bar
350 = to 350 bar

Type of adjustment
V = Allen head (standard)
Other adjustment types on request

Sequence pressure setting
No details = no setting
180 = 180 bar
Other sequence pressures on request

Standard models

Model code	Part No.
DZ5E-01X-100V	710297
DZ5E-01X-200V	710298
DZ5E-01X-250V	710296
DZ5E-01X-350V	710299

Other models on request

Standard in-line bodies

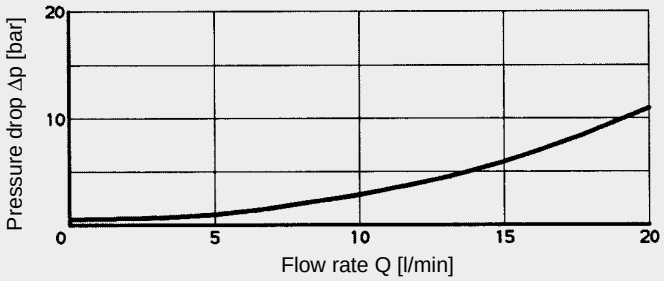
Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G3/8	420 bar
R06020-10X-01	276842	Steel, zinc-plated	G3/8	420 bar

Seal kits

Code	Part No.
SEAL KIT 06020-NBR	3119017
SEAL KIT 06020-FKM	3262477

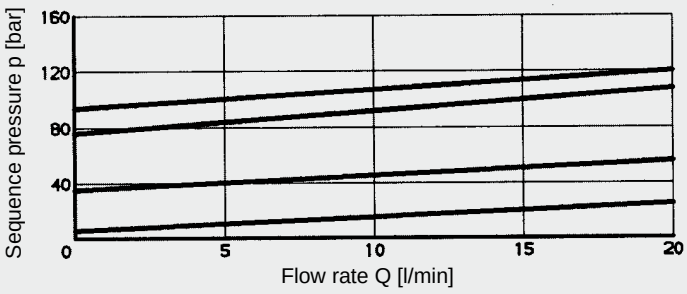
PERFORMANCE

Pressure drop, dependent on flow rate
Measured at ν = 36 mm²/s and T_{oil} = 50 °C,
Flow direction 2→1

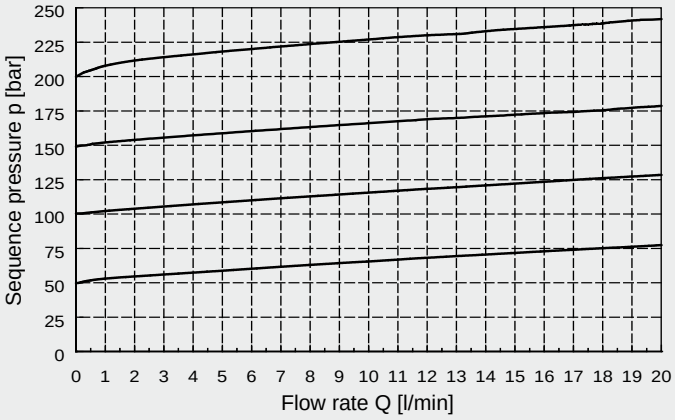


Sequence pressure, dependent on flow rate
Measured at ν = 36 mm²/s and T_{oil} = 50 °C,
Flow direction 1→2

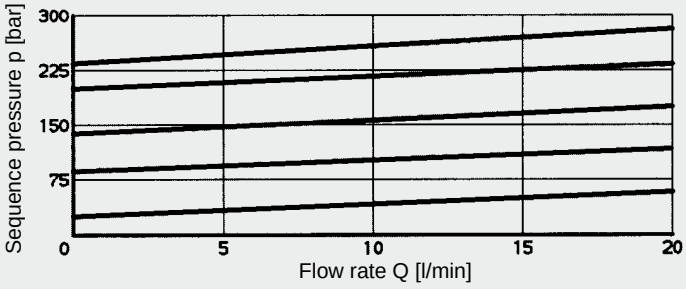
Pressure range ... 100 bar



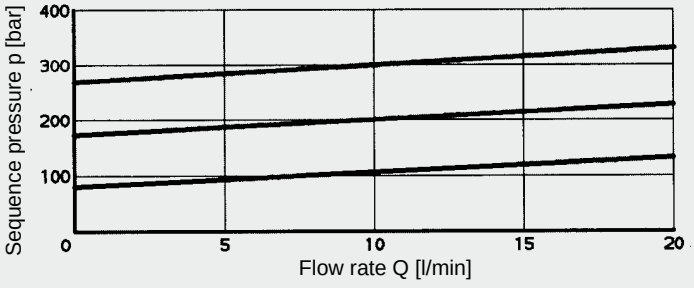
Pressure range ... 100 bar



Pressure range ... 250 bar

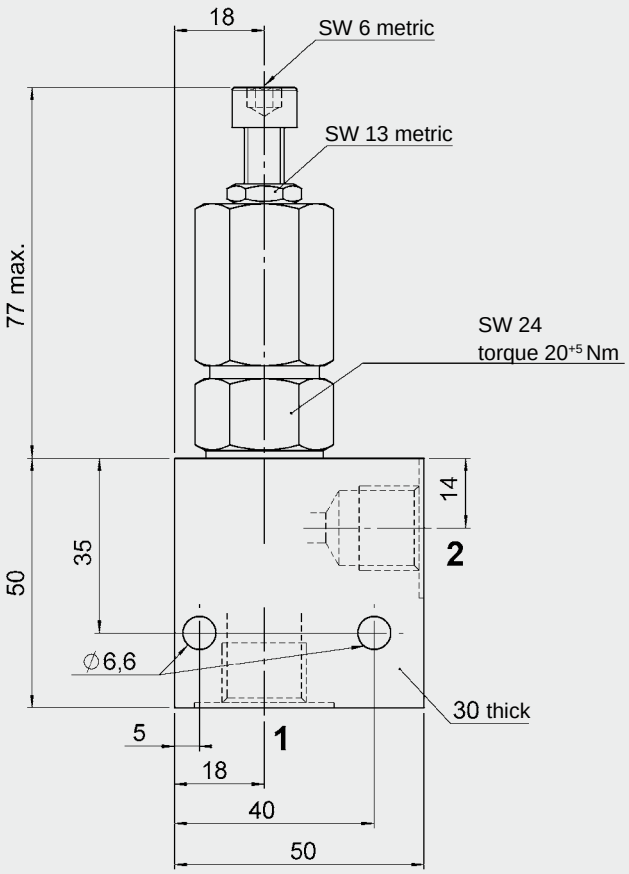


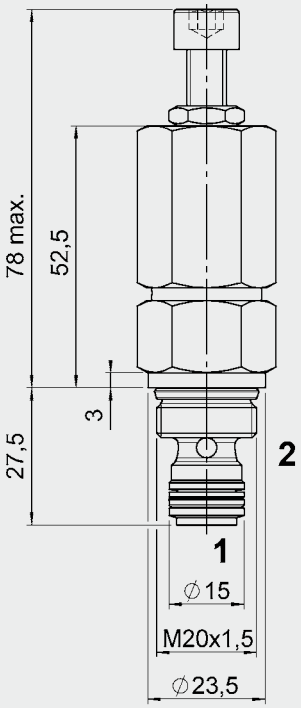
Pressure range ... 350 bar



DIMENSIONS

Type of adjustment

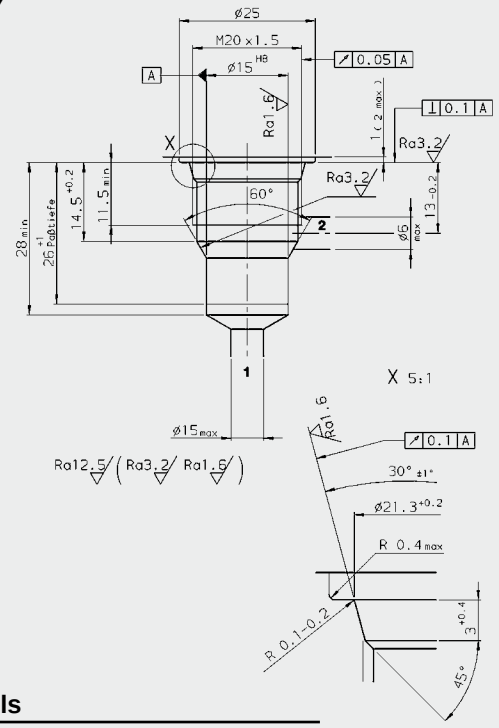




Millimeter
Subject to technical modifications

CAVITY

06020



Form tools

Tool	Part No.
Countersink	170033
Reamer	1000768
Tap	1002648
Plug gauge	168840

Millimeter
Subject to technical modifications

NOTE

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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
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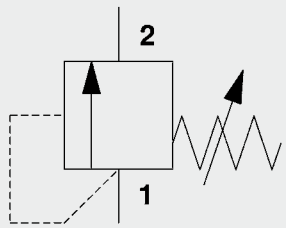
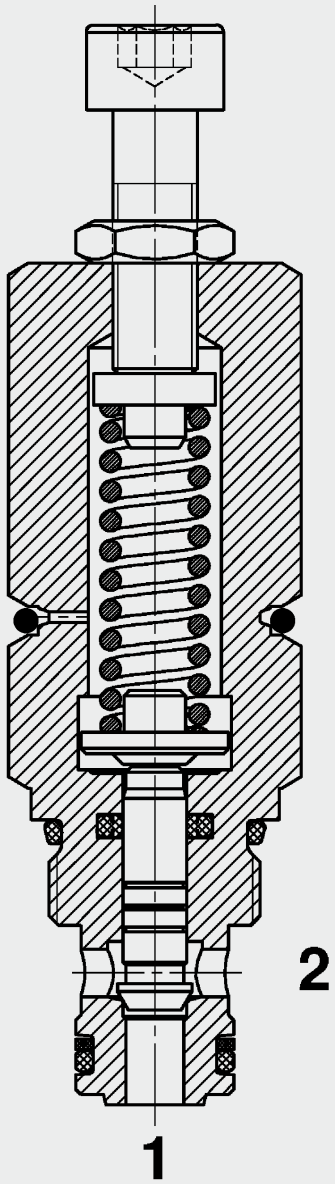


up to 30 l/min
up to 350 bar

Pressure Sequence Valve Poppet Type, Direct Acting Metric Cartridge – 350 bar DZM06020-01

FUNCTION



The pressure sequence valve DZM06020 is a direct-acting, spring-loaded poppet valve. If the hydraulic pressure exceeds the pre-set spring tension, the valve opens and the oil flows to port 2 (consumer). If the consumer reaches the pre-set pressure, the valve remains open.

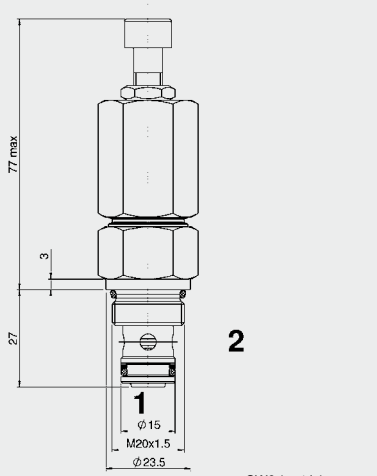
FEATURES

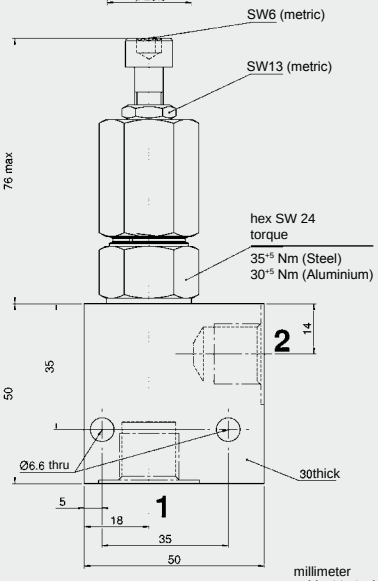
- To connect additional consumers once certain pressures are reached
- Excellent dynamic performance
- Excellent stability throughout the entire flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- Various pressure ranges up to 210 bar

SPECIFICATIONS

Operating pressure:	max. 350 bar, can be set up to 210 bar	
Nominal flow:	max. 30 l/min	
Internal leakage:	leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Setting pressure ranges:	min. 10 bar - 100 / 210 bar	
Sequence pressure tolerance:	+/- 5 bar	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	06020	
Weight:	0.18 kg	

DIMENSIONS

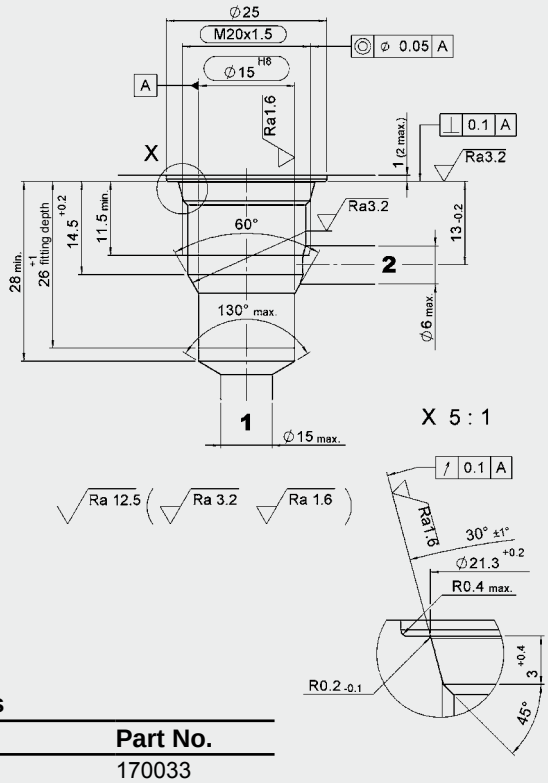




millimeter
subject to technical modifications

CAVITY

06020



Form tools

Tool	Part No.
Countersink	170033
Reamer	1000768
Tap	1002648
Plug gauge	168840

millimeter
subject to technical modifications

MODEL CODE

DZM 06020 – 01 – C – N – 100 V

Basic model
Pressure sequence valve, metric

Cavity
06020 = 2-way cavity

Type
01 = standard

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Setting pressure range
100 = up to 100 bar
210 = up to 210 bar

Type of adjustment
V = adjustable using tool
Other types of adjustment on request

Standard models

Model code	Part No.
DZM06020-01-C-N-100V	3361011
DZM06020-01-C-N-210V	3376262

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G3/8	max. 420 bar
R06020-10X-01	276842	Steel, zinc-plated	G3/8	max. 420 bar

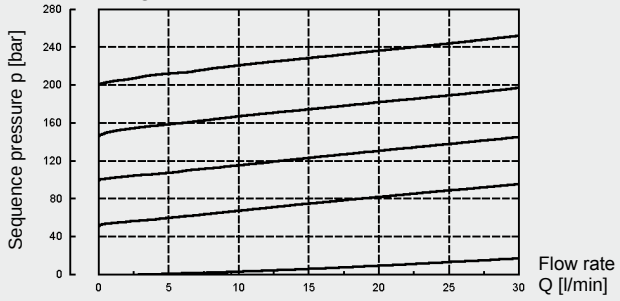
Seal kits

Code	Material	Part No.
SEAL KIT 06020-NBR	NBR	3119017
SEAL KIT 06020-FKM	FKM	3262477

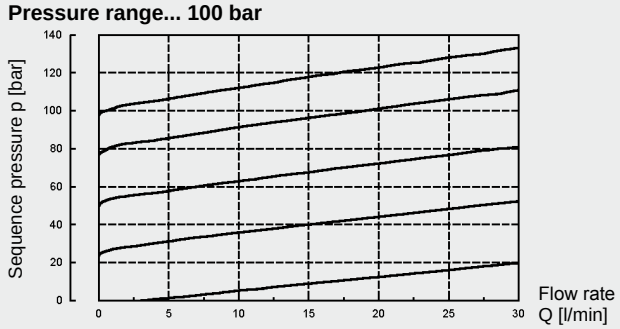
PERFORMANCE

Flow direction 1 → 2 measured at: 33 mm²/s, T_{oil} = 46 °C

Pressure range... 210 bar



Pressure range... 100 bar



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D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
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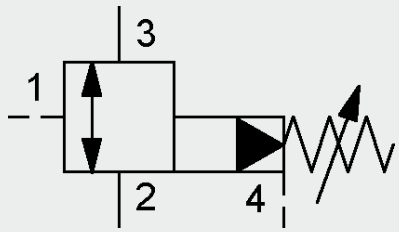
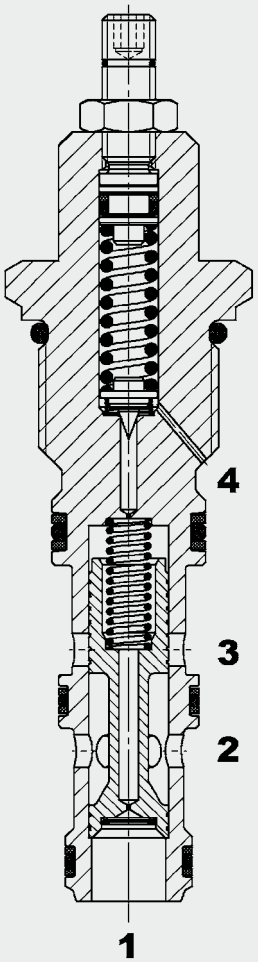


Up to 200 l/min
Up to 350 bar

Pressure Sequence Valve Spool Type, Pilot-Operated with Pilot Drain Metric Cartridge – 350 bar DZM12131PE

FUNCTION



The pressure sequence valve DZM12131PE is a pilot-operated, spring-loaded spool valve with a pilot drain at port 4. This means that pressures across port 3 have no influence on the pressure setting. If the pressure at port 1 exceeds the pre-set spring tension, the pilot stage opens and oil flows from behind the main piston to tank port 4. The resulting pressure differential causes the main piston to move against the reset spring and allows oil to flow from port 2 to port 3 or vice versa.

FEATURES

- To connect additional consumers once certain pressures are reached
- Excellent dynamic performance
- Excellent stability throughout the entire flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- Adjustable throughout flow range
- Various pressure ranges up to 350 bar

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 200 l/min	
Pressure setting ranges:	35 bar / 60 bar / 125 bar / 230 bar / 350 bar	
Sequence pressure tolerance:	+/- 5 bar	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	12131	
Weight:	0.3 kg	

MODEL CODE

DZM 12131 PE – 01 – C – N – 230 V 060

Basic model
Pressure sequence valve, metric

Cavity
12131 = 3-way cavity

Function
PE = pilot-operated with pilot drain

Type
01 = standard

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Pressure range
035 = up to 35 bar
060 = up to 60 bar
125 = up to 125 bar
230 = up to 230 bar
350 = up to 350 bar

Type of adjustment
V = adjustable using tool
Other types of adjustment on request

Cracking pressure setting
No details = no setting, spring relaxed
060 = specific cracking pressure
Other cracking pressures on request

Standard models

Model code	Part No.
DZM12131PE-01-C-N-035V019	3194780
DZM12131PE-01-C-N-230V060	3363310
DZM12131PE-01-C-N-230V175	3309451
DZM12131PE-01-C-N-230V	3586934

Other models on request

***Standard in-line bodies**

Code	Part No.	Material	Ports	Pressure
R12131-01X-01	3195406	steel	3/4, 3/8	420 bar

Other bodies on request

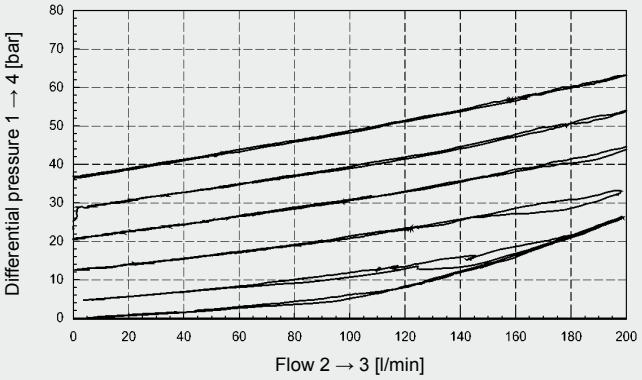
Seal kits

Code	Part No.
On request	

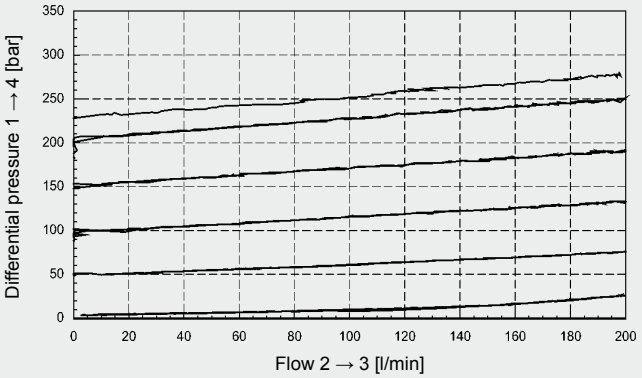
PERFORMANCE

Measured at T_{oil} = 46 °C, ν = 34 mm²/s

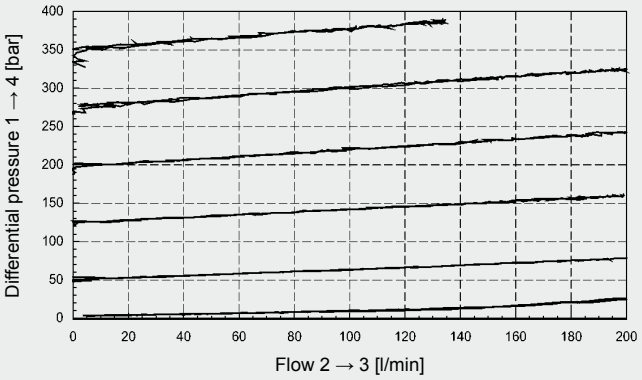
35 bar



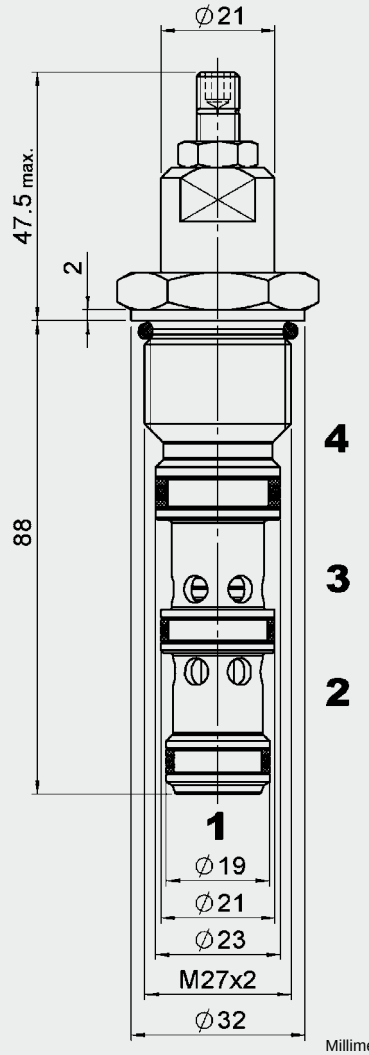
230 bar



350 bar



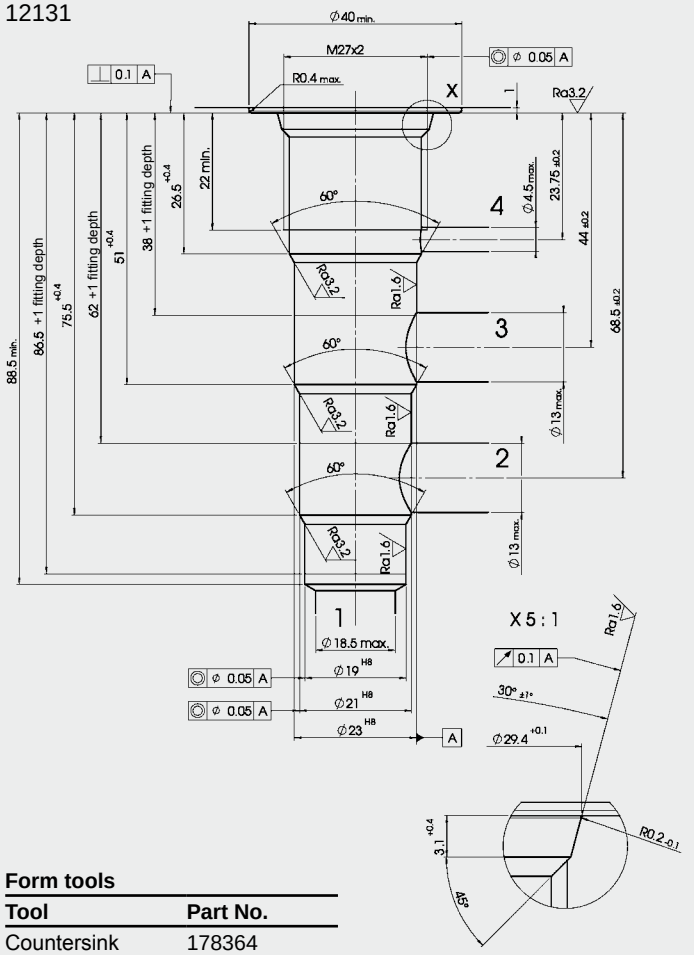
DIMENSIONS



Millimeter
Subject to technical modifications.

CAVITY

12131



Form tools

Tool	Part No.
Countersink	178364
Reamer	In preparation
Tap	In preparation
Plug gauge	In preparation

Millimeter
Subject to technical modifications.

NOTE

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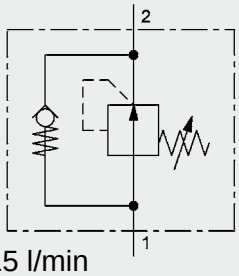
Subject to technical modifications.

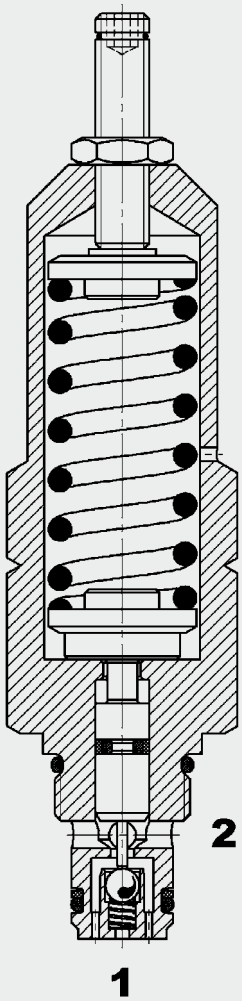
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

Overpressure Protection Valve Poppet Type, Direct-Acting Metric Cartridge – 500 bar DSR5E



Up to 15 l/min
Up to 500 bar

FUNCTION



The overpressure protection valve DSR5E is a direct-acting, spring-loaded poppet valve. When the pressure rises above the pre-set spring tension, the valve closes and the oil flow to the consumer port 2 is blocked.

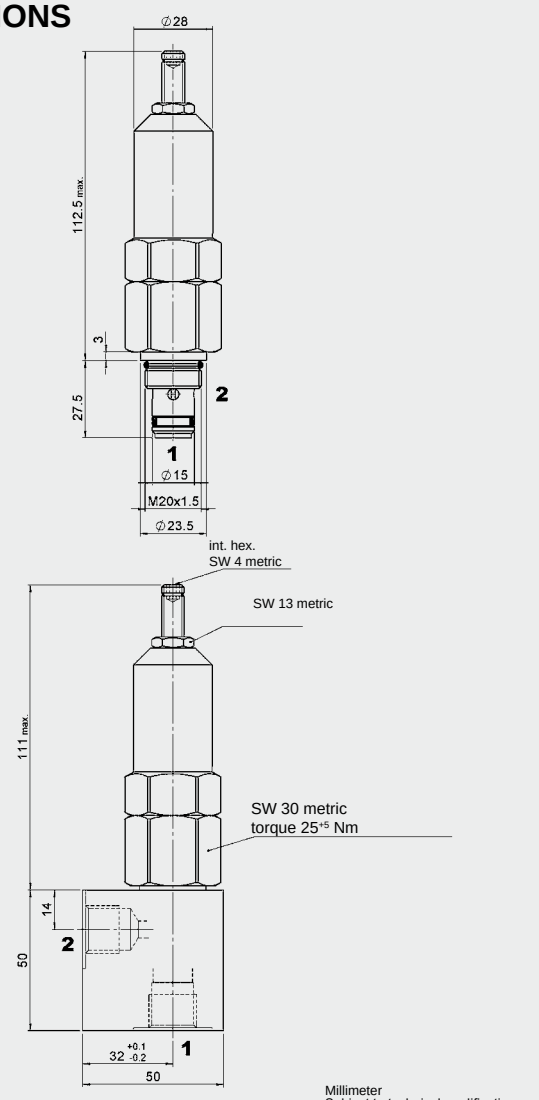
FEATURES

- To shut off consumers when certain pressures are reached
- Excellent dynamic performance
- Excellent stability throughout the entire flow range
- Hardened and ground valve components to ensure minimal wear and extended service life
- Adjustable up to 350 bar
- Various pressure ranges up to 350 bar

SPECIFICATIONS

Operating pressure:	max. 500 bar, can be set up to 350 bar	
Nominal flow:	max. 15 l/min	
Pressure setting ranges:	100 / 250 / 350 bar	
Cut-out pressure tolerance:	+/- 5 bar	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions, preferably horizontal	
Materials:	Valve body:	steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +100 °C)
	Back-up rings:	PTFE
Cavity:	06020	
Weight:	0.38 kg	

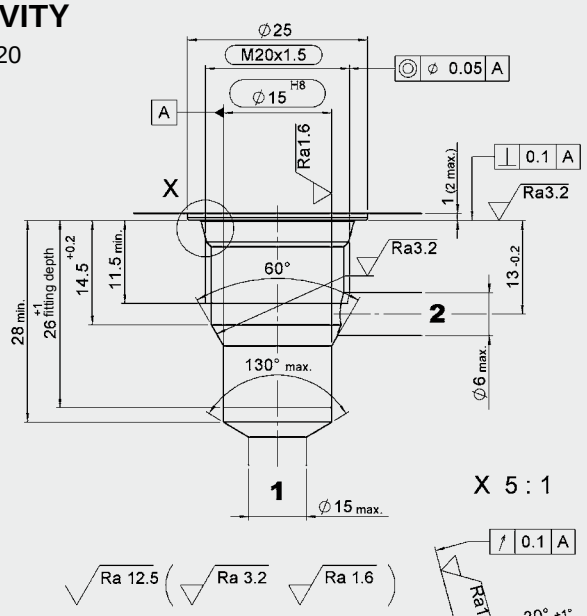
DIMENSIONS

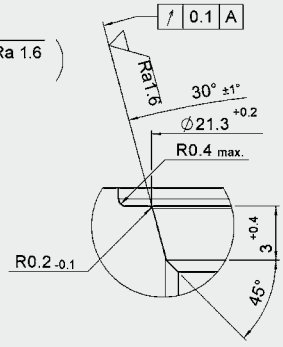


Millimeter
Subject to technical modifications

CAVITY

06020





Millimeter
Subject to technical modifications

Form tools

Tool	Part No.
Countersink	170033
Reamer	1000768
Tap	1002648
Plug gauge	168840

MODEL CODE

DSR5 E – 01X / 250 V 110

Basic model
Overpressure protection valve, metric

Body and ports
E = cartridge

Type
01 = standard

Pressure setting range
100 = 0 to 100 bar
250 = 0 to 250 bar
350 = 0 to 350 bar

Type of adjustment
V = adjustable

Pre-set cut-out pressure
110 = 110 bar

Other settings on request

Standard models

Model code	Part No.
DSR5E-010/100V	710280
DSR5E-010/250V	710281
DSR5E-010/350V	710282

Other models on request

Standard in-line bodies

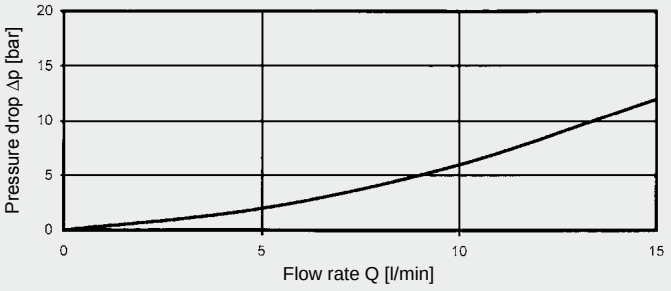
Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G3/8	350 bar
R06020-10X-01	276842	Steel, zinc-plated	G3/8	350 bar

Seal kits

Code	Part No.
SEAL KIT 06020-NBR	3119017
SEAL KIT 06020-FKM	3262477

Δp-Q GRAPH

Measured at ν = 38 mm²/s, T_{oil} = 43 °C



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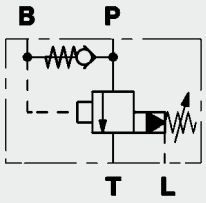
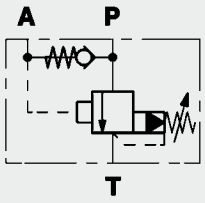
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

DLHSD



DLHSR



Up to 30 l/min
Up to 350 bar

Accumulator Charging Valve Spool Type Pilot-Operated – 350 bar DLHSD (Manifold Mounting) DLHSR (Inline Mounting)

FUNCTION

The accumulator charging valve DLHS D / R is a pilot-operated, spring-loaded spool valve mounted in a manifold or inline housing. Its function is to control the charging of the accumulator within a pre-set switching range. A pilot stage with defined hysteresis, a main piston and a check valve are integrated into the circuit.

The accumulator is charged at port A from pump port P across the check valve. If the pressure in the accumulator exceeds the pre-set value of the pilot stage, the main piston opens and the pump is relieved to tank. If the pressure in the accumulator decreases by the value of the switching pressure differential, the pilot stage closes again and the accumulator is re-charged.

Caution:

– Switching pressures are affected by the pressure at port T!
– Select the largest possible switching pressure differential!
– Ensure that switch-off pressure + accumulator size to pump flow achieves a charging time of >1s!

FEATURES

- Re-charging of the accumulator is dependent on the switch-on pressure, resulting in full accumulator capacity for emergency function in pump intermittent duty mode.
- Switch-off pressures within the pressure ranges 100, 250 and 350 bar freely adjustable
- Very low discharge of the accumulator due to pilot stage with minimal leakage
- Compact design enables space-saving installation in control blocks and power units
- Optimal system adaptation due to valves with different, fixed switching pressure differentials (12, 16, 21%),
- Built-in check valve means no additional installation cost
- Low Δp characteristics
- Various pressure ranges up to 350 bar
- Simple commissioning by setting the switch-off pressure

SPECIFICATIONS

Operating pressure:	min. 0 to max. 350 bar max. 10 bar across tank port T	
Nominal flow:	max. 30 l/min	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 8 mm²/s to max. 320 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard)
	Back-up rings:	PTFE
Weight:	DLHSD: 2.1 kg DLHSR: 1.5 kg	
Line length:	From port A to the accumulator: max. 200 mm; T (tank) or L (drain) lines to the tank must be sized for minimal back-pressure	
Switching pressure differential:	12%, 16%, 21% (switching pressures are affected by the pressure across port T)	

MODEL CODE

DLHSR – 01 X – 21 / 250

Accumulator charging valve - hydraulic
Controlled by switching pressure differential
DLHSD = manifold housing
DLHSR = inline housing

Type
01 = standard (with check valve)

Series
(determined by manufacturer)

Switching pressure differential
12 = minus 12% of switch-off press. = switch-on pressure
16 = minus 16% of switch-off press. = switch-on pressure
21 = minus 21% of switch-off press. = switch-on pressure

Max. switch-off pressure
100 = 30 to 100 bar
250 = 60 to 250 bar
350 = 100 to 350 bar

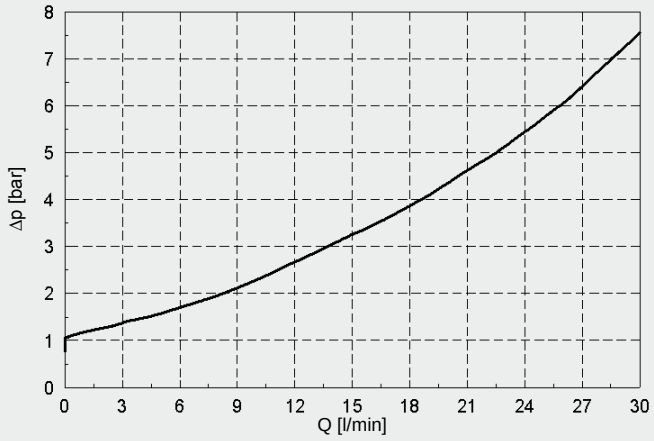
Standard models

Model code	Part No.
DLHSD-01X-12/100	561894
DLHSD-01X-12/250	558260
DLHSD-01X-16/100	3345531
DLHSD-01X-16/250	3034027
DLHSD-01X-21/100	3107800
DLHSD-01X-21/250	562729
DLHSD-01X-21/350	3228872
DLHSR-01X-12/100	3192646
DLHSR-01X-12/250	3526092
DLHSR-01X-12/350	3227535
DLHSR-01X-16/100	3069194
DLHSR-01X-16/250	396811
DLHSR-01X-16/350	3195654
DLHSR-01X-21/100	561385
DLHSR-01X-21/250	3126516

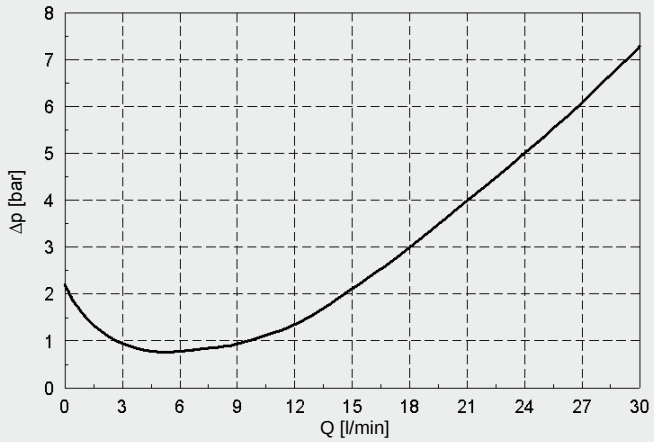
PERFORMANCE

Measured at:
ν = 46 mm²/s, T_{oil} = 40 °C

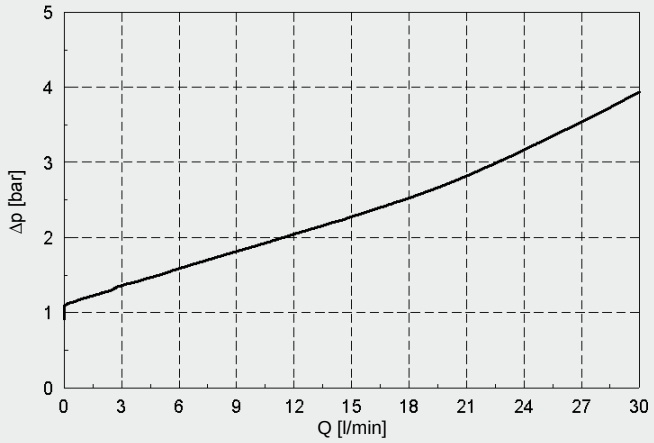
DLHSD-01X-12/100 **P→B**



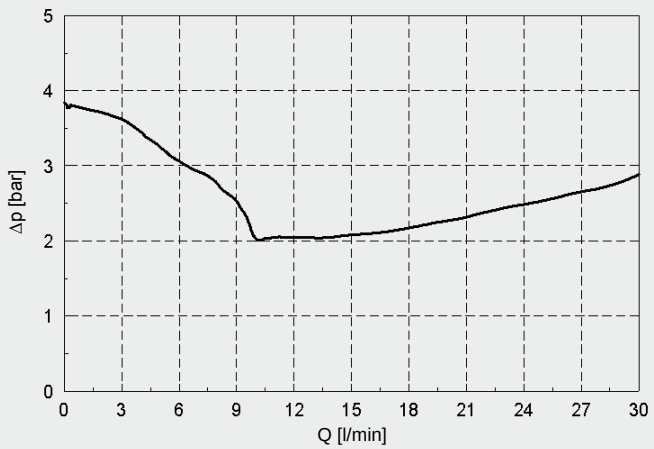
DLHSD-01X-12/100 **P→T**



DLHSR-01X-12/350 **P→A**

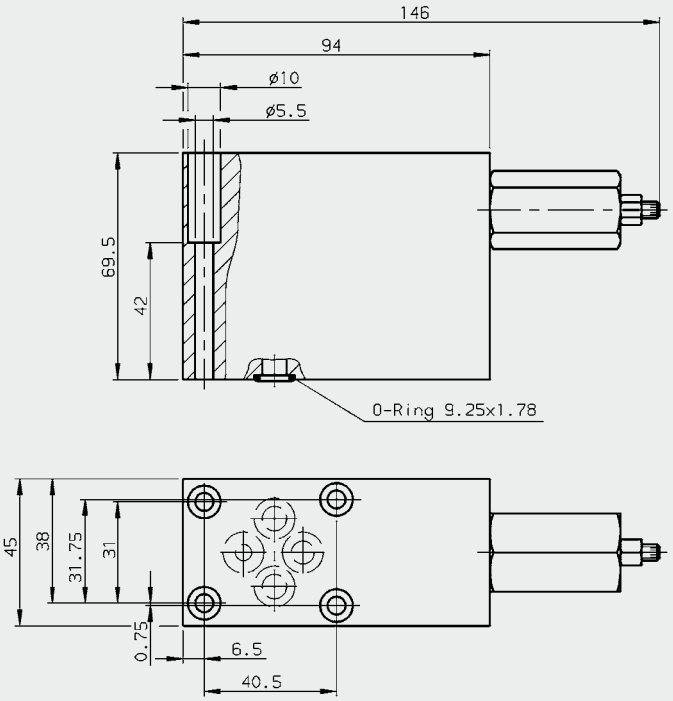


DLHSR-01X-12/350 **P→T**



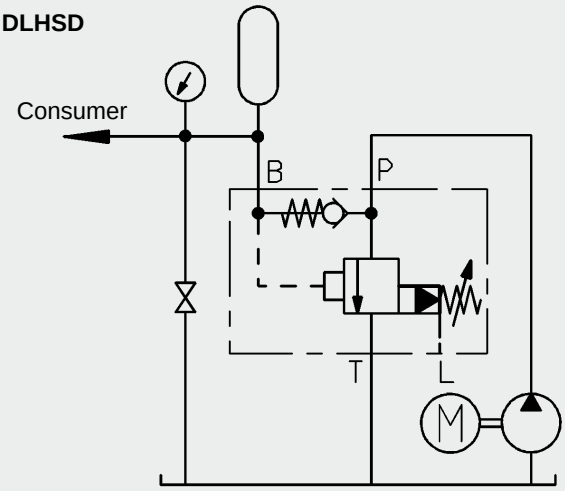
DIMENSIONS

DLHSD

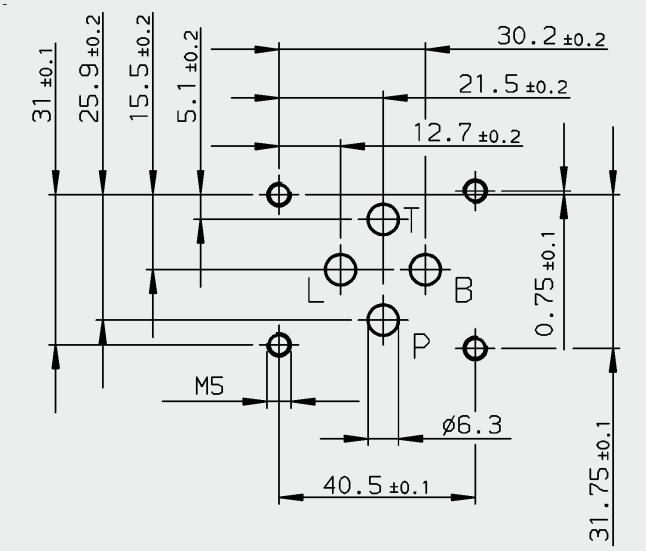


CIRCUIT DIAGRAM EXAMPLE

DLHSD



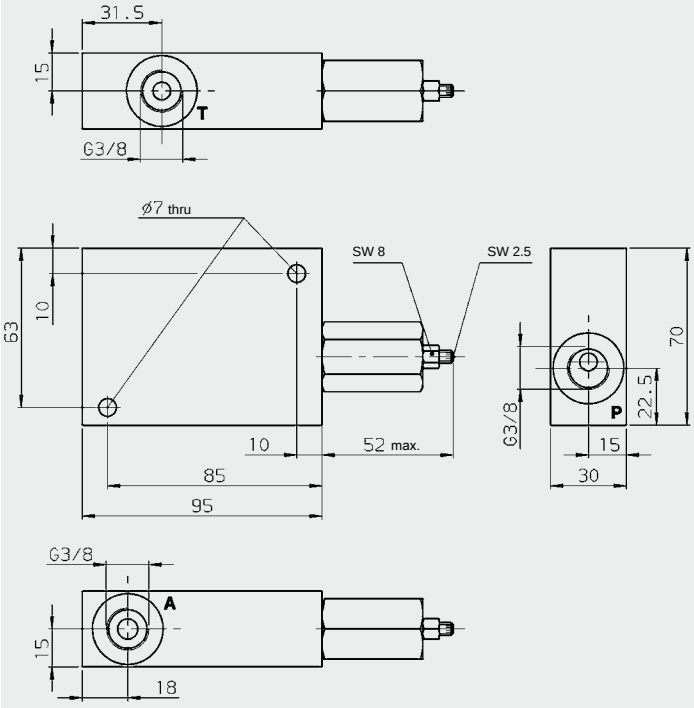
Interface A6 DIN 24340 and CETOP R 35 H-4.2-4-03



Millimeter (Inch)
Subject to technical modifications

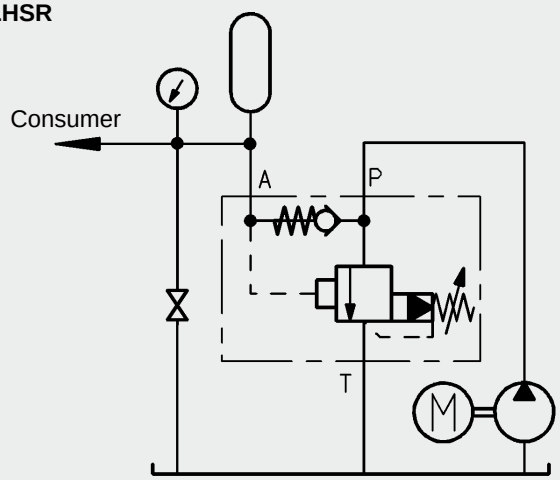
DIMENSIONS

DLHSR



CIRCUIT DIAGRAM EXAMPLE

DLHSR



Millimeter (Inch)
Subject to technical modifications

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HYDAC Fluidtechnik GmbH
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D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
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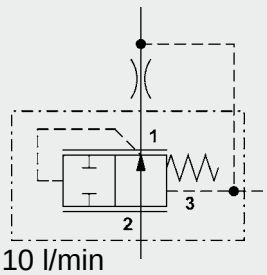
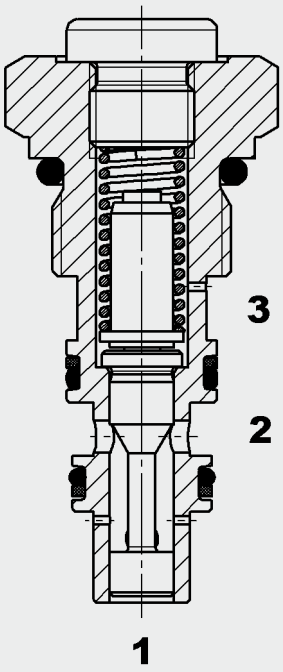


Up to 10 l/min
Up to 250 bar

Pressure Compensator, Upstream, Spool Type, Direct-Acting Normally Open Metric Cartridge – 250 bar DW05830V

FUNCTION



The pressure compensator DW05830V is a normally open, direct-acting, spring-loaded flow control valve which operates smoothly.
By maintaining a constant differential pressure between inlet and outlet of an orifice (ports 1 and 3 of the pressure compensator), a constant flow rate is maintained (independently of the load pressure). As soon as the pressure differential exceeds the value pre-set by the spring force, the control piston reduces an orifice cross-section.
The pressure compensator can, for example, be used when raising variable loads at the same velocity. Together with a proportional flow control valve it can be used as a 2-way proportional flow regulator.

In a load sensing system in which several consumers are operated, the speed of each individual circuit can be controlled.

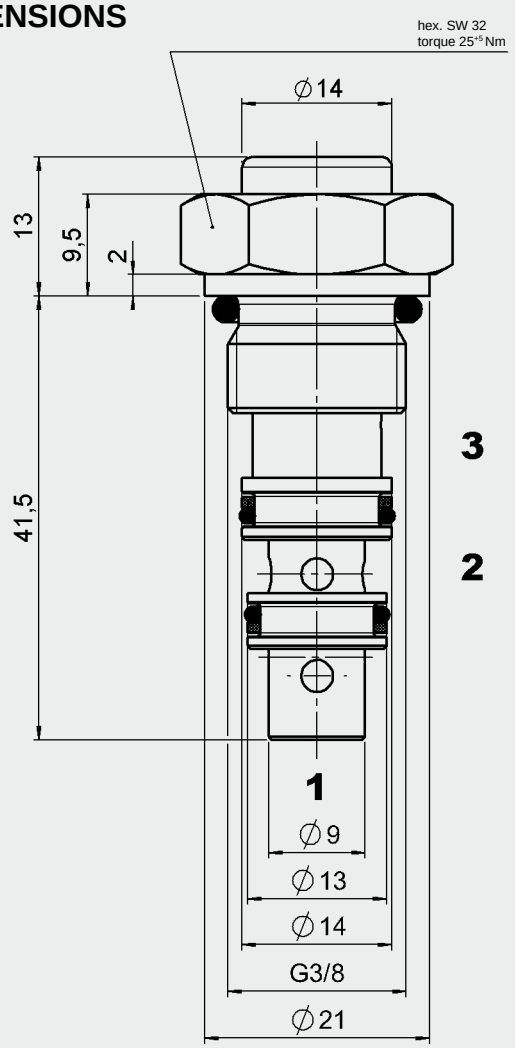
FEATURES

- Used to control the flow rate of consumers independently of the load pressure
- Excellent stability throughout pressure and flow range
- Excellent dynamic performance
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground valve components to ensure minimal wear and extended service life
- Reliable operation due to integral stroke limitation

SPECIFICATIONS

Operating pressure:	max. 250 bar	
Nominal flow:	max. 10 l/min	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Closing element:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	05830	
Weight:	0.065 kg	

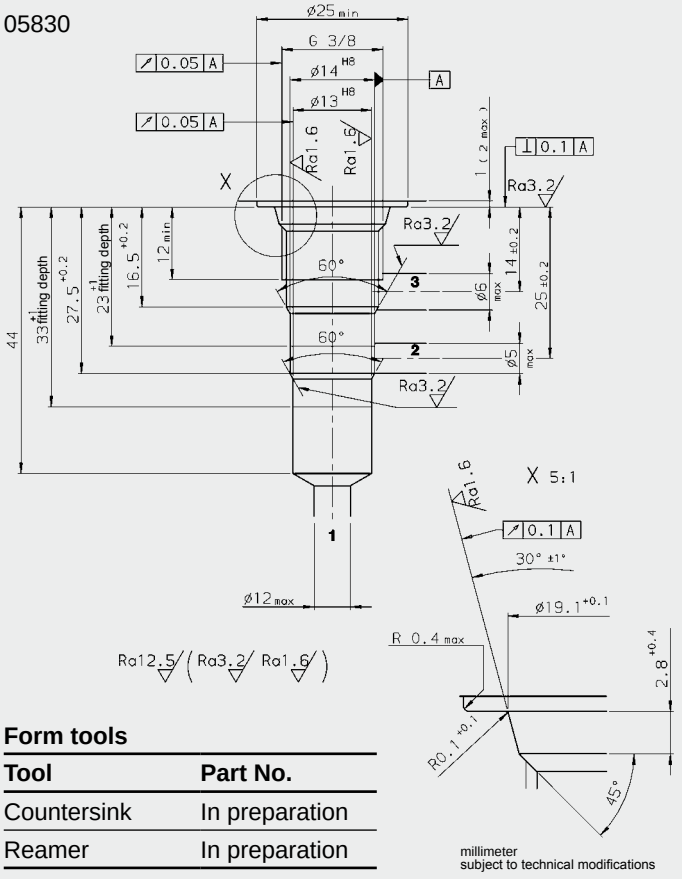
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

05830



Form tools

Tool	Part No.
Countersink	In preparation
Reamer	In preparation

millimeter
subject to technical modifications

MODEL CODE

DW 05830 V – 21 – C – N – 10

Basic model
Pressure compensator

Cavity

Function symbol
V = upstream pressure compensator

Type
21 = without damping, without venting
22 = with damping, without venting

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Control pressure differential
10 = 10 bar differential pressure

Standard models

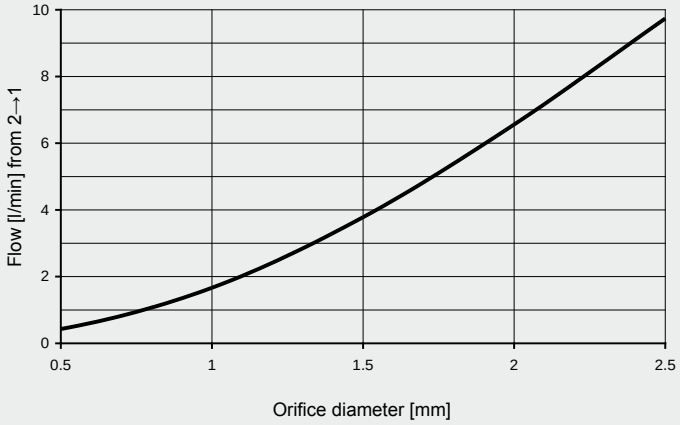
Model code	Part No.
DW05830V-21-C-N-05	3152308
DW05830V-21-C-N-10	3031531

Other models on request

Line bodies and seal kits on request

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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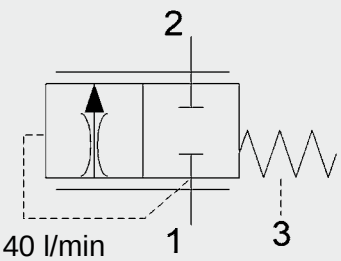
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

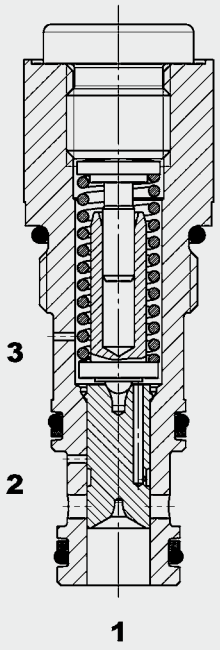


Up to 40 l/min
Up to 250 bar

Pressure Compensator Bypass Spool Type, Direct-Acting, Normally Closed Metric Cartridge – 250 bar

DWM08130Z

FUNCTION



The pressure compensator DWM08130Z is a normally closed, direct-acting, spring-loaded flow control valve which operates smoothly.
By maintaining a constant differential between inlet and outlet pressure of an orifice (ports 1 and 3 of the pressure compensator), a constant flow rate is maintained (independently of the load pressure). As soon as the pressure differential exceeds the value pre-set by the spring force, the control piston opens an orifice cross-section and diverts the surplus flow which is not required by the consumer, through a third port.
The pressure compensator can, for example, be used when raising variable loads at the same velocity. Together with a proportional flow control valve it can be used as a 3-way proportional flow regulator. In load sensing circuits with a fixed displacement pump, if there is no demand from the consumer, the valve allows the oil to flow back to tank and therefore vents the whole system.

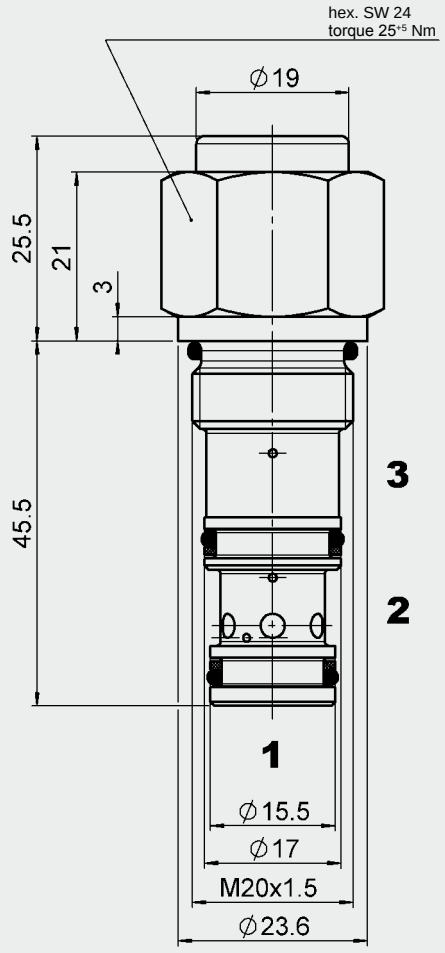
FEATURES

- Used as a load sensing valve to control the flow rate of consumers independently of the pressure
- Versions available for different control pressure differentials
- Hydrodynamic damping
- Excellent stability throughout pressure and flow range
- Excellent dynamic performance
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground valve components to ensure minimal wear and extended service life
- Reliable operation due to integral stroke limitation
- Internal venting of the load sensing line when valve is open

SPECIFICATIONS

Operating pressure:	max. 250 bar	
Nominal flow:	max. 40 l/min	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Closing element:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	Metric 08130	
Weight:	0.15 kg	

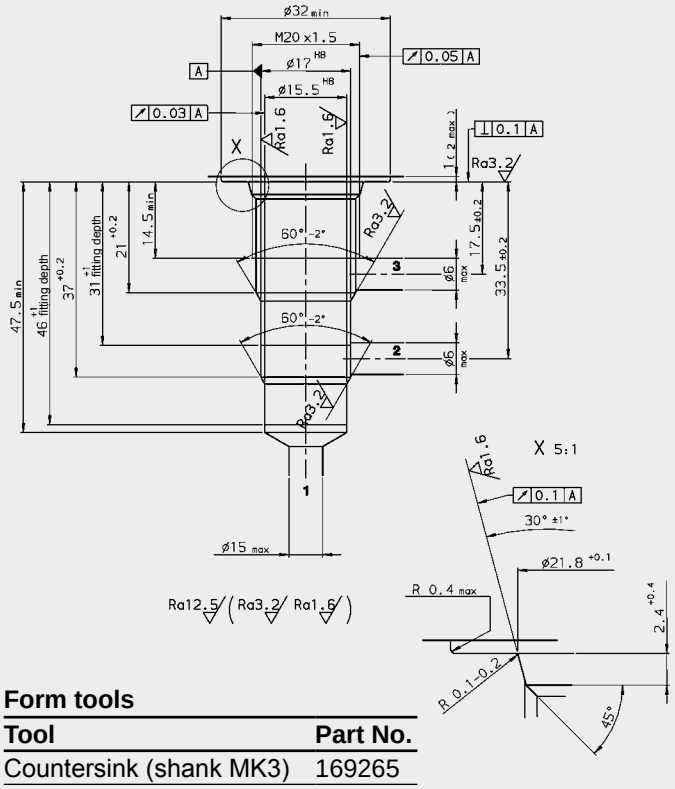
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

Metric 08130



Form tools

Tool	Part No.
Countersink (shank MK3)	169265
Reamer (shank MK2)	163639

millimeter
subject to technical modifications

MODEL CODE

DWM 08130 Z – 32 – C – N – 10

Basic model
Pressure compensator

Cavity to ISO

Function symbol
Z = pressure compensator, normally closed

Type
21 = without damping, without venting from 3 → 2
22 = with damping, without venting from 3 → 2
31 = without damping, with venting from 3 → 2
32 = with damping, with venting from 3 → 2

Body and ports
C = cartridge only
Versions with bodies on request

Seals
N = NBR (standard)
V = FKM (optional)

Control pressure differential
10 = 10 bar differential pressure
15 = 15 bar differential pressure

Standard models

Model code	Part No.
DWM08130Z-21-C-N-15	3036651
DWM08130Z-22-C-N-15	3036882
DWM08130Z-31-C-N-15	555147
DWM08130Z-32-C-N-15	3036877

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R08130-01X-01	394488	Steel, zinc-plated	G 3/8	420 bar
R08130-01X-02	394378	Steel, zinc-plated	M14 x 1.5	420 bar

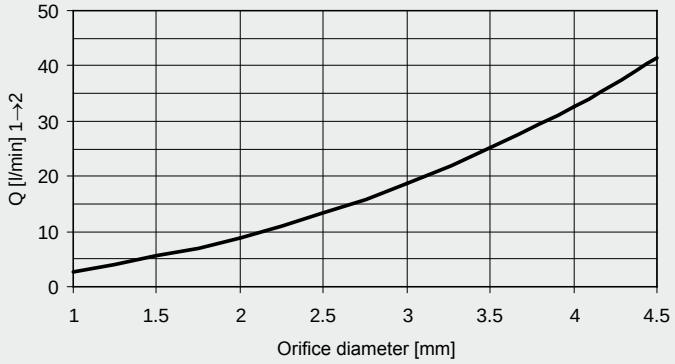
Seal kits

Code	Material	Part No.
Seal kit 08120	NBR	3164596
Seal kit 08120	FKM	3183746

PERFORMANCE

DWM08130Z-..-C-N-15

Measured at ν = 56 mm²/s, T_{oil} = 34 °C



NOTE

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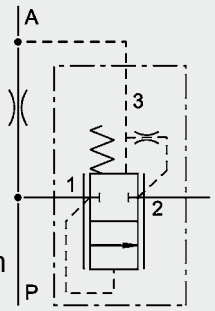
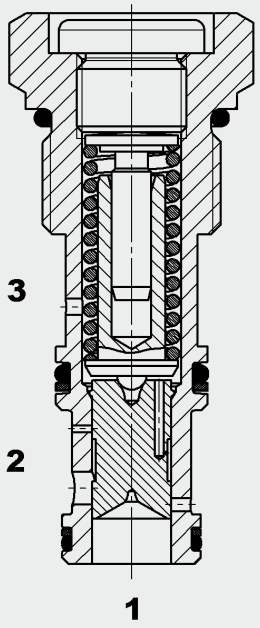
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



Up to 90 l/min
Up to 250 bar

Pressure Compensator Bypass Spool Type, Direct-Acting, Normally Closed Metric Cartridge – 250 bar DWM12130Z

FUNCTION



The pressure compensator DWM12130Z is a normally closed, direct-acting, spring-loaded flow control valve.
By maintaining a constant differential between inlet and outlet pressure of an orifice (ports 1 and 3 of the pressure compensator), a constant flow rate is maintained (independently of the load pressure). As soon as the pressure differential exceeds the value pre-set by the spring force, the control piston opens an orifice cross-section and diverts the surplus flow which is not required at the consumer, through a third port.
The pressure compensator can, for example, be used when raising variable loads at the same velocity. Together with a proportional flow control valve it can be used as a 3-way proportional flow regulator. In load sensing circuits with a fixed displacement pump, if there is no demand from the consumer, the valve allows the oil to flow back to tank and therefore vents the whole system.

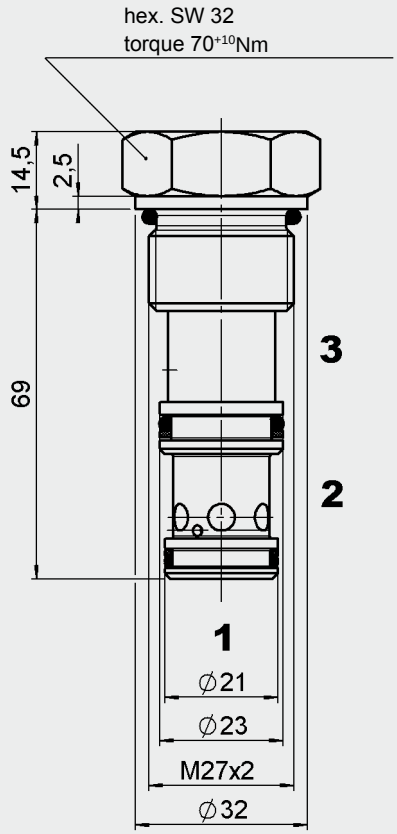
FEATURES

- Used as a load sensing valve to control the flow rate of consumers independently of the pressure
- Versions available for two different control pressure differentials
- Hydrodynamic damping
- Excellent stability throughout pressure and flow range
- Excellent dynamic performance
- All surfaces zinc-plated and corrosion-proof
- Hardened and ground valve components to ensure minimal wear and extended service life
- Reliable operation due to integral stroke limitation
- Internal venting of the load sensing line

SPECIFICATIONS

Operating pressure:	max. 250 bar	
Nominal flow:	max. 90 l/min	
Control accuracy:	+/- 10%	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +100 °C)
	Back-up rings:	PTFE
Cavity:	12130	
Weight:	0.25 kg	

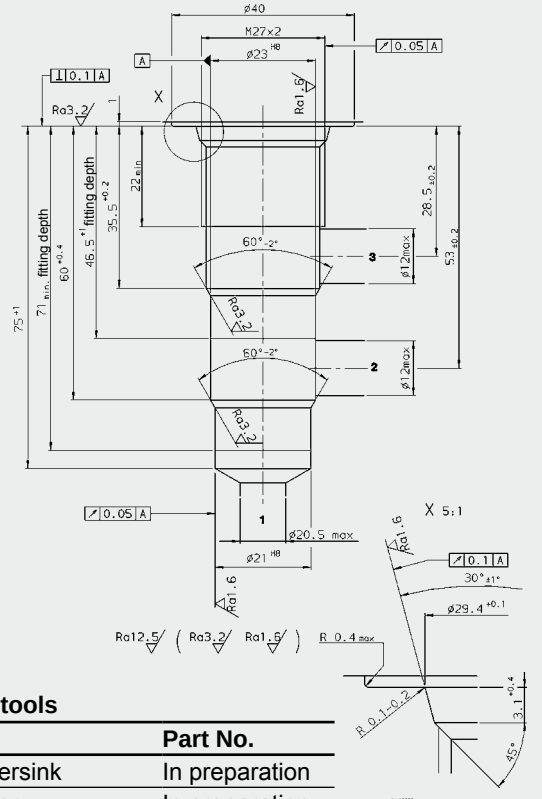
DIMENSIONS



Millimeter
Subject to technical modifications

CAVITY

Metric 12130



Form tools

Tool	Part No.
Countersink	In preparation
Reamer	In preparation

Millimeter
Subject to technical modifications

MODEL CODE

DWM 12130 Z – 0 – C – V – 06

Basic model
Pressure compensator

Cavity to ISO

Function symbol
Z = normally closed pressure compensator

Type
21 = without damping, without venting
22 = with damping, without venting
31 = without damping, with venting from 3 to 2
32 = with damping, with venting from 3 to 2

Body and ports
C = cartridge only
Versions with bodies on request

Seals
V = FKM (standard)
N = NBR

Control pressure differential
06 = 6 bar differential pressure
15 = 15 bar differential pressure

Standard models

Model code	Mat.-Nr.
DWM12130Z-32-C-V-15	562816
DWM12130Z-22-C-V-15	3308547
DWM12130Z-31-C-V-06	3396757

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R12130	3305489	Steel, zinc-plated	G 3/4	420 bar

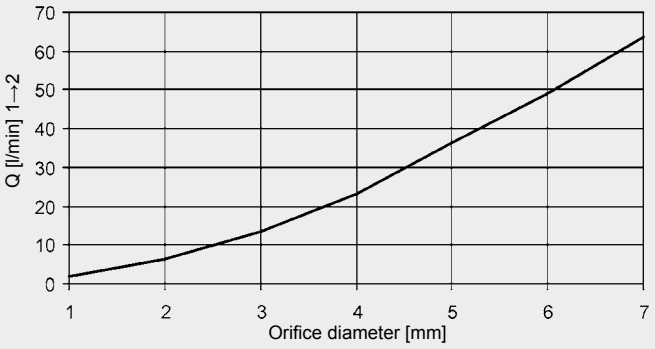
Seal kits

Code	Material	Part No.
Seal kit 12130	NBR	3506022
Seal kit 12130	FKM	3506021

PERFORMANCE

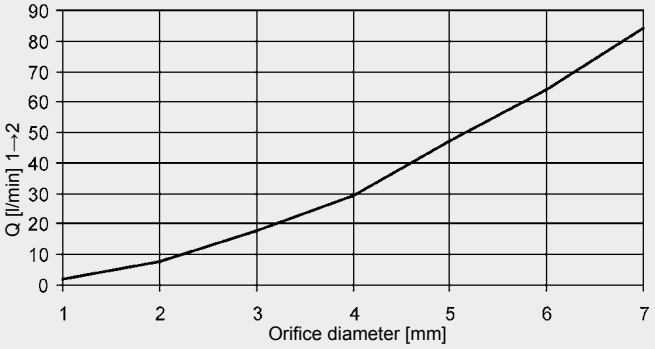
DWM12130Z-...-C-V-06

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



DWM12130Z-...-C-V-15

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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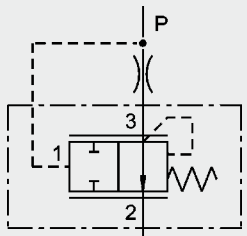
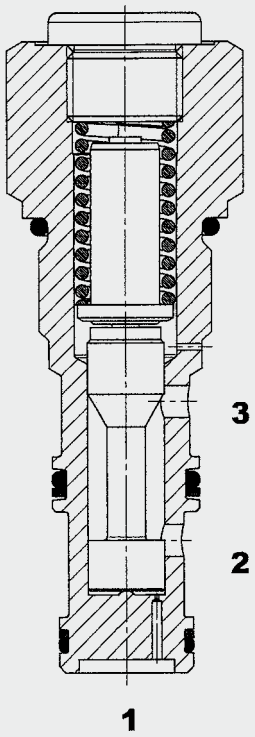
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



Up to 130 l/min
Up to 250 bar

Pressure Compensator, Downstream, Spool Type, Direct-Acting, Normally Open Metric Cartridge – 250 bar DWM12130Y

FUNCTION



The pressure compensator DWM12130Y is a normally open, direct-acting, spring-loaded flow control valve.
By maintaining a constant differential between inlet and outlet pressure of an orifice (ports 1 and 3 of the pressure compensator), a constant flow rate is maintained (independently of the load pressure). As soon as the pressure differential exceeds the value pre-set by the spring force, the control piston reduces an orifice cross-section. The pressure compensator can, for example, be used when lowering variable loads at the same velocity. Together with a proportional flow control valve it can be used as a 2-way proportional flow regulator.
In a load sensing system in which several consumers are operated, the speed of each individual circuit can be controlled.

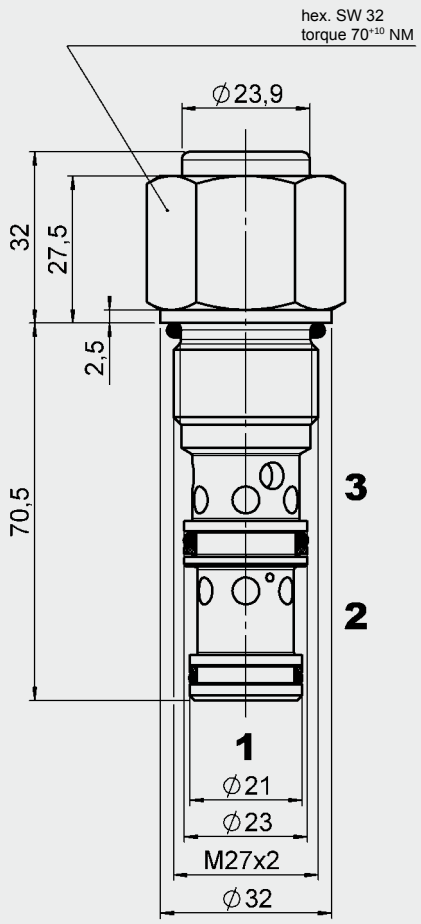
FEATURES

- Used to control the flow rate of consumers independently of the load pressure
- Versions for two different control pressure differentials and for flow rates up to max. 130 l/min
- Excellent stability throughout pressure and flow range
- Excellent dynamic performance
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground valve components to ensure minimal wear and extended service life
- Reliable operation due to integral stroke limitation

SPECIFICATIONS

Operating pressure:	max. 250 bar	
Nominal flow:	max. 130 l/min	
Control accuracy:	+/- 10%	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	FKM NBR (optional, media temperature range -30 °C to +100 °C
	Back-up rings:	PTFE
Cavity:	Metric 12130	
Weight:	0.35 kg	

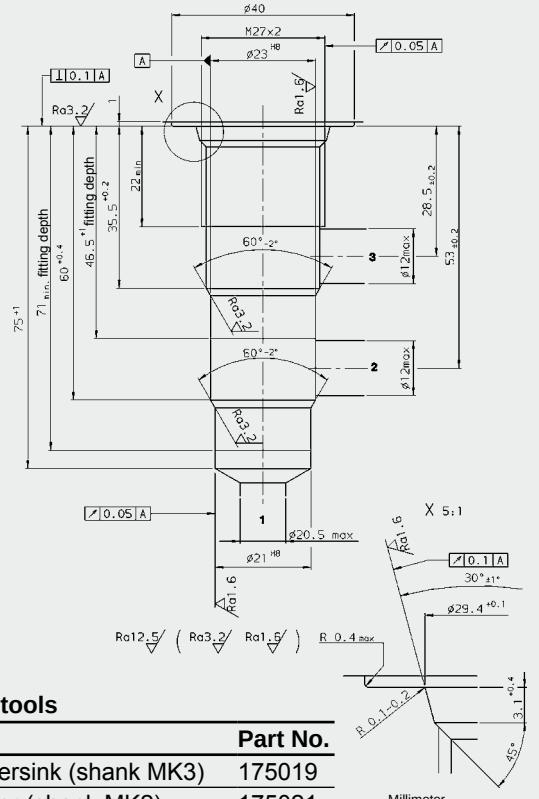
DIMENSIONS



Millimeter
Subject to technical modifications

CAVITY

Metric 12130



Form tools

Tool	Part No.
Countersink (shank MK3)	175019
Reamer (shank MK2)	175021

Millimeter
Subject to technical modifications

MODEL CODE

DWM 12130 Y – 21 – C – V – 15

Basic model
Pressure compensator

Cavity to ISO

Function symbol
Y = downstream pressure compensator

Type
21 = without damping, without venting
22 = with damping, without venting

Body and ports
C = cartridge only
Versions with bodies on request

Seals
V = FKM (standard)
N = NBR

Control pressure differential
15 = 15 bar differential pressure, up to 90 l/min
22 = 22 bar differential pressure, up to 130 l/min

Standard models

Model code	Part No.
DWM12130Y-21-C-V-15	554334
DWM12130Y-21-C-V-22	557576

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R12130	3305489	Steel, zinc-plated	G 3/4	420 bar

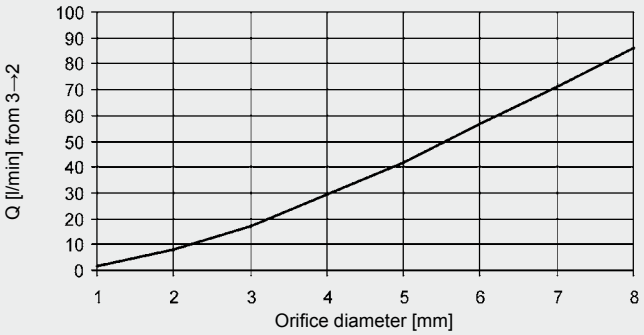
Seal kits

Code	Material	Part No.
Seal kit 12130	NBR	3506022
Seal kit 12130	FKM	3506021

PERFORMANCE

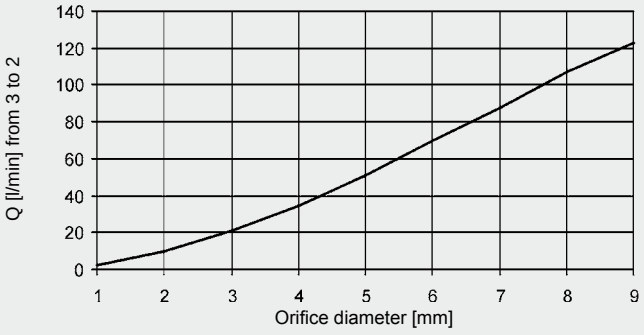
DWM12130Y-...-C-V-15

Measured at ν = 44 mm²/s, T_{oil} = 40 °C



DWM12130Y-...-C-V-22

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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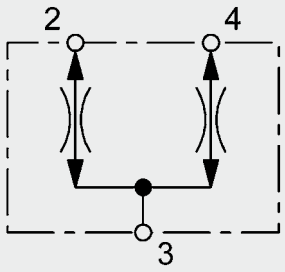
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

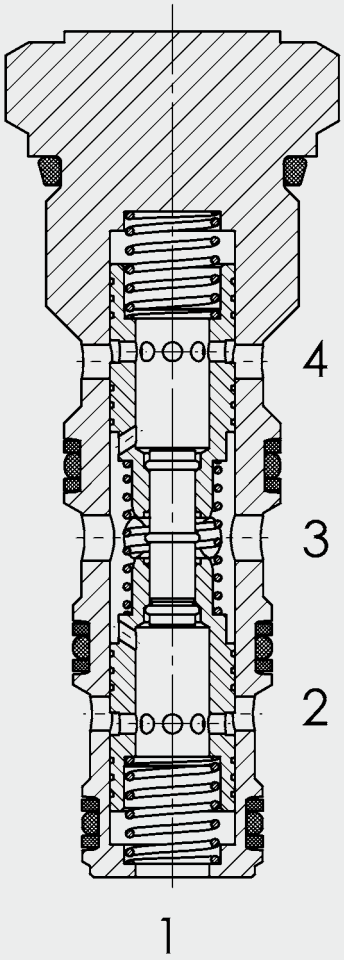
Flow Divider / Combiner SAE-10 Cartridge – 350 bar ST10-01

UNF



45 l/min
350 bar

FUNCTION



Note:
Port 1 is not used

The ST10 flow divider is a spring-loaded pressure compensated spool type valve. It divides a flow in two and keeps both flows constant. The division is made according to the specified ratio - from port 3 to ports 2 and 4.
As a flow combiner it combines two partial flows together – from ports 2 and 4 to port 3.
Port 1 is not used.

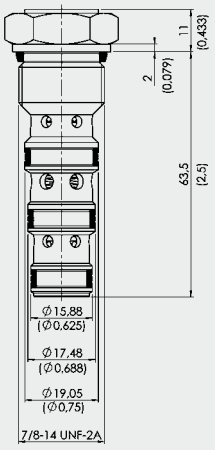
FEATURES

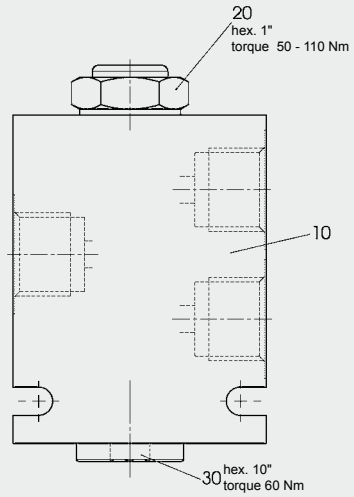
- External surfaces corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Excellent dividing and combining accuracy
- Wide flow range down to 25% of nominal flow rating
- Low pressure drop throughout flow range
- Can be used for differential locks in drive applications
- Synchronizing flow in both operating modes
- Compact design

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 45 l/min	
Inlet flow:	7.6 l/min 15.2 l/min 22.8 l/min 30.4 l/min 37.8 l/min 45.6 l/min	Code 11 Code 22 Code 33 Code 44 Code 55 Code 66
Accuracy:	See performance graphs	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Materials:	Valve body: Spool: Seals: Back-up rings:	steel hardened and ground steel NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C) PTFE
Cavity:	FC10-4 (port 1 not used)	
Weight:	0.122 kg	

DIMENSIONS

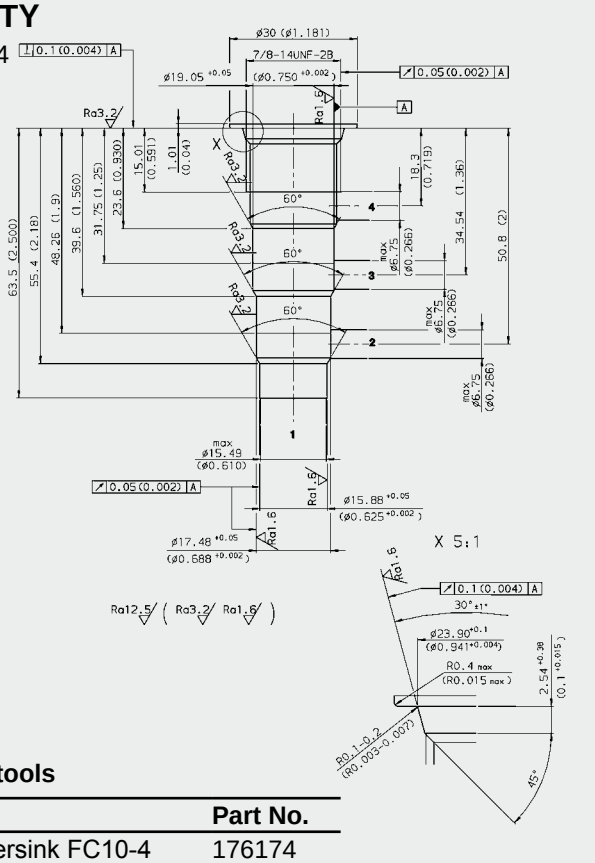




millimeter (inch)
subject to technical modifications

CAVITY

FC10-4



Form tools

Tool	Part No.
Countersink FC10-4	176174
Reamer FC10-4	176175

millimeter (inch)
subject to technical modifications

MODEL CODE

ST10-01 – C – N – 33

Basic model
Flow divider / Combiner, UNF

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Flow rate code & flow range

Code	Ratio Port 2 [%]	Ratio Port 4 [%]	Max. inlet flow [l/min]	Balance flow rate Combining [l/min] 2-4 at 100 bar	Dividing [l/min] 2-4 at 100 bar
11	50	50	7.6	0.7	0.7
22	50	50	15.2	1.3	1.1
33	50	50	22.8	2.3	2.1
44	50	50	30.4	2.6	2.8
55	50	50	37.8	3	3.4
66	50	50	45.6	5.2	3.1

Standard models

Model code	Part No.
ST10-01-C-N-11	562884
ST10-01-C-N-22	562885
ST10-01-C-N-33	562886
ST10-01-C-N-44	562887
ST10-01-C-N-55	562888
ST10-01-C-N-66	562889

*Standard in-line bodies

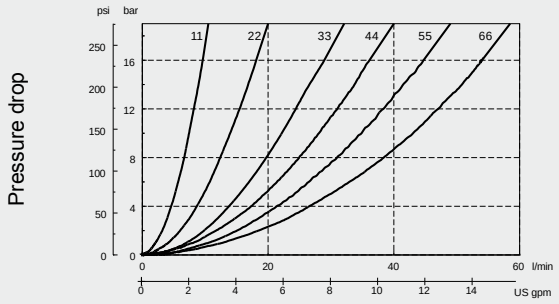
Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB4	3038097	Aluminium, anodized	G1/2	210 bar

Seal kits

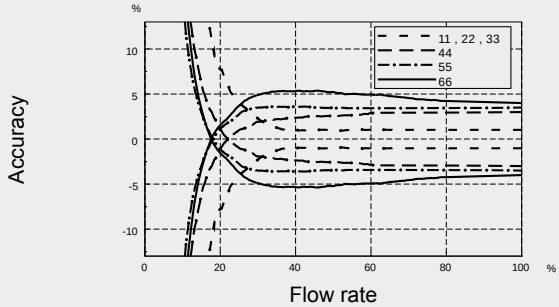
Code	Material	Part No.
FH104-N SEAL KIT	NBR	3051912
FH104-V SEAL KIT	FKM	3071275

PERFORMANCE

Measured at ν = 34 mm²/s T_{Oil} = 46 °C



Flow rate at port 3



Flow rate

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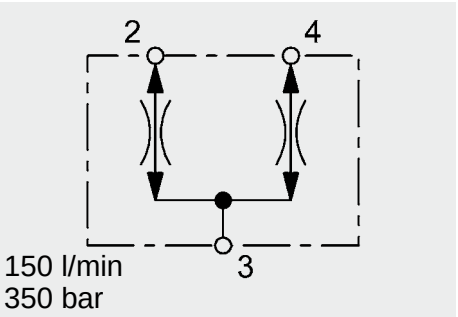
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

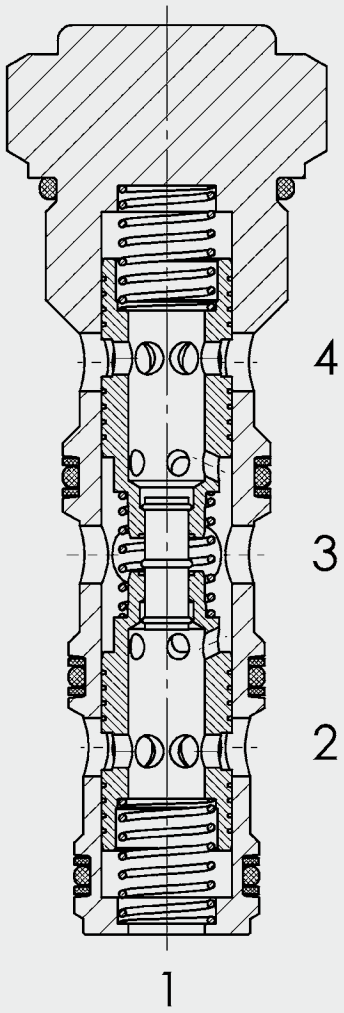


Flow Divider / Combiner SAE-16 Cartridge – 350 bar

UNF

ST16-01

FUNCTION



* Note:
Port 1 is not used

The ST16 flow divider is a pressure compensated spring-loaded spool type valve. It divides a flow in two and keeps both flows constant. The division is made according to the specified ratio - from port 3 to ports 2 and 4.
As a flow combiner it combines two partial flows together – from ports 2 and 4 to port 3.
Port 1 is not used.

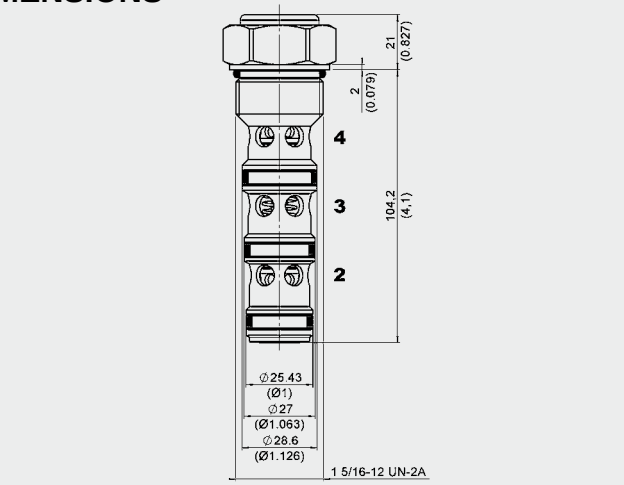
FEATURES

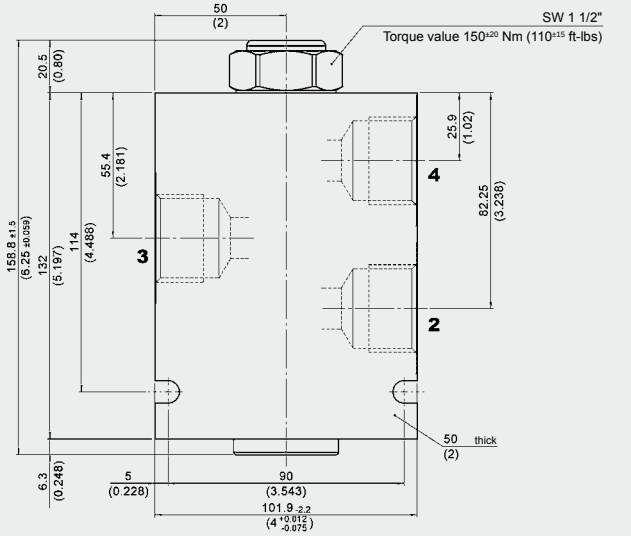
- External surfaces corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Excellent dividing and combining accuracy
- Wide flow range down to 25% of nominal flow rating
- Low pressure drop throughout flow range
- Can be used for differential locks in drive applications
- Synchronizing flow in both operating modes
- Compact design

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 150 l/min	
Inlet flow:	max. 90 l/min max. 115 l/min max. 150 l/min	Code 1212 Code 1515 Code 2020
Accuracy:	See performance graph	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	FC16-4 (port 1 not used)	
Weight:	0.45 kg	

DIMENSIONS

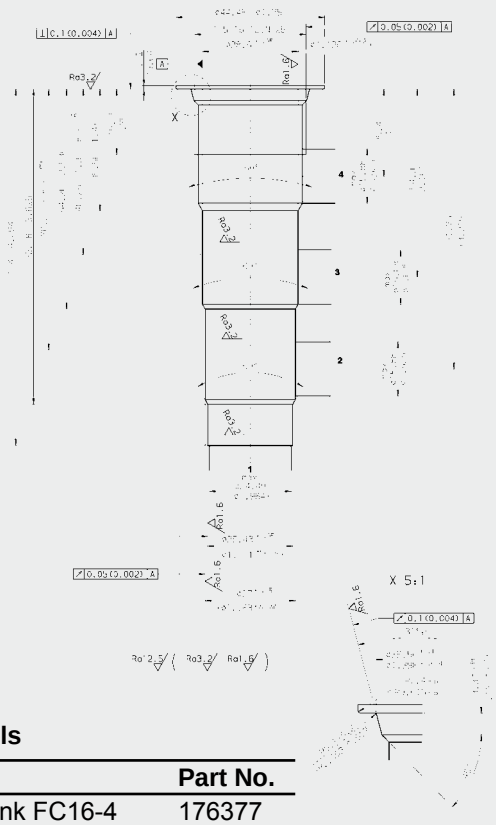




millimeter (inch)
subject to technical modifications

CAVITY

FC16-4



Form tools

Tool	Part No.
Countersink FC16-4	176377
Reamer FC16-4	176378

millimeter (inch)
subject to technical modifications

MODEL CODE

ST16-01 – C – N – 1212

Basic model
Flow divider / Combiner, UNF

Body and Ports*
C = cartridge only
SB8 = G1 ports, steel body
AB8 = G1 ports, aluminium body
Versions with line bodies on request

Seals
N = NBR (standard)
V = FKM

Flow rate code & flow range

Code	Ratio Port 2 [%]	Ratio Port 4 [%]	Max. inlet flow [l/min]	Balance flow rate [l/min]
1212	50	50	90	6.7
1515	50	50	115	8.3
2020	50	50	150	9.8

Standard models

Model code	Part No.
ST16-01-C-N-1212	3012922
ST16-01-C-N-1515	3115421
ST16-01-C-N-2020	3012973

*Standard in-line bodies

Code	Part No.	Materials:	Ports	Pressure
FH164-SB8	3032902	Steel, zinc-plated	G1	420 bar
FH164-AB8	3037213	Aluminium, anodized	G1	210 bar

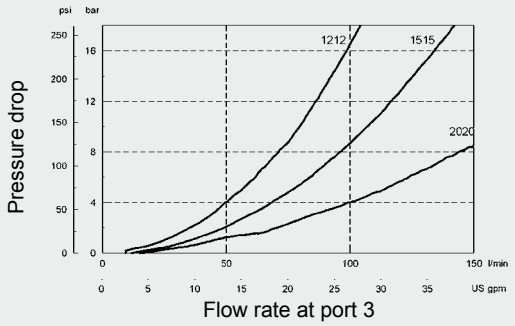
Seal kits

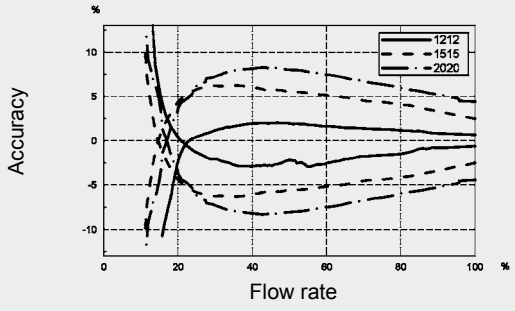
Code	Material	Part No.
FS164-N SEAL KIT	NBR	3181644
FS164-V SEAL KIT	FKM	3181675

Port 1 is not required and should be closed with threaded plug

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C





NOTE

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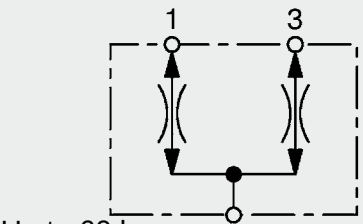
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

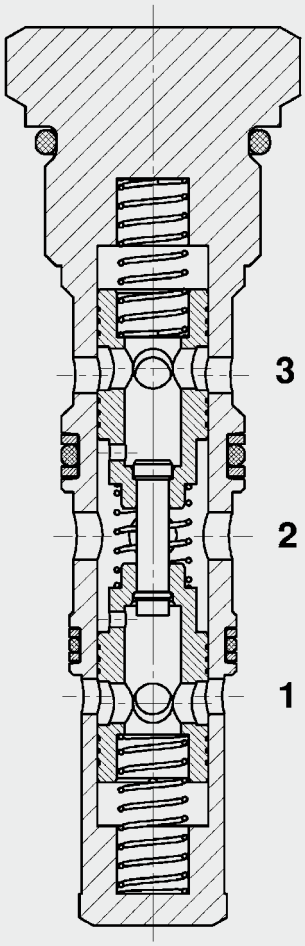


Up to 60 bar
Up to 350 l/min

Flow Divider /Combiner Spool Type Metric Cartridge – 350 bar

ST12230

FUNCTION



The ST12230-01 flow divider is a spring-loaded pressure-compensated spool type valve. It divides a flow in two and keeps both flows constant. The division is made according to the specified ratio - from port 2 to ports 1 and 3.
As a flow combiner it combines two partial flows together – from ports 3 and 1 to port 2.

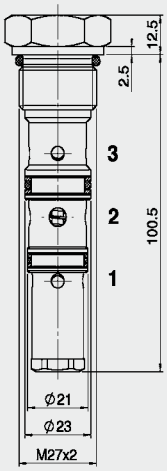
FEATURES

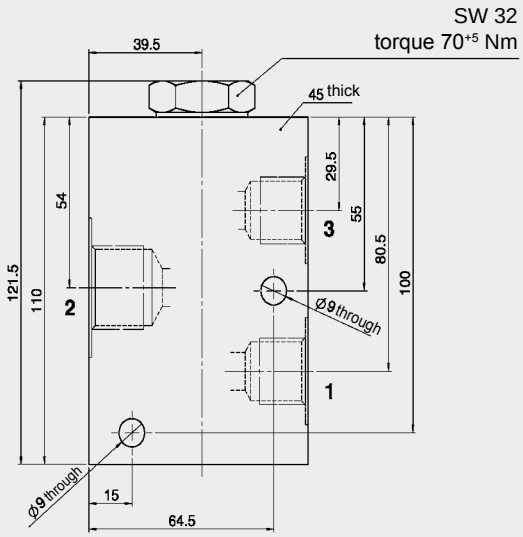
- Main use is as a differential lock in drive applications or for the synchronisation of two cylinders
- Synchronising flow in both operating modes
- Hardened and ground control piston to ensure minimal wear and extended service life
- Excellent dividing and combining accuracy
- Wide flow range down to 25% of nominal flow rating
- Compact design enables space-saving installation in connection housings and control blocks
- Various flow rates up to max. 60 l/min input flow rate

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 60 l/min	
Inlet flow:	20 l/min 60 l/min	Model code 20 Model code 60
Accuracy:	See performance curve	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C bis max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	12230 metric	
Weight:	0.27 kg	

DIMENSIONS

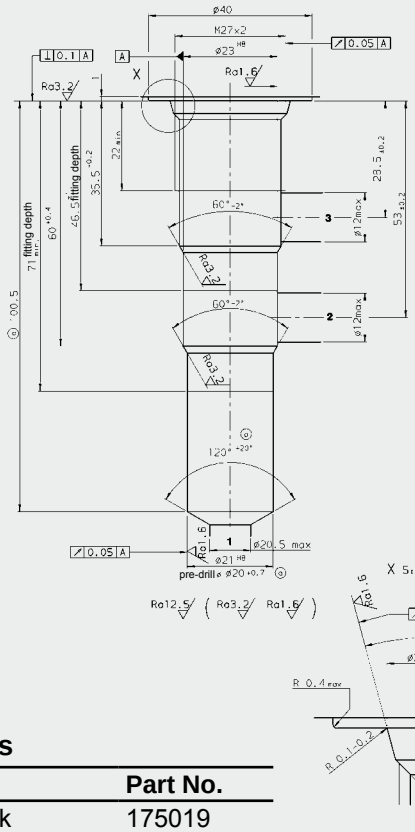




Millimeter
Subject to technical modifications

CAVITY

12220



Form tools

Tool	Part No.
Countersink	175019
Reamer	175021

Millimeter
Subject to technical modifications

MODEL CODE

ST12230 – 01 X – 20

Basic model
Flow divider, metric

Type
01 = standard
04 = zinc-plated

Series
(determined by manufacturer)

Flow rate range
20 = up to 20 l/min
60 = up to 60 l/min

Code	Ratio Port 1 [%]	Ratio Port 3 [%]	Max. inlet flow [l/min]	Synchronization flow rate [l/min]
20	50	50	20	0.5
60	50	50	60	2.2

Standard models

Model code	Part No.
ST12230 - 01 X - -20	560637
ST12230 - 04 X - -60	560638

Other models on request

Standard in-line bodies

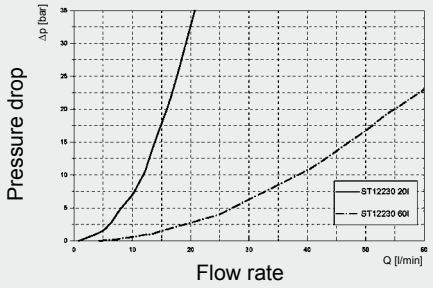
Code	Part No.	Material	Ports
R12230-01X-01	560705	Steel	G1/2, G3/4

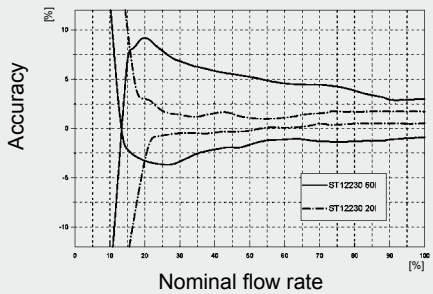
Seal kits

Code	Material	Part No.
Seal kit ST12230	FKM	3419571

PERFORMANCE

Measured at v = 34 mm²/s
T Oil = 46 °C





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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

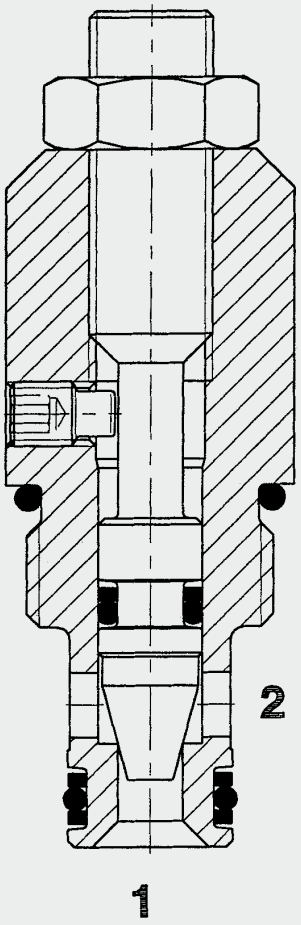
60 l/min
420 bar

Needle Valve
SAE-8 Cartridge – 420 bar

UNF

SD08-01

FUNCTION



The SD08 is a flow restrictor valve which controls the flow rate by means of an adjustable cross section. The flow rate is therefore dependent on the pressure differential and viscosity. Starting with the throttle spindle in the fully closed position, the flow rate increases in accordance with the appropriate curve as the control knob is turned. The flow is controlled in both directions.

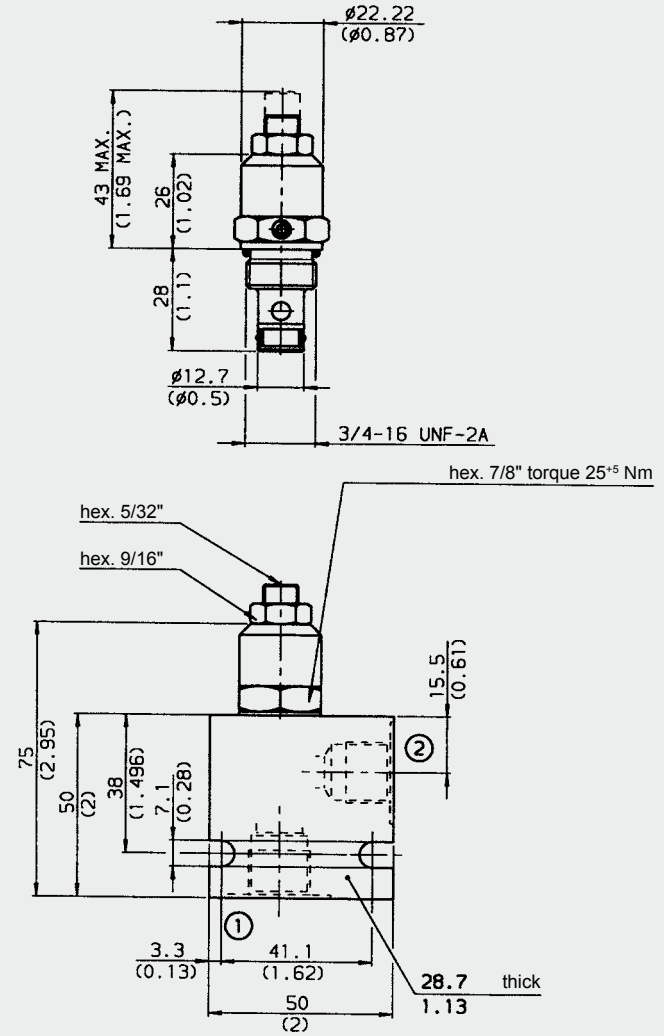
FEATURES

- External surfaces zinc-plated and corrosion proof
- Complete shut-off function
- Adjustable throughout flow range
- Hardened and ground internal valve components to ensure minimal wear and extended service life

SPECIFICATIONS

Operating pressure:	max. 420 bar	
Nominal flow:	max. 60 l/min	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Control spindle:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
Cavity:	FC08-2	
Weight:	0.11 kg	

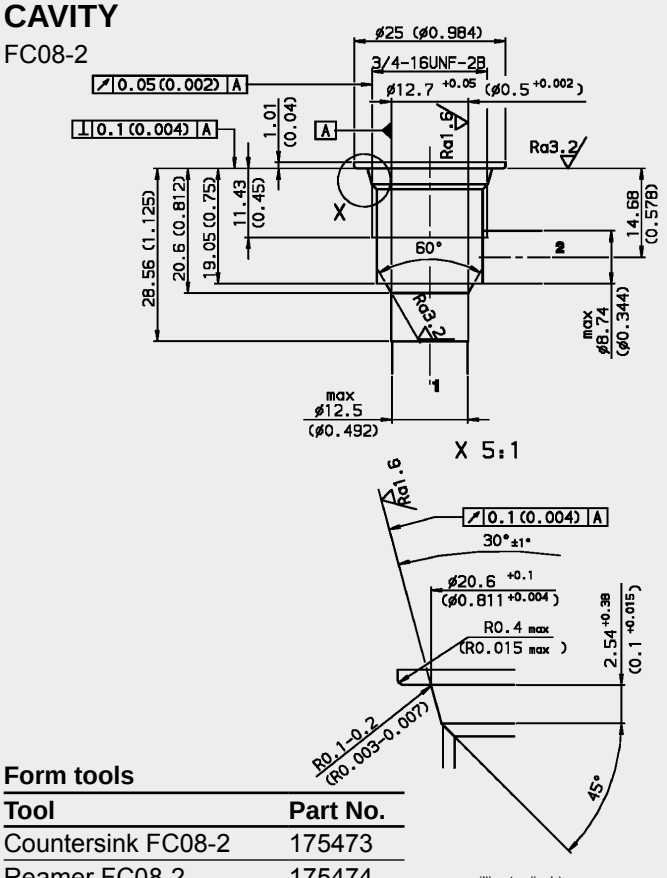
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

millimeter (inch)
subject to technical modifications

MODEL CODE

SD08-01 C – N – V

Basic model
Needle valve UNF

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR
V = FKM

Type of adjustment
V = Allen head (hex. 5/32")
H = knob adjustment
Other adjustment types on request

Standard models

Model code	Part No.
SD08-01-C-N-V	3009792
SD08-01-C-V-H	3033838

*Standard in-line bodies

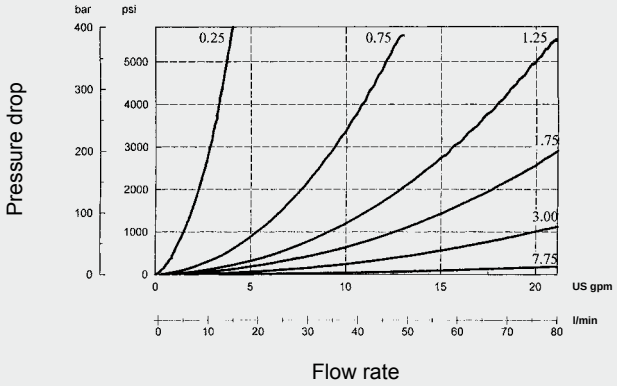
Model code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

Seal kits

Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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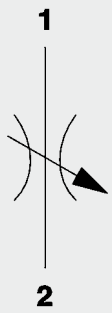
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

Needle Valve
SAE-10 Cartridge – 420 bar

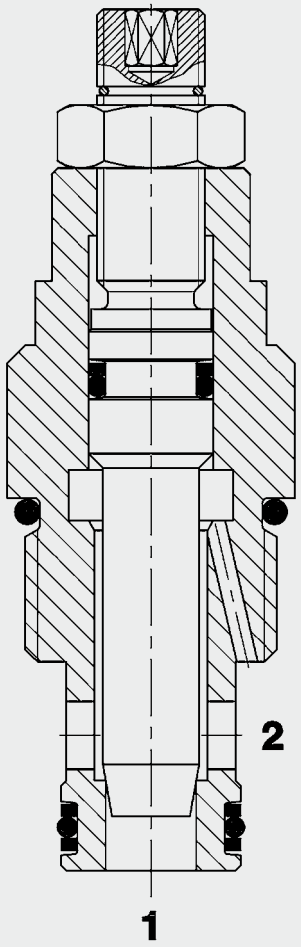
UNF

SD10-01



160 l/min
420 bar

FUNCTION



FEATURES

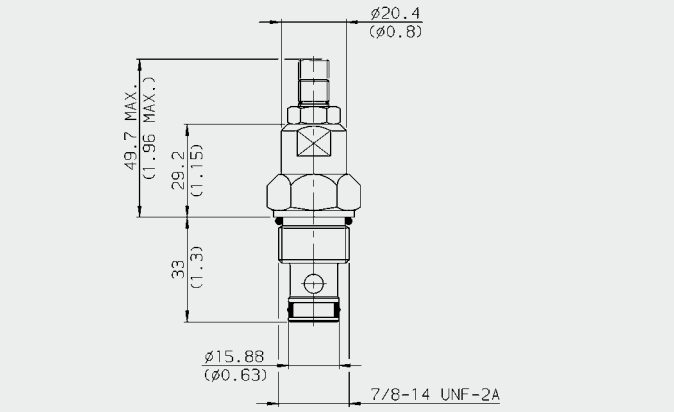
- For regulating the speed of loads
- External surfaces zinc-plated and corrosion-proof
- Flow adjustable from full flow to complete shut-off
- Compact design

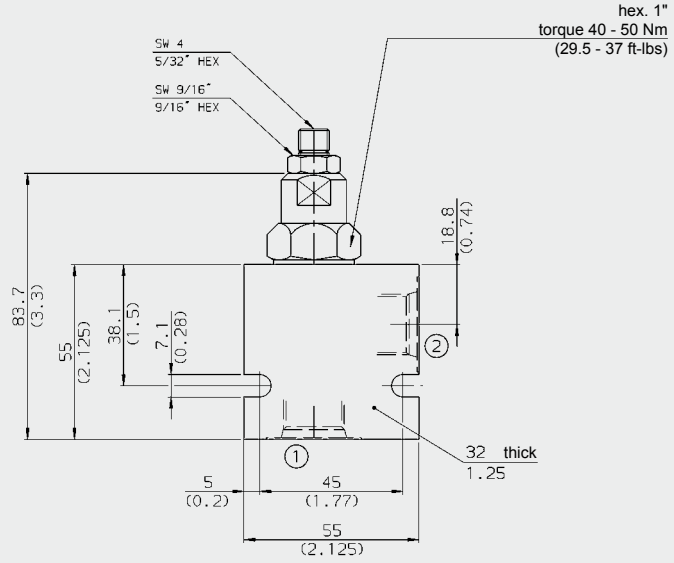
SPECIFICATIONS

Operating pressure:	max. 420 bar	
Nominal flow:	max. 160 l/min	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Control spindle:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
Cavity:	FC10-2	
Weight:	0.15 kg	

The SD10 is a flow control valve which controls the flow rate by adjusting the cross section. The flow rate is therefore dependent on the pressure differential and viscosity. Starting with the throttle spindle in the fully closed position, the flow rate increases in accordance with the appropriate curve as the control knob is turned. The flow is controlled in both directions.
Control knob option: The coloured rings on the top of the control knob enable accurate repeat setting.

DIMENSIONS

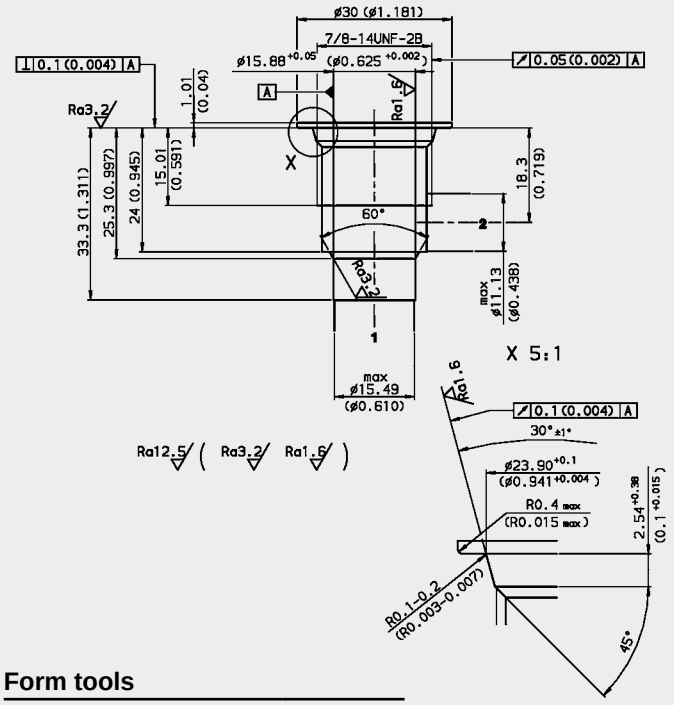




millimeter
subject to technical modifications

CAVITY

FC10-2



Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter
subject to technical modifications

MODEL CODE

SD10-01 C – N – V

Basic model
Needle valve UNF

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Type of adjustment
V = Allen head (int. hex. 5/32")
H = knob adjustment

Other adjustment types on request

Standard models

Model code	Part No.
SD10-01-C-N-V	3017145
SD10-01-C-N-H	3054472

*Standard in-line bodies

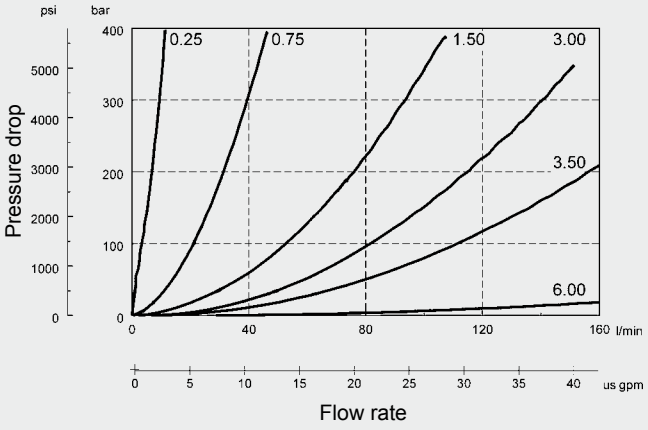
Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, clear anodized	G1/2	210 bar

Seal kits

Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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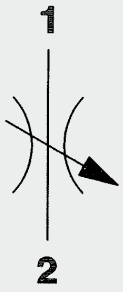
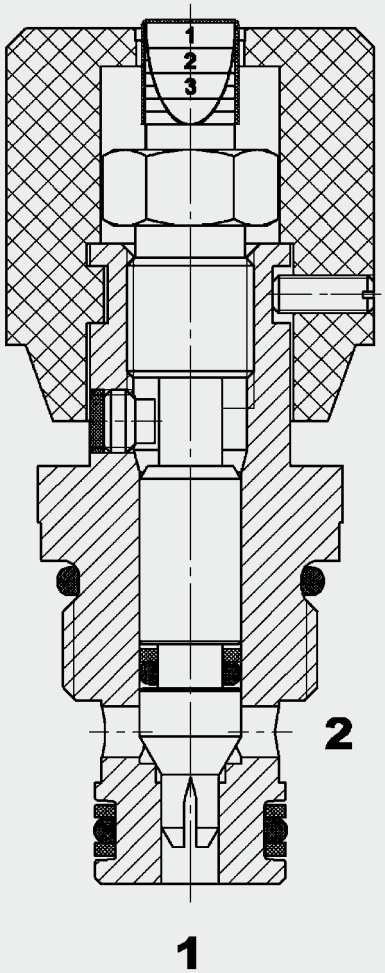
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

Needle Valve
Direct-Acting
Metric Cartridge – 350 bar
DV5E



Up to 30 l/min
Up to 350 bar

FUNCTION



The DV5E is a flow control valve which controls the flow rate by adjusting the cross section. The flow rate is dependent on the pressure differential and the viscosity.
Starting with the control spindle in the fully closed position, the flow rate increases according to the relevant curve as the number of turns of the control knob is increased.
The flow is controlled in both directions.
The scale and coloured rings on the top of the control knob enable accurate repeat setting.

FEATURES

- For regulating the speed of loads
- For fine adjustment and shut-off of the flow
- For system-related damping in hydraulic circuits
- High level of safety provided by patented spindle safety mechanism
- A set-screw locks the setting
- Optional zinc-plated version available

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 30 l/min	
Media operating temperature range:	min. -20 °C to max. +80 °C	
Ambient temperature range:	min. -20 °C to max. +80 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 380 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions, preferably horizontal	
Materials:	Valve body:	steel
	Piston:	steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +80 °C)
	Back-up rings:	PTFE
Cavity:	06020	
Weight:	0.11 kg	

MODEL CODE

DV5E – 01 X

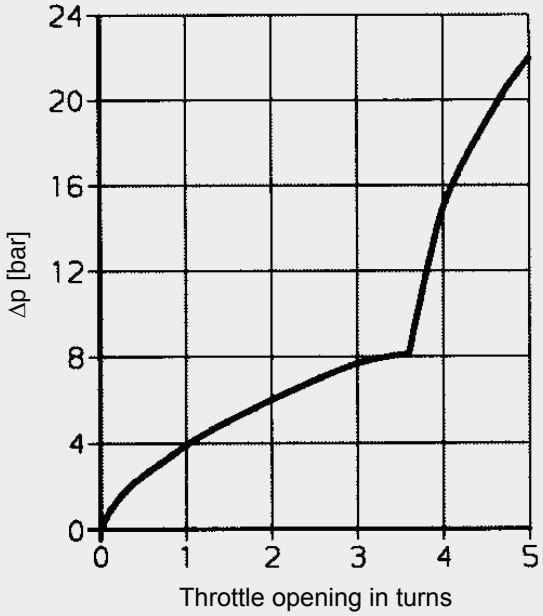
Basic model
Needle valve, metric

Type
01 = standard (phosphated, seals FKM)
02 = zinc-plated, seals NBR
04 = zinc-plated, seals FKM
11 = fine throttle spindle (phosphated, seals FKM)

Series
(determined by manufacturer)

PERFORMANCE

Opening characteristics



Δp = 10 bar = constant

Standard models

Model code	Part No.
DV5E-01X	710300
DV5E-02X	3139707
DV5E-04X	3094196
DV5E-11X	710302

Other models on request

Standard in-line bodies

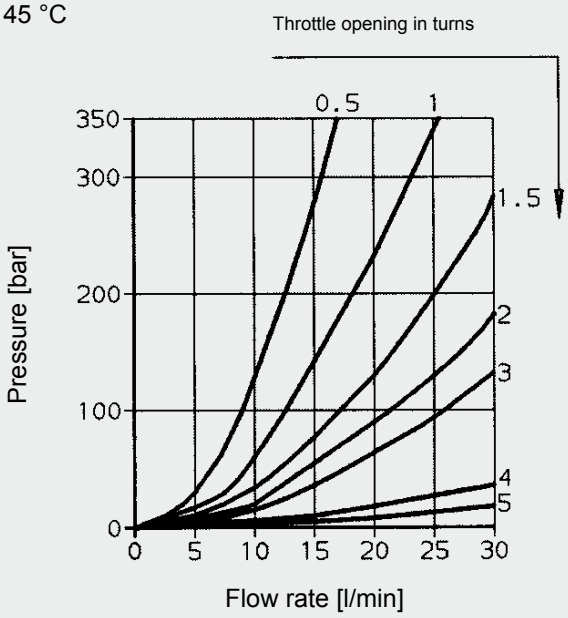
Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G3/8	350 bar
R06020-10X-01	276842	Steel, zinc-plated	G3/8	350 bar

Seal kits

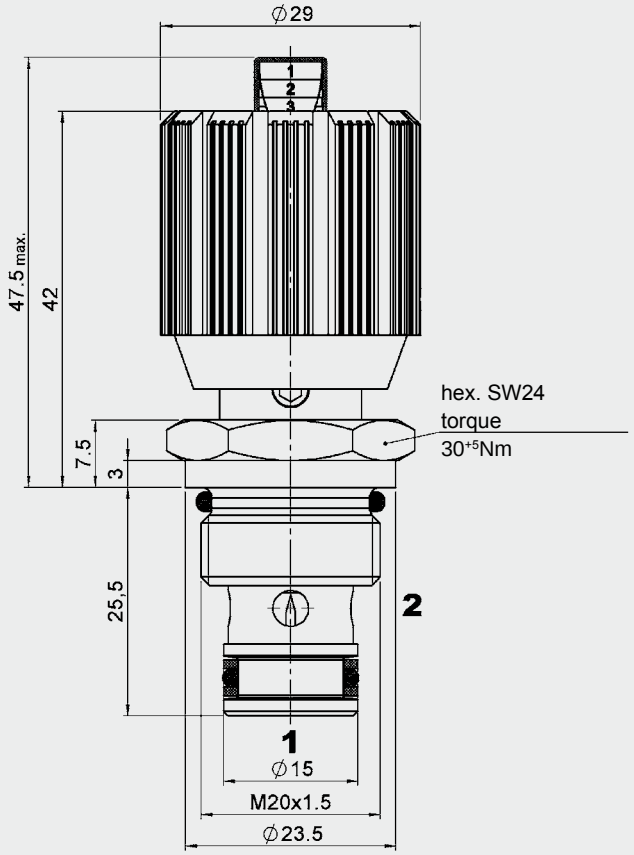
Code	Part No.
SEAL KIT 06020-NBR	3119017
SEAL KIT 06020-FKM	3262477

Pressure drop, dependent on flow rate

DV5E-01X
Measured at ν = 36 mm²/s
T_{oil} = 45 °C



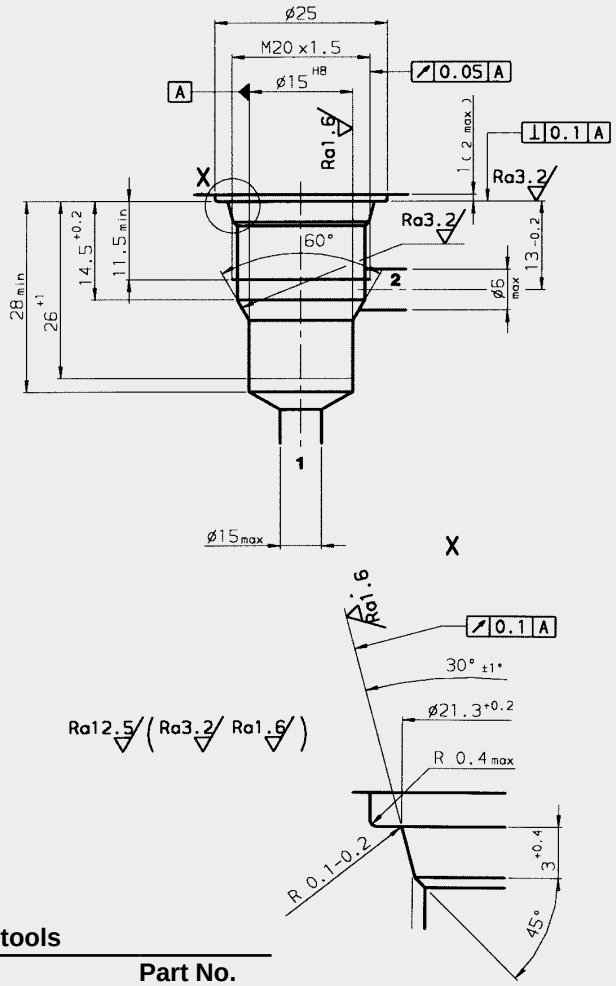
DIMENSIONS



Millimeter
Subject to technical modifications

CAVITY

06020



Form tools

Tool	Part No.
Countersink	170033
Reamer	1000768
Tap	1002648
Plug gauge	168840

Millimeter
Subject to technical modifications

NOTE

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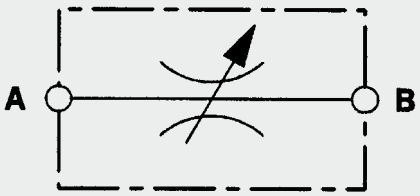
Subject to technical modifications.

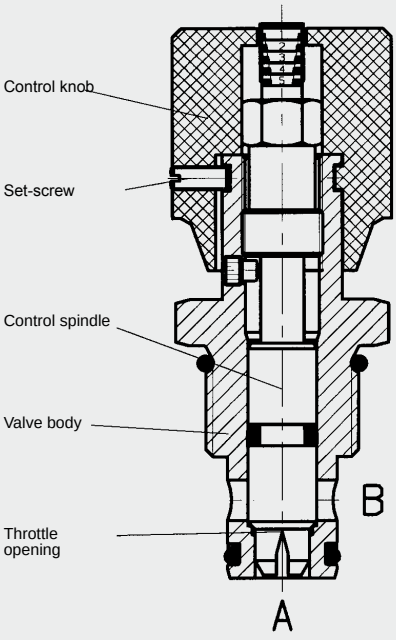
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

Needle Valve Direct-Acting Cartridge – 350 bar DVE 08920 to 16920



Up to 160 l/min
Up to 350 bar

FUNCTION



The DVE is a flow control valve which controls the flow rate by adjusting the cross section. It is available in four sizes. The flow rate is dependent on the pressure differential and the viscosity. Starting with the throttle spindle in the fully closed position, the flow rate increases in accordance with the appropriate curve as the control knob is turned. The flow is controlled in both directions. The scale and coloured rings on the top of the control knob enable accurate repeat setting.

FEATURES

- For regulating the speed of loads
- For fine adjustment and shut-off of the flow
- For system-related damping in hydraulic circuits
- High level of safety provided by patented spindle safety mechanism
- A set-screw locks the setting
- Choice of four sizes for optimum adaptability to the system
- Optional zinc-plated version available
- Optional version with UNF thread available

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	DVE 08920 max. 50 l/min DVE 10920 max. 80 l/min DVE 12920 max. 160 l/min DVE 16920 max. 160 l/min
Media operating temperature range:	-20 °C to +80 °C
Ambient temperature range:	min. -20 °C to max. +80 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s
Filtration:	Class 21/19/16 according to to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions, preferably horizontal
Materials:	Valve body: steel Seals: FKM (standard) NBR (optional, media temperature range -30 °C to +80 °C) Back-up rings: PTFE
Cavity:	08920, 10920, 12920, 16920
Weight:	DVE 08920 = 0.15 kg DVE 10920 = 0.25 kg DVE 12920 = 0.50 kg DVE 16920 = 0.70 kg

MODEL CODE

DVE 08920 – 01 – C – V

Basic model
Needle valve, metric (UNF optional)

Cavity
08920, 10920, 12920, 16920

Type
01 = standard (phosphated, seals FKM)
11 = zinc-plated, stainless steel spindle 0.3 mm
12 = valve body nickel-plated, fine throttle spindle, protective dome nut – adjustment with tool
Other types on request

Body and ports
C = cartridge only

Seals
V = FKM (standard)
N = NBR

Standard models

Model code	Part No.
DVE08920-01-C-V	705426
DVE10920-01-C-V	705430
DVE12920-01-C-V	705434
DVE16920-01-C-V	705438

Other models with metric or UNF thread on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
On request				

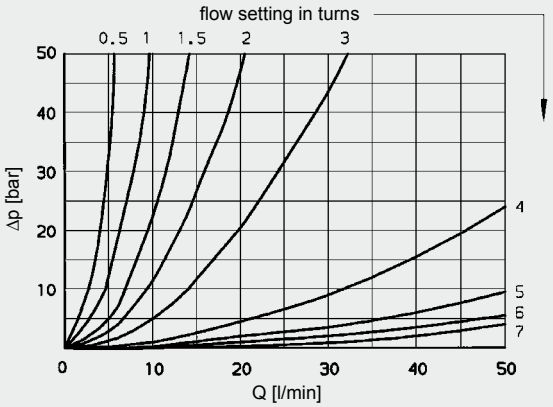
Seal kits

Code	Part No.
SEAL KIT 08FKM DV/P DRV/P DVE RVP SRVR/P	555090
SEAL KIT 10FKM DV/P DRV/P DVE RVP SRVR/P	555091
SEAL KIT 12FKM DV/P DRV/P DVE RVP SRVR/P	555092
SEAL KIT 16FKM DV/P DRV/P DVE RVP SRVR/P	555093

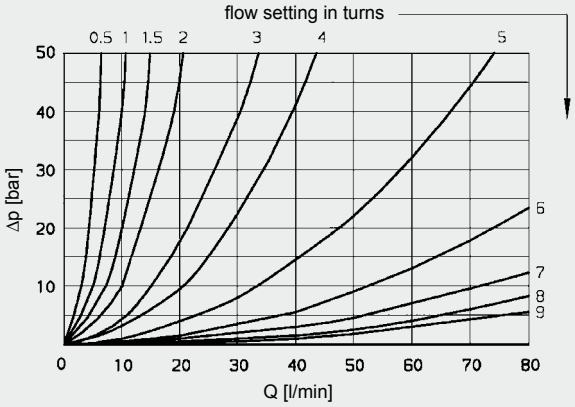
PERFORMANCE

Pressure drop, dependent on flow rate
Pressure differential Δp measured against flow rate Q, measured at constant flow setting, v = 34 mm²/s and T_{oil} = 46 °C

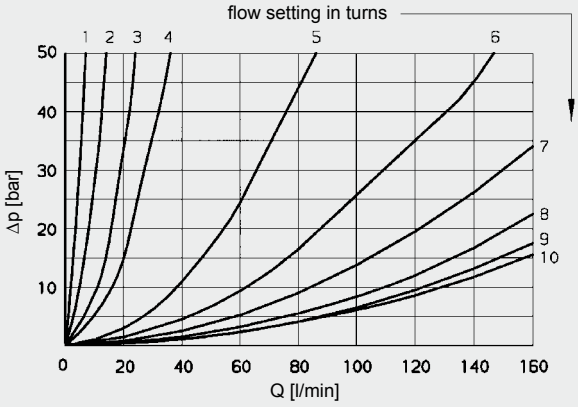
DVE08920



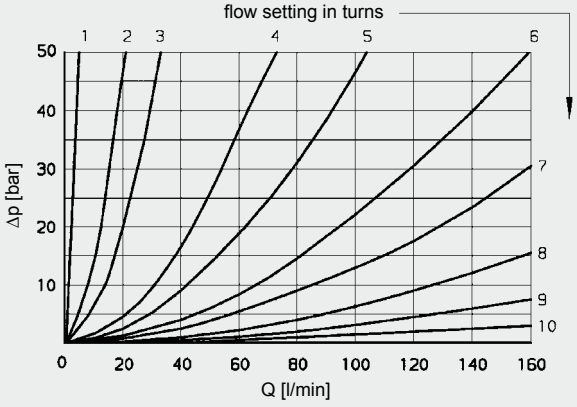
DVE10920



DVE12920

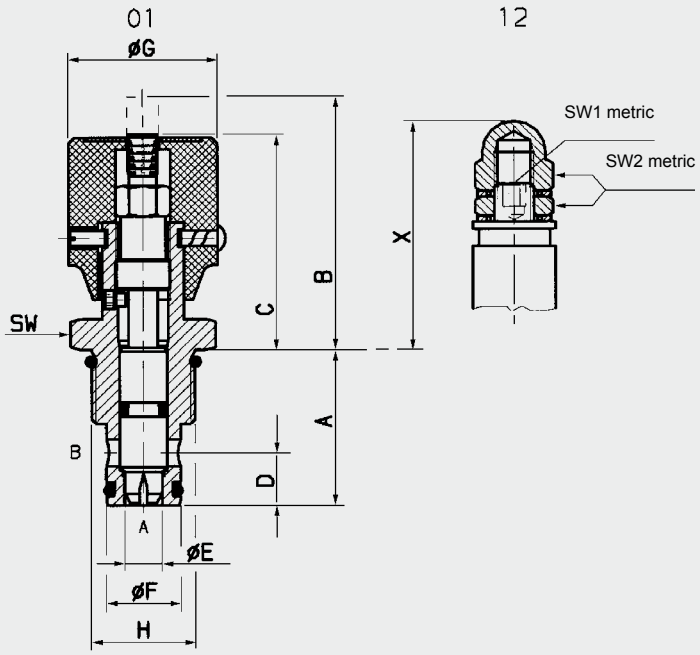


DVE16920



DIMENSIONS

Type:

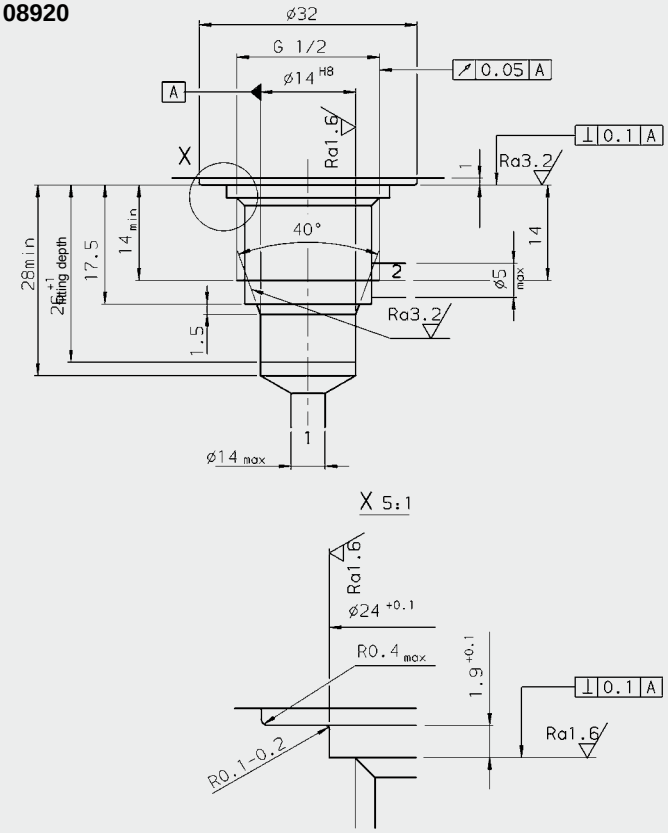


millimeter
subject to technical modifications

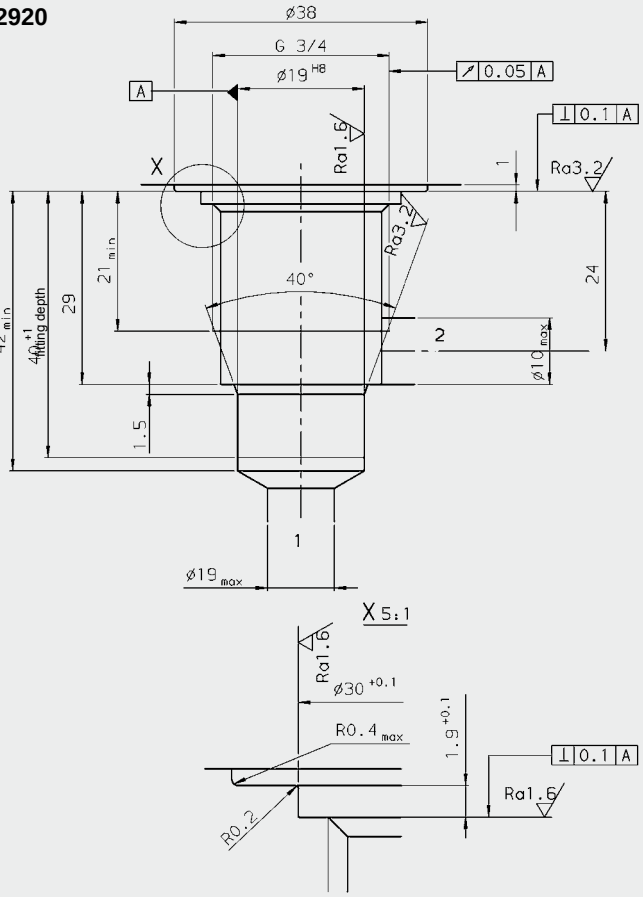
A	B	C	D	E	F	G	H	SW	SW1	SW2	X	Torque
26	47	40	12	5	14	29	G ½ A	27	4	13	44	30 + 5
30	64	54	12.5	8	16	38	G ½ A	27	5	17	58	40 + 5
40	65	54	13.5	9.5	19	38	G ¾ A	32	6	19	64	50 + 5
43.5	65	55	17.5	11	27	38	G 1 A	41	6	19	64.5	75 + 5

CAVITY

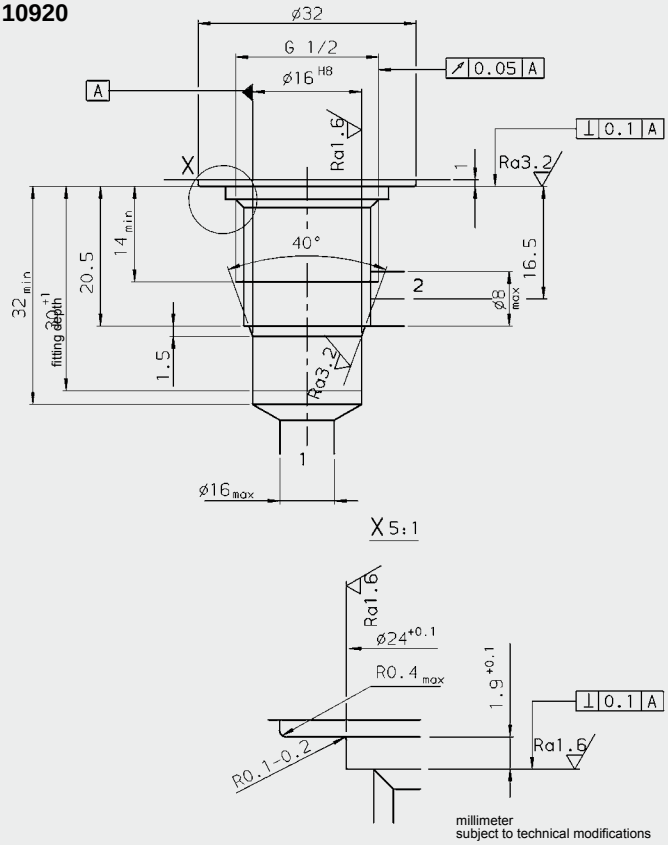
08920



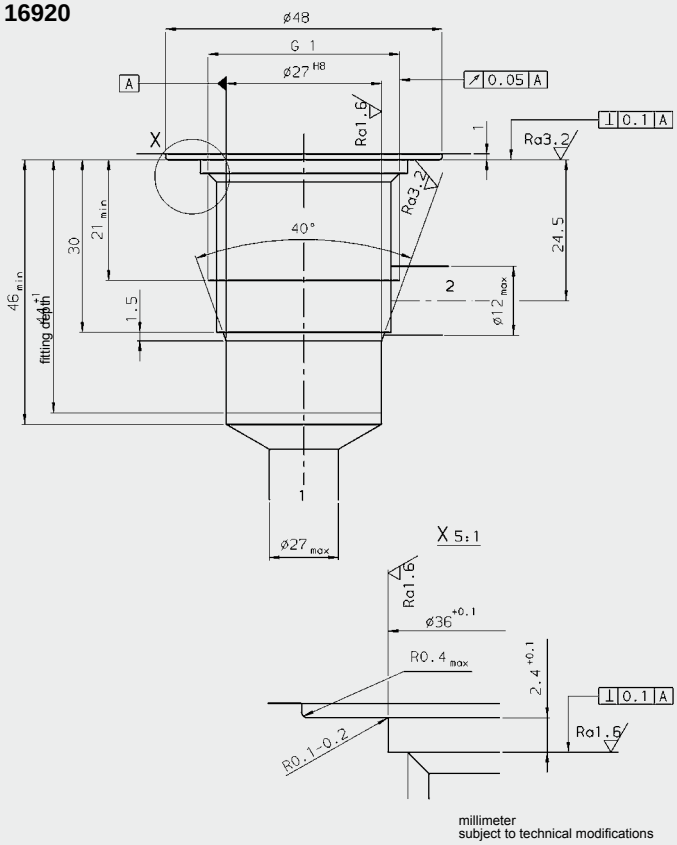
12920



10920



16920



millimeter
subject to technical modifications

millimeter
subject to technical modifications

Form tools

Tool	Cavity / Part No.			
	08920	**10920**	**12920**	**16920**
Countersink	170854	170863	170862	170861
Forming tool	169169	169169	170844	170843
Reamer	1014205	1000772	1000778	1014208
Tap	1002667	1002667	1002663	1002661
Plug gauge	173839	173840	173841	–

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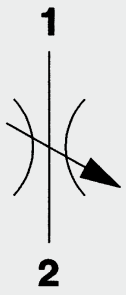
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

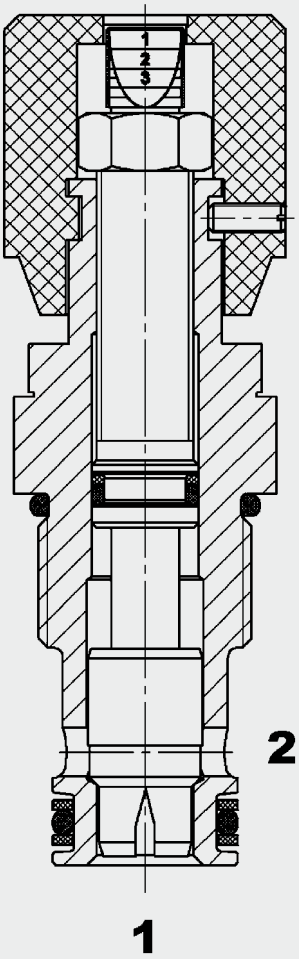


Up to 80 l/min
Up to 350 bar

Needle Valve Direct-Acting Metric Cartridge – 350 bar

SD10120

FUNCTION



The SD10120 is a flow control valve which controls the flow rate by adjusting the cross section. The flow rate depends on the pressure differential and the viscosity. Starting with the throttle spindle in the fully closed position, the flow rate increases in accordance with the appropriate curve as the control knob is turned. The flow is controlled in both directions. The scale and coloured rings on the top of the control knob enable accurate repeat setting.

FEATURES

- For regulating the speed of loads
- For fine adjustment and shut-off of the flow
- For system-related damping in hydraulic circuits
- A set-screw locks the setting
- Hardened and ground valve components to ensure minimal wear and extended service life
- Optional zinc-plated version available

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	80 l/min	
Media operating temperature range:	min. -20 °C to max. +80 °C	
Ambient temperature range:	min. -20 °C to max. +80 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions, preferably horizontal	
Materials:	Valve body:	steel
	Piston:	steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +100 °C)
	Back-up rings:	PTFE
Cavity:	10120	
Weight:	0.17 kg	

MODEL CODE

SD10120 - 01 X

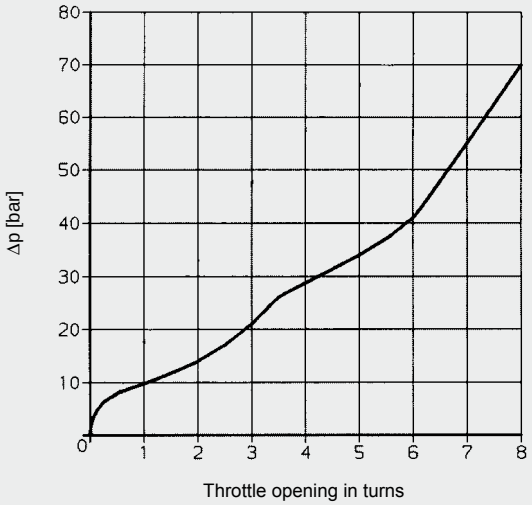
Basic model
Needle valve, metric

Type
01 = standard (phosphated, seals FKM and PTFE)

Series
(determined by manufacturer)

PERFORMANCE

Opening characteristics



Δp = 10 bar = constant

Standard models

Model code	Part No.
SD10120-01X	710390

Other models on request

Standard in-line bodies

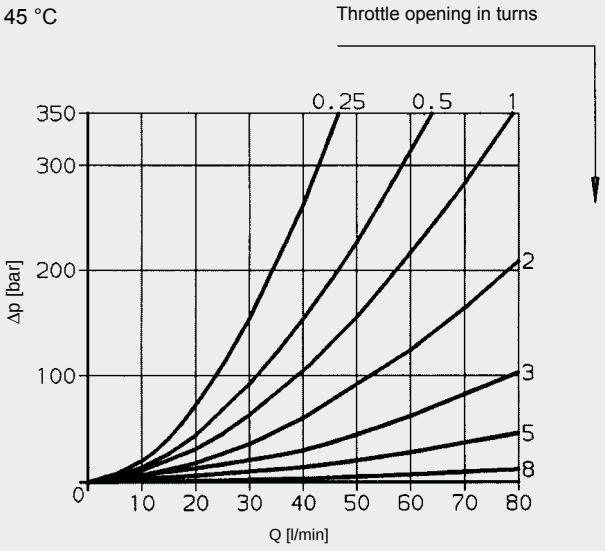
Code	Part No.	Material	Ports	Pressure
R10120-01X-01	395234	Steel, zinc-plated	G1/2	420 bar
R10120-01X-02	395235	Steel, zinc-plated	M22 x 1.5	420 bar

Seal kits

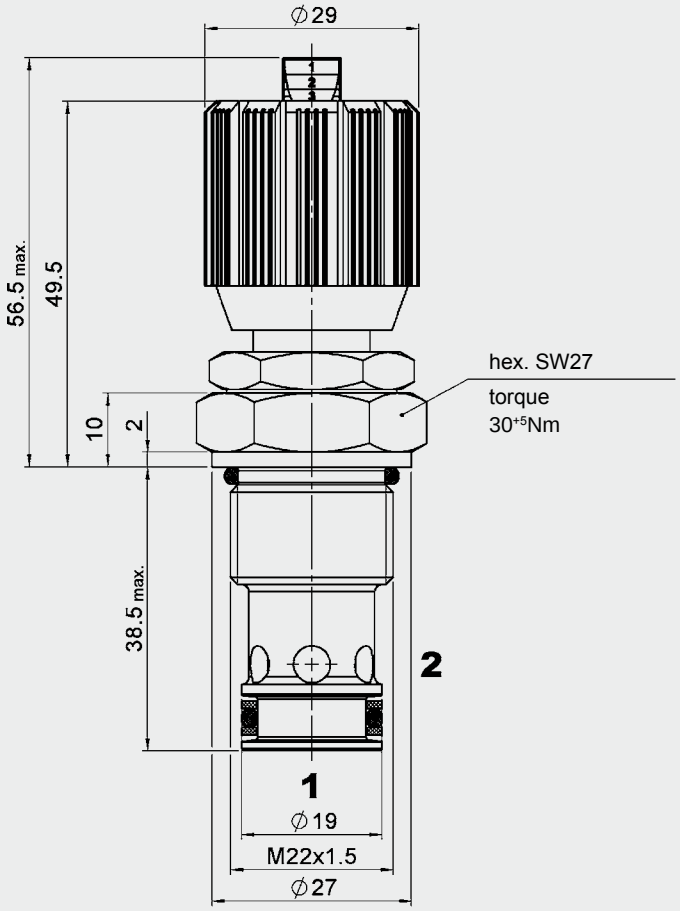
Code	Part No.
SEAL KIT 10120-NBR	3382346
SEAL KIT 10120-FKM	3178281

PRESSURE DROP, DEPENDENT ON FLOW RATE

Measured at ν = 36 mm²/s
$T_{Öl}$ = 45 °C



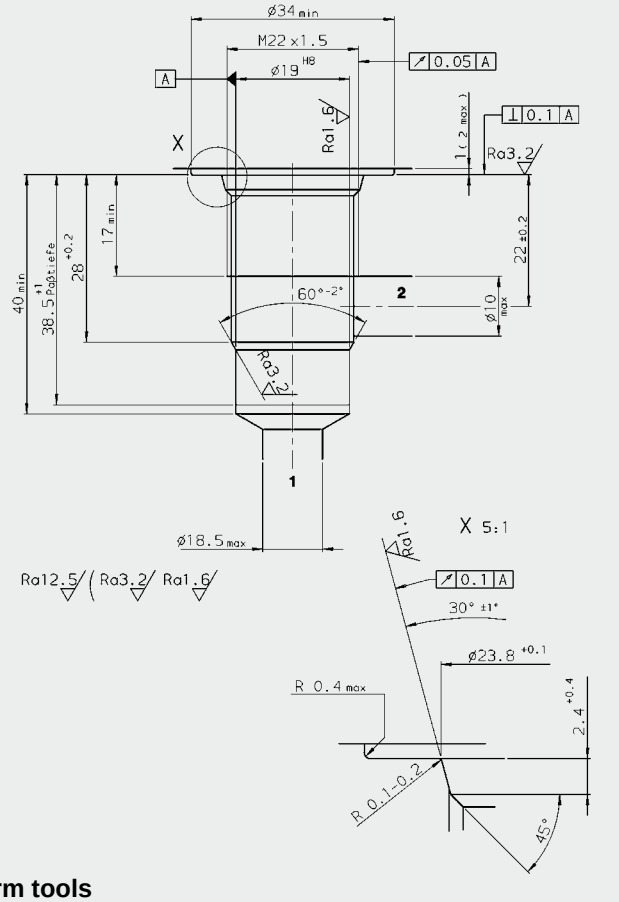
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

10120



Form tools

Tool	Part No.
Countersink	170418
Reamer	1014206
Tap	1002627
Plug gauge	169394

millimeter (inch)
subject to technical modifications

NOTE

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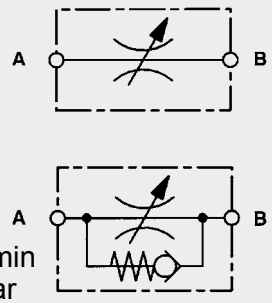
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

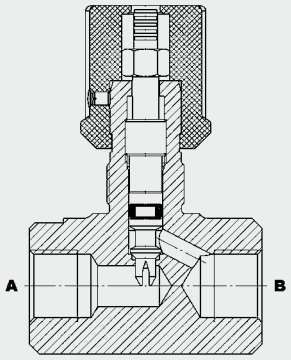


Up to 180 l/min
Up to 350 bar

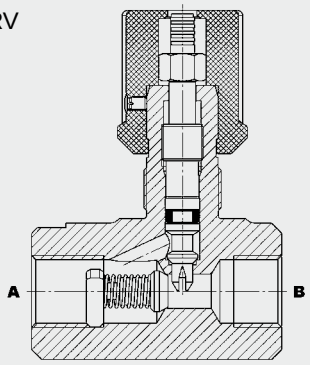
Needle Valves with and without Reverse Flow Check Direct-Acting Inline Mounted - 350 bar DV, DRV 06 to 16

FUNCTION

DV



DRV



The DV is an inline mounted flow control valve which controls the flow by adjusting the cross-section. The flow rate is therefore dependent on the pressure differential and viscosity. Starting with the throttle spindle in the fully closed position, the flow rate increases in accordance with the appropriate curve as the control knob is turned. The flow is controlled in both directions.
The scale on the lower edge of the control knob enables accurate repeat setting. The DRV is a flow control valve in the same design which also allows the same fine flow adjustment, but in one direction only. Unrestricted flow in the reverse direction is via the built-in check valve (cracking pressure 0.5 bar).

FEATURES

- For regulating the speed of loads
- For fine adjustment and shut-off of the flow
- For system-related damping in hydraulic circuits
- To release pressure from accumulator systems
- As an emergency drain for lowering a load without a dead man's circuit
- High level of safety provided by patented spindle safety mechanism
- A set-screw locks the setting by allen screw
- Choice of five sizes ensures best possible adaptability to the system
- Optional zinc-plated version available

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	DV, DRV-06 max. 20 l/min DV, DRV-08 max. 50 l/min DV, DRV-10 max. 60 l/min DV, DRV-12 max. 90 l/min DV, DRV-16 max. 180 l/min	
Cracking pressure (on DRV):	0.5 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	no orientation restrictions, preferably horizontal	
Materials:	Valve body:	steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard)
	Back-up rings:	PTFE
Weight:	DV 06 = 0.10 kg DV 08 = 0.26 kg DV 10 = 0.38 kg DV 12 = 0.62 kg DV 16 = 1.04 kg	DRV 06 = 0.10 kg DRV 08 = 0.28 kg DRV 10 = 0.41 kg DRV 12 = 0.65 kg DRV 16 = 1.14 kg

MODEL CODE

DRV – 08 – 01 . X / 0

Basic model
DV = Needle valve
DRV = Needle valve with reverse flow check

Nominal size
06, 08, 10, 12, 16

Type
01 = standard, housing phosphated
11 = housing zinc-plated, fine throttle spindle in stainless steel
12 = housing zinc-nickel coated (seawater-resistant), fine throttle spindle in steel, with protective dome nut - adjustment with tool
30 = housing stainless steel
Other types on request

Series
(to be determined by manufacturer)

Threaded connection
0 = Whitworth thread, threaded connection Form X to DIN 3852 Part 2
5 = NPT thread
12 = UNF thread

Standard models

Model code	Part No.
DV-06-01.3/0	705002
DV-08-01.3/0	705014
DV-10-01.3/0	705026
DV-12-01.3/0	705038
DV-16-01.3/0	705050
DRV-06-01.3/0	705502
DRV-08-01.3/0	705514
DRV-10-01.3/0	705526
DRV-12-01.3/0	705538
DRV-16-01.3/0	705550

Other models on request

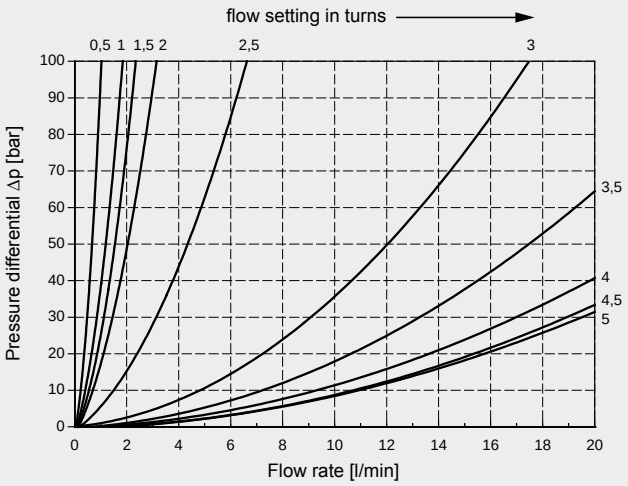
Accessories
Panel mounting sets, nickel-plated, consisting of locking washer, disc and hex. nut

Size	Part No.
06	705309
08	705310
10	705310
12	705311
16	705311

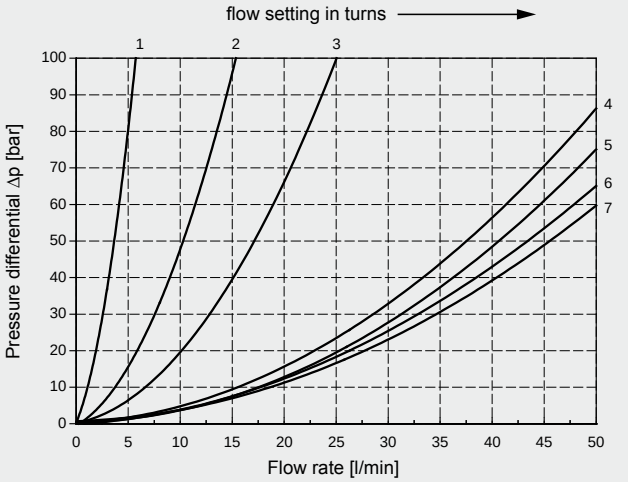
PERFORMANCE

Pressure drop, dependent on flow rate
DV→=→flow direction A → B and B → A
DRV→=→flow direction A → B
Pressure differential Δp measured against flow rate Q, measured at constant flow setting, v = 53 mm²/s and T_{oil} = 36 °C

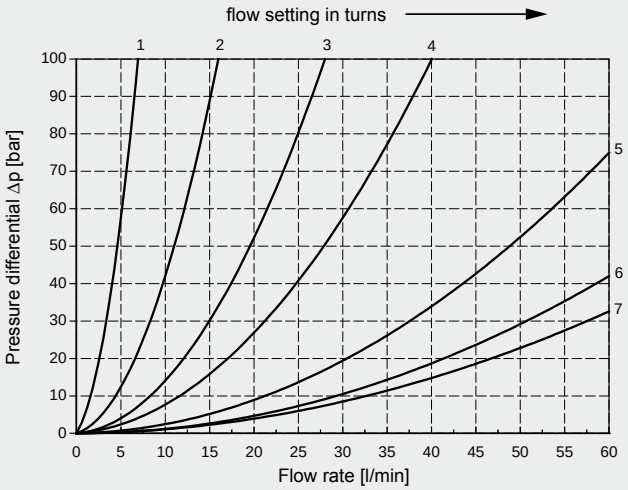
DV-06-01.3/0 A → B



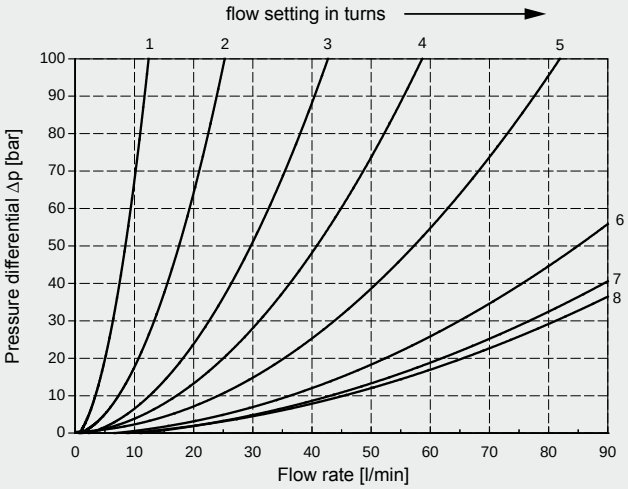
DV-08-01.3/0 A → B



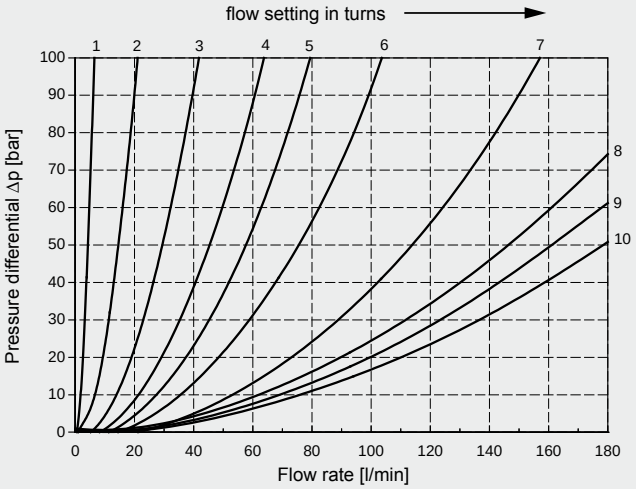
DV-10-01.3/0 A → B



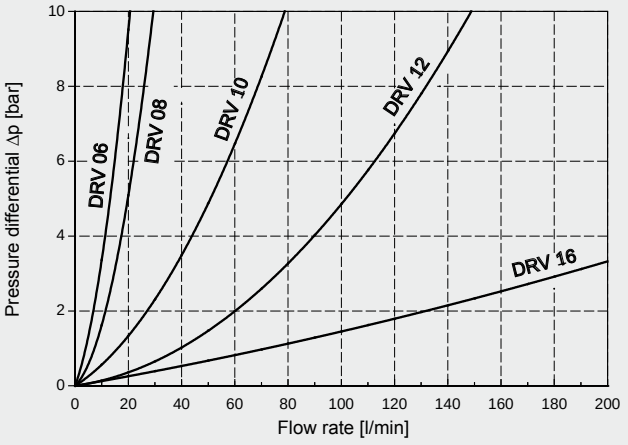
DV-12-01.3/0 A → B



DV-16-01.3/0 A → B



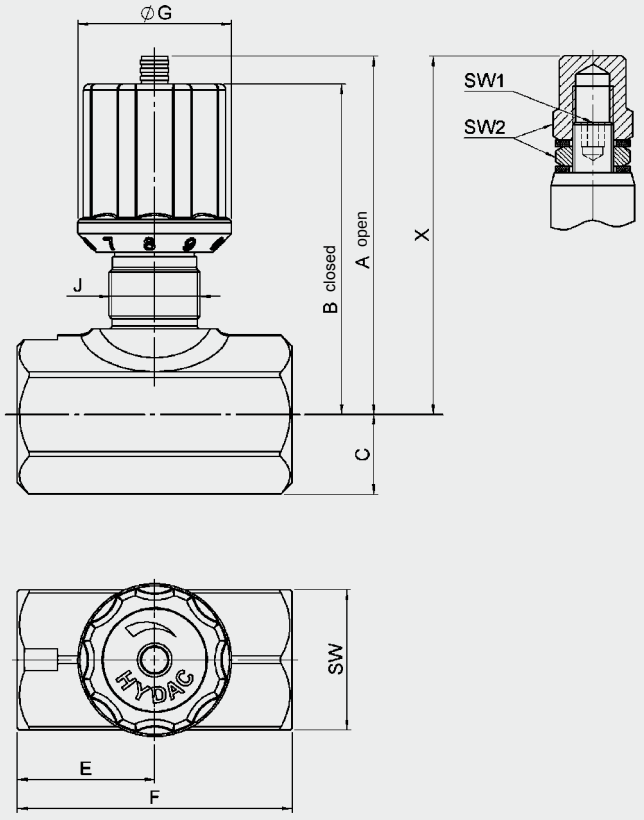
DRV-06-16 B → A



DIMENSIONS

DV

Type 01 30 11 12



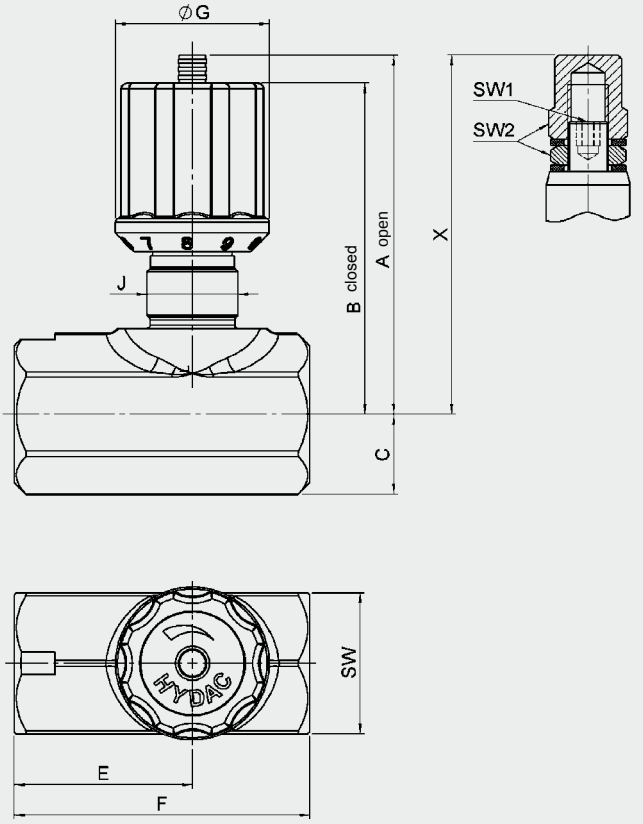
millimeter
subject to technical modifications

Size	Threaded connection	A	B	C	SW	E
06	G⅛	57	52.9	9	16	19
08	G¼	70.4	64.3	14.2	25	24
10	G⅜	76.6	70.8	17.7	30	29
12	G½	89.2	82.3	20	35	34
16	G¾	106.2	97.3	25.7	45	39

F	G	J	SW1	SW2	X	Weight [kg]
38	25.2	Pg7	3	10	58.6	0.094
48	30.5	Pg11	4	13	72.3	0.257
58	30.5	Pg11	4	13	78.8	0.378
68	38	Pg16	5	17	89.3	0.618
78	38	Pg16	6	19	111.3	1.038

DRV

Type 01 30 11 12



millimeter
subject to technical modifications

Size	Threaded connection	A	B	C	SW	E
06	G⅛	57	52.9	9	16	28.8
08	G¼	70.4	64.3	14.2	25	34
10	G⅜	76.6	70.8	17.7	30	42
12	G½	89.2	82.3	20	35	44
16	G¾	106.2	97.3	25.7	45	57

F	G	J	SW1	SW2	X	Weight [kg]
45	25.2	Pg7	3	10	58.6	0.103
55	30.5	Pg11	4	13	72.3	0.277
58	30.5	Pg11	4	13	78.8	0.407
73	38	Pg16	5	17	89.3	0.644
88	38	Pg16	6	19	111.3	1.139

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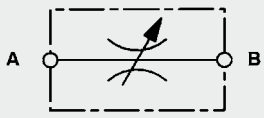
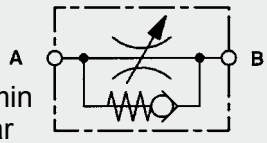
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com



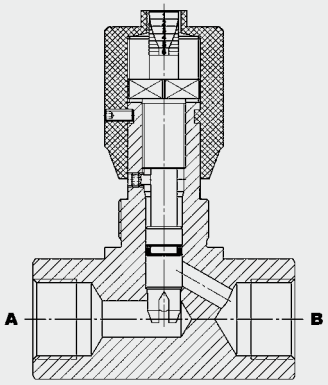


Up to 300 l/min
Up to 350 bar

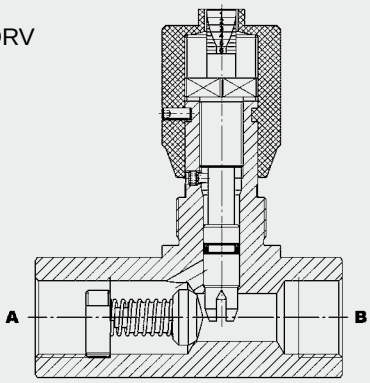
Needle Valves with and without Reverse Flow Check Direct-Acting Inline Mounted - 350 bar DV, DRV 20 to 40

FUNCTION

DV



DRV



The DV is an inline mounted flow control valve which controls the flow by adjusting the cross-section. The flow rate is therefore dependent on the pressure differential and viscosity. Starting with the throttle spindle in the fully closed position, the flow rate increases in accordance with the appropriate curve as the control knob is turned. The flow is controlled in both directions.
The scale and coloured rings on the top of the control knob enable accurate repeat setting. The DRV is a flow control valve in the same design which also allows the same fine flow adjustment, but in one direction only. Unrestricted flow in the reverse direction is via the built-in check valve (cracking pressure 0.5 bar).

FEATURES

- For regulating the speed of loads
- For fine adjustment and shut-off of the flow
- For system-related damping in hydraulic circuits
- To release pressure from accumulator systems
- As an emergency drain for lowering a load without a dead man's circuit
- High level of safety provided by patented spindle safety mechanism
- A set-screw locks the setting
- Choice of four sizes for optimum adaptability to the system
- Nickel-plated version available as an option

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	DV, DRV-20 max. 300 l/min DV, DRV-25 max. 300 l/min DV, DRV-30 max. 300 l/min DV, DRV-40 max. 300 l/min	
Cracking pressure (on DRV):	0.5 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	no orientation restrictions, preferably horizontal	
Materials:	Valve body:	steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard)
	Back-up rings:	PTFE
Weight:	DV 20 = 2.1 kg DV 25 = 2.8 kg DV 30 = 3.5 kg DV 40 = 5.5 kg	DRV 20 = 2.4 kg DRV 25 = 3.5 kg DRV 30 = 4.6 kg DRV 40 = 7.7 kg

MODEL CODE

DRV – 20 – 01 . X / 0

Basic model
DV = Needle valve
DRV = Needle valve with reverse flow check

Size
20, 25, 30, 40

Type
01 = standard, housing phosphated
12 = housing zinc-nickel coated (seawater-resistant), fine throttle spindle in steel, with protective dome nut - adjustment with tool (not for size 40)
17 = housing zinc-plated (not for size 40)
30 = housing stainless steel (only size 20)
Other types on request

Series
(determined by manufacturer)

Threaded connection
0 = BSP thread, threaded connection Form X to DIN 3852 Part 2
5 = NPT thread
12 = UNF thread

Standard models

Model code	Part No.
DV-20-01.1/0	705062
DV-25-01.1/0	705074
DV-30-01.1/0	705086
DV-40-01.1/0	705098
DRV-20-01.1/0	705562
DRV-25-01.1/0	705574
DRV-30-01.1/0	705586
DRV-40-01.1/0	705598

Other models on request

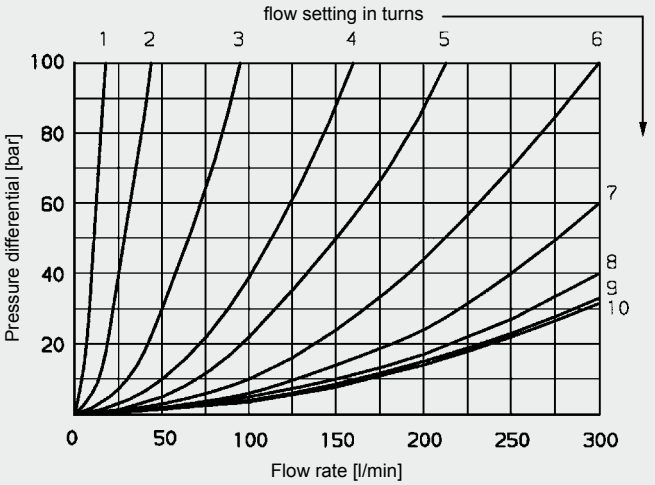
Seal kits

Code	Part No.
SEAL KIT 20FKM DV/P DRV/P RVP SRV	555094
SEAL KIT 25FKM DV/P DRV/P RVP	555095
SEAL KIT 30FKM DV/P DRV/P RVP	555096
SEAL KIT 40FKM DV/P DRV/P RVP	561456

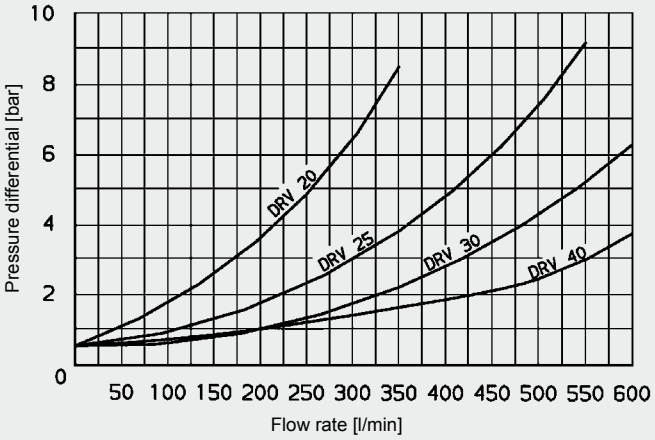
PERFORMANCE

Pressure drop, dependent on flow rate
DV = flow direction A → B and B → A
DRV = flow direction A → B

Pressure differential Δp measured against flow rate Q, measured at constant flow setting, v = 54 mm²/s and T_{oil} = 36 °C



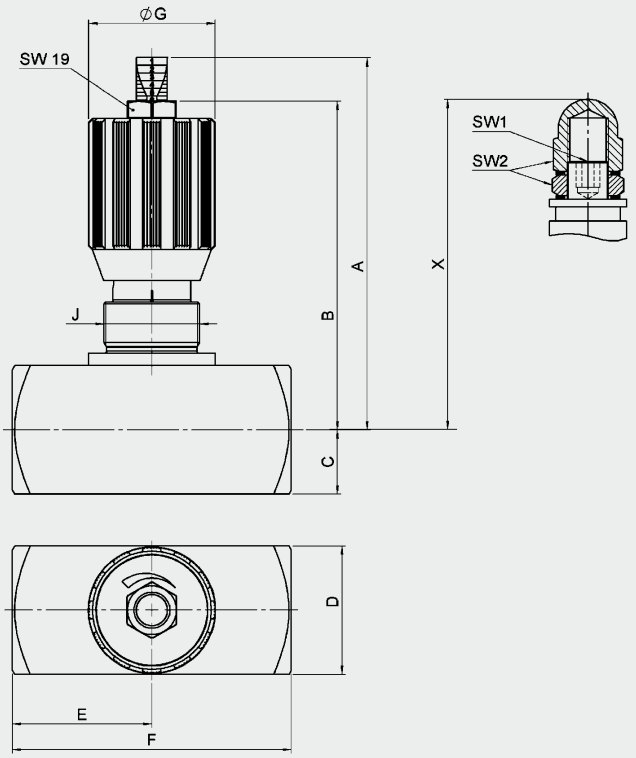
DRV Flow direction B→A



DIMENSIONS

DV

Type 01 30 11 12



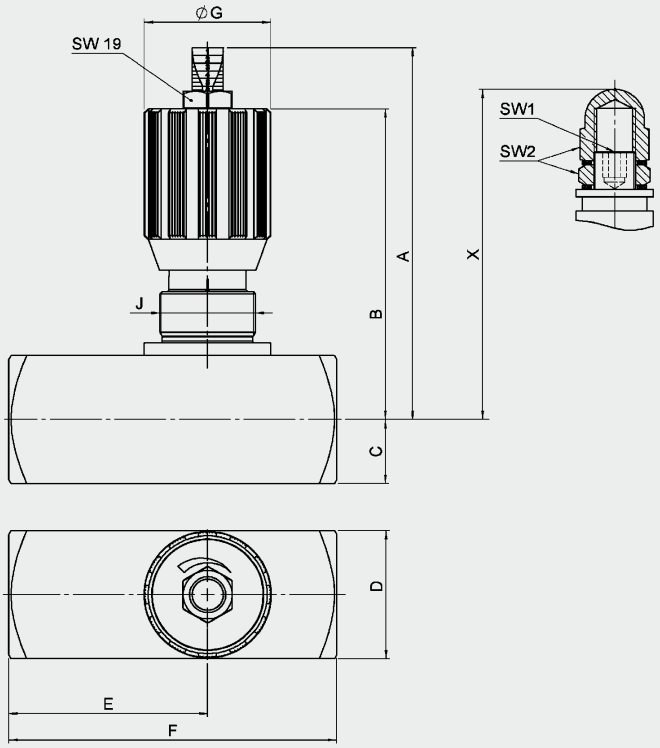
millimeter(inch)
subject to technical modifications

Nominal size	Threaded connection	A	B	C	D	E
20	G1	145	128	25	50	54
25	G1¼	150	133	30	60	54
30	G1½	155	138	35	70	54
40	G2	165	148	45	90	65

F	G	J	SW1	SW2	X	Weight [kg]
108	49	Pg29	8	24	129	2.10
108	49	Pg29	8	24	134	2.80
108	49	Pg29	8	24	139	3.50
130	49	Pg29	–	–	–	5.50

DRV

Type 01 30 11 12



millimeter (inch)
subject to technical modifications

Nominal size	Threaded connection	A	B	C	D	E
20	G1	145	128	25	50	77
25	G1¼	150	133	30	60	93
30	G1½	155	138	35	70	108
40	G2	165	148	45	90	130

F	G	J	SW1	SW2	X	Weight [kg]
127	49	Pg29	8	24	129	2.40
143	49	Pg29	8	24	134	3.50
143	49	Pg29	8	24	139	4.60
165	49	Pg29	–	–	–	7.70

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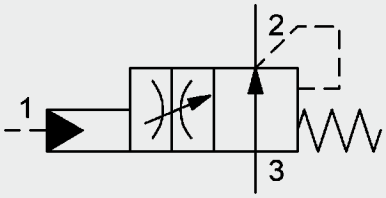
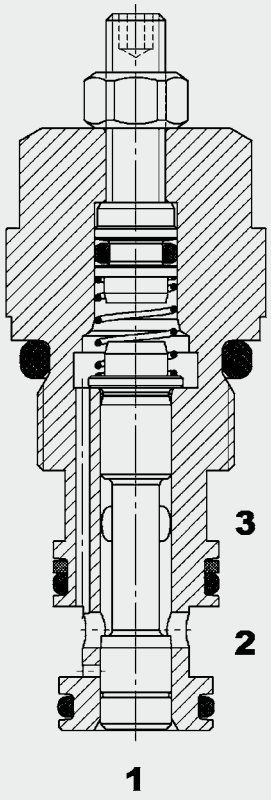
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

Needle Valve Spool Type, Hydraulically Operated Metric Cartridge – 250 bar SDH05330



Up to 20 l/min
Up to 250 bar

FUNCTION



The SDH05330 is a hydraulically operated, spring-loaded, adjustable spool valve. In the normal position, the valve is open and there is flow from port 3 to port 2. When control pressure is applied to port 1, the valve switches into the flow control position and the flow is reduced.

The flow setting can be adjusted using the set screw (clockwise to increase flow, counter-clockwise to decrease flow)

Caution: the control pressure must generally be greater than the pressure at port 2, otherwise the valve will not function.

In order that the valve switches back from the flow control position to the fully open position, port 1 must be vented and (at this moment) there must be no flow through the valve.

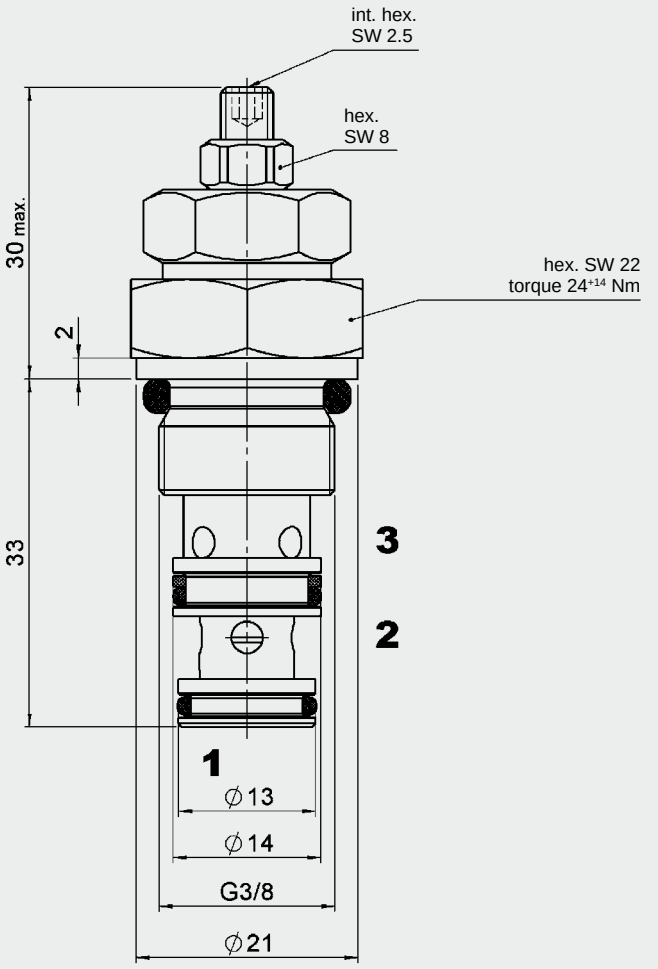
FEATURES

- Flow control is dependent on the viscosity of the oil and the system pressure
- A lock-nut locks the setting
- External surfaces zinc-plated
- Hardened and ground control piston to ensure minimal wear and extended service life
- Compact design

SPECIFICATIONS

Operating pressure:	max. 250 bar	
Nominal flow:	max. 20 l/min	
Control pressure:	min = P at Port 2 + 5 bar, max. 250 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 380 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	Hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	05330	
Weight:	0.075 kg	

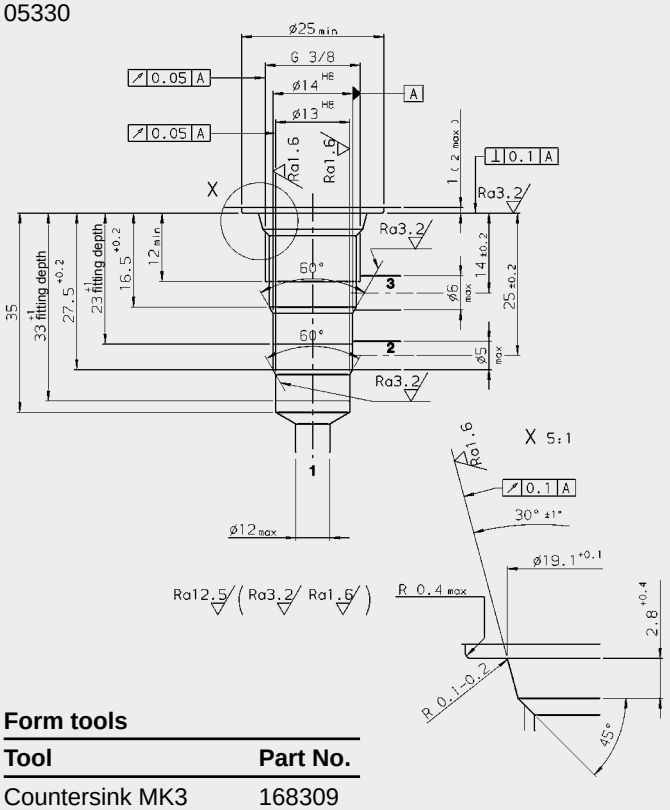
DIMENSIONS



Millimeter
Subject to technical modifications

CAVITY

05330



Form tools

Tool	Part No.
Countersink MK3	168309
Reamer MK1	161079

Millimeter
Subject to technical modifications

MODEL CODE

SDH 05330 – 01 X

Basic model
Flow control valve, hydraulically operated

Cavity
05330 = 2-way cavity

Type
01 = standard

Series
(determined by manufacturer)

Standard models

Code	Part No.
SDH05330-01X	394746

Other models on request

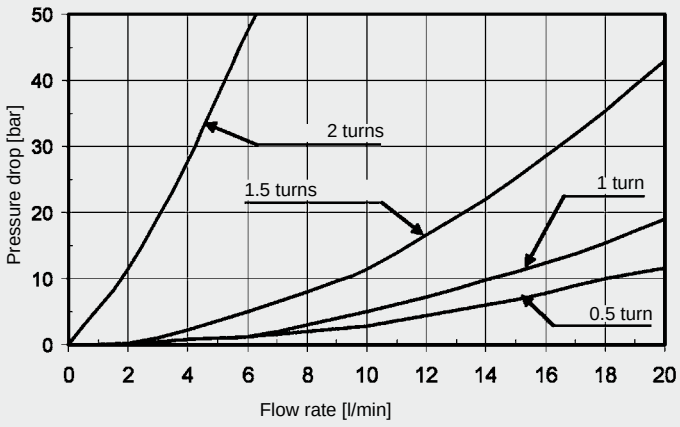
Seal kits

Code	Part No.
SEAL KIT WKH05330-XXX FKM	3006592

PERFORMANCE

Measured at v = 34 mm²/s
T_{Oil} = 46 °C

Set screw turned clockwise as far as stop.
Number of turns indicated, counter-clockwise, starting from this setting



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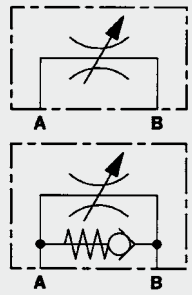
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

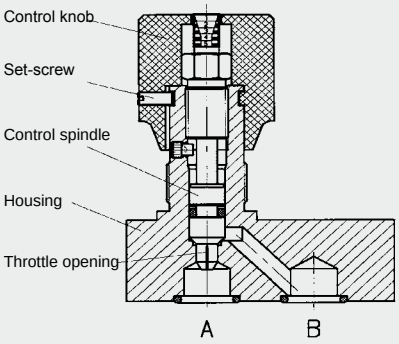


Up to 300 l/min
Up to 350 bar

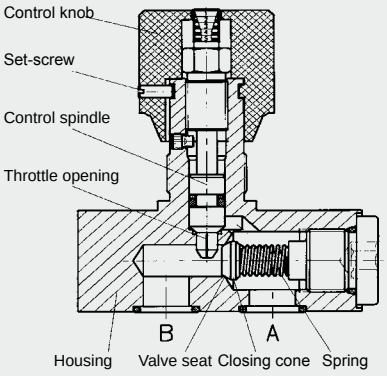
Needle Valves with and without Reverse Flow Check Direct-Acting Manifold Mounted – 350 bar DVP, DRVP 06 to 40

FUNCTION

DVP



DRVP



The DVP is a manifold mounted flow control valve which controls the flow rate by adjusting the cross-section. The flow rate is therefore dependent on the pressure differential and viscosity. Starting with the throttle spindle in the fully closed position, the flow rate increases in accordance with the appropriate curve as the control knob is turned. The flow is controlled in both directions.
The scale and coloured rings on the top of the control knob enable accurate repeat setting. The DRVP is a manifold mounted flow control valve which allows the same fine flow adjustment, but in one direction only. Unrestricted flow in the reverse direction is via the built-in check valve (cracking pressure 0.5 bar).

FEATURES

- For regulating the speed of loads
- For fine adjustment and shut-off of the flow
- For system-related damping in hydraulic circuits
- To release pressure from accumulator systems
- As an emergency drain for lowering a load
- High level of safety provided by patented spindle safety mechanism
- A set-screw locks the setting
- Choice of nine sizes ensures best possible adaptability to the system
- Hardened and ground valve components to ensure minimal wear and extended service life
- Optional nickel-plated version available (up to size 12)

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	DVP, DRVP-06 max. 20 l/min DVP, DRVP-08 max. 50 l/min DVP, DRVP-10 max. 60 l/min DVP, DRVP-12 max. 90 l/min DVP, DRVP-16 max. 180 l/min DVP, DRVP-20 max. 300 l/min DVP, DRVP-25 max. 300 l/min DVP, DRVP-30 max. 300 l/min DRVP-40 max. 300 l/min
Cracking pressure (on DRVP):	0.5 bar
Media operating temperature range:	min. -20 °C to max. +80 °C
Ambient temperature range:	min. -20 °C to max. +80 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions, preferably horizontal
Materials:	Valve body: steel Piston: hardened and ground steel Seals: FKM (standard) Back-up rings: PTFE
Weight:	DVP 06 = 0.2 kg DVP 08 = 0.4 kg DVP 10 = 0.6 kg DVP 12 = 1.0 kg DVP 16 = 1.7 kg DVP 20 = 3.6 kg DVP 25 = 5.5 kg DVP 30 = 7.5 kg DRVP 06 = 0.3 kg DRVP 10 = 0.8 kg DRVP 12 = 1.1 kg DRVP 16 = 2.5 kg DRVP 25 = 6.7 kg DRVP 30 = 3.9 kg DRVP 40 = 17.5 kg

MODEL CODE

DRVP – 08 – 01 . X

Basic model
Needle valve DVP
Needle valve with check valve DRVP

Nominal size
06, 08, 10, 12, 16, 20, 25, 30

Type
01 = standard
(housing phosphated, seals FKM)
12 = housing nickel-plated, fine throttle spindle in steel, with protective dome nut - adjustment with tool (not for size 40)
Other types on request

Series
(determined by manufacturer)

Standard models

Code	Part No.
DVP-06-01.X	705351
DVP-08-01.X	705353
DVP-10-01.X	705355
DVP-12-01.X	705357
DVP-16-01.X	705359
DVP-20-01.X	705361
DVP-25-01.X	705363
DVP-30-01.X	705365
DRVP-06-01.X	705777
DRVP-08-01.X	705779
DRVP-10-01.X	705781
DRVP-12-01.X	705783
DRVP-16-01.X	705785
DRVP-20-01.X	705787
DRVP-25-01.X	705789
DRVP-30-01.X	705791
DRVP-40-01.X	705792

Other models on request

Seal kits

Code	Part No.
SEAL KIT 06FKM DV/P DRV/P RVP	555089
SEAL KIT 08FKM DV/P DRV/P DVE RVP SRVR/P	555090
SEAL KIT 10FKM DV/P DRV/P DVE RVP SRVR/P	555091
SEAL KIT 12FKM DV/P DRV/P DVE RVP SRVR/P	555092
SEAL KIT 16FKM DV/P DRV/P DVE RVP SRVR/P	555093
SEAL KIT 20FKM DV/P DRV/P RVP SRVR	555094
SEAL KIT 25FKM DV/P DRV/P RVP	555095
SEAL KIT 30FKM DV/P DRV/P RVP	555096
SEAL KIT 40FKM DV/P DRV/P RVP	561456

PERFORMANCE

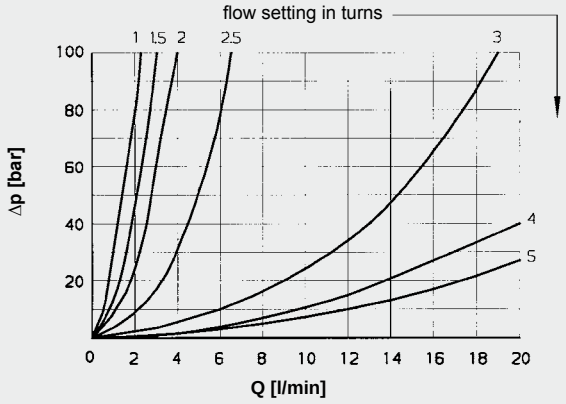
Pressure drop, dependent on flow rate

DVP = flow direction A → B and B → A

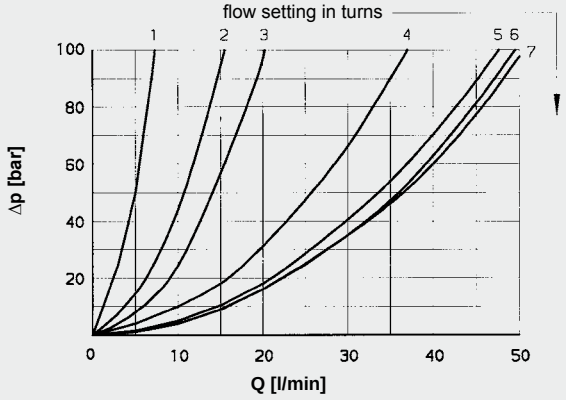
DRVP = flow direction A → B

Pressure differential Δp measured against flow rate
Measured at constant flow setting, ν = 54 mm²/s
and T_{oil} = 36 °C

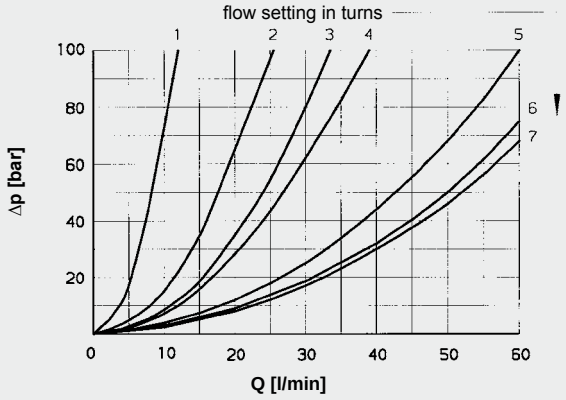
DVP/DRVP-06-01.X



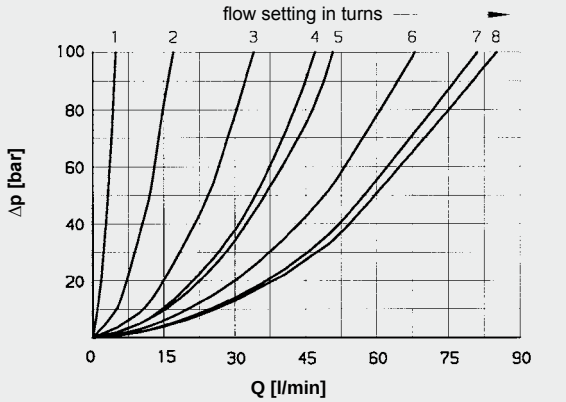
DVP-DRVP-08-01.X



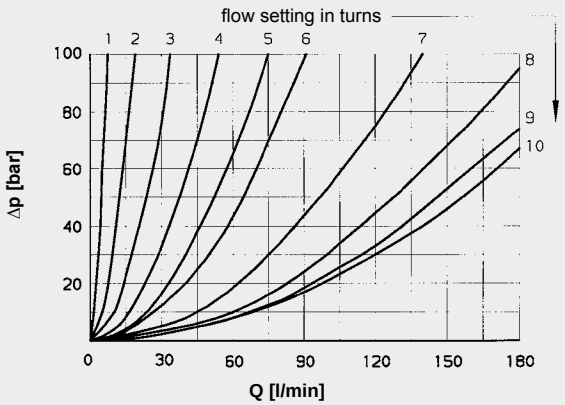
DVP/DRVP-10-01.X



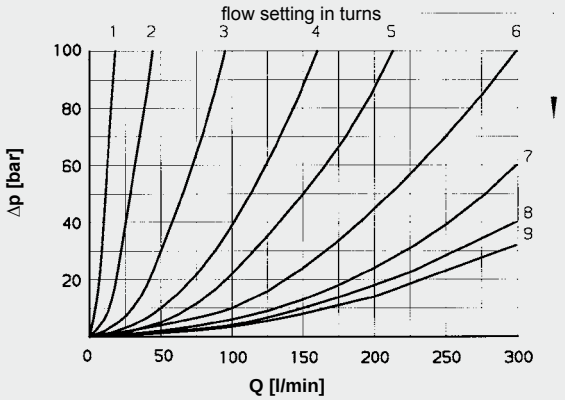
DVP/DRVP-12-01.X



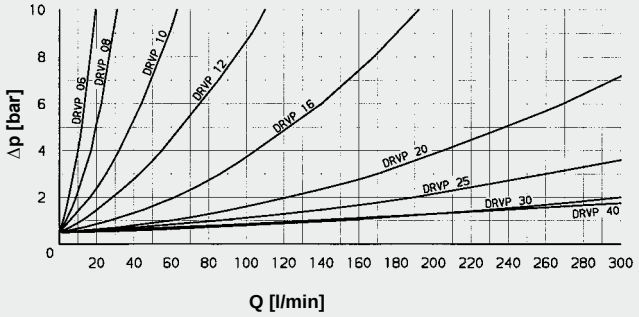
DVP/DRVP-16-01.X



DVP/DRVP-20 to 40-01.X

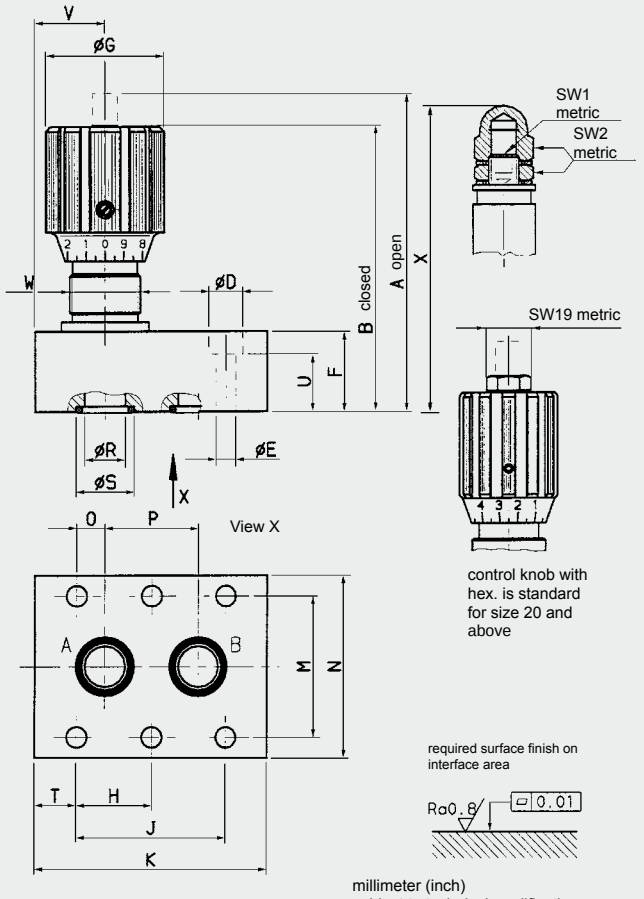


DRVP-06 to DRVP-40-01.X



DIMENSIONS

DVP



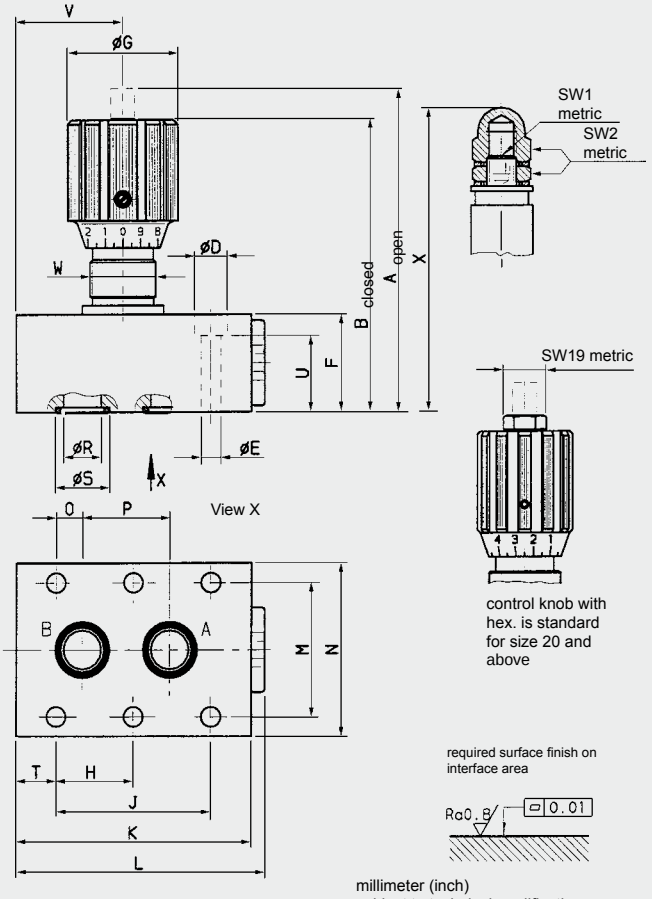
millimeter (inch)
subject to technical modifications

Size	A	B	D	E	F	G	H	J	K	M
06	63	58	11	6.6	16	24	–	19.0	35.0	28.5
08	79	72	11	6.6	20	29	–	35.0	47.5	33.5
10	84	77	11	6.6	25	29	–	33.5	51.0	38.0
12	99	89	11	6.6	25	38	–	38.0	75.0	44.5
16	113	103	14	9.0	30	38	38.0	76.0	93.5	54.0
20	165	148	14	9.0	45	49	47.5	95.0	111.0	60.0
25	165	148	18	11.5	45	49	60.0	120.5	143.0	76.0
30	170	153	20	14.0	50	49	71.5	143.0	171.0	92.0
40	170	153	20	14.0	50	49	67.0	133.5	192.0	111.0

Size	N	O	P	R	S	T	U	V	W	Weight [kg]
06	41.5	1.5	16.0	5.0	9.7	8.0	9	9.5	PG 7	0.20
08	46.0	4.5	25.5	7.0	12.7	6.5	13	12.0	PG 11	0.40
10	51.0	4.2	25.5	10.0	15.6	8.5	18	14.0	PG 11	0.60
12	57.5	4.0	30.0	13.0	18.6	18.5	18	22.5	PG 16	1.00
16	70.0	11.0	54.0	17.0	24.5	8.5	21	19.5	PG 16	1.70
20	76.5	19.1	57.0	22.0	30.5	8.0	36	31.5	PG 29	3.60
25	100.0	20.8	79.5	28.5	37.4	11.0	34	46.0	PG 29	5.50
30	112.0	23.8	95.0	35.0	43.4	15.0	37	39.0	PG 29	7.50
40	140.0	25.5	89.0	47.5	57.5	16.0	37	58.0	PG 29	8.20

DIMENSIONS

DRVP



millimeter (inch)
subject to technical modifications

Size	A	B	D	E	F	G	H	J	K	L	M	N
06	63	58	11	6.6	16	24	–	19.0	41.5	46.0	28.5	41.5
08	79	72	11	6.6	20	29	–	35.0	63.5	67.0	33.5	46.0
10	84	77	11	6.6	25	29	–	33.5	70.0	74.0	38.0	51.0
12	106	96	11	6.6	32	38	–	38.0	80.0	84.5	44.5	57.5
16	128	118	14	9.0	45	38	38.0	76.0	104.0	109.5	54.0	70.0
20	170	153	14	9.0	50	49	47.5	95.0	127.0	133.0	60.0	76.5
25	175	158	18	11.5	55	49	60.0	120.5	165.0	172.0	76.0	100.0
30	195	178	20	14.0	75	49	71.5	143.0	186.0	196.0	92.0	115.0
40	220	203	20	14.0	100	49	67.0	133.5	192.0	201.0	111.0	140.0

Size	O	P	R	S	T	U	V	W	SW1	SW2	X	Weight [kg]
06	1.6	16.0	5.0	9.7	6.4	9	13.5	PG 7	–	–	–	0.26
08	4.8	25.5	7.0	12.7	14.2	13	31.0	PG 11	–	–	–	0.50
10	4.0	25.5	10.0	15.6	18.0	18	29.5	PG 11	6	13	81	0.80
12	4.0	30.0	13.0	18.6	21.0	25	36.5	PG 16	6	17	100	1.10
16	11.0	54.0	17.0	24.5	14.0	36	49.0	PG 16	8	19	127	2.50
20	19.0	57.0	22.0	30.5	16.0	41	49.0	PG 29	–	–	–	3.90
25	20.6	79.5	28.5	37.4	15.0	44	77.0	PG 29	–	–	–	6.70
30	23.8	95.0	35.0	43.4	15.0	62	85.0	PG 29	–	–	–	11.00
40	25.5	89.0	47.5	57.5	16.0	87	64.0	PG 29	–	–	–	17.50

NOTE

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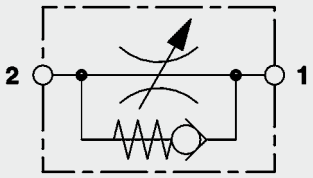
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

Needle Valve with Reverse Flow Check Precision Control Function SAE-10 Cartridge – 350 bar

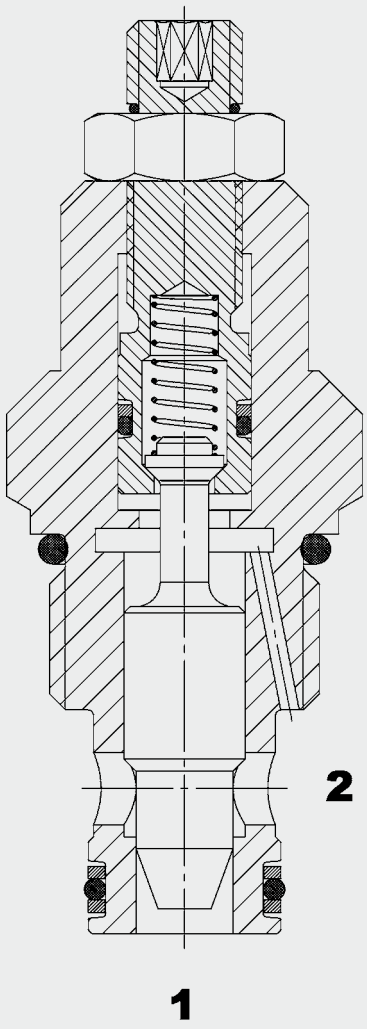
UNF

SDR10A-11



Up to 100 l/min
Up to 350 bar

FUNCTION



The needle valve SDR10A-11 with reverse flow check is an adjustable, hydraulically operated, spring-loaded spool valve. Depending on the throttle setting, the valve controls the flow rate from port 2 to 1. There is free flow from port 1 to 2. Flow is not pressure-compensated, i.e. the flow rate is dependent on the viscosity and the pressure drop.

The valve is used for precision flow control from 0 to 40 l/min.

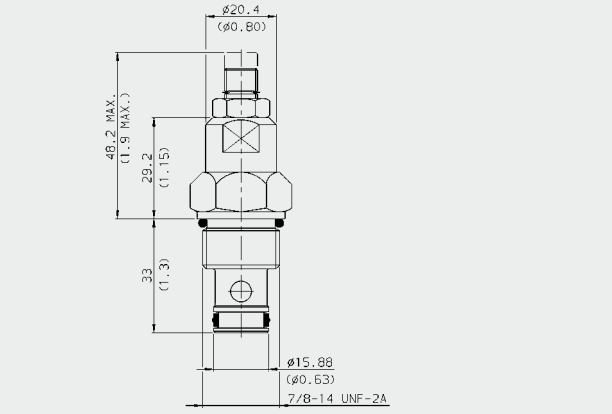
FEATURES

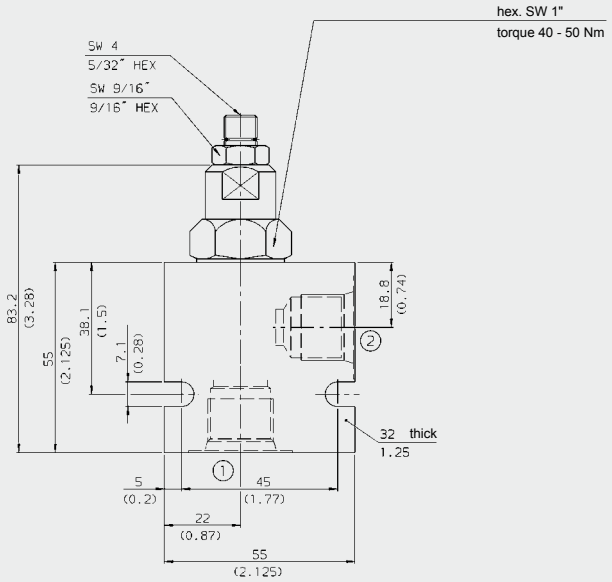
- Precision flow control function up to 40 l/min from port 2 to 1
- The flow is controlled subject to the viscosity of the oil and the pressure drop
- A set-screw locks the setting
- Excellent stability across the whole flow range
- External surfaces zinc-plated and corrosion-proof
- Reverse flow possible (flushing function)

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 100 l/min	
Internal leakage:	max. 0.5 l/min at 350 bar	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Control spindle:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	FC10-2	
Weight:	0.15 kg	

DIMENSIONS

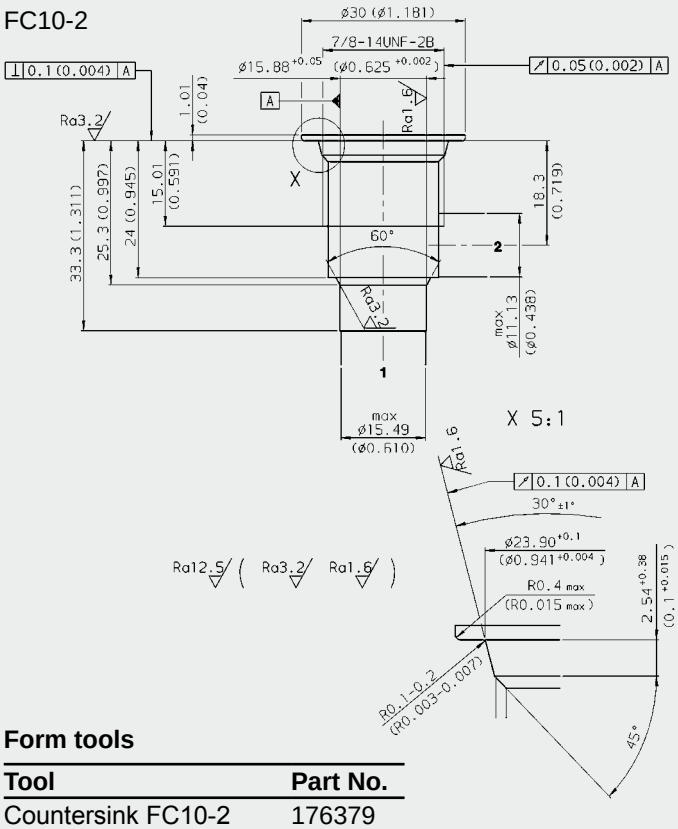




millimeter (inch)
subject to technical modifications

CAVITY

FC10-2



Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter (inch)
subject to technical modifications

MODEL CODE

SDR 10A – 11 – C – N – 15 V

Basic model
Needle valve,
with reverse flow check, UNF

Cavity
FC10-2 = UNF cavity 2-way

Type
11 = precision flow control (standard)

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Pressure setting
15 = 1 bar (15 PSI)

Type of adjustment
V = Allen head

Standard models

Model code	Part No.
SDR10A-11-C-N-15V	3360939

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, anodized	G1/2	210 bar

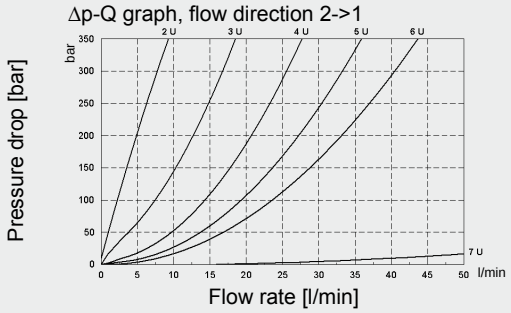
Seal kits

Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

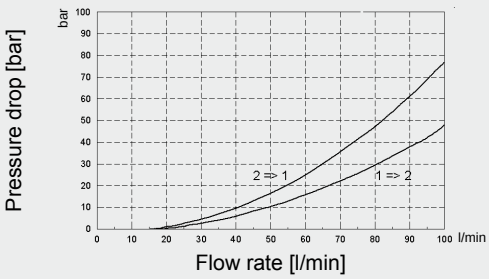
PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C

Δp-Q graph, flow direction 2->1



Δp-Q graph, valve completely open



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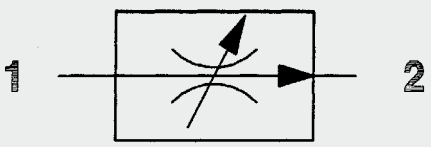
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



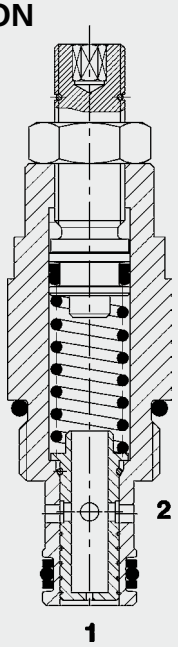
30 l/min
350 bar

2-Way Flow Regulator, Pressure Compensated, Restrictive Style SAE-8 Cartridge – 350 bar

UNF

SR08-01

FUNCTION



The SR08 is a 2-way flow regulator which maintains a constant flow rate by means of a control function. The flow rate is largely independent of the pressure and viscosity.
The valve has a fixed orifice with pressure compensator spool. The measuring orifice determines the setting range for the flow rate and can be adjusted within a limited range. If oil is flowing from 1 to 2, a pressure drop occurs at the measuring orifice. The pressure compensator moves into the control position which corresponds to the force equilibrium. This is created by the pressure drop acting on the control piston area overcoming the spring force. As the flow rate increases (increasing pressure drop), the diameter of the control orifice is reduced until the forces are equal again. A constant flow rate is therefore achieved. In the reverse direction there is free flow through the valve.
Important: if the required control pressure differential is not reached, the valve operates as a throttle.

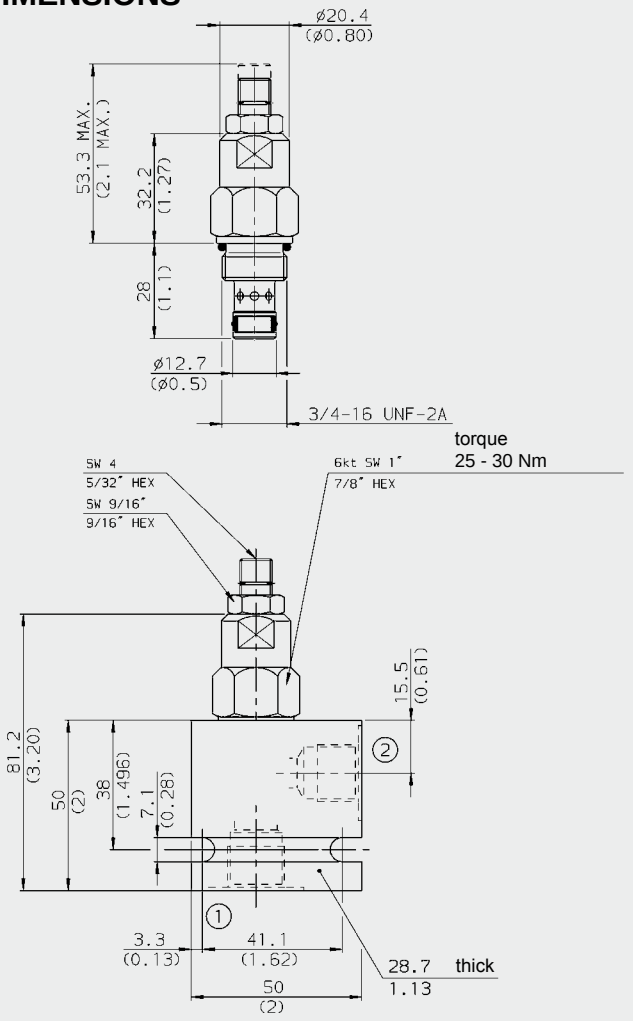
FEATURES

- Excellent stability throughout the entire flow range
- External surfaces zinc-plated and corrosion proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Optional flow ranges up to 30 l/min
- Flow rate can be adjusted within a limited range

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 30 l/min	
Flow ranges:	0.95 to 1.50 l/min 1.15 to 2.00 l/min 2.00 to 3.60 l/min 3.30 to 6.30 l/min 5.40 to 9.70 l/min 8.80 to 16.70 l/min 14.00 to 27.00 l/min	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
Cavity:	FC08-2	
Weight:	0.113 kg	

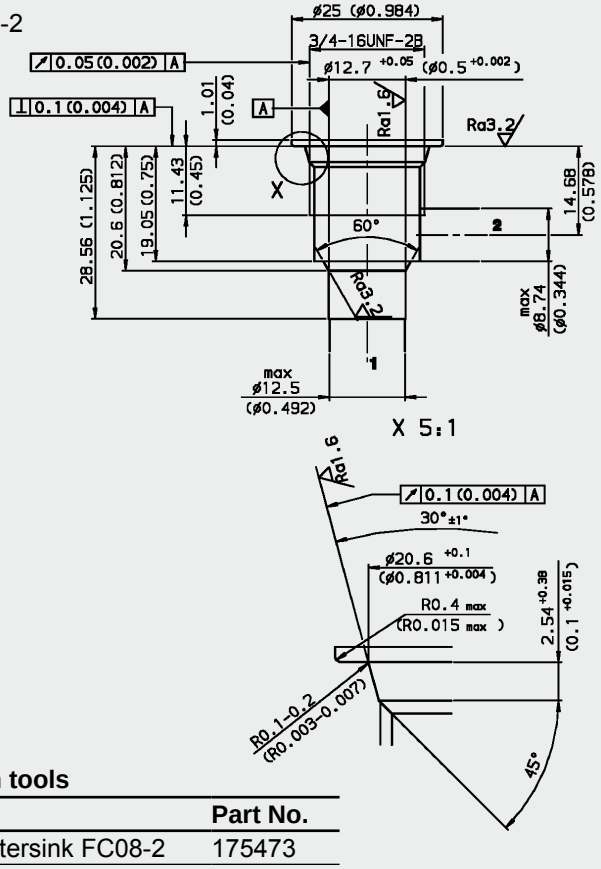
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

millimeter (inch)
subject to technical modifications

MODEL CODE

SR08-01 – C – N – 1.0 V 1.8

Basic model
Flow regulator UNF

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR
V = FKM

Flow rate code and flow range
0.5: 0.95 to 1.50 l/min
0.6: 1.15 to 2.00 l/min
1.0: 2.00 to 3.60 l/min
1.8: 3.30 to 6.30 l/min
2.8: 5.40 to 9.70 l/min
4.8: 8.80 to 16.70 l/min
7.9: 14.00 to 27.00 l/min

Type of adjustment
V = Allen head (hex. 5/32")
H = knob adjustment
Other adjustment types on request

Setting
No details = set to lowest value of flow range
1.8 = 3.3 l/min as per customer requirement, on request

Standard models

Model code	Part No.
SR08-01-C-N-0.5V	3009246
SR08-01-C-N-1.0V	3015411
SR08-01-C-N-1.8V	3015412
SR08-01-C-N-4.8V	3015474
SR08-01-C-N-7.9V	3015475

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

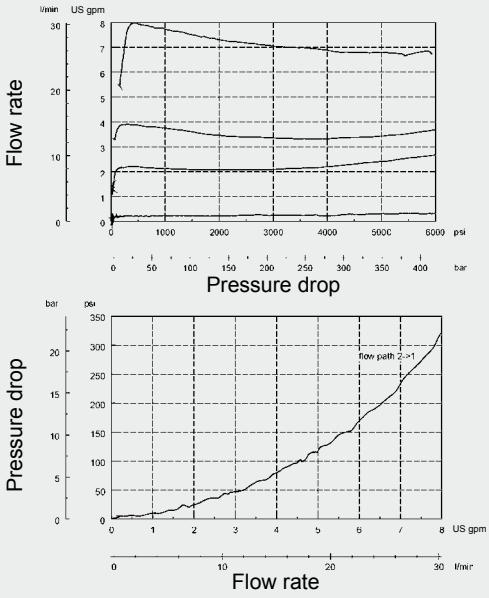
Other housings on request

Seal kits

Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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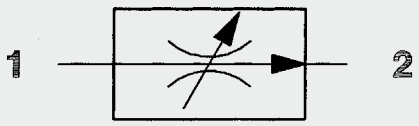
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

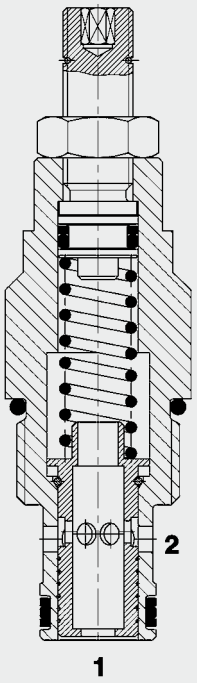


38 l/min
350 bar

2-Way Flow Regulator Pressure Compensated Restrictive Style, SAE-10 Cartridge – 350 bar

SR10-01

FUNCTION



The SR10 is a pressure compensated flow control valve which maintains a constant outlet flow by means of a control function. The flow rate is largely independent of the pressure and viscosity.
The valve has a fixed orifice with pressure compensator spool. The metering orifice determines the setting range for the flow rate and can be adjusted within a limited range. If oil is flowing from 1 to 2, a pressure drop occurs at the metering orifice. The pressure compensator moves into the control position which corresponds to the force equilibrium. This is created by the pressure drop acting on the control piston area overcoming the spring force. As the flow rate increases (increasing pressure drop), the diameter of the control orifice is reduced until the forces are equal again. A constant flow rate is therefore achieved. In the reverse direction there is free flow through the valve. Important: if the required control pressure differential is not reached, the valve operates as a throttle valve.

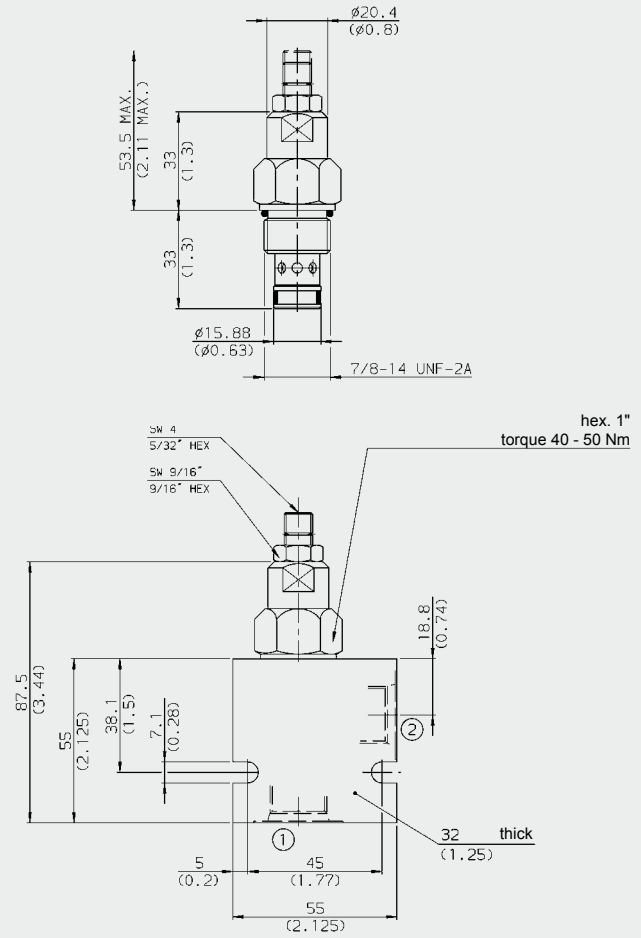
FEATURES

- Excellent stability throughout the entire flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- Optional flow ranges up to 38 l/min
- The flow rate can still be adjusted within a limited range.

SPECIFICATIONS

Operating pressure:	max. 350 bar (210 bar from port 2 to 1)	
Nominal flow:	max. 38 l/min	
Flow ranges and accuracy:	4.0 – 13.0 l/min ±10% 13.0 – 38.0 l/min ±10%	
Media operating temperature range:	min. -30 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Material	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
Cavity:	FC10-2	
Weight:	0.16 kg	

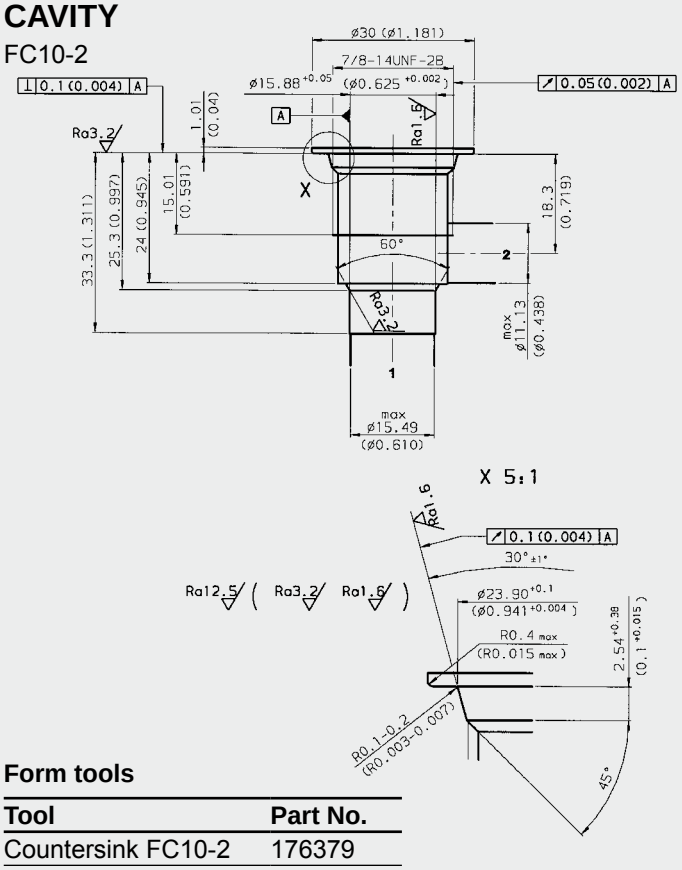
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

FC10-2



Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter
subject to technical modifications

MODEL CODE

SR10-01 – C – N – 10.5 V 9.2

Basic model
Flow regulator UNF

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR
V = FKM

Flow rate code and flow range
3.5 = 4.0 – 13.0 l/min ± 10%
10.5 = 13.0 – 38.0 l/min ± 10%

Type of adjustment
V = Allen head (hex. 5/32")
H = Knob adjustment
F = Factory preset, non adjustable

Opening flow rate setting
No details = no setting
9.2 = 9.2 l/min customer-specific flow setting on request

Standard models

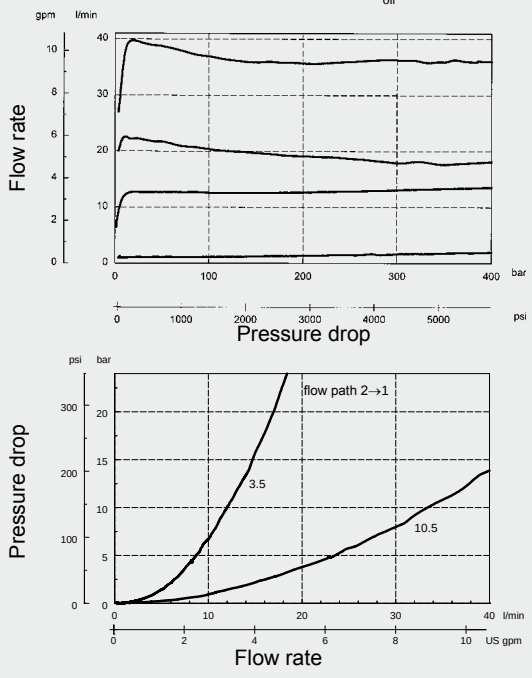
Model code	Part No.
SR10-01-C-N-3.5V	3053635
SR10-01-C-N-10.5V	3053636

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, clear anodized	G1/2	210 bar

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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HYDAC Fluidtechnik GmbH
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D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
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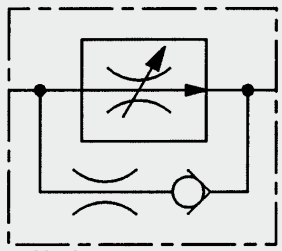
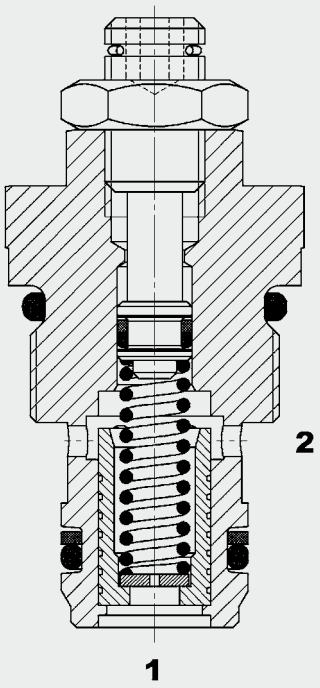


Up to 20 l/min
Up to 350 bar

2-Way Flow Regulator, Pressure Compensated Direct-Acting Metric Cartridge – 350 bar

SR5E

FUNCTION



The SR5E is a pressure compensated flow control valve which maintains a constant outlet flow by means of a control function. The flow rate is largely independent of the pressure and viscosity.

The valve has a fixed orifice with pressure compensator spool. The measuring orifice determines the setting range for the flow rate which can be adjusted over a small range. If oil is flowing from 1 to 2, a pressure drop occurs at the measuring orifice. The pressure compensator moves into the control position which corresponds to the force equilibrium. This is created by the pressure drop acting on the control piston area overcoming the spring force.

As the flow rate increases (greater pressure drop), the diameter of the control orifice is reduced until the forces are equal again. A constant flow rate is therefore achieved. In the reverse direction there is free flow through the valve.
Important: if the required control pressure differential is not reached, the valve operates as a non-compensated flow control valve.

FEATURES

- For regulating the speed of loads independently of the pressure
- For limiting the max. speed of lifting gear (in compliance with accident prevention regulations)
- For limiting the flow rate for control oil circuits in the main circuit and offline
- Hardened and ground valve components to ensure minimal wear and extended service life
- Optional zinc-plated version available

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 20 l/min	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 380 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions, preferably horizontal	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	06020	
Weight:	0.07 kg	

MODEL CODE

SR5E – 01 X / 2.5 – 2.8

Basic model
Flow regulator, metric

Type
01 = standard (phosphated, seals FKM)

Series
(determined by manufacturer)

Flow rate code
(see separate flow rate table)

Flow rate setting value
no details = valve is not set
(but the flow rate is within the setting range)
2.8 = setting value as per customer requirements
Other settings on request

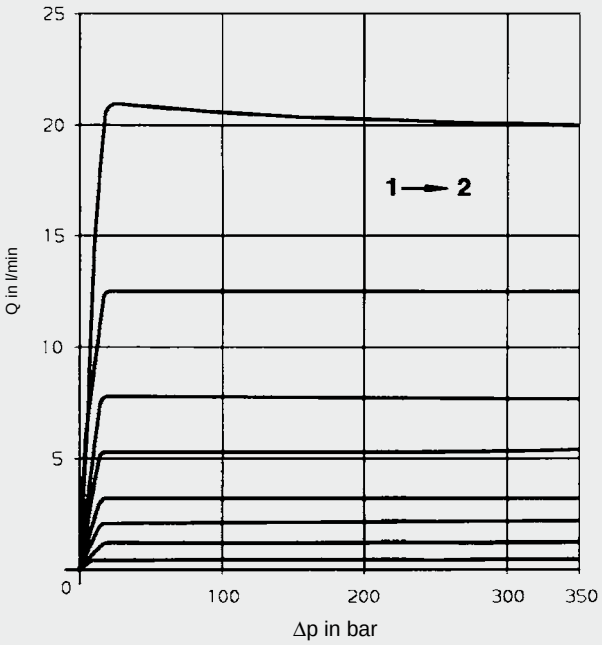
Flow rate and operating pressure ranges

Flow rate code (VK)	Flow rate setting range (l/min)	Required control pressure differential Dp = p_1 - p_2 (bar)
0.5	0.5 – 0.6	10 – 15
1.0	1.0 – 1.2	10 – 18
1.6	1.6 – 2.1	10 – 18
2.5	2.5 – 3.2	10 – 18
4.0	4.0 – 5.2	10 – 18
6.5	6.5 – 7.8	10 – 18
10	10.0 – 12.5	12 – 20
16	16.0 – 20.0	12 – 20

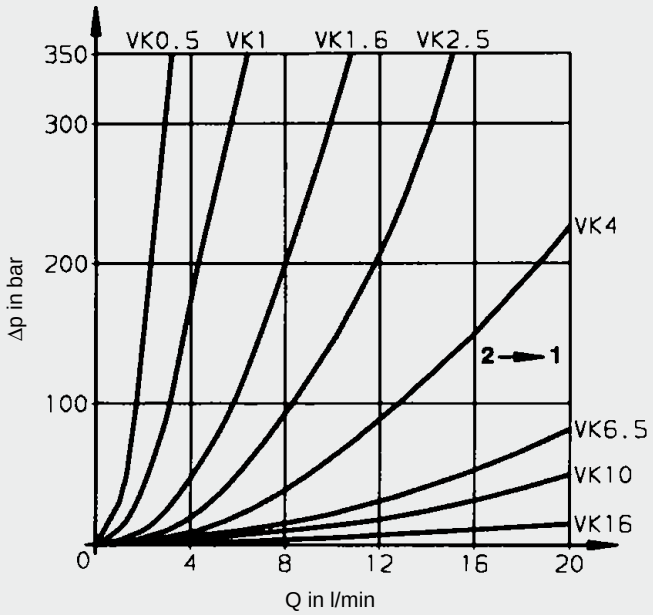
Important:
– if the required control pressure differential is not reached, the valve operates as a non-compensated throttle valve.
– different settings are available as an option (standard manufacturer's setting at Δp= 100 bar)

FLOW RATE CURVES

Flow rate, pressure-dependent
Q-Δp curve,
measured at n = 72mm²/s and $T_{Öl}$ = 30°C



Q-Δp curve
Pressure differential Δp against flow rate Q,
measured at ν = 72 mm²/s and T_{oil} = 30 °C
VK = Flow rate code



Standard models

Model code		Part No.
SR5E-01X/0.3	Q=0.3-0.4	710335
SR5E-01X/0.5	Q=0.5-0.6	710321
SR5E-01X/0.7	Q=0.7-0.9	710347
SR5E-01X/1	Q=1.0-1.2	710337
SR5E-01X/1.6	Q=1.6-2.1	710338
SR5E-01X/2.5	Q=2.5-3.2	710339
SR5E-01X/3.5	Q=3.5-3.9	717832
SR5E-01X/4	Q=4.0-5.2	710340
SR5E-01X/6.5	Q=6.5-7.8	710341
SR5E-01X/7.9	Q=7.9-8.9	710342
SR5E-01X/10	Q=10.0-12.5	710343
SR5E-01X/12.6	Q=12.6-15.9	710313
SR5E-01X/16	Q=16.0-20.0	710344

Other models on request

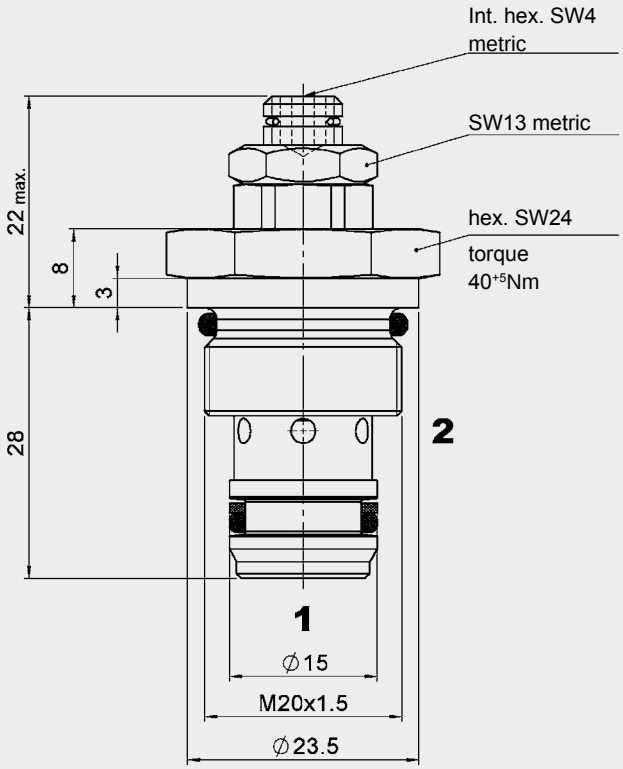
Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G3/8	420 bar
R06020-10X-01	276842	Steel, zinc-plated	G3/8	420 bar

Seal kits

Code	Part No.
SEAL KIT 06020-NBR	3119017
SEAL KIT 06020-FKM	3262477

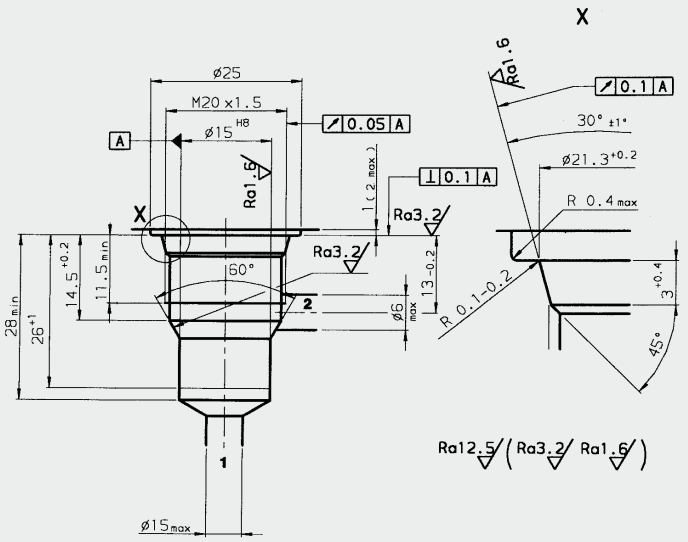
DIMENSIONS



Millimeter
Subject to technical modifications

CAVITY

06020



Form tools

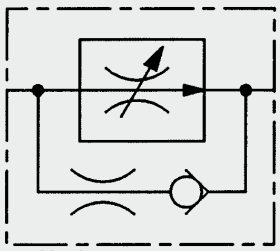
Tool	Part No.
Countersink	170033
Reamer	1000768
Tap	1002648
Plug gauge	168840

Millimeter
Subject to technical modifications

NOTE

The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

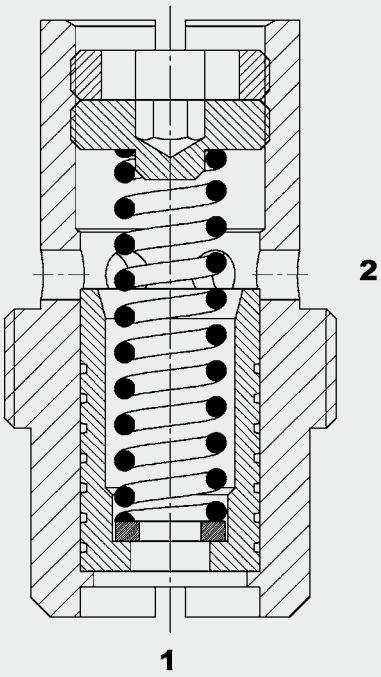


Up to 97 l/min
Up to 350 bar

2-Way Flow Regulator Pressure Compensated Direct-Acting Cartridge – 350 bar

SRE 1 to 4

FUNCTION



The SRE is a pressure compensated flow control valve which maintains a constant outlet flow by means of a control function. The flow rate is largely independent of the pressure and viscosity.

The valve has a fixed orifice with pressure compensator spool. The measuring orifice determines the setting range for the flow rate which can be adjusted over a small range. If oil is flowing from 1 to 2, a pressure drop occurs at the measuring orifice. The pressure compensator moves into the control position which corresponds to the force equilibrium. This is created by the pressure drop acting on the control piston area overcoming the spring force.

As the flow rate increases (greater pressure drop), the diameter of the control orifice is reduced until the forces are equal again. A constant flow rate is therefore achieved. In the reverse direction there is free flow through the valve.
Important: if the required control pressure differential is not reached, the valve operates as a non-compensated flow control valve.

FEATURES

- For regulating the speed of loads independently of the pressure
- For limiting the max. speed of lifting gear (in compliance with accident prevention regulations)
- For limiting the flow rate for control oil circuits in the main circuit and offline
- Hardened and ground valve components to ensure minimal wear and extended service life
- Choice of four sizes for optimum adaptability to the system
- Space-saving installation
- Unauthorized adjustment not possible since not accessible once fitted

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	SRE1 0.6 to max. 10 l/min SRE2 1.0 to max. 20 l/min SRE3 1.7 to max. 48 l/min SRE4 27 to max. 97 l/min
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +100 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 2.8 mm²/s to max. 380 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions, preferably horizontal
Materials:	Valve body: steel
Cavity:	05520, 08520, 10520, 12520
Weight:	SRE1= 0.013 kg SRE2= 0.025 kg SRE3= 0.049 kg SRE4= 0.112 kg

MODEL CODE

SRE 1 – G 1/4 – 01 X / 2.3 – 2.8

Basic model
Flow regulator

Cartridge thread size
G 1/4 = SRE1
G 3/8 = SRE2
G 1/2 = SRE3
G 3/4 = SRE4

Type
01 = standard (phosphated)

Series
(determined by manufacturer)

Flow rate code
(see separate flow rate table)

Flow rate setting value
no details = valve is not set
(but the flow rate is within the setting range)
2.8 = setting value as per customer requirements (tolerance ± 10 %)
Other settings on request

Flow rate and operating pressure ranges

Flow rate code (VK)	Flow rate setting range (l/min)	Required control pressure differential $\Delta p = p_1 - p_2$ [bar]	
0.6	0.6 – 0.7	10 – 12	SRE 1
1	1.0 – 1.3	10 – 12	
1.6	1.6 – 2.1	10 – 12	
2.3	2.3 – 3.0	10 – 12	
3.8	3.8 – 4.8	10 – 15	
6.6	6.6 – 8.6	10 – 15	
1	1.0 – 1.5	8 – 15	SRE 2
1.5	1.5 – 2.4	8 – 15	
2.9	2.9 – 4.6	8 – 15	
5	5.0 – 7.5	10 – 15	
9	9.0 – 13.0	12 – 18	
15	15.0 – 23.0	12 – 18	
1.7	1.7 – 2.1	8 – 12	SRE 3
2.8	2.8 – 3.8	8 – 12	
4.5	4.5 – 5.5	8 – 15	
7	7.0 – 9.2	8 – 15	
10	10.0 – 12.5	8 – 15	
15.5	15.0 – 18.0	8 – 15	
26	25.5 – 30.0	8 – 15	
35	35.0 – 42.0	10 – 18	
42	41.0 – 48.0	10 – 18	
27	27.0 – 29.4	12 – 15	SRE 4
40	40.0 – 42.9	12 – 15	
46	46.0 – 49.9	12 – 15	
55	55.0 – 59.9	13 – 17	
70	70.0 – 78.9	15 – 18	
88	88.0 – 97.0	18 – 21	

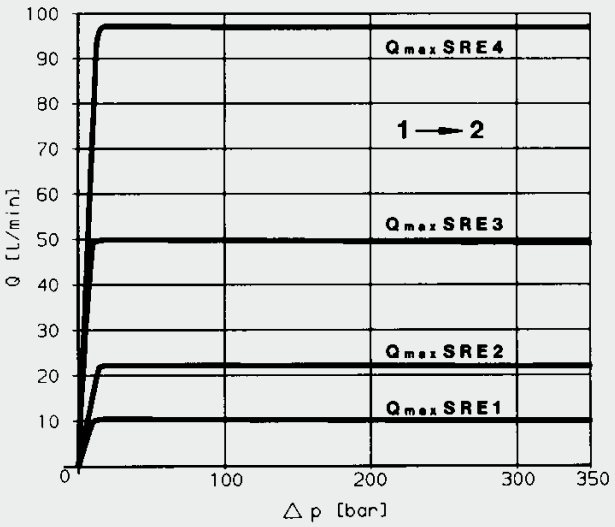
Important:

– if the required control pressure differential is not reached, the valve operates as a non-compensated throttle valve.

– different settings are available as an option (standard manufacturer's setting at Δp= 100 bar)

FLOW RATE CURVES

Q-Δp curve
Pressure differential Δp against flow rate Q, measured at ν = 72mm²/s and $T_{Öl}$ = 30°C
VK = Flow rate code



Standard models

Model code	Part No.
SRE1-G1/4-01X/1.6	717583
SRE1-G1/4-01X/3.8	710355
SRE1-G1/4-01X/6.6	710351
SRE2-G3/8-01X/2.9	717586
SRE2-G3/8-01X/9.0	717588
SRE2-G3/8-01X/15	717590
SRE3-G1/2-01X/7.0	717689
SRE3-G1/2-01X/15.5	717691
SRE3-G1/2-01X/26	717693
SRE4-G3/4-01X/70	717825
SRE4-G3/4-01X/88	479390

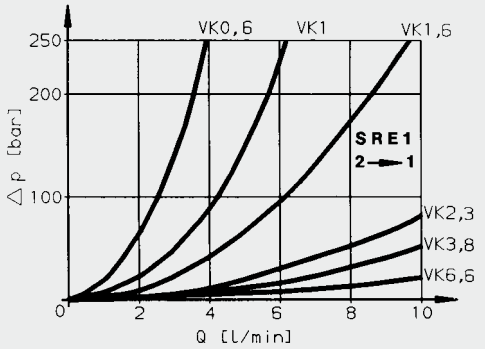
Other models on request

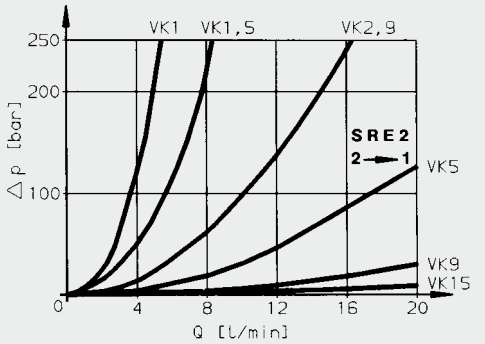
Standard in-line bodies

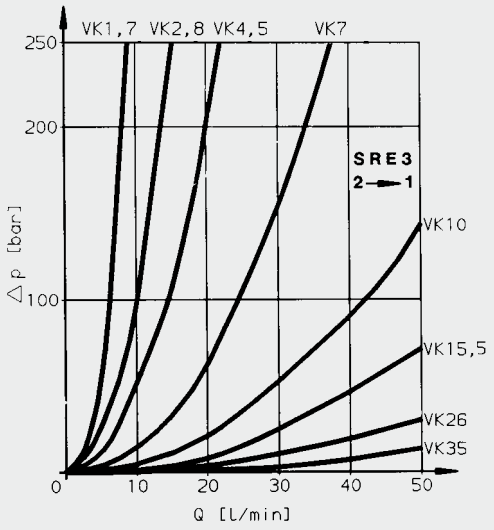
Code	Part No.	Material	Ports	Pressure
Port: 1x female thread, 1x male thread				
XB05520-01X	393215	Steel	G1/4	350 bar
XB08520-01X	393217	Steel	G3/8	350 bar
XB10520-01X	393219	Steel	G1/2	350 bar
XB12520-01X	395061	Steel	G3/4	350 bar
Port: 2x female thread				
XX05520-01X	393224	Steel	G1/4	350 bar
XX08520-01X	393226	Steel	G3/8	350 bar
XX10520-01X	393228	Steel	G1/2	350 bar
XX12520-01X	395063	Steel	G3/4	350 bar

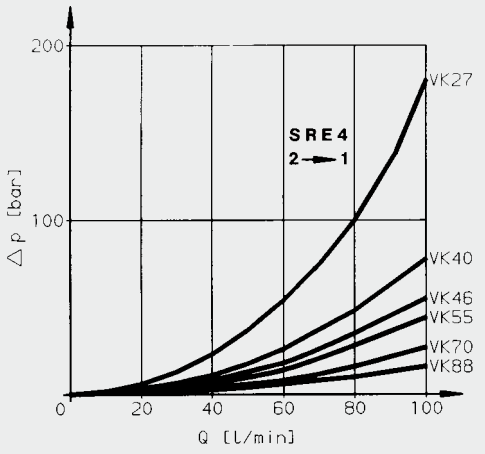
PERFORMANCE

Flow rate, pressure-dependent
Q-Δp curve,
measured at ν = 72mm²/s and $T_{Öl}$ = 30°C
Δp_{max}2 →: 250 bar

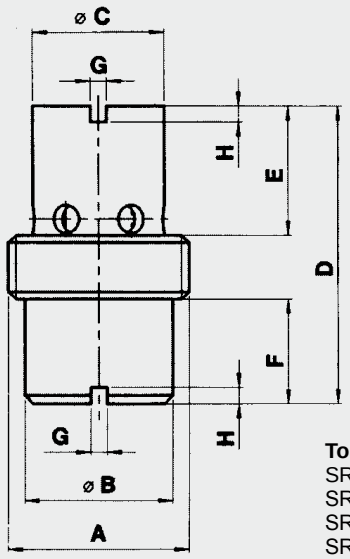








DIMENSIONS

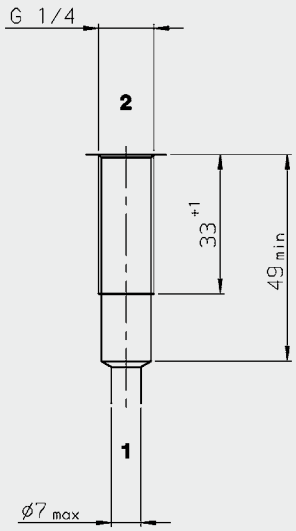


Torque

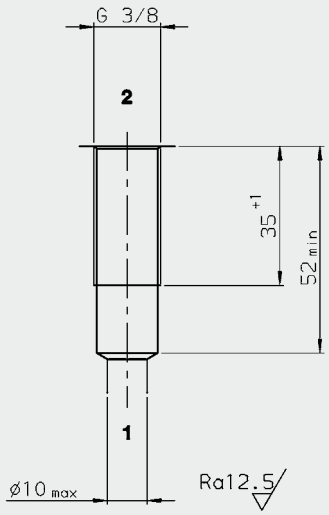
SRE1	3 - 5 Nm
SRE2	5 - 8 Nm
SRE3	8 - 12 Nm
SRE4	12 - 18 Nm

Size	A	øB	øC	D	E	F	G	H
SRE1	G 1/4	11.0	10.0	26.0	14.0	6.5	1.5	1.5
SRE2	G 3/8	14.0	13.0	30.0	14.5	9.5	1.5	1.5
SRE3	G 1/2	18.0	16.0	37.0	16.0	13.0	2.0	2.0
SRE4	G 3/4	23.0	20.0	51.0	21.0	20.0	4.0	2.0

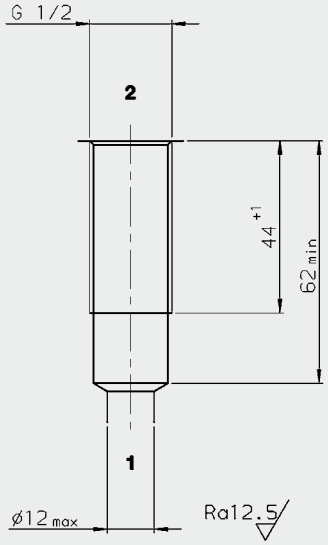
CAVITY
05520



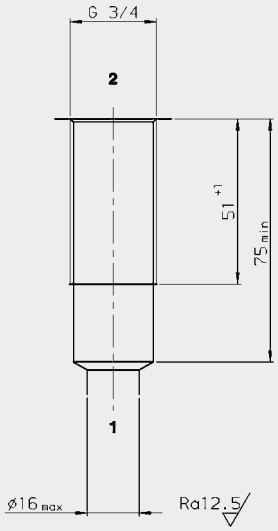
CAVITY
08520



CAVITY
10520



CAVITY
12520



Form tools

Tool	Part No. / Cavity			
	05520	**08520**	**10520**	**12520**
Tap	1002670	1002668	1002667	1002663

NOTE
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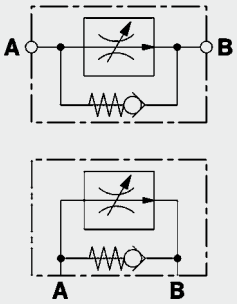
Subject to technical modifications.

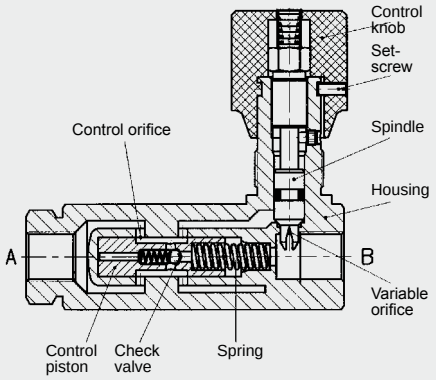
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

2-Way Flow Regulator, Pressure Compensated, Direct-Acting
Inline and Manifold Mounted – 210 bar
SRVR / SRVRP 08 to 20



Up to 160 bar
Up to 210 l/min

FUNCTION



The SRVR / SRVRP is a pressure-compensated flow control valve which maintains a constant outlet flow by means of a control function. The flow rate is largely independent of the pressure and viscosity. The valve has a variable orifice with pressure compensator spool. The variable orifice determines the flow cross section. If oil is flowing from A to B, a pressure drop occurs at the variable orifice. The pressure compensator moves into the control position which corresponds to the force equilibrium. This is created by the pressure drop acting on the control piston area and overcoming the spring force.

As the flow rate increases (increasing pressure drop), the diameter of the control orifice is reduced until the forces are equal again. A constant flow rate from A to B is therefore achieved. In the reverse direction there is free flow via a built-in check valve. Important: if the required control pressure differential is not reached, the valve operates as a non-compensated throttle valve.

FEATURES

- For regulating the speed of loads independently of the pressure
- For limiting the max. speed of lifting gear
- For limiting the flow rate for control oil circuits in the main circuit and offline
- Hardened and ground valve components to ensure minimal wear and extended service life
- Choice of five sizes for optimum adaptability to the system
- Space-saving installation
- Optional nickel-plated version available (SRVR-10 to 16, SRVRP-10 and 12)

SPECIFICATIONS

Operating pressure:	max. 210 bar
Nominal flow:	SRVR / SRVRP08 up to max.12 l/min SRVR / SRVRP10 up to max.22 l/min SRVR / SRVRP12 up to max.55 l/min SRVR / SRVRP16 up to max.90 l/min SRVR 20 up to max.160 l/min
Media operating temperature range:	min. -20 °C to max. +80 °C
Ambient temperature range:	min. -20 °C to max. +80 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions, preferably horizontal
Materials:	Valve body: steel Piston: hardened and ground steel Seals: FKM
Weight:	SRVR-08 = 0.6 kg SRVRP-08 = 0.9 kg SRVR-10 = 0.9 kg SRVRP-10 = 1.4 kg SRVR-12 = 1.7 kg SRVRP-12 = 2.3 kg SRVR-16 = 2.2 kg SRVRP-16 = 3.3 kg SRVR-20 = 4.0 kg

MODEL CODE

SRVR – 10 – 01 . X / 0

Basic model
SRVR = flow control valve for inline mounting with bypass check valve
SRVRP = flow control valve for manifold mounting with bypass check valve

Nominal size
08, 10, 12, 16,
20 (SRVR only)

Type
01 = standard, housing phosphated
12 = housing nickel-plated, seals FKM with protective dome nut – adjustment with tool (only SRVR-10 to 16 and SRVRP-10 and 12)
Other types on request

Series
(determined by manufacturer)

Threaded connection (SRVR only)
0 = BSP thread, threaded connection Form X to DIN 3852 Part 2
5 = NPTF thread

Standard models

Model code	Part No.
SRVR-08-01.X/0	706067
SRVR-10-01.X/0	706075
SRVR-12-01.X/0	706083
SRVR-16-01.X/0	706091
SRVR-20-01.X/0	706115
SRVRP-08-01.X	706151
SRVRP-10-01.X	706153
SRVRP-12-01.X	706155
SRVRP-16-01.X	706157

Other models on request

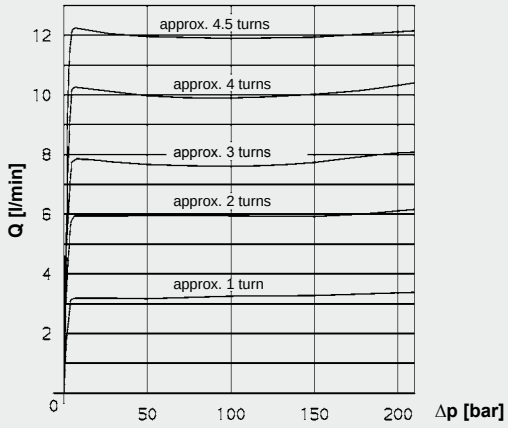
Seal kits

Code	Part No.
SEAL KIT 08FKM DV/P DRV/P DVE RVP SRVR/P	555090
SEAL KIT 10FKM DV/P DRV/P DVE RVP SRVR/P	555091
SEAL KIT 12FKM DV/P DRV/P DVE RVP SRVR/P	555092
SEAL KIT 16FKM DV/P DRV/P DVE RVP SRVR/P	555093
SEAL KIT 20FKM DV/P DRV/P RVP SRVR	555094

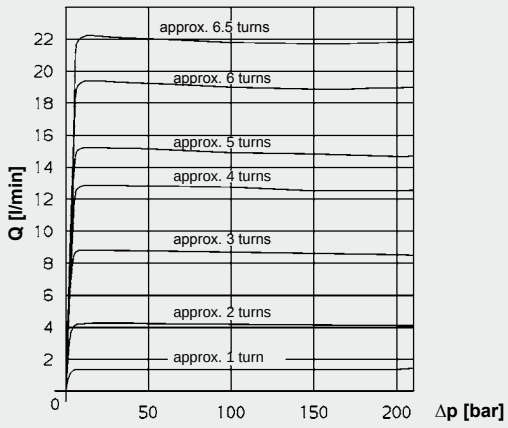
PERFORMANCE

Flow rate, pressure-dependent
Flow direction A to B
Q–Δp curve measured at ν = 34 mm²/s and t_{oil} = 46 °C

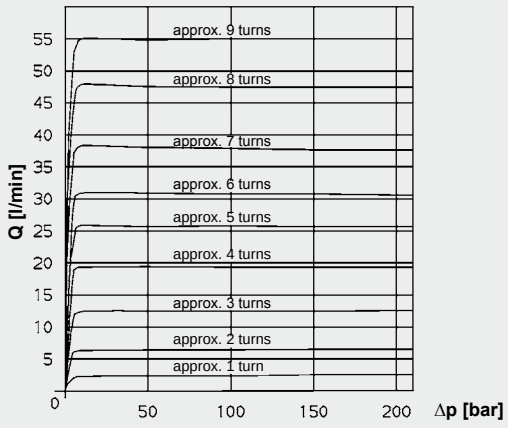
SRVR / SRVRP–08–01.X



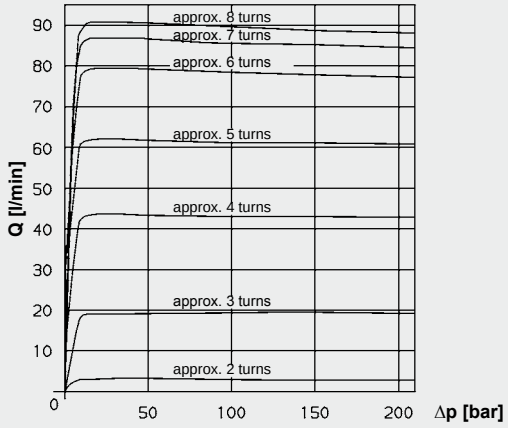
SRVR / SRVRP–10–01.X



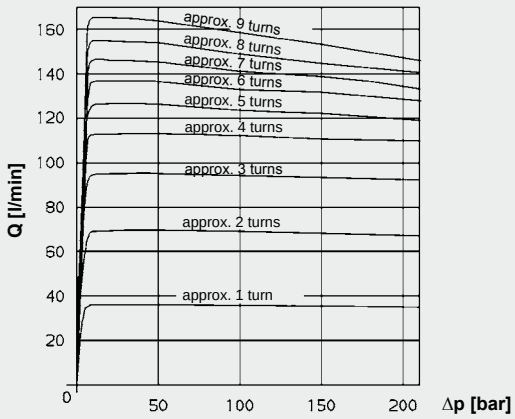
SRVR / SRVRP–12–01.X



SRVR / SRVRP–16–01.X

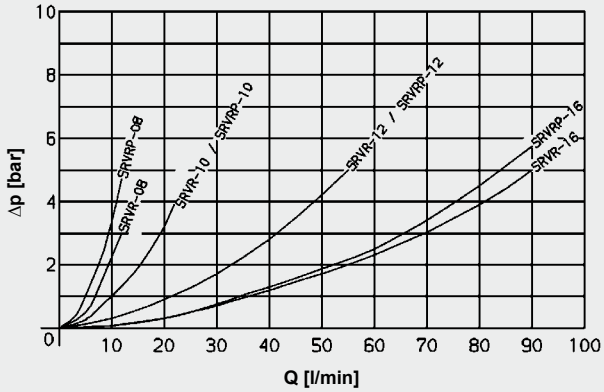


SRVR–20–01.X

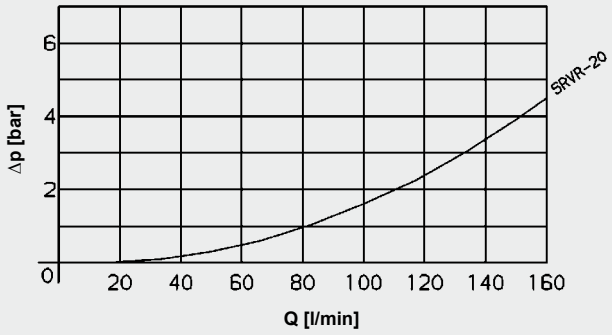


Pressure drops, dependent on flow rate
Flow direction from B to A
Pressure differential Δp dependent on flow rate Q
via variable orifice and check valve (SRVR / SRVRP)
with fully open spindle
measured at ν = 34 mm²/s and t_{oil} = 46 °C

SRVR/SRVRP, Nominal sizes 8–16



SRVR, Nominal size 20

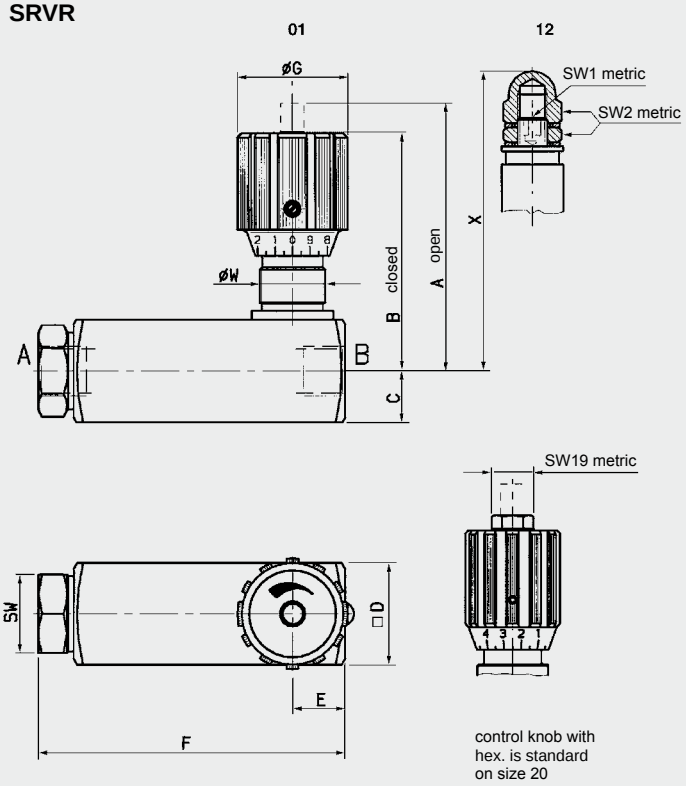


Flow rate / Operating pressure ranges

Nominal size	Flow rate (l/min)	Required control pressure differential Δp = p_1 - p_2 (bar)
08	12	7
10	22	7
12	55	7
16	90	7
20	160	12

DIMENSIONS

SRVR

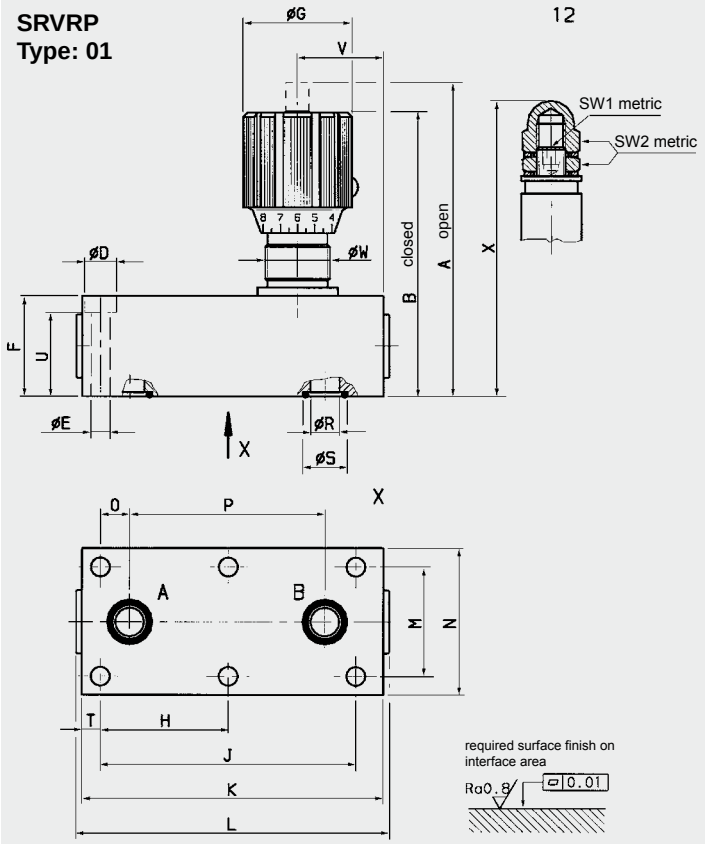


Size	Threaded connection	A	B	C	D	E	F	G
08	G 1/4	76	68	15	30	17.5	92	29
10	G 3/8	91	81.5	17.5	35	18	105	38
12	G 1/2	106.5	96.5	22.5	45	21	125	38
16	G 3/4	109	100	25	50	26	140	38
20	G 1	150	134	30	60	33	175	49

W	SW	SW1	SW2	X	Weight (kg)
PG11	24	–	–	–	0.60
PG16	27	5	17	85.5	0.90
PG16	32	6	19	104.5	1.70
PG16	41	6	19	107	2.20
PG29	50	–	–	–	4.00

DIMENSIONS

SRVRP
Type: 01



Size	A	B	D	E	F	G	H	J	K	L
08	91	83	11	6.6	30	29	–	73	86	89
10	108.5	99	11	6.6	35	38	–	89	105	107.5
12	129	119	11	6.6	45	38	–	105	118	121.5
16	134	125	15	9	50	38	62	124	145	145.5

M	N	O	P	R	S	T	U	V	W	SW1	SW2	X	Weight [kg]
33.5	45	9.5	54	7.5	12.7	6.5	23	22.5	PG11	–	–	–	0.85
38	51	10.2	68	10	15.6	6.4	28	30	PG16	5	17	103	1.40
44.5	60	12.5	79	13	18.6	6.5	38	29.5	PG16	6	19	127	2.30
54	70	16	92	17	24.5	10.5	41	39	PG16	–	–	–	3.30

NOTE

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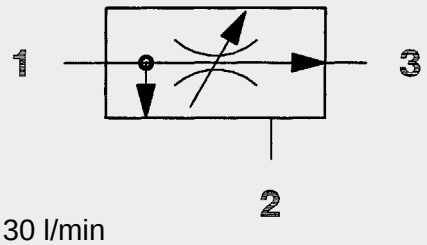
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



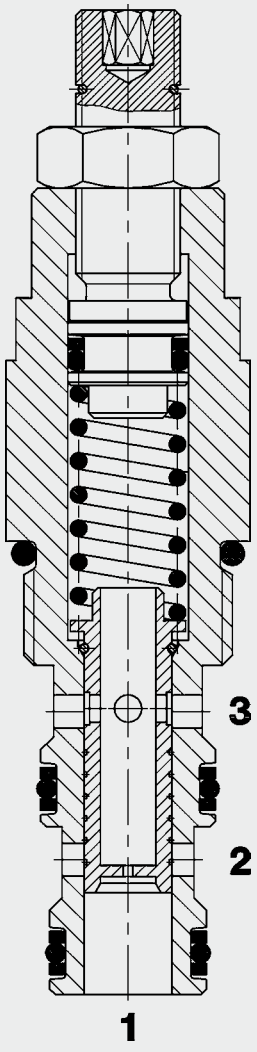
30 l/min
350 bar

3-Way Flow Regulator, Pressure Compensated Priority Style, SAE-8 Cartridge – 350 bar

UNF

SRP08

FUNCTION



The flow regulator SRP08 is a 3-way spool-type flow regulating valve, with a measuring orifice for controlling flow rate independently of the pressure. The excess flow is made available on the bypass line at port 2. If port 2 is closed the valve acts as a 2-way restrictive flow regulator. If port 3 is closed the valve will stay closed because there is no pressure differential over the piston.

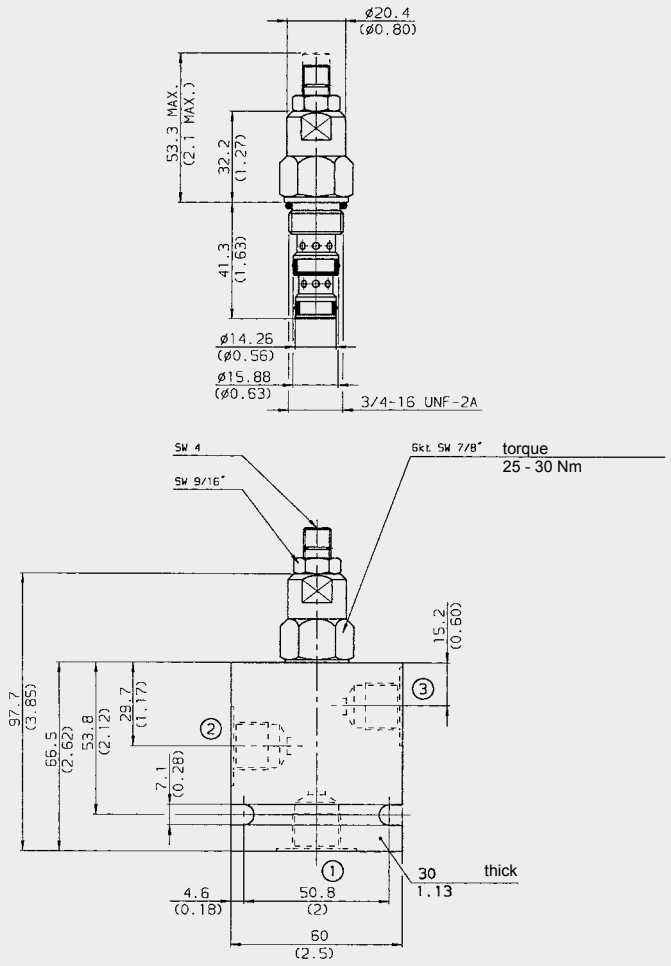
FEATURES

- Excellent stability throughout flow range
- External surfaces zinc-plated and corrosion proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop by CFD optimized flow path
- Optional flow ranges up to 30 l/min
- Flow rate can be adjusted within a limited range
- Excess flow at the bypass can be used to supply other consumers

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Inlet flow Q1:	max. 50 l/min	
Flow rate Q3:	max. 30 l/min	
Flow ranges and accuracy:	1.3 – 1.8 l/min 1.6 – 2.5 l/min 2.0 – 3.7 l/min 3.5 – 6.5 l/min 6.0 – 12.5 l/min 8.8 – 20.8 l/min 13.5 – 30.0 l/min	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings	PTFE
Cavity:	FC08-3	
Weight:	0.126 kg	

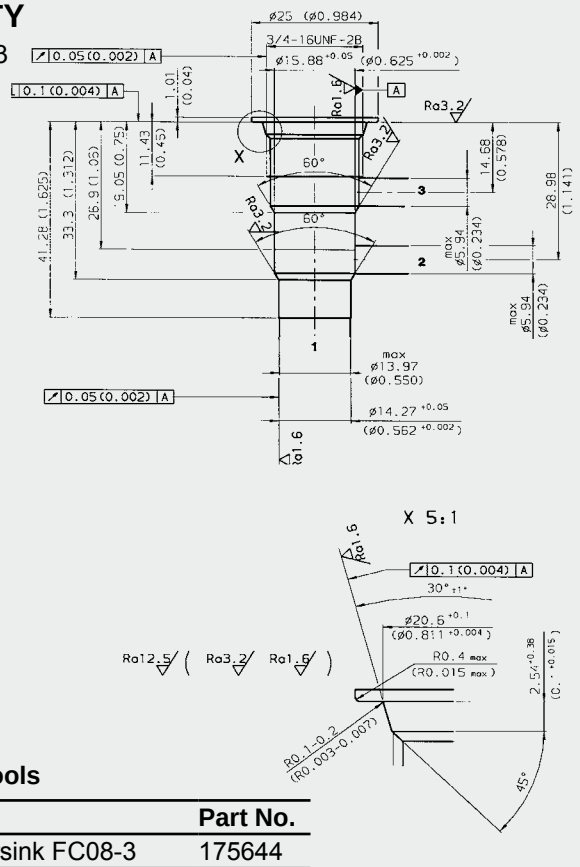
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-03



Form tools

Tool	Part No.
Countersink FC08-3	175644
Reamer FC08-3	175645

millimeter (inch)
subject to technical modifications

MODEL CODE

SRP08-01 – C – N – 1.0 V 0.8

Basic model
Flow regulator, UNF

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR
V = FKM

Flow rate code and flow range
0.4 = 1.3 – 1.8 l/min
0.5 = 1.6 – 2.5 l/min
0.9 = 2.0 – 3.7 l/min
1.6 = 3.5 – 6.5 l/min
3.0 = 6.0 – 12.5 l/min
5.5 = 8.8 – 20.8 l/min
7.9 = 13.5 – 30.0 l/min

Type of adjustment
V = Allen head (hex. 5/32")
H = knob adjustment
Other adjustment types on request

Setting
No details = set to lowest value of flow range

Standard models

Model code	Part No.
SRP08-01-C-N-0.5V	3020780
SRP08-01-C-N-0.9V	3020781
SRP08-01-C-N-3.0V	3020823
SRP08-01-C-N-5.5V	3020824

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH083-SB3	560922	Steel, zinc-plated	G 3/8	420 bar
FH083-AB3	3011427	Aluminium, clear anodized	G3/8	210 bar

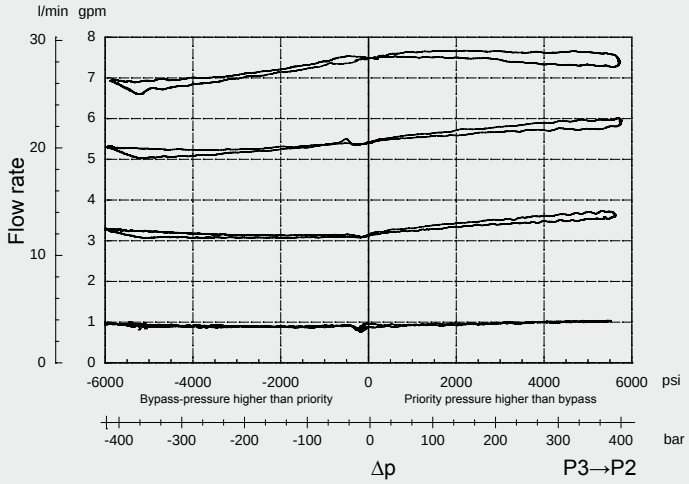
Other housings on request

Seal kits

Code	Material	Part No.
FH083-N	NBR	3054795
FH083-V	FKM	2591059

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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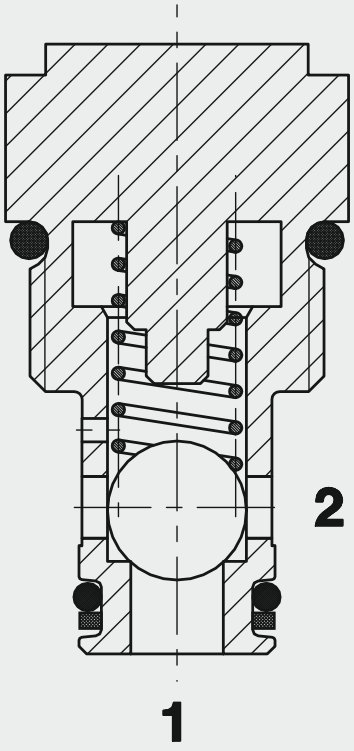
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

38 l/min
420 bar

Check Valve UNF
Ball Poppet Type, Direct Acting
SAE-08 Cartridge – 420 bar
RV08A-01

FUNCTION



The check valve RV08A-01 is a direct-acting, spring-loaded ball poppet valve. When there is no flow through the valve, the spring holds the ball in the closed position and therefore shuts off port 2 from port 1. The valve opens when the pressure at port 1 is higher than the pressure at port 2, including the pressure created by the spring force.

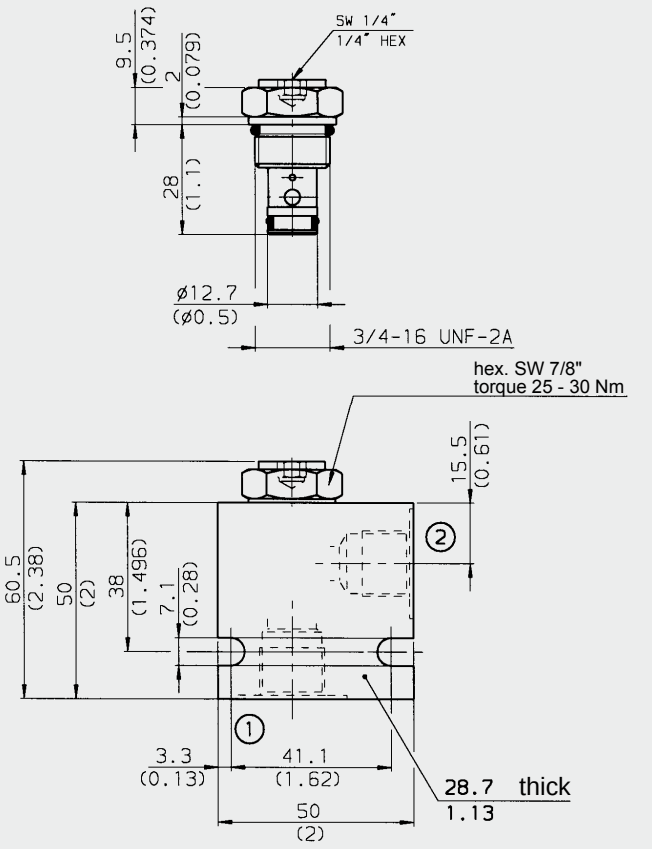
FEATURES

- Main application is to prevent uncontrolled movement or creeping of loaded cylinders and also to shut-off sections of the system
- Excellent stability throughout the entire flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

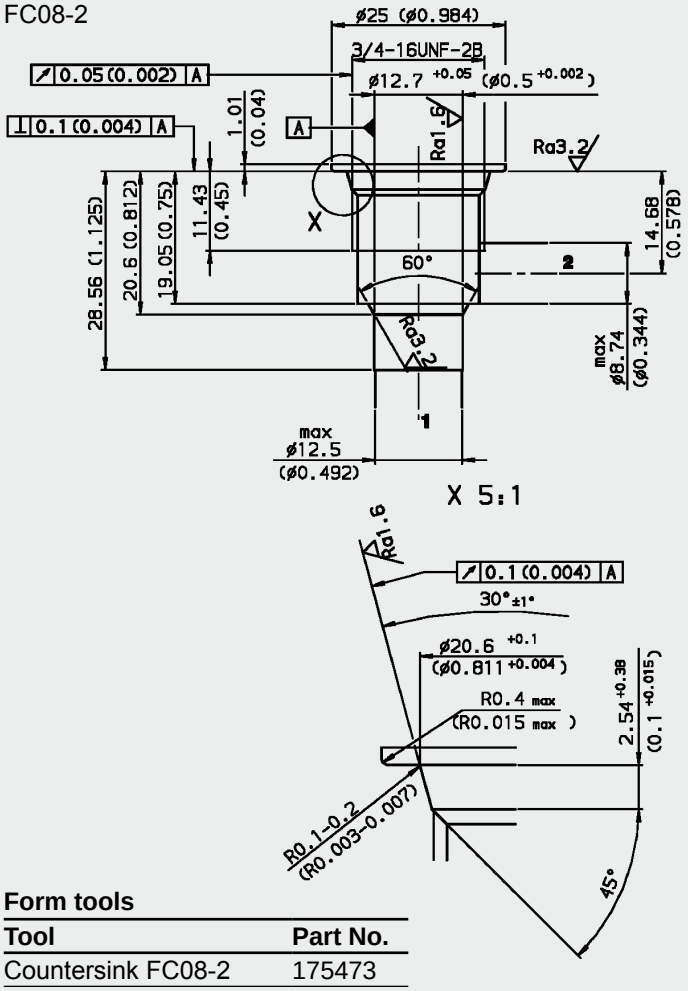
Operating pressure:	max. 420 bar	
Nominal flow:	max. 38 l/min	
Internal leakage:	0.1 cm³/min at 420 bar	
Cracking pressure:	0.35 bar 1.00 bar 2.00 bar 5.00 bar	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Ball:	roller bearing steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	FC08-2	
Weight:	0.06 kg	

DIMENSIONS



CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

MODEL CODE

RV08A-01 – C – N – 05

Basic model
Check valve UNF

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Cracking pressure
05 = 0.35 bar (5 PSI)
15 = 1.00 bar (15 PSI)
30 = 2.00 bar (30 PSI)
70 = 5.00 bar (70 PSI)

Standard models

Model code	Part No.
RV08A-01-C-N-05	560084
RV08A-01-C-N-15	560085
RV08A-01-C-N-30	560086
RV08A-01-C-N-70	560087

* Standard in-line bodies

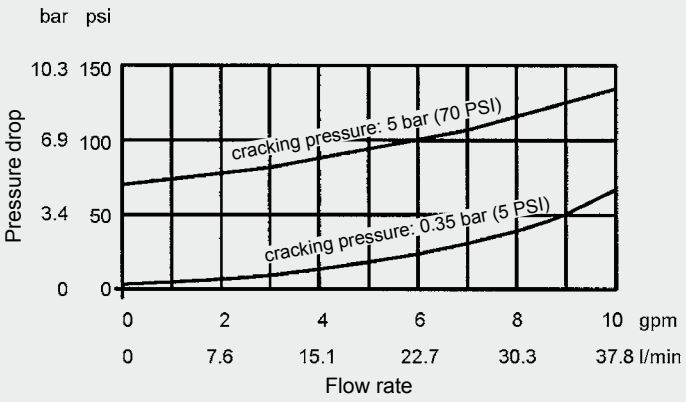
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, anodized	G3/8	210 bar

Seal kits

Code	Material	Part No.
FH082-N Seal kit	NBR	3033920
FH082-V Seal kit	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

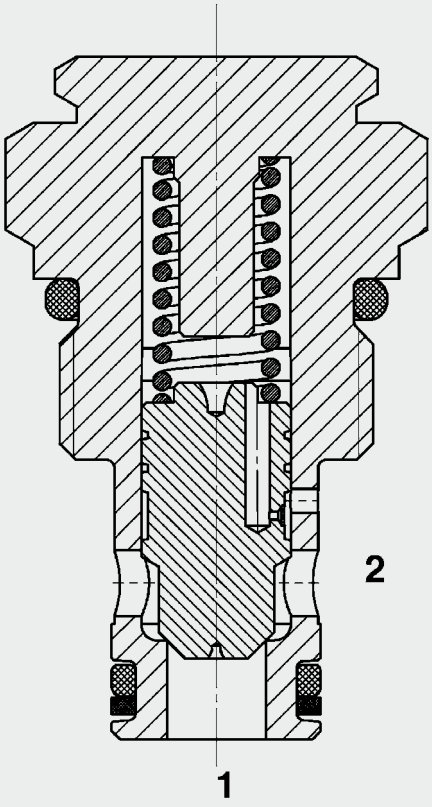
Up to 38 l/min
Up to 350 bar

Check Valve
Cone Poppet Type
Direct Acting
SAE-08 Cartridge – 350 bar

UNF

RV08A-51

FUNCTION



The check valve RV08A-51 is a direct acting cone poppet type valve.

When there is no flow through the valve, the spring holds the cone in the closed position and therefore shuts off port 2 from port 1. The valve opens when the pressure across port 1 is higher than the pressure across port 2, including the pressure created by the spring force.

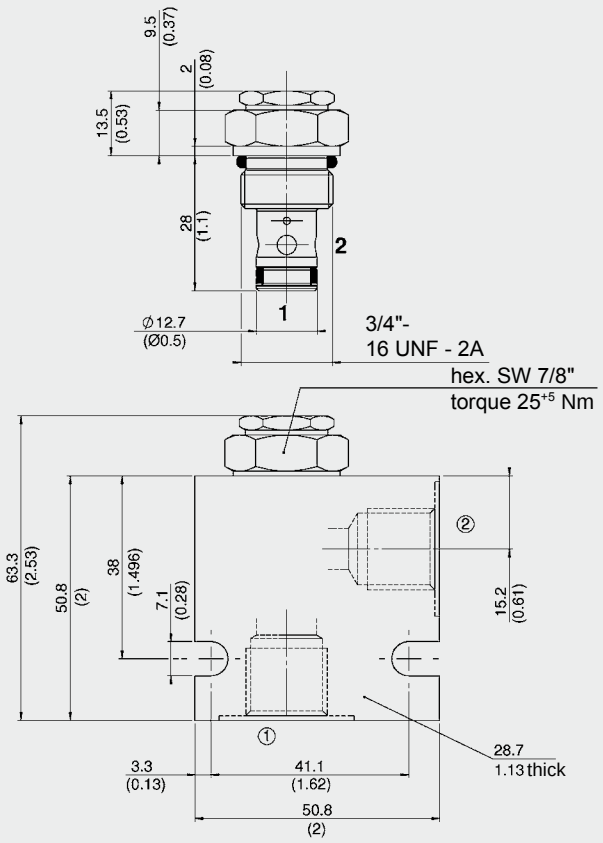
FEATURES

- High performance version for high cycle rate
- Main application is to prevent uncontrolled movement or creeping of loaded cylinders and also to shut-off sections of the system
- Excellent stability throughout the entire flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- Improved abrasion resistance achieved by a guided and damped piston

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 38 l/min	
Internal leakage:	0.05 cm³ at 350 bar	
Opening pressure:	0.35 bar (others on request)	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temp. range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	steel
	Piston:	ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	FC08-2	
Weight:	0.06 kg	

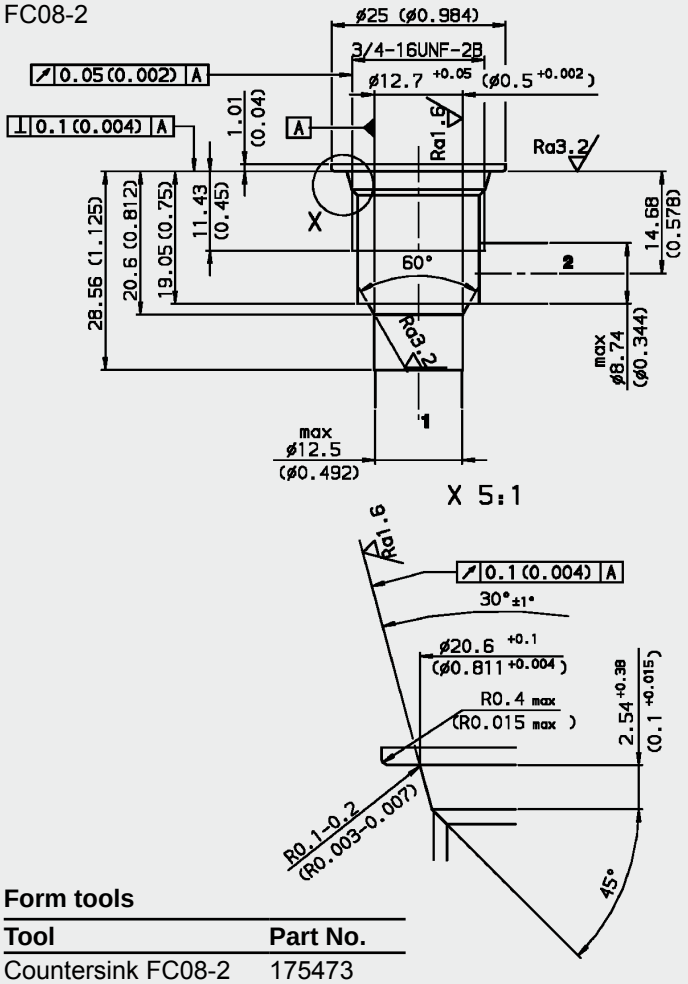
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

millimeter (inch)
subject to technical modifications

MODEL CODE

RV08A – 51 – C – N – 05

Basic model
Check valve UNF

Type
51 = poppet type, optimized for high cycle rate

Body and ports*
C = Cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body
Versions with line bodies on request

Seals
N = NBR (standard)
V = FKM (optional)

Cracking pressure
0.5 = 0.35 bar (5 psi)
Others on request

Standard models

Model code	Part No.
RV08A-51-C-N-05	3347912
RV08A-51-C-N-70	560087

Other models on request

* Standard in-line bodies

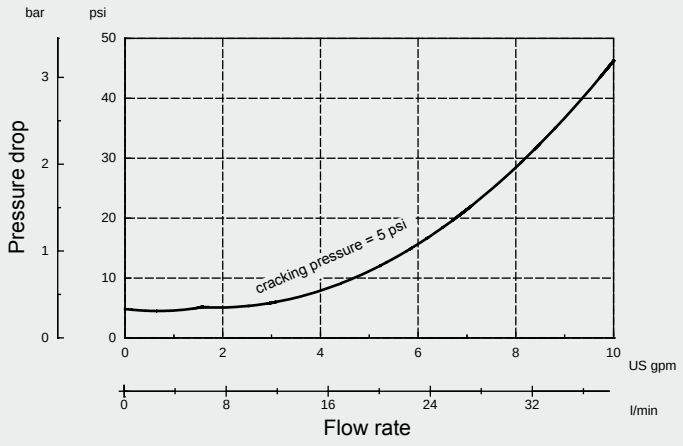
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium	G3/8	210 bar

Seal kits

Code	Material	Part No.
Seal kit FS082-N	NBR	3033920
Seal kit FS082-V	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

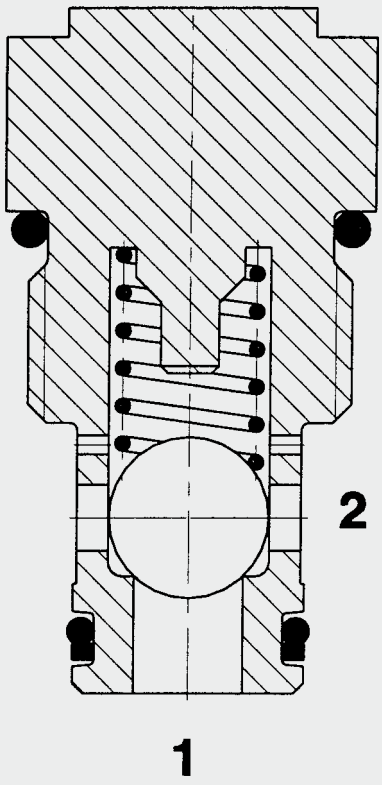
80 l/min
420 bar

Check Valve
Ball Poppet Type
Direct Acting
SAE-10 Cartridge – 420 bar

UNF

RV10A-01

FUNCTION



The check valve RV10A is a direct-acting, spring-loaded poppet valve. When there is no flow through the valve, the spring holds the ball in the closed position and therefore shuts off port 2 from port 1. The valve opens when the pressure at port 1 is higher than the pressure at port 2, including the pressure created by the spring force.

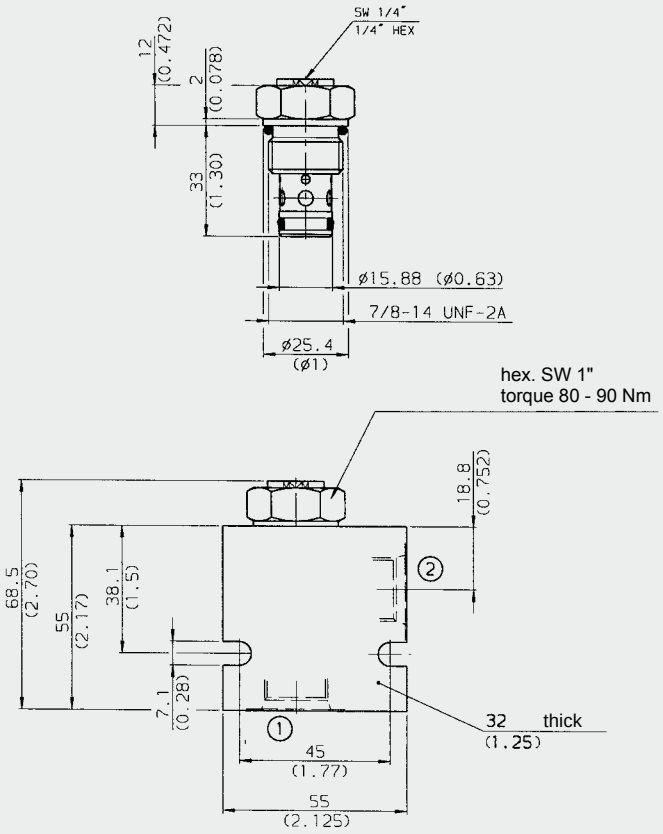
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened closing element
- Low leakage design
- Compact design

SPECIFICATIONS

Operating pressure:	max. 420 bar	
Nominal flow:	max. 80 l/min	
Internal leakage:	max. 0.1 cm³/min at 420 bar	
Cracking pressure:	0.35 bar 1.00 bar 2.00 bar 5.00 bar	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Ball poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
Cavity:	FC10-2	
Weight:	0.1 kg	

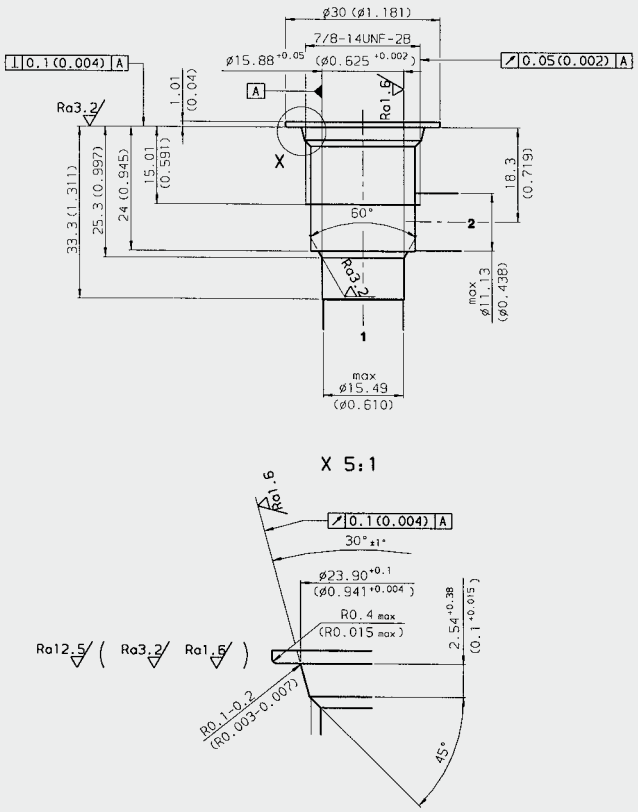
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC10-2



Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter (inch)
subject to technical modifications

MODEL CODE

RV10A-01 – C – N – 05

Basic model
Check valve UNF

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Cracking pressure
05 = 0.35 bar (5 PSI)
15 = 1.00 bar (15 PSI)
30 = 2.00 bar (30 PSI)
70 = 5.00 bar (70 PSI)

Standard models

Model code	Part No.
RV10A-01-C-N-05	3014052
RV10A-01-C-N-15	3014103
RV10A-01-C-N-30	3014104
RV10A-01-C-N-70	3014105

*Standard in-line bodies

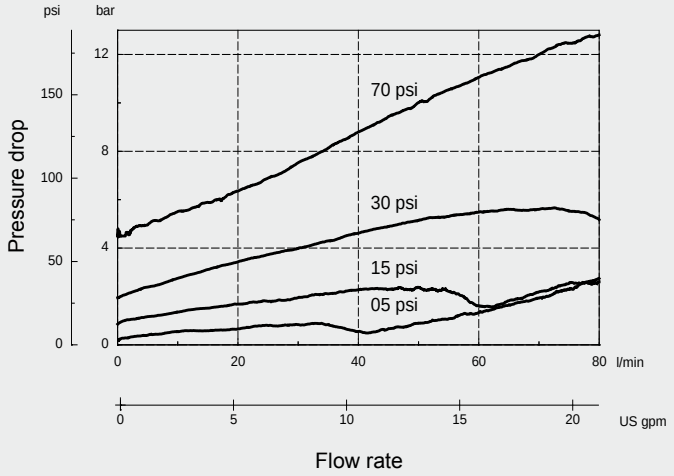
Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, anodized	G1/2	210 bar

Seal kits

Code	Material	Part No.
FH102-N Seal kit	NBR	3033872
FH102-V Seal kit	FKM	3051757

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



Note

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Subject to technical modifications.

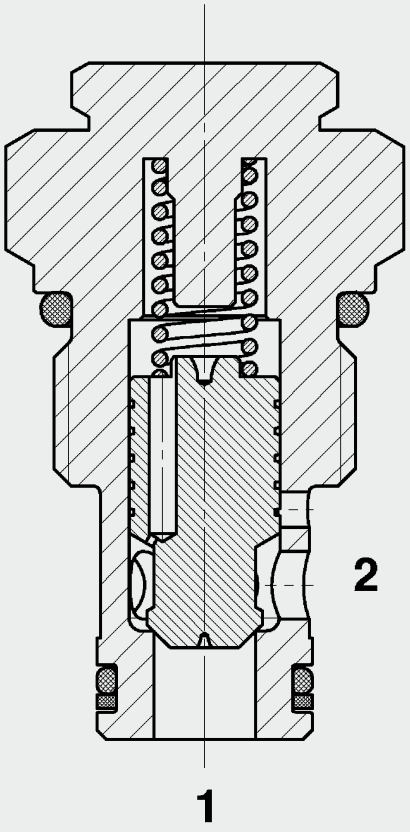
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

Up to 80 l/min
Up to 350 bar

Check valve
Poppet Type
SAE-10 Cartridge – 350 bar

RV10A-51

FUNCTION



The RV10A-51 is a direct acting, spring-loaded, poppet type check valve.

When there is no flow through the valve, the spring holds the cone poppet in the closed position and therefore shuts off port 2 from port 1. The valve opens when the pressure at port 1 is higher than the pressure at port 2, including the pressure created by the spring force.

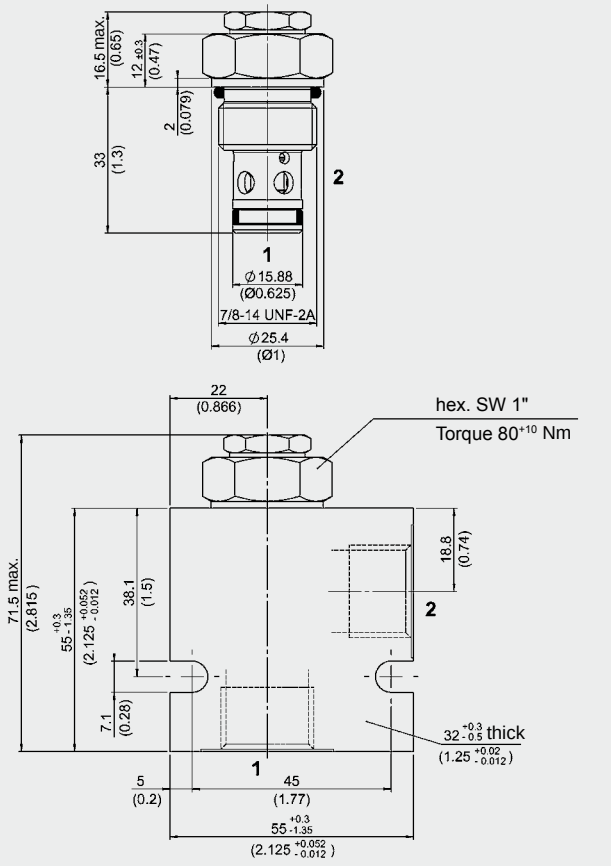
FEATURES

- Main application is to prevent uncontrolled movement or creeping of loaded cylinders and also to shut off sections of the system
- High performance version for high cycle rate
- Excellent stability throughout the entire flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 80 l/min	
Internal leakage:	0.1 cm³ at 350 bar	
Cracking pressure:	0.5 bar (others on request)	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	FC10-2	
Weight:	0.11 kg	

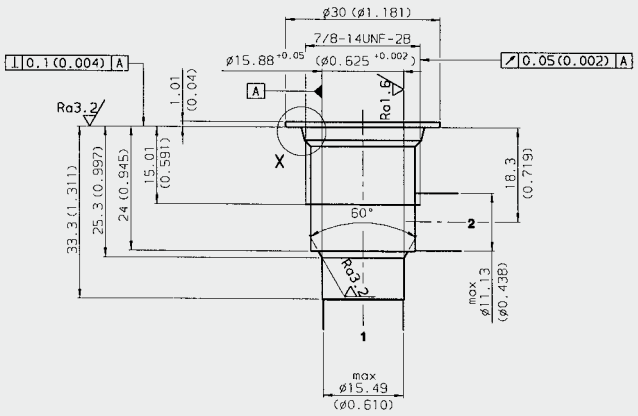
DIMENSIONS

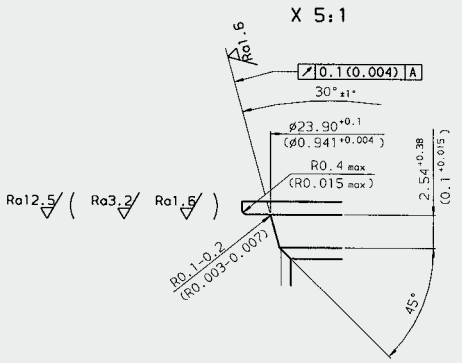


millimeter (inch)
subject to technical modifications

CAVITY

FC10-2





Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter (inch)
subject to technical modifications

MODEL CODE

RV 10A – 51 – C – N – 05

Basic model
Check valve UNF

Cavity
10A = 2-way cavity

Type
51 = poppet, optimized for high cycle rate (zinc-plated)

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Cracking pressure
05 = 0.35 bar

(others on request)

Standard models

Model code	Part No.
RV10A-51-C-N-05	3357644

Standard in-line bodies

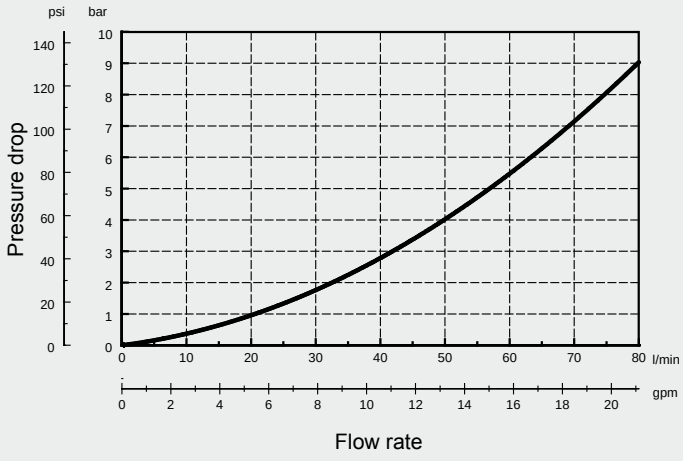
Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, anodized	G1/2	210 bar

Seal kits

Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

PERFORMANCE

Measured at ν = 46 mm²/s, T_{oil} = 40 °C



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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

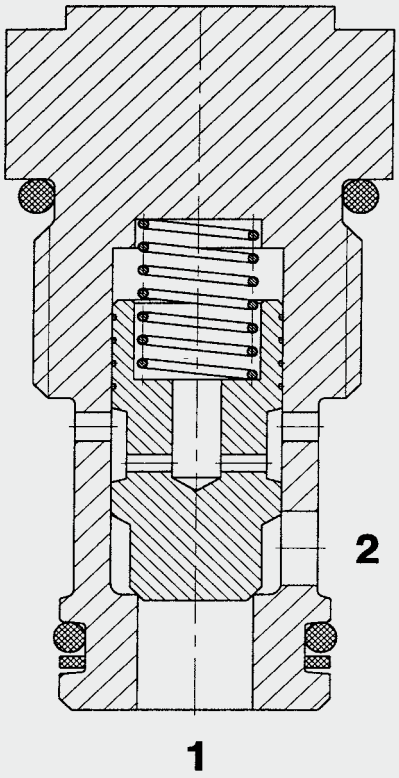
120 l/min
420 bar

Check Valve Poppet Type Direct Acting SAE-12 Cartridge – 420 bar

UNF

RV12A-01

FUNCTION



The check valve RV12A-01 is a direct acting cone poppet type valve which allows flow in one direction and shuts off flow in the opposite direction. When there is no flow through the valve, the spring holds the poppet in the closed position and therefore shuts off port 2 from port 1. The valve opens when the pressure at port 1 is higher than the pressure at port 2, including the pressure created by the spring force.

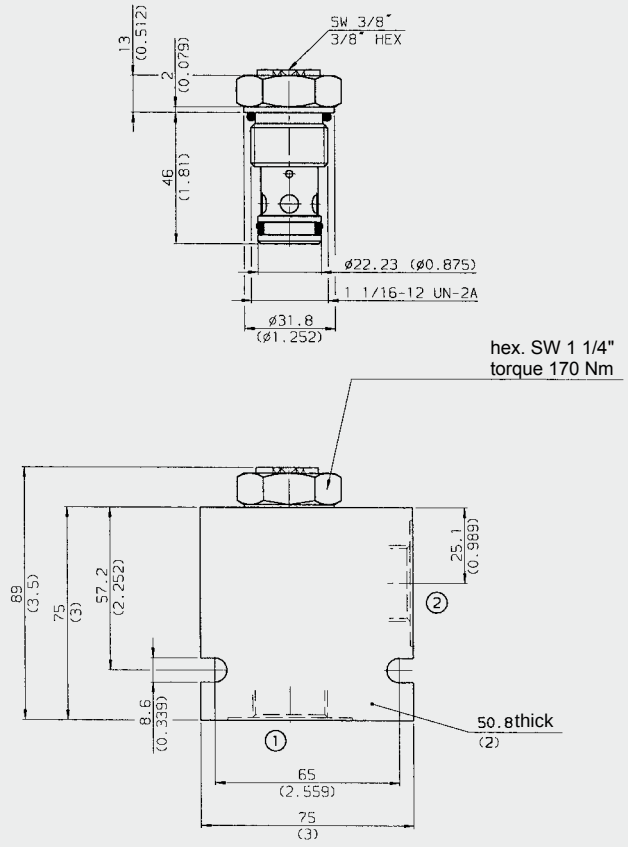
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Consumer is held in position leak-free
- Compact design
- Hardened and ground valve components to ensure minimal wear and extended service life

SPECIFICATIONS

Operating pressure:	max. 420 bar	
Nominal flow:	max. 120 l/min	
Internal leakage:	max. 0.1 cm³/min at 420 bar	
Cracking pressure:	0.35 bar 0.80 bar 1.70 bar 3.40 bar	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
Cavity:	FC12-2	
Weight:	0.2 kg	

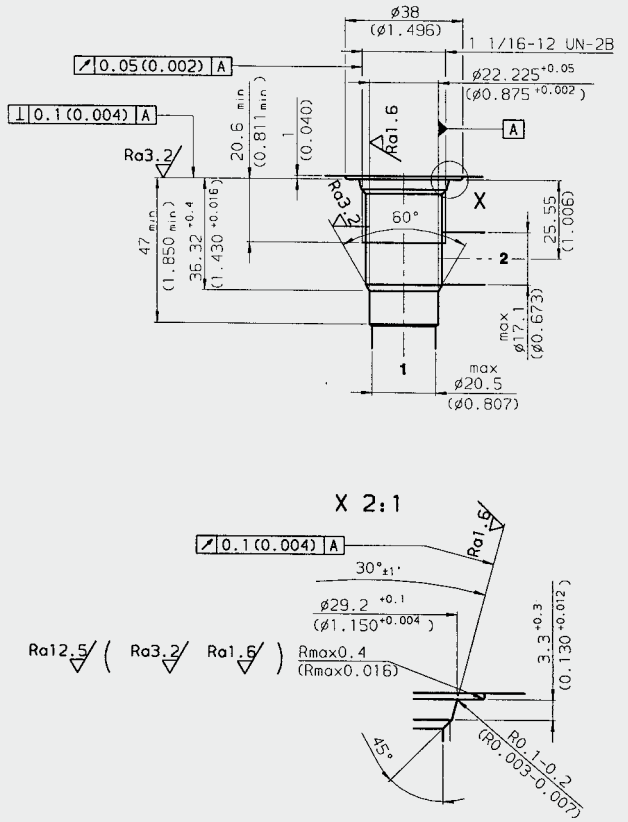
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC12-2



Form tools

Tool	Part No.
Countersink FC12-2	176951
Reamer FC12-2	176952

millimeter (inch)
subject to technical modifications

MODEL CODE

RV12A-01 – C – N – 05

Basic model
Check valve UNF

Body and ports*
C = cartridge only
SB6 = G3/4 ports, steel body
AB6 = G3/4 ports, aluminium body

Seals
N = NBR
V = FKM

Cracking pressure
05 = 0.35 bar (5 PSI)
12 = 0.80 bar (12 PSI)
25 = 1.70 bar (25 PSI)
50 = 3.40 bar (50 PSI)

Standard models

Model code	Part No.
RV12A-01-C-N-05	3047039
RV12A-01-C-N-12	3047040
RV12A-01-C-N-25	3047041
RV12A-01-C-N-50	3047042

*Standard in-line bodies

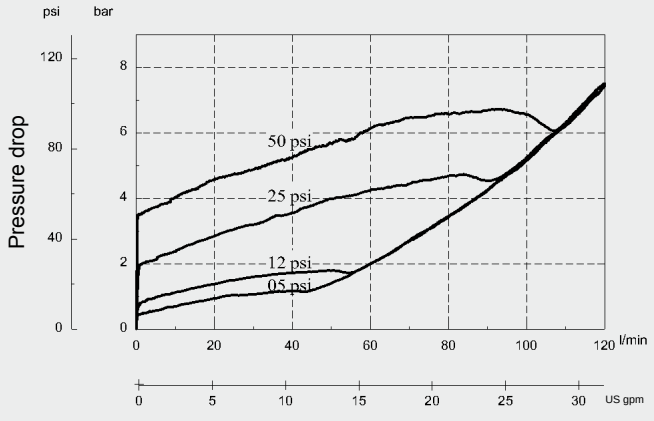
Code	Part No.	Material	Ports	Pressure
FH122-SB6	3053782	Steel, zinc-plated	G3/4	420 bar
FH122-AB6	3053843	Aluminium, anodized	G3/4	210 bar

Seal kits

Code	Material	Part No.
FH122-N Seal kit	NBR	3071298
FH122-V Seal kit	FKM	3071299

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



Flow rate

NOTE

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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
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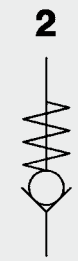
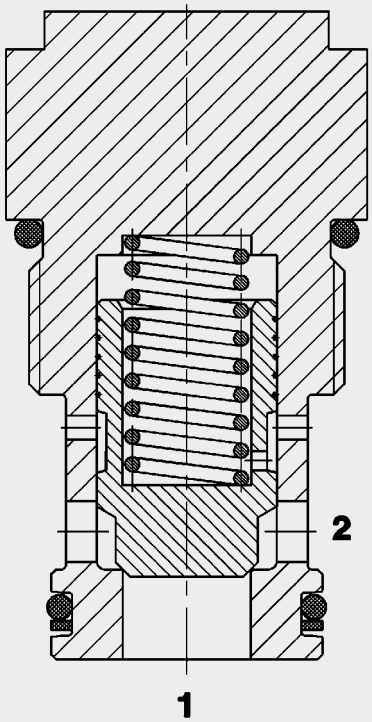


Up to 165 l/min
Up to 420 bar

Check Valve Poppet Type Direct Acting SAE-16 Cartridge – 420 bar RV16A-01

UNF

FUNCTION



The check valve RV16A is a direct-acting, spring-loaded poppet valve.

When there is no flow through the valve, the spring holds the cone poppet in the closed position and therefore shuts off port 2 from port 1. The valve opens when the pressure at port 1 is higher than the pressure at port 2, including the pressure created by the spring force.

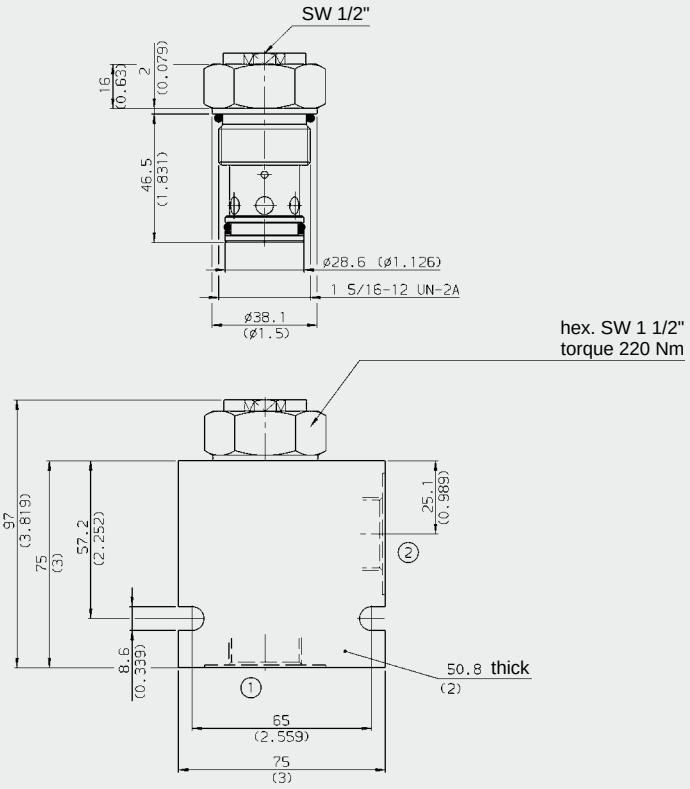
FEATURES

- Main application is to prevent uncontrolled movement or creeping of loaded cylinders and also to shut off sections of the system
- Excellent stability throughout the entire flow range
- External surfaces zinc-plated
- Hardened and ground valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 420 bar	
Nominal flow:	max. 165 l/min	
Leakage:	max. 0.1 cm³/min at 420 bar	
Standard cracking pressures:	05 = 0.35 bar 15 = 1.0 bar 30 = 2.0 bar 70 = 5.0 bar 100 = 7.0 bar	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	FC16-2	
Weight:	0.345 kg	

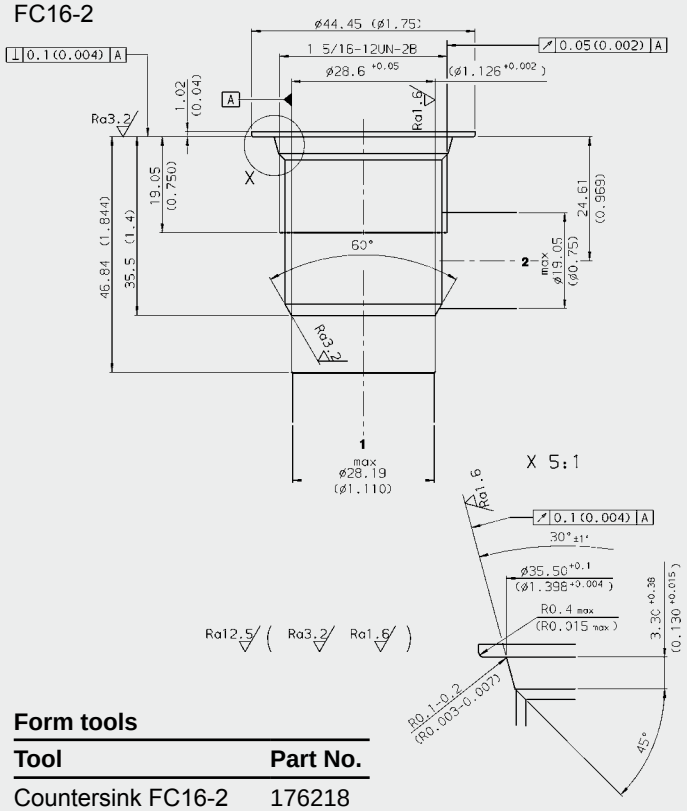
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC16-2



Form tools

Tool	Part No.
Countersink FC16-2	176218
Reamer FC16-2	176219

millimeter (inch)
subject to technical modifications

MODEL CODE

RV16A – 01 C – N – 05

Basic model
Check valve, poppet type, NG16

Type
01 = standard

Body and Ports*
C = Cartridge only
SB8 = G1 ports, steel body
AB8 = G1 ports, aluminium body

Seals
N = NBR (standard)
V = FKM (optional)

Cracking pressure
05 = 0.35 bar (5 psi)
15 = 1.0 bar (15 psi)
30 = 2.0 bar (30 psi)
70 = 5.0 bar (70 psi)
100 = 7.0 bar (100 psi)
Other pressure settings on request

Standard models

Model code	Part No.
RV16A-01-C-N-05	3015349
RV16A-01-C-N-15	3015350
RV16A-01-C-N-30	3015351
RV16A-01-C-N-70	3015352
RV16A-01-C-N-100	3555397

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH162-SB8	3032496	Steel, zinc-plated	G1	420 bar
FH162-AB8	3037193	Aluminium, anodized	G1	210 bar

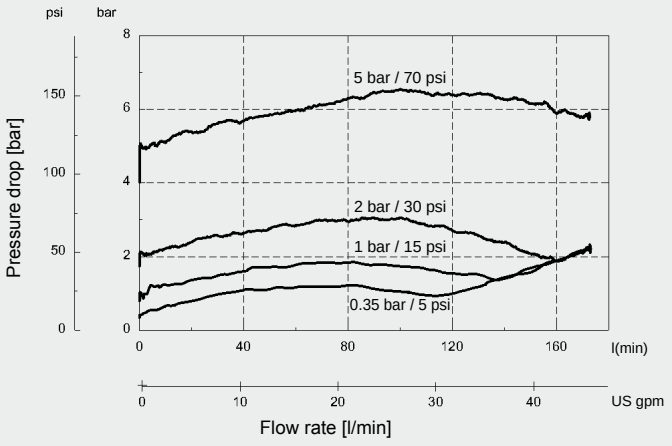
Other line bodies on request

Seal kits

Code	Material	Part No.
FS162-N SEAL KIT	NBR	3052427
FS162-V SEAL KIT	FKM	3051758

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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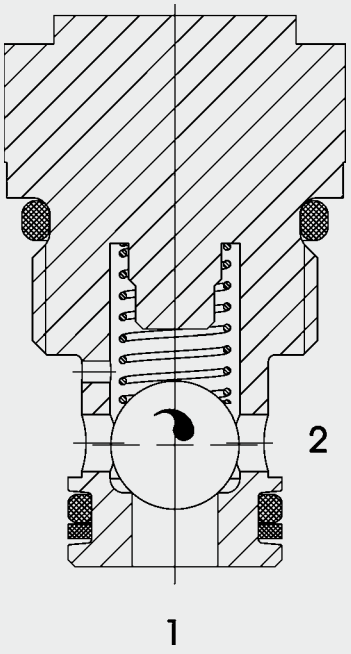
E-Mail: flutec@hydac.com

Up to 38 l/min
Up to 350 bar

Check Valve
Ball Seat Type
Metric Cartridge – 350 bar
RVM06020

FUNCTION



The check valve RVM06020 is a direct-acting, spring-loaded ball poppet valve.

When there is no flow through the valve, the spring holds the ball in the closed position and therefore shuts off port 2 from port 1. The valve opens when the pressure at port 1 is higher than the pressure at port 2, including the pressure created by the spring force.

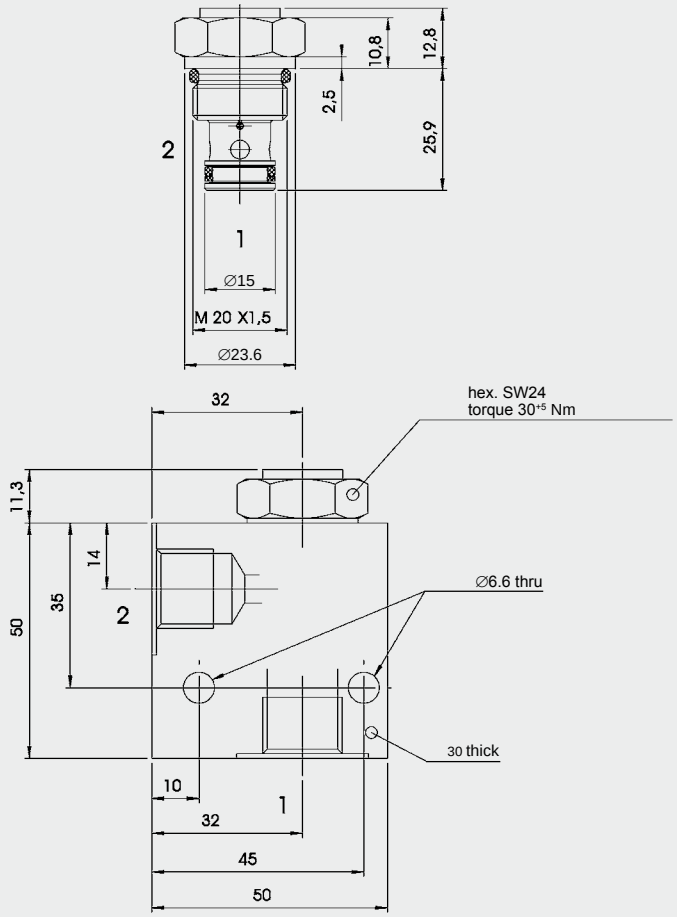
FEATURES

- Main application is to prevent uncontrolled movement or creeping of loaded cylinders and also to shut-off sections of the system
- External surfaces zinc-plated
- Low pressure drop by CFD optimized flow path
- Optional version with hardened and ground seat

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 38 l/min	
Internal leakage:	Leak-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Cracking pressure:	0.5 bar (others on request)	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Closing element:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	06020	
Weight:	0.08 kg	

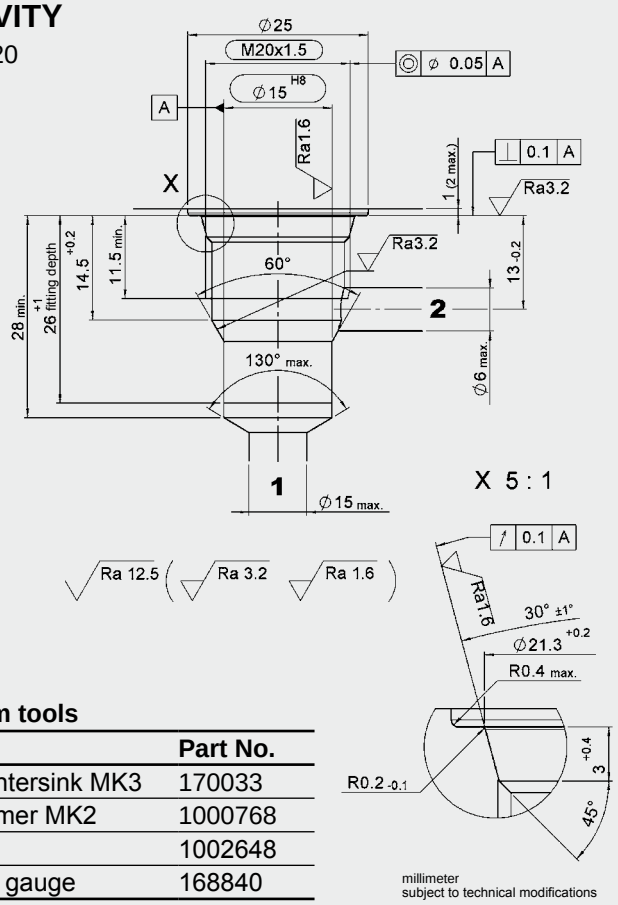
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

06020



Form tools

Tool	Part No.
Countersink MK3	170033
Reamer MK2	1000768
Tap	1002648
Plug gauge	168840

millimeter
subject to technical modifications

MODEL CODE

RVM 06020 – 01 – C – N – 0.5

Basic model
Check valve, metric

Cavity
06020 = 2-way cavity

Type
01 = standard model
(surface zinc-plated)
06 = hardened seat version

Body and ports
C = cartridge

Seals
N = NBR
V = FKM

Cracking pressure
0.5 = 0.5 bar
Others on request

Standard models

Model code	Part No.
RVM06020-01-C-N-0.5	3196992

Other models on request

Standard in-line bodies

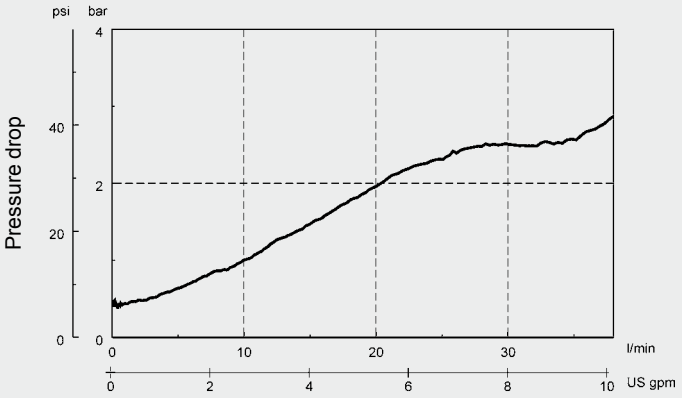
Code	Part No.	Material	Ports
R06020-01X-01	275266	Steel, zinc-plated	G 3/8

Seal kits

Code	Material	Part No.
SEAL KIT 06020-NBR	NBR	3119017
SEAL KIT 06020-FKM	FKM	3262477

PERFORMANCE

Measured at:
ν = 34 mm²/s, T_{oil} = 46 °C



Flow rate

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Fax: 0 68 97 /509-598
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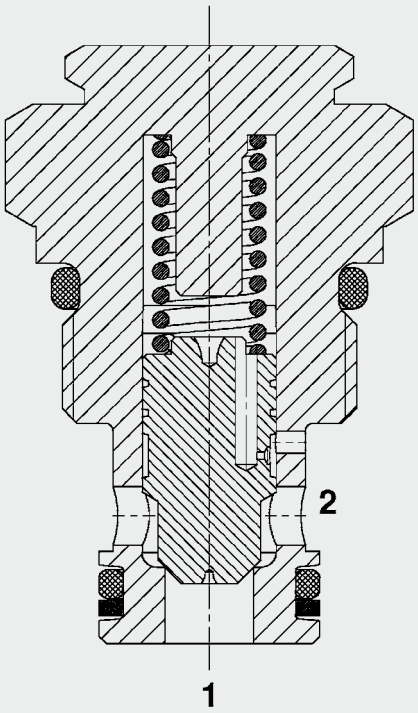
38 l/min
350 bar

Check Valve
Poppet Type
Metric Cartridge – 350 bar
RVM06020-51

FUNCTION



The check valve RVM06020-51 is a direct-acting, spring-loaded poppet valve.

When there is no flow through the valve, the spring holds the poppet in the closed position and therefore shuts off port 2 from port 1. The valve opens when the pressure at port 1 is higher than the pressure at port 2, including the pressure created by the spring force.

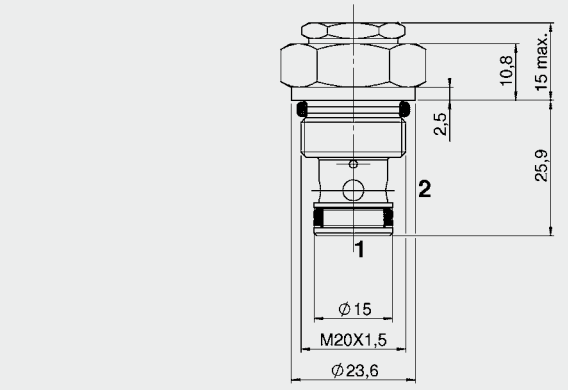
FEATURES

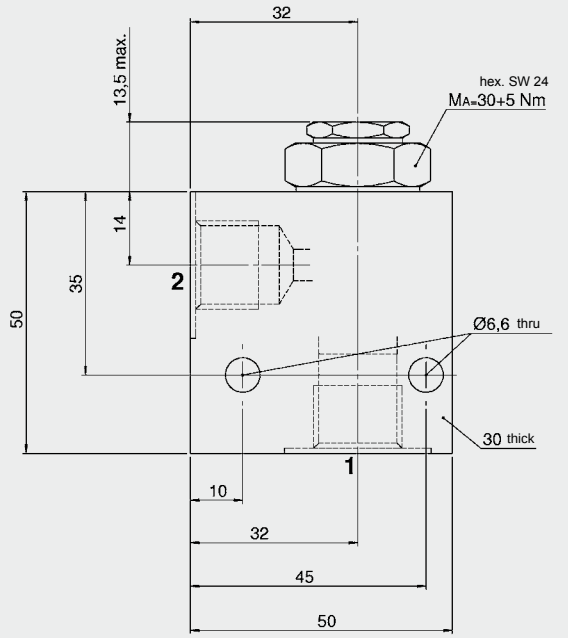
- High performance version for high cycle rate
- Main application is to prevent uncontrolled movement or creeping of loaded cylinders and also to shut-off sections of the system
- External surfaces zinc-plated
- Hardened and ground valve components to ensure minimal wear and extended service life
- Low pressure drop by CFD optimized flow path
- Improved wear resistance, achieved by a guided and dampened piston

SPECIFICATIONS

Operating pressure:	350 bar	
Nominal flow:	38 l/min	
Internal leakage:	0.064 cm³ at 350 bar	
Cracking pressure:	0.5 bar (others on request)	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	Metric 06020	
Weight:	0.07 kg	

DIMENSIONS

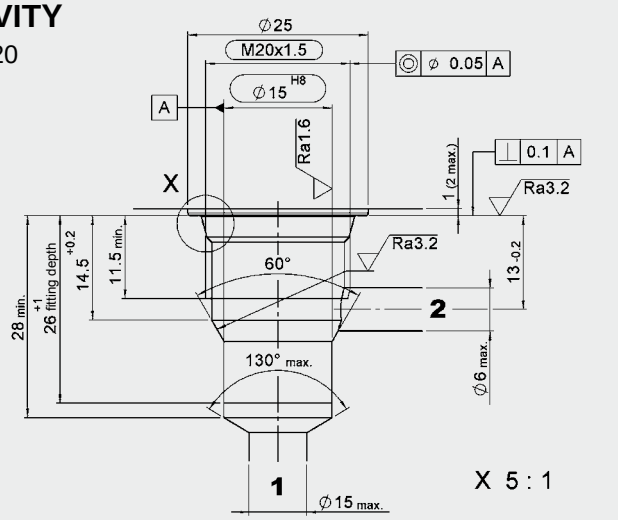


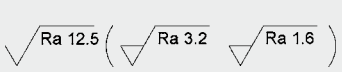


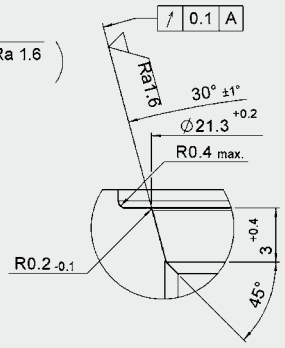
millimeter
subject to technical modifications

CAVITY

06020







millimeter
subject to technical modifications

Form tools

Tool	Part No.
Countersink MK3	170033
Reamer MK2	1000768
Tap	1002648
Plug gauge	168840

MODEL CODE

RVM 06020 – 51 – C – N – 0.5

Basic model
Check valve, metric

Cavity
06020 = 2-way cavity

Type
51 = poppet type, optimized for high cycle rate

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Cracking pressure
0.5 = 0.5 bar
Others on request

Standard models

Model code	Part No.
RVM06020-51-C-N-0.5	3347965

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G 3/8	420 bar

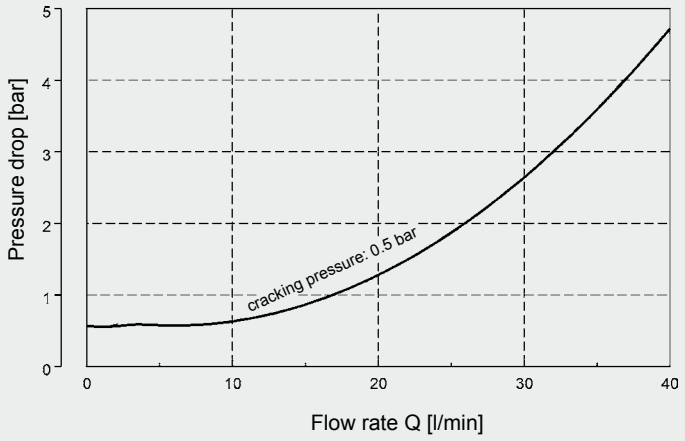
Other line bodies on request

Seal kits

Code	Part No.
SEAL KIT 06020-NBR	3119017
SEAL KIT 06020-FKM	3262477

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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Subject to technical modifications.

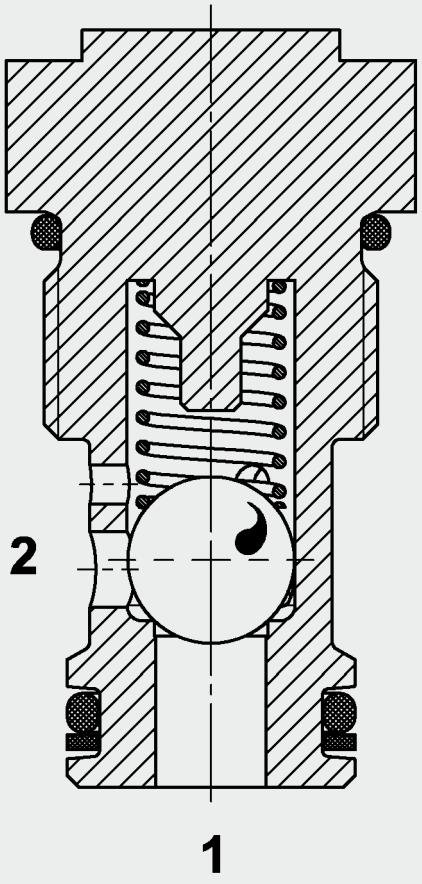
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

Up to 100 l/min
Up to 350 bar

Check Valve
Ball Poppet Type
Metric Cartridge – 350 bar

RVM10120-01

FUNCTION



When there is no flow through the valve, the spring holds the ball in the closed position and therefore shuts off port 2 from port 1.

The valve opens when the pressure at port 1 is higher than the pressure at port 2, including the pressure created by the spring force.

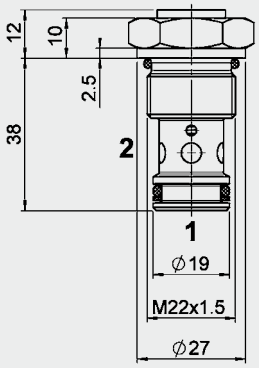
FEATURES

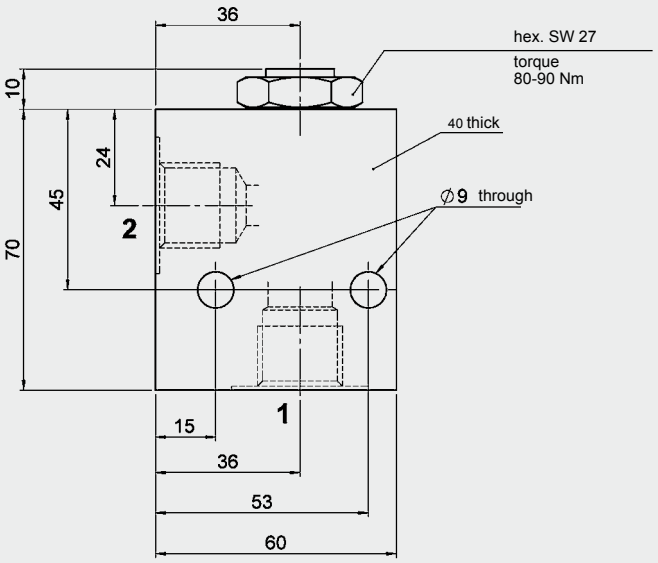
- External surfaces zinc-plated and corrosion-proof
- Excellent stability throughout the entire flow range
- Compact design enables space-saving installation in connection housings and control blocks

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 100 l/min	
Internal leakage:	leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Cracking pressure:	0.5 bar Others on request	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Ball poppet:	roller bearing steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	10120	
Weight:	0.11 kg	

DIMENSIONS

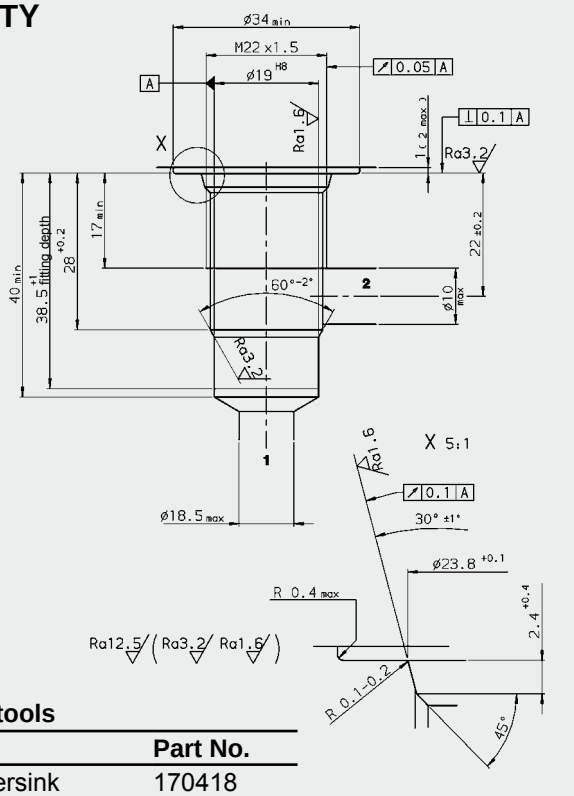




millimeter
subject to technical modifications

CAVITY

10120



Form tools

Tool	Part No.
Countersink	170418
Reamer	1014206
Tap	1002627
Plug gauge	169394

millimeter
subject to technical modifications

MODEL CODE

RVM 10120 – 01 – C – N – 0.5

Basic model
Check valve, metric

Cavity
10120 = 2-way cavity

Type
01 = standard

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Cracking pressure
0.5 = 0.5 bar
Others on request

Standard models

Model code	Part No.
RVM10120-01-C-N-0.5	3058962

* Standard in-line bodies

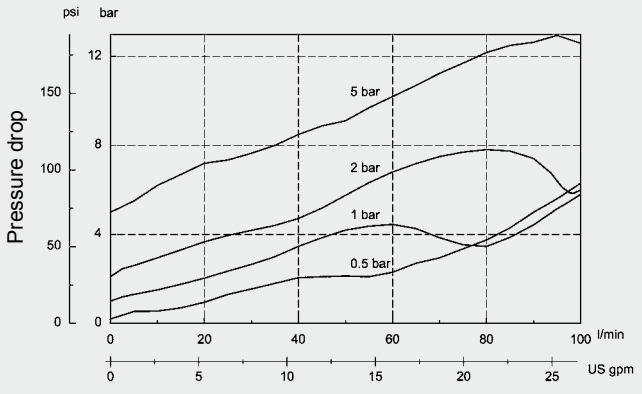
Code	Part No.	Material	Ports	Pressure
R10120-01X-01	395234	Steel, zinc-plated	G 1/2	420 bar
R10120A-01X-02	395235	Steel, zinc-plated	M 22 x 1.5	420 bar

Seal kits

Code	Material	Part No.
SEAL KIT 10120-NBR	NBR	3382346
SEAL KIT 10120-FKM	FKM	3178281

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



Flow rate

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D-66280 Sulzbach/Saar
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Fax: 0 68 97 /509-598
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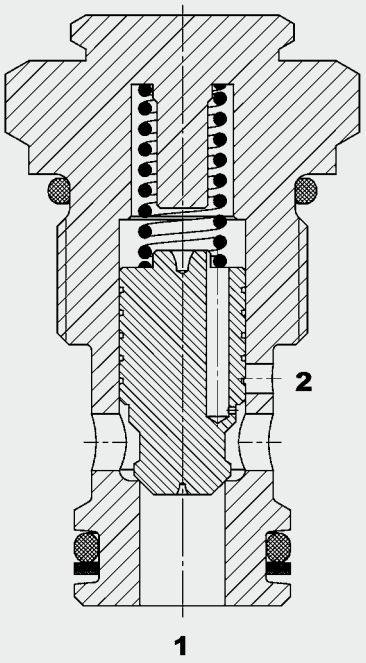
Up to 100 bar
Up to 350 l/min

Check Valve
Poppet Type
Metric Cartridge – 350 bar
RVM10120-51

FUNCTION



The RVM06020-51 is a direct-acting, spring-loaded, poppet check valve.

When there is no flow through the valve, the spring holds the cone poppet in the closed position and therefore shuts off port 2 from port 1. The valve opens when the pressure at port 1 is higher than the pressure at port 2, including the pressure created by the spring force.

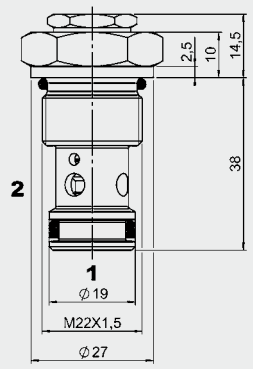
FEATURES

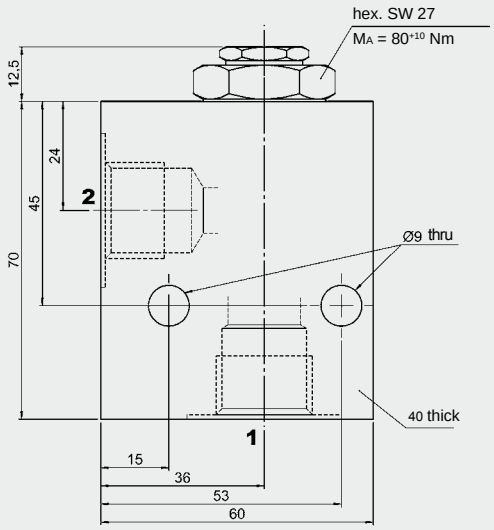
- High performance version for high cycle rate
- Main application is to prevent uncontrolled movement or creeping of loaded cylinders and also to shut-off sections of the system
- External surfaces zinc-plated
- Hardened and ground valve components to ensure minimal wear and extended service life
- Improved wear resistance, achieved by a guided and dampened piston

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 100 l/min	
Internal leakage:	leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Cracking pressure:	0.5 bar (others on request)	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	10120	
Weight:	0.12 kg	

DIMENSIONS

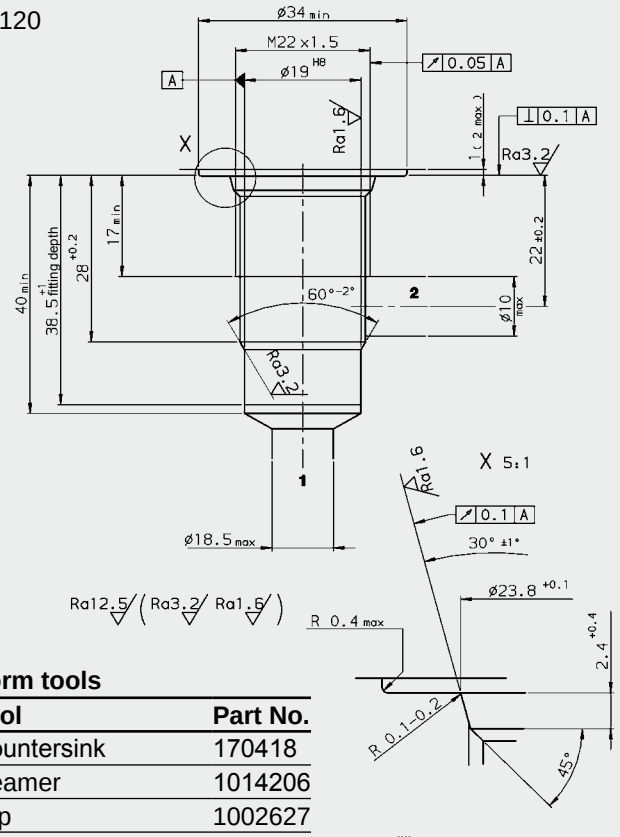




millimeter
subject to technical modifications

CAVITY

10120



Form tools

Tool	Part No.
Countersink	170418
Reamer	1014206
Tap	1002627
Plug gauge	169394

millimeter
subject to technical modifications

MODEL CODE

RVM 10120 – 51 – C – N – 0.5

Basic model
Check valve, metric

Cavity
10120 = 2-way cavity

Type
51 = poppet, optimized for high cycle rate

Body and ports
C = cartridge

Seals
N = NBR (standard)
V = FKM (optional)

Cracking pressure
0.5 = 0.5 bar
Others on request

Standard models

Model code	Part No.
RVM10120-51-C-N-0.5	3420466

Standard in-line bodies

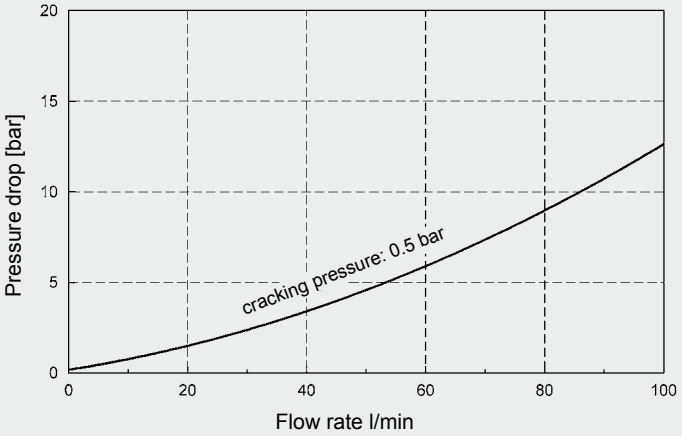
Code	Part No.	Material	Ports	Pressure
R10120-01X-01	395234	Steel, zinc-plated	G 1/2	420 bar
R10120-01X-02	395235	Steel, zinc-plated	M22x1.5	420 bar

Seal kits

Code	Material	Part No.
SEAL KIT 10120-NBR	NBR	3382346
SEAL KIT 10120-FKM	FKM	3178281

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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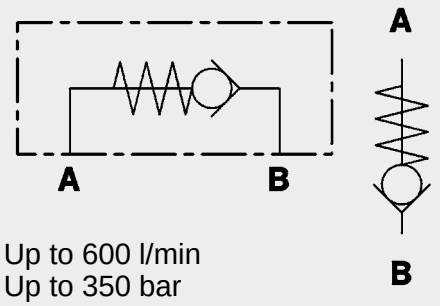
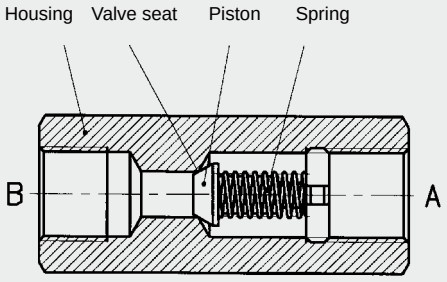
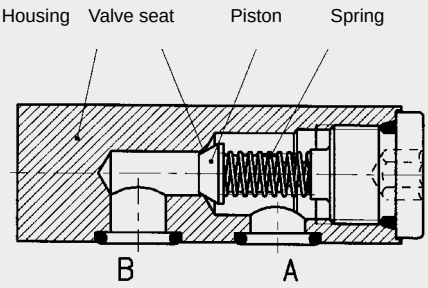


Up to 600 l/min
Up to 350 bar

Check Valves, Direct-Acting, Cone Poppet Valve for Inline and Manifold Mounting – 350 bar RV, RVP 06 - 40

FUNCTION





RV and RVP are check valves which allow flow in one direction (port B → port A) while the other direction is shut off. The shut-off function is provided by the spring-loaded cone poppet and the standard cracking pressure is 0.5 bar.

FEATURES

- Check valves for mounting directly inline and directly onto control blocks
- Choice of nine sizes ensures best possible adaptability to the system
- Leak-free poppet design for complete shut-off
- Optional zinc-plated version (RVP) available
- Cracking pressures other than 0.5 bar are available as an option

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	RV, RVP-06	max. 20 l/min
	RV, RVP-08	max. 40 l/min
	RV, RVP-10	max. 70 l/min
	RV, RVP-12	max. 160 l/min
	RV, RVP-16	max. 200 l/min
	RV, RVP-20	max. 350 l/min
	RV, RVP-25	max. 550 l/min
	RV, RVP-30	max. 600 l/min
	RV, RVP-40	max. 600 l/min
Cracking pressure	0.5 bar	
Media operating temperature range:	min. -20 °C to max. +80 °C	
Ambient temperature range:	min. -20 °C to max. +80 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
MTTF d:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard)
Weight:	RV 06 = 0.1 kg	RVP 06 = 0.2 kg
	RV 08 = 0.2 kg	RVP 08 = 0.4 kg
	RV 10 = 0.2 kg	RVP 10 = 0.5 kg
	RV 12 = 0.3 kg	RVP 12 = 1.0 kg
	RV 16 = 0.5 kg	RVP 16 = 2.1 kg
	RV 20 = 1.1 kg	RVP 25 = 5.8 kg
	RV 25 = 1.8 kg	RVP 30 = 3.3 kg
	RV 30 = 2.6 kg	RVP 30 = 10.3 kg
	RV 40 = 4.4 kg	RVP 40 = 17.9 kg

MODEL CODE

RVP – 08 – 01 . X / 0 – 1 BAR

Basic model
RV = Check valve for inline mounting
RVP = Check valve for manifold mounting

Size
06, 08, 10, 12, 16, 20, 25, 30, 40

Type
01 = standard (RVP = housing phosphated)
(RV = housing zinc-plated)
30 = housing in stainless steel (for RV only)
Other types on request

Series
(determined by manufacturer)

Threaded connection (for RV only)
0 = Whitworth thread, threaded bore Form X to DIN 3852 Part 2
5 = NPT thread
12 = UNF thread

Specific cracking pressure
On request

Standard models

Model code	Part No.
RV-06-01.1/0	705826
RV-08-01.1/0	705829
RV-10-01.1/0	705832
RV-12-01.1/0	705835
RV-16-01.1/0	705838
RV-20-01.1/0	705841
RV-25-01.1/0	705844
RV-30-01.1/0	705847
RV-40-01.1/0	705850
RVP-06-01.1	705927
RVP-08-01.1	705929
RVP-10-01.1	705931
RVP-12-01.1	705933
RVP-16-01.1	705935
RVP-20-01.1	705937
RVP-25-01.1	705939
RVP-30-01.1	705941
RVP-40-01.1	705943

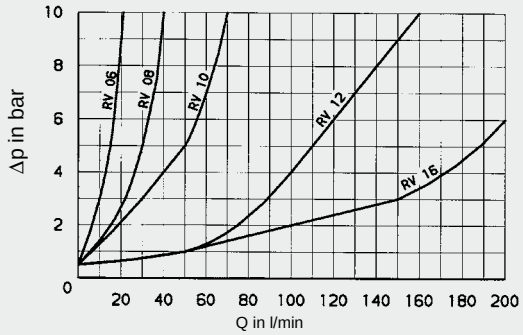
(Mounting screws are not supplied with the valve)
Other models on request

Code	Part No.
SEAL KIT 06FKM DV/P DRV/P RVP	555089
SEAL KIT 08FKM DV/P DRV/P DVE RVP SRVR/P	555090
SEAL KIT 10FKM DV/P DRV/P DVE RVP SRVR/P	555091
SEAL KIT 12FKM DV/P DRV/P DVE RVP SRVR/P	555092
SEAL KIT 16FKM DV/P DRV/P DVE RVP SRVR/P	555093
SEAL KIT 20FKM DV/P DRV/P RVP SRV	555094
SEAL KIT 25FKM DV/P DRV/P RVP	555095
SEAL KIT 30FKM DV/P DRV/P RVP	555096

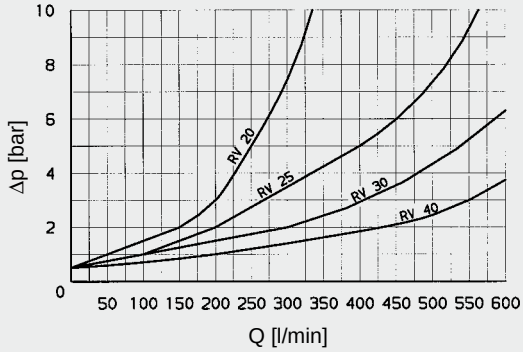
PERFORMANCE

Pressure drops, dependent on flow rate
RV = Flow direction B → A, measured at ν = 72 mm²/s and T_{oil} = 30°C
RVP = Flow direction B → A, measured at ν = 38 mm²/s and T_{oil} = 43°C
Pressure differential Δp against flow rate Q!

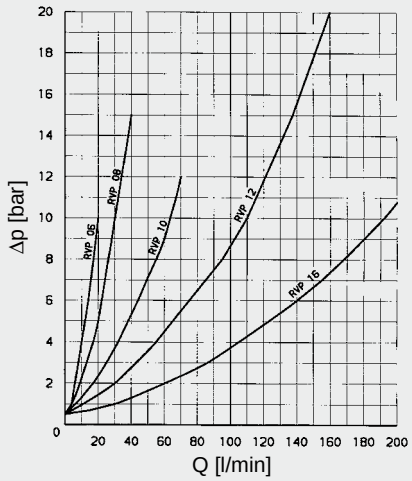
RV-06-01.X bis RV-16-01.X



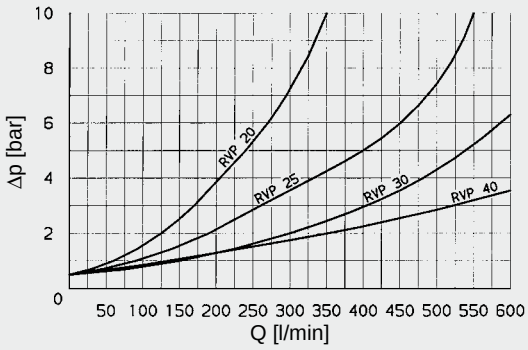
RV-20-01.X bis RV-40-01.X



RVP-06-01.X to RVP-16-01.X

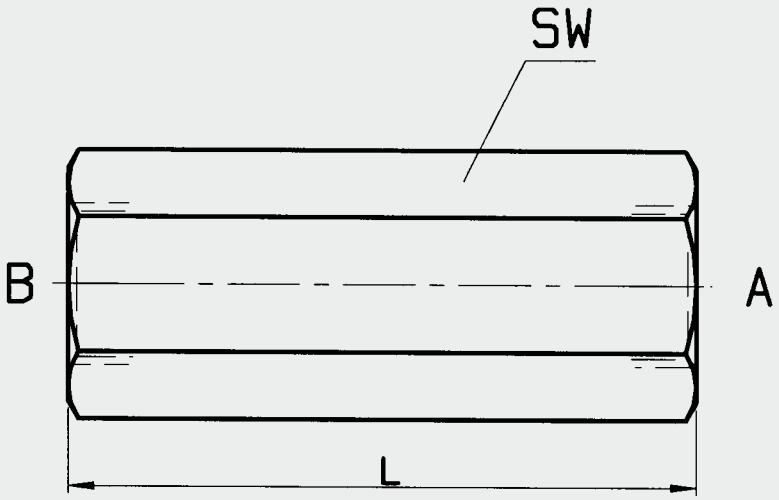


RVP-20-01.X to RVP-40-01.X



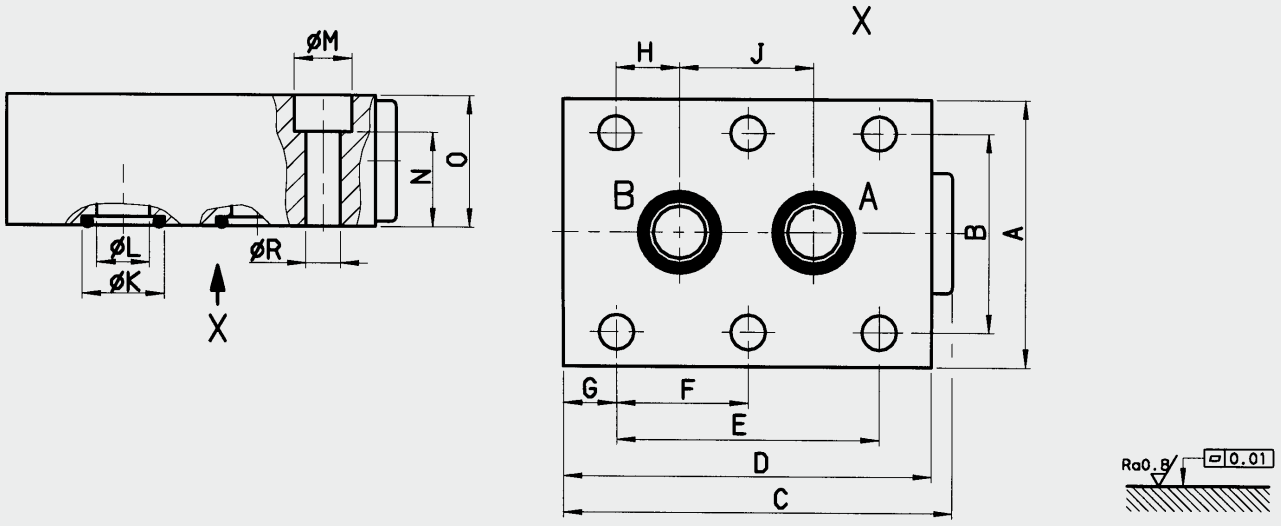
DIMENSIONS

RV



Nominal size	Threaded connection	SW	L	Weight [kg]
06	G1/8	17	45	0.1
08	G1/4	19	55	0.2
10	G3/8	24	65	0.2
12	G1/2	30	73	0.3
16	G3/4	36	88	0.5
20	G1	46	127	1.1
25	G1 1/4	60	143	1.8
30	G1 1/2	65	143	2.6
40	G2	80	165	4.4

RVP



Size	A	B	C	D	E	F	G	H	J	K	L	M	N	O	R	Weight [kg]
06	41.5	28.5	46	41.5	19	–	6.4	1.6	16	9.7	5	11	9	16	6.6	0.2
08	46	33.5	67	63.5	35	–	14.2	4.8	25.5	12.7	7	11	13	20	6.6	0.4
10	51	38	74	70	33.5	–	18	4	25.5	15.6	10	11	18	25	6.6	0.5
12	57.5	44.5	84.5	80	38	–	21	4	30	18.6	13	11	25	32	6.6	1.0
16	70	54	109.5	104	76	38	14	11	54	24.5	17	14	36	45	9	2.1
20	76.5	60	133	127	95	47.5	16	19	57	30.5	22	14	41	50	9	3.3
25	100	76	172	165	120.5	60	15	20.6	79.5	37.4	28.5	18	44	55	11.5	5.8
30	115	92	196	186	143	71.5	15	23.8	95	43.4	35	20	62	75	14	10.3
40	140	111	201	192	133.5	67	16	25.5	89	57.2	47	20	87	100	14	17.9

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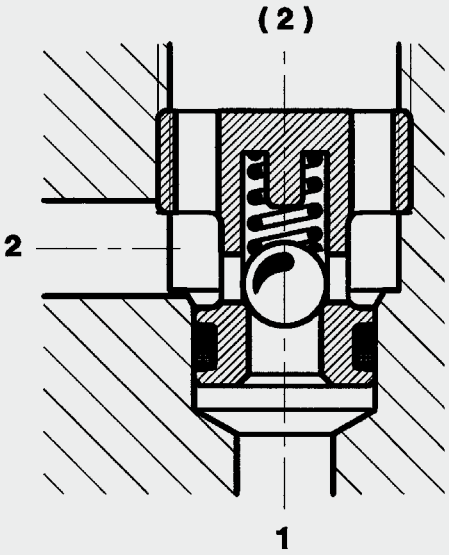
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

Up to 60 l/min
Up to 350 bar

Check Valve Direct-Acting Cartridge – 350 bar RVE-R 1/8 to 1/2

FUNCTION



The RVE is a check valve which allows flow in one direction (port 1 → 2) and shuts off flow in the other direction. The design is a spring-loaded ball with a standard cracking pressure of 0.5 bar.

FEATURES

- Check valves for mounting directly into control blocks
- Both axial and radial flow direction
- Choice of four sizes for optimum adaptability to the system
- Leakage-free poppet design for complete shut-off
- Cracking pressures other than 0.5 bar are available as an option

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	RVE-R1/8 to max. 10 l/min RVE-R1/4 to max. 10 l/min RVE-R3/8 to max. 30 l/min RVE-R1/2 to max. 60 l/min
Media operating temperature range:	min. -20 °C to max. +120 °C
Ambient temperature range:	min. -20 °C to max. +120 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions
Materials:	Valve body: steel Seals: FKM
Cavity:	04020, 04220, 06320, 08220
Weight:	RVE-R1/8 = 0.003 kg RVE-R1/4 = 0.005 kg RVE-R3/8 = 0.010 kg RVE-R1/2 = 0.024 kg

MODEL CODE

RVE – R1/2 – X – 0.5

Basic model
Check valve

Size of connection
R1/8 = RVE-1/8
R1/4 = RVE-1/4
R3/8 = RVE-3/8
R1/2 = RVE-1/2

Series
(determined by manufacturer)

Cracking pressure
0.5 = 0.5 bar
Others on request

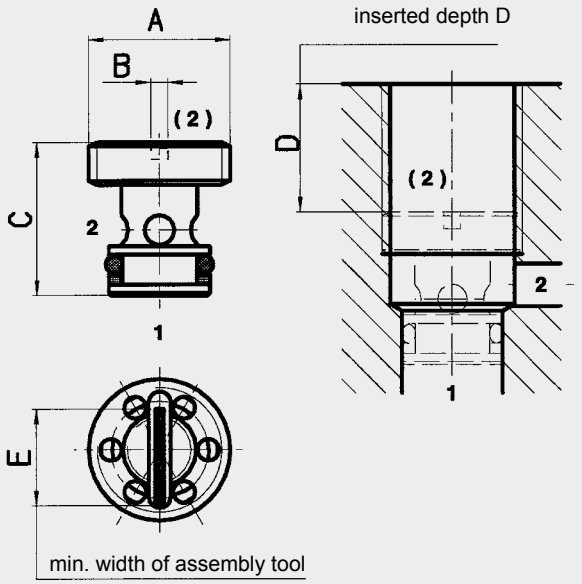
Standard models

Model code	Part No.
RVE-R1/8-X-0.5	710150
RVE-R1/4-X-0.5	710151
RVE-R3/8-X-0.5	710152
RVE-R1/2-X-0.5	710153

Other models on request

Standard in-line bodies
On request

DIMENSIONS



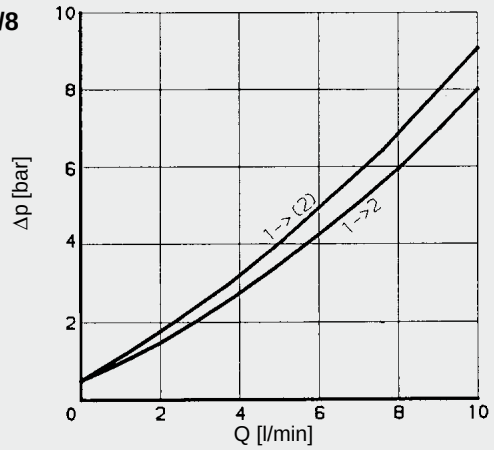
Valves must be screwed in to the inserted depth D (see below) and secured appropriately. Securing by closing screw or calk thread!
If screwed in too far, leaks may occur!

Description	A	B	C	D	E
RVE-R1/8-X	G 1/8	1.5	13	10	7
RVE-R1/4-X	G 1/4	1.5	13	14.5	8.5
RVE-R3/8-X	G 3/8	2	18	15	13.5
RVE-R1/2-X	G 1/2	2	23	17	12

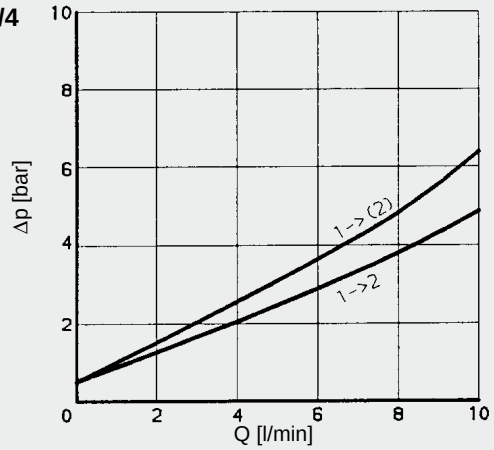
PERFORMANCE

Pressure drops, dependent on flow rate
Measured at ν **= 34 mm²/s**
and T_{oil} = 46°C

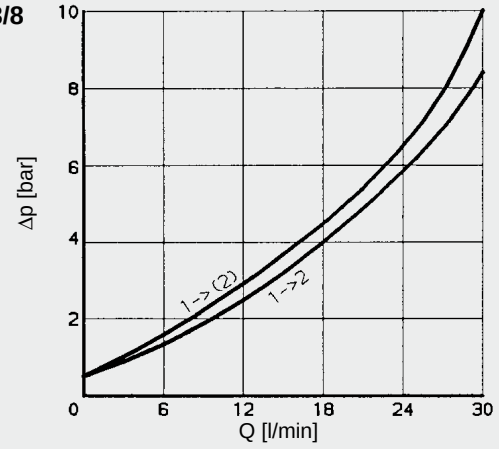
RVE - R 1/8



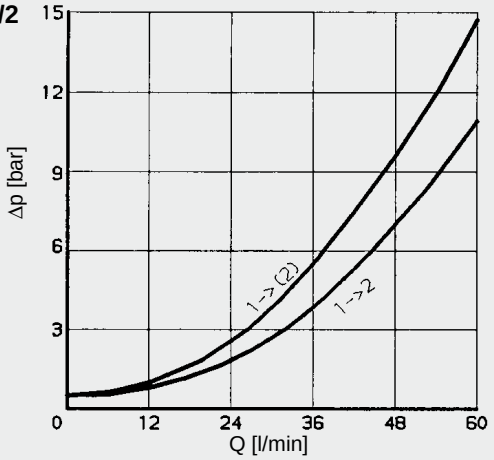
RVE - R 1/4



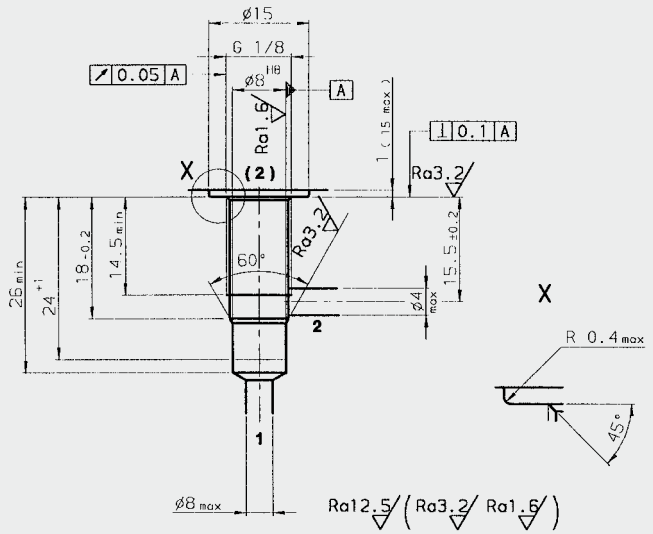
RVE - R 3/8



RVE - R 1/2

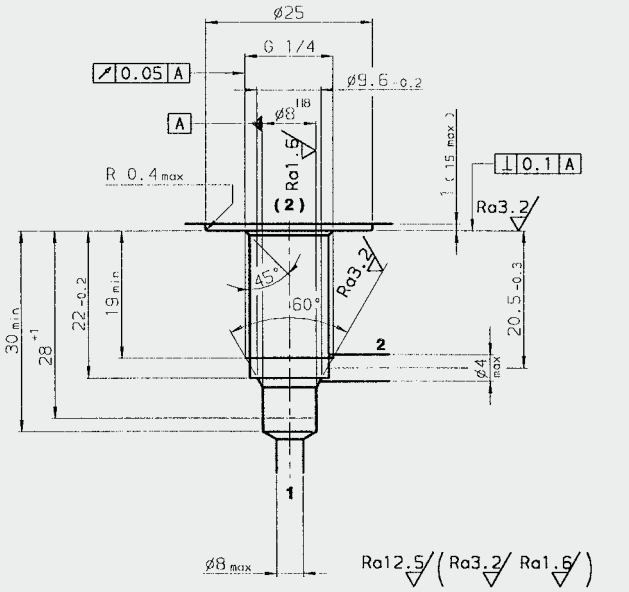


CAVITY
04020 (RVE-R 1/8)



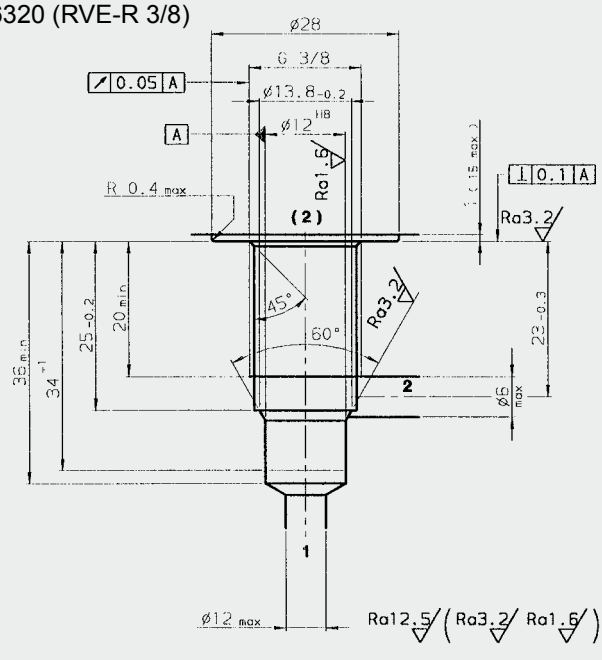
Millimeter
Subject to technical modifications

CAVITY
04220 (RVE-R 1/4)



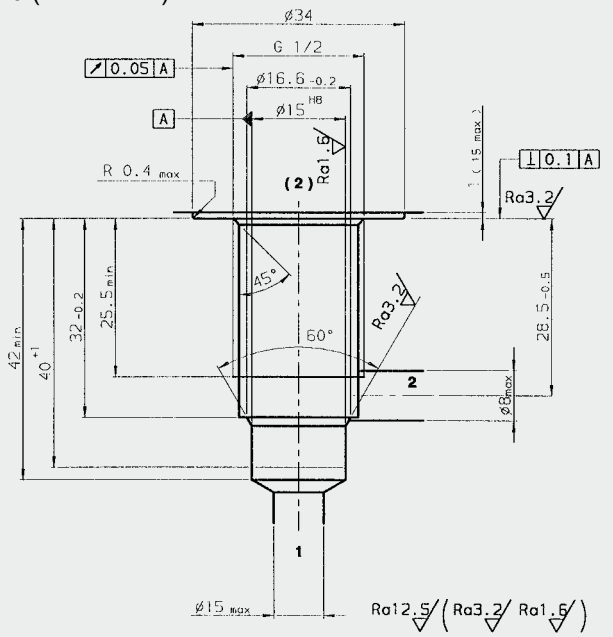
Millimeter
Subject to technical modifications

CAVITY
06320 (RVE-R 3/8)



Millimeter
Subject to technical modifications

CAVITY
08220 (RVE-R 1/2)



Millimeter
Subject to technical modifications

Form tools

Tool	Part No./Cavity			
	04020	**04220**	**06320**	**08220**
Countersink MK1	169549	169563	169550	158735
Reamer MK1	1000747	1000747	1014203	1000768
Tap	1002671	1002670	1002668	1002667
Plug gauge	174850	172742	172826	158736

NOTE
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D-66280 Sulzbach/Saar
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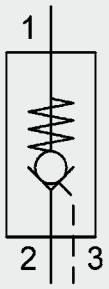


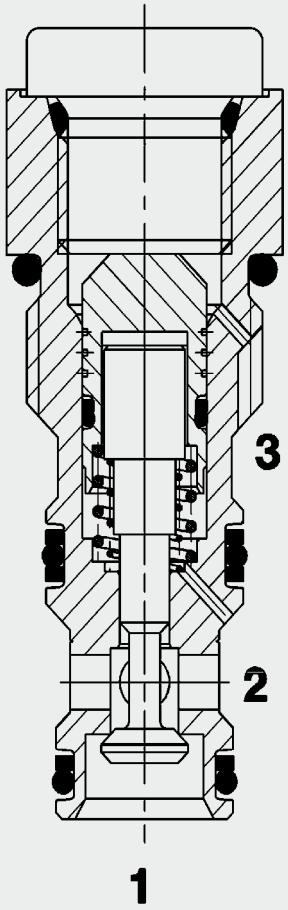
38 l/min
420 bar

Check Valve Pilot-to-Open Poppet Type, Direct-Acting SAE-08 Cartridge – 420 bar

UNF

RP08A-01

FUNCTION



FEATURES

- Corrosion protection of external surfaces through blue zinc-plating or thermochemical Nitrotec coating (black)
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- Spring return in the pilot stage for safe valve operation
- Quick response
- Low leakage design
- Optional pilot piston seal

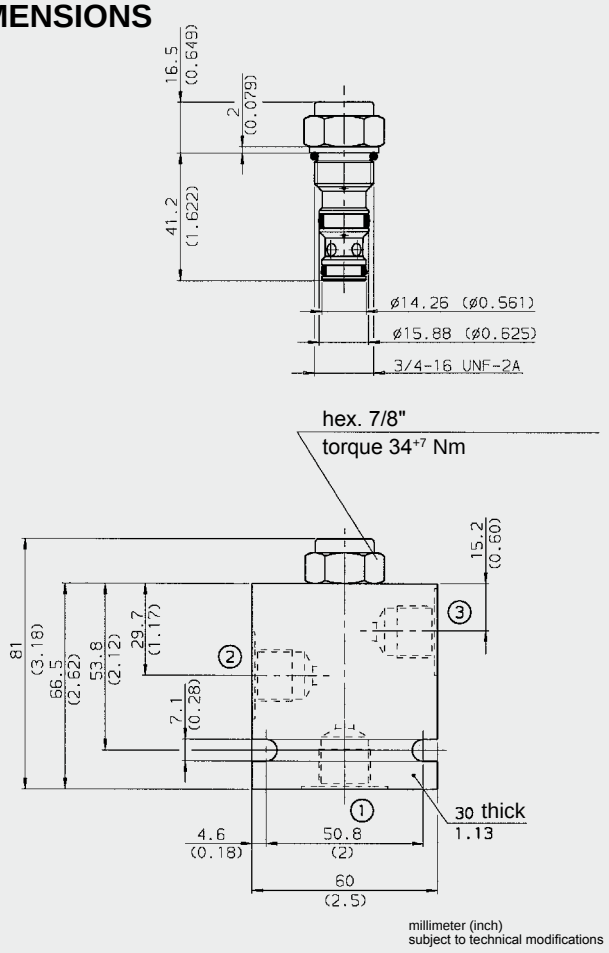
SPECIFICATIONS

Operating pressure:	max. 420 bar	
Nominal flow:	max. 38 l/min	
Leakage:	leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Leakage 2→3:	< 5 l/min at 420 bar (40 °C HLP 46) For versions without O-ring on pilot piston	
Cracking pressure	1.00 bar	
Pilot ratio:	3:1 ; 4:1	
Media operating temperature range:	-30 °C to +100 °C	
Ambient temperature range:	-30 °C to +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	7.4 to 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	steel
	Pilot:	steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
Cavity:	FC08-3	
Weight:	0.088 kg	

The pilot-to-open check valve RP08A is a direct-acting, spring-loaded poppet valve.
The valve allows flow from port 2 to 1. In the opposite direction, the poppet is pressed onto the seat and blocks flow.
If a sufficiently high control pressure is applied at port 3, the poppet is lifted from the valve seat and oil flows from 1 to 2.
The necessary pilot pressure at port 3 is dependent on the pressures across port 1 and 2.

The following applies: $p_{control} = \frac{p_{port\,1} - p_{port\,2}}{\varphi} + p_{port\,2}$

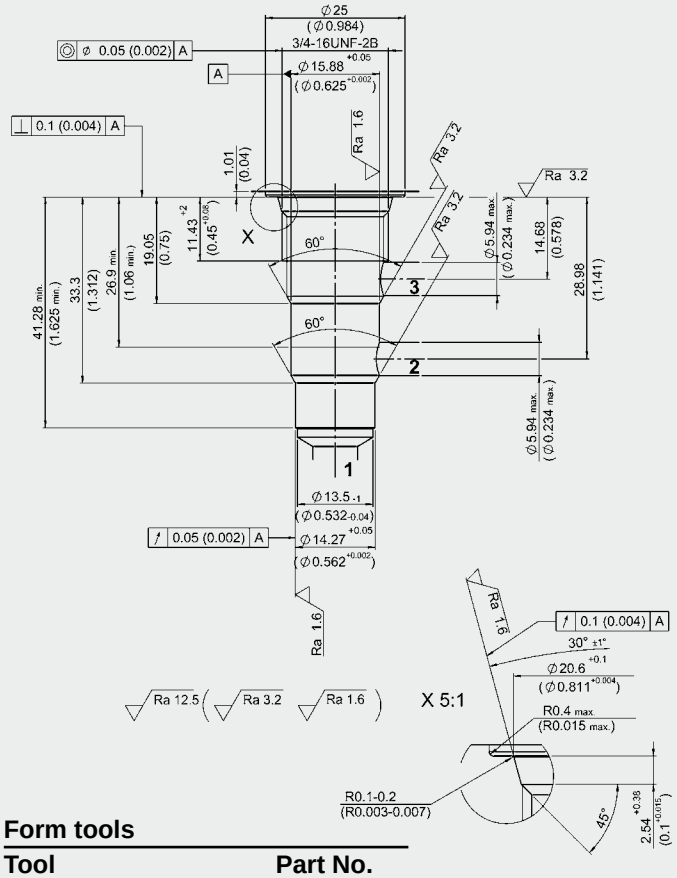
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-3



Form tools

Tool	Part No.
Countersink FC08-3	175644
Reamer FC08-3	175645

millimeter (inch)
subject to technical modifications

MODEL CODE

RP08A-01 - C - **NS** - **15**- 4

Basic model
Check valve, pilot-to-open UNF

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR
NS = NBR with piston seal
V = FKM
VS = FKM with piston seal

Cracking pressure
15 = 1 bar (15 PSI)

Pilot ratio
3 = 3:1
4 = 4:1

Standard models

Model code	Part No.
RP08A-01-C-N-15-3	561916
RP08A-01-C-N-15-4	561918
RP08A-01-C-NS-15-3	561917
RP08A-01-C-NS-15-4	561919

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH083-SB3	560922	Steel, zinc-plated	G3/8	420 bar
FH083-AB3	3011427	Aluminium, anodized	G3/8	210 bar

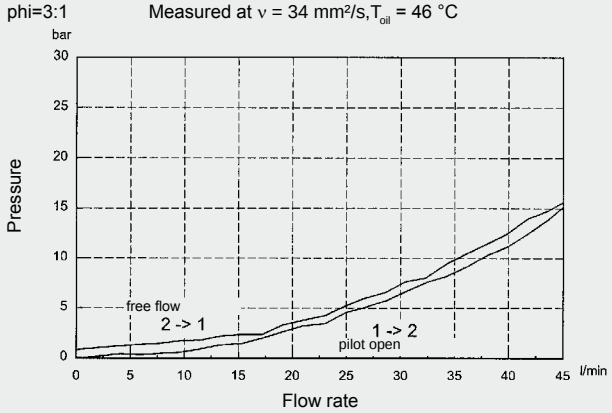
Other models on request

Seal kits

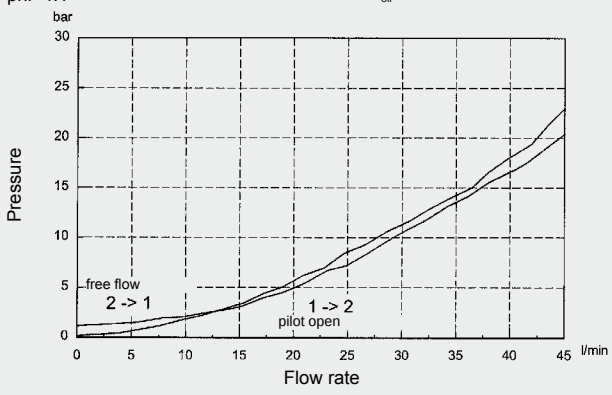
Code	Part No.
Seal kit FS083-N	3054795
Seal kit FS083-V	2591059

PERFORMANCE

phi=3:1 Measured at ν = 34 mm²/s, T_{oil} = 46 °C



phi=4:1 Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
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Fax: 0 68 97 /509-598
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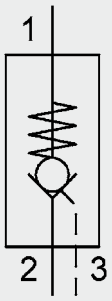


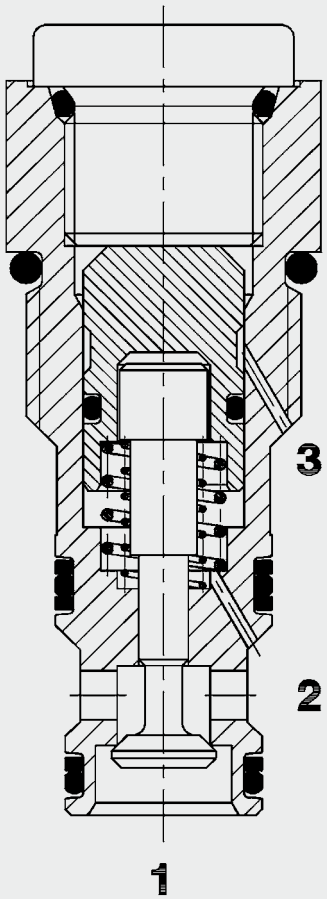
60 l/min
420 bar

Check Valve
Poppet Type, Pilot-to-Open
Direct-Acting
SAE-10 Cartridge – 420 bar

UNF

RP10A-01

FUNCTION



FEATURES

- External surfaces zinc-plated and corrosion proof
- Hardened and ground internal valve components to ensure minimal wear and to extend service life
- Low pressure drop due to CFD optimized flow path
- Spring return at pilot stage for safe valve operation
- Quick response
- Low leakage design
- Optional sealed pilot

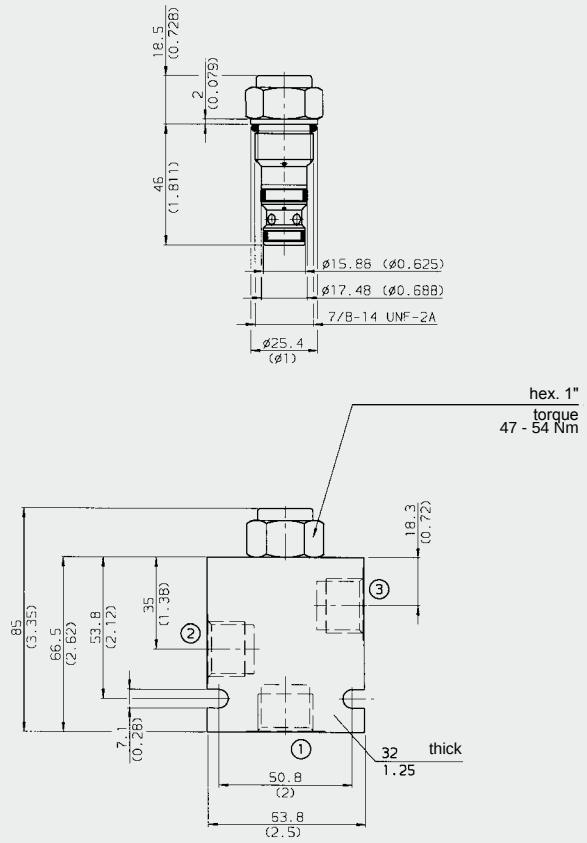
SPECIFICATIONS

Operating pressure:	max. 420 bar	
Nominal flow:	max. 60 l/min	
Internal leakage:	0.1 cm³/min at 420 bar	
Cracking pressure:	1.00 bar	
Pilot ratio:	3 = 3:1 4 = 4:1	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	FC10-3	
Weight:	0.14 kg	

The pilot-to-open check valve RP10A is a direct-acting, spring-loaded poppet valve. There is free flow from port 2 to port 1. In the opposite direction, the poppet is pressed onto the seat and blocks flow. If a sufficiently high control pressure builds at port 3, the poppet is lifted from the valve seat and oil flows from 1 to 2. The necessary pilot pressure at port 3 is dependent on the pressure across port 1 and 2.

The following applies: $p_{control} = \frac{p_{port\,1} - p_{port\,2}}{\varphi} + p_{port\,2}$

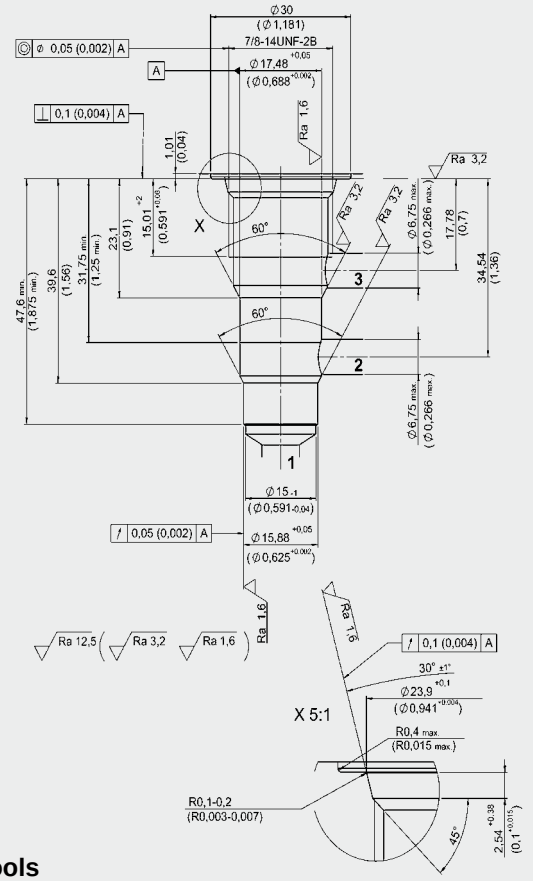
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC10-3



Form tools

Tool	Part No.
Countersink FC10-3	176282
Reamer FC10-3	176283

millimeter (inch)
subject to technical modifications

MODEL CODE

RP10A-01 – C – NS – 15 – 3

Basic model
Check valve UNF

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR
NS = NBR with piston seal
V = FKM
VS = FKM with piston seal

Cracking pressure
1 bar (15 PSI)

Pilot ratio
3 = 3:1
4 = 4:1

Standard models

Model code	Part No.
RP10A-01-C-N-15-3	561206
RP10A-01-C-N-15-4	561208
RP10A-01-C-NS-15-3	561207
RP10A-01-C-NS-15-4	561209

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH103-SB4	3037697	Steel, zinc-plated	G1/2	420 bar
FH103-AB4	3038092	Aluminium, clear anodized	G1/2	210 bar

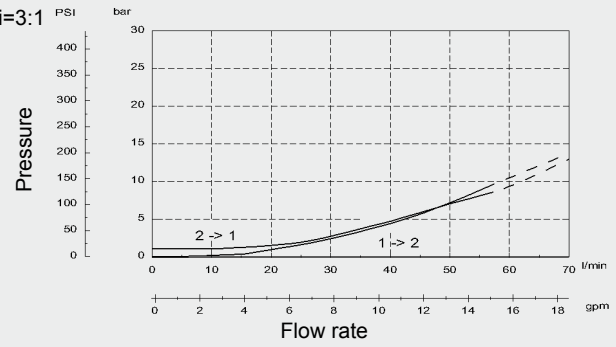
Seal kits

Code	Material	Part No.
FS103-N Seal kit	NBR	3071274
FS103-V Seal kit	FKM	3049443

PERFORMANCE

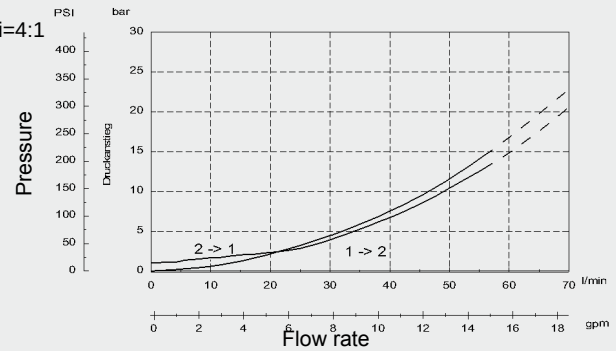
Measured at ν = 34 mm²/s, T_{oil} = 46 °C

phi=3:1



Measured at ν = 34 mm²/s, T_{oil} = 46 °C

phi=4:1



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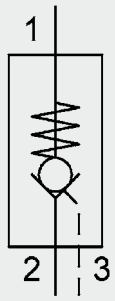


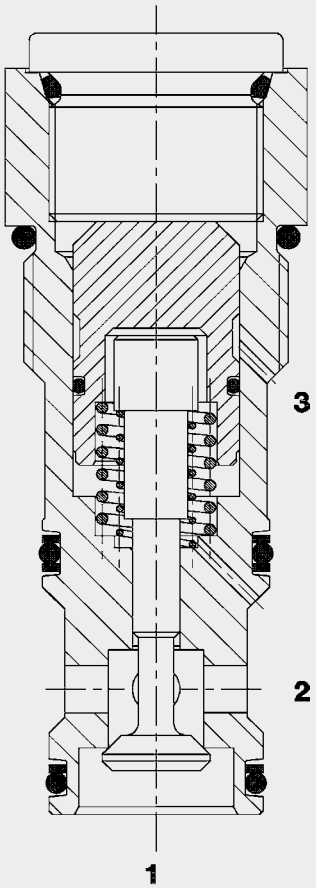
150 l/min
420 bar

Check Valve Pilot-to-Open Poppet Type, Direct-Acting SAE-16 Cartridge – 420 bar

UNF

RP16A-01

FUNCTION



The pilot-to-open check valve RP16A is a direct-acting, spring-loaded poppet valve.
The valve allows flow from port 2 to 1. In the opposite direction, the poppet is pressed onto the seat and blocks flow.
If a sufficiently high control pressure is applied to port 3, the poppet is lifted from the valve seat and oil flows from 1 to 2.
The necessary pilot pressure at port 3 is dependent on the pressures across port 1 and 2.

The following applies: $p_{control} = \frac{p_{port\,1} - p_{port\,2}}{\varphi} + p_{port\,2}$

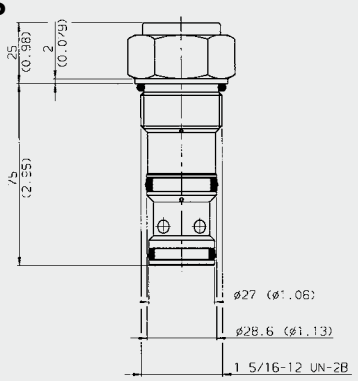
FEATURES

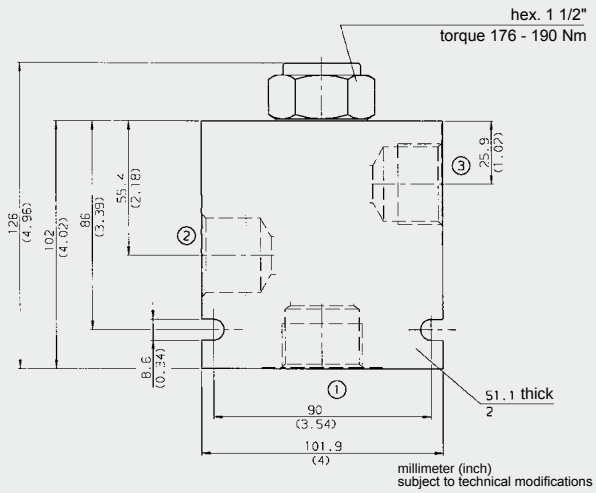
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- Spring return in the pilot stage for safe valve operation
- Quick response
- Low leakage design
- Optional pilot piston seal

SPECIFICATIONS

Operating pressure:	max. 420 bar	
Nominal flow:	max. 150 l/min	
Internal leakage:	max. 0.1 cm³/min at 420 bar (Version N/V)	
Cracking pressure:	1.00 bar	
Pilot ratio:	3 = 3:1 4 = 4:1	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	FC16-3	
Weight:	0.51 kg	

DIMENSIONS





MODEL CODE

RP16-A01 – C – NS – 15 – 3

Basic model
Check valve, pilot-to-open UNF

Body and Ports*
C = cartridge only
SB8 = G1 ports, steel body
AB8 = G1 ports, aluminium body
Versions with line bodies on request

Seals
N = NBR
NS = NBR with piston seal
V = FKM
VS = FKM with piston seal

Cracking pressure
1.00 bar (15 PSI)

Pilot ratio
3 = 3:1
4 = 4:1

Standard models

Model code	Part No.
RP16A-01-C-N-15-3	561996
RP16A-01-C-N-15-4	561998
RP16A-01-C-NS-15-3	561997
RP16A-01-C-NS-15-4	561999

*Standard in-line bodies

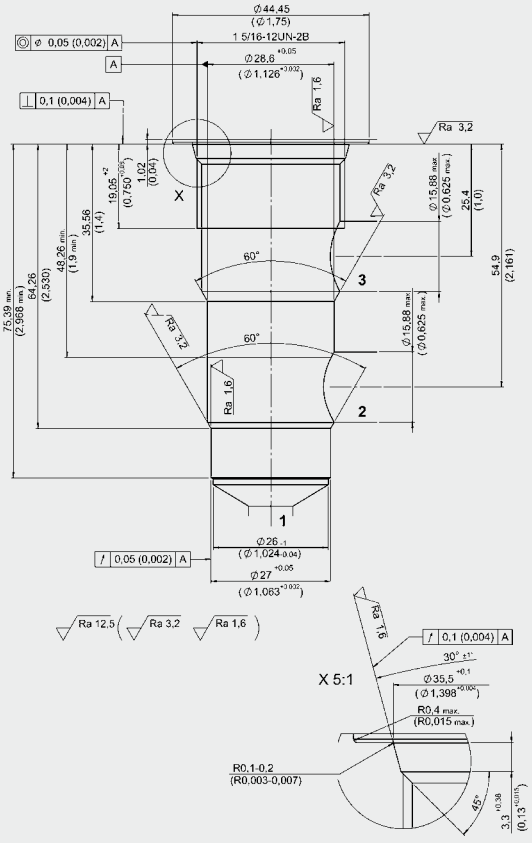
Code	Part No.	Material	Ports	Pressure
FH163-SB8	3036257	Steel, zinc-plated	G1	420 bar
FH163-AB8	3037208	Aluminium, anodized	G1	210 bar

Seal kits

Code	Part No.
FS163-N seal kit	3071303
FS163-V seal kit	3071304

CAVITY

FC16-3



Form tools

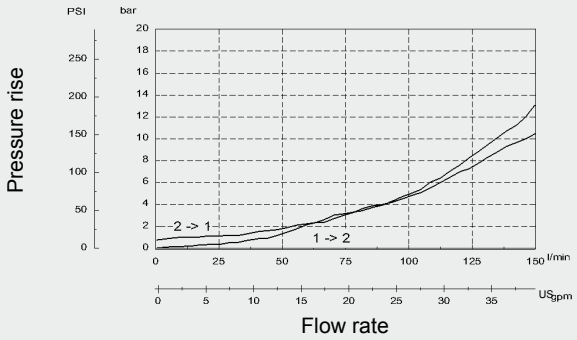
Tool	Part No.
Countersink FC16-3	176375
Reamer FC16-3	176376

millimeter (inch)
subject to technical modifications

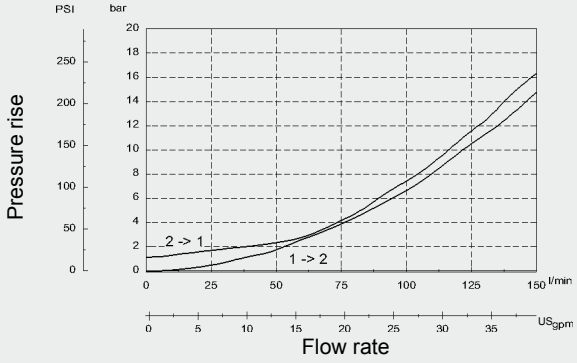
PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C

phi=3:1



phi=4:1



NOTE

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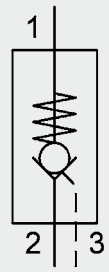
Subject to technical modifications.

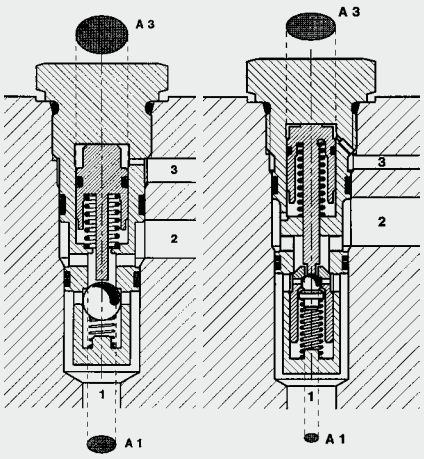
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

Check valve
Poppet Type, Pilot-to-Open
Cartridge – 350 bar
ERVE 08021, ERVE 16021 and ERVE 20021



Up to 300 l/min
Up to 350 bar

FUNCTION



(direct-operated) (two-stage)

The pilot-to-open check valve ERVE 08021 is a direct-acting poppet valve. Its function is to hold the consumer in position leak-free (5 drops per minute). The valve allows flow from port 2 to port 1. In the opposite direction, the ball is pressed onto the seat by the closing spring and the pressure at port 1, and blocks flow from 1 to 2. If a sufficiently high control pressure is introduced at port 3, the ball is pressed against the closing spring and oil flows from 1 to 2. In this case port 2 must not be pressurized.

The check valves ERVE 16021 and ERVE 20021 function according to the same principle but with first stage decompression. The first stage only opens when the control pressure is introduced providing damped relief of the pressurized fluid. A further stroke of the control piston then causes the main stage to open, permitting flow from 1 to 2.

FEATURES

- To prevent creeping of loaded cylinders which are controlled by spool valves
- To prevent uncontrolled movement of loaded consumers
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop by CFD optimized flow path
- Consumer is held in position leak-free
- External surfaces zinc-plated and corrosion-proof

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	ERVE 08021	max. 30 l/min
	ERVE 16021	max. 150 l/min
	ERVE 20021	max. 300 l/min
Cracking pressure:	1 bar (from port 2 to port 1)	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Control volume:	ERVE 08021	0.3 cm³
	ERVE 16021	1.55 cm³
	ERVE 20021	3.3 cm³
Pilot ratio φ:	$\varphi = \frac{A3}{A1}$	
	ERVE 08021-01X	φ = 3.4
	ERVE 16021-01X	φ = 13.0
	ERVE 20021-01X	φ = 13.4
Control pressure p_{ctrl}:	Pressure required to cancel shut-off function of the valve across port 3 (flow from 1 to 2) p_2 = pressure across port 2 p_1 = pressure across port 1 Δp = pressure differential from performance curves	

	Cancellation main stage	Cancellation first stage	Keep open
ERVE 08021-01X	$p_{ctrl} = 0.3 \times p_1 + 2.5$ bar	not available	$p_{ctrl} = p_2 + \Delta p + 4.5$ bar
ERVE 16021-01X	$p_{ctrl} = 0.55 \times p_1 + 2.5$ bar	$p_{ctrl} = 0.08 \times p_1 + 3$ bar	$p_{ctrl} = p_2 + \Delta p + 5.0$ bar
ERVE 20021 01X	$p_{ctrl} = p_1 + 3.5$ bar	$p_{ctrl} = 0.08 \times p_1 + 4$ bar	$p_{ctrl} = p_2 + \Delta p + 6.0$ bar

Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 380 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_{d:}$	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard)
	Back-up rings:	PTFE
Cavity:	08021, 16021, 20021	
Weight:	ERVE 08021	0.1 kg
	ERVE 16021	0.45 kg
	ERVE 20021	1.4 kg

MODEL CODE

ERVE – R½ – 01 X

Basic model
Pilot-to-open check valve

Size
R½, R1 and R1½

Type
01 = standard pilot ratio φ 3.4 (08021) and 13.0 (16021) and 13.4 (20021) - phosphated
06 = pilot ratio φ 2.7 for (08021), hardened seat, zinc-plated
11 = pilot ratio φ 6 for (08021), phosphated
18 = pilot ratio φ 3.4 for (08021), nickel-plated, cracking pressure p_o = 11 bar

Series
(determined by manufacturer)

Standard models

Model code	Part No.
ERVE 08021-01X	710000
ERVE 16021-01X	710001
ERVE 20021 -01X	710002

Other models on request

Standard in-line bodies

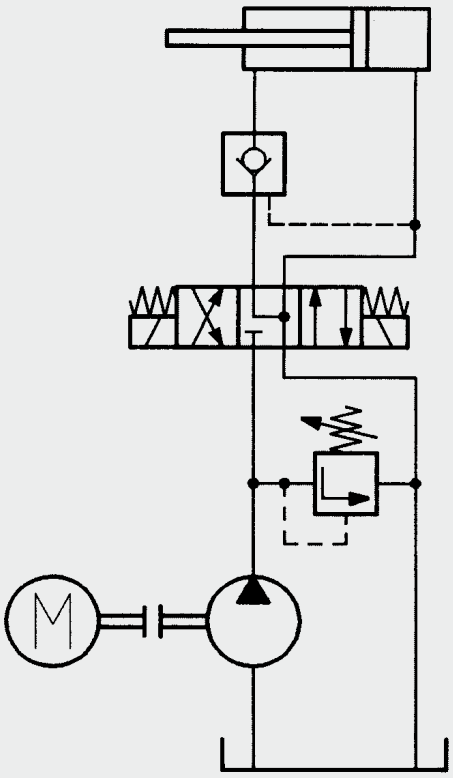
Code	Part No.	Material	Ports	Pressure
R08021-01X-01	275033	Steel, zinc-plated	G3/8, G1/4	420 bar
R08021-10X-01	283841	Steel, zinc-plated	G3/8, G1/4	420 bar
R16021-01X-01	277051	Steel, zinc-plated	G1, G1/4	420 bar

Other line bodies on request

Seal kits

Code	Part No.
SEAL KIT ERVE 08021...FKM	715394
SEAL KIT ERVE 16021...FKM	715932
SEAL KIT ERVE 20021...FKM	715885

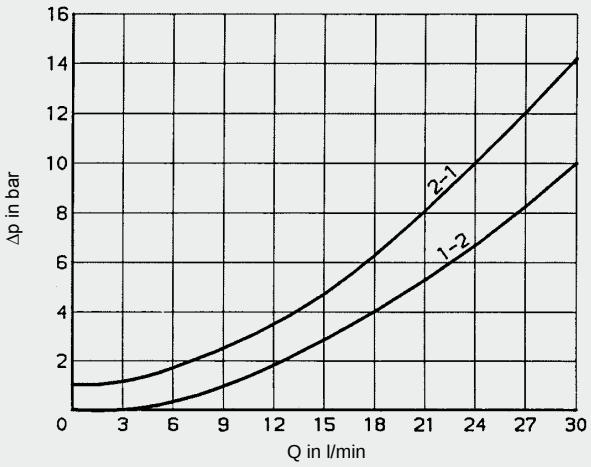
CIRCUIT DIAGRAM EXAMPLE



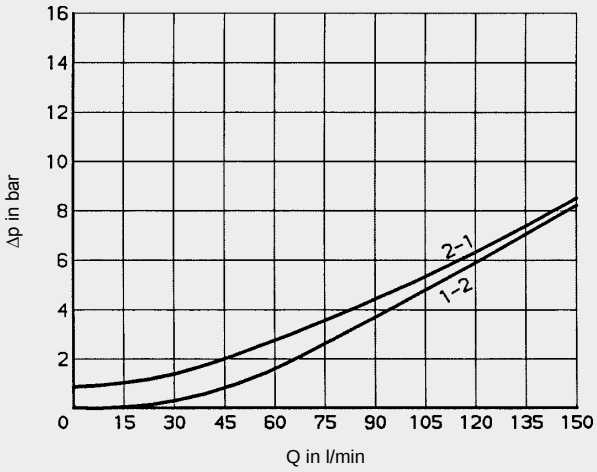
PERFORMANCE

Measured at ν = 36 mm²/s, T_{oil} = 50 °C

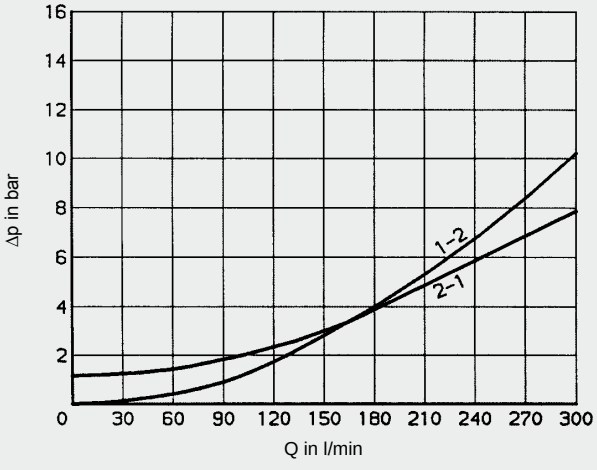
ERVE 08021



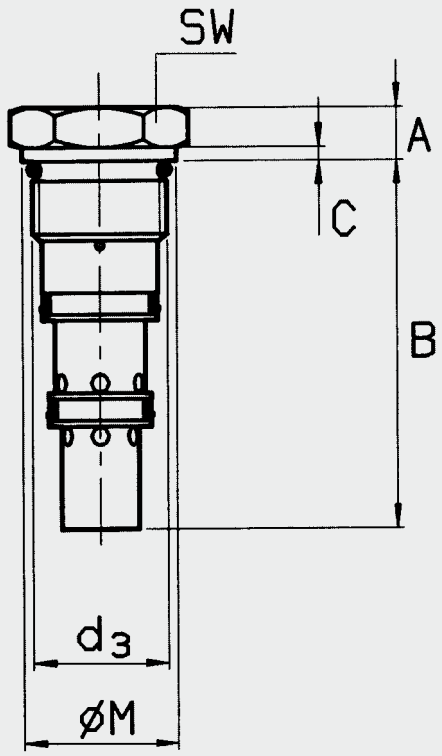
ERVE 16021



ERVE 20021



DIMENSIONS

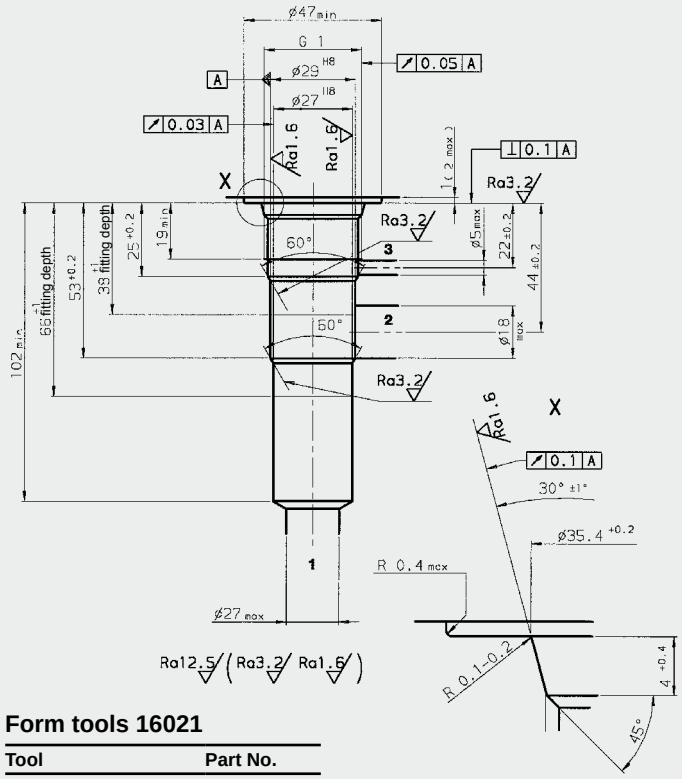


Millimeter
Subject to technical modifications

Nom. size	d3	A	B	C	ØM	SW	Torque
ERVE 08021	G ½	8	56	2	24	24	25^{+5} Nm
ERVE 16021	G 1	16	100	3	40	41	150^{+10} Nm
ERVE 20021	G 1½	20	125	3	54	55	150^{+10} Nm

CAVITY

16021 (ERVE 16021)



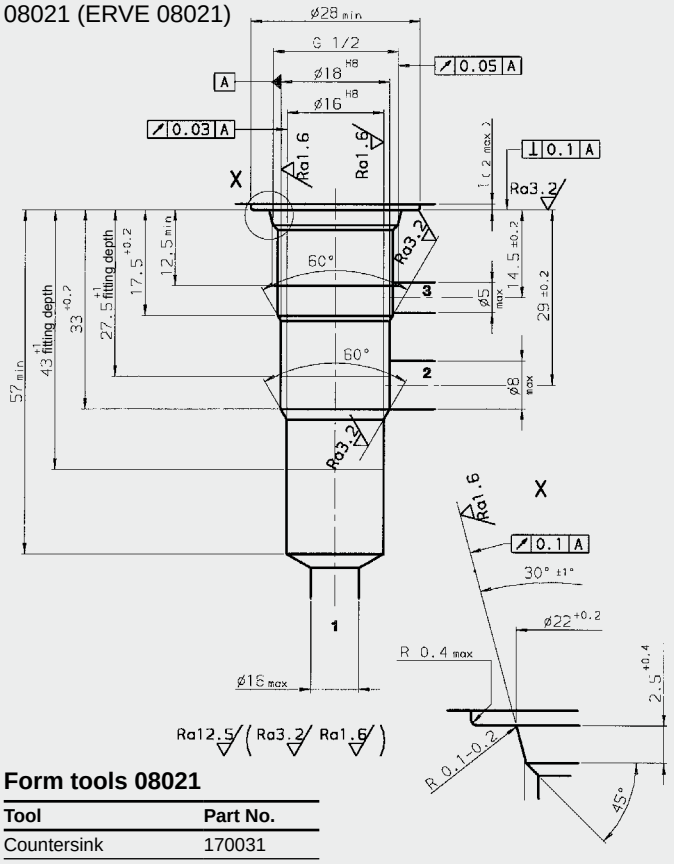
Form tools 16021

Tool	Part No.
Countersink	170035
Reamer	169965
Tap	1002661
Plug gauge	174879

Millimeter
Subject to technical modifications

CAVITY

08021 (ERVE 08021)



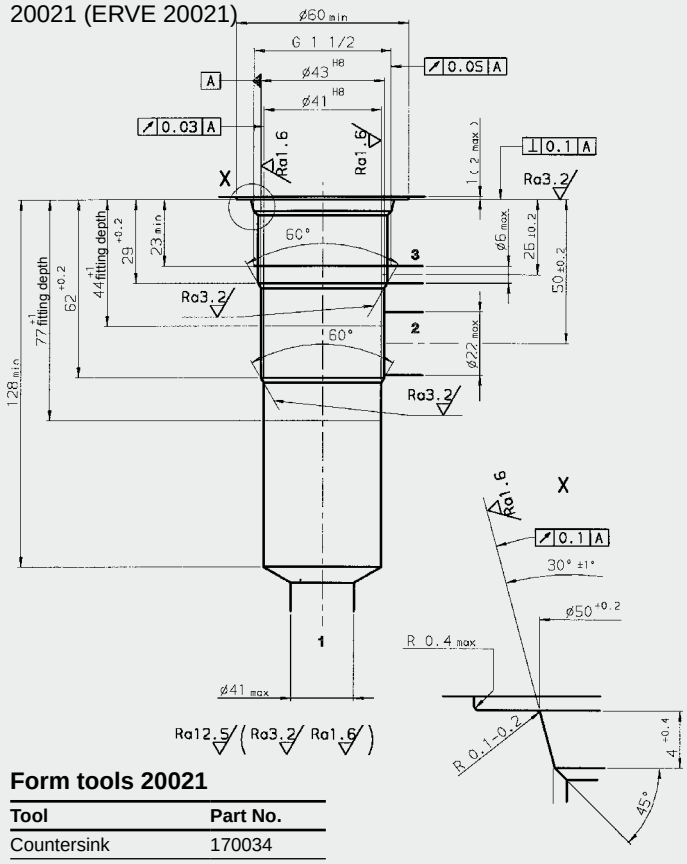
Form tools 08021

Tool	Part No.
Countersink	170031
Reamer	169962
Tap	1002667
Plug gauge	169939

Millimeter
Subject to technical modifications

CAVITY

20021 (ERVE 20021)



Form tools 20021

Tool	Part No.
Countersink	170034
Reamer	169966
Tap	1002524
Plug gauge	174880

Millimeter
Subject to technical modifications

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Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
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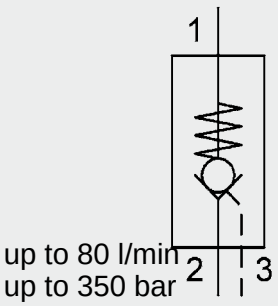
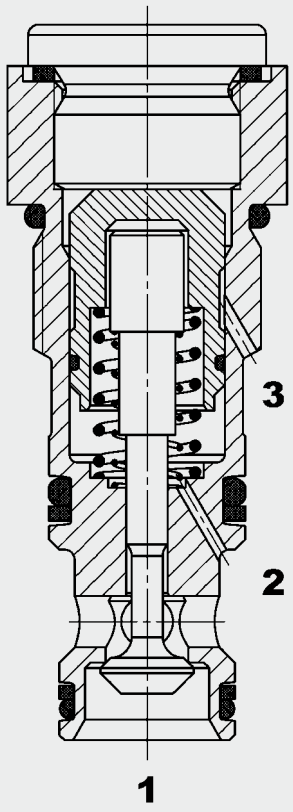
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

Check Valve, Pilot-to-Open Poppet Type, Direct-Acting Metric Cartridge – 350 bar RP10121



up to 80 l/min
up to 350 bar

FUNCTION



The pilot-to-open check valve RP10121 is a direct-acting, spring-loaded poppet valve. There is free flow from port 2 to port 1. In the opposite direction, the poppet is pressed onto the seat and blocks flow. If a sufficiently high control pressure builds at port 3, the poppet is lifted from the valve seat and oil flows from 1 to 2. The necessary pilot pressure at port 3 is dependent on the pressures across port 1 and 2.

The following applies:

$$P_{pilot} = \frac{P_{port1} - P_{port2}}{\varphi} + P_{port2}$$

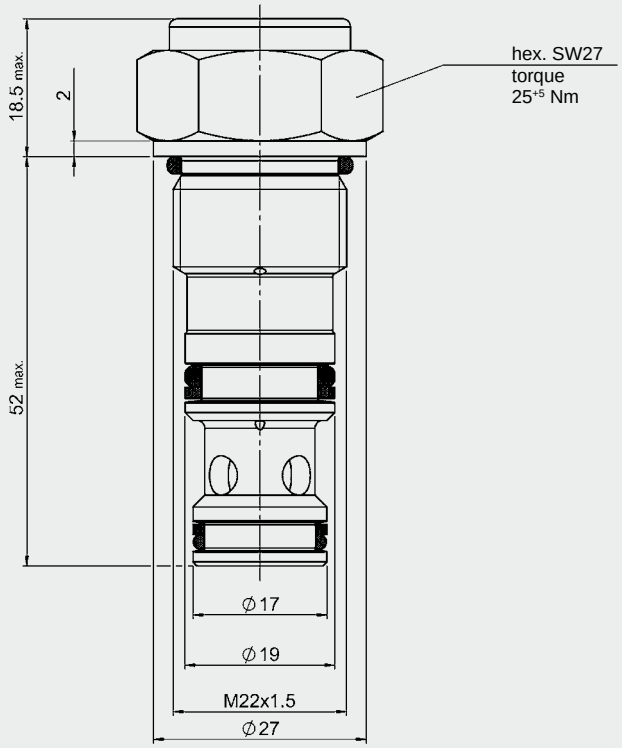
FEATURES

- Main application is to prevent uncontrolled movement or creeping of loaded cylinders and also to isolate sections of the system
- External surfaces zinc-plated and corrosion proof
- Hardened and ground internal valve components to ensure minimal wear and to extend service life
- Low pressure drop due to CFD optimized flow path
- Consumer is held in position with minimum leakage

SPECIFICATIONS

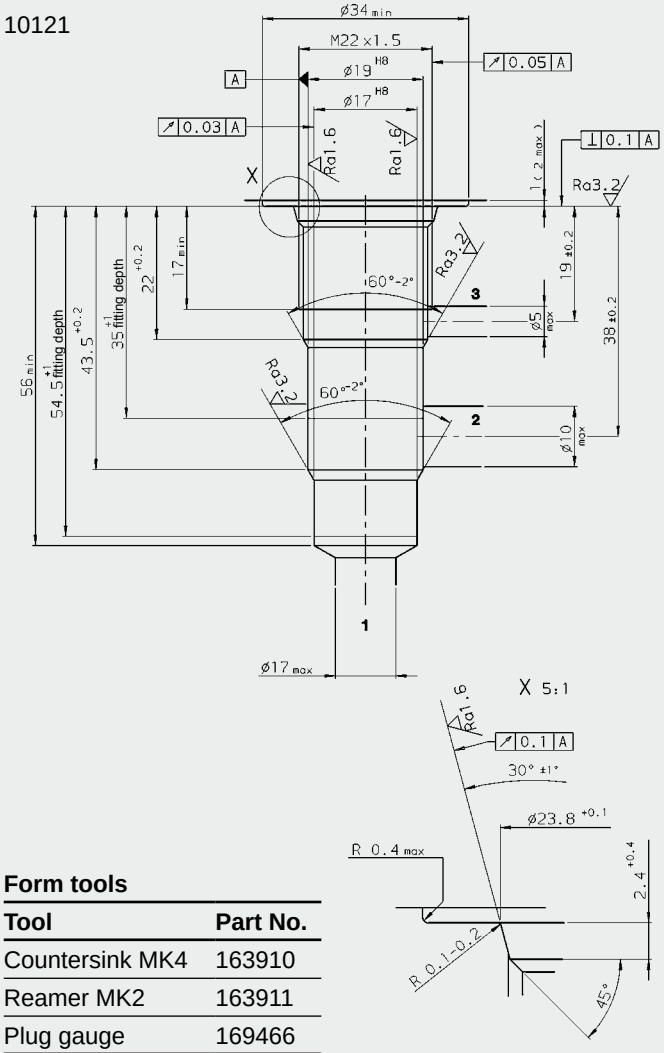
Operating pressure:	max. 350 bar	
Nominal flow:	80 l/min	
Pilot ratio:	φ = 3.5	
Leakage:	Leakage-free	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
MTTF d:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	10121	
Weight:	0.145 kg	

DIMENSIONS



CAVITY

10121



Form tools

Tool	Part No.
Countersink MK4	163910
Reamer MK2	163911
Plug gauge	169466

MODEL CODE

RP 10121 – 01 X

Basic model
Check valve, pilot-to-open

Cavity
10121 = 3-way, metric

Type
01 = standard, surface phosphated, seals FKM
10 = surface phosphated, seals NBR, with O-ring on control piston
12 = with pilot and drain bores
20 = surface phosphated, seals NBR, with O-ring on control piston, cracking pressure 2 bar

Series
(to be determined by manufacturer)

Standard models

Model code	Part No.
RP10121-01X	710006
RP10121-10X	717571
RP10121-12X	3011826
RP10121-20X	3075560

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R10121-01X-01	395236	Steel, zinc-plated	G1/2 G1/4	420 bar
R10121-01X-02	395237	Steel, zinc-plated	M 22x1.5 M 14x1.5	420 bar

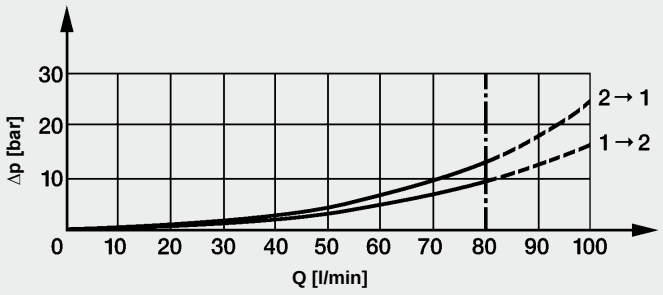
Other housings on request

Seal kits

Code	Part No.
SEAL KIT RP10121-XX0...FKM	560835

PERFORMANCE

Measured at ν = 72 mm²/s, T_{oil} = 30 °C



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D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
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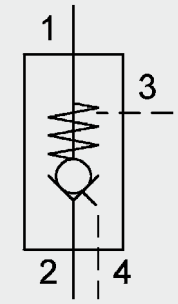
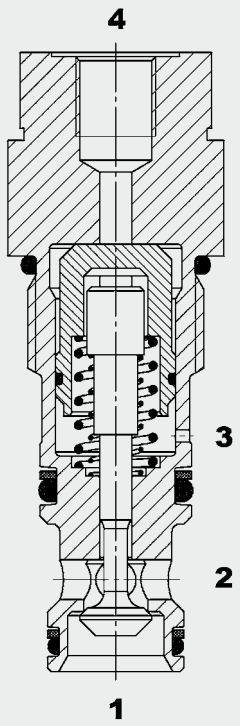
E-Mail: flutec@hydac.com



Up to 80 l/min
Up to 350 bar

Check Valve, Pilot-to-Open Poppet Type, Direct-Acting with Drain Port Metric Cartridge - 350 bar RPL10121

FUNCTION



The pilot-to-open check valve RPL10121 is a direct-acting, spring-loaded poppet valve with drain port at port 3 and pilot line at port 4 (external).

When there is no flow through the valve, the spring holds the poppet in the closed position. The valve allows flow from port 2 to port 1. In the opposite direction, the poppet is pressed onto the seat and blocks flow. If a sufficiently high control pressure is introduced at port 4, the poppet is lifted from the valve seat and oil can also flow from port 1 to 2. In this case port 3 must not be pressurized.

The following applies:

When P3 and P2 = atmospheric pressure

$$P_{pilot} = \frac{P_{port\ 1}}{\varphi}$$

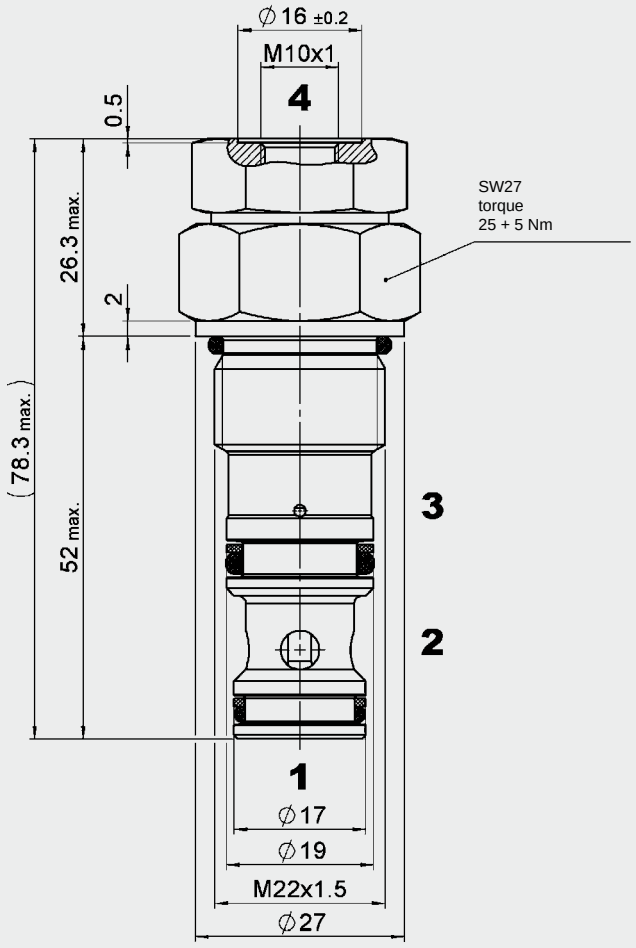
FEATURES

- Main application is to prevent uncontrolled movement or creeping of loaded cylinders and also to shut-off sections of the system
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Consumer is held in position leak-free

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 80 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Pilot ratio:	φ = 3.5	
Media operating temperature range:	min. –20 °C to max. +100 °C	
Ambient temperature range:	min. –20 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 380 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	10121	
Weight:	0.175 kg	

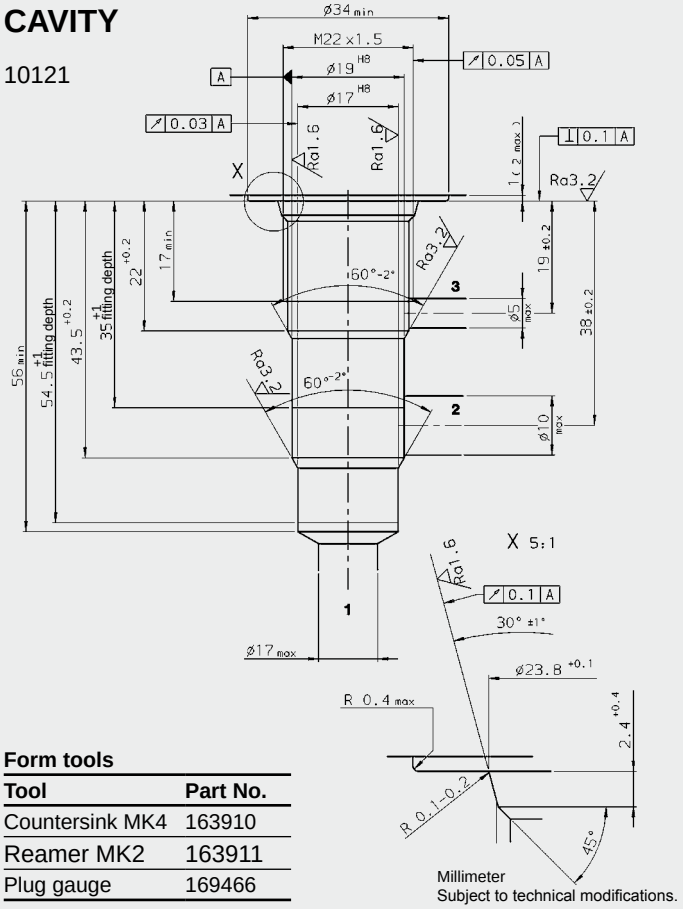
DIMENSIONS



Millimeter
Subject to technical modifications.

CAVITY

10121



Form tools

Tool	Part No.
Countersink MK4	163910
Reamer MK2	163911
Plug gauge	169466

Millimeter
Subject to technical modifications.

MODEL CODE

RPL10121 – 01 X

Basic model
Check valve, pilot-to-open
with separate drain port

Cavity
10121 = 3-way, metric

Type
01 = standard, surface phosphated,
seals FKM
with O-ring on control piston

Series
(determined by manufacturer)

Standard models

Model code	Part No.
RPL10121-010	717778

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R10121-01X-01	395236	Steel, zinc-plated	G ½ / G ¼	420 bar
R10121-01X-02	395237	Steel, zinc-plated	M 22x1.5 / M 14x1.5	420 bar

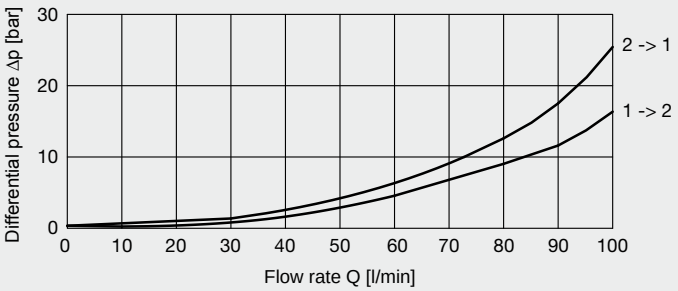
Other line bodies on request

Seal kits

Code	Part No.
SEAL KIT RP10121-XX0...FKM	560835

PERFORMANCE

T_{oil} = 30 °C, ν = 72 mm²/s



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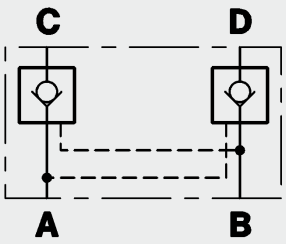
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

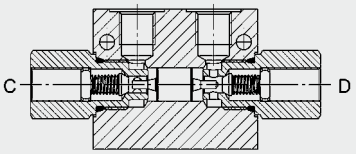


Up to 100 l/min
Up to 350 bar

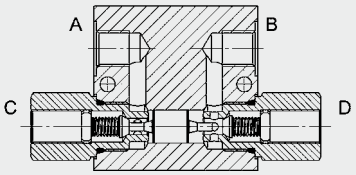
Double Check Valve, Pilot-to-Open, Direct-Acting Inline Mounted RPDR 06 / 08 / 10

FUNCTION

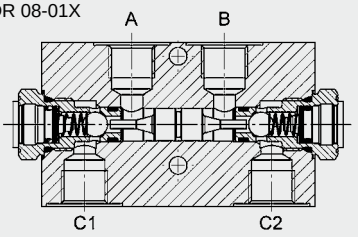
RPDR 06-01X



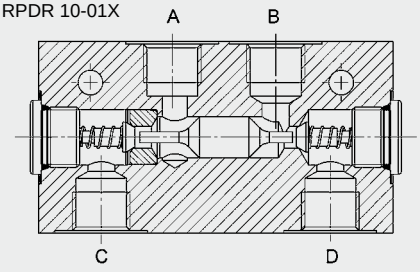
RPDR 06-03X



RPDR 08-01X



RPDR 10-01X



The pilot-to-open double check valve RPDR is inline mounted with two opposing, direct-acting, spring-loaded poppet valves. In the normal position, the closing element is pressed onto the valve seat by the spring and pressure at port C or D, and blocks flow from C to A or from D to B leak-free. If a sufficiently high control pressure is introduced at port A or B, the control piston moves, lifting the closing element off the valve seat. The valve is opened and oil flows from D to B or from C to A.

FEATURES

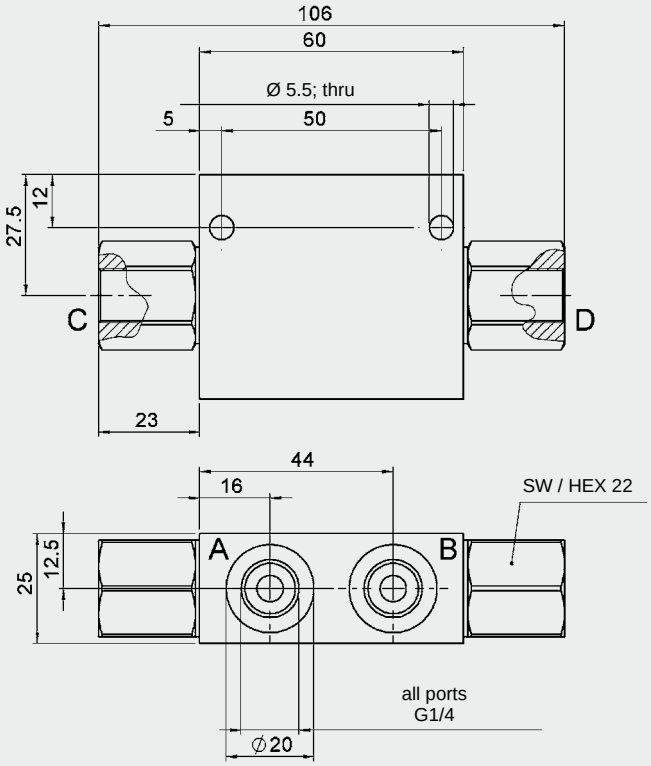
- Main application is to prevent uncontrolled movement or creeping of loaded cylinders, to isolate sections of the system and to control double-acting cylinders
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Consumer is held in position with minimum leakage (A and B must be vented to T)

SPECIFICATIONS

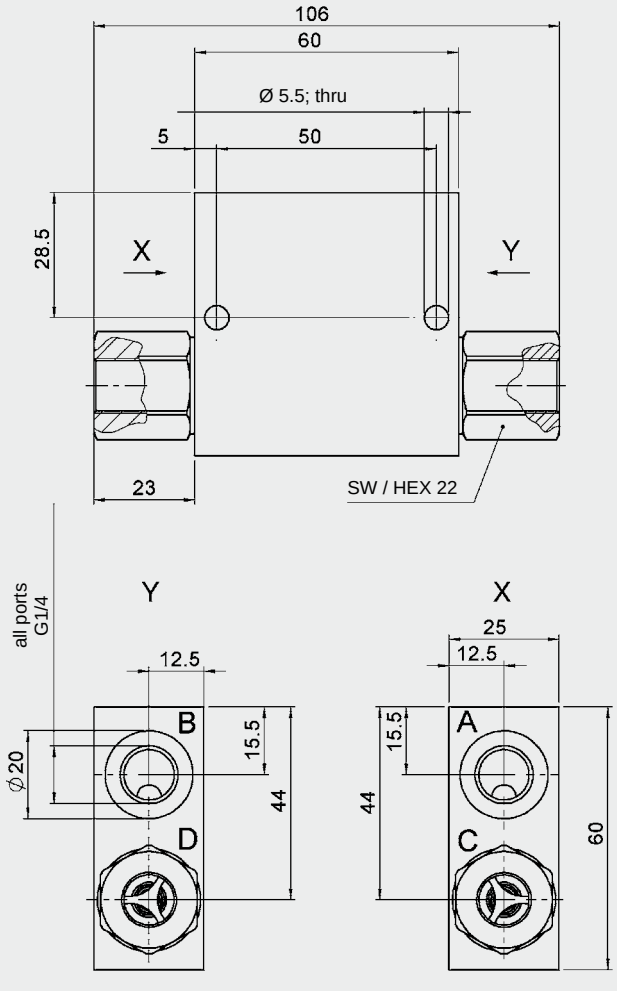
Operating pressure:	RPDR06 = max. 350 bar RPDR08 = max. 210 bar RPDR10 = max. 350 bar	
Nominal flow:	RPDR06 = max. 30 l/min RPDR08 = max. 40 l/min RPDR10 = max. 100 l/min	
Pilot ratio:	φ = 1 : 4 for RPDR06 φ = 1 : 4 for RPDR08 φ = 1 : 3.5 for RPDR10	
Leakage:	Leak-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. –20 °C to max. +80 °C	
Ambient temperature range:	min. –20 °C to max. +80 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard)
	Back-up rings:	PTFE
Weight:	RPDR06-01 0.61 kg RPDR06-03 0.78 kg RPDR08 1.15 kg RPDR10 2.47 kg	

DIMENSIONS

RPDR 06-01X

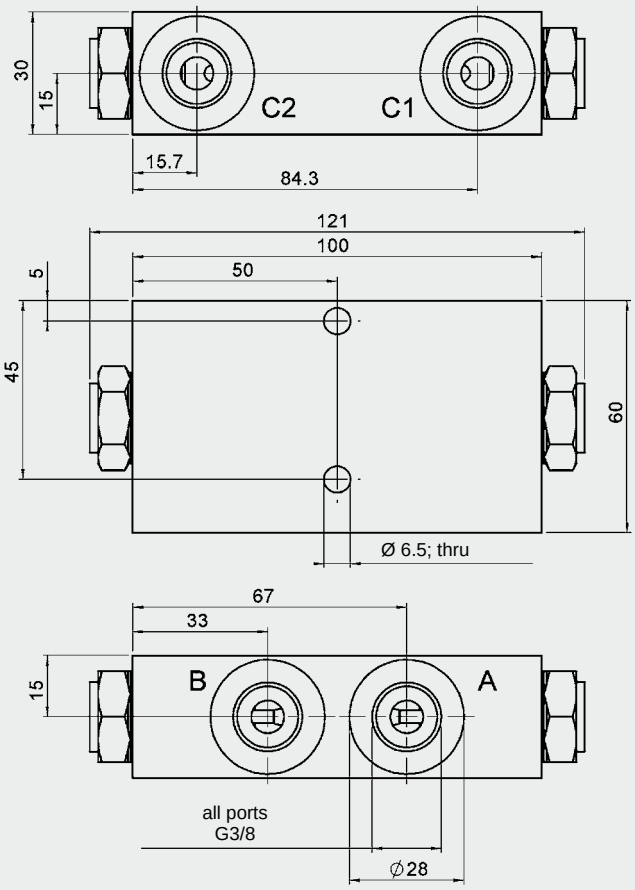


RPDR 06-03X

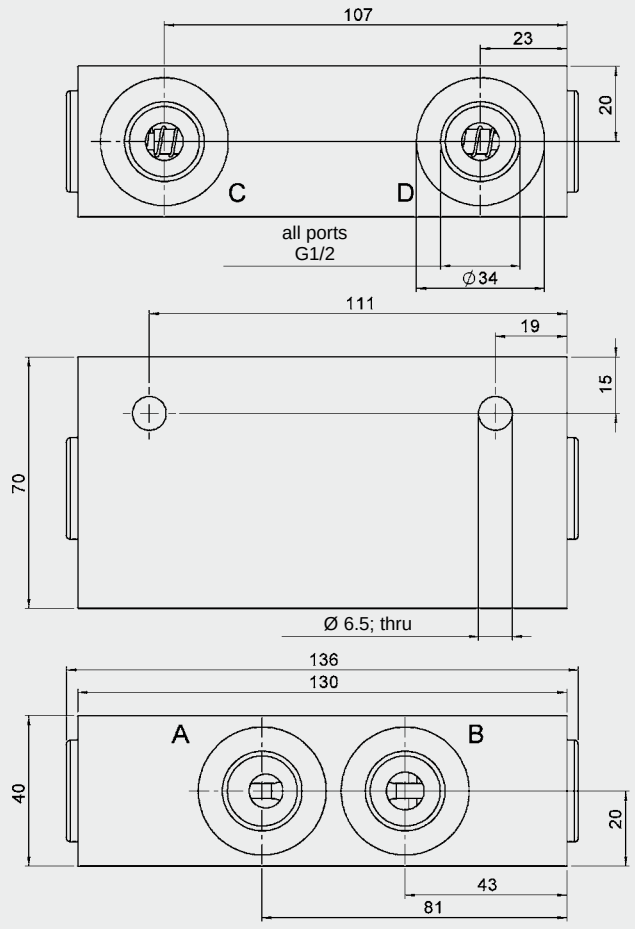


Millimeter
Subject to technical modifications.

RPDR 08-01X



RPDR 10-01X



Millimeter
Subject to technical modifications.

MODEL CODE

RPDR 06 – 01 X – 0.5

Basic model
Double check valve,
pilot-to-open

Size
06 = size 6
08 = size 8
10 = size 10

Type
01 = standard (line body: zinc-plated, seals: Viton, inline ports: size 10: G 1/2, size 06: G 1/4)
02 = (only size 10) line body: zinc-plated, seals: Viton, inline ports: radial M18x1.5
03 = (only size 06) line body: zinc-plated, G 1/4
10 = (only size 10) line body: zinc-plated, seals: Viton, inline ports: ports XGE with threaded pipe connections
Other types on request

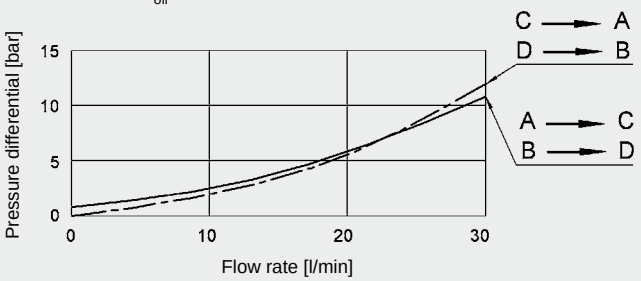
Series
(determined by manufacturer)

Cracking pressure
0.5 = 0.5 bar
Other cracking pressures on request

PERFORMANCE

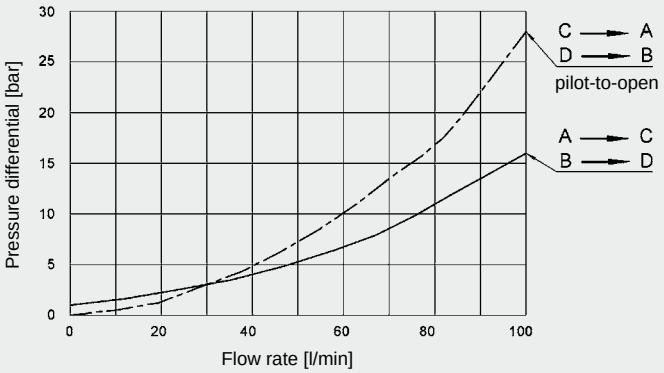
RPDR 06

Measured at T_{oil} = 46 °C, ν = 38 mm²/s



RPDR 10

Measured at T_{oil} = 27 °C, ν = 84 mm²/s



Standard models

Model code	Part No.
RPDR06-01X-0.5	552421
RPDR06-01X-5	554094
RPDR06-03X-0.5	3059561
RPDR08-01X-0.5	3128981
RPDR10-01X-1	395769
RPDR10-02X-1	3081412
RPDR10-10X-1	557868

Other models on request

NOTE
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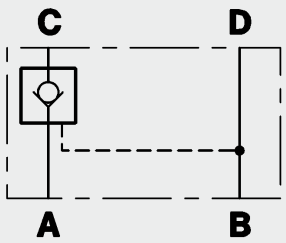
Subject to technical modifications.

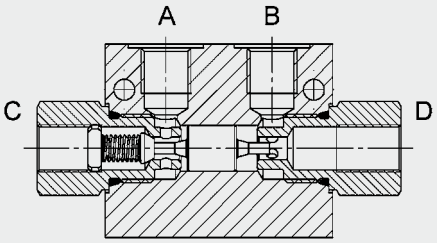
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com



Up to 30 l/min
Up to 350 bar

Single Check Valve, Pilot-to-Open Direct-Acting Inline Mounted RPER 06

FUNCTION



The pilot-to-open check valve RPER is an inline mounted, direct-acting, spring-loaded poppet valv. Its function is to hold the consumer in position and the valve is leak-free. The valve allows flow from port A to port C. In the opposite direction, the ball is pressed onto the seat by the closing spring and the pressure at port C, and blocks flow from C to A. If a sufficiently high control pressure is introduced at port B or D, the control piston moves, lifting the ball from the poppet and allows flow from C to A. In this case port A (tank) must not be pressurized.

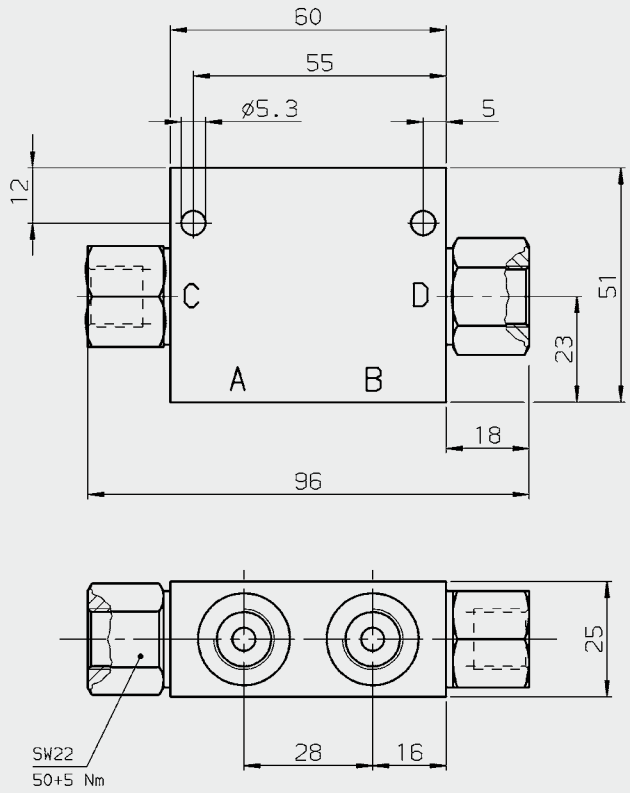
GENERAL

- Main application is to prevent uncontrolled movement or creeping of loaded cylinders, to isolate sections of the system and to control double-acting cylinders
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Consumer is held in position with minimum leakage

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 30 l/min	
Pilot ratio:	φ = 1: 4	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar, C to A)	
Media operating temperature range:	min. –20 °C to max. +100 °C	
Ambient temperature range:	min. –20 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard)
	Back-up rings:	PTFE
Weight:	0.51 kg	

DIMENSIONS



Millimeter
Subject to technical modifications.

MODEL CODE

RPER 06 – 01 X – 0.5

Basic model
Check valve,
pilot-to-open

Size
06 = size 6

Type
01 = standard
(line body, zinc-plated,
seals FKM)

Series
(determined by manufacturer)

Cracking pressure
0.5 = 0.5 bar
Other cracking pressures on request

Standard models

Model code	Part No.
RPER06-011-0.5	3165890

Other models on request

NOTE
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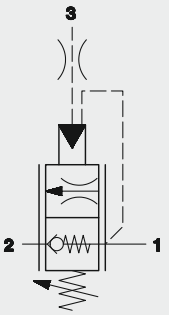
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

Counterbalance Valve Poppet Type, Direct-Acting SAE-08 Cartridge – 350 bar

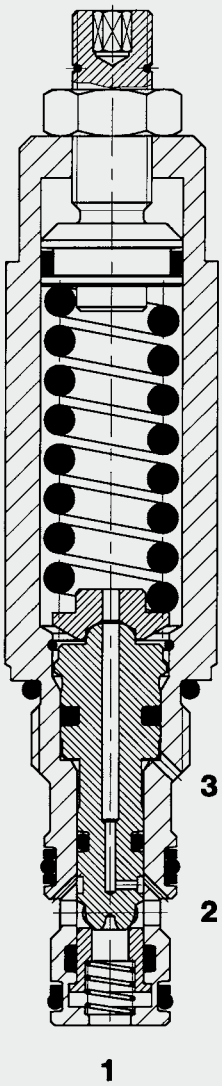
UNF

RS08-01



38 l/min
350 bar

FUNCTION



The counterbalance valve RS08 is a direct-acting poppet valve. Its function is to control the speed of a consumer according to the inlet flow. It also prevents the consumer from overrunning if there are retracting loads and ensures smooth action in consumers. In load-holding applications, it can be used as a hose-break valve.

FEATURES

- External surfaces zinc-plated and corrosion-proof
- Excellent stability throughout the entire flow range
- Adjustable throughout flow range
- Max. stroke limiter
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Sealing between port 2 and port 3 prevents leakage between the ports
- Optional spring ranges up to 350 bar
- Quick response

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 38 l/min	
Setting pressure:	up to 350 bar	
Cracking pressure:	3 bar	
Internal leakage:	max. 0.25 cm³/min at 80% nominal pressure	
Pilot ratio:	3 = 3:1 4 = 4:1	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	FC08-3	
Weight:	0.27 kg	

MODEL CODE

RS08-01 – C – N – 3 500 V 300

Basic model
Counterbalance valve UNF

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Pilot ratio
3 = 3:1
4 = 4:1

Pressure setting range
500 = 350 bar (5000 psi)

Type of adjustment
V = Allen head (hex. 5/32")
H = Knob adjustment
F = Factory preset, non adjustable

Cracking pressure setting
No details = no setting, spring relaxed
300 = 210 bar (3000 psi)
Customer-specific opening pressure on request

Standard models

Model code	Part No.
RS08-01-C-N-3-500V	562797
RS08-01-C-N-4-500V	562798

*Standard in-line bodies

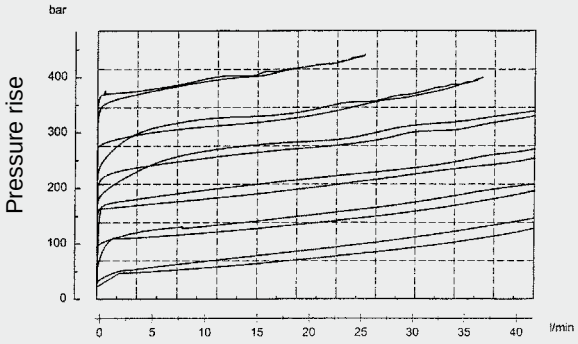
Code	Part No.	Material	Ports	Pressure
FH083-SB3	560922	Steel, zinc-plated	G3/8	420 bar
FH083-AB3	3011427	Aluminium, anodized	G3/8	210 bar

Seal kits

Code	Material	Part No.
FS083-N SEAL KIT	NBR	3054795
FS083-V SEAL KIT	FKM	2591059

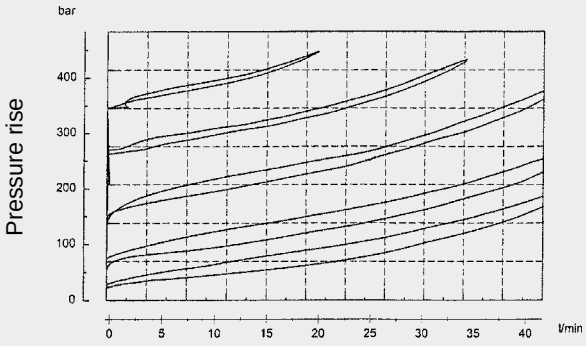
PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C
phi = 3:1



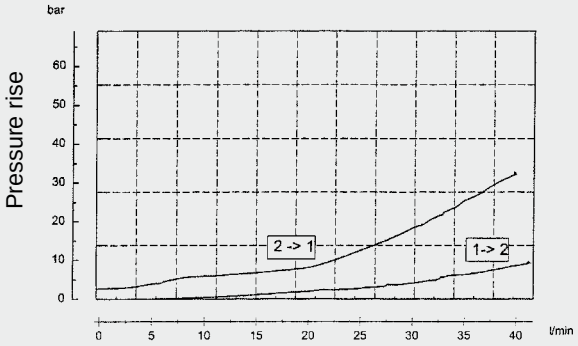
Flow rate

Measured at ν = 34 mm²/s, T_{oil} = 46 °C
phi = 4:1



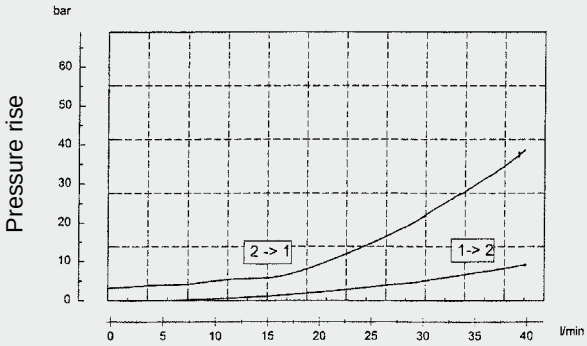
Flow rate

Measured at ν = 34 mm²/s, T_{oil} = 46 °C
phi = 3:1



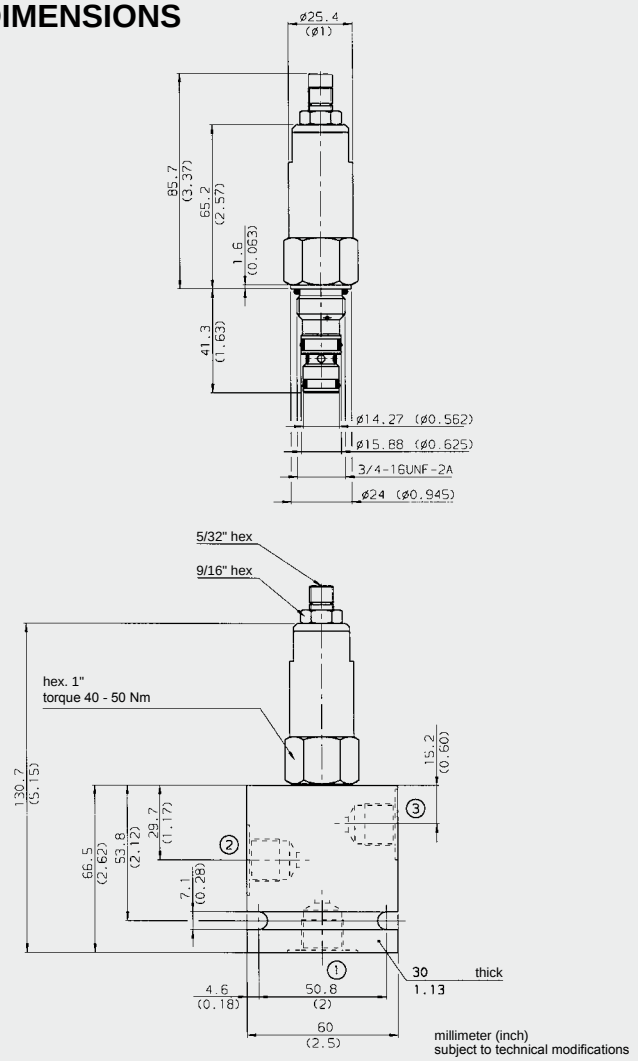
Flow rate

Measured at ν = 34 mm²/s, T_{oil} = 46 °C
phi = 4:1



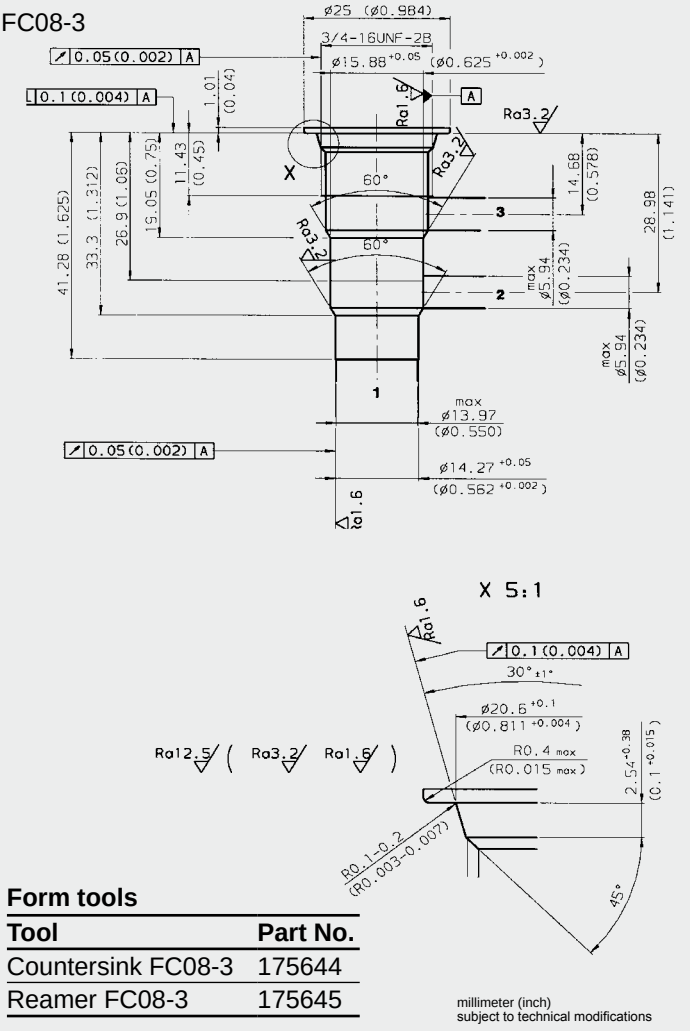
Flow rate

DIMENSIONS



CAVITY

FC08-3



Form tools

Tool	Part No.
Countersink FC08-3	175644
Reamer FC08-3	175645

To raise a load, flow is permitted from pump port 2 to consumer port 1 via the built-in check valve.
To hold the load, the check valve piston is pressed against its seat by the load pressure at port 1 and seals leakage-free (control port 3 must be at zero pressure!).
To lower the load, pressure is applied to control port 3 which controls the valve. Flow is now permitted from port 1 to port 2. The load cannot therefore overrun because the load flow rate is controlled at the metering edge of the control piston according to the consumer's inlet pressure.
An additional restriction of the load pressure is provided in that the consumer pressure (load pressure) at port 1 acts on a control piston within the valve and therefore against the force of the adjustment spring. When the spring tension is exceeded, the control piston moves away from the check valve piston, and this opens the flow path from port 1 to port 2 – the resulting flow limits the load pressure to the pre-set value.
Speed is controlled when lowering the consumer. For overrunning loads, the valve must be installed in the return line of the consumer.

Note

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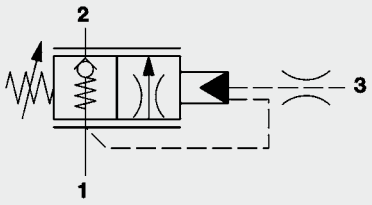
Subject to technical modifications.

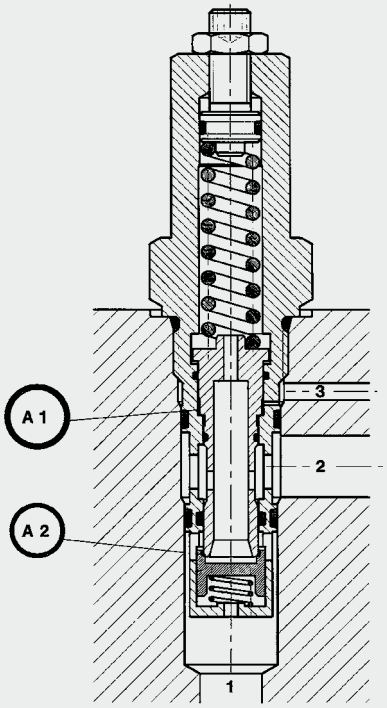
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

Counterbalance Valve Poppet Type, Direct-Acting Cartridge – 350 bar SBVE-R1 and SBVE-R1/2



Up to 100 l/min
Up to 350 bar

FUNCTION



HYDAC counterbalance valves are direct-acting poppet valves with integrated check valve which enable smooth action in consumers if there are retracting and extending loads. In load-holding applications, it can be used as a hose-break valve.
To raise a load, flow is permitted from pump port 2 to consumer port 1 via the built-in check valve.
To hold the load, the check valve piston is pressed against its seat by the load pressure at port 1 and seals leakage-free (control port 3 must be released of pressure!).
To lower the load, pressure is applied to control port 3 which controls the valve. The load cannot therefore speed ahead because the load flow rate is controlled at the metering edge of the control piston according to the consumer's inlet pressure.
An additional restriction of the load pressure is provided in that the consumer pressure (load pressure) at port 1 acts on a control piston within the valve and therefore against the force of the adjustment spring. When the spring tension is exceeded, the control piston moves away from the check valve piston, and this opens the flow path from port 1 to port 2.

FEATURES

- Hardened and ground valve components to ensure minimal wear and extended service life
- Adjustable throughout flow range
- Speed of consumer controlled in accordance with the inlet flow
- Consumer prevented from speeding ahead where there are retracting loads
- Consumer is held in position leak-free
- Consumer pressure is restricted to the relevant pre-set pressure
- Acts as a hose-break valve for safety purposes if there is a break in the control line, consumer supply line or drain line
- All exposed surfaces can be zinc-plated as an option (version 04) for better protection from corrosion

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Setting pressure:	max. 420 bar	
Nominal flow:	max. 100 l/min (30 l/min for SBVE-R1/2)	
Cracking pressure:	1 bar (from port 2 to port 1)	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Control volume:	SBVE-R1/2	0.05 cm³
	SBVE-R1	0.20 cm³
Pilot ratio:	$\varphi = \frac{A1}{A2}$	
	SBVE-R1/2-01X	φ = 4.6
	SBVE-R1/2-11X	φ = 7.5
	SBVE-R1/2-18X	φ = 3.3
	SBVE-R1-01X	φ = 4.8
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 380 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -30 °C to +100 °C)
	Back-up rings:	PTFE
Cavity:	08021 and 16021	
Weight:	SBVE-R1/2	0.20 kg
	SBVE-R1	0.77 kg

MODEL CODE

SBVE – R1/2 – 01 X – 200 V

Designation
Counterbalance valve

Size
R1/2 and R1

Type
01 = standard pilot ratio φ 4.6 (R1/2) and 4.8 (R1), phosphated
11 = pilot ratio φ 7.5 for (R1/2), phosphated
18 = pilot ratio φ 3.3 for (R1/2), zinc-plated

Series
(determined by manufacturer)

Setting pressure
No details = valve not pre-set
200 = pre-set to 200 bar by manufacturer (optional)
Other settings on request

Type of adjustment
V = Allen head
Other types of adjustment on request

Standard models

Model code	Part No.
SBVE-R1-01X-XXXV	710101
SBVE-R1/2-01X-XXXV	710100

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R08021-01X-01	275033	Steel, zinc-plated	G3/8, G1/4	420 bar
R08021-10X-01	283841	Steel, zinc-plated	G3/8, G1/4	420 bar
R16021-01X-01	277051	Steel, zinc-plated	G1	420 bar

Other line bodies on request

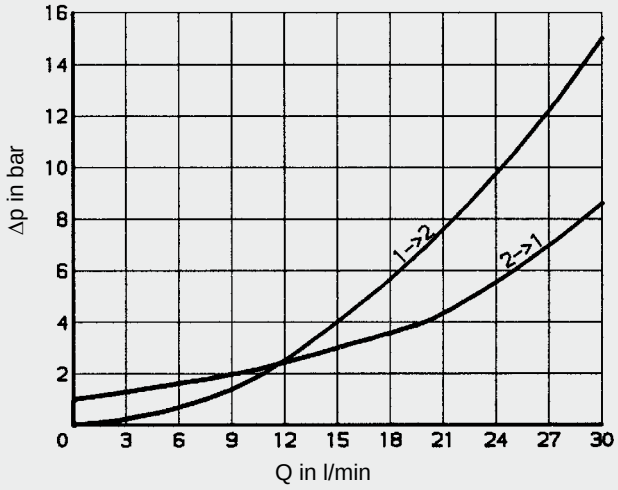
Seal kits

Code		Part No.
Seal kit	SBVE-R1/2-1...FKM	715787
Seal kit	SBVE-R1-0...FKM	715878

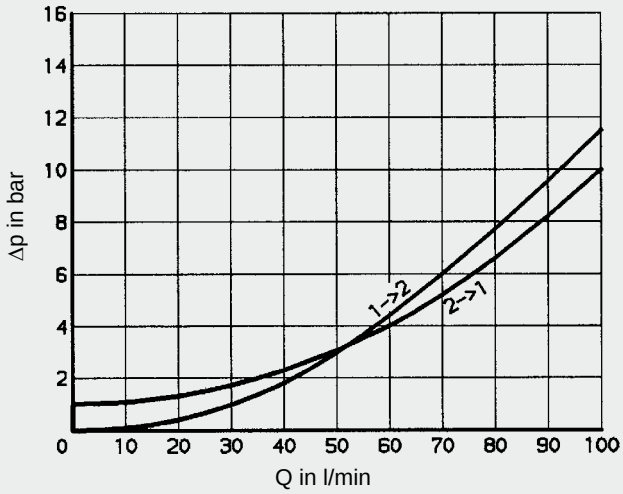
Setting pressure Pe:	The adjustment spring must be set to a value at least 1.2 times higher than the load pressure (Pe > P1 x 1.2) P1 = load pressure (max. pressure required to move the load) max. 350 bar Pe = setting pressure (max. 420 bar)
Control pressure Pctrl:	Control pressure across port 3 required to cancel the shut-off function of the valve (flow from 1 to 2) P2 = pressure across port 2 $Pctrl = \frac{Pe - P1}{\varphi} + P2$

PERFORMANCE

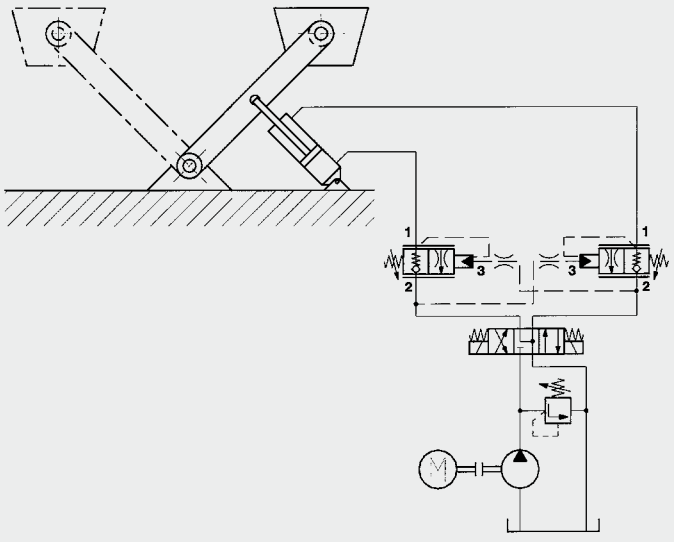
SBVE-R 1/2



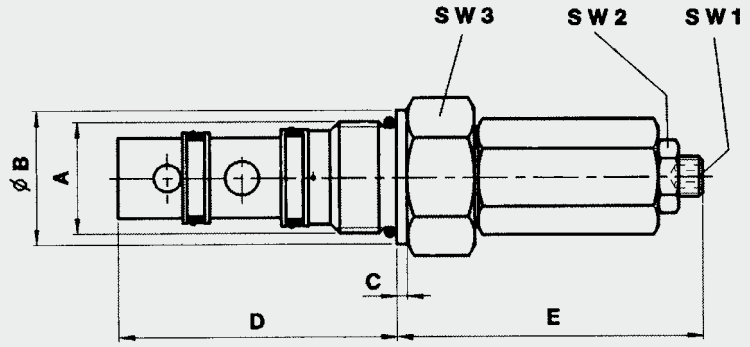
SBVE-R1



CIRCUIT DIAGRAM EXAMPLE

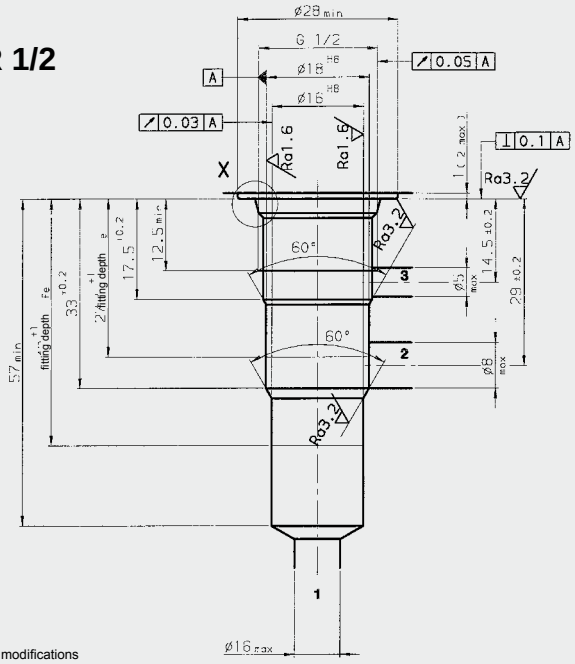


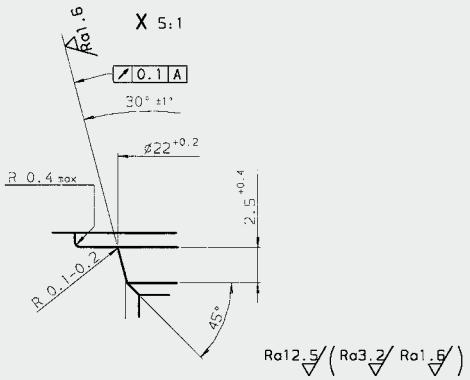
DIMENSIONS



Nominal size	A (ISO 228)	ØB	C	D	E_{max}	SW1	SW2	SW3	Torque
SBVE-R1/2	G 1/2	24	4	56.5	56	4	13	24	30^{+5} Nm
SBVE-R1	G 1	40	3	82	94	6	19	41	150^{+10} Nm

CAVITY
SBVE-R 1/2
08021



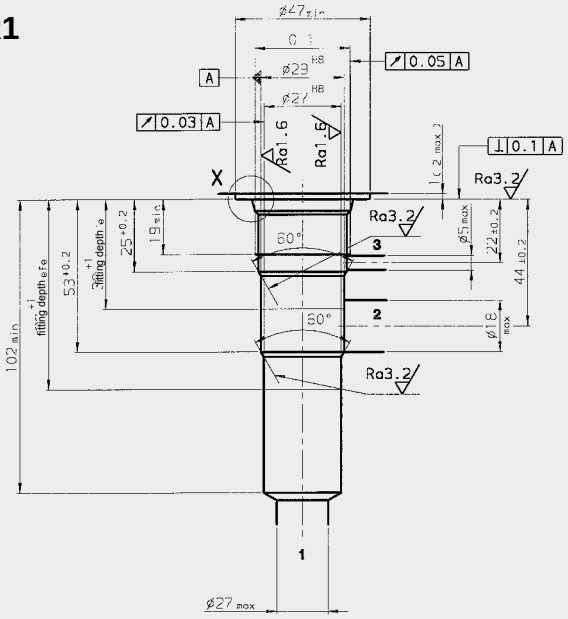


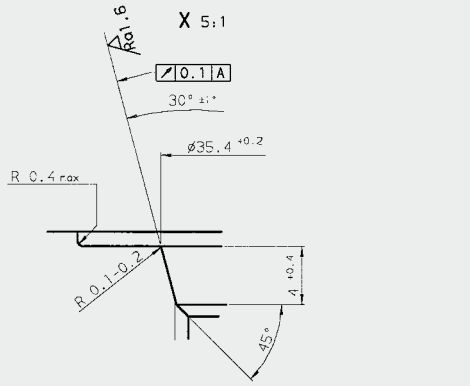
Millimeter
Subject to technical modifications

Form tools

Tool	Part No.
Countersink	170031
Reamer	169962
Tap	1002667
Plug gauge	169939

SBVE-R1
16021





Millimeter
Subject to technical modifications

Form tools

Tool	Part No.
Countersink	170035
Reamer	169965
Tap	1002661
Plug gauge	174879

NOTE
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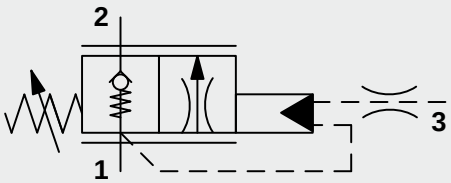
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

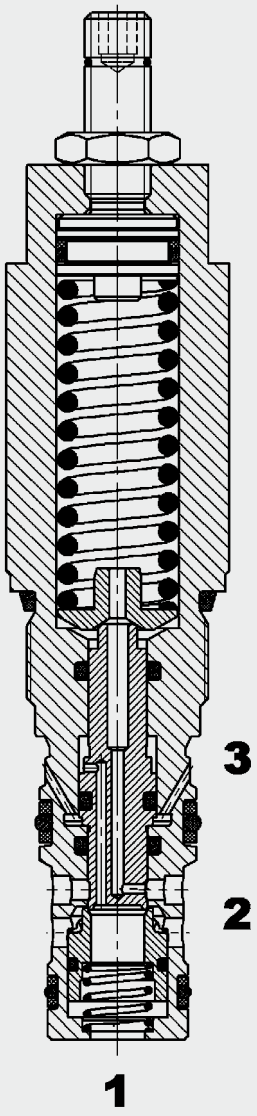


Up to 60 l/min
Up to 420 bar

Counterbalance Valve Poppet Type, Direct-Acting Metric Cartridge – 420 bar

RSM10121

FUNCTION



The counterbalance valve RSM10121 is a direct-acting poppet valve. Its function is to control the speed of a consumer according to the inlet flow. It also prevents the consumer from overrunning if there are pulling loads and ensures smooth action in consumers. In addition it fulfils the function of a hose-break valve.

FEATURES

- Primarily used in lift-lowering applications
- Low hysteresis over the entire pressure and flow range
- Consumer is held in position leakage-free
- Prevents overrunning of pulling loads
- Speed of consumer controlled in accordance with the inlet flow
- Hardened and ground valve components to ensure minimal wear and extend service life
- Low pressure drop due to CFD optimized flow path
- Acts as a hose-break valve to hold load if there is a leak in the control or feed line
- Restricts the load pressure to preset value (overload protection)
- Option: Model with control function which is independent of load pressure (version 0)
- Option: Model with control pressure which is independent of tank pressure (Version E can be vented to atmosphere in cavity 10121 or separately to tank in cavity 10122)
- Option: Different versions of precision control of the lowering function

SPECIFICATIONS

Operating pressure:	max. 420 bar	
Nominal flow:	max. 60 l/min	
Cracking pressure of check valve:	2 bar	
Pressure setting range:	30 to 240 bar 240 to 420 bar	
Load pressure (at port 1):	p = 0 - 350 bar (Max. pressure adjust 420 bar)	
Pressure at port 2 (pump / tank):	p = 0 - 350bar Warning! Pressures at port 2 are additive to the cracking pressure! Solution: Vented version (E) of the valve	
Control pressure (port 3):	p = 0 - 420 bar	
Tank pressure (port 4):	p = 0 - 30 bar Note: This port is only required if a vented version (E) of the valve is used, and the trapped oil, which collects in the spring chamber, is to be drained separately via a 4th port to the tank (cavity 10122!)	
Pressure drop from port 2 to 1:	approx. 14 bar at 60 l/min (check function)	
Pressure drop from port 1 to 2:	see curve (dependent on fine control sleeve)	
Pilot ratio φ:	1:1, 2:1, 3:1, 5:1, 10:1, 0 (without pressure relief function)	
Leakage:	leak-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm²/s to max. 380 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	Steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C) PTFE
	Back-up rings:	PTSM
Cavity:	10121 and 10122	
Weight:	0.275 kg	

MODEL CODE

RSM 10121 E - 01 - C - N - 3 - M 240 V 210

Basic model
Counterbalance valve
Metric

Cavity

Additional code
None = without venting (standard)
E = Version E - control pressure independent of tank pressure

Type
01 = standard

Body and ports*
C = cartridge only
Versions with bodies on request

Seals
N = NBR (standard)
V = FKM (optional)

Pilot ratio φ
1 = 1 : 1
2 = 2 : 1
3 = 3 : 1
5 = 5 : 1
10 = 10 : 1
0 = Version 0 – control independent of load pressure

Resolution (fine control due to sleeve)
(Q from 1 to 2 at max. control and Δp = 30 bar)
H = 20 l/min
M = 40 l/min
L = 60 l/min

Pressure range
240 = 30 to 240 bar
420 = 240 to 420 bar

Type of adjustment
V = Allen head
F = fixed setting, cannot be adjusted

Pressure setting
Pressure in bar

Standard models

Model code	Part No.
RSM10121-01-C-N-3-M240F	3487868
RSM10121-01-C-N-3-M240V	3435438
RSM10121E-01-C-N-3-M240V	3487816

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R10121-01X-01	395236	Steel, zinc-plated	G1/2, G1/4	420 bar

Seal kits

Code	Material	Part No.
SEAL KIT RSM10121...NBR	DE	3638115
SEAL KIT RSM10121...FKM	DE	3638116

CALCULATION OF CONTROL PRESSURE:

standard: $p_{ctrl} = \frac{p_e - p_1}{\varphi} + Kf \times p_2$ **vented:** $p_{ctrl} = \frac{p_e - p_1}{\varphi}$

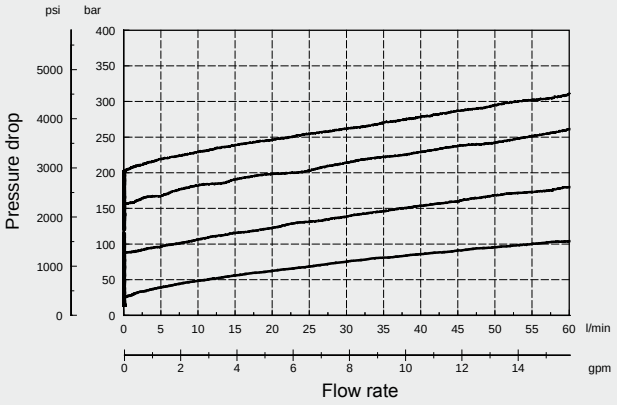
p_e = Setting pressure
p_{st} = Control pressure
p_1 = Load pressure
p_2 = Tank pressure
φ = Pilot ratio

Kf (φ = 1) = 2
Kf (φ = 2) = 1.5
Kf (φ = 3) = 1.3
Kf (φ = 5) = 1.2
Kf (φ =10) = 1.1

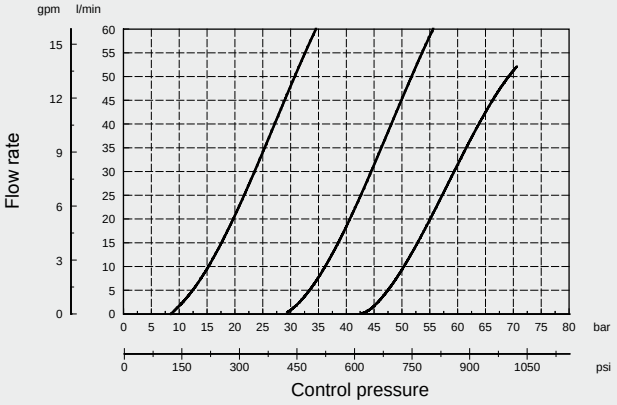
PERFORMANCE

Measured at v = 36 mm²/s, T_{oil} = 46 °C, with sleeve, φ = 3:1

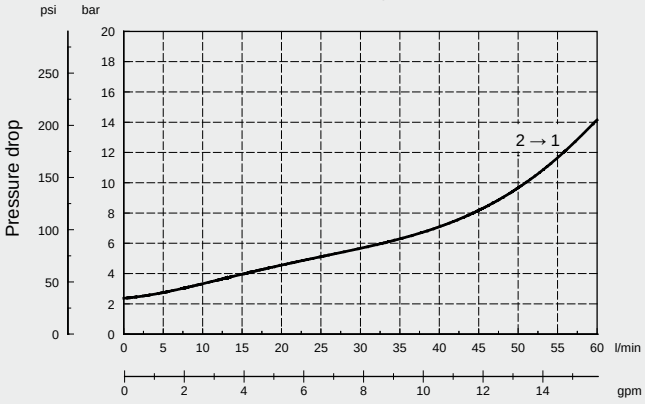
Pressure relief curve:
Pressure at port 1 against flow rate from port 1 to 2, p_3 = 0 bar
Pressure relief function protects the system in the event of overload on the consumer.



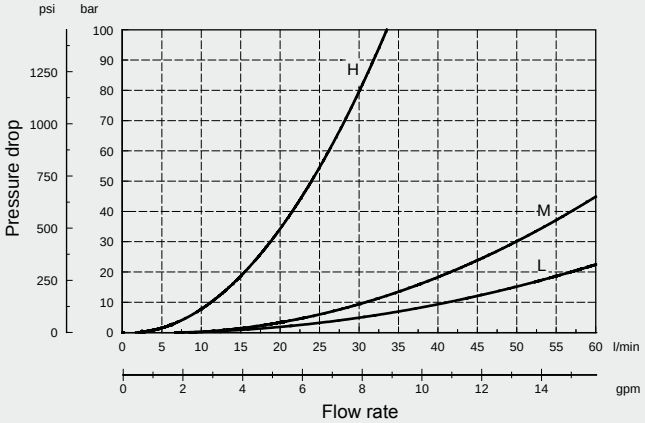
Control curve: (Pressure at port 3 against flow rate from port 1 to 2)
The control function shows the lowering speed against the control pressure.
Setting pressure: 200 bar; Load pressure: 25, 50, 85 % of set pressure



Throttle curve: Δp-Q from port 2→1
The throttle curve shows the back-pressure against flow rate from port 2→1.



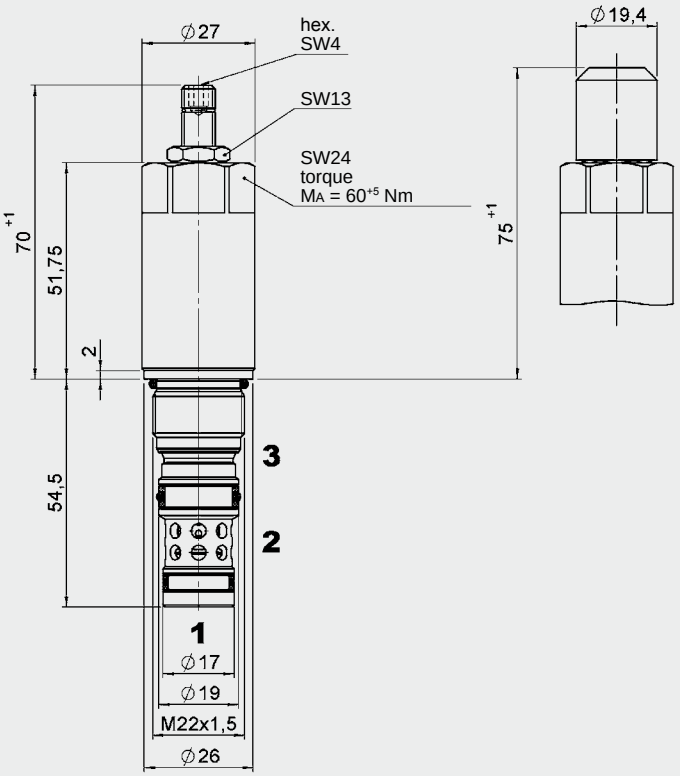
Throttle curve: Δp-Q from port 1→2 maximum control
The throttle curve shows the back-pressure against flow rate from port 1→2.
(for different settings)



Important!
The differential pressure from port 1→2 on a fully controlled valve is dependent on the resolution of the fine control sleeve.
When the resolution of the pilot function is higher, the back pressure increases.

DIMENSIONS

RSM10121-01-V **RSM10121-01-F**



millimeter
subject to technical modifications

FUNCTION PRINCIPLE

With the counterbalance valve RSM 10121, to raise a load, flow is permitted from pump port 2 to consumer port 1 via the built-in check valve.

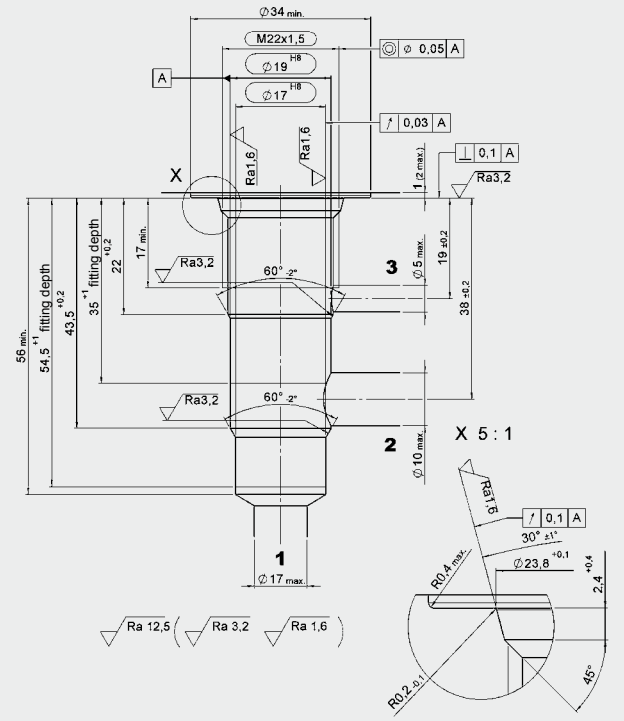
To hold the load, the check valve piston is pressed against its seat by the load pressure at port 1 and seals leakage-free (control port 3 must be released of pressure!).

To lower the load, a combination of load- and control pressure is applied to control port 3 which controls the valve. The higher the load pressure, the lower the necessary control pressure. Flow is now permitted from consumer port 1 to port 2. The load cannot therefore overrun because the load flow rate is controlled at the metering edge of the control piston according to the inlet pressure of the consumer (control port 3 must be connected directly to the cylinder – not externally).

An additional restriction of the load pressure is provided in that the consumer pressure (load pressure) at port 1 acts on a control piston within the valve and therefore against the force of the adjustment spring. When the spring tension is exceeded, the control piston moves away from the check valve piston, and this opens the flow path from port 1 to port 2 – the resulting flow limits the load pressure to the pre-set value.

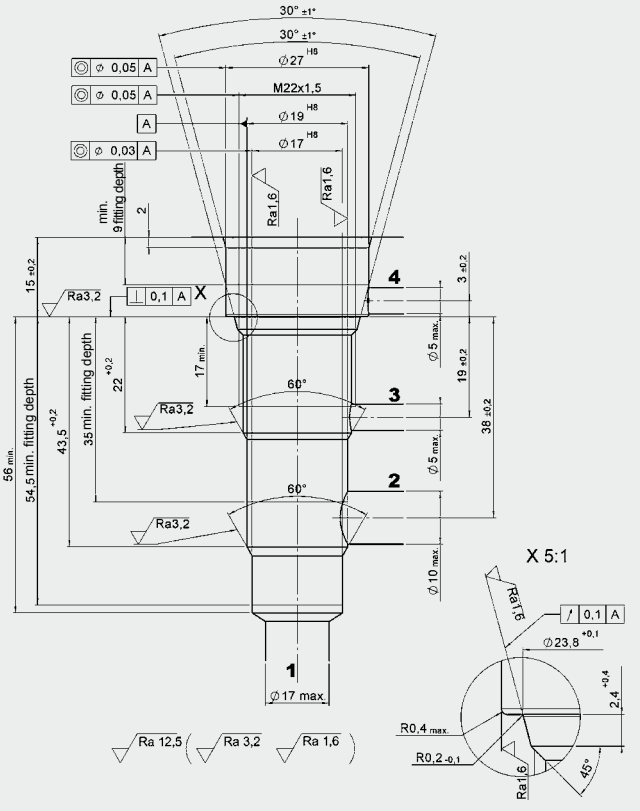
CAVITY

10121



Version E

10122



Form tools

Tool	Part No.
Countersink MK4	163910
Reamer MK2	163911

millimeter
subject to technical modifications

Note

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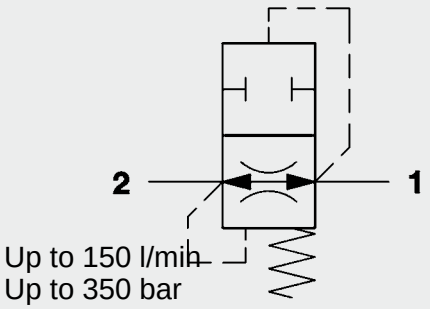
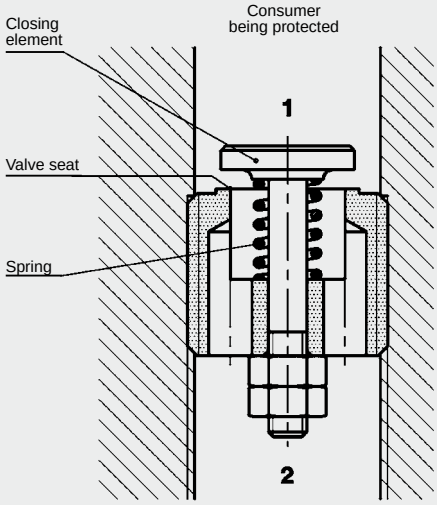
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



Hose Burst Valve Direct-Acting Flat Seat Valve, Cartridge – 350 bar RBE 1/4 to 3/4

FUNCTION



The hose burst valve RBE is a flow operated flat seat valve which prevents uncontrolled movement in the consumer in the event of a hose burst. The hose burst valve is open in the normal position and allows flow in both directions. If the pre-set actuating flow rate is exceeded as a result of a hose burst, for example, the valve quickly closes and blocks the flow from port 1 to port 2.

Caution:
The actuating flow rate should be at least 20% higher than the highest flow rate in the system, to prevent the valve reacting too sensitively! Due to the effects of acceleration and inertia, the valve should be replaced after a hose burst.

FEATURES

- Hose burst valves for direct installation in cylinders, lines and control blocks
- Highly reliable thanks to fast response
- Unauthorized adjustment not possible once installed
- Choice of four sizes for optimum adaptability to the system
- Different flow rate settings available as an option

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	RBE1/4 up to max.25 l/min RBE3/8 up to max.50 l/min RBE1/2 up to max.75 l/min RBE3/4 up to max.150 l/min
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +100 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions, preferably horizontal
Materials:	Valve body: steel
Weight:	RBE1/4 = 0.009 kg RBE3/8 = 0.016 kg RBE1/2 = 0.031 kg RBE3/4 = 0.057 kg

MODEL CODE

RBE – R 1/2 – X – 75

Basic model
Hose burst valve

Size of connection
R 1/4 = RBE R1/4
R 3/8 = RBE R3/8
R 1/2 = RBE R1/2
R 3/4 = RBE R3/4

Series
(determined by manufacturer)

Actuating flow rate
3 – 25 l/min = RBE R1/4
6 – 50 l/min = RBE R3/8
12 – 75 l/min = RBE R1/2
25 – 150 l/min = RBE R3/4
Setting value = max. flow rate
Other pre-set flow rates on request

Standard models

Model code	Part No.
RBE-R1/4-X-25	710025
RBE-R3/8-X-50	710026
RBE-R1/2-X-75	710028
RBE-R3/4-X-150	710029

Other models on request

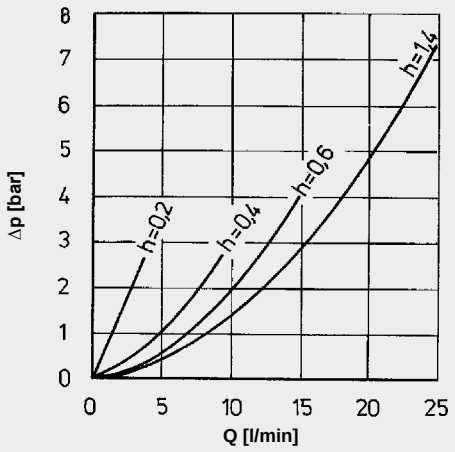
Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
Ports: 1x female thread, 1x male thread				
XB05520-01X	393215	Steel	G1/4	350 bar
XB08520-01X	393217	Steel	G3/8	350 bar
XB10520-01X	393219	Steel	G1/2	350 bar
XB12520-01X	395061	Steel	G3/4	350 bar
Ports: 2x female thread:				
XX05520-01X	393224	Steel	G1/4	350 bar
XX08520-01X	393226	Steel	G3/8	350 bar
XX10520-01X	393228	Steel	G1/2	350 bar
XX12520-01X	395063	Steel	G3/4	350 bar

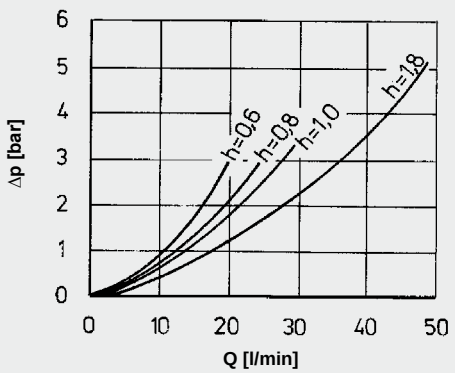
PERFORMANCE

Pressure drops, dependent on flow rate at various setting values, measured at ν = 34 mm²/s and T_{oil} = 46 °C

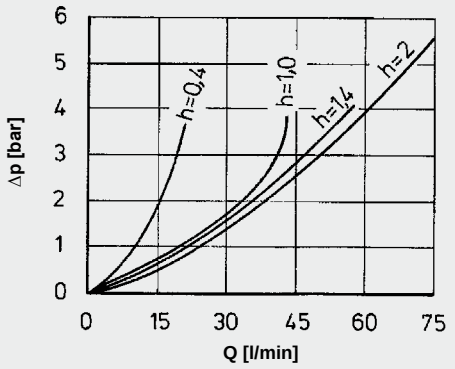
RBE–R1/4



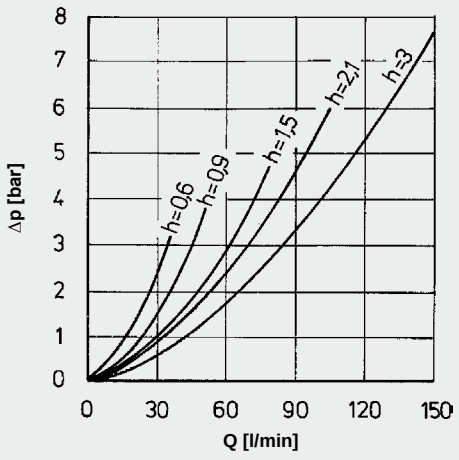
RBE–R3/8



RBE–R1/2

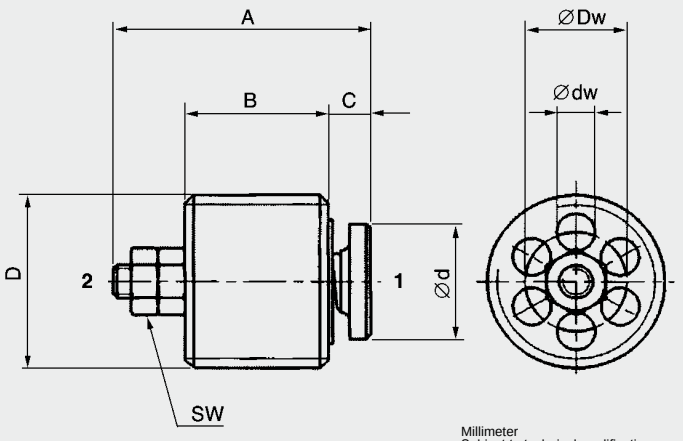


RBE–R3/4



DIMENSIONS

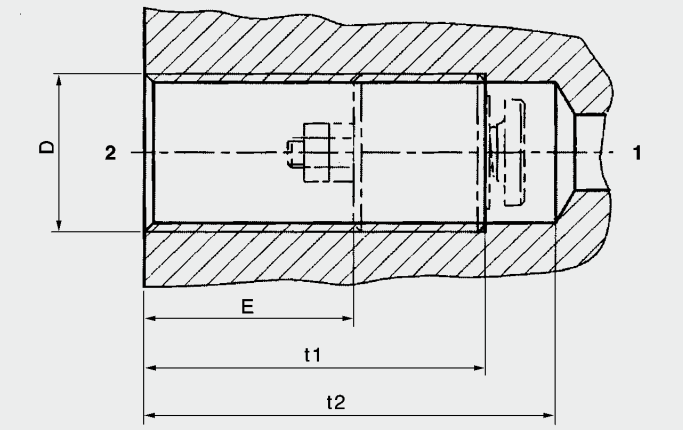
Cartridge



Millimeter
Subject to technical modifications

Type	D	A	B	C	∅d	SW	∅Dw	∅dw
RBE R1/4–X–...	R1/4”	21	11.5	3.5	9.5	5	8	2.5/5
RBE R3/8–X–...	R3/8”	23.5	13.5	5	12	5.5	10	3.5/6
RBE R1/2–X–...	R1/2”	30.5	17	5.5	14	7	12	4.5/8
RBE R3/4–X–...	R3/4”	38	23.5	6.5	18	7	16	6.5/9

Cavity



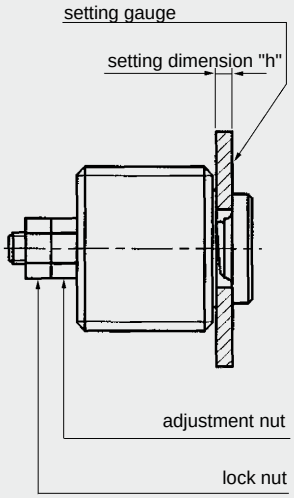
Millimeter
Subject to technical modifications

Type	D	E	t1 ±0.5	t2 min.
RBE R1/4–X–...	R1/4”	20.5	32	38
RBE R3/8–X–...	R3/8”	22.5	36	44
RBE R1/2–X–...	R1/2”	27	44	53
RBE R3/4–X–...	R3/4”	27.5	51	61

The installation dimensions (in mm) shown in the tables are minimum values for threaded pipe connections and male adapters to DIN 3852.

Note

The valves are set to the max. actuating flow rate as standard and can be adjusted by the user. Equally, valves with fixed settings are also available. The valve is set according to the setting curves by varying the gap "h" (see diagrams).



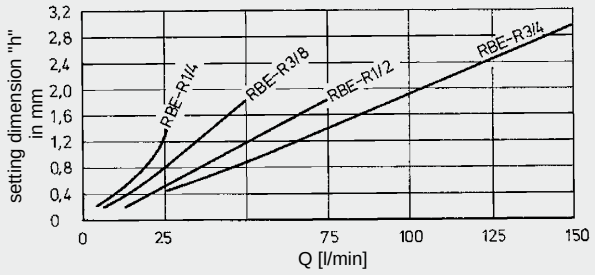
RBE-R1/4 and 3/8:
Torque 0.8 Nm

RBE-R1/2 and 3/4:
Torque 1.8 nM

To change the setting, loosen the lock nut, measure the gap using setting gauges, or similar, and then re-tighten lock nut.

Setting curves

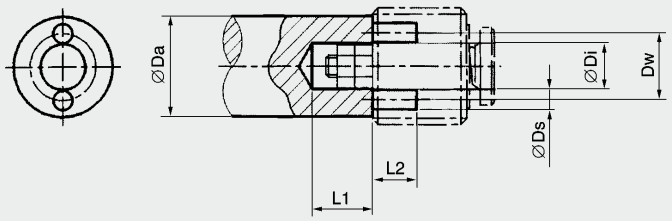
measured at ν = 34 mm²/s



Form tools

Tool	Part No. / Cavity			
	05520	08520	10520	12520
Tap	1002670	1002668	1002667	1002663
Assembly tool	161421	160561	160560	164180

Assembly tool

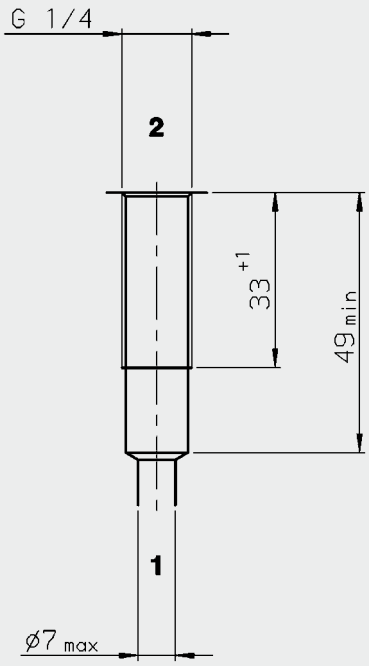


Type	Da max.	Dw	Di	Ds	L1 min.	L2 max.
RBE R1/4–X–...	11.5	8	5.8	2	9	5
RBE R3/8–X–...	15	10	6.5	3	9	6
RBE R1/2–X–...	18	12	8.2	3.5	11	8
RBE R3/4–X–...	24	16	8.5	6	12	8

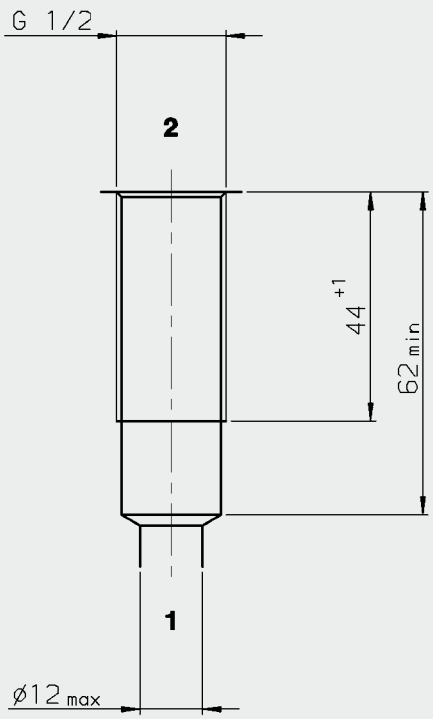
All dimensions in mm.

CAVITY

05520



10520



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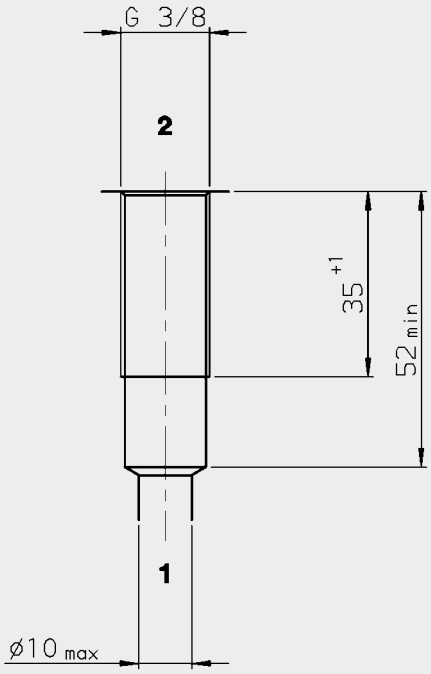
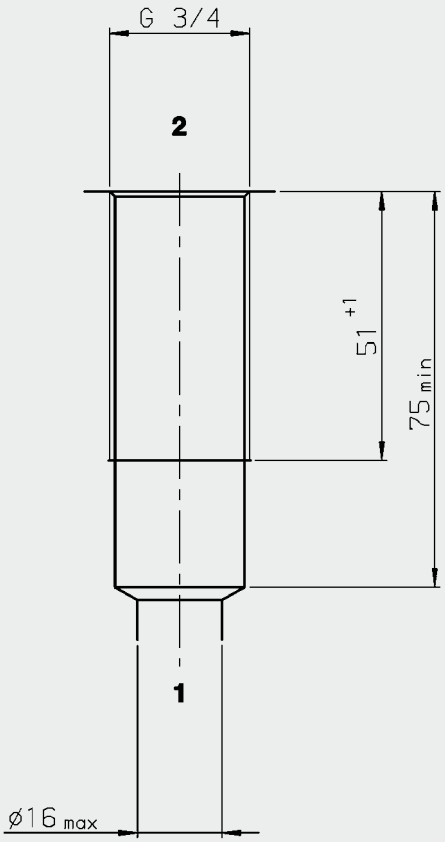


12520



NOTE
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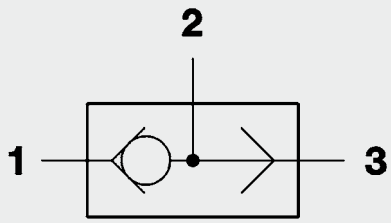
Subject to technical modifications.

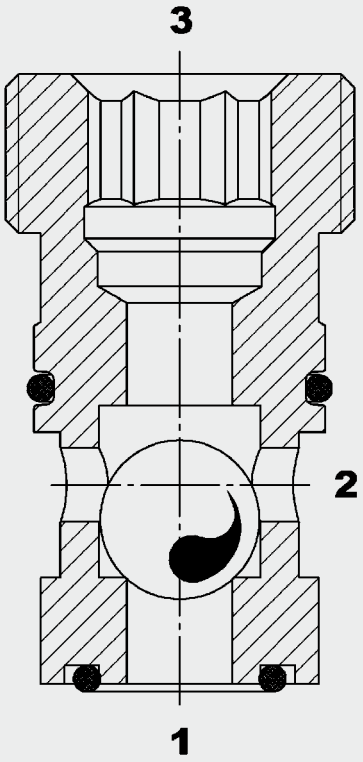
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



Up to 70 l/min
Up to 350 bar

Shuttle Valve 3-Way Cartridge – 350 bar WVE-R1/8 to R1/2

FUNCTION



The shuttle valve WVE is a ball poppet shut-off valve.

It has two inlets (port 1 and 3) and one outlet (port 2). The inlet with the higher pressure pushes the closing element towards the other inlet. The inlet with the higher pressure is therefore always automatically connected to the outlet, and the other inlet is shut off.

FEATURES

- For safe and leak-free shut-off
- Choice of three sizes for optimum adaptability to the system
- Space-saving installation

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	Type R1/8 = max. 10 l/min Type R1/4 = max. 20 l/min Type R1/2 = max. 70 l/min
Media operating temperature range:	min. -20 °C to max. +120 °C
Ambient temperature range:	min. -20 °C to max. +120 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 2.8 mm²/s to max. 800 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions, preferably horizontal
Materials:	Valve body: high tensile steel Ball: roller bearing steel Seal: FKM
Cavity:	03030, 05030, 08730
Weight:	WVE-R1/8 = 0.005 kg WVE-R1/4 = 0.012 kg WVE-R1/2 = 0.045 kg

MODEL CODE

WVE – R1/4 – 01 X

Basic model
Shuttle valve

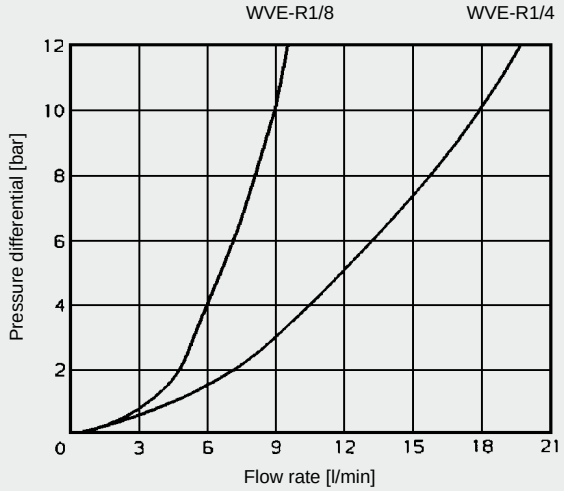
Cartridge size
R1/8 = 1/8"
R1/4 = 1/4"
R1/2 = 1/2"
Other thread sizes on request

Type
01 = standard (phosphated)

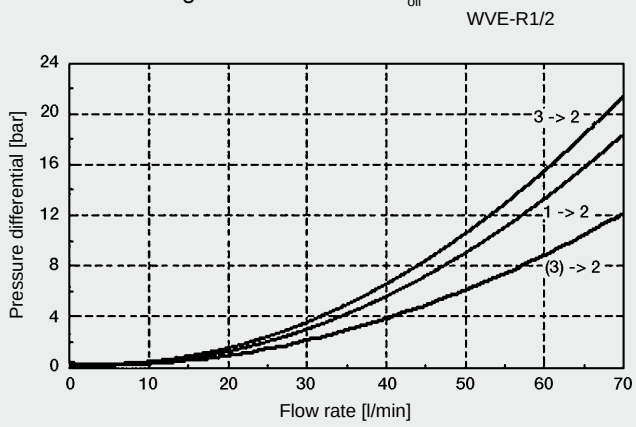
Series
(determined by manufacturer)

PERFORMANCE

Pressure differential Δp against flow rate Q, measured at constant flow setting ν = 36 mm²/s and T_{oil} = 40 °C



Pressure differential Δp against flow rate Q, measured at constant flow setting ν = 33 mm²/s and T_{oil} = 46 °C



Standard models

Model code	Part No.
WVE-R1/8-010	710125
WVE-R1/4-010	710126
WVE-R1/2-010	3467544

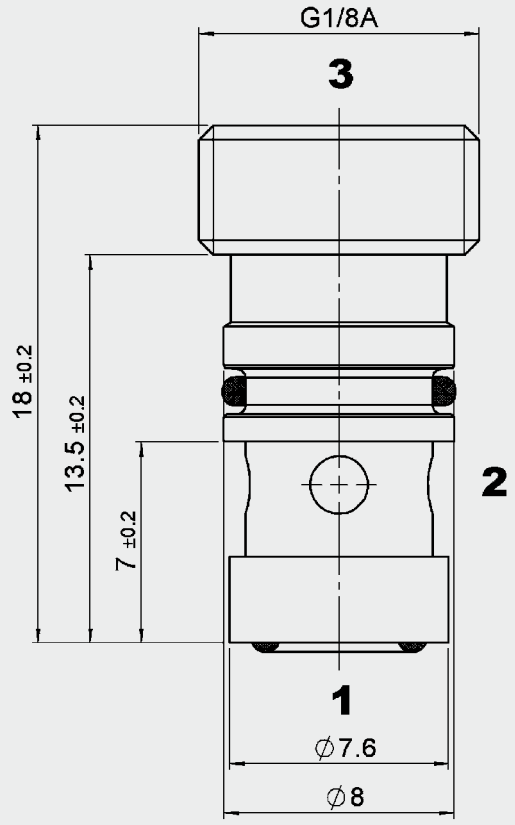
Other models on request

Seal kits

Code	Part No.
SEAL KIT FOR WVE-R1/8-VITON	715879
SEAL KIT FOR WVE-R1/4-VITON	715880

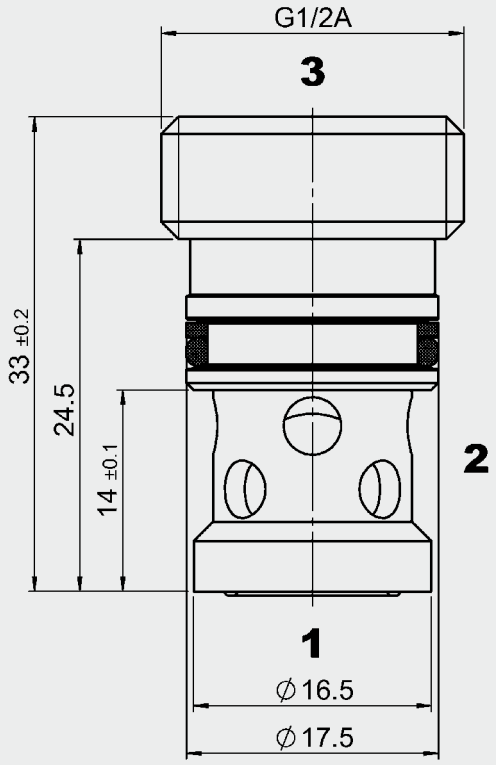
DIMENSIONS

WVE-R1/8



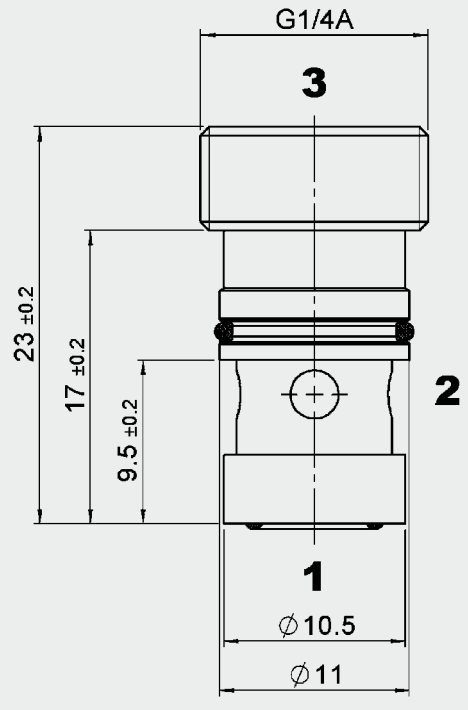
Millimeter
Subject to technical modifications

WVE-R1/2



Millimeter
Subject to technical modifications

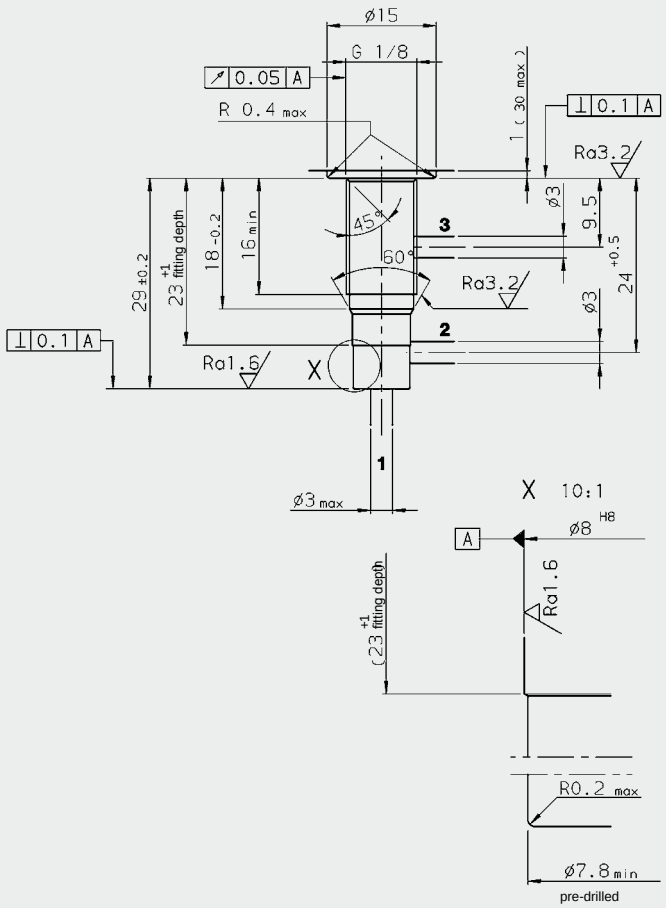
WVE-R1/4



Millimeter
Subject to technical modifications

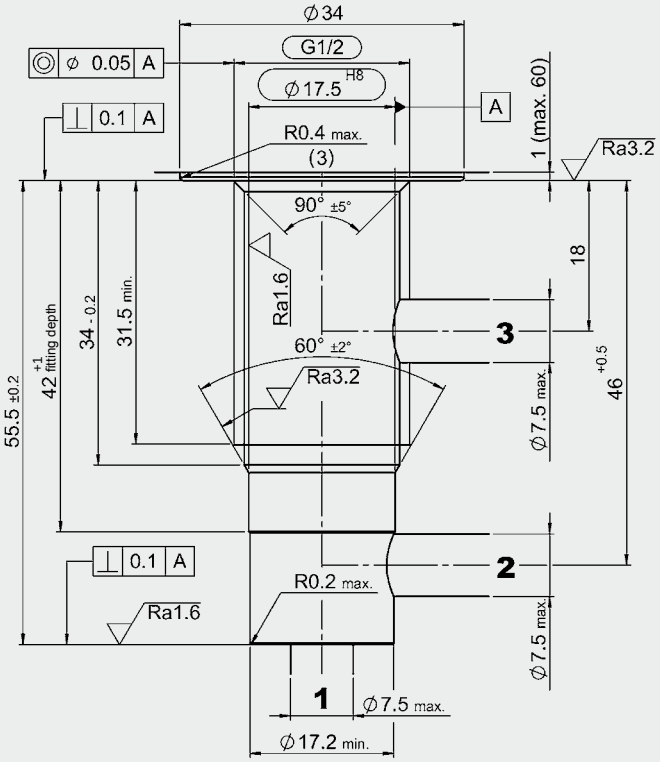
CAVITY

03030



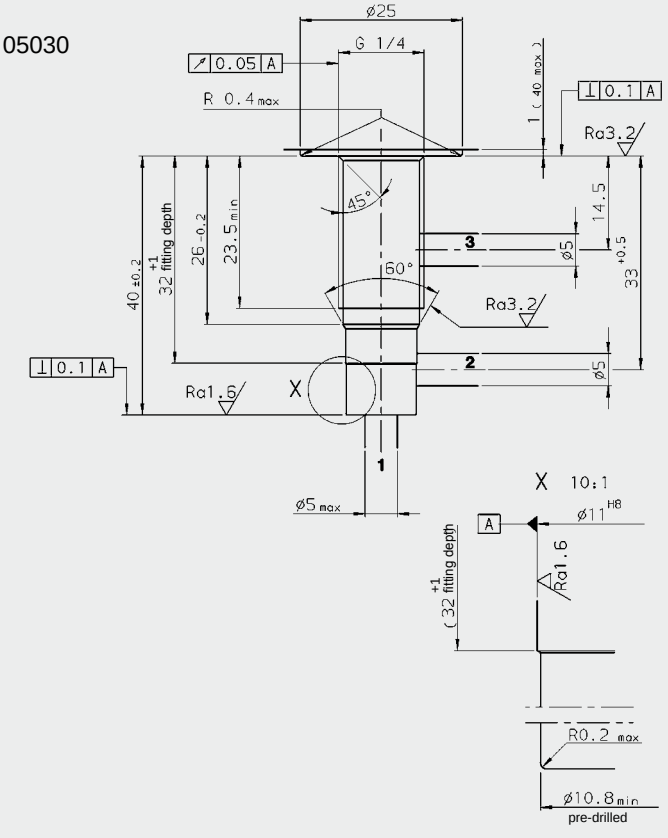
Millimeter
Subject to technical modifications

08730



Millimeter
Subject to technical modifications

05030



Millimeter
Subject to technical modifications

Form tools

Tool	Cavity / Part No.		
	03030	**05030**	**08730**
Countersink	171856	171857	179632
Reamer	1000747	1000754	In preparation
Tap	1002671	1002670	In preparation
Plug gauge	–	159565	In preparation

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D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
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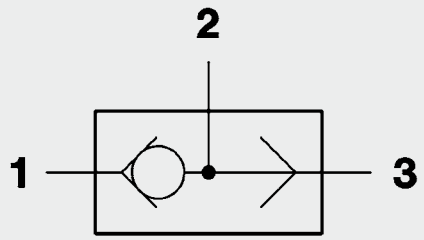
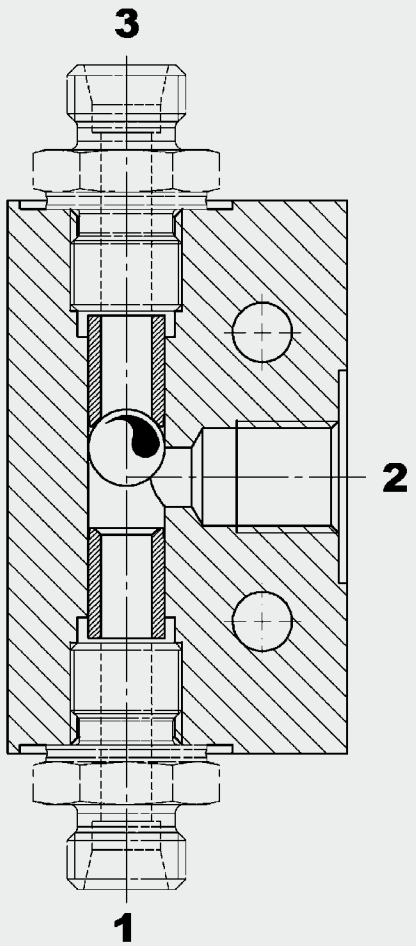


Up to 50 l/min
Up to 420 bar

Shuttle Valve
3-Way
Manifold Mounted – 420 bar
WVG-06

FUNCTION



FEATURES

- For safe and leak-free shut-off
- For control circuits with pilot-operated and remote-controlled directional valves, variable and control pumps and logic elements
- Housing designed for port adapters according to EN ISO 8434
- External surfaces zinc-plated
- Negative switching overlap
- Space-saving installation

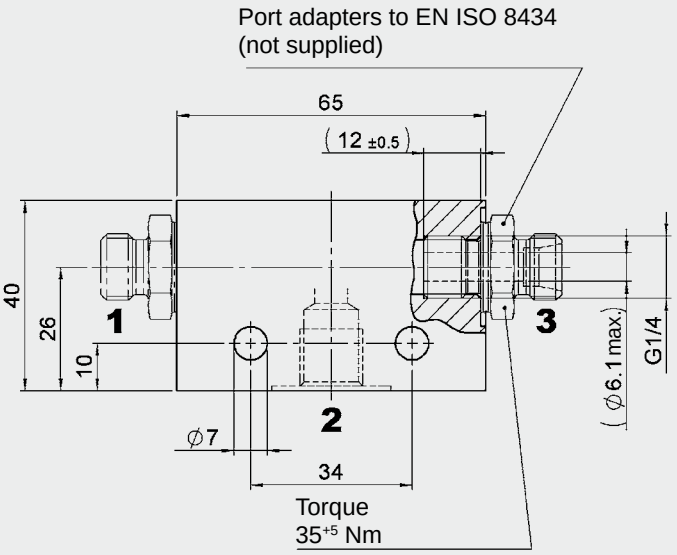
SPECIFICATIONS

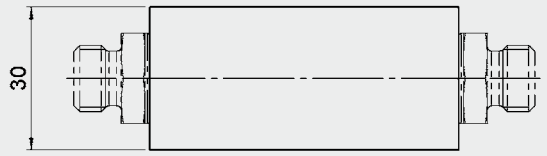
Operating pressure:	max. 420 bar	
Nominal flow:	max. 50 l/min	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 420 bar)	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Ball:	roller bearing steel
Weight:	0.55 kg	

The shuttle valve WVG is a ball poppet shut-off valve.

It has two inlets (port 1 and 3) and one outlet (port 2). The inlet with the higher pressure pushes the closing element towards the other inlet. The inlet with the higher pressure is therefore always automatically connected to the outlet, and the other inlet is shut off.

DIMENSIONS





Millimeter
Subject to technical modifications

MODEL CODE

WVG – 06 – 01

Basic model
Shuttle valve

Size of connection
06 = G 1/4

Series
(determined by manufacturer)

Standard models

Model code	Part No.
WVG-06-01	3520977

Other models on request

PERFORMANCE

Measured at ν = 40 mm²/s and T_{oil} = 42 °C

NOTE

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Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
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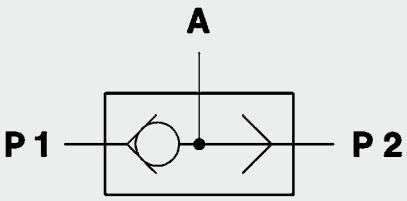
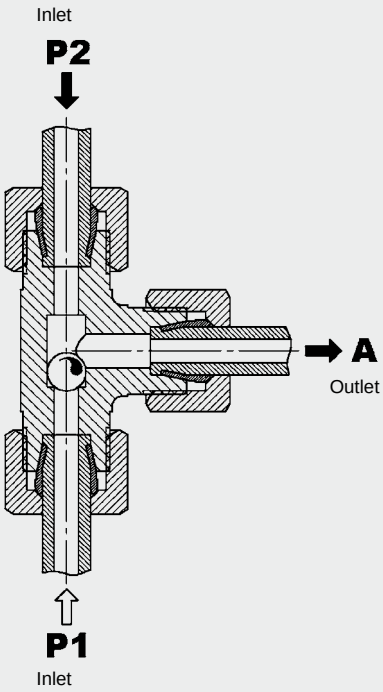
Shuttle Valve
3-Way
Inline Mounted – 350 bar
WVT 6S / 8S / 10S / 12S



Up to 80 l/min
Up to 350 bar

FUNCTION



The shuttle valve WVT is a ball poppet shut-off valve. It has two inlets (port P1 and P2) and one outlet (port A). The inlet with the higher pressure pushes the closing element towards the other inlet. The inlet with the higher pressure is therefore always automatically connected to the outlet, and the other inlet is shut off.

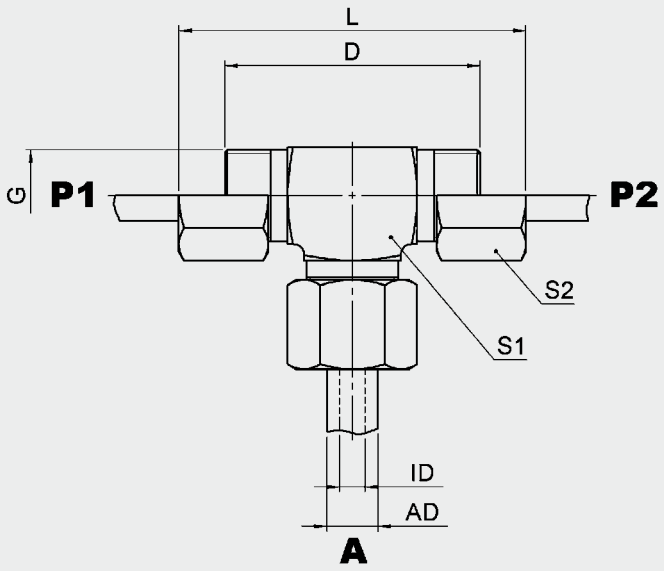
FEATURES

- For safe and leak-free shut-off
- For control circuits with pilot-operated and remote-controlled directional valves, variable & control pumps and logic elements
- Various sizes for optimum adaptability to the system
- Inline body with compression fittings
- External surfaces zinc-plated
- Negative switching overlap
- Space-saving installation

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 80 l/min Type 6S = 12 l/min Type 8S = 25 l/min Type 10S = 45 l/min Type 12S = 80 l/min
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +100 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 2.8 mm²/s to max. 380 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions
Materials:	Valve body: high tensile steel Ball: roller bearing steel
Weight:	WVT-6S = 0.135 kg WVT-8S = 0.155 kg WVT-10S = 0.22 kg WVT-12S = 0.29 kg

DIMENSIONS



Valve body to DIN EN ISO 8434-1

Coupling nut DIN 3870
Compression fittings to DIN 3861 } supplied loose with the valve

Type	G	L	D	AD	IDmax.	S1	S2
WVT-06 S-X	M14x1.5	62	46	6	4	14	17
WVT-08 S-X	M16x1.5	64	48	8	5	17	19
WVT-10 S-X	M18x1.5	68	50	10	7	19	22
WVT-12 S-X	M20x1.5	76	58	12	8	22	24

Millimeter
Subject to technical modifications

MODEL CODE

WVT – 10S – 1

Basic model
Shuttle valve

Connection size
6S = M 14 x 1.5
8S = M 16 x 1.5
10S = M 18 x 1.5
12S = M 20 x 1.5
compression fitting to DIN 3861 with coupling nut to DIN 3870

Series
(determined by manufacturer)

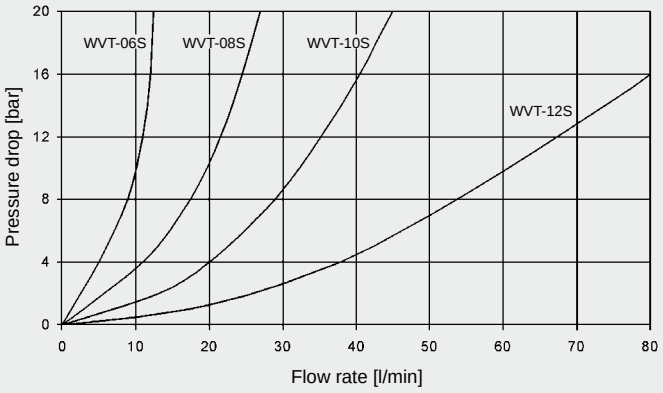
Standard models

Model code	Part No.
WVT-6S-1-ZINC-PLATED	710133
WVT-8S-1-ZINC-PLATED	710134
WVT-10S-1-ZINC-PLATED	710140
WVT-12S-1-ZINC-PLATED	710132

Other models on request

PERFORMANCE

Pressure differential Δp against flow rate Q,
measured at ν = 40 mm²/s and T_{oil} = 42 °C



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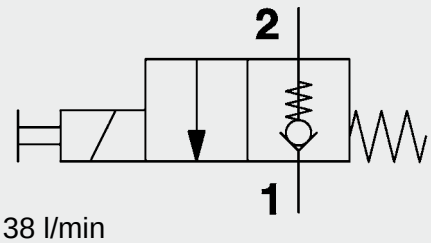


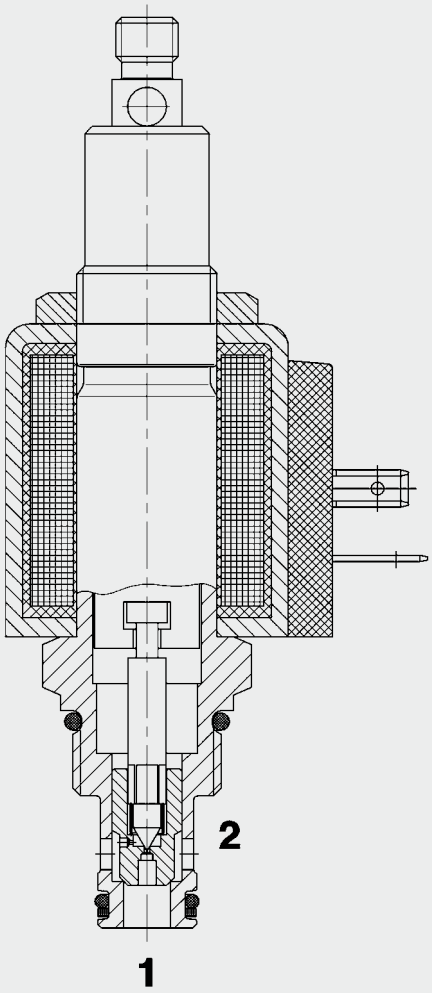
38 l/min
350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Spring-Return Manual Override Normally Closed SAE-08 Cartridge – 350 bar

UNF

WS08Z-01J

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. Flow is permitted from port 1 to port 2.

When energized, there is free flow through the valve from port 2 to port 1. Return flow from port 1 to 2 is prevented.

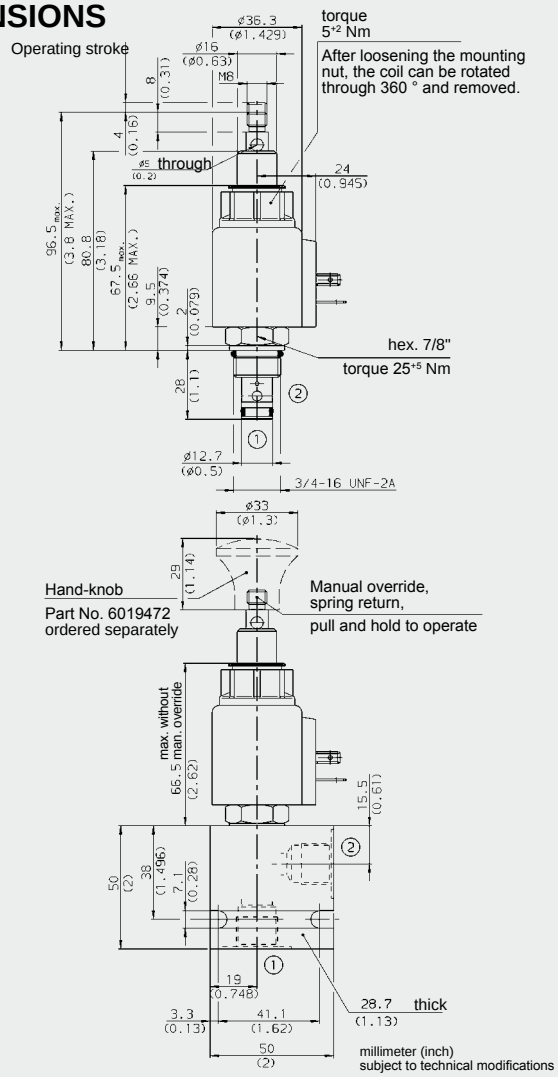
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Solenoid coil available with wide variety of connectors
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Low pressure drop due to CFD optimized flow path
- Wide variety of connectors available

SPECIFICATIONS

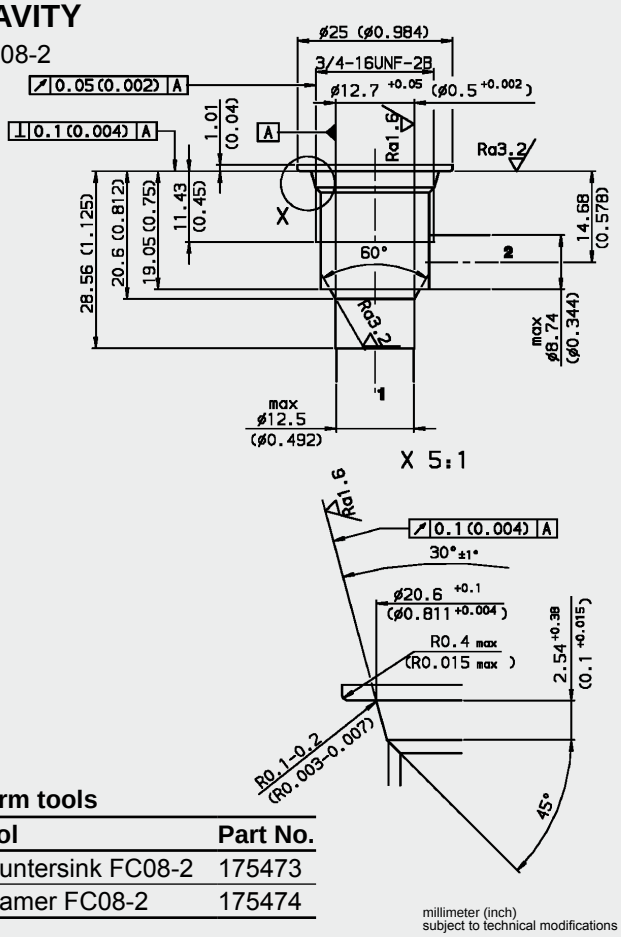
Operating pressure:	max. 350 bar	
Nominal flow:	max. 38 l/min	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	FC08-2	
Weight:	Valve complete	0.36 kg
	Coil only	0.19 kg
Electrical data:		
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Manual override:	The pull-force required is dependent on the operating pressure max. approx. 150 N. The max. permitted pull-force is 180 N	
Response time:	Energized: De-energized:	approx. 35 ms approx. 50 ms
Coil type:	Coil…-40-1836	

DIMENSIONS



CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

MODEL CODE

WS08Z – 01 J – C – N – 24 DG

Basic model
Directional poppet valve UNF

Type
01 = standard

Manual override
J = pull-and-hold, spring-return manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Nominal voltage for actuating solenoid
DC:
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WS08Z-01J-C-N-24DG	3122463
WS08Z-01J-C-N-230AG	3122464

*Standard in-line bodies

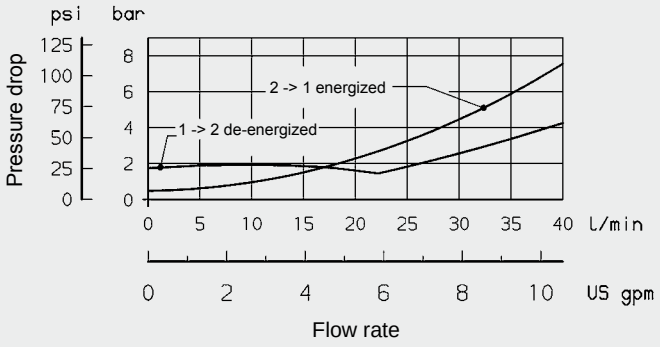
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, anodized	G3/8	210 bar

Seal kits

Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at v = 34 mm²/s, Toil = 46 °C



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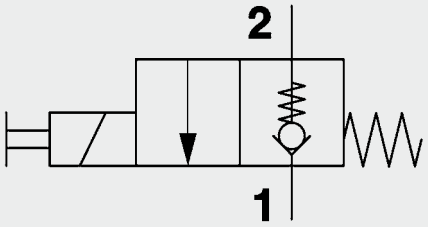
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

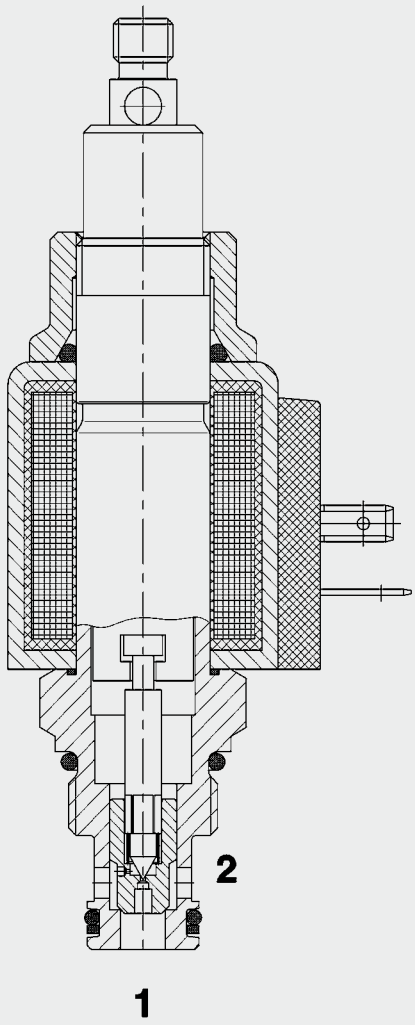


Up to 40 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Spring-Return Manual Override Normally Closed Metric Cartridge Valve – 350 bar

WSM06020Z-01J

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. Flow is permitted from port 1 to port 2. The valve piston opens at a differential pressure of approx. 1.5 bar (check function). When energized, there is free flow through the valve from port 2 to 1. Flow from port 1 to 2 is prevented.

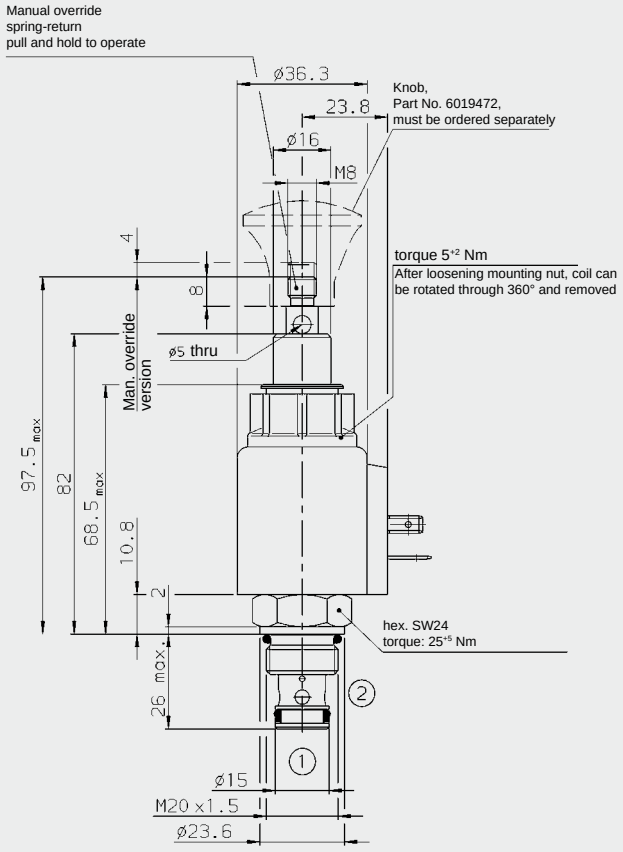
FEATURES

- With spring return manual override e.g. for cable-pull
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 40 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	06020	
Weight:	Valve complete	0.36 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± -15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Manual override:	The pull-force required is dependent on the operating pressure – max. approx. 150 N. The max. permitted pull-force is 180 N.	
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 50 ms
Coil type:	Coil…-40-1836	

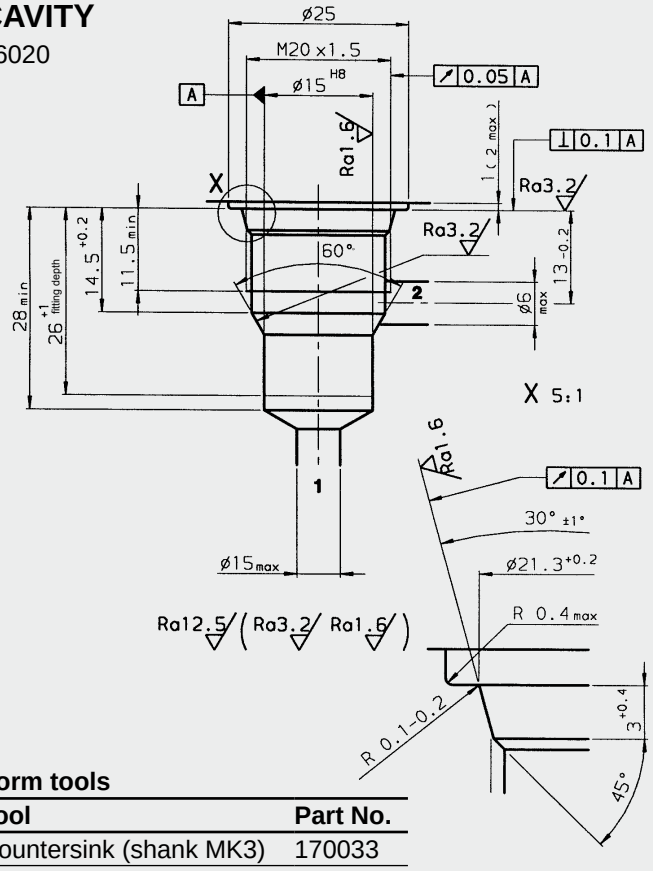
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

06020



Form tools

Tool	Part No.
Countersink (shank MK3)	170033
Reamer (shank MK2)	1000768

millimeter
subject to technical modifications

MODEL CODE

WSM06020Z – 01 J – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
J = pull-type,
spring-return manual override

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WSM06020Z-01J-C-N-24DG	3123455
WSM06020Z-01J-C-N-230AG	3123456

* Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G 3/8	420 bar

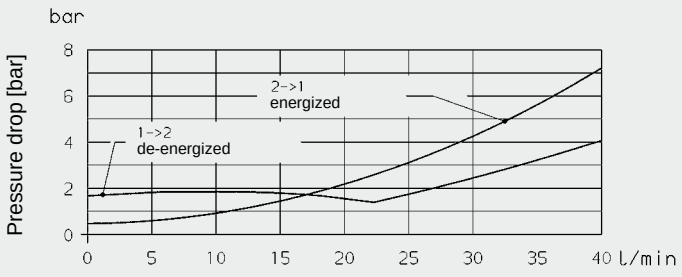
For other connection housings, see brochure no. E 5.252.

Seal kits

Code	Material	Part No.
SEAL KIT 06020-NBR	NBR	3119017
SEAL KIT 06020-FKM	FKM	3262477

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



Flow rate [l/min]

NOTE

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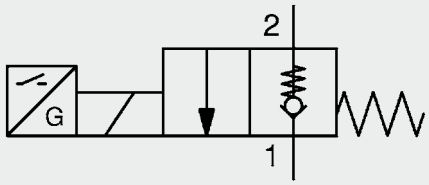
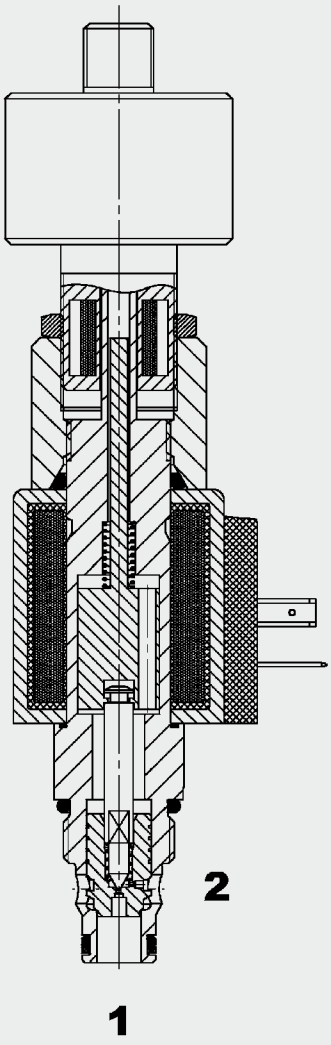


Up to 40 l/min
Up to 350 bar

FUNCTION



2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Normally Closed With Electronic Switch Position Monitoring SAE-08 Cartridge – 350 bar

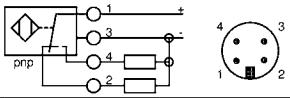
UNF

WS08Z-01E

FEATURES

- With integrated electronic switch position monitoring
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components ensure minimal wear and extended service life
- Wide variety of connections available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

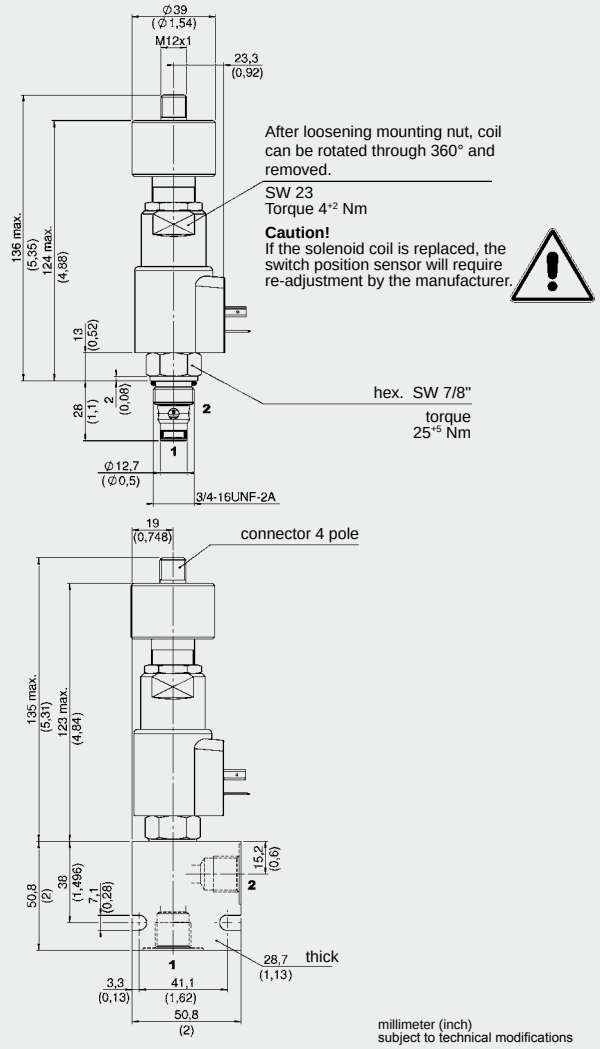
Operating pressure:	max. 350 bar
Nominal flow:	max. 40 l/min
Leckage:	leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)
Media operating temperature range.	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Fluids:	Hydraulic oil to DIN 51524 Part 1 + 2
Viscosity:	min. 10 mm²/s to max. 420 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	Optional
Material:	Valve body: hardened steel Piston: hardened and ground steel Seals: NBR (standard) FPM (optional, media temperature range -20 °C to +120 °C) Back-up rings: PTFE
Cavity:	FC08-2
Weights:	0.5 kg
Electric data:	
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil
Current draw at 20 °C	1,5 A for 12 V DC 0,8 A for 24 V DC
Pull-in voltage:	± 15% of nominal
Coil duty rating:	Continuous up to 115% of nominal voltage at 60 °C ambient temperature
Response time:	Energized: approx. 30 ms De-energized: approx. 70 ms
Coil type	Coil…-40-1836
Sensor specifications	
Supply voltage	20 up to 32 V DC with reverse polarity protection of supply
Outputs:	2 with change-over function PNP positive switching
Output load:	≤ 400 mA, 100% continuous
Short-circuit protection:	Provided
Connector:	Male connector M12 x 1, round
Type of protection:	IP65 to DIN 40050
CE conformity:	93/68/EEC2004/108/EC
EMV:	DIN EN6100-6-1-2-3-4
Humidity range:	0-95 % rel. (to DIN 40040)
Diagram:	

The directional valve WS08Z-01E is a pilot-operated poppet valve with electronic switch position monitoring. When de-energized the valve is closed from port 2 to port 1.

Flow is possible in the opposite direction. The valve piston opens at a differential pressure of approx. 1.8 bar (check function).

When energized, there is free flow through the valve from port 2 to port 1. Flow in the reverse direction is prevented.

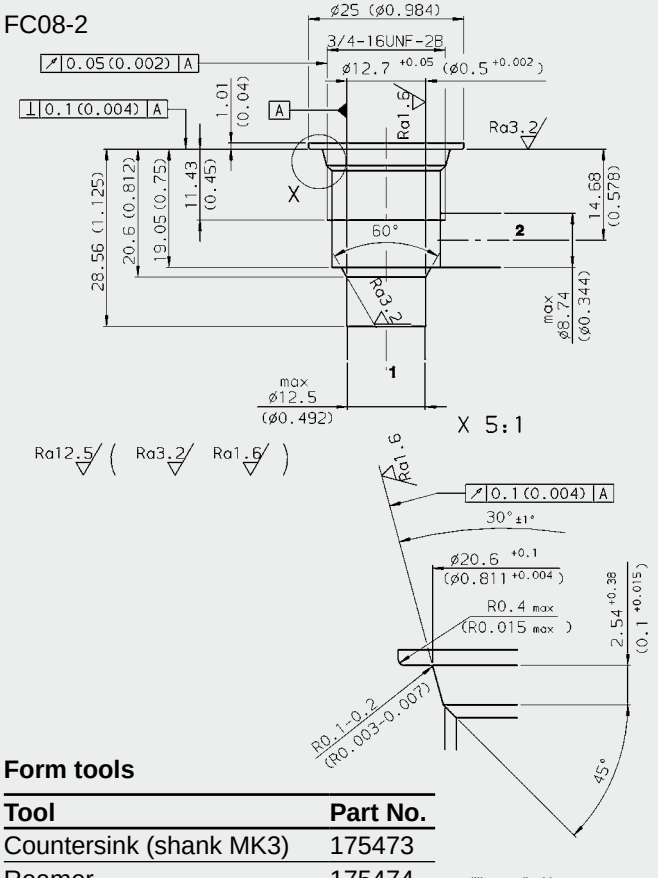
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-2



millimeter (inch)
subject to technical modifications

Form tools

Tool	Part No.
Countersink (shank MK3)	175473
Reamer	175474

MODEL CODE

WS08Z – 01E – C – N – 24 DG

Basic model
Directional poppet valve, UNF

Type
01E = with electronic switch position monitoring

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN Connector (EN 175301-803)
other connectors on request

Standard models

Code	Part No.
WS08Z-01E-C-N-12DG	3368894
WS08Z-01E-C-N-24DG	3361705
WS08Z-01E-C-N-230AG	3368916

Other models on request

* Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

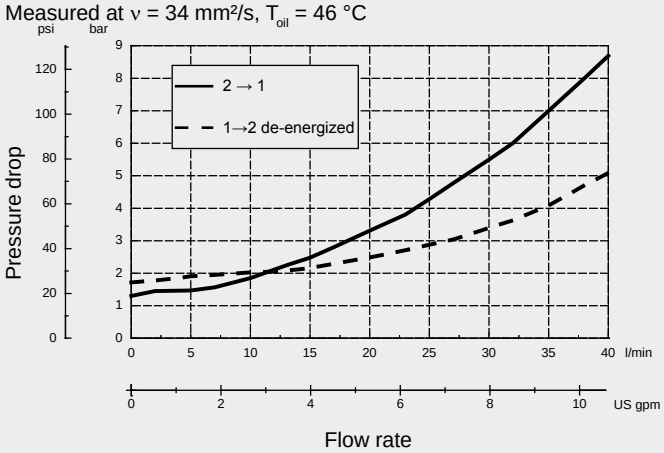
Other models on request

Seal kits

Code	Material	Part No.
FH082-N Seal kit	NBR	3033920
FH082-V Seal kit	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



Note

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Subject to technical modifications.

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Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
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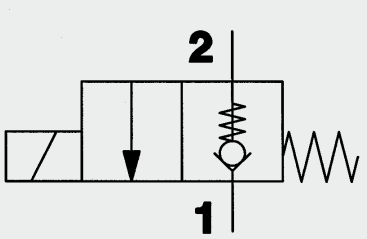
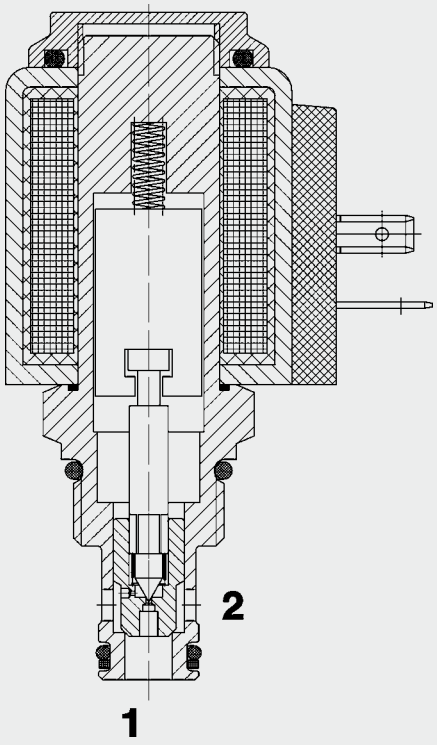


38 l/min
350 bar

2/2 Solenoid Directional Valve UNF Poppet Type, Pilot-Operated Normally Closed SAE-08 Cartridge – 350 bar

WS08Z-01

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. There is free flow from port 1 to 2.

When energized, there is free flow through the valve from port 2 to port 1. Flow from port 1 to 2 is prevented.

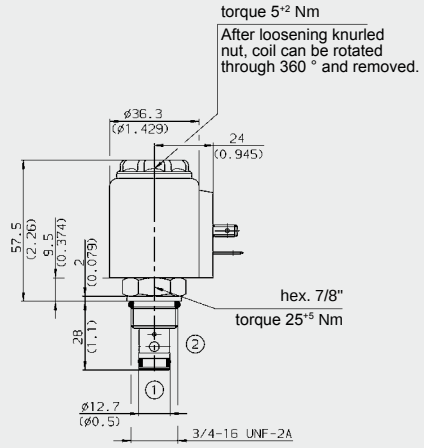
FEATURES

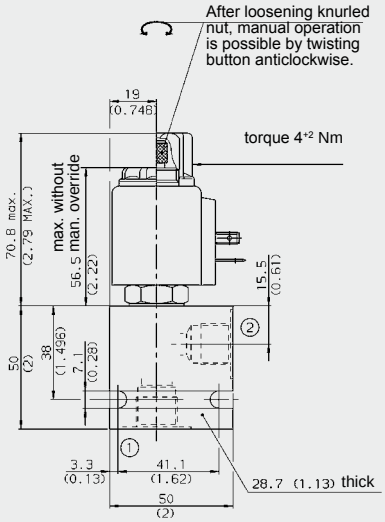
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connections available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 38 l/min	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Closing elements:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to 120 °C)
	Back-up rings:	PTFE
Cavity:	FC08-2	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Switching time:	energized:	approx. 35 ms
	de-energized:	approx. 50 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

DIMENSIONS

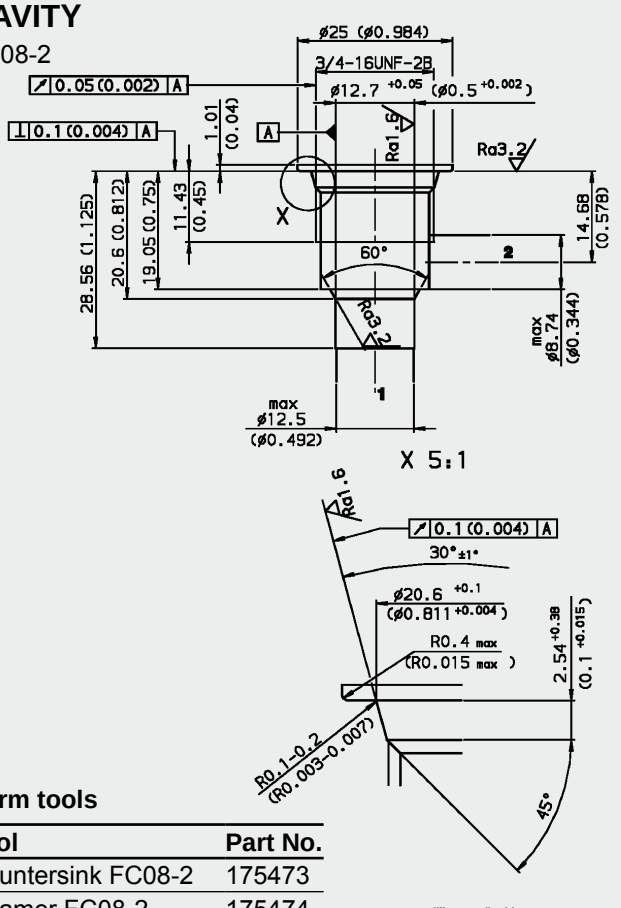




millimeter (inch)
subject to technical modifications

CAVITY

FC08-2



millimeter (inch)
subject to technical modifications

Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

MODEL CODE

WS08Z – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, UNF

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = Cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body
Versions with line bodies on request

Seals
V = NBR (standard)
N = FKM (optional)

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
other connectors on request

Standard models

Model code	Part No.
WS08Z-01-C-N-24DG	561579
WS08Z-01-C-N-230AG	3043403

Other models on request

* Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

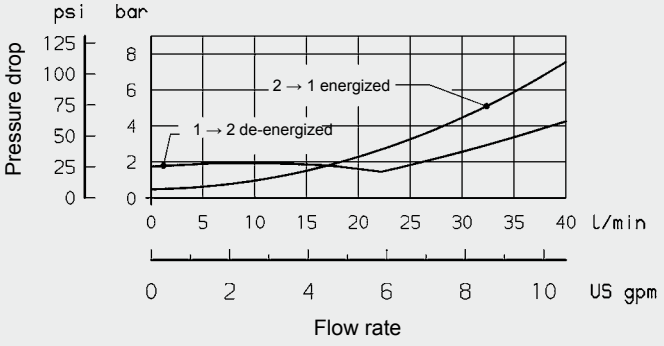
Other housings on request

Seal kits

Code	Material	Part No.
FH082-N SEAL KIT	NBR	3033920
FH082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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D-66280 Sulzbach/Saar
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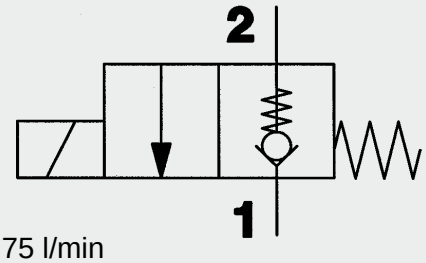
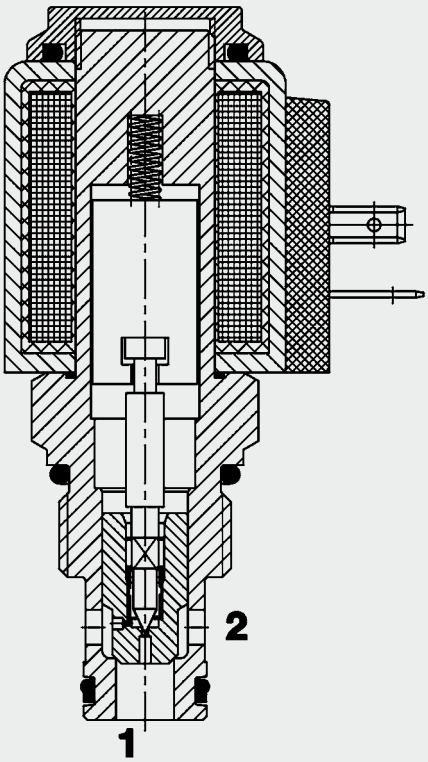


75 l/min
350 bar

2/2 Solenoid Directional Valve UNF Poppet Type - Pilot Operated, Normally Closed SAE-10 Cartridge – 350 bar

WS10Z-01

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. There is free flow from port 1 to port 2. When energized, there is free flow through the valve from port 2 to port 1. Flow in the reverse direction is not possible.

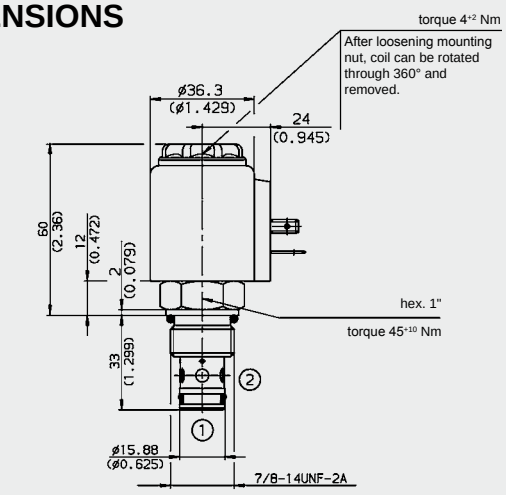
FEATURES

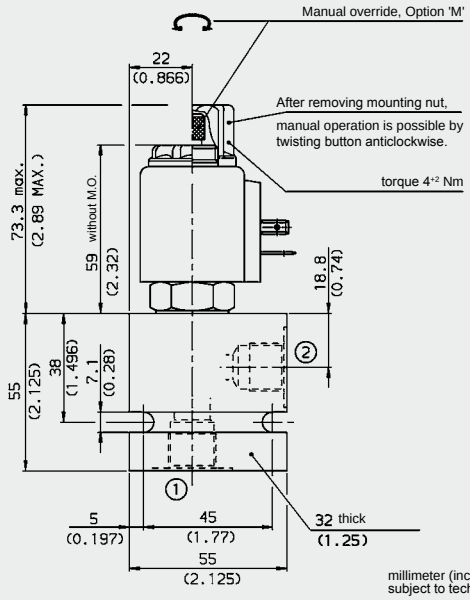
- External surfaces zinc-plated and corrosion proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop by CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 75 l/min	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-2	
Weight:	Valve complete:	0.37 kg
	Coil only:	0.19 kg
Electrical data:		
Switching time:	energized:	approx. 30 ms
	non-energized:	approx. 60 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Nominal voltage at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

DIMENSIONS

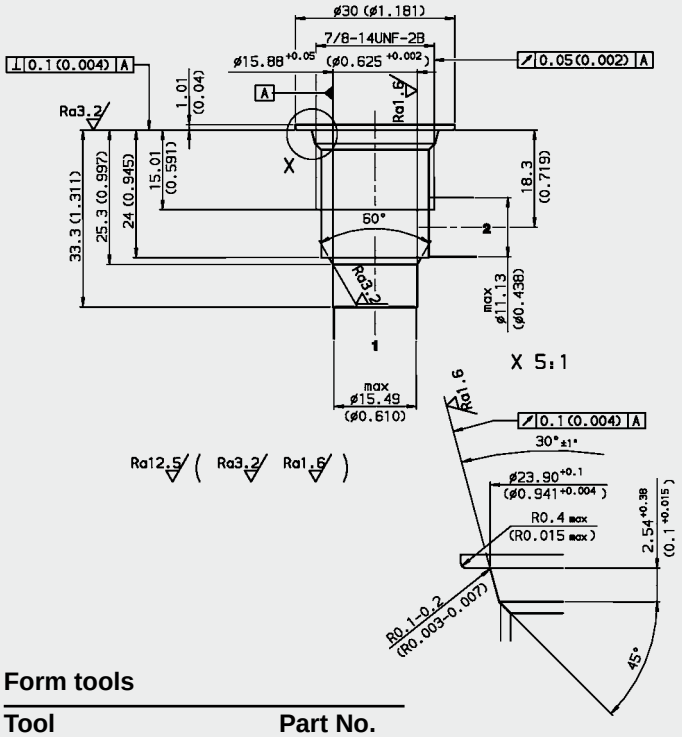




millimeter (inch)
subject to technical modifications

CAVITY

FC10-2



Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter (inch)
subject to technical modifications

MODEL CODE

WS10Z-01 M – C – N – 24 DG

Basic Model
Directional poppet valve UNF

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL-threaded connection M27x1
DL = 2 flying leads, 457 mm long; 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS10Z-01-C-N-24DG	3030560
WS10Z-01-C-N-230AG	3043793

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, clear anodized	G1/2	210 bar

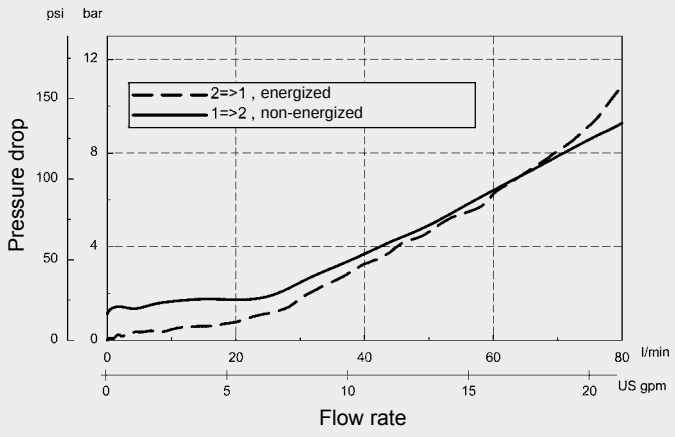
Other housings on request

Seal kits

Code	Material	Part No.
FH102-N Seal kit	NBR	3033872
FH102-V Seal kit	FKM	3051757

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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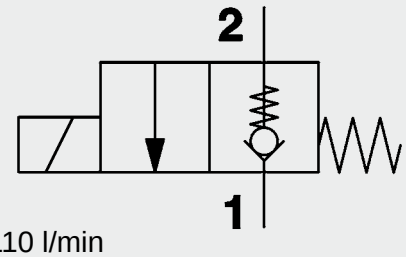
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

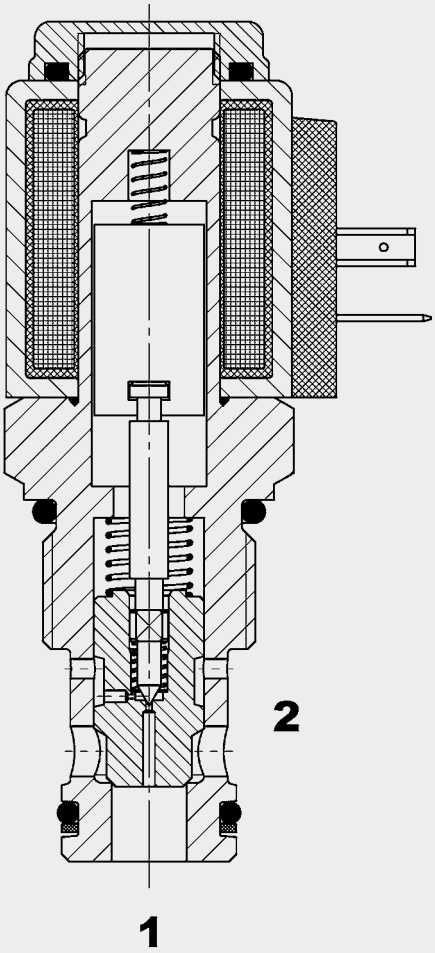


110 l/min
350 bar

2/2 Solenoid Directional Valve UNF
Poppet Type, Pilot-Operated
Normally Closed
SAE-12 Cartridge – 350 bar

WS12Z-01

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. There is free flow from port 1 to port 2.

When energized, there is free flow through the valve from port 2 to 1. Flow from port 1 to 2 is not permitted.

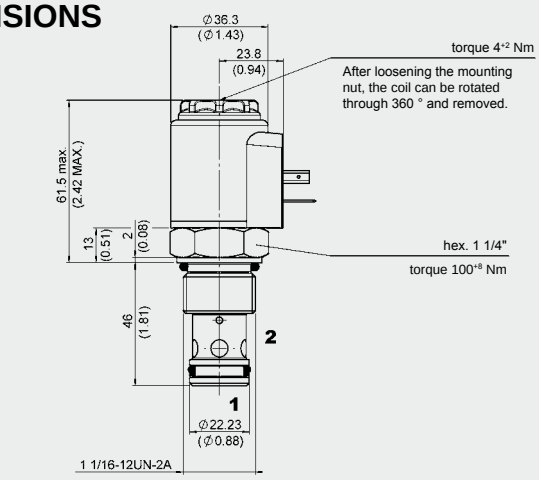
FEATURES

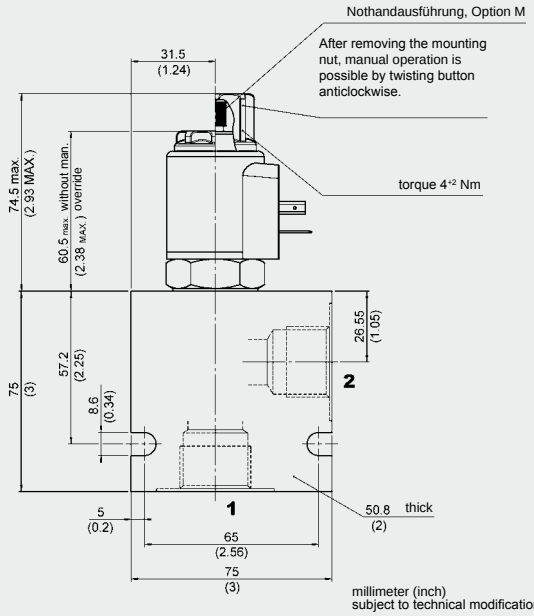
- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Low pressure drop due to CFD optimized flow path
- Wide variety of connectors available

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 110 l/min	
Leakage:	Leak-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC12-2	
Weight:	Valve complete	0.46 kg
	Coil only	0.19 kg
Electrical data:		
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Response time:	Energized:	approx. 30 ms
	De-energized:	approx. 70 ms
Coil type:	Coil…-40-1836	

DIMENSIONS

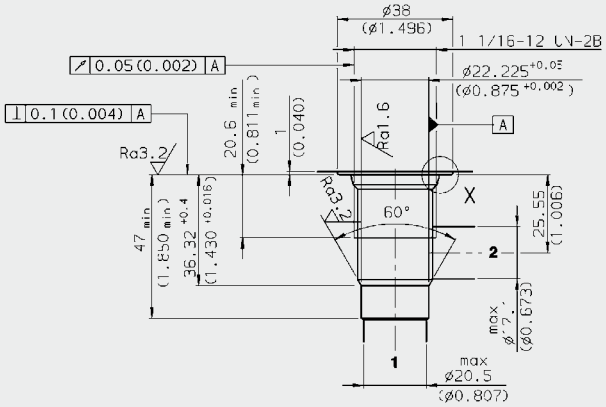


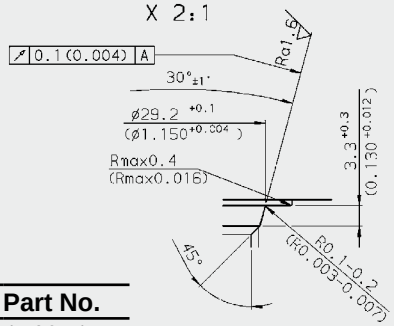


millimeter (inch)
subject to technical modifications

CAVITY

FC12-2





Form tools

Tool	Part No.
Countersink FC12-2	176951
Reamer FC12-2	176952

millimeter (inch)
subject to technical modifications

MODEL CODE

WS12Z – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, UNF

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB6 = G3/4 ports, steel body
AB6 = G3/4 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS12Z-01-C-N-24DG	3157866
WS12Z-01-C-N-230AG	3157865

*Standard in-line bodies

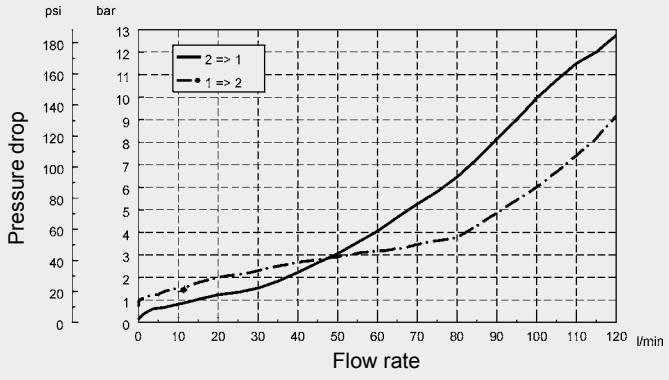
Code	Part No.	Material	Ports	Pressure
FH122-SB6	3053782	Steel, zinc-plated	G3/4	420 bar
FH122-AB6	3053843	Aluminium, anodized	G3/4	210 bar

Seal kits

Code	Material	Part No.
FS122-N SEAL KIT	NBR	3071298
FS122-V SEAL KIT	FKM	3071299

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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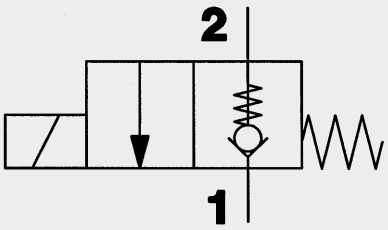
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

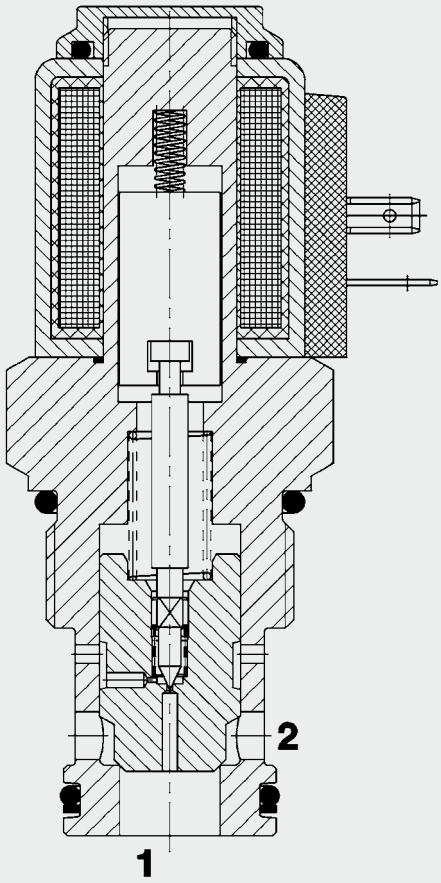


150 l/min
350 bar

2/2 Solenoid Directional Valve UNF Poppet Type, Pilot-Operated Normally Closed SAE-16 Cartridge – 350 bar

WS16Z-01

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. Flow is permitted from port 1 to port 2.

When energized, there is free flow through the valve from port 2 to port 1. Return flow from port 1 to 2 is prevented.

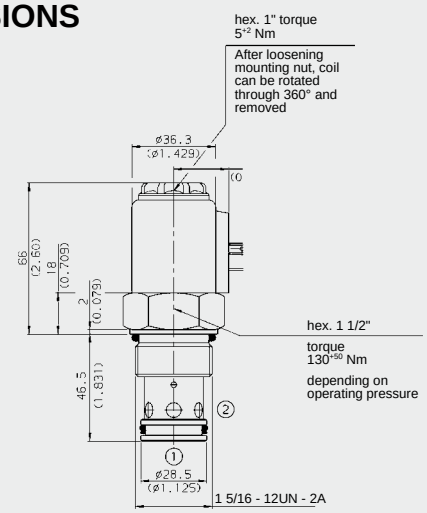
FEATURES

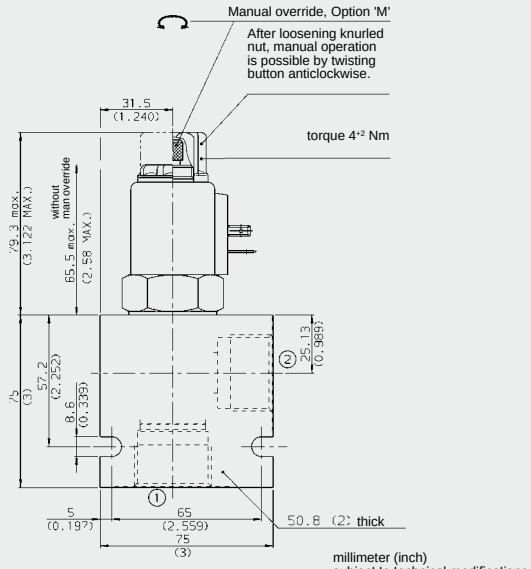
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	350 bar	
Nominal flow:	max. 150 l/min up to 280 bar max. 100 l/min from 280 to 350 bar	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	7.4 to 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to 120 °C)
	Coil:	Steel/Polyamide
Cavity:	FC16-2	
Weight:	Valve complete:	0.62 kg
	Coil only:	0.19 kg
Electrical data		
Response time:	Energized:	approx. 50 ms
	De-energized:	approx. 35 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15 % of nominal voltage	
Coil duty rating:	Continuous up to max. 115% of nominal voltage at max. 60° C ambient temperature	
Coil type:	Coil…-40-1836	

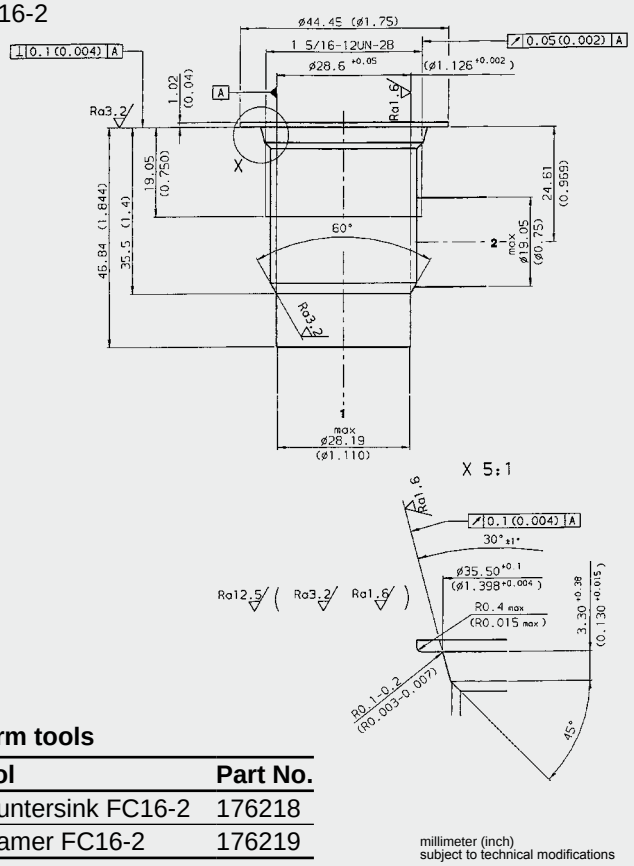
DIMENSIONS





CAVITY

FC16-2



Form tools

Tool	Part No.
Countersink FC16-2	176218
Reamer FC16-2	176219

MODEL CODE

WS16Z – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, UNF

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and Ports*
C = Cartridge only
SB8 = G1 ports, steel body
AB8 = G1 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS16Z-01-C-N-12DG	3049464
WS16Z-01-C-N-24DG	3049480
WS16Z-01-C-N-230AG	3049517

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH162-SB8	3032496	Steel, zinc-plated	G1	420 bar
FH162-AB8	3037193	Aluminium, anodized	G1	250 bar

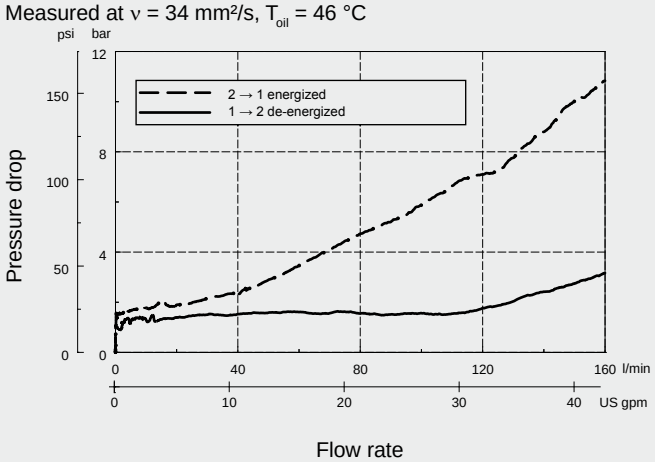
Other models on request

Seal kits

Code	Material	Part No.
FH162-N	NBR	3052427
FS162-V	FKM	3051758

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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HYDAC Fluidtechnik GmbH
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D-66280 Sulzbach/Saar
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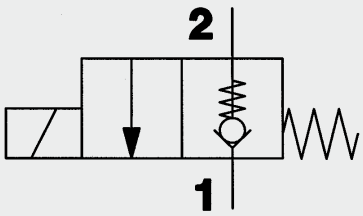
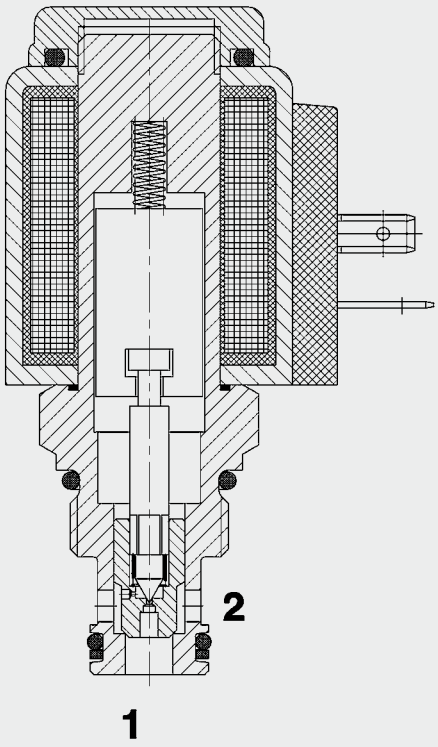


Up to 40 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Closed Metric Cartridge Valve – 350 bar

WSM06020Z-01

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1.

In the reverse direction there is free flow through the valve. The valve piston opens at a differential pressure of approx. 1.5 bar (check function).

When energized, there is free flow through the valve from port 2 to port 1. Return flow from port 1 to 2 is prevented.

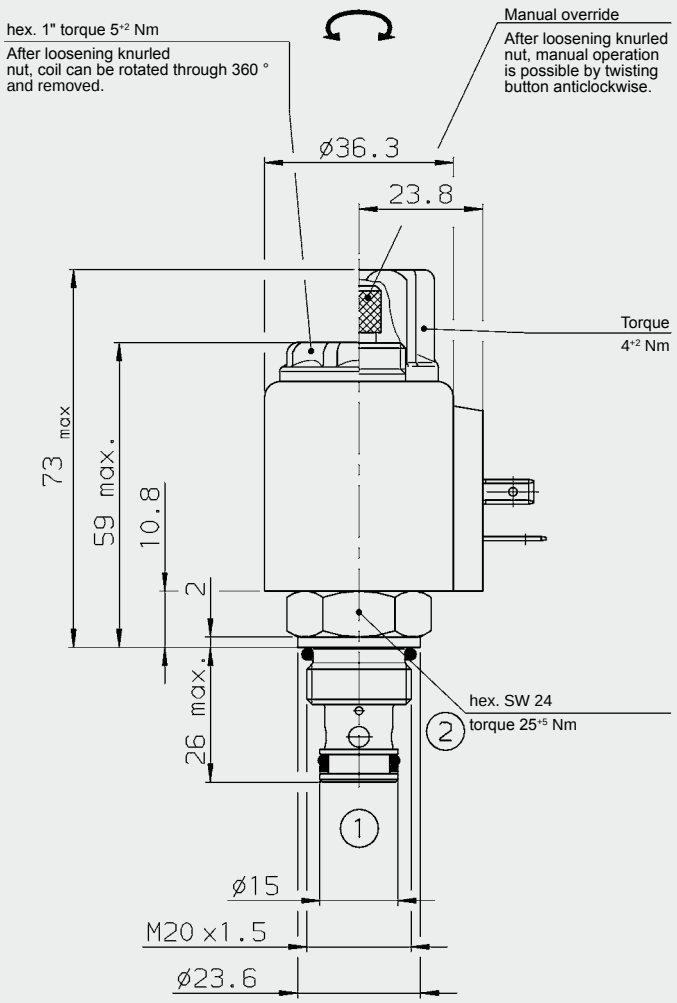
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground control piston to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Coil seals protect the solenoid system
- Compact design enables space-saving installation in connection housings and control blocks

SPECIFICATIONS

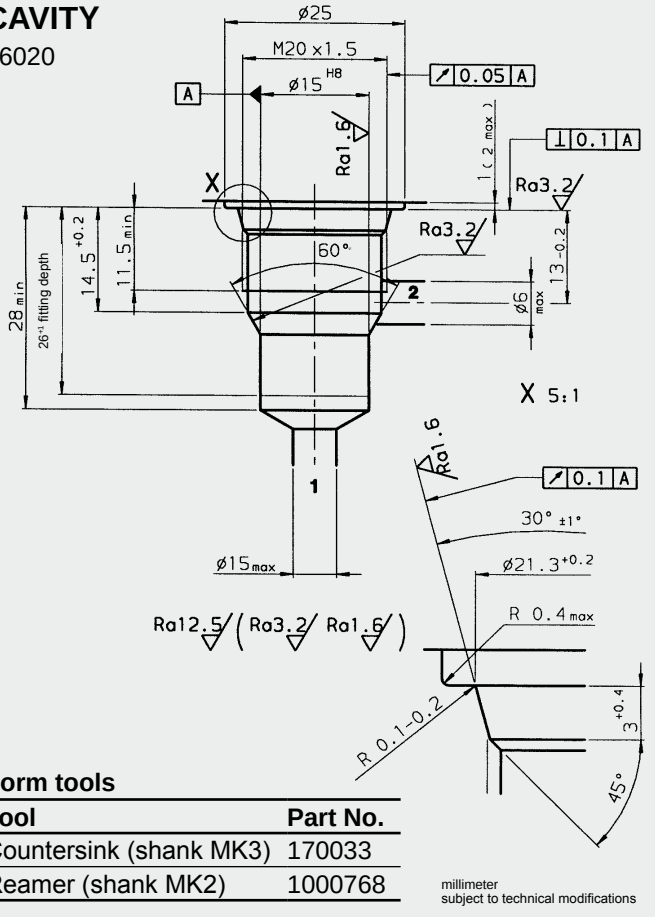
Operating pressure:	max. 350 bar	
Nominal flow:	max. 40 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	06020	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 50 ms
Coil type:	Coil…-40-1836	

DIMENSIONS



CAVITY

06020



Form tools

Tool	Part No.
Countersink (shank MK3)	170033
Reamer (shank MK2)	1000768

MODEL CODE

WSM06020Z – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DT = AMP Junior Timer, 2-pole, radial
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads 475 mm long, 0.75 mm²
DN = Deutsch connector, axial
AC: AG = DIN connector to EN175301-803

Other connectors on request

Standard models

Model code	Part No.
WSM06020Z-01-C-N-24DG	3055428
WSM06020Z-01-C-N-230AG	3055416

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G3/8	420 bar

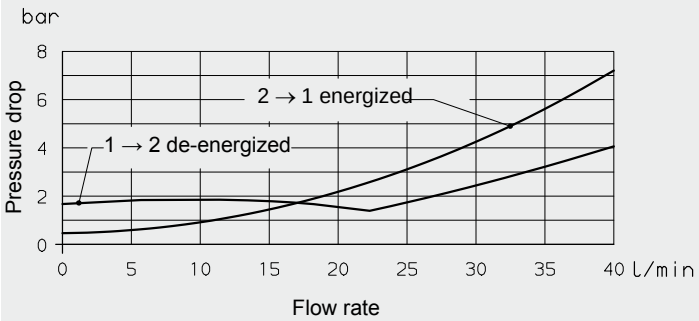
For other connection housings, see brochure no. E 5.252. "Connection Housings for Cartridge Valves".

Seal kits

Code	Material	Part No.
SEAL KIT 06020-NBR	NBR	3119017
SEAL KIT 06020-FKM	FKM	3262477

PERFORMANCE

Measured at ν = 34 mm²/s, T_{Oil} = 46 °C



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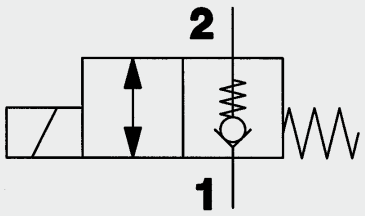
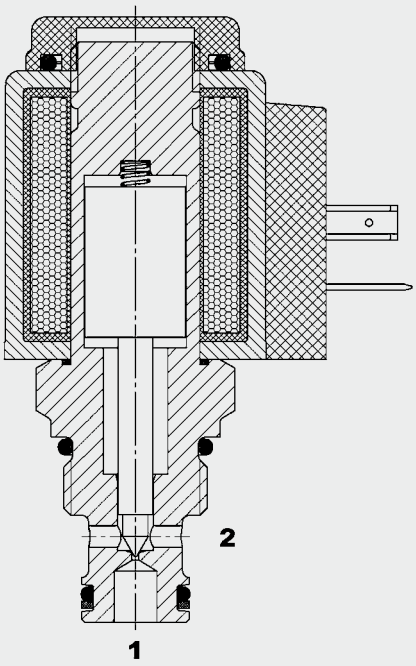


Up to 3 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Direct-Acting Normally Closed Metric Cartridge – 350 bar

WSM06020Z-70

FUNCTION



The WSM06020Z-70 is suitable for particularly low flow rates and is specially designed for use as a pilot valve.

When the solenoid coil is not energized, the valve is closed from port 2 to port 1. In the opposite direction, the valve opens at a pressure differential of approx. 60 bar. When the solenoid coil is energized, the valve allows flow in both directions.

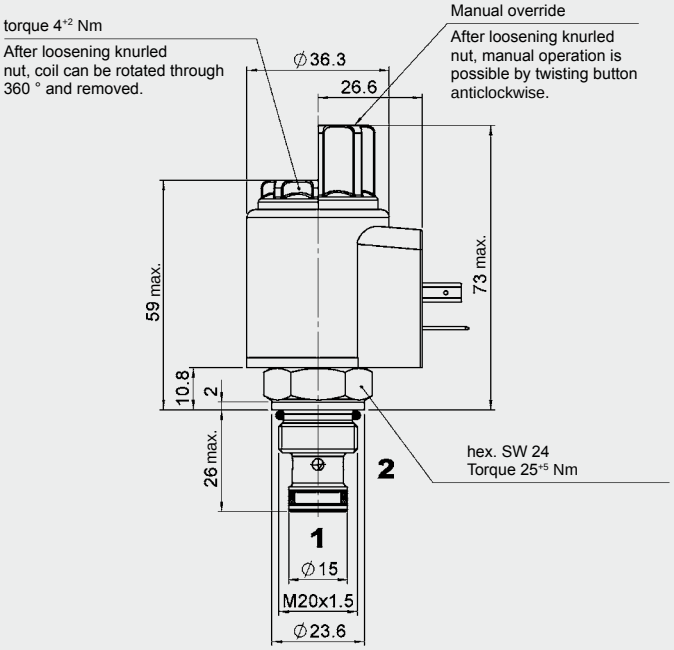
FEATURES

- Version -70 for particularly low flow rates
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 3 l/min	
Internal leakage:	Leakage-free	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	06020	
Weight:	Complete valve:	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	On:	approx. 20 ms
	Off:	approx. 30 ms
Coil type:	Coil …-40-1836	

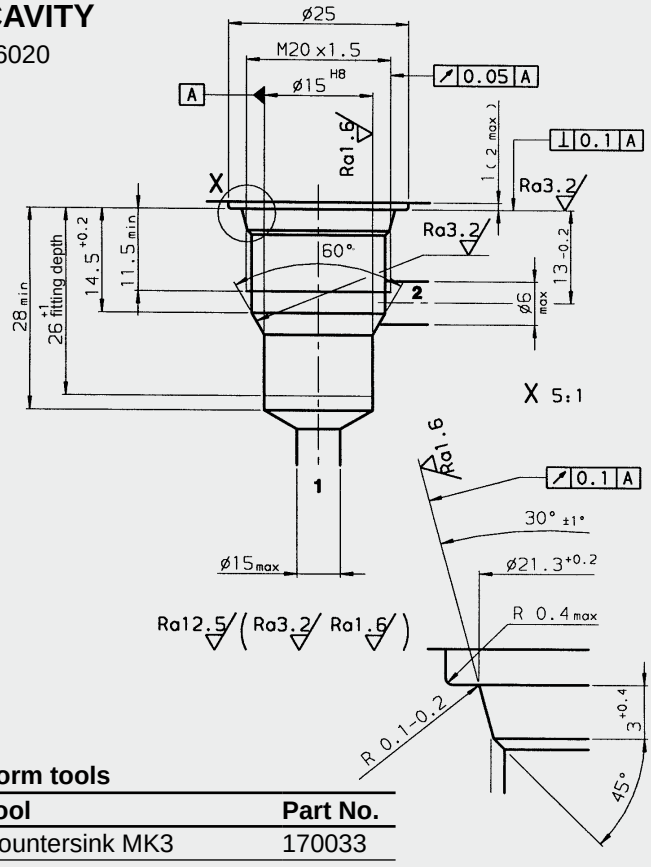
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

06020



Form tools

Tool	Part No.
Countersink MK3	170033
Reamer MK2	1000768

millimeter
subject to technical modifications

MODEL CODE

WSM06020Z – 70 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Ausführung
70 = Standard
(for particularly low flow rates)

Manual override
no details = without manual override
M = manual override

Body and ports
C = cartridge only
Combinations with body on request

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WSM06020Z-70-C-N-12DG	3581216
WSM06020W-70-C-N-24DG	3534256
WSM06020Z-70-C-N-230AG	3534257

Other models on request

Standard in-line bodies

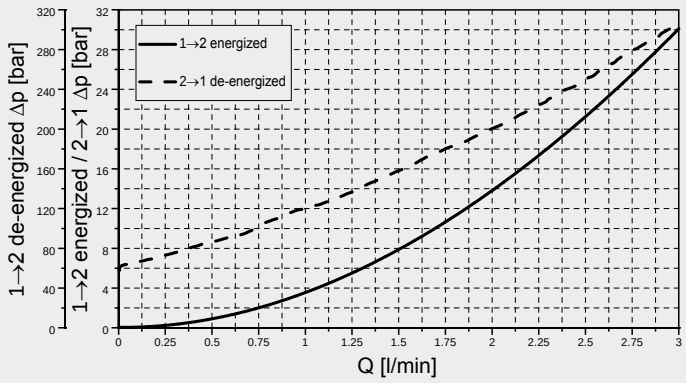
Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G 3/8	420 bar

Seal kits

Code	Material	Part No.
SEAL KIT 06020-NBR	NBR	3119017
SEAL KIT 06020-FKM	FKM	3262477

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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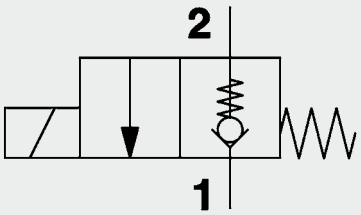
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

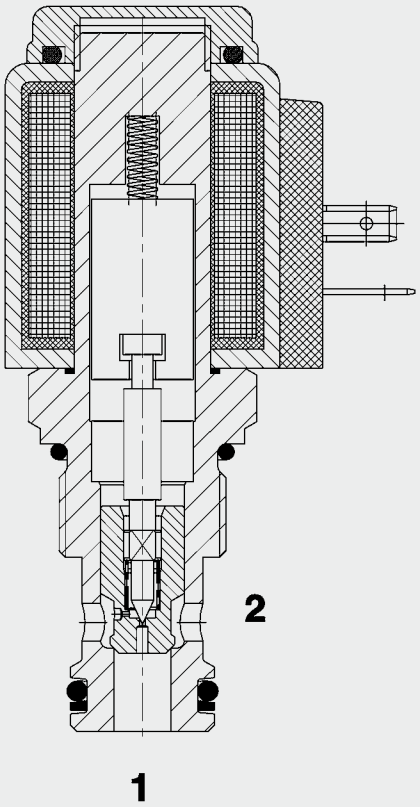


Up to 75 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Closed Metric Cartridge Valve – 350 bar

WSM10120Z-01

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. Flow is permitted from port 1 to port 2.

When energized, there is free flow through the valve from port 2 to 1. Reverse flow from port 1 to 2 is prevented.

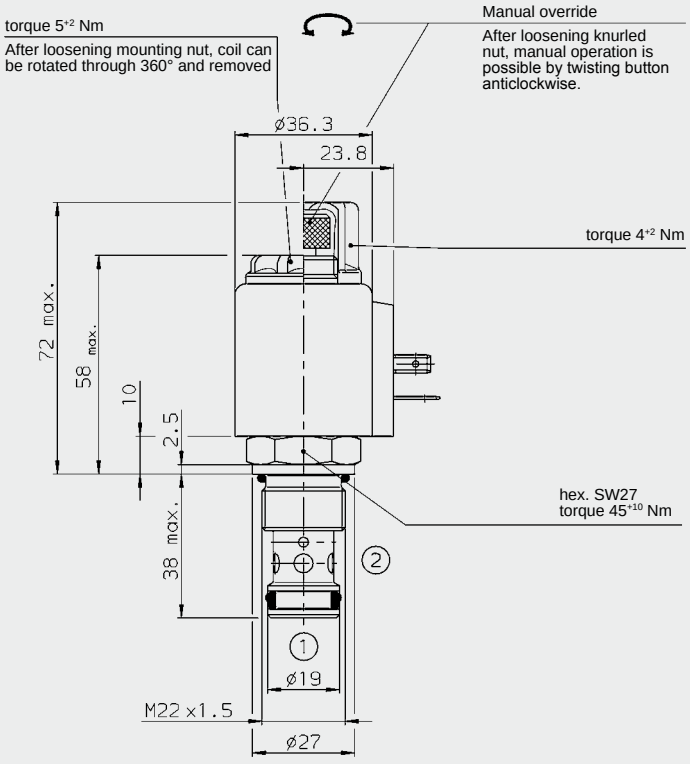
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 75 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Mounting position:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	10120	
Weight:	Valve complete	0.37 kg
	Coil only	0.19 kg
Electrical data		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 80 ms
Coil type:	Coil…-40-1836	

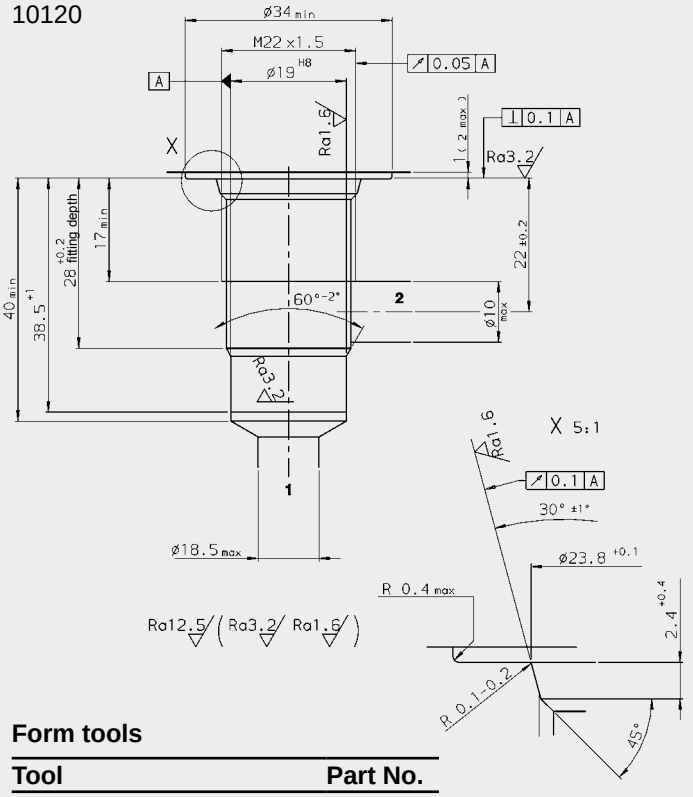
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

10120



Form tools

Tool	Part No.
Countersink (shank MK3)	170418
Reamer (shank MK2)	1014206

millimeter
subject to technical modifications

MODEL CODE

WSM10120Z – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages:
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL-threaded connection M27x1
DL = 2 flying leads, 457 mm long; 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WSM10120Z-01-C-N-24DG	3179153
WSM10120Z-01-C-N-230AG	3179152

* Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R10120-01X-01	395234	Steel, zinc-plated	G 1/2	420 bar

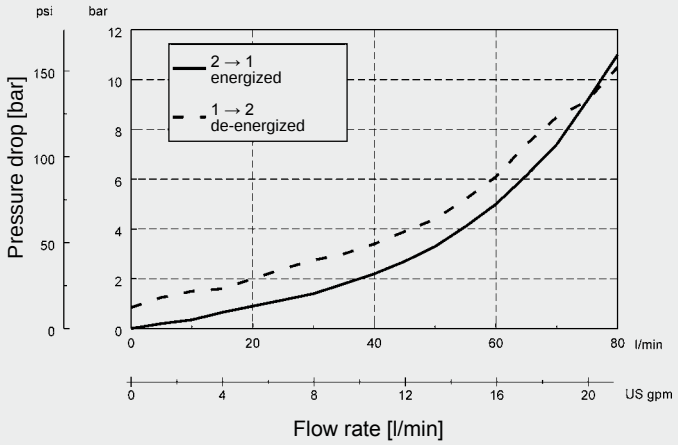
For other connection housings, see brochure no. E 5.252.4 "Connection Housings for Cartridge Valves".

Seal kits

Code	Material	Part No.
SEAL KIT 10120-NBR	NBR	3382346
SEAL KIT 10120-FKM	FKM	3178281

PERFORMANCE

Measured at ν = 33 mm²/s T_{Oil} = 46 °C



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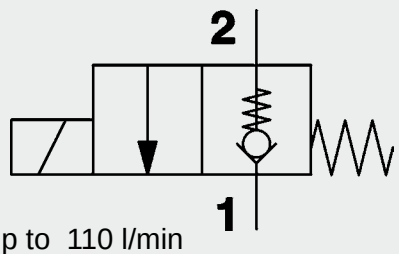
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

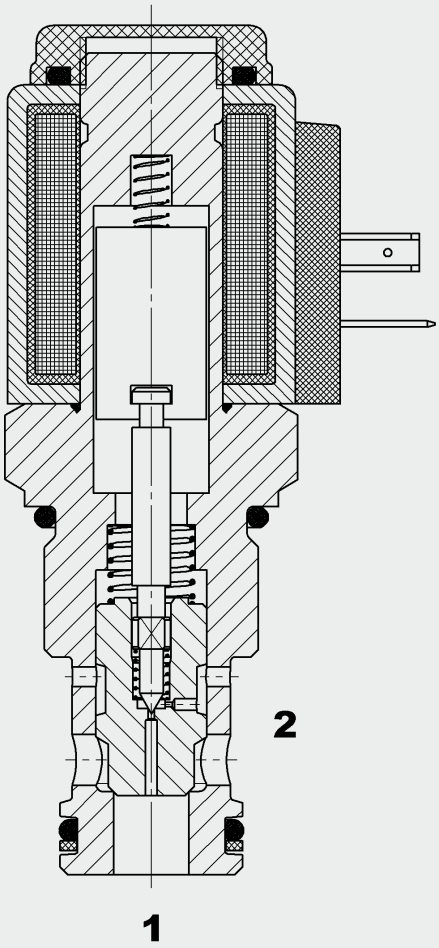


Up to 110 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Closed Metric Cartridge Valve – 350 bar

WSM12120Z

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to 1.
In the opposite direction, oil can flow freely through the valve. The valve piston opens at a differential pressure of approx. 1.5 bar (check function). When energized, there is free flow through the valve from port 2 to port 1.
Return flow from port 1 to 2 is not possible.

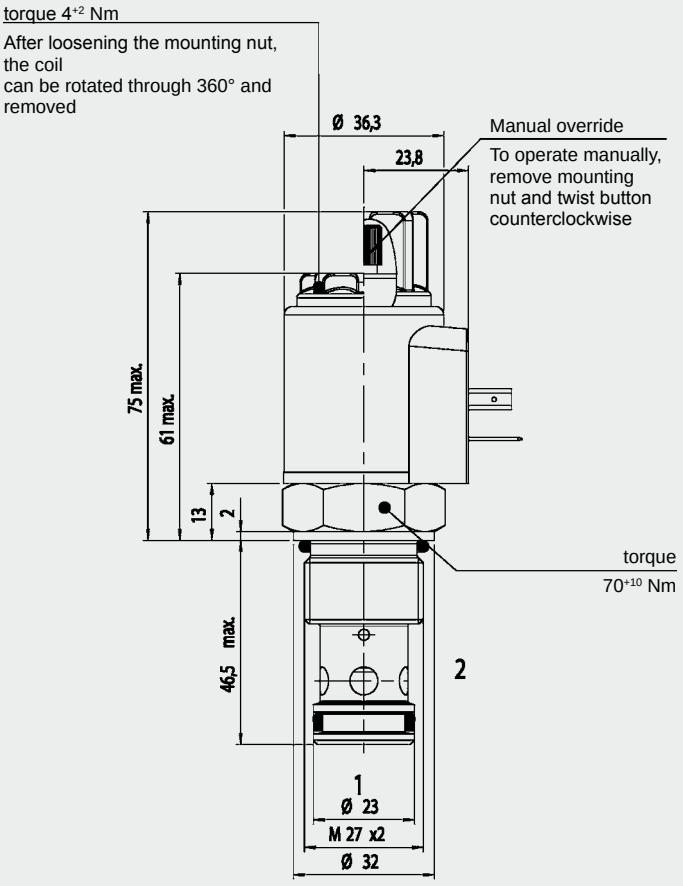
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground control piston to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 110 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to 120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	12120	
Weight:	Valve complete	0.46 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Response time:	energized:	approx. 35 ms
	de-energized:	approx. 70 ms
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil...-40-1836	

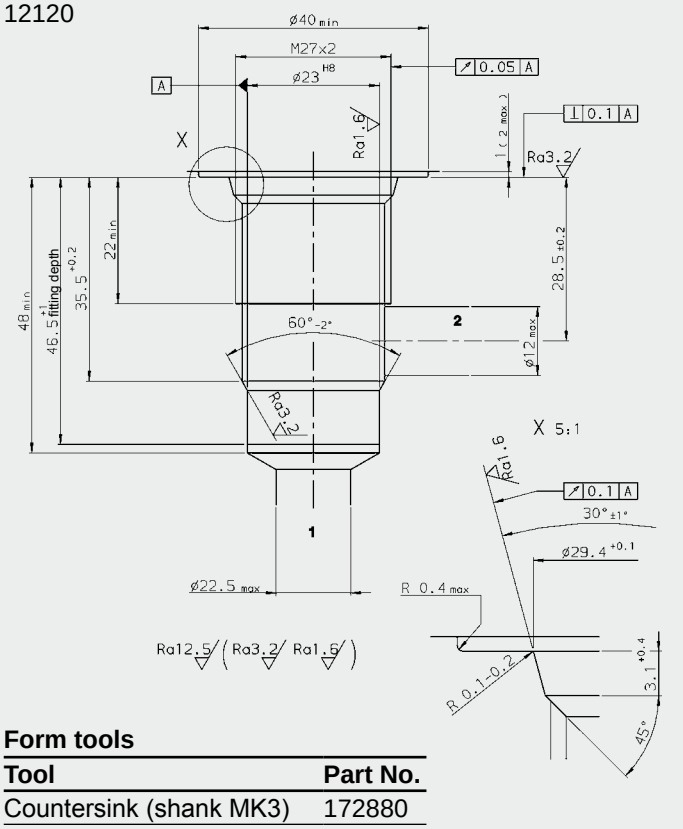
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

12120



Form tools

Tool	Part No.
Countersink (shank MK3)	172880
Reamer	1014207

millimeter
subject to technical modifications

MODEL CODE

WSM12120Z – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL-threaded connection M27x1
DL = 2 flying leads, 457 mm long; 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WSM12120Z-01-C-N-12DG	3230865
WSM12120Z-01-C-N-24DG	3230870
WSM12120Z-01-C-N-230AG	3230869

Other models on request

Standard in-line bodies

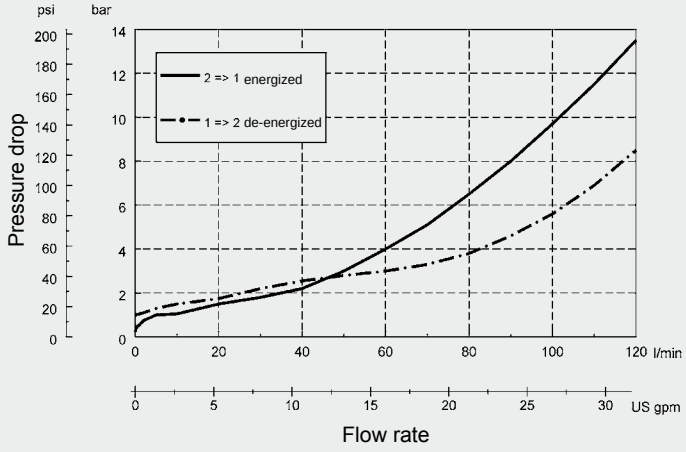
Code	Part No.	Material	Ports	Pressure
R12120-10X-01	396708	Steel, zinc-plated	G 3/4	420 bar
R10120-01X-01	396707	Steel, zinc-plated	M 27 x 2	420 bar

Seal kits

Code	Material	Part No.
SEAL KIT 10120-NBR	NBR	3454001
SEAL KIT 10120-FKM	FKM	3454002

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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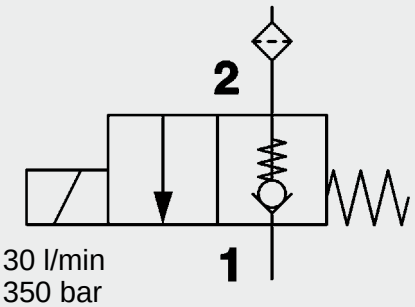
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

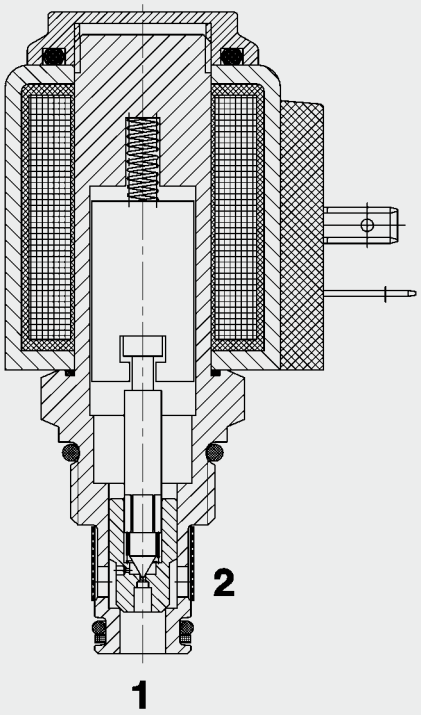


30 l/min
350 bar

2/2 Solenoid Directional Valve UNF
Poppet Type, Pilot-Operated
Normally Closed
Screen Filter
SAE-08 Cartridge – 350 bar

WS08Z-30

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. Flow is permitted from port 1 to port 2.

When energized, there is free flow through the valve from port 2 to 1. Flow from port 1 to 2 is prevented.

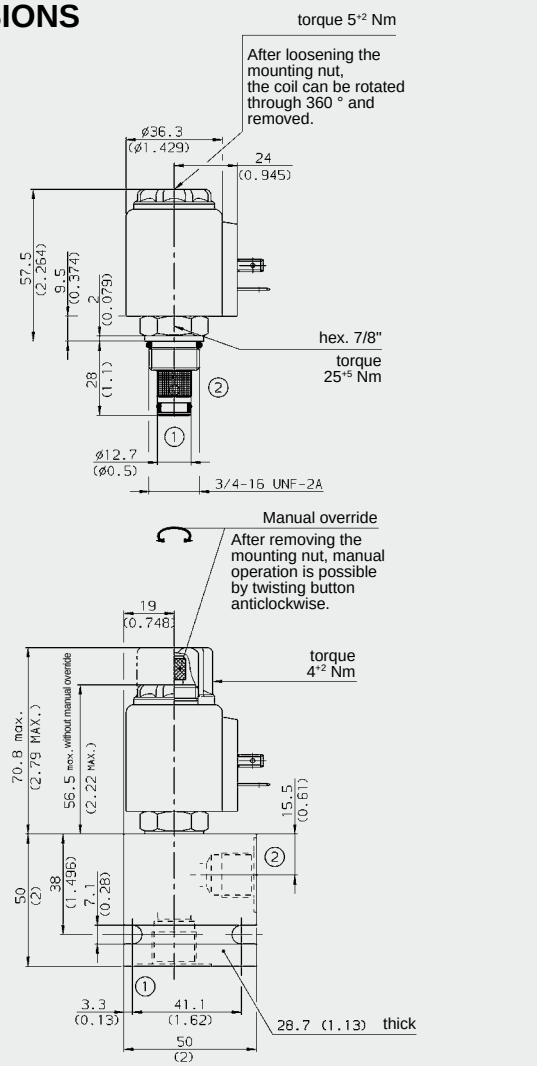
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Wide variety of connectors available
- Low pressure drop due to CFD optimized flow path
- In flow direction 2 to 1 internal valve parts protected against coarse contamination by screen filter

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 30 l/min	
Leakage:	Leak-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
Screen filter:	300 µm mesh size	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-2	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 50 ms
Coil type:	Coil…-40-1836	

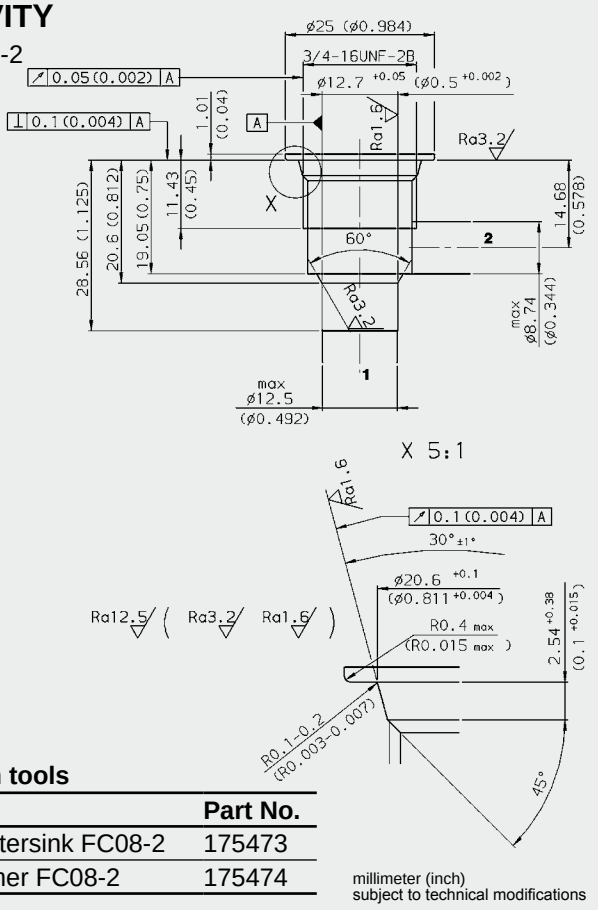
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

millimeter (inch)
subject to technical modifications

MODEL CODE

WS08Z – 30 M – C – N – 24 DG

Basic model
Directional poppet valve, UNF, with screen filter

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial

AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WS08Z-30-C-N-24DG	3132859
WS08Z-30-C-N-230AG	3132860

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, anodized	G3/8	210 bar

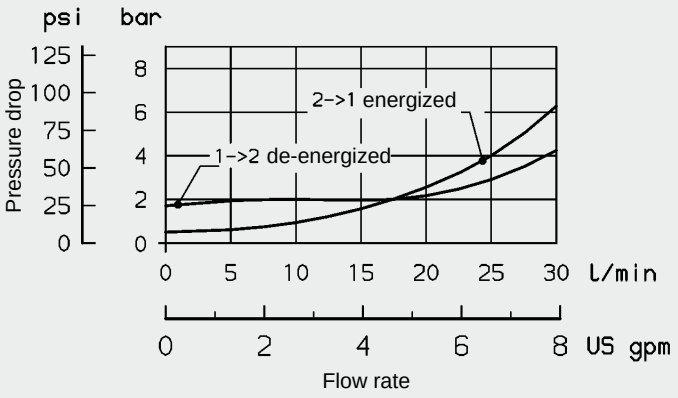
Other line bodies on request

Seal kits

Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	NBR	3051756

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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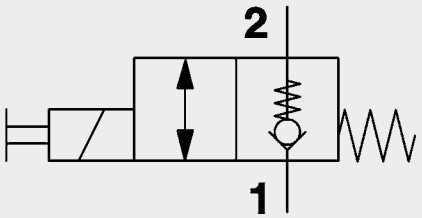


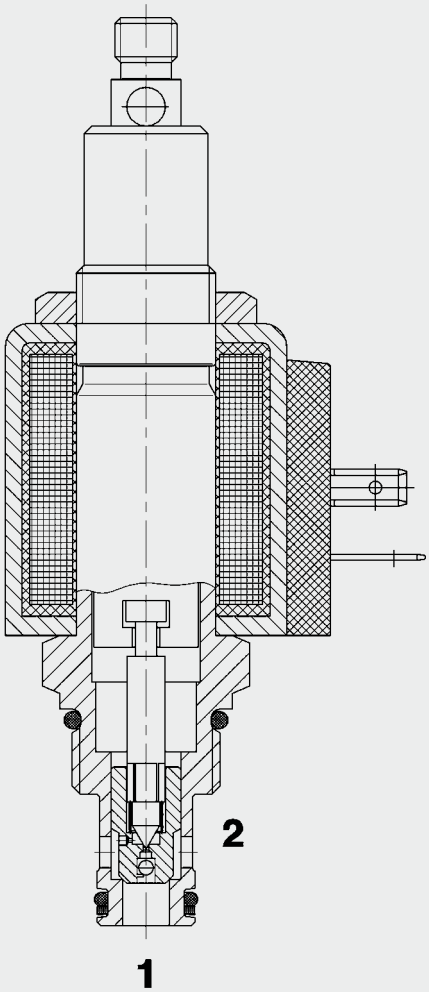
38 l/min
350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Spring-Return Manual Override Normally Closed (Reverse Flow) SAE-08 Cartridge – 350 bar

UNF

WS08ZR-01J

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. Flow is permitted from port 1 to port 2.

When energized the valve allows flow in both directions.

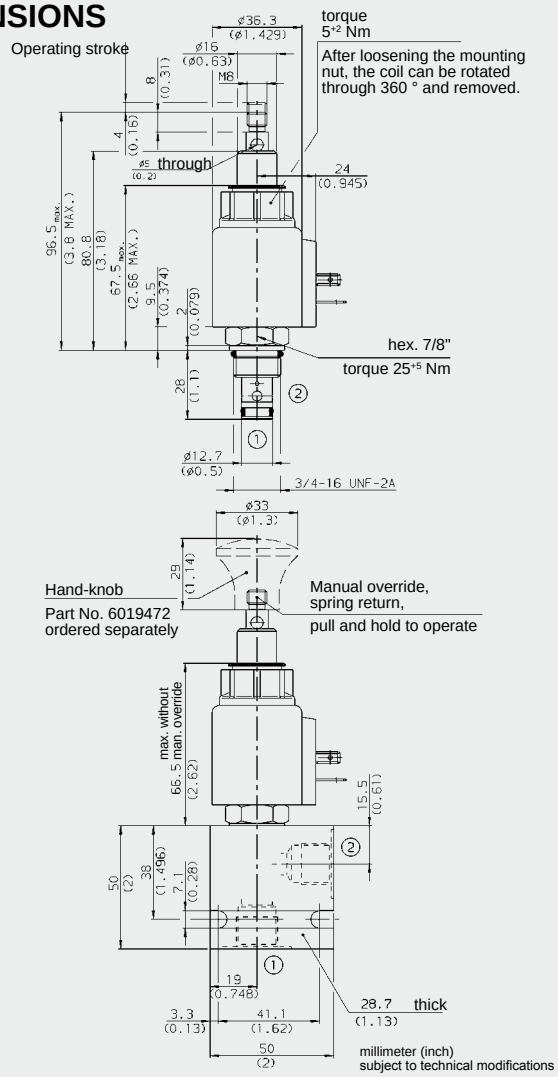
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Wide variety of connectors available
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Wide variety of connectors available

SPECIFICATIONS

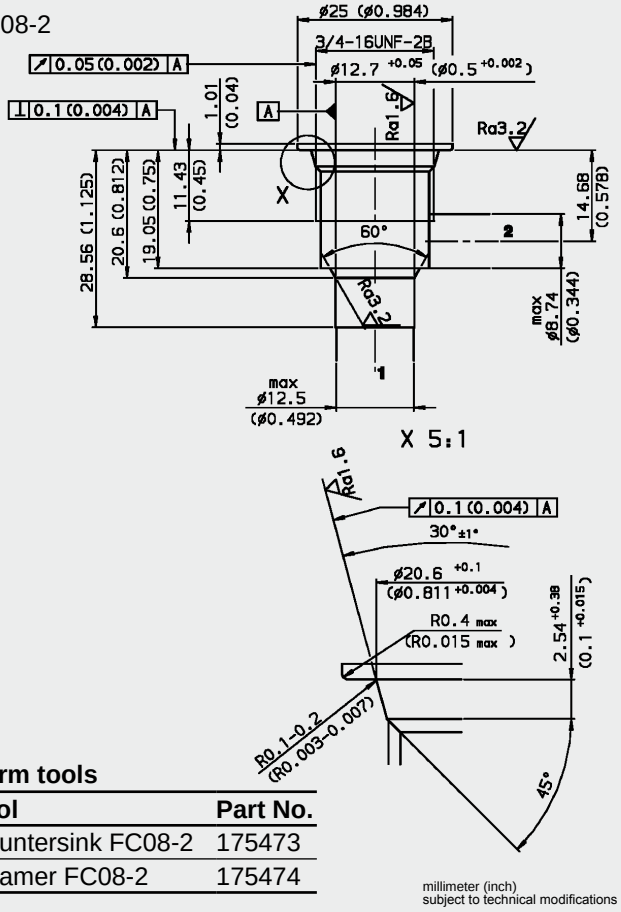
Operating pressure:	max. 350 bar	
Nominal flow:	max. 38 l/min	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Manual override:	The pull-force required is dependent on the operating pressure max. approx. 150 N The max. permitted pull-force is 180 N	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-2	
Weight:	Valve complete	0.36 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Voltage tolerance:	± 15% of the nominal voltage	
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 50 ms
Coil type:	Coil…-40-1836	

DIMENSIONS



CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

MODEL CODE

WS08ZR – 01 J – C – N – 24 DG

Basic model
Directional poppet valve UNF

Type
01 = standard

Manual override
J = pull-and-hold, spring-return manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Nominal voltage for actuating solenoid
DC voltages:
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS08ZR-01J-C-N-24DG	3122604
WS08ZR-01J-C-N-230AG	3122605

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, anodized	G3/8	210 bar

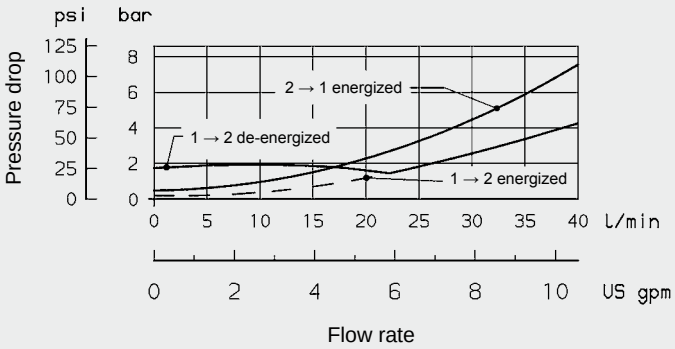
Other bodies on request

Seal kits

Code	Material	Part No.
FS082-N SEAL NBR	DE	3033920
FS082-V SEAL FKM	DE	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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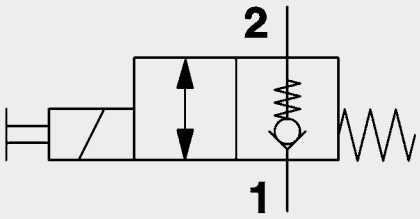
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

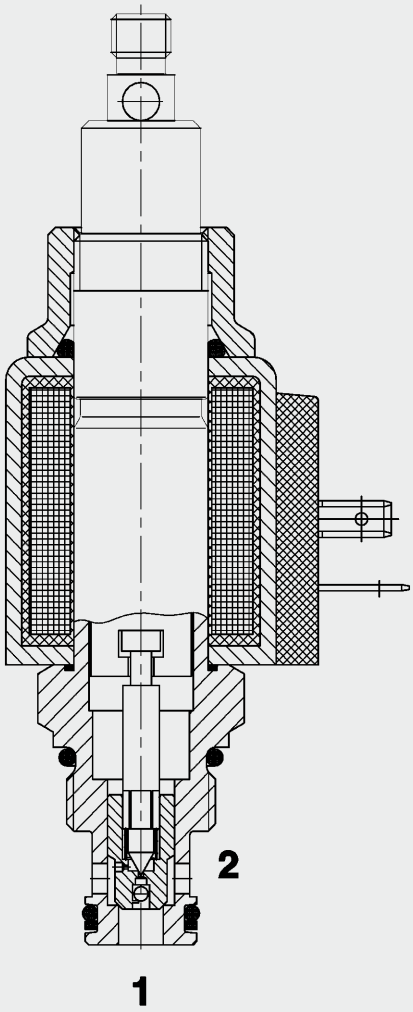
2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Spring-Return Manual Override Normally Closed (Reverse Flow) Metric Cartridge Valve – 350 bar

WSM06020ZR-01J



Up to 40 l/min
Up to 350 bar

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. Flow is permitted from port 1 to port 2.

When energized the valve allows flow in both directions.

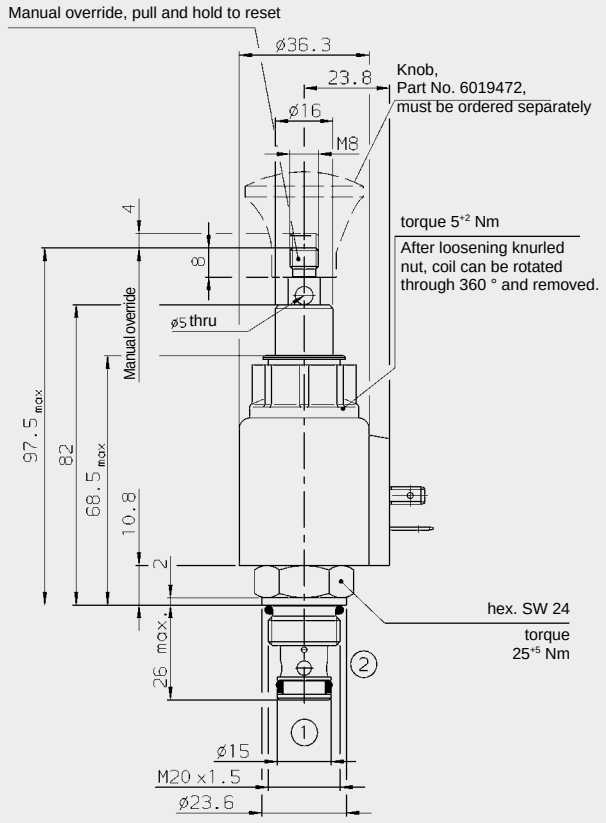
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground control piston to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 40 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Manual override:	The pull-force required is dependent on the operating pressure max. approx. 150 N The max. permitted pull-force is 180 N	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	06020	
Weight:	Valve complete	0.36 kg
	Coil only	0.19 kg
Electrical data		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 50 ms
Coil type:	Coil…-40-1836	

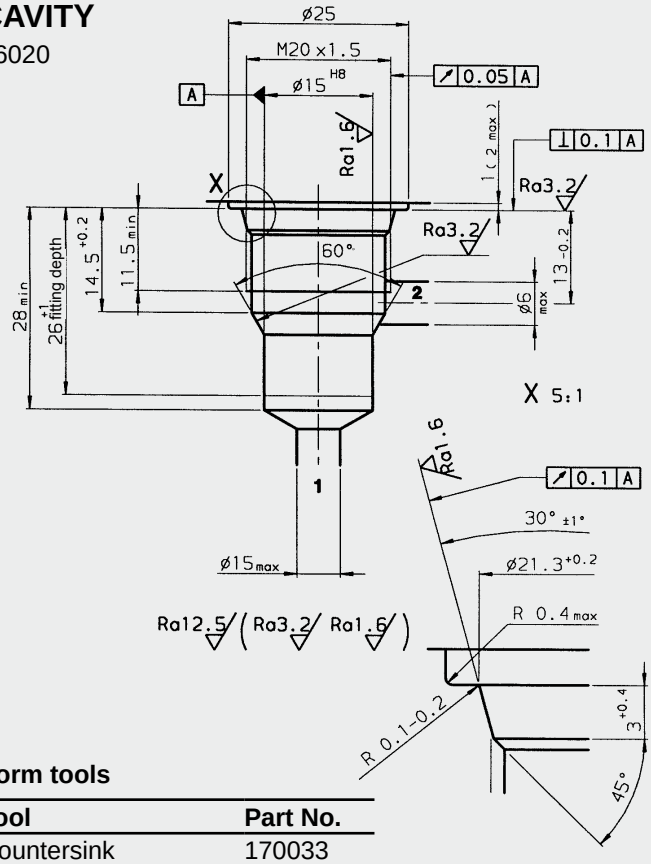
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

06020



Form tools

Tool	Part No.
Countersink	170033
Reamer	1000768

millimeter
subject to technical modifications

MODEL CODE

WSM06020ZR - 01 J - C - N - 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
J = pull-type,
spring-return manual override

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WSM06020ZR-01J-C-N-24DG	3123457
WSM06020ZR-01J-C-N-230AG	3123561

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G 3/8	420 bar

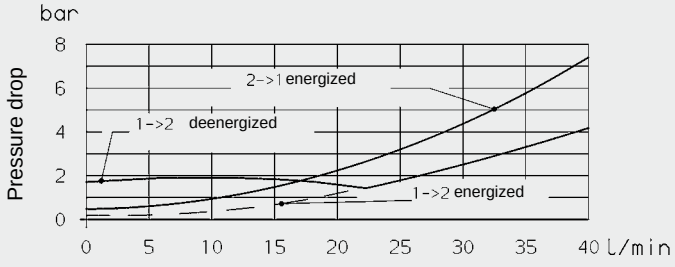
Other bodies on request

Seal kits

Code	Material	Part No.
SEAL KIT 06020-NBR	NBR	3119017
SEAL KIT 06020-FKM	FKM	3262477

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



Flow rate

NOTE

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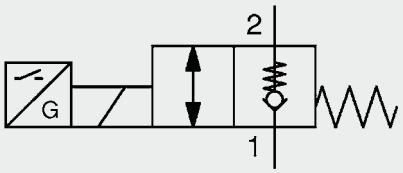
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



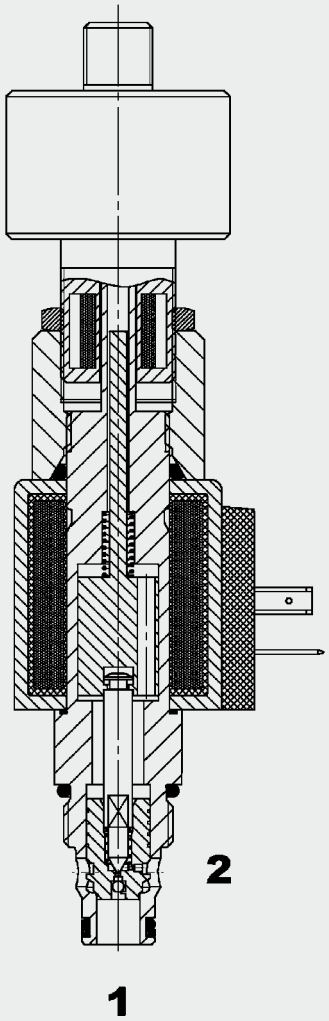
Up to 40 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Normally Closed (Reverse Flow) With Electronic Switch Position Monitoring SAE-08 Cartridge – 350 bar

UNF

WS08ZR-01E

FUNCTION



The directional valve WS08ZR-01E is a pilot-operated poppet valve with electronic switch position monitoring. When de-energized the valve is closed from port 2 to port 1.

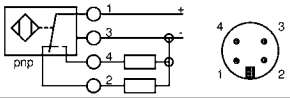
Flow is possible in the opposite direction. The valve poppet opens at a differential pressure of approx. 1.8 bar (check function).

When energized the valve allows flow in both directions.

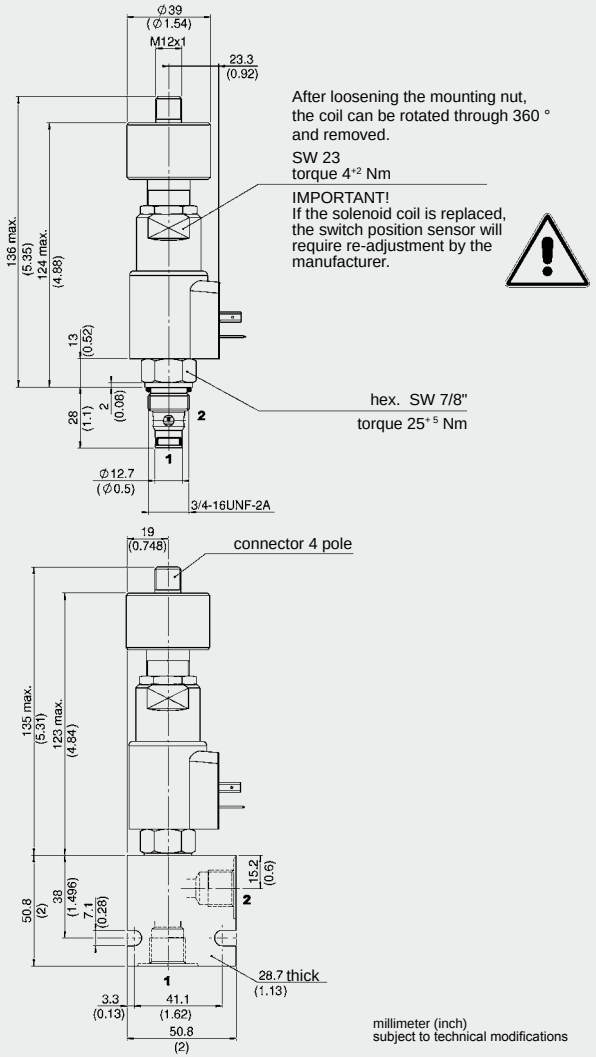
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path
- With integrated electronic switch position monitoring

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 40 l/min	
Leakage:	leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-2	
Weight:	0.5 kg	
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	Energized:	approx. 30 ms
	De-energized:	approx. 70 ms
Sensor data:		
Supply voltage:	20 to 32 V DC, with reverse polarity protection	
Outputs:	2 with change-over function PNP positive switching	
Output load:	≤ 400 mA, 100% duty	
Short circuit protection:	Provided	
Connector:	Male connector M12 x 1, round	
Protection class	IP65 to DIN 40050	
CE-Conformity:	93/68/EEC 2004/108/EC	
EMC:	DIN EN 6100-6-1-2-3-4	
Humidity requirements:	0 - 95 % rel. (to DIN 40040)	
Sensor connections:		

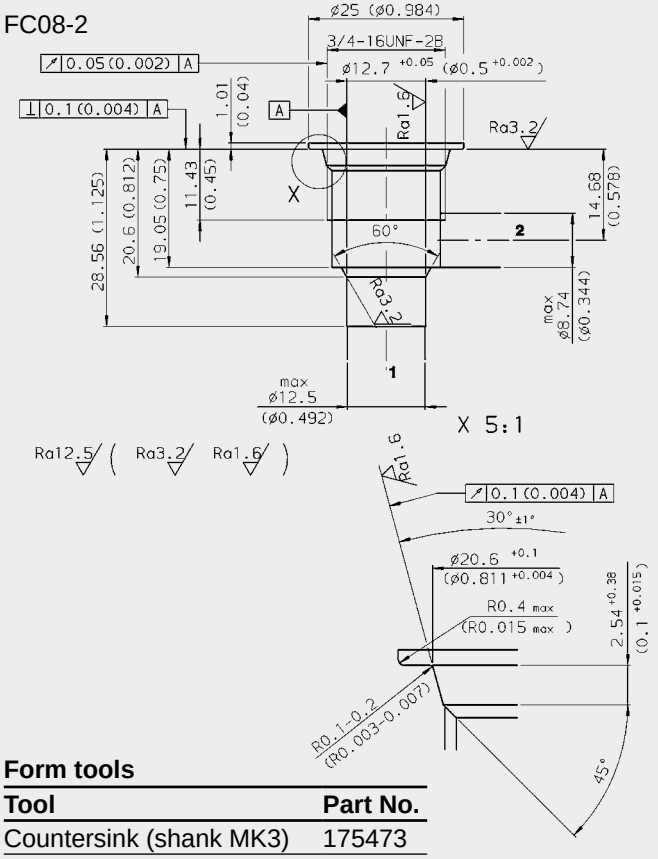
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink (shank MK3)	175473
Reamer	175474

millimeter (inch)
subject to technical modifications

MODEL CODE

WS08ZR – 01E – C – N – 24 DG

Basic model
Directional poppet valve, UNF

Type
01E = with electronic switch position monitoring

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial

AC: AG = DIN Connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WS08ZR-01E-C-N-12DG	3368892
WS08ZR-01E-C-N-24DG	3352882
WS08ZR-01E-C-N-230AG	3368893

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, anodized	G3/8	210 bar

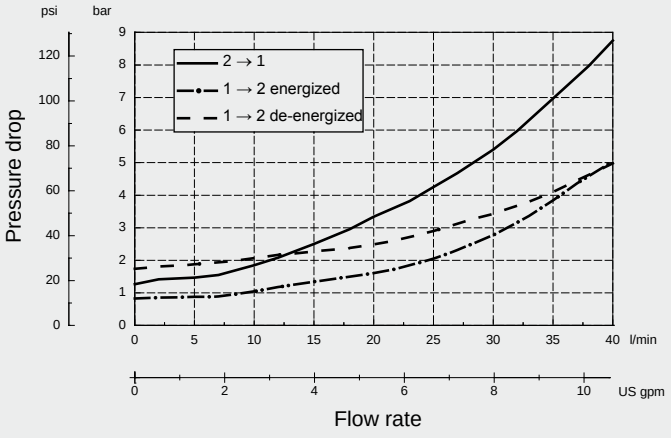
Other bodiess on request

Seal kits

Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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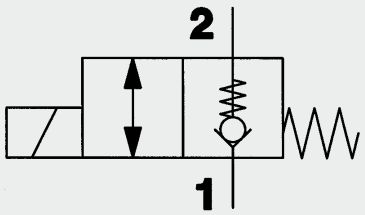
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

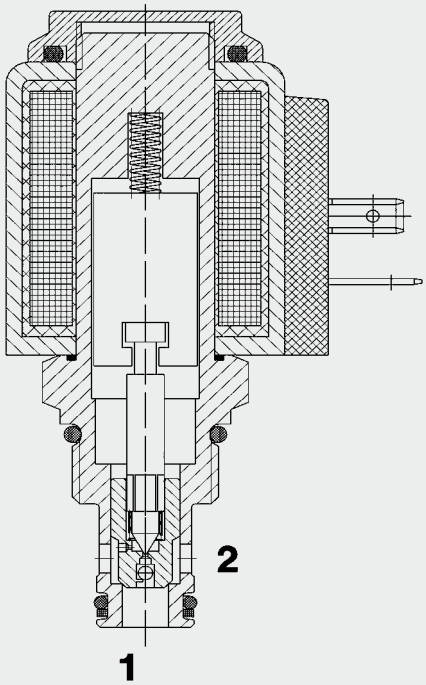


38 l/min
350 bar

2/2 Solenoid Directional Valve UNF Poppet Type, Pilot-Operated Normally Closed (Reverse Flow) SAE-08 Cartridge – 350 bar

WS08ZR-01

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. Flow is permitted from port 1 to port 2.

When energized the valve allows flow in both directions.

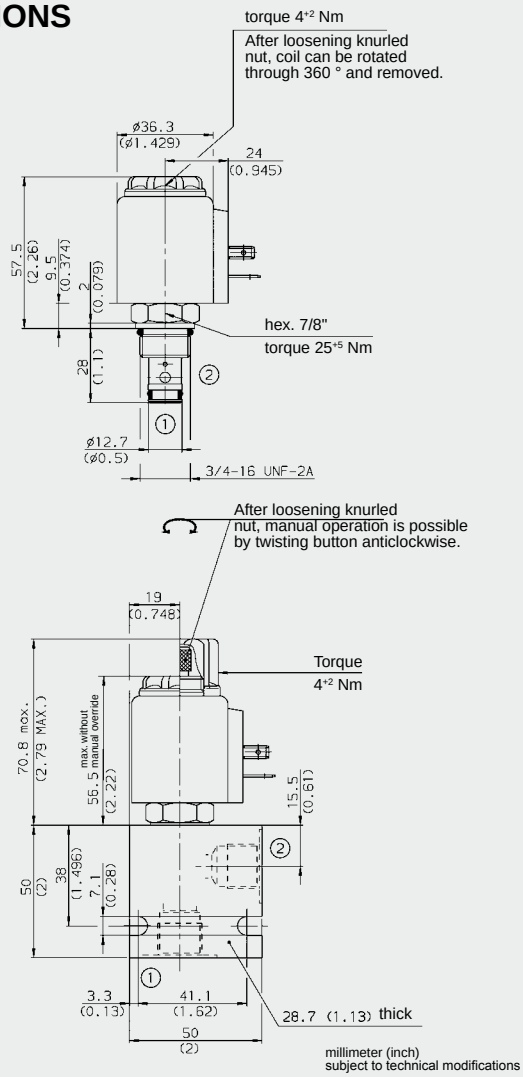
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

CHARACTERISTICS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 38 l/min	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel/Polyamide
Cavity:	FC08-2	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 50 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

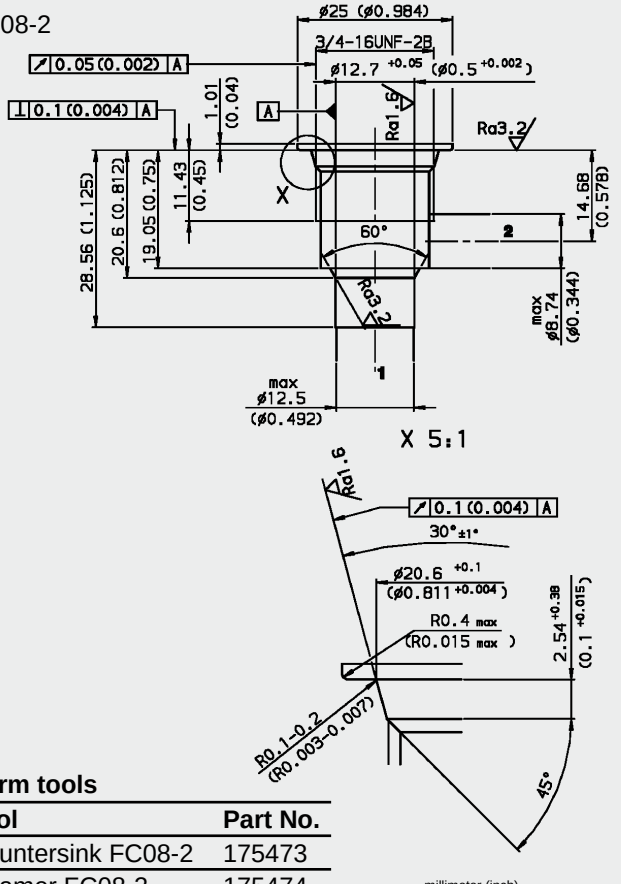
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-2



millimeter (inch)
subject to technical modifications

Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

MODEL CODE

WS08ZR-01 M – C – N – 24 DG

Basic model
Directional poppet valve, UNF

Manual override
no details = without manual override
M = manual override

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial

AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WS08ZR-01-C-N-12DG	558859
WS08ZR-01-C-N-24DG	562806
WS08ZR-01-C-N-230AG	3043419

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

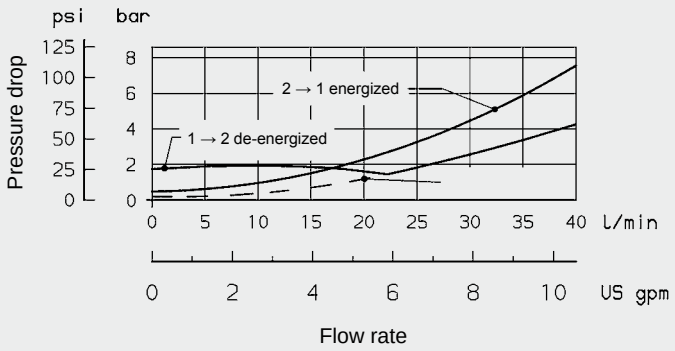
Other line bodies on request

Seal kits

Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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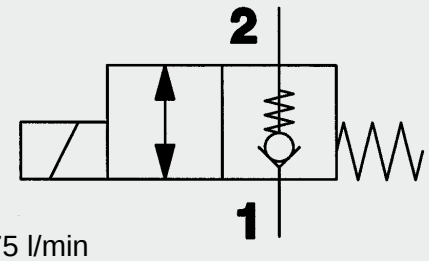
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

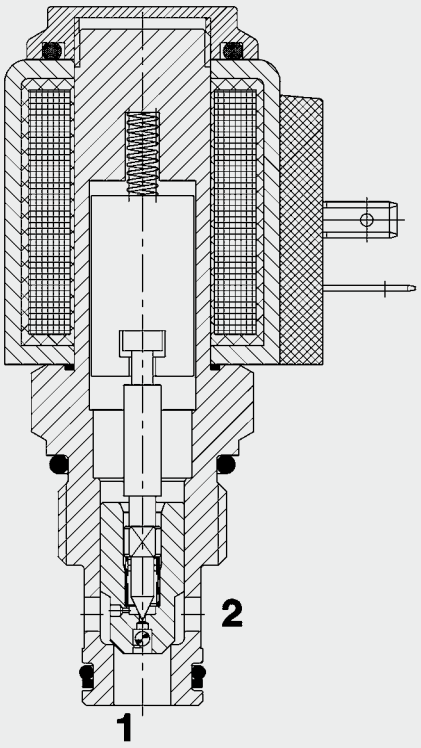


75 l/min
350 bar

2/2 Solenoid Directional Valve UNF Poppet Type Normally Closed (Reverse Flow) SAE-10 Cartridge – 350 bar

WS10ZR-01

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. There is free flow from port 1 to port 2. When energized, the valve allows flow in both directions.

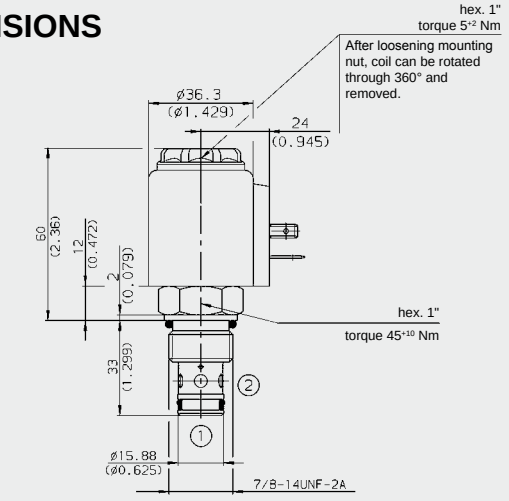
FEATURES

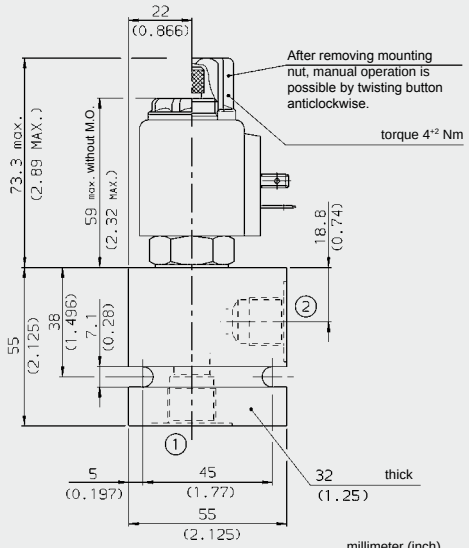
- External surfaces zinc-plated and corrosion proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop by CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 75 l/min	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-2	
Weight:	Valve complete	0.37 kg
	Coil only	0.19 kg
Electrical data:		
Switching time:	energized:	approx. 30 ms
	non-energized:	approx. 60 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Nominal voltage at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

DIMENSIONS

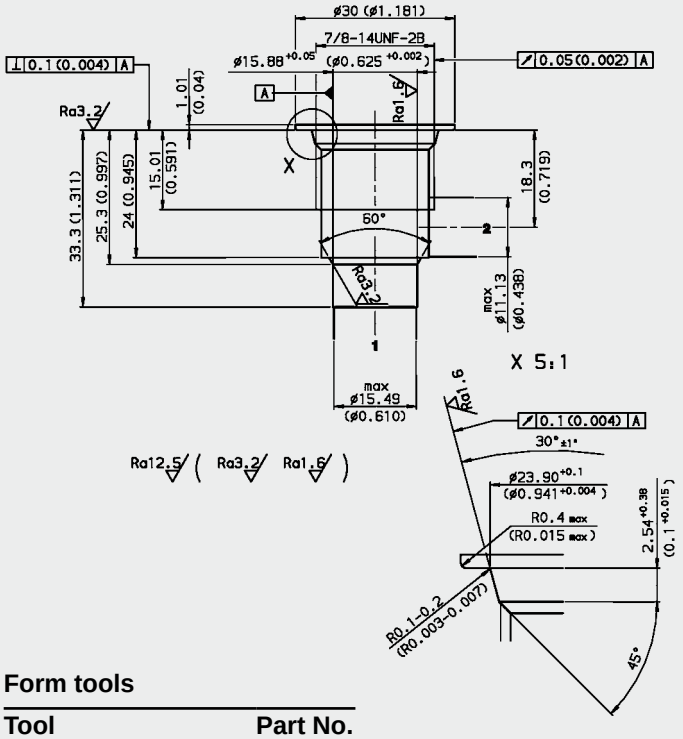




millimeter (inch)
subject to technical modifications

CAVITY

FC10-2



Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter (inch)
subject to technical modifications

MODEL CODE

WS10ZR – 01 M – C – N – 24 DG

Basic Model
Directional poppet valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS10ZR-01-C-N-24DG	3030604
WS10ZR-01-C-N-230AG	3043820

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, clear anodized	G1/2	210 bar

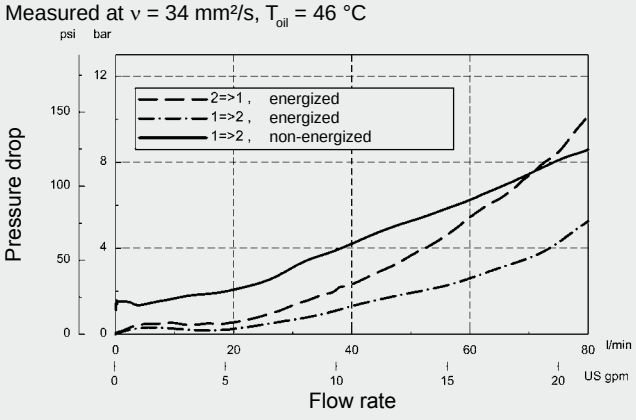
Other housings on request

Seal kits

Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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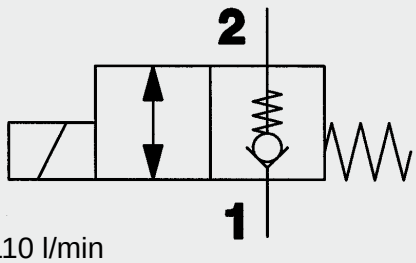
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

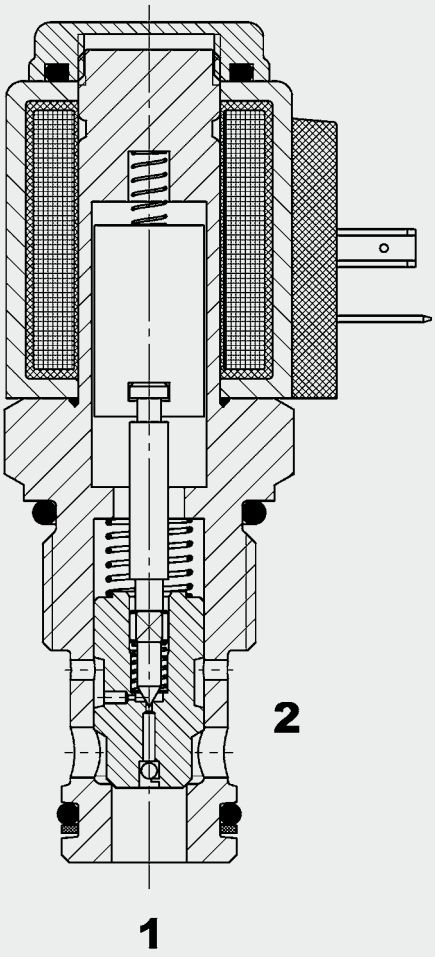


110 l/min
350 bar

2/2 Solenoid Directional Valve UNF Poppet Type, Pilot-Operated Normally Closed (Reverse Flow) SAE-12 Cartridge – 350 bar

WS12ZR-01

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. There is free flow from port 1 to port 2.

When energized the valve allows flow in both directions.

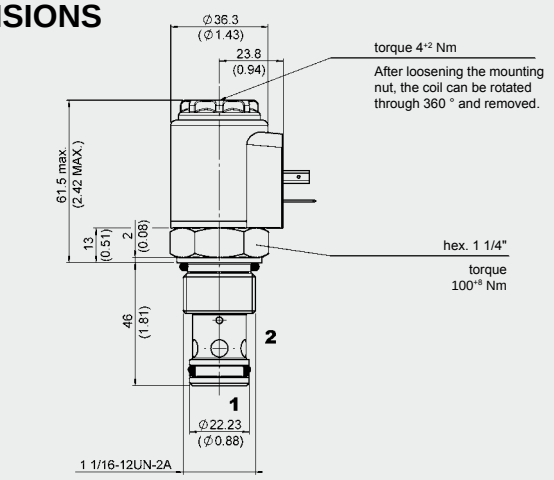
FEATURES

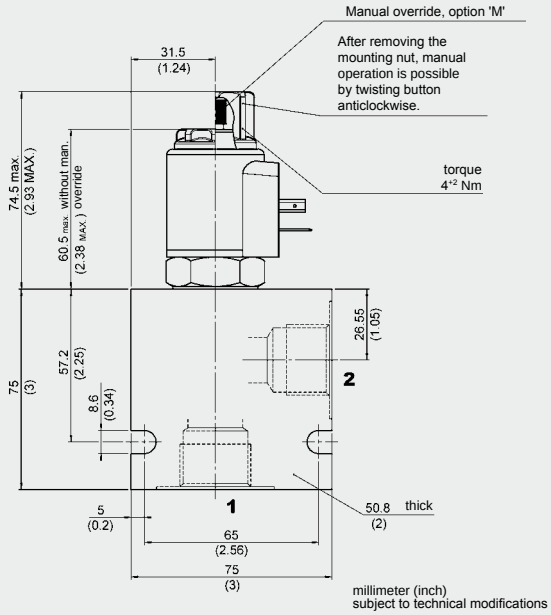
- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Wide variety of connectors available
- External surfaces zinc-plated and corrosion-proof
- Coil seals protect the solenoid system
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 110 l/min	
Leakage:	Leak-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC12-2	
Weight:	Valve complete	0.46 kg
	Coil only	0.19 kg
Electrical data:		
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Response time:	Energized:	approx. 30 ms
	De-energized:	approx. 70 ms
Coil type:	Coil…-40-1836	

DIMENSIONS

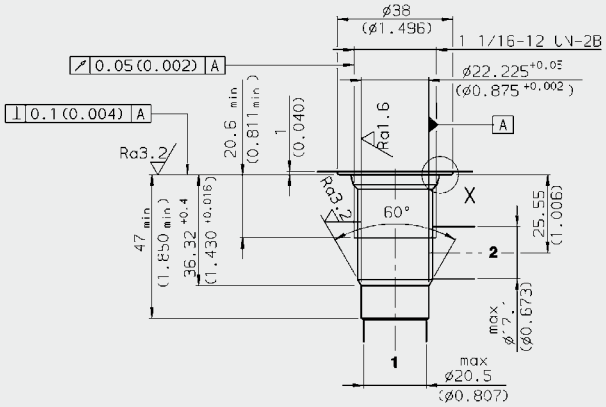


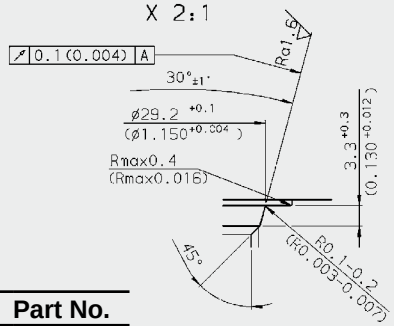


millimeter (inch)
subject to technical modifications

CAVITY

FC12-2





Form tools

Tool	Part No.
Countersink FC12-2	176951
Reamer FC12-2	176952

millimeter (inch)
subject to technical modifications

MODEL CODE

WS12ZR – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, UNF

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB6 = G3/4 ports, steel body
AB6 = G3/4 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
30 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS12ZR-01-C-N-24DG	3157869
WS12ZR-01-C-N-230AG	3157867

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH122-SB6	3053782	Steel, zinc-plated	G3/4	420 bar
FH122-AB6	3053843	Aluminium, anodized	G3/4	210 bar

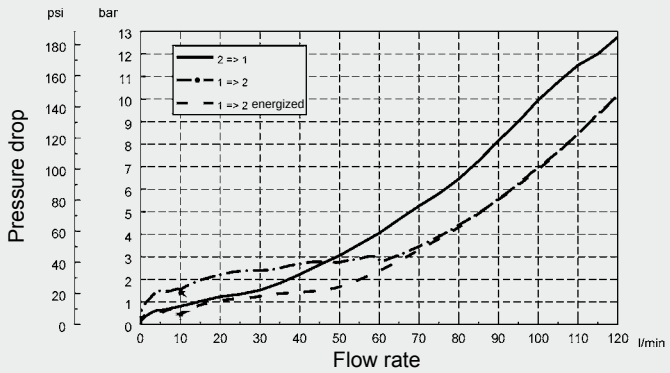
Other line bodies on request

Seal kits

Code	Material	Part No.
FS122-N SEAL KIT	NBR	3071298
FS122-V SEAL KIT	FKM	3071299

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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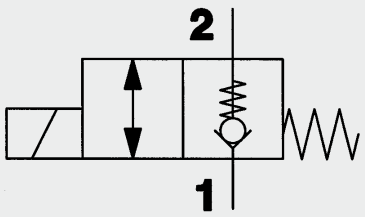
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

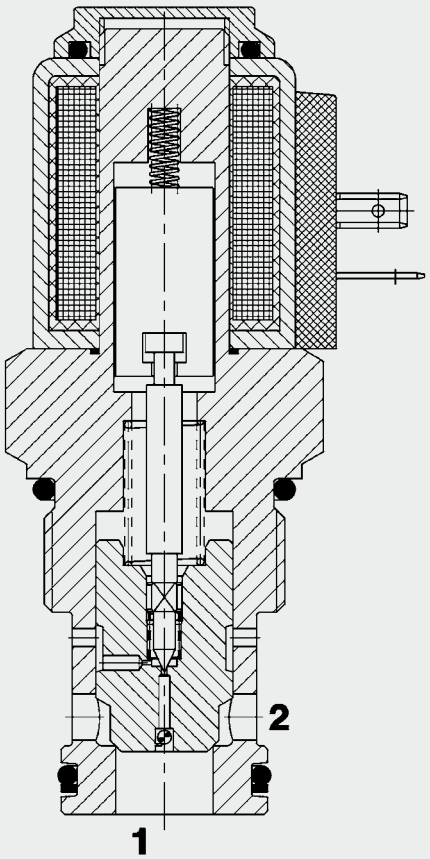


150 l/min
350 bar

2/2 Solenoid Directional Valve UNF Poppet Type, Pilot-Operated Normally Closed (Reverse Flow) SAE-16 Cartridge – 350 bar

WS16ZR-01

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. Flow is permitted from port 1 to port 2.

When energized the valve allows flow in both directions.

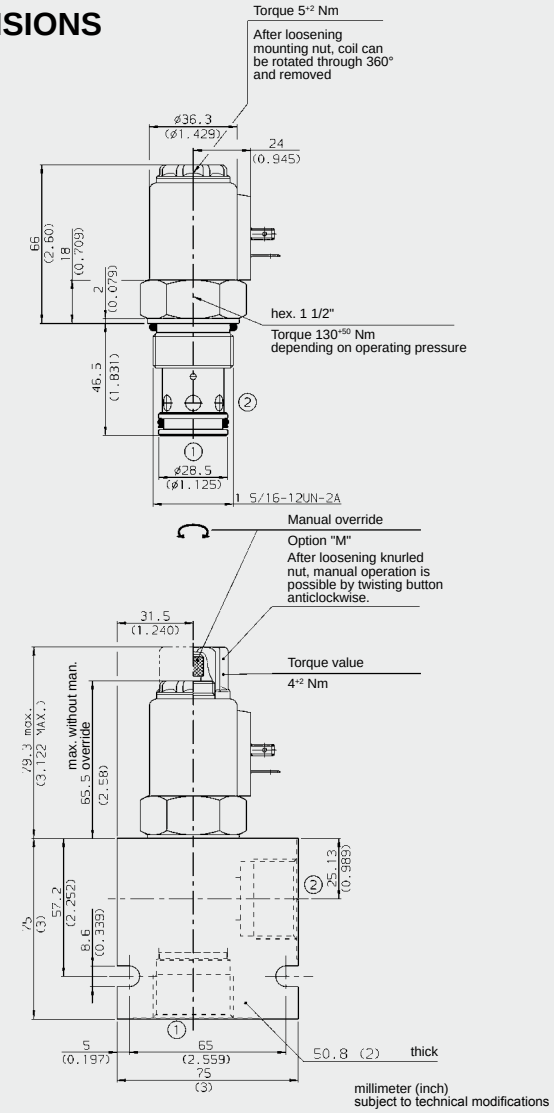
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Wide variety of connectors available
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Coil seals protect the solenoid system

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 150 l/min up to 280 bar max. 100 l/min, from 280 to 350 bar	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC16-2	
Weight:	Valve complete	0.62 kg
	Coil only	0.19 kg
Electrical data:		
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 70 ms
Coil type:	Coil…-40-1836	

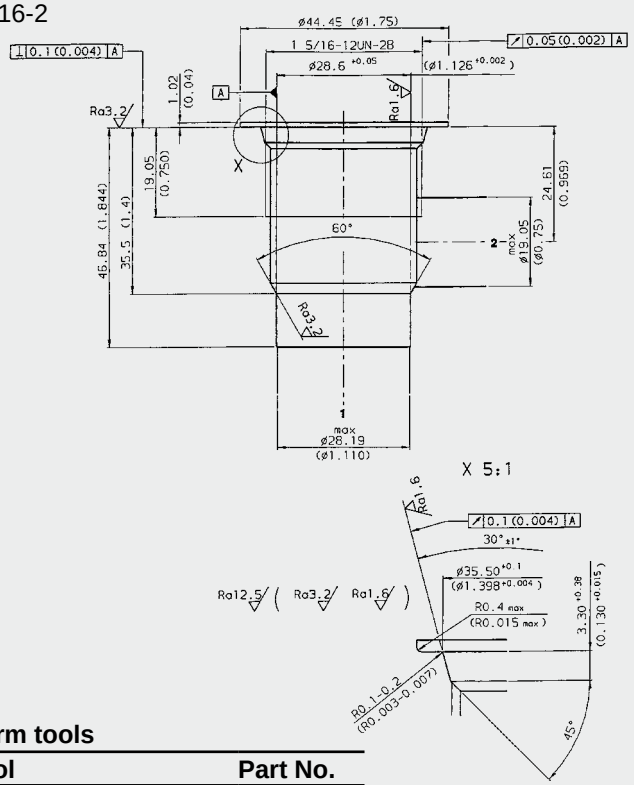
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC16-2



Form tools

Tool	Part No.
Countersink FC16-2	176218
Reamer FC16-2	176219

millimeter (inch)
subject to technical modifications

MODEL CODE

WS16ZR – 01 M – C – N – 24 DG

Basic model
Directional poppet valve UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and Ports*
C = Cartridge only
SB8 = G1 ports, steel body
AB8 = G1 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS16ZR-01-C-N-24DG	3049536
WS16ZR-01-C-N-230AG	3049568

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH162-SB8	3032496	Steel, zinc-plated	G1	420 bar
FH162-AB8	3037193	Aluminium, anodized	G1	250 bar

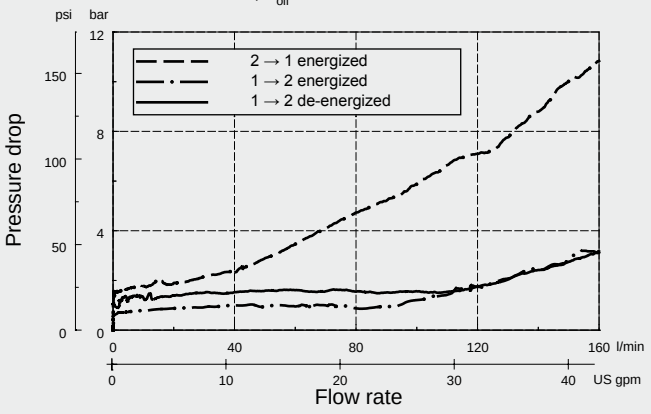
Other housings on request

Seal kits

Code	Material	Part No.
FS162-N SEAL KIT	NBR	3052427
FS162-V SEAL KIT	FKM	3051758

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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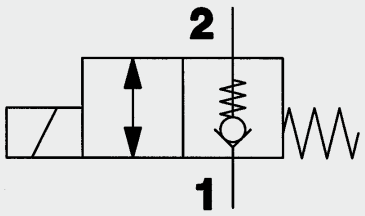
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

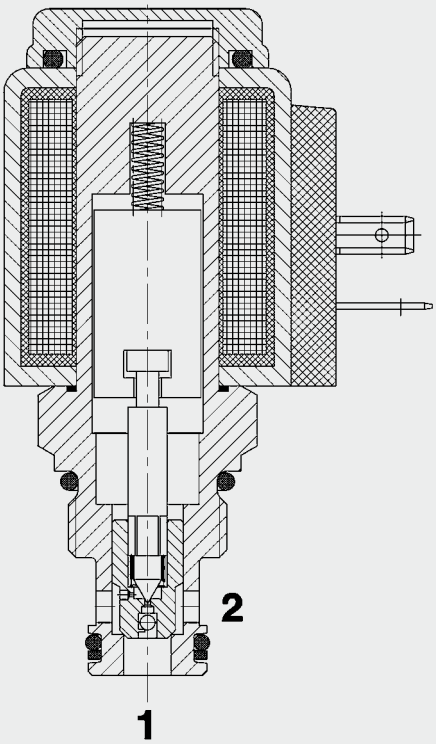


Up to 40 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Closed (Reverse Flow) Metric Cartridge Valve – 350 bar

WSM06020ZR-01

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1.

In the reverse direction there is free flow through the valve. The valve piston opens at a differential pressure of approx. 1.5 bar (check function).

When energized the valve allows flow in both directions.

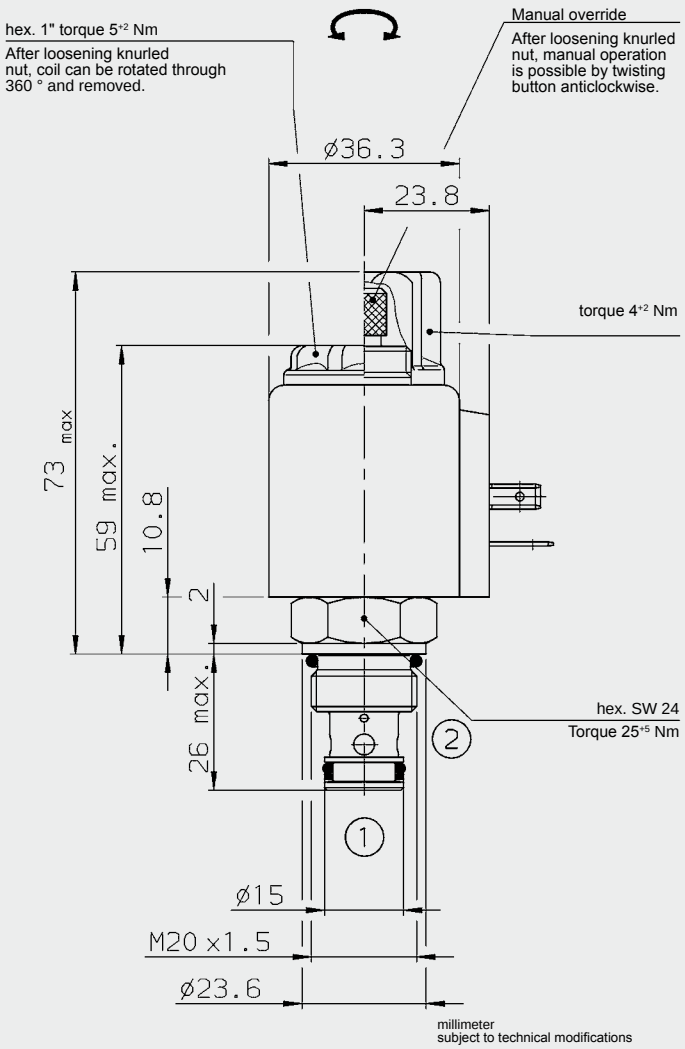
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground control piston to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- Wide variety of connectors available
- External surfaces zinc-plated and corrosion-proof
- Coil seals protect the solenoid system
- Compact design enables space-saving installation in connection housings and control blocks

SPECIFICATIONS

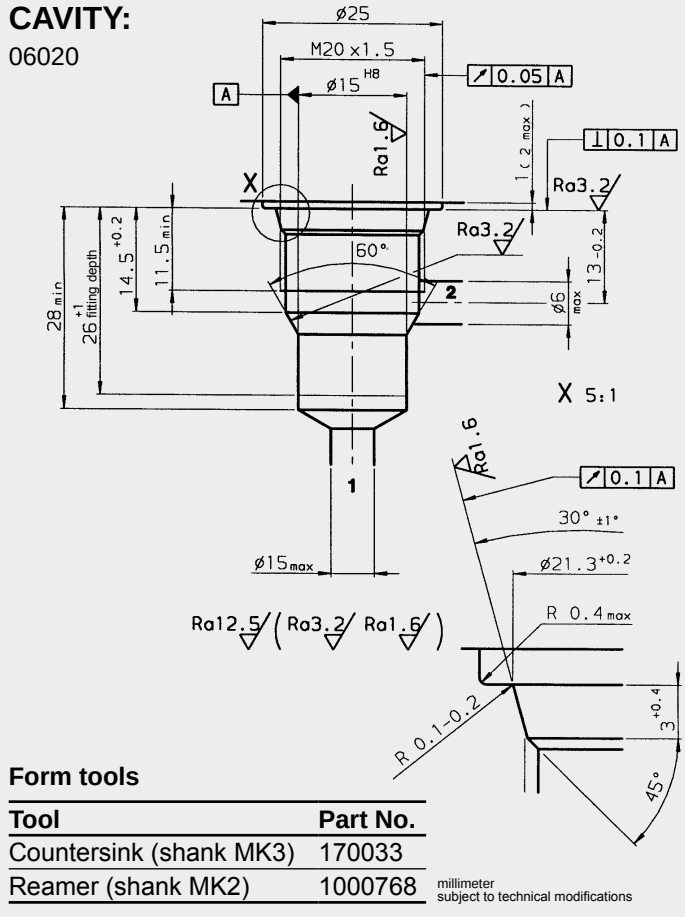
Operating pressure:	max. 350 bar	
Nominal flow:	max. 40 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	06020	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	Energized: approx. 35 ms De-energized: approx. 50 ms	
Coil type:	Coil…-40-1836	

DIMENSIONS



CAVITY:

06020



Form tools

Tool	Part No.
Countersink (shank MK3)	170033
Reamer (shank MK2)	1000768

MODEL CODE

WSM06020ZR - 01 M - C - N - 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DT = AMP Junior Timer, 2 pole, radial
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads, 475 mm long
DN = Deutsch connector, axial
AC: AG = DIN connector to EN175301-803

Other connectors on request

Standard models

Model code	Part No.
WSM06020ZR-01-C-N-24DG	3055535
WSM06020ZR-01-C-N-230AG	3055533

Standard in-line bodies

Code	Part No.	Material	Ports
R06020-01X-01	275266	Steel, zinc-plated	G 3/8

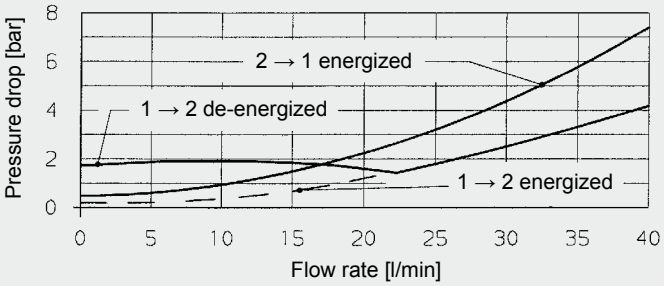
Other housings on request

Seal kits

Code	Material	Part No.
SEAL KIT 06020-NBR	NBR	3119017
SEAL KIT 06020-FKM	FKM	3262477

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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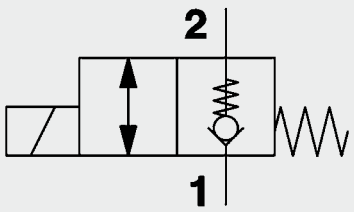
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Closed (Reverse Flow) Metric Cartridge Valve – 350 bar

WSM10120ZR-01

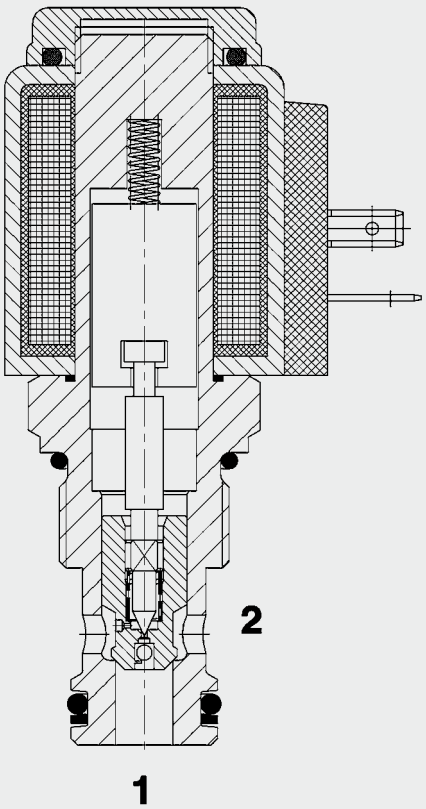


Up to 75 l/min
Up to 350 bar

FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

FUNCTION



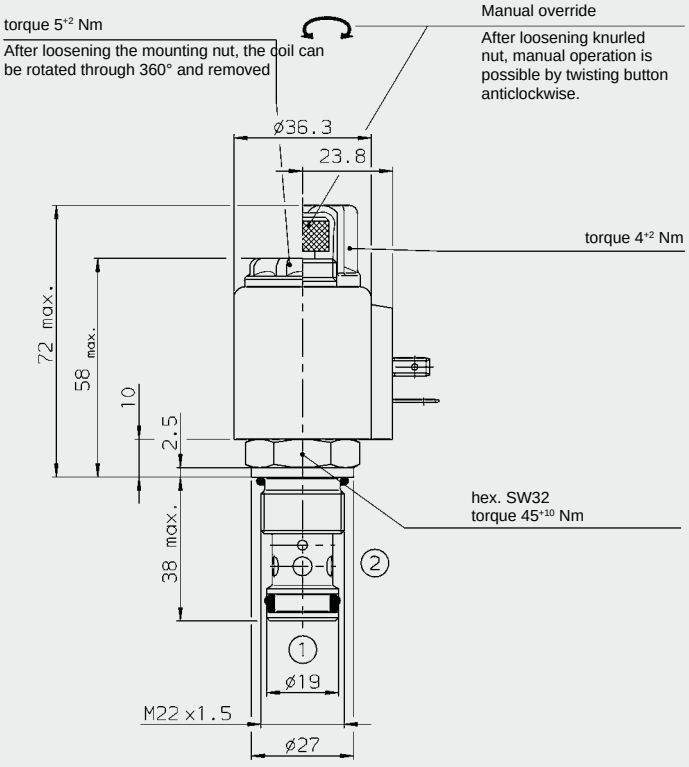
When the solenoid coil is not energized, the valve is closed from port 2 to port 1. Flow is permitted from port 1 to port 2.

When energized the valve allows flow in both directions.

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 75 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to 120 °C)
	Back-up rings:	PTFE
Cavity:	10120	
Weight:	Valve complete	0.37 kg
	Coil only	0.19 kg
Electrical data		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 80 ms
Coil type:	Coil…-40-1836	

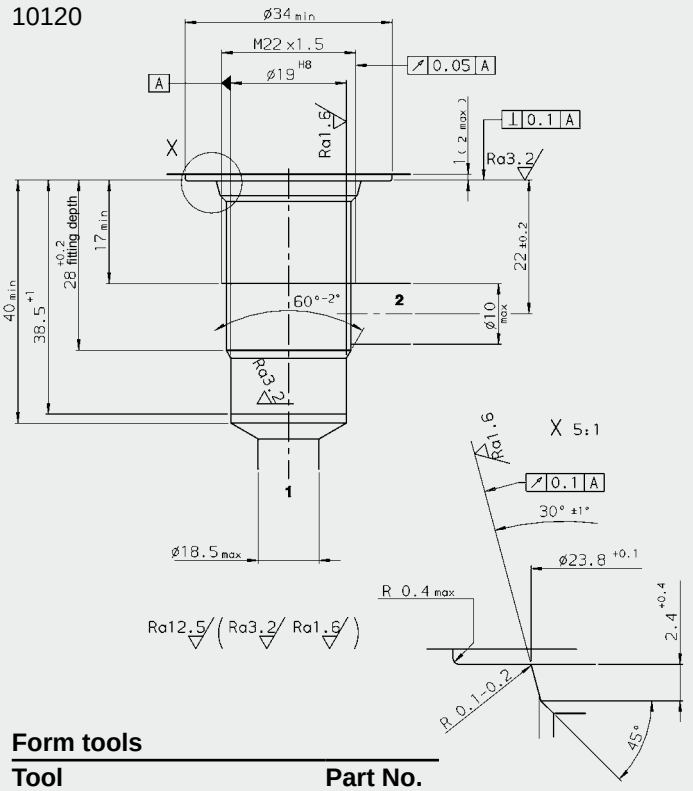
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

10120



Form tools

Tool	Part No.
Countersink (shank MK3)	170418
Reamer (shank MK2)	1014206

millimeter
subject to technical modifications

MODEL CODE

WSM10120ZR – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports *
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL-threaded connection M27x1
DL = 2 flying leads, 457 mm long; 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WSM10120ZR-01-C-N-24DG	3179188
WSM10120ZR-01-C-N-230AG	3179187

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R10120-01X-01	395234	Steel, zinc-plated	G 1/2	420 bar

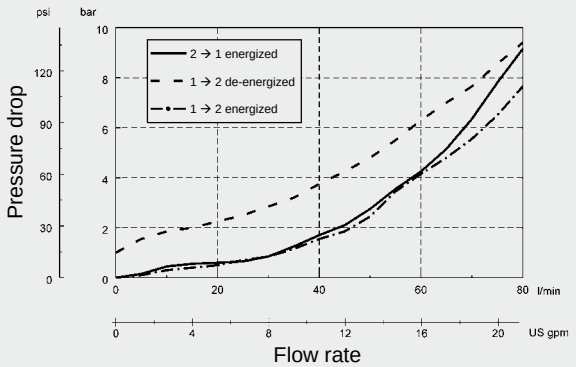
For other connection housings, see brochure no. E 5.252.

Seal kits

Code	Part No.
SEAL KIT 10120-NBR	3382346
SEAL KIT 10120-FKM	3178281

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



Note

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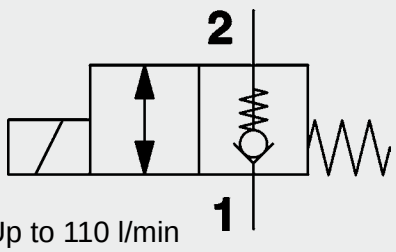
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

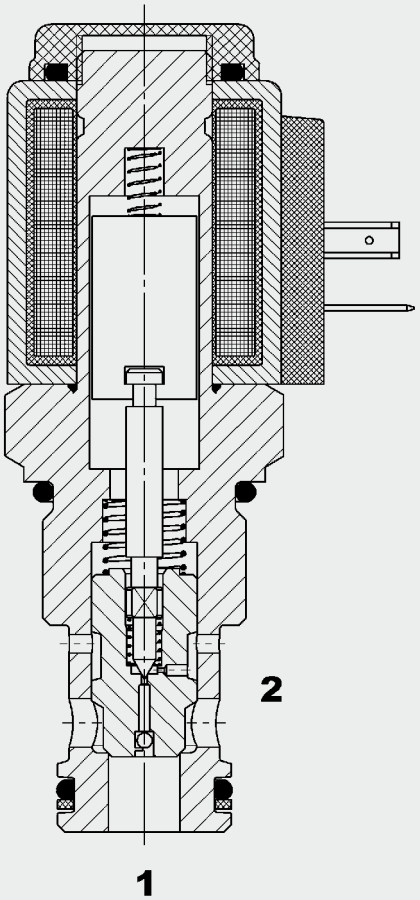


Up to 110 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Closed (Reverse Flow) Metric Cartridge - 350 bar

WSM12120ZR

FUNCTION



When the solenoid coil is de-energized, the valve is closed from port 2 to port 1.

In the reverse direction there is free flow through the valve. The valve poppet opens at a differential pressure of approx. 1.5 bar (check function).

When energized the valve allows flow in both directions.

FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid

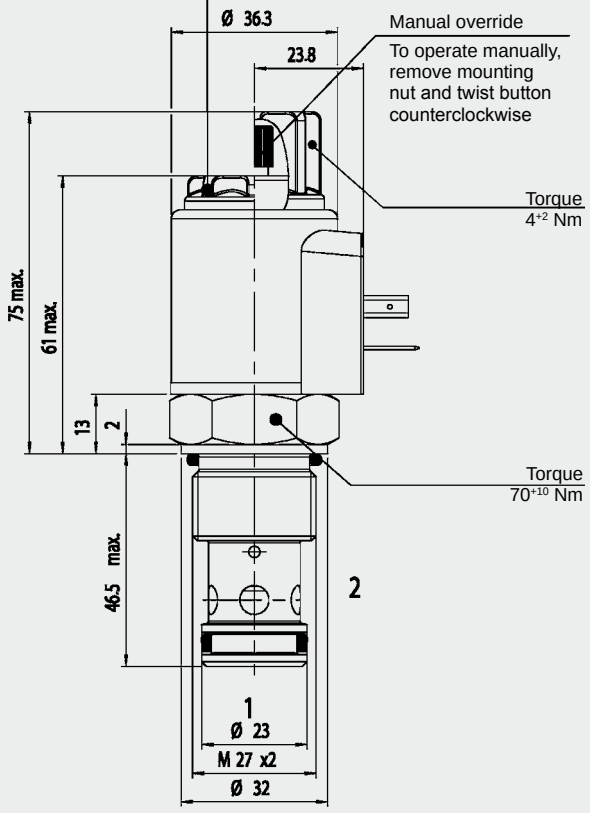
SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 110 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel / Polyamide
Cavity:	Metric 12120	
Weight:	Valve complete	0.46 kg
	Coil only:	0.19 kg
Electrical data		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Response time:	Energized:	approx. 30 ms
	De-energized:	approx. 70 ms
	typical 24 V DC-coil	
Voltage tolerance:	± 15 % of nominal voltage	
Coil duty rating:	Continuous up to max. 115% of nominal voltage at max. 60° C ambient temperature	
Coil type:	Coil...-40-1836	

DIMENSIONS

torque 4^{+2} Nm

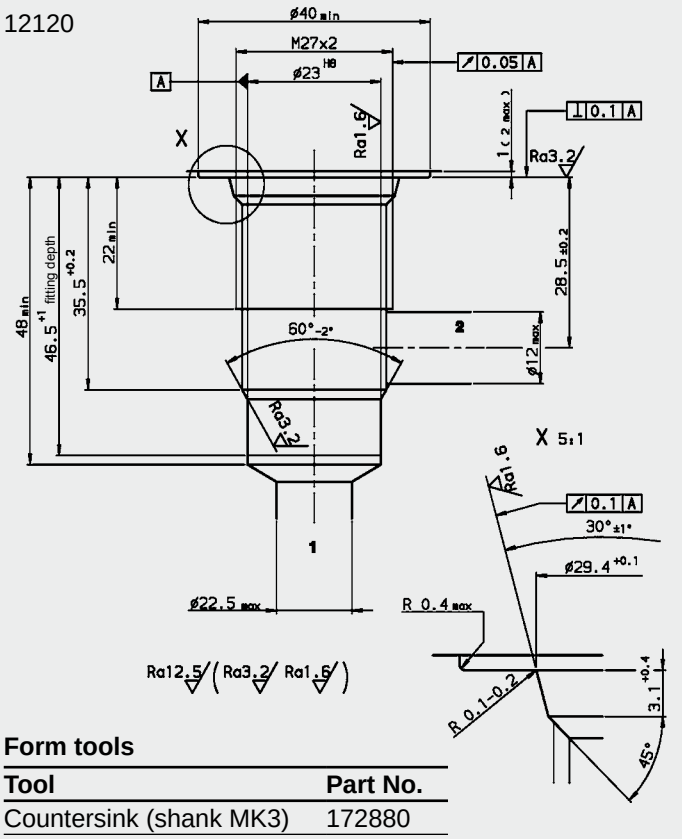
After loosening the mounting nut, the coil can be rotated through 360° and removed



millimeter
subject to technical modifications

CAVITY:

12120



Form tools

Tool	Part No.
Countersink (shank MK3)	172880
Reamer	1014207

millimeter
subject to technical modifications

MODEL CODE

WSM12120ZR – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports *
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL-threaded connection M27x1
DL = 2 flying leads, 457 mm long; 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WSM12120ZR-01-C-N-12DG	3230893
WSM12120ZR-01-C-N-24DG	3230898
WSM12120ZR-01-C-N-230AG	3230897

Other models on request

*Standard in-line bodies

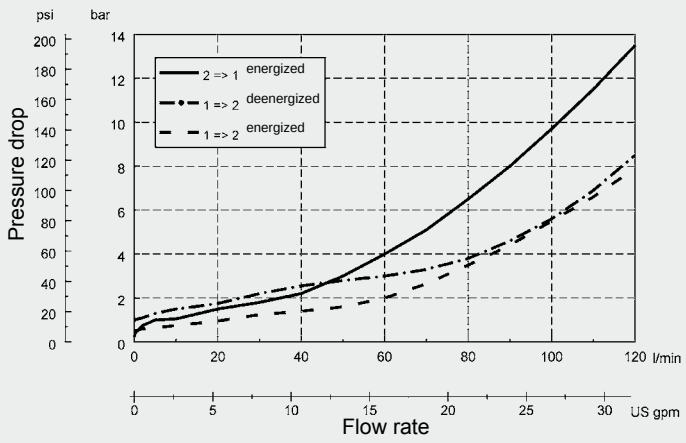
Code	Part No.	Material	Ports	Pressure
R12120-10X-01	396708	Steel, zinc-plated	G 3/4	max. 420 bar
R12120-10X-02	396707	Steel, zinc-plated	M27 x 2	max. 420 bar

Seal kits

Code	Material	Part No.
SEAL KIT 12120-NBR	NBR	3454001
SEAL KIT 12120-FKM	FKM	3454002

PERFORMANCE

Measured at v = 34 mm²/s, T_{oil} = 46 °C



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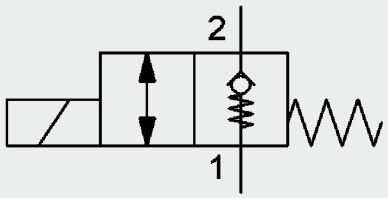
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

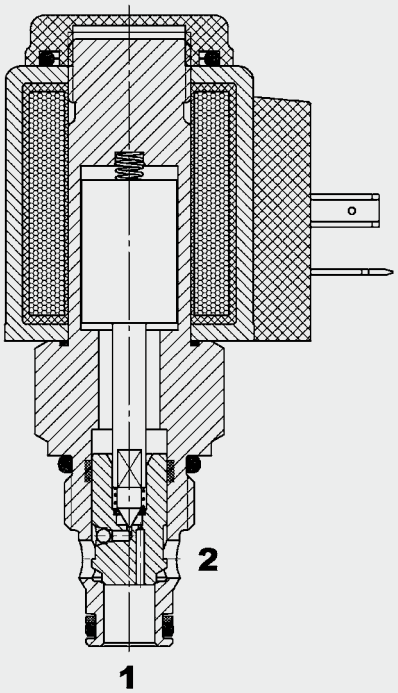
2/2 Solenoid Directional Valve Poppet Type, Pilot Operated, Normally Closed SAE-08 Cartridge – 350 bar WS08BR-31

UNF



Up to 40 l/min
Up to 350 bar

FUNCTION



The directional poppet valve WS08BR is a pilot-operated, normally closed, spring-loaded valve. When the solenoid is de-energized, the valve blocks flow from port 1 to 2 and acts as a check allowing flow from port 2 to 1. When energized the valve allows flow in both directions.

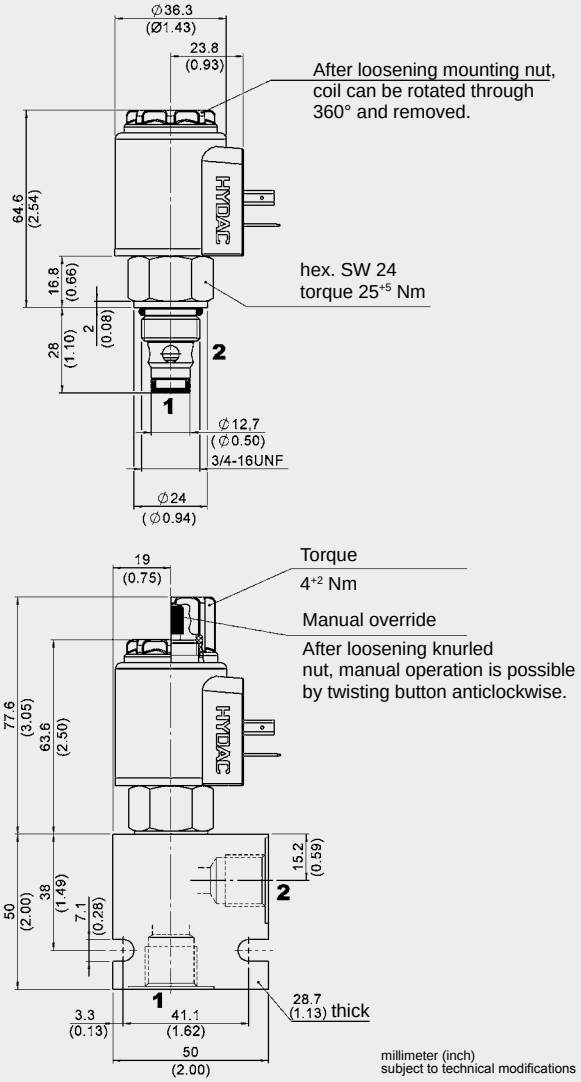
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- Coil seals protect the solenoid system
- Wide variety of connections available
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

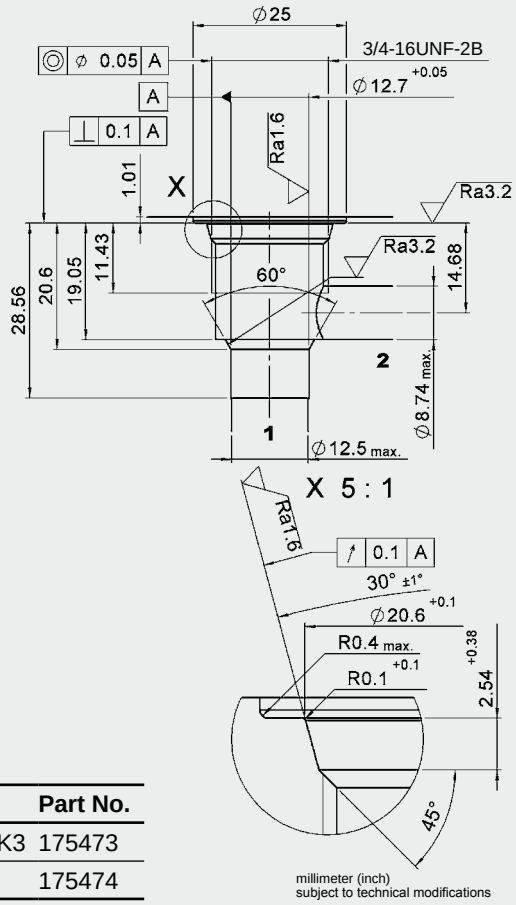
Operating pressure:	max. 350 bar
Nominal flow:	max. 40 l/min
Internal leakage:	Leakage-free
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
MTTFd:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions
Materials:	Valve body: high tensile steel Piston: hardened and ground steel Seals: NBR (standard) FKM (optional) Back-up rings: PTFE
Cavity:	FC08-2
Weight:	Valve complete 0.33 kg Coil only 0.19 kg
Electrical data:	
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil
Current draw at 20 °C:	1.5 A at 12 V DC; 0.8 A at 24 V DC
Voltage tolerance:	± 15% of nominal
Coil duty rating:	Continuous up to max. 115% of nominal voltage at max. 60° C ambient temperature
Response time:	On: approx. 20 ms Off: approx. 80 ms
Coil type:	Coil... –40-1836

DIMENSIONS



CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink MK3	175473
Reamer	175474

MODEL CODE

WS08BR – 31 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
31 = standard (spanner width 24 metric)

Manual override
No details = without manual override
M = manual override

Body and ports
C = cartridge only
Combinations with body on request

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC: 12 = 12 Volt DC
24 = 24 Volt DC
AC: 115 = 115 Volt AC (bridge rectifier built into coil)
230 = 230 Volt AC (bridge rectifier built into coil)
Other voltages on request

Coil connections 40-1836
DC: DG = DIN connection to EN175301-803
DT = AMP Junior Timer, 2 pole, radial
DK = Kostal threaded connection M27 x 1
DL = leadwires (2), 475mm long
DN = Deutsch connection, axial
AC: AG = DIN connection to EN175301-803
Other connections on request

Standard models

Model code	Part No.
WS08BR-31-C-N-24DG	3554847
WS08BR-31-C-N-230AG	3554848

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	3/8 BSP	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	3/8 BSP	210 bar

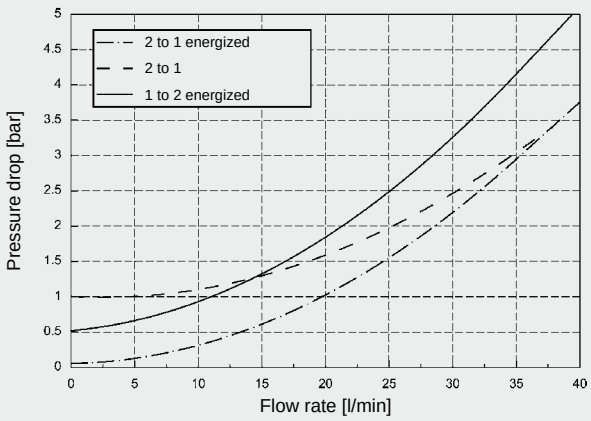
Other bodies on request

Seal kits

Model code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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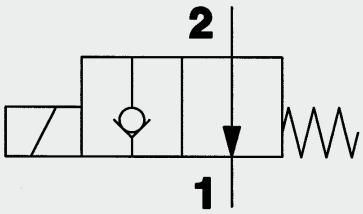
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

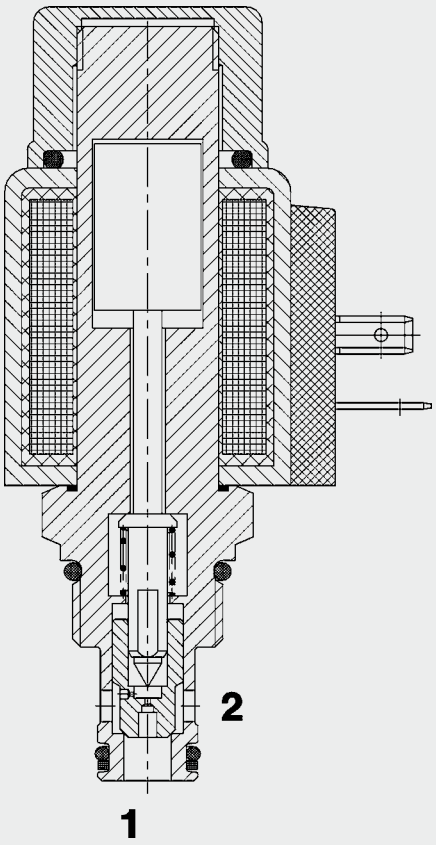
2/2 Solenoid Directional Valve UNF
Poppet Type, Pilot-Operated
Normally Open
SAE-08 Cartridge – 350 bar

WS08Y-01



38 l/min
350 bar

FUNCTION



When de-energized, there is free flow through the valve from port 2 to port 1. Flow is not possible in the reverse direction.

When the solenoid coil is energized, the valve is closed from port 2 to port 1. In the reverse direction from port 1 to 2 there is free flow through the valve when the hydraulic force on the piston overcomes the solenoid force (approx. 9 to 20 bar).

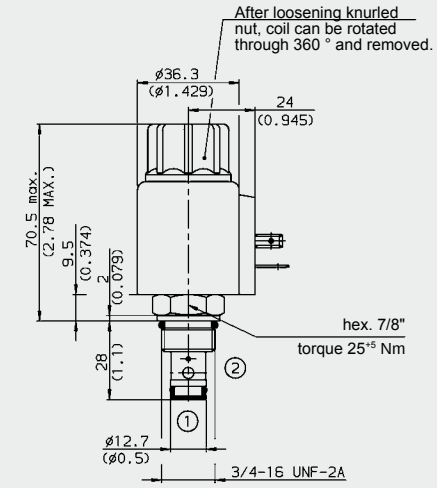
FEATURES

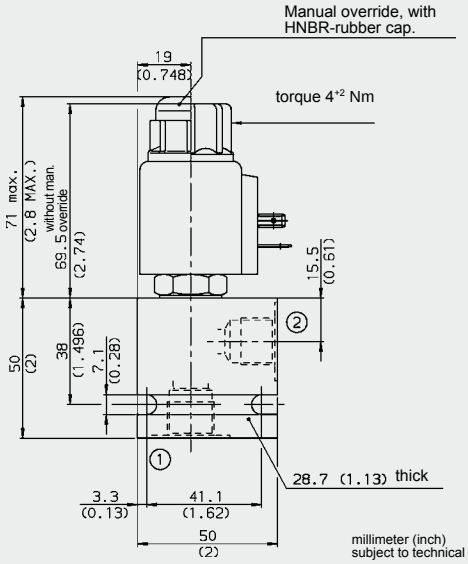
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 38 l/min	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-2	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Switching time:	energized:	approx. 50 ms
	de-energized:	approx. 35 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

DIMENSIONS

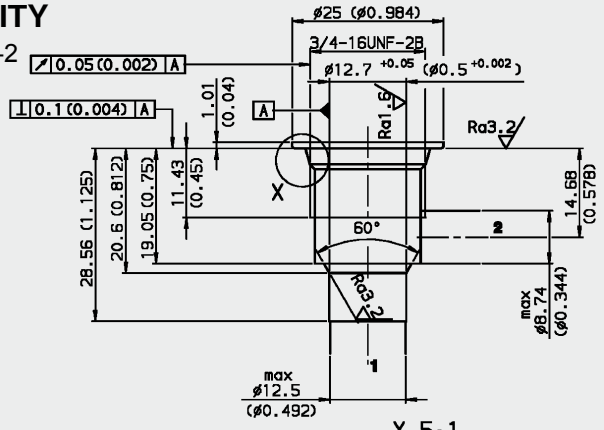


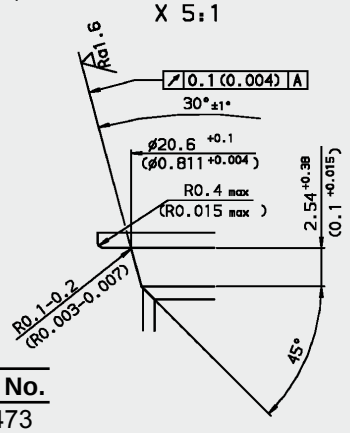


millimeter (inch)
subject to technical modifications

CAVITY

FC08-2





Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

millimeter (inch)
subject to technical modifications

MODEL CODE

WS08Y – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, UNF

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC, 24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC, 230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model Code	Part No.
WS08Y-01-C-N-24DG	563048
WS08Y-01-C-N-230AG	3043372

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

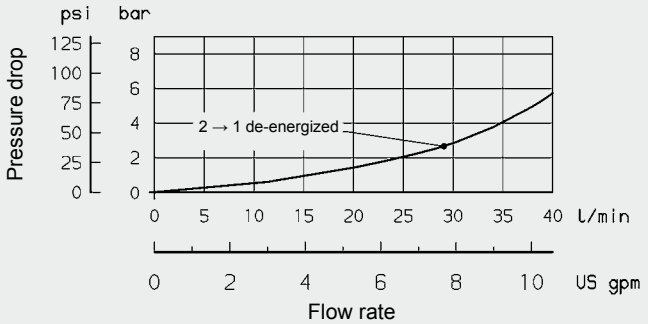
Other line bodies on request

Seal kits

Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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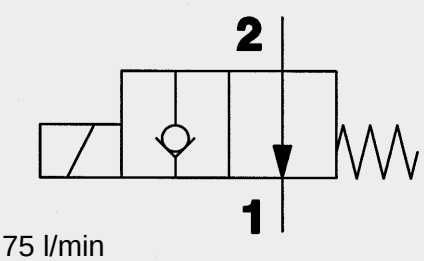
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

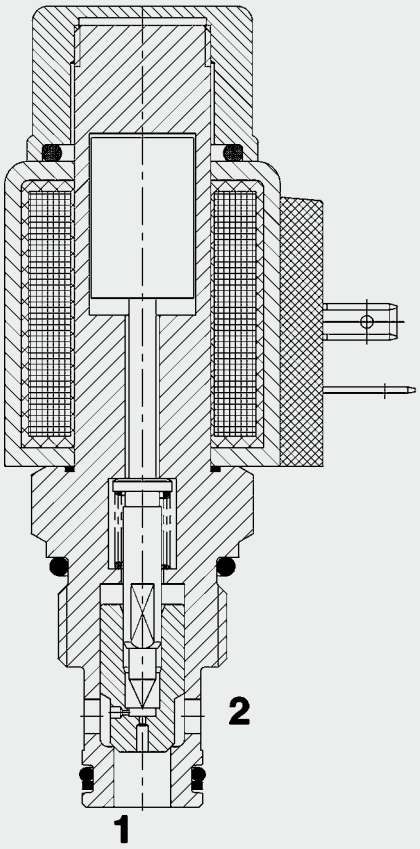


75 l/min
350 bar

2/2 Solenoid Directional Valve UNF Poppet Type, Pilot-Operated Normally Open SAE-10 Cartridge – 350 bar

WS10Y-01

FUNCTION



When de-energized, there is free flow through the valve from port 2 to port 1. Flow is not possible in the reverse direction. When the solenoid coil is energized, the valve is closed from port 2 to port 1. In the reverse direction the valve will allow flow from port 1 to 2 when the hydraulic force on the piston overcomes the solenoid force (approx. 2.5 to 10 bar).

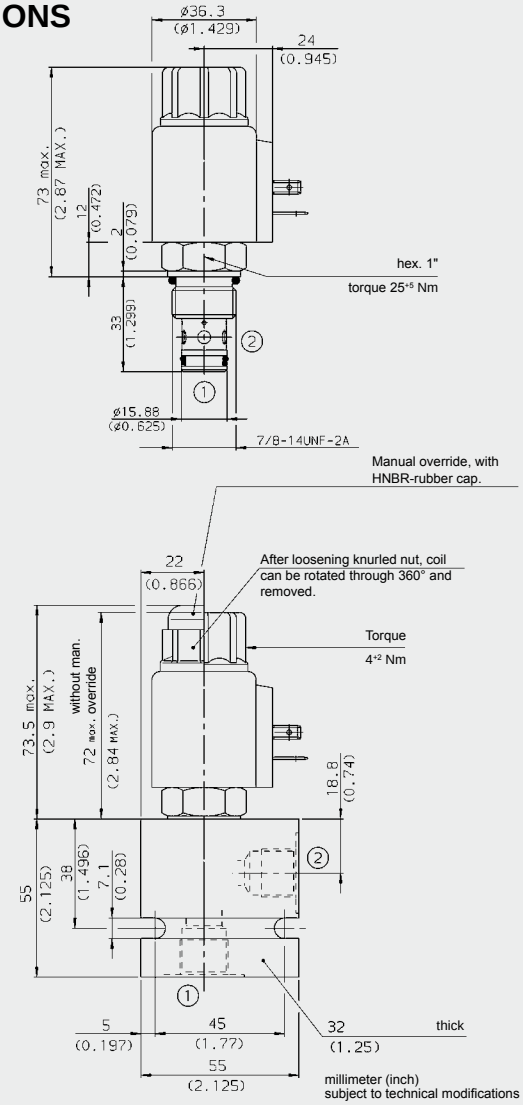
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

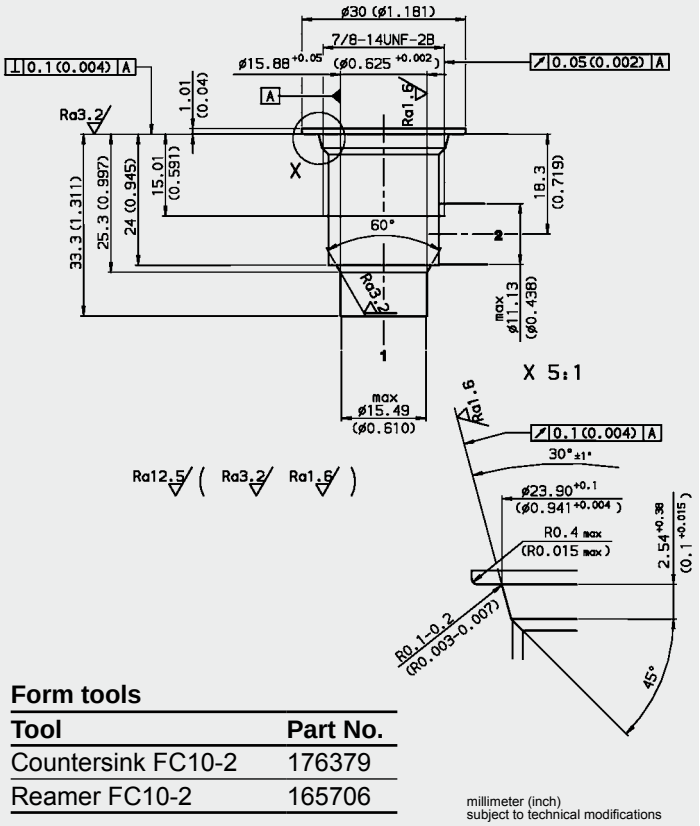
Operating pressure:	max. 350 bar	
Nominal flow:	max. 75 l/min	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel/Polyamide
Cavity:	FC10-2	
Weight:	Valve complete	0.37 kg
	Coil only	0.19 kg
Electrical data:		
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 50 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

DIMENSIONS



CAVITY

FC10-2



Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter (inch)
subject to technical modifications

MODEL CODE

WS10Y – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS10Y-01-C-N-24DG	3030653
WS10Y-01-C-N-230AG	3043826

Other models on request

* Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	350 bar
FH102-AB4	3037777	Aluminium, anodized	G1/2	210 bar

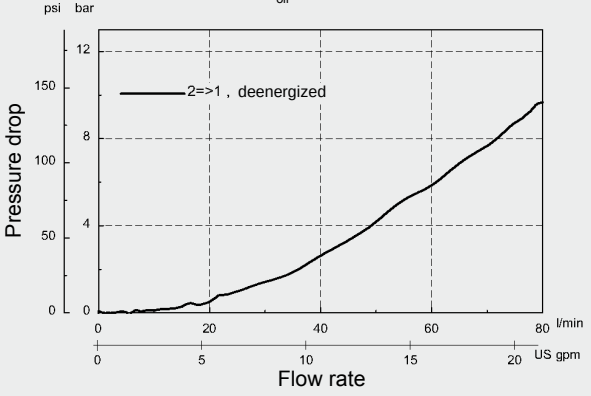
Other housings on request

Seal kits

Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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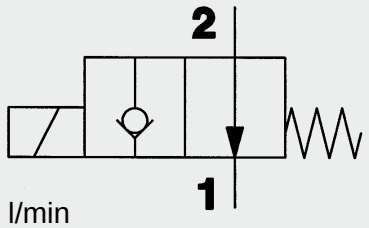
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

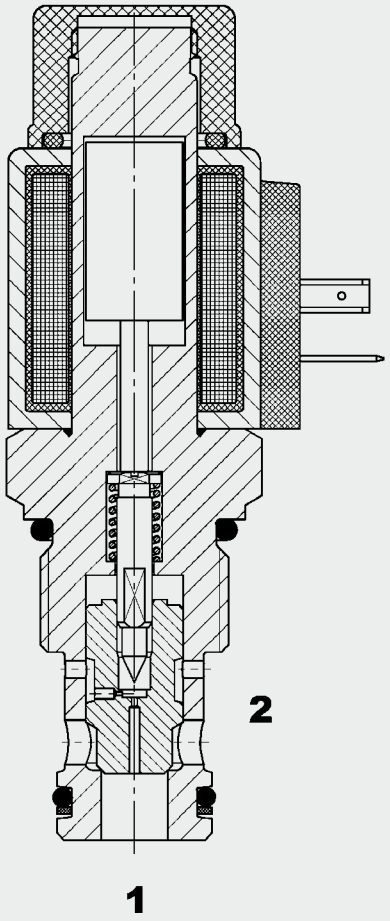


110 l/min
350 bar

2/2 Solenoid Directional Valve UNF
Poppet Type, Pilot-Operated
Normally Open
SAE-12 Cartridge – 350 bar

WS12Y-01

FUNCTION



When de-energized, there is free flow through the valve from port 2 to 1. Flow is not permitted in the reverse direction.

When the solenoid coil is energized, the valve is closed from port 2 to port 1. In the reverse direction the valve will allow flow from port 1 to 2 when the hydraulic force on the poppet overcomes the solenoid force (approx. 1.5 to 6.5 bar).

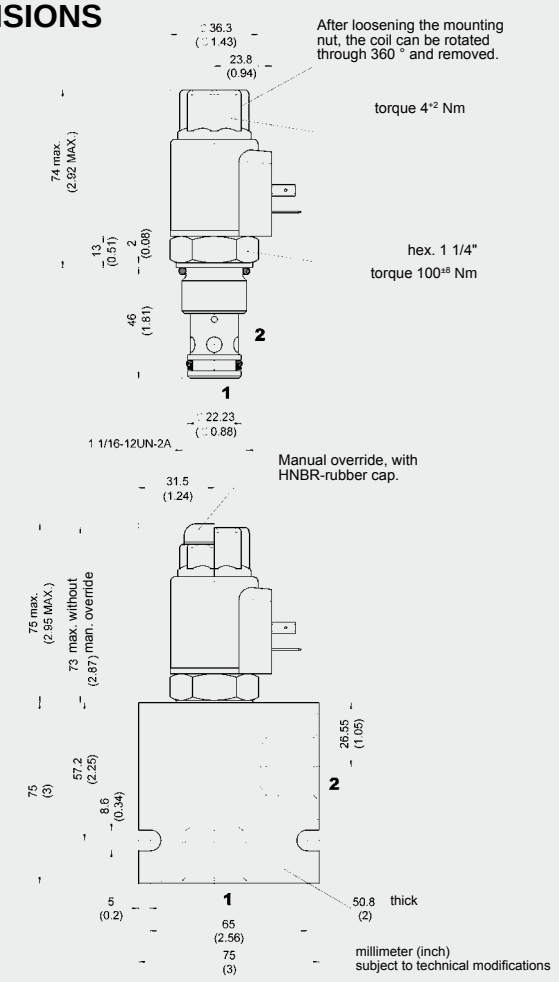
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Wide variety of connectors available
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

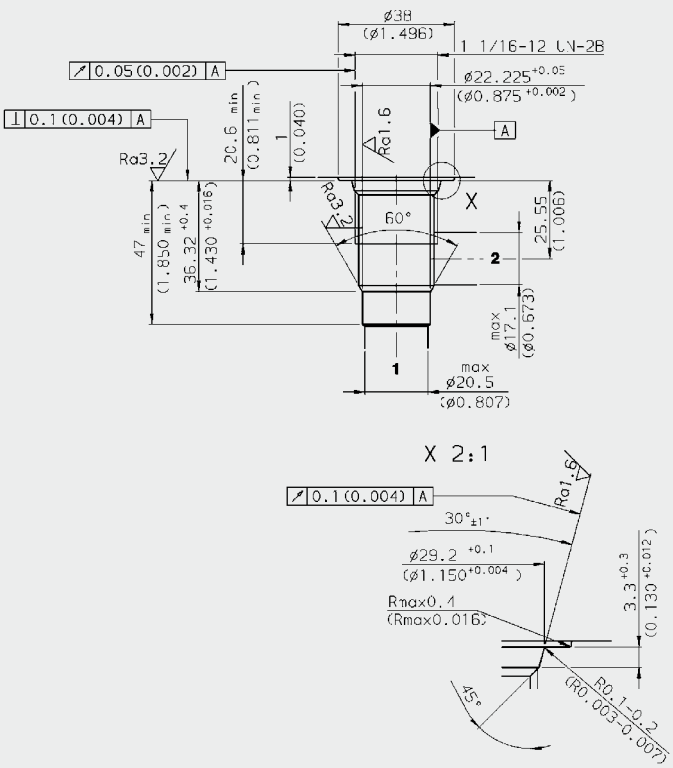
Operating pressure:	max. 350 bar	
Nominal flow:	max. 110 l/min	
Leakage:	Leak-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC12-2	
Weight:	Valve complete	0.49 kg
	Coil only	0.19 kg
Electrical data:		
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Response time:	Energized:	approx. 90 ms
	De-energized:	approx. 25 ms
Coil type:	Coil…-40-1836	

DIMENSIONS



CAVITY

FC12-2



Form tools

Tool	Part No.
Countersink FC12-2	176951
Reamer FC12-2	176952

millimeter (inch)
subject to technical modifications

MODEL CODE

WS12Y – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, UNF

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB6 = G3/4 ports, steel body
AB6 = G3/4 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS12Y-01-C-N-24DG	3157829
WS12Y-01-C-N-230AG	3157828

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH122-SB6	3053782	Steel, zinc-plated	G3/4	420 bar
FH122-AB6	3053843	Aluminium, anodized	G3/4	210 bar

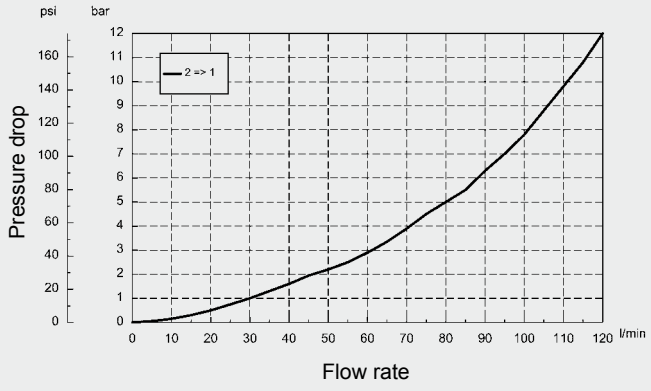
Other line bodies on request

Seal kits

Code	Material	Part No.
FS122-N SEAL KIT	NBR	3071298
FS122-V SEAL KIT	FKM	3071299

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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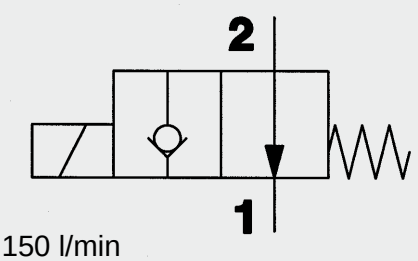
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

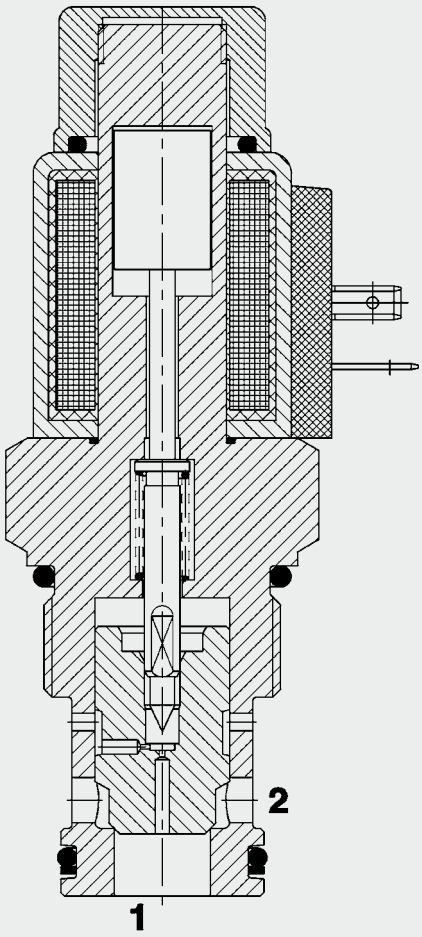


150 l/min
350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Normally Open SAE-16 Cartridge – 350 bar

WS16Y-01

FUNCTION



When de-energized, there is free flow through the valve from port 2 to 1. Flow is not possible in the reverse direction.

When the solenoid coil is energized, the valve is closed from port 2 to port 1. In the reverse direction the valve will allow flow from port 1 to 2 when the hydraulic force on the piston overcomes the solenoid force (approx. 9 to 20 bar).

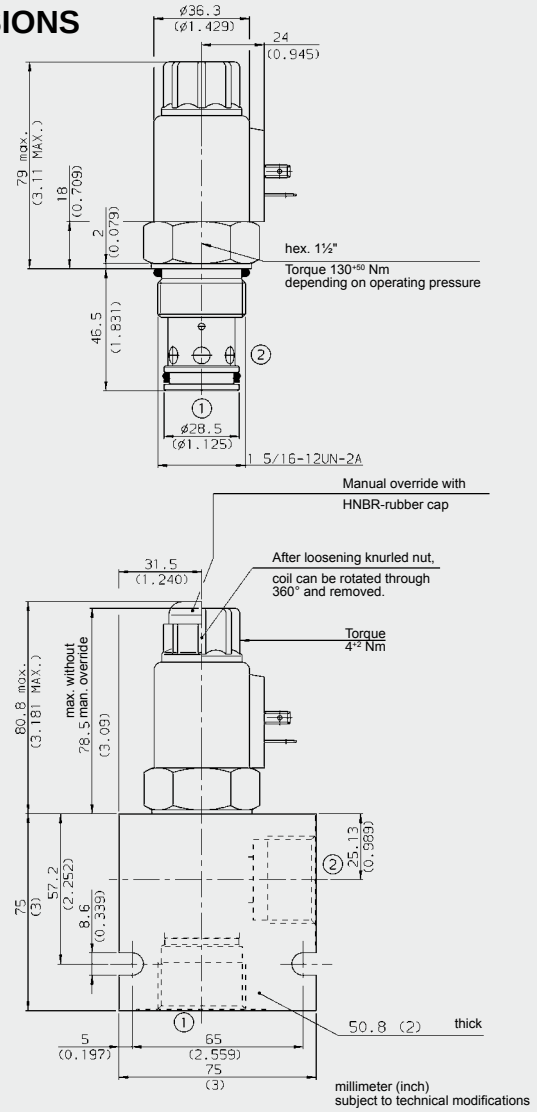
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Wide variety of connectors available
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Coil seals protect the solenoid system

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Flow rate	max. 150 l/min up to 280 bar max. 100 l/min, from 280 to 350 bar	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC16-2	
Weight:	Valve complete	0.65 kg
	Coil only	0.19 kg
Electrical data:		
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	Energized:	approx. 150 ms
	De-energized:	approx. 35 ms
Coil type:	Coil…-40-1836	

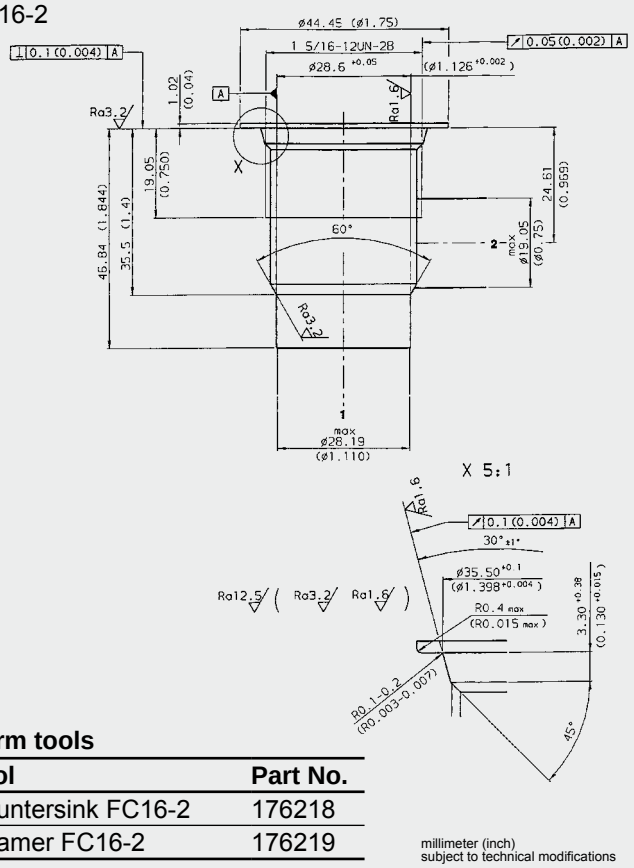
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC16-2



Form tools

Tool	Part No.
Countersink FC16-2	176218
Reamer FC16-2	176219

millimeter (inch)
subject to technical modifications

MODEL CODE

WS16Y – 01 M – C – N – 24 DG

Basic model
Directional poppet valve UNF

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB6 = G3/4 ports, steel body
AB6 = G3/4 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS16Y-01-C-N-24DG	3049587
WS16Y-01-C-N-230AG	3049612

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH162-SB8	3032496	Steel, zinc-plated	G1	420 bar
FH162-AB8	3037193	Aluminium, anodized	G1	210 bar

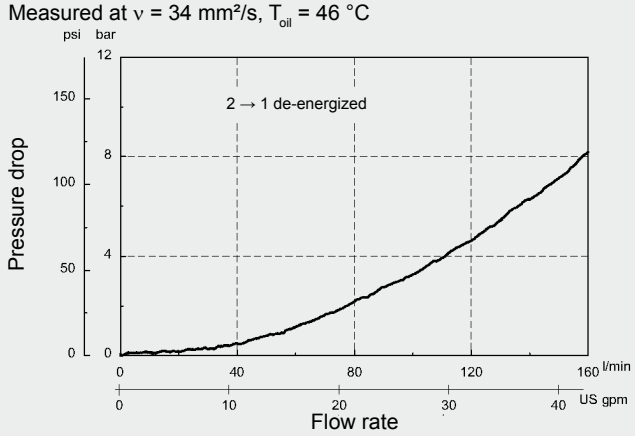
Other line bodies on request

Seal kits

Code	Material	Part No.
FS162-N SEAL KIT	NBR	3052427
FS162-V SEAL KIT	FKM	3051758

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
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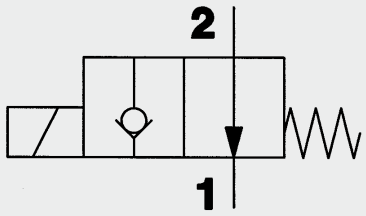
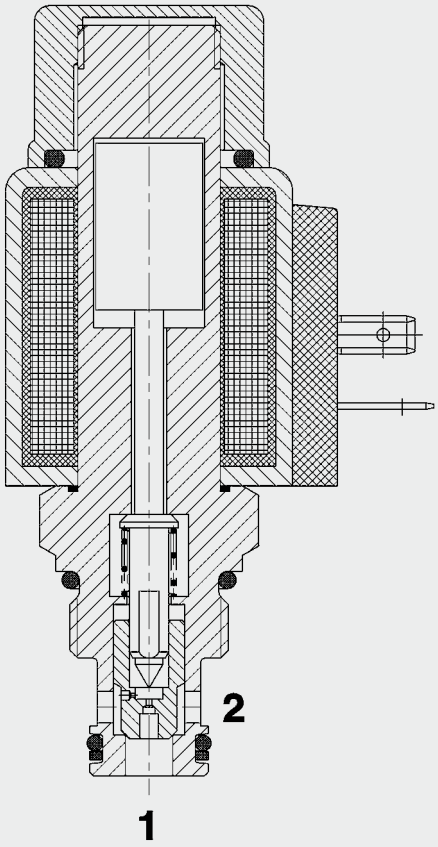


Up to 40 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Normally Open Metric Cartridge – 350 bar

WSM06020Y-01

FUNCTION



When de-energized, there is free flow through the valve from port 2 to 1. Flow in the reverse direction is not permitted.

When the solenoid coil is energized, the valve is closed from port 2 to port 1.

In the reverse direction there is free flow through the valve when the hydraulic force on the piston exceeds the solenoid force (approx. 9 to 20 bar).

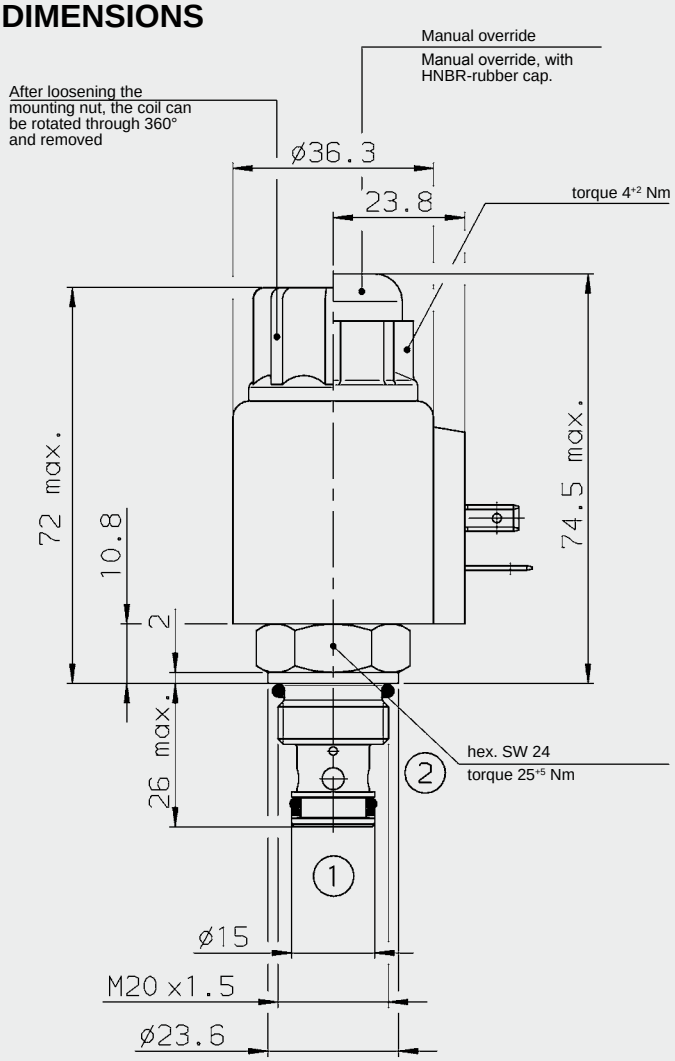
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground control piston to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Coil seals protect the solenoid system
- Compact design enables space-saving installation in connection housings and control blocks

SPECIFICATIONS

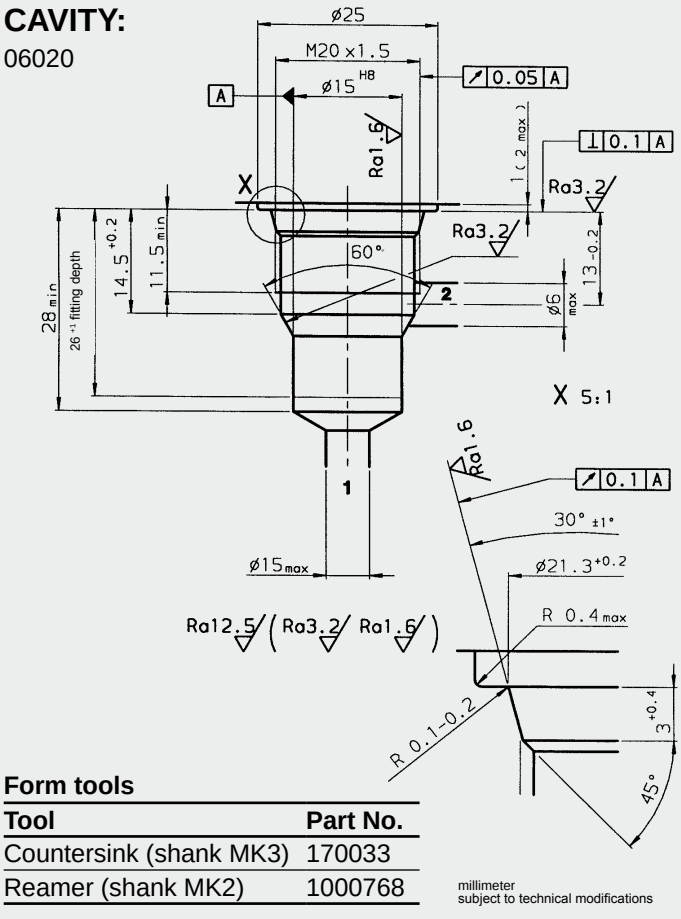
Operating pressure:	max. 350 bar	
Nominal flow:	max. 40 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	06020	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	energized: de-energized:	approx. 50 ms approx. 35 ms
Coil type:	Coil...-40-1836	

DIMENSIONS



CAVITY:

06020



Form tools

Tool	Part No.
Countersink (shank MK3)	170033
Reamer (shank MK2)	1000768

MODEL CODE

WSM06020Y – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads 475 mm long, 0.75 mm²
DN = Deutsch connector, 2 pole, axial
DT = AMP Junior Timer, 2 pole, radial
AC: AG = DIN connector to EN175301-803

Other connectors on request

Standard models

Model code	Part No.
WSM06020Y-01-C-N-24DG	3056077
WSM06020Y-01-C-N-230AG	3056075

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G 3/8	420 bar

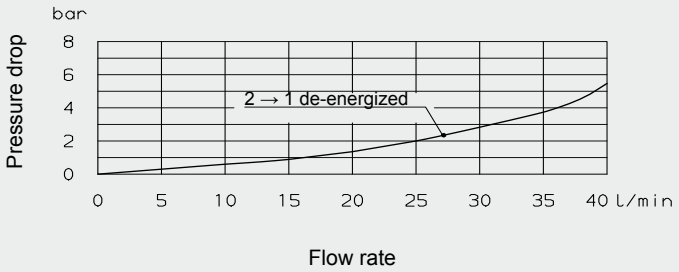
For other connection housings, see brochure no. E 5.252.

Seal kits

Code	Material	Part No.
SEAL KIT 06020-NBR	NBR	3119017
SEAL KIT 06020-FKM	FKM	3262477

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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HYDAC Fluidtechnik GmbH
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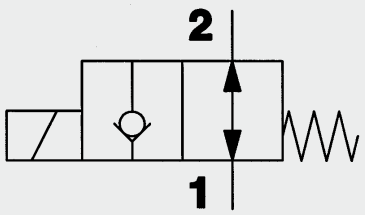
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

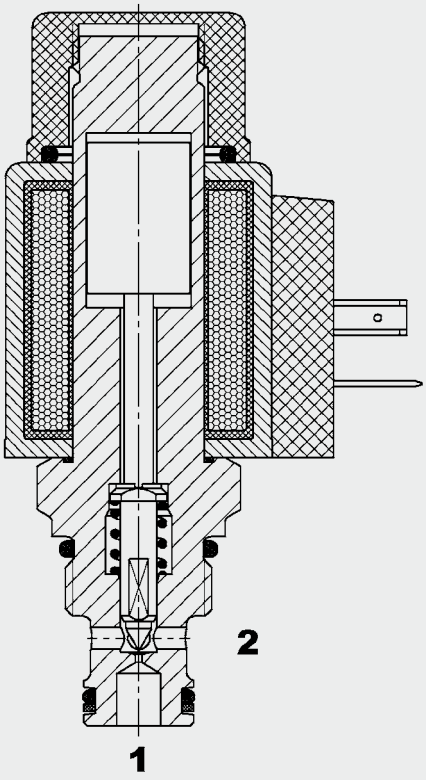


Up to 3 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Direct-Acting Normally Open Metric Cartridge Valve – 350 bar

WSM06020Y-70

FUNCTION



The WSM06020Y-70 is suitable for particularly low flow rates and is specially designed for use as a pilot valve.

When the solenoid coil is de-energized, the valve is open in both directions. When the solenoid coil is energized, the valve is closed from port 2 to port 1. In the reverse direction the valve will allow flow when the hydraulic force exceeds the solenoid force (from approx. 300 bar depending on operating voltage and coil temperature).

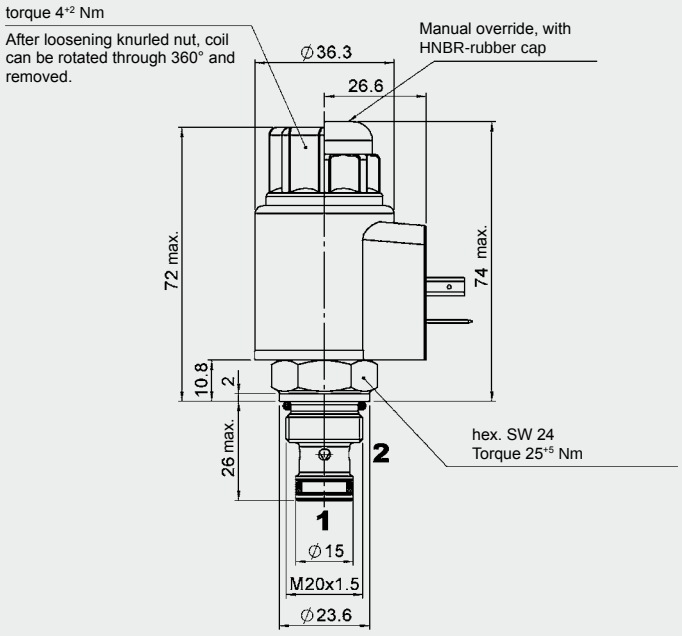
FEATURES

- Version -70 for particularly low flow rates
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 3 l/min	
Internal leakage:	Leakage-free	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Poppet:	Hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	06020	
Weight:	Complete valve	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	On:	approx. 30 ms
	Off:	approx. 20 ms
Coil type:	Coil …-40-1836	

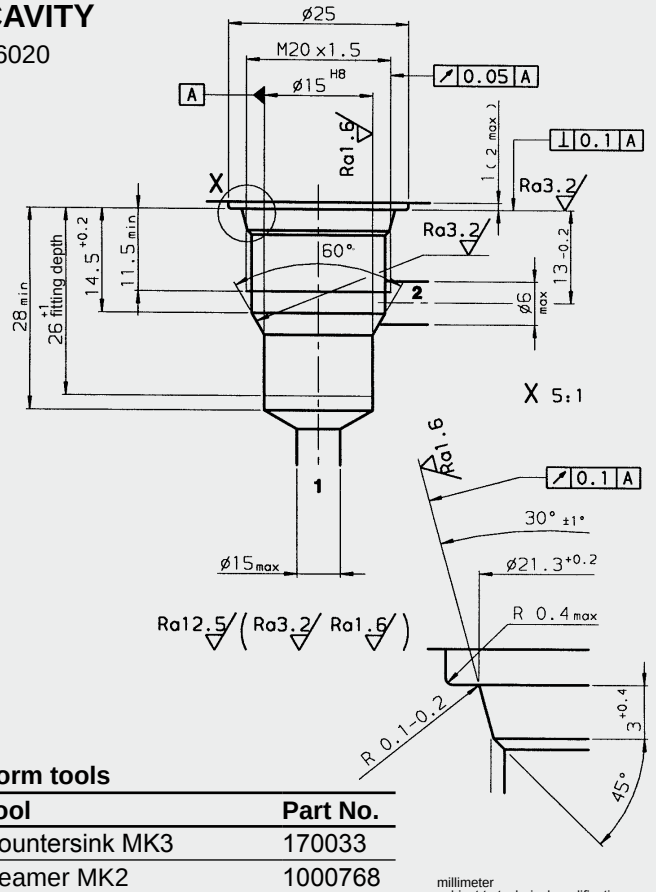
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

06020



Form tools

Tool	Part No.
Countersink MK3	170033
Reamer MK2	1000768

millimeter
subject to technical modifications

MODEL CODE

WSM06020Y – 70 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
70 = standard
(for particularly low flow rates)

Manual override
no details = without manual override
M = manual override

Body and ports
C = cartridge only
Combinations with body on request

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WSM06020Y-70-C-N-12DG	3581218
WSM06020Y-70-C-N-24DG	3534259
WSM06020Y-70-C-N-230AG	3534260

Other models on request

Standard in-line bodies

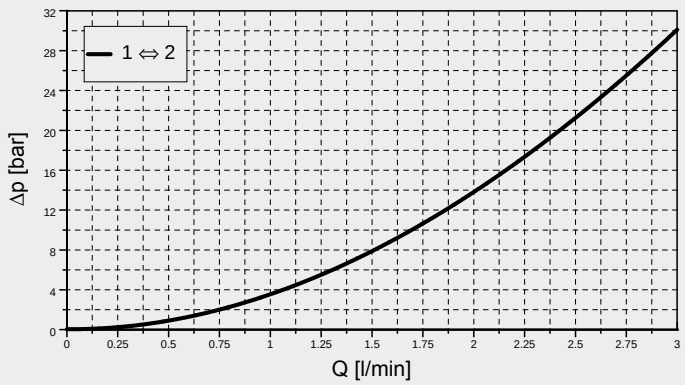
Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G 3/8	420 bar

Seal kits

Code	Material	Part No.
SEAL KIT 06020-NBR	NBR	3119017
SEAL KIT 06020-FKM	FKM	3262477

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

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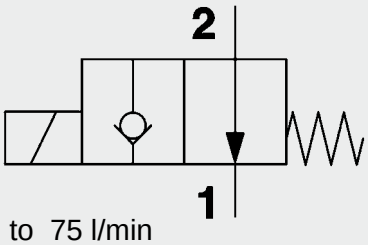
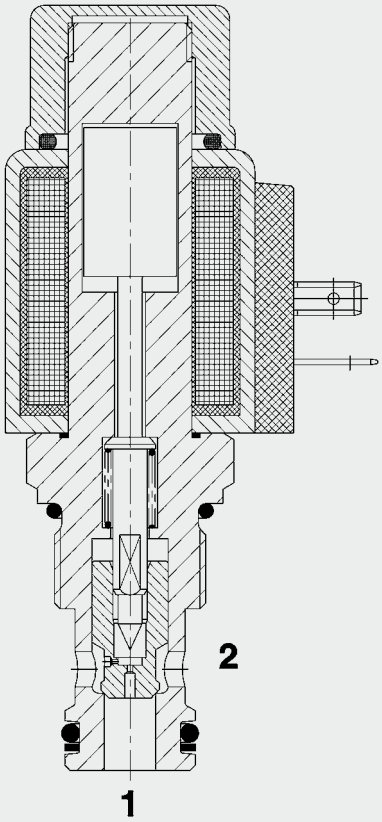


Up to 75 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Normally Open Metric Cartridge – 350 bar

WSM10120Y-01

FUNCTION



When de-energized, there is free flow through the valve from port 2 to 1. Flow is not possible in the reverse direction. When the solenoid coil is energized, the valve is closed from port 2 to port 1. In the reverse direction the valve will allow flow from port 1 to 2 when the hydraulic force on the piston overcomes the solenoid force (approx. 2.5 to 10 bar).

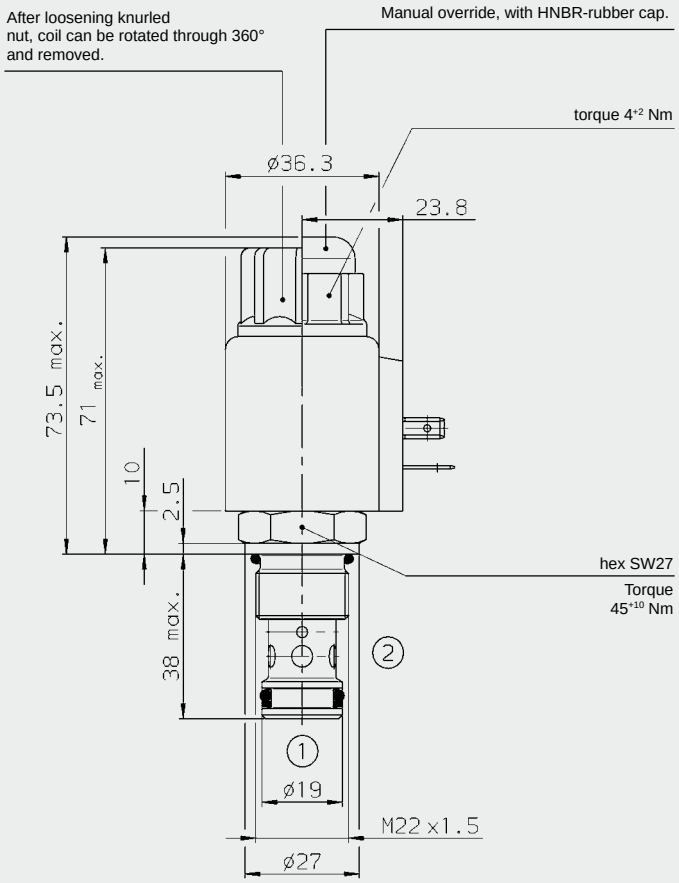
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 75 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	10120	
Weight:	Valve complete	0.37 kg
	Coil only	0.19 kg
Electrical data		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	Energized:	approx. 60 ms
	De-energized:	approx. 20 ms
Coil type:	Coil…-40-1836	

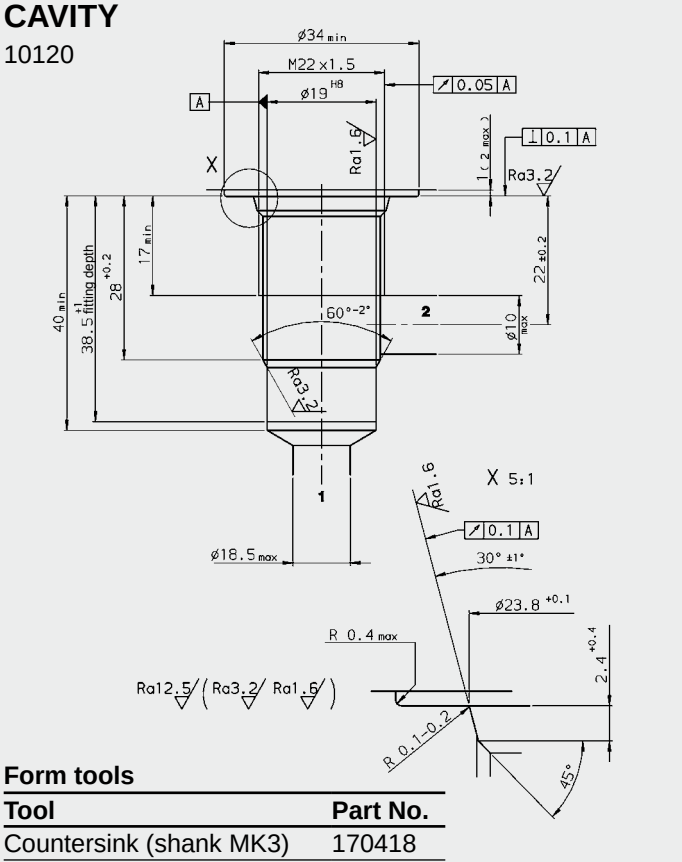
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

10120



Form tools

Tool	Part No.
Countersink (shank MK3)	170418
Reamer (shank MK2)	1014206

millimeter
subject to technical modifications

MODEL CODE

WSM10120Y – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WSM10120Y-01-C-N-24DG	3178525
WSM10120Y-01-C-N-230AG	3178524

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R10120-01X-01	395234	Steel, zinc-plated	G 1/2	420 bar

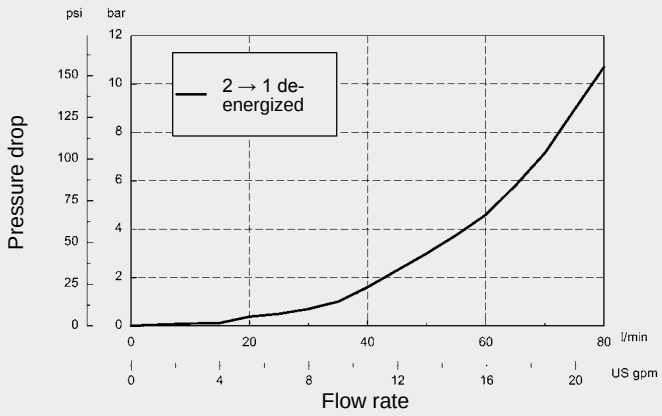
For other connection housings, see brochure no. E 5.252.

Seal kits

Code	Material	Part No.
SEAL KIT 10120-NBR	NBR	3382346
SEAL KIT 10120-FKM	FKM	3178281

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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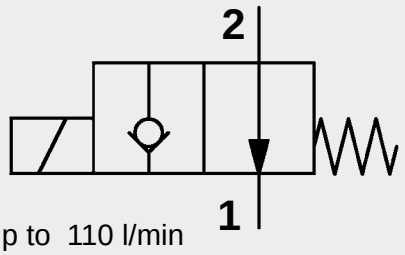
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

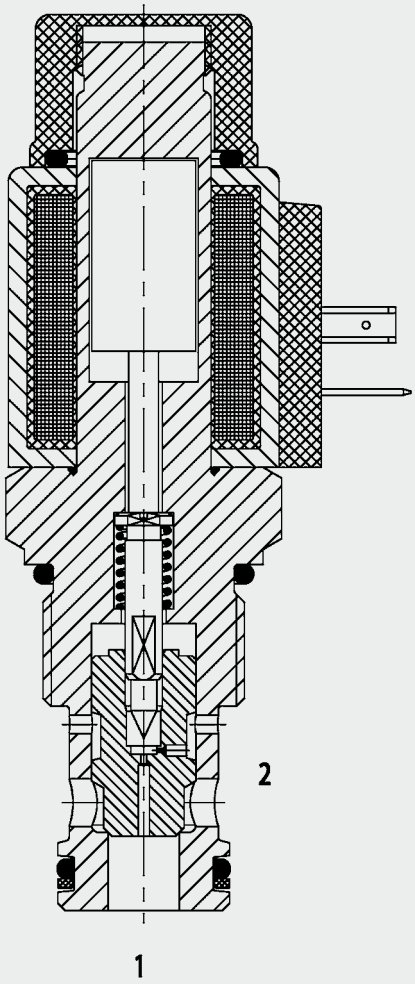


Up to 110 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Normally Open Metric Cartridge – 350 bar

WSM12120Y

FUNCTIONING



When de-energized, there is free flow through the valve from port 2 to 1. Flow in the opposite direction is not permitted.

When energized, the valve is closed from port 2 to port 1.

In the reverse direction there is free flow through the valve when the hydraulic force on the poppet exceeds the solenoid force (approx. 9 to 20 bar).

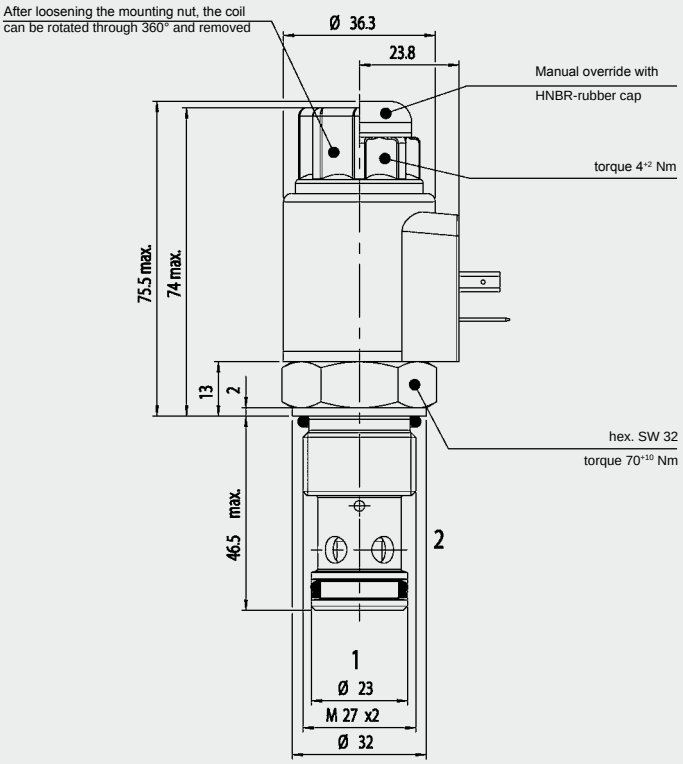
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground control piston to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 110 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	12120	
Weight:	Valve complete	0.49 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Response time:	energized:	approx. 90 ms
	de-energized:	approx. 25 ms
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil..-40-1836	

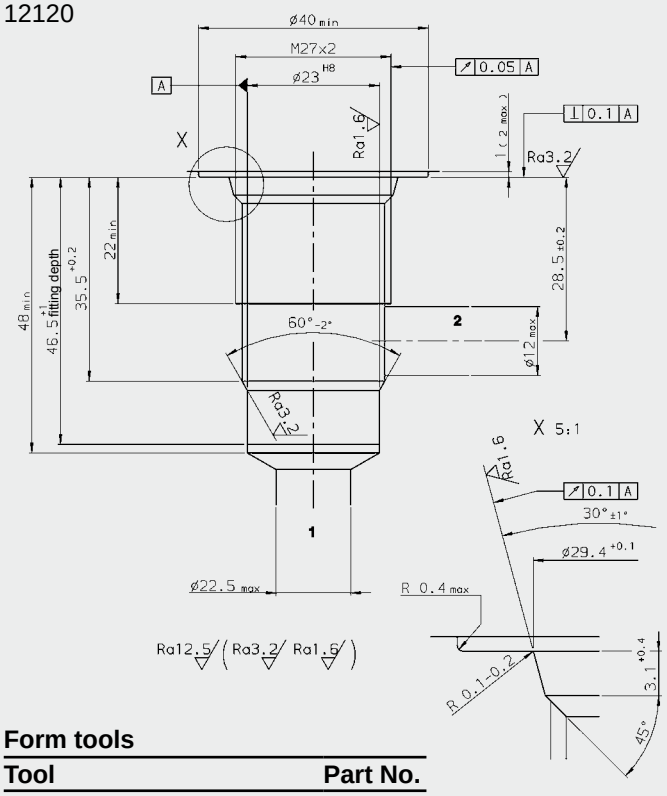
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

12120



Form tools

Tool	Part No.
Countersink (shank MK3)	172880
Reamer	1014207

millimeter
subject to technical modifications

MODEL CODE

WSM12120Y – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL-threaded connection M27x1
DL = 2 flying leads, 457 mm long; 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WSM12120Y-01-C-N-12DG	3230826
WSM12120Y-01-C-N-24DG	3230834
WSM12120Y-01-C-N-230AG	3230833

Other models on request

Standard in-line bodies

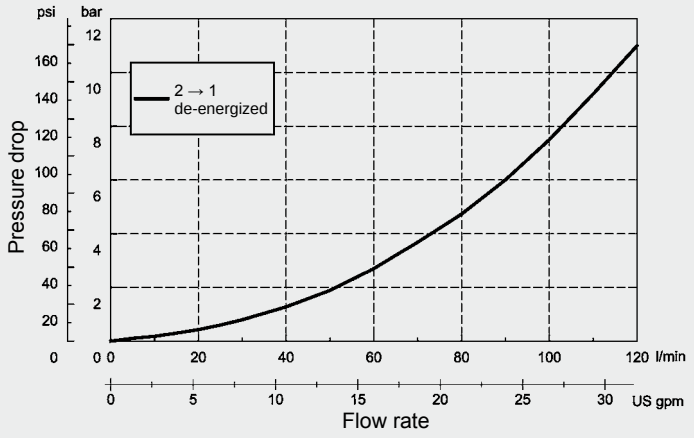
Code	Part No.	Material	Ports	Pressure
R12120-10X-01	396708	Steel, zinc-plated	G 3/4	max. 420 bar
R12120-01X-01	396707	Steel, zinc-plated	M 27 x 2	max. 420 bar

Seal kits

Code	Material	Part No.
SEAL KIT 12120-NBR	NBR	3454001
SEAL KIT 12120-FKM	FKM	3454002

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
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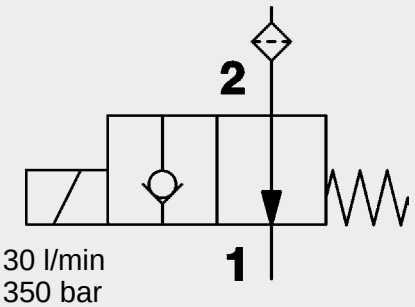
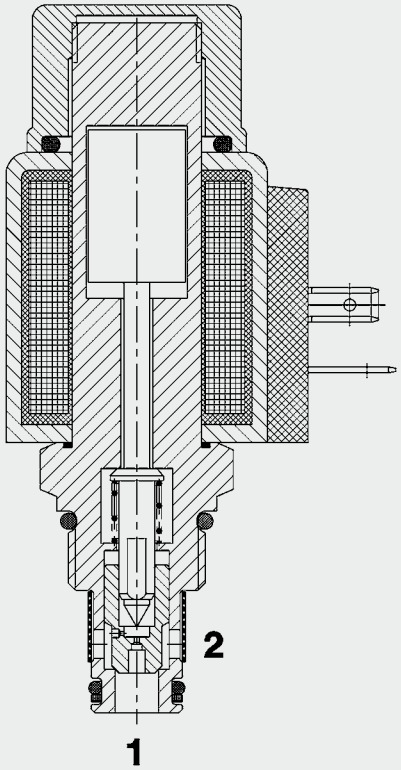


30 l/min
350 bar

2/2 Solenoid Directional Valve UNF
Poppet Type, Pilot-Operated
Normally Open
Screen Filter
SAE-08 Cartridge – 250 bar

WS08Y-30

FUNCTION



When de-energized, there is free flow through the valve from port 2 to 1. Flow from port 1 to 2 is is not permitted.

When the solenoid coil is energized, the valve is closed from port 2 to port 1. In the reverse direction the valve will allow flow from port 1 to 2 when the hydraulic force on the poppet overcomes the solenoid force (approx. 9 to 20 bar).

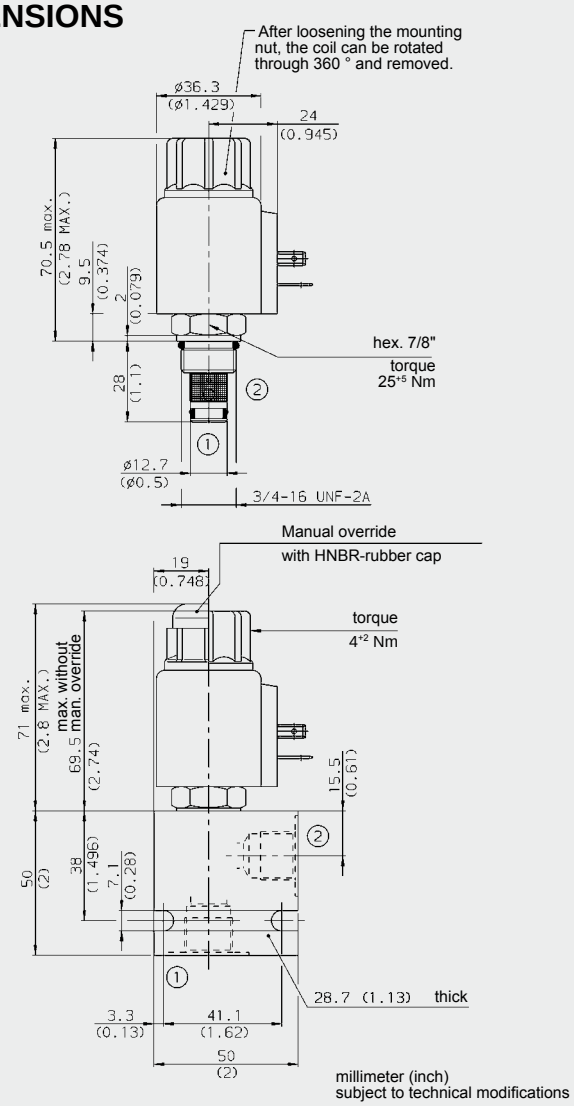
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Wide variety of connectors available
- Low pressure drop due to CFD optimized flow path
- In flow direction 2 to 1 internal valve parts protected against coarse contamination by screen filter

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 30 l/min	
Leakage:	Leak-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
Screen filter:	300 µm mesh size	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-2	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Response time:	Energized:	approx. 50 ms
	De-energized:	approx. 35 ms
Coil type:	Coil…-40-1836	

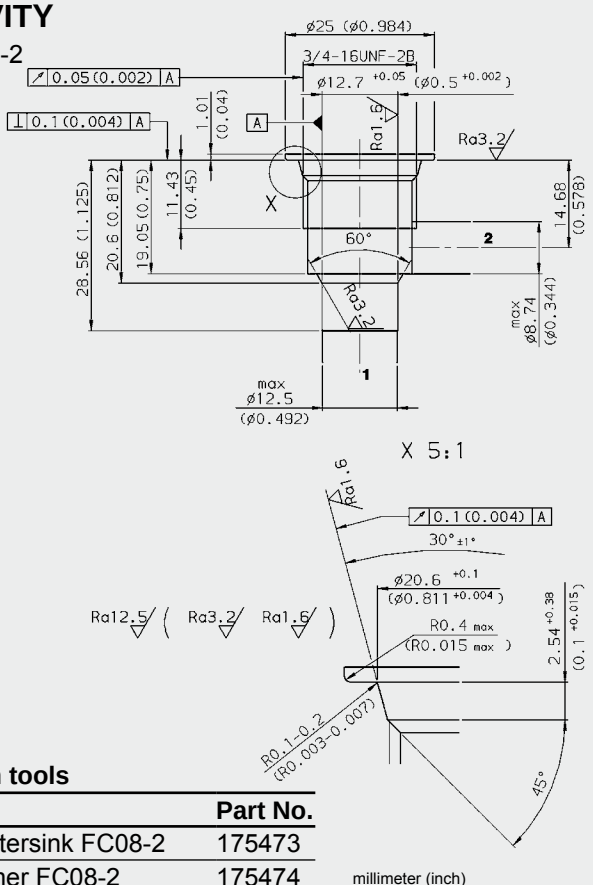
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-2



millimeter (inch)
subject to technical modifications

Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

MODEL CODE

WS08Y – 30 M – C – N – 24 DG

Basic model
Directional poppet valve with screen filter

Type
30 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS08Y-30-C-N-24DG	3132862
WS08Y-30-C-N-230AG	3132863

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, anodized	G3/8	210 bar

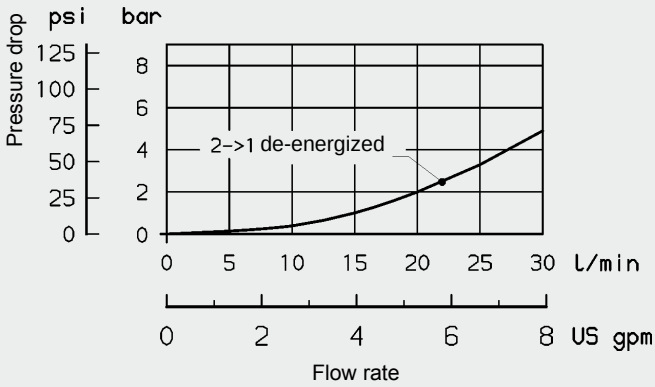
Other line bodies on request

Seal kits

Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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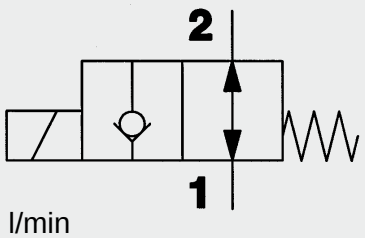
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

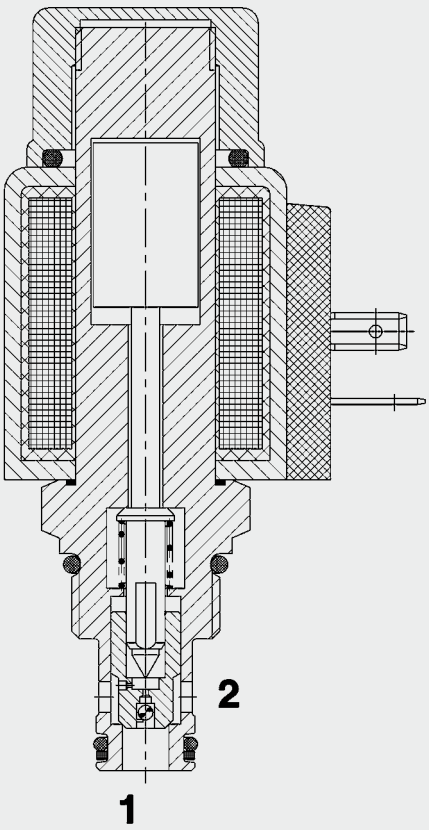


38 l/min
350 bar

2/2 Solenoid Directional Valve UNF Poppet Type, Pilot-Operated Normally Open (Reverse Flow) SAE-08 Cartridge – 350 bar

WS08YR-01

FUNCTION



When the solenoid coil is not energized, the valve is open in both directions.

When the solenoid coil is energized, the valve is closed from port 2 to port 1. In the reverse direction from port 1 to 2 there is free flow through the valve when the pressure force on the piston exceeds the solenoid force (approx. 9 to 20 bar).

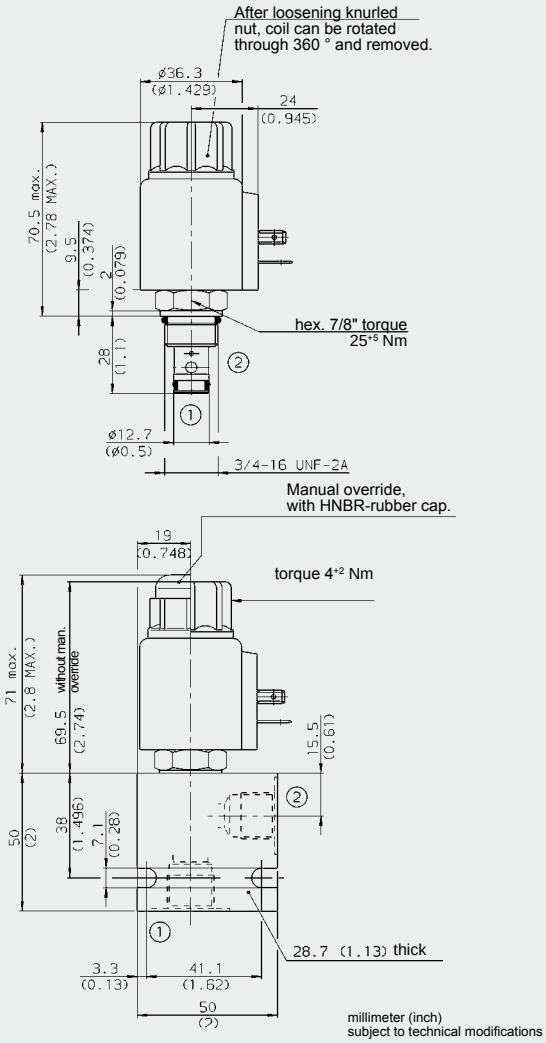
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 38 l/min	
Leakage:	leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temp. range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel/Polyamide
Cavity:	FC08-2	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Switching time:	Energized:	approx. 50 ms
	De-energized:	approx. 35 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

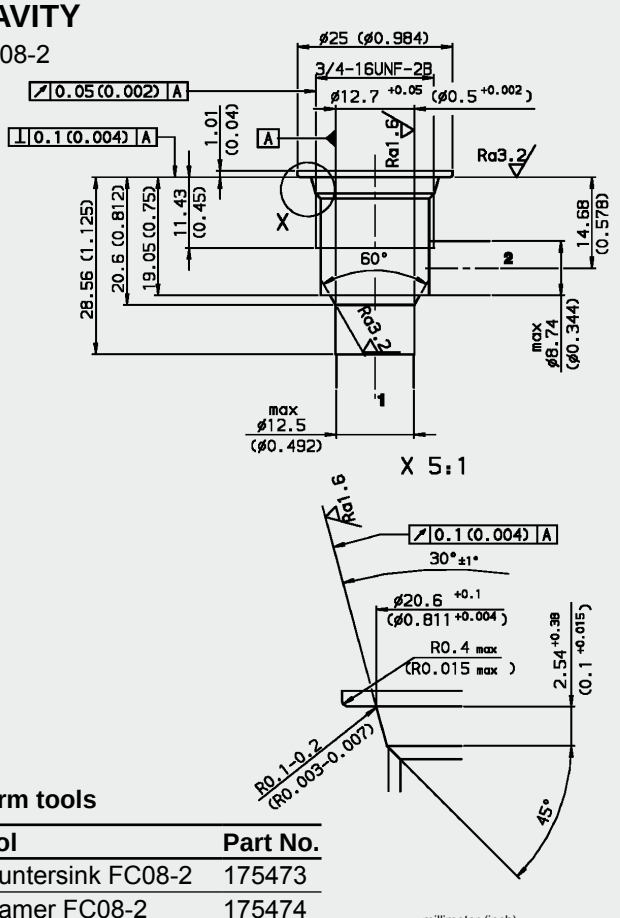
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-2



millimeter (inch)
subject to technical modifications

Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

MODEL CODE

WS08YR – 01 M – C – N – 24 DG

Basic Model
Directional poppet valve UNF

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and Ports*
C = Cartridge only
SB3 = G3/8 BSP ports, steel body
AB3 = G3/8 BSP ports, aluminium body

Seals
N = NBR
V = FKM

Coil voltage
DC voltages:
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS08YR-01-C-N-24DG	562805
WS08YR-01-C-N-230AG	3043387

Other models on request

* Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	350 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

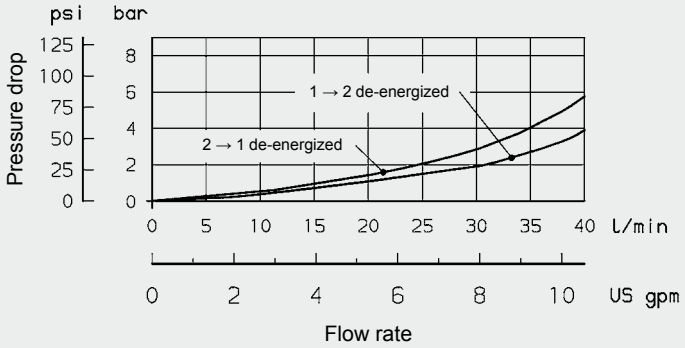
Other housings on request

Seal kits

Code	Material	Part No.
FH082-N SEAL KIT	NBR	3033920
FH082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
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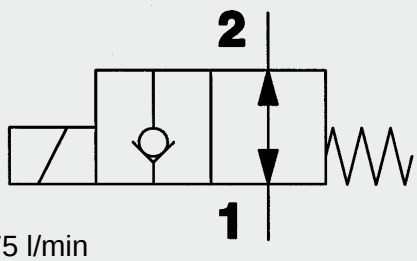
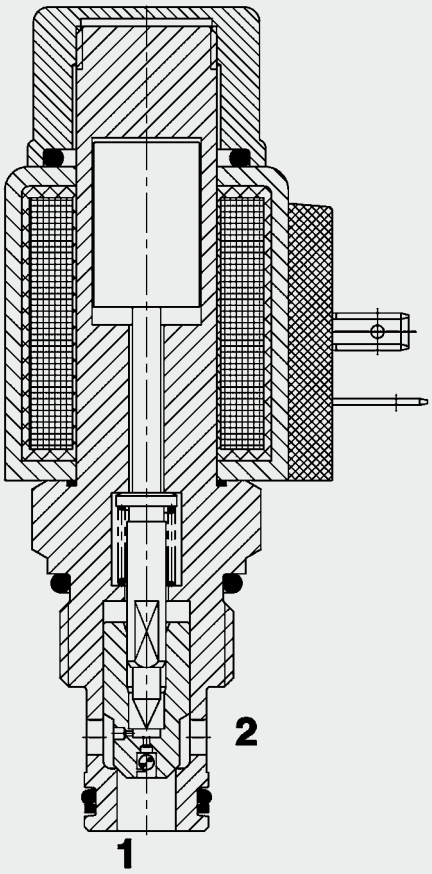


75 l/min
350 bar

2/2 Solenoid Directional Valve UNF Poppet Type, Pilot-Operated Normally Open (Reverse Flow) SAE-10 Cartridge – 350 bar

WS10YR

FUNCTION



When the solenoid coil is de-energized, the valve is open in both directions. When the solenoid coil is energized, the valve is closed from port 2 to port 1. In the reverse direction the valve will allow flow from port 1 to 2 when the hydraulic force on the piston overcomes the solenoid force (approx. 9 to 20 bar).

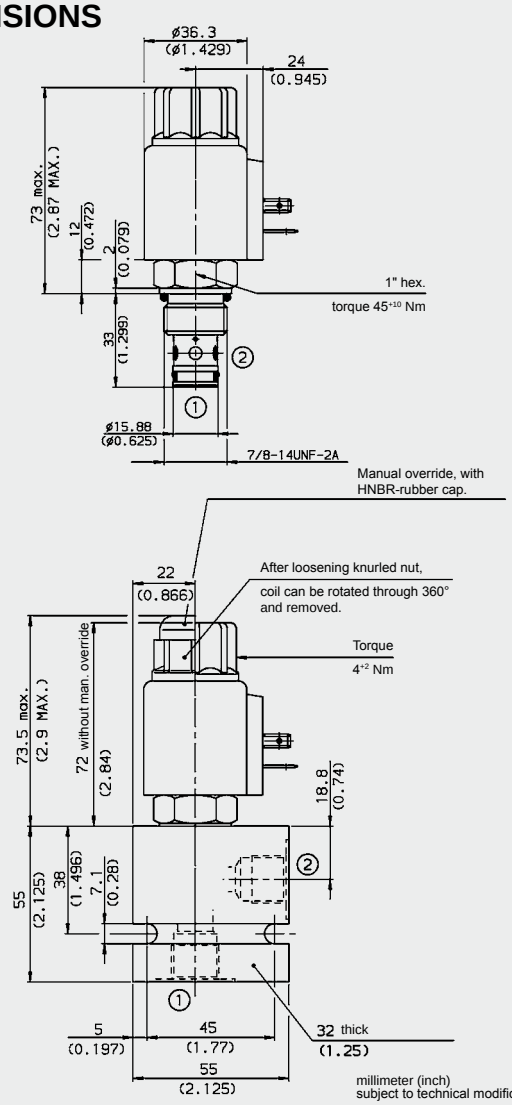
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 75 l/min	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-2	
Weight:	Valve complete	0.37 kg
	Coil only	0.19 kg
Electrical data:		
Switching time:	Energized: approx. 50 ms De-energized: approx. 35 ms	
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

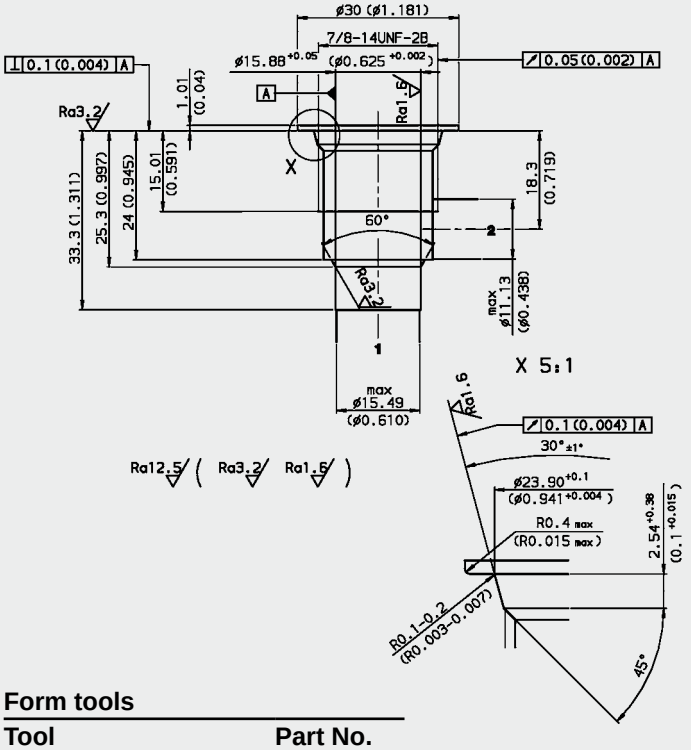
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC10-2



Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter (inch)
subject to technical modifications

MODEL CODE

WS10YR-01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WS10YR-01-C-N-24DG	3030758
WS10YR-01-C-N-230AG	3043833

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, clear anodized	G1/2	210 bar

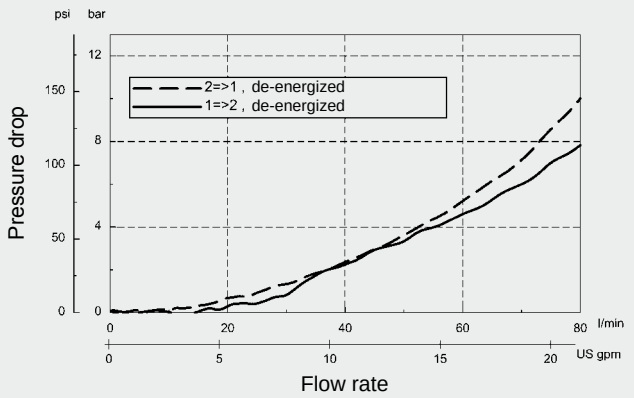
Other housings on request

Seal kits

Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
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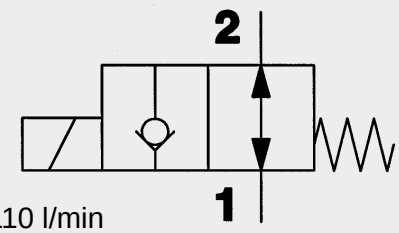
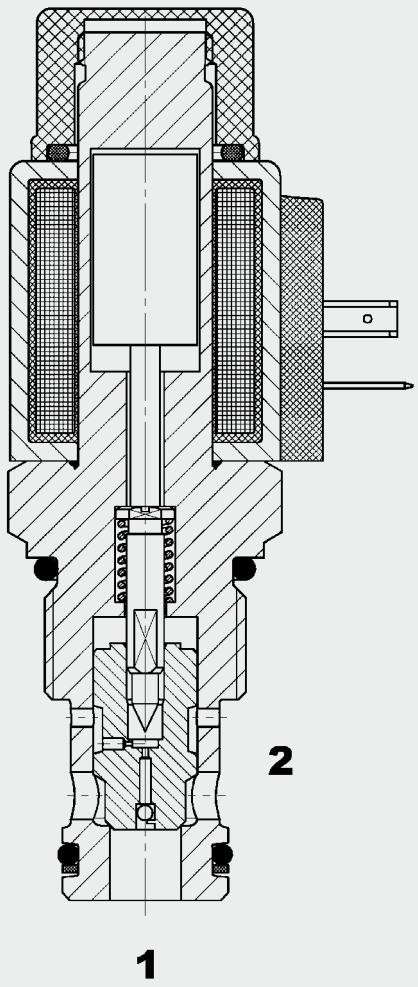


110 l/min
350 bar

2/2 Solenoid Directional Valve UNF Poppet Type, Pilot-Operated Normally Open (Reverse Flow) SAE-12 Cartridge – 350 bar

WS12YR-01

FUNCTION



When the solenoid coil is de-energized, there is free flow through the valve in both directions.

When the solenoid coil is energized, the valve is closed from port 2 to port 1. In the reverse direction the valve will allow flow from port 1 to 2 when the hydraulic force on the poppet overcomes the solenoid force (approx. 1.5 to 6.5 bar).

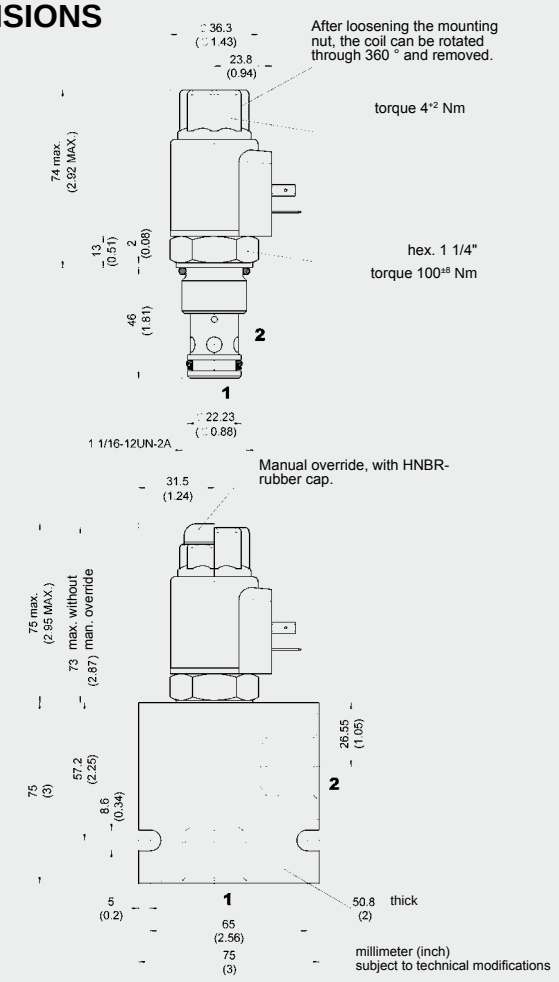
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Wide variety of connectors available
- External surfaces zinc-plated and corrosion-proof
- Coil seals protect the solenoid system
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

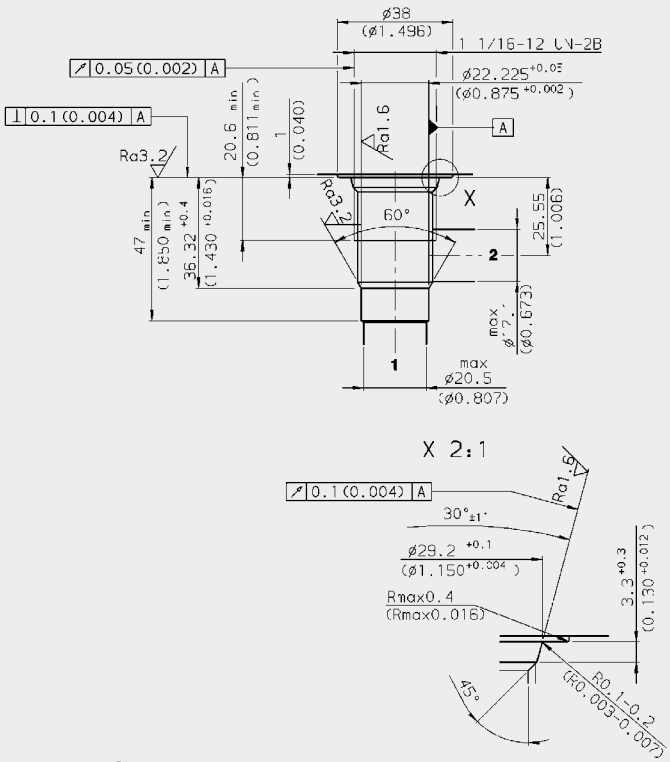
Operating pressure:	max. 350 bar	
Nominal flow:	max. 110 l/min	
Leakage:	Leak-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC12-2	
Weight:	Valve complete	0.48 kg
	Coil only	0.19 kg
Electrical data:		
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Response time:	Energized:	approx. 90 ms
	De-energized:	approx. 35 ms
Coil type:	Coil…-40-1836	

DIMENSIONS



CAVITY

FC12-2



Form tools

Tool	Part No.
Countersink FC12-2	176951
Reamer FC12-2	176952

MODEL CODE

WS12YR – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, UNF

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB6 = G3/4 ports, steel body
AB6 = G3/4 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS12YR-01-C-N-24DG	3157876
WS12YR-01-C-N-230AG	3157875

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH122-SB6	3053782	Steel, zinc-plated	G3/4	420 bar
FH122-AB6	3053843	Aluminium, anodized	G3/4	210 bar

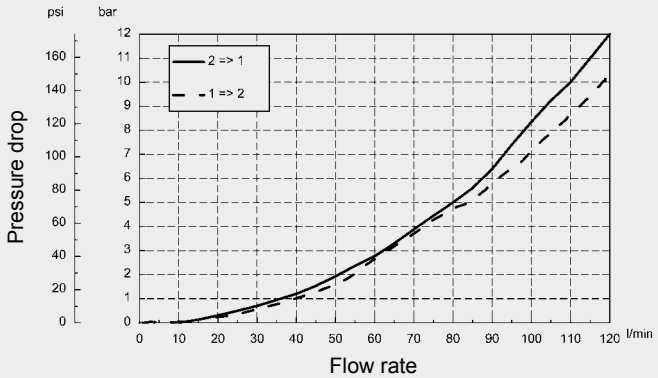
Other line bodies on request

Seal kits

Code	Material	Part No.
FS122-N SEAL KIT	NBR	3071298
FS122-V SEAL KIT	FKM	3071299

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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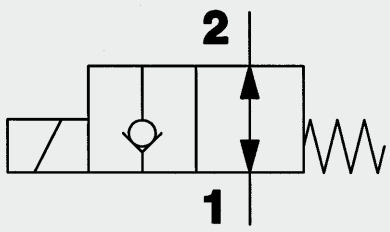
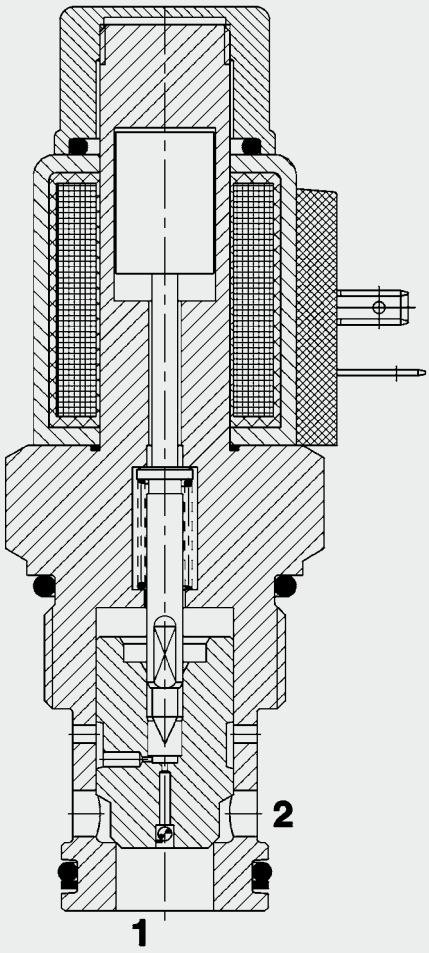


150 l/min
350 bar

2/2 Solenoid Directional Valve UNF Poppet Type, Pilot-Operated Normally Open (Reverse Flow) SAE-16 Cartridge – 350 bar

WS16YR-01

FUNCTION



When the solenoid coil is de-energized, the valve is open in both directions.

When the solenoid coil is energized, the valve is closed from port 2 to port 1. In the reverse direction the valve will allow flow from port 1 to 2 when the hydraulic force on the piston overcomes the solenoid force (approx. 1 to 3 bar).

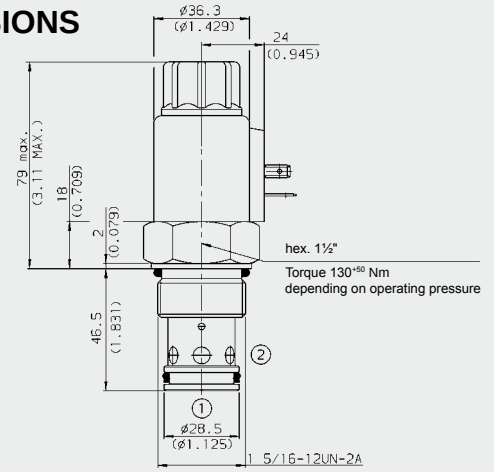
FEATURES

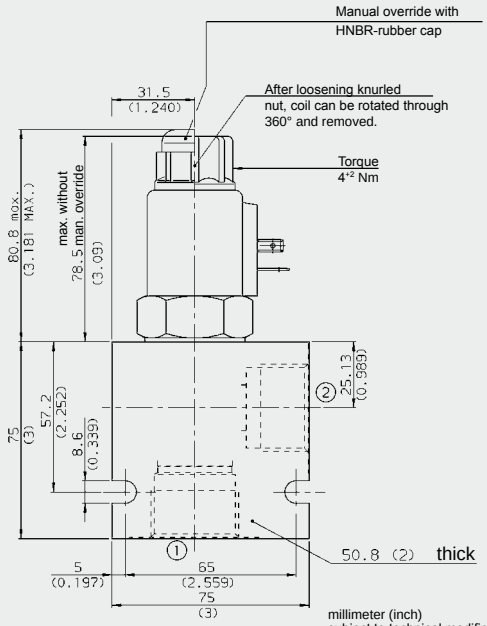
- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Coil seals protect the solenoid system
- Wide variety of connectors available

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 150 l/min, up to 280 bar max. 100 l/min, from 280 to 350 bar	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC16-2	
Weight:	Valve complete	0.65 kg
	Coil only	0.19 kg
Electrical data:		
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Response time:	Energized:	approx. 150 ms
	De-energized:	approx. 35 ms
Coil type:	Coil…-40-1836	

DIMENSIONS

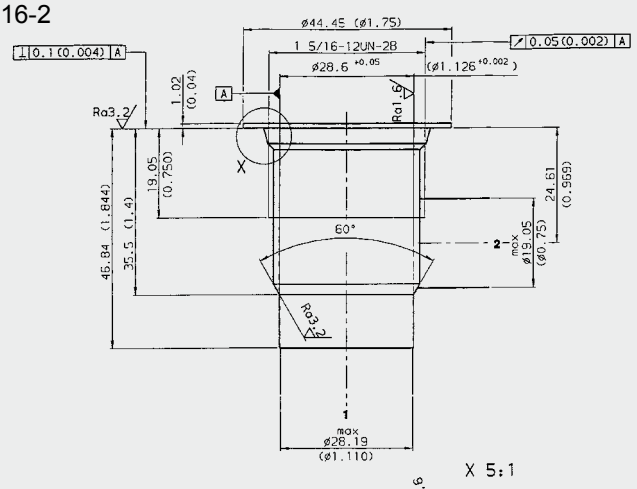


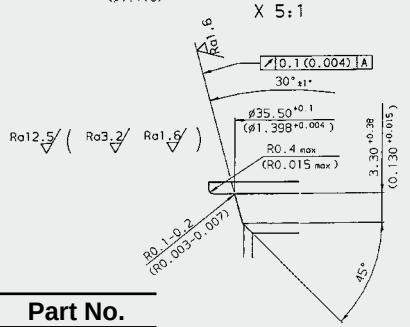


millimeter (inch)
subject to technical modifications

CAVITY

FC16-2





Form tools

Tool	Part No.
Countersink FC16-2	176218
Reamer FC16-2	176219

millimeter (inch)
subject to technical modifications

MODEL CODE

WS16YR – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and Ports*
C = Cartridge only
SB8 = G1 ports, steel body
AB8 = G1 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS16YR-01-C-N-24DG	3049625
WS16YR-01-C-N-230AG	3049650

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH162-SB8	3032496	Steel, zinc-plated	G1	420 bar
FH162-AB8	3037193	Aluminium, anodized	G1	210 bar

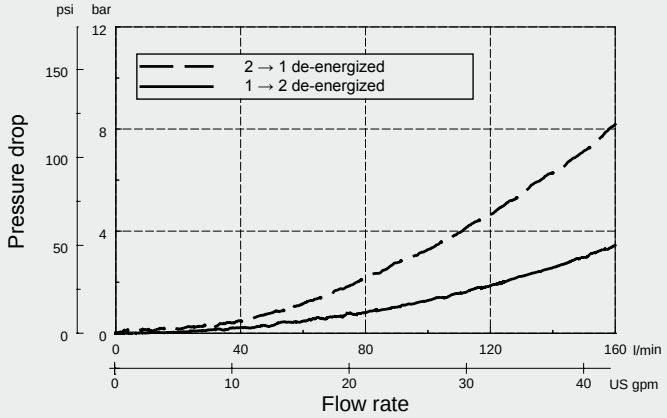
Other housings on request

Seal kits

Code	Material	Part No.
FS162-N SEAL KIT	NBR	3052427
FS162-V SEAL KIT	FKM	3051758

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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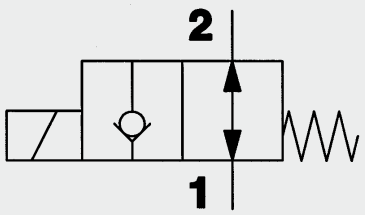
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

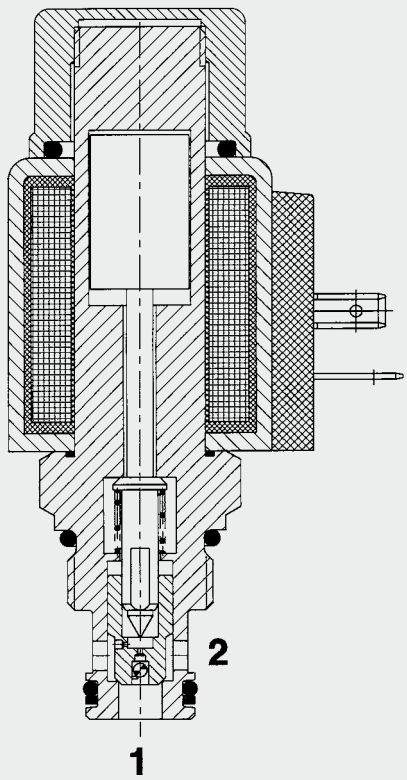


Up to 40 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Open (Reverse Flow) Metric Cartridge - 350 bar

WSM06020YR-01

FUNCTION



When the solenoid coil is de-energized, the valve is open in both directions.

When the solenoid coil is energized, the valve is closed from port 2 to port 1.

In the reverse direction there is free flow through the valve when the hydraulic force on the piston exceeds the solenoid force (approx. 9 to 20 bar).

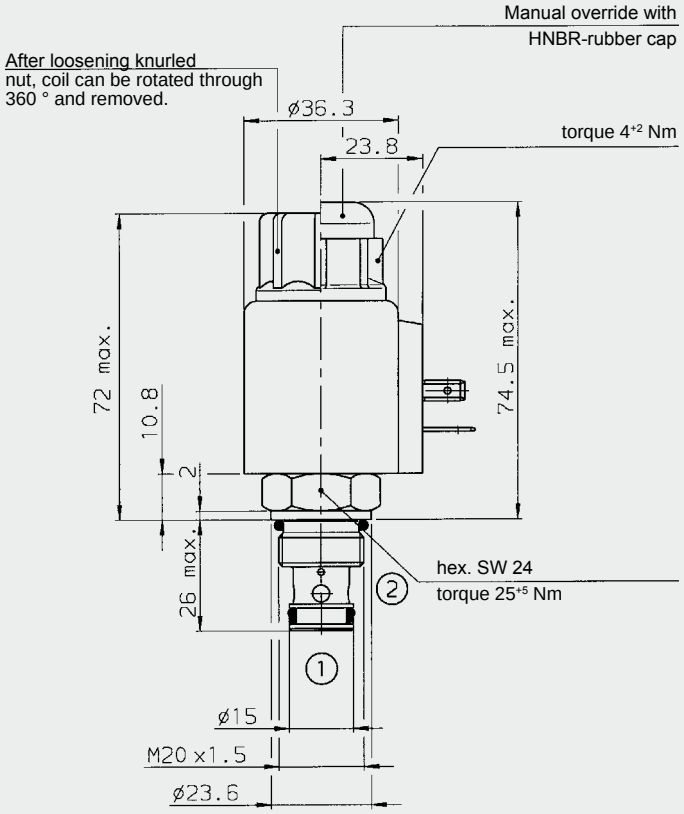
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 40 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	06020	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	energized:	approx. 50 ms
	de-energized:	approx. 35 ms
Coil type:	Coil...-40-1836	

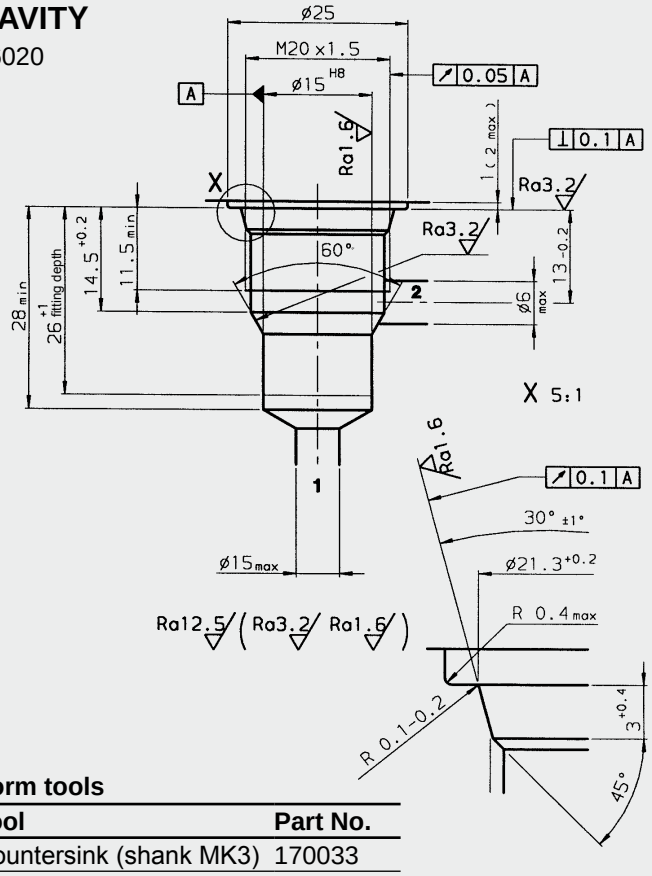
DIMENSIONS



Subject to technical modifications.

CAVITY

06020



Form tools

Tool	Part No.
Countersink (shank MK3)	170033
Reamer (shank MK2)	1000768

Subject to technical modifications.

MODEL CODE

WSM06020YR - 01 M - C - N - 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DT = AMP Junior Timer, 2-pole, radial
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads 475 mm long, 0.75 mm²
DN = Deutsch connector, axial
AC: AG = DIN connector to EN175301-803

Other connectors on request

Standard models

Model code	Part No.
WSM06020YR-01-C-N-24DG	3056228
WSM06020YR-01-C-N-230AG	3056226

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G 3/8	max. 420 bar

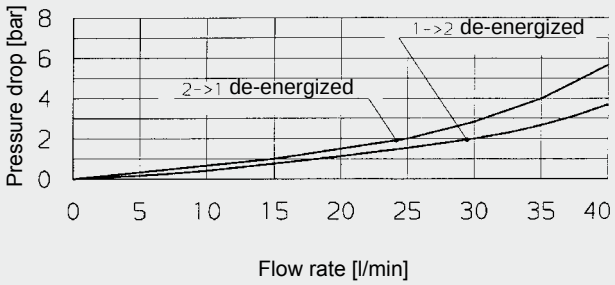
For other line bodies, see brochure no. E 5.252.

Seal kits

Code	Material	Part No.
SEAL KIT 06020-NBR	NBR	3119017
SEAL KIT 06020-FKM	FKM	3262477

PERFORMANCE

Measured at ν = 34 mm²/s, T_{Oil} = 46 °C



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D-66280 Sulzbach/Saar
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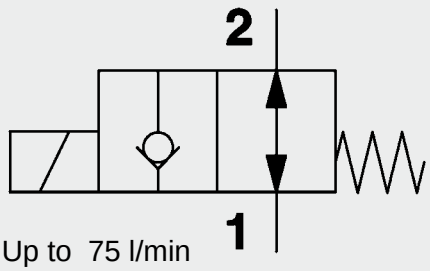
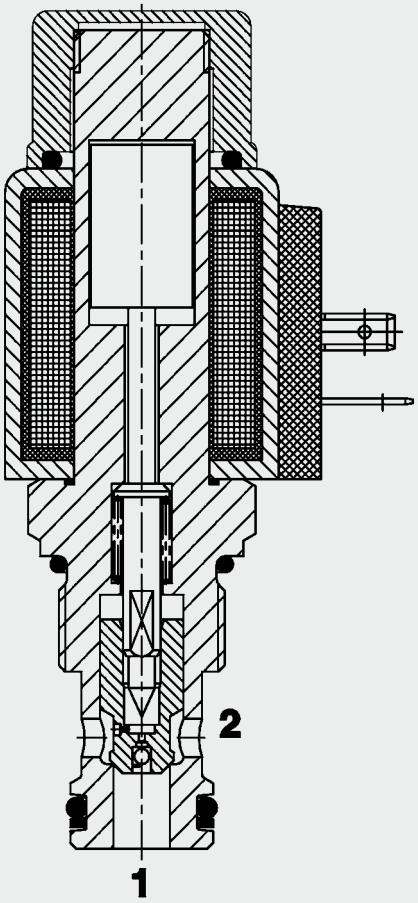


Up to 75 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Open (Reverse Flow) Metric Cartridge Valve – 350 bar

WSM10120YR-01

FUNCTION



When the solenoid coil is de-energized, the valve is open in both directions.

When the solenoid coil is energized, the valve is closed from port 2 to port 1. In the reverse direction the valve will allow flow from port 1 to 2 when the hydraulic force on the piston overcomes the solenoid force (approx. 2.5 to 10 bar).

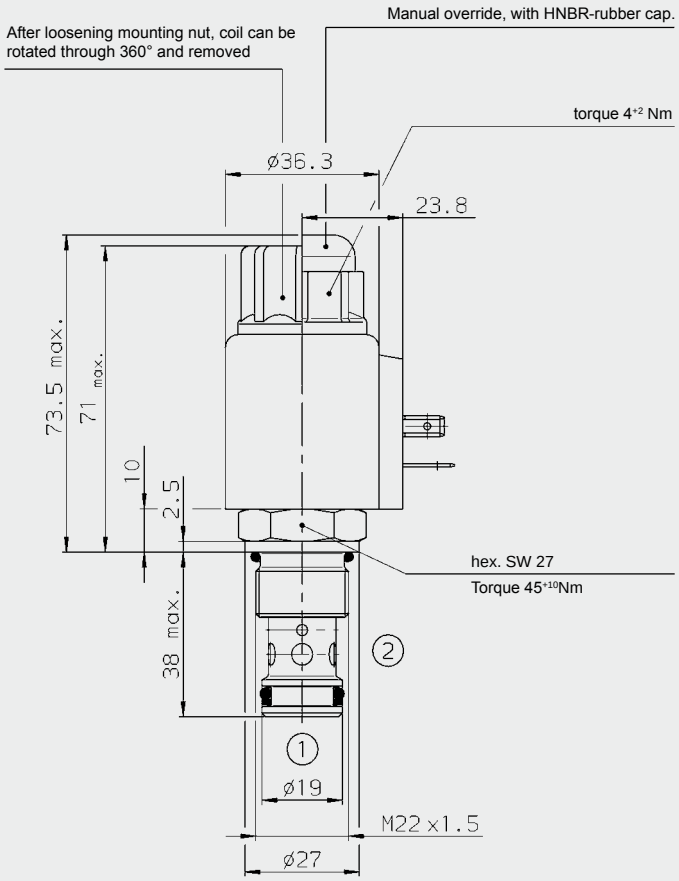
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 75 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Weight:	Valve complete	0.37 kg
	Coil only	0.19 kg
Electrical data		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	Energized:	approx. 60 ms
	De-energized:	approx. 20 ms
Coil type:	Coil...-40-1836	

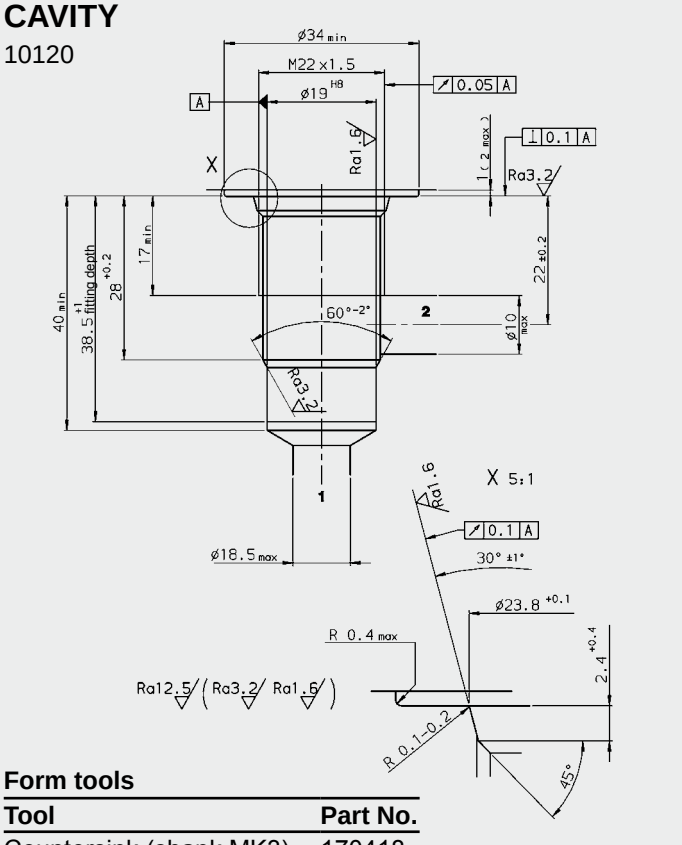
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

10120



Form tools

Tool	Part No.
Countersink (shank MK3)	170418
Reamer (shank MK2)	1014206

millimeter
subject to technical modifications

MODEL CODE

WSM10120YR – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL-threaded connection M27x1
DL = 2 flying leads, 457 mm long; 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WSM10120YR-01-C-N-24DG	3179040
WSM10120YR-01-C-N-230AG	3576069

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R10120-01X-01	395234	Steel, zinc-plated	G 1/2	max. 420 bar

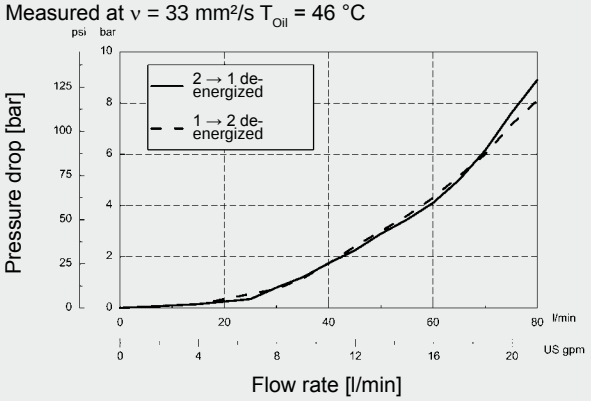
For other connection housings, see brochure no. E 5.252.

Seal kits

Code	Material	Part No.
SEAL KIT 10120-NBR	NBR	3382346
SEAL KIT 10120-FKM	FKM	3178281

PERFORMANCE

Measured at ν = 33 mm²/s T_{Oil} = 46 °C



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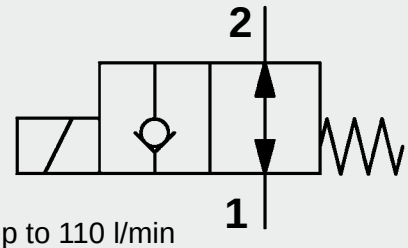
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

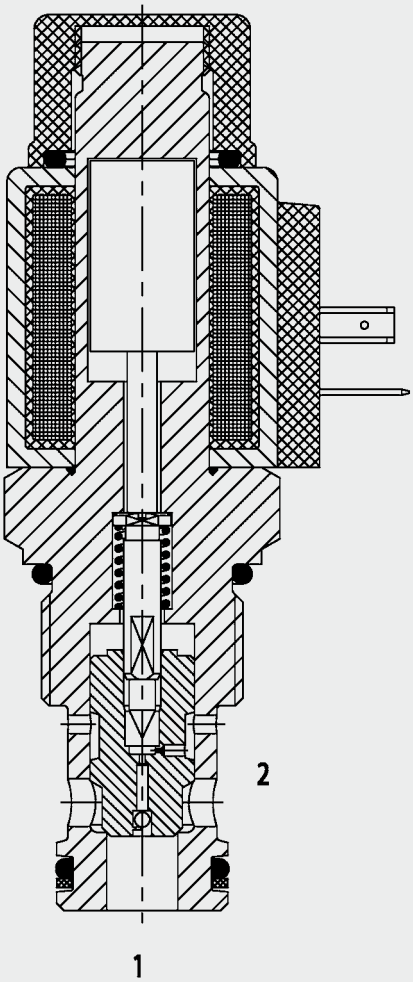
2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Open (Reverse Flow) Metric Cartridge – 350 bar

WSM12120YR



Up to 110 l/min
Up to 350 bar

FUNCTION



When the solenoid coil is de-energized, the valve is open in both directions.

When the solenoid coil is energized, the valve is closed from port 2 to port 1. In the reverse direction there is free flow through the valve when the hydraulic force on the piston exceeds the solenoid force (approx. 9 to 20 bar).

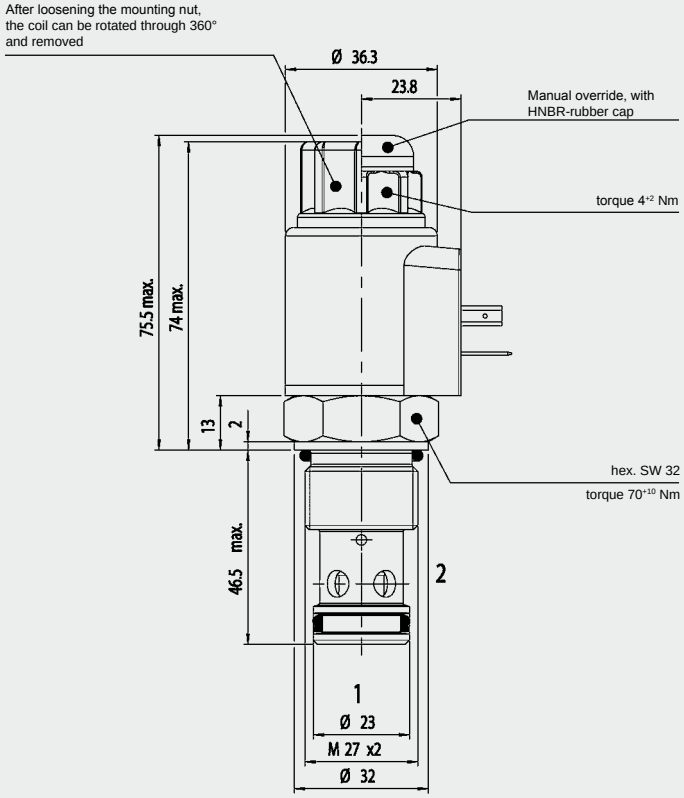
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground control piston to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 110 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	12120	
Weight:	Valve complete	0.49 kg
	Coil only	0.19 kg
Response time:	Energized: approx. 90 ms De-energized: approx. 25 ms	
Electrical data		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil ...-40-1836	

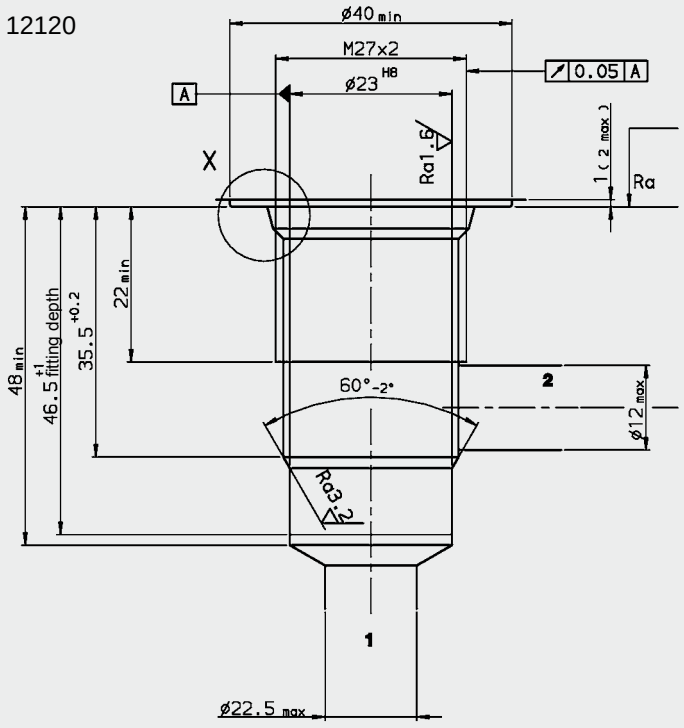
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

12120



Form tools

Tool	Part No.
Countersink (shank MK3)	172880
Reamer	1014207

millimeter
subject to technical modifications

MODEL CODE

WSM12120YR – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WSM12120YR-01-C-N-12DG	3230846
WSM12120YR-01-C-N-24DG	3230852
WSM12120YR-01-C-N-230AG	3179093

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R12120-10X-01	396708	Steel, zinc-plated	G 3/4	max. 420 bar
R12120-10X-02	396707	Steel, zinc-plated	M 27 x 2	max. 420 bar

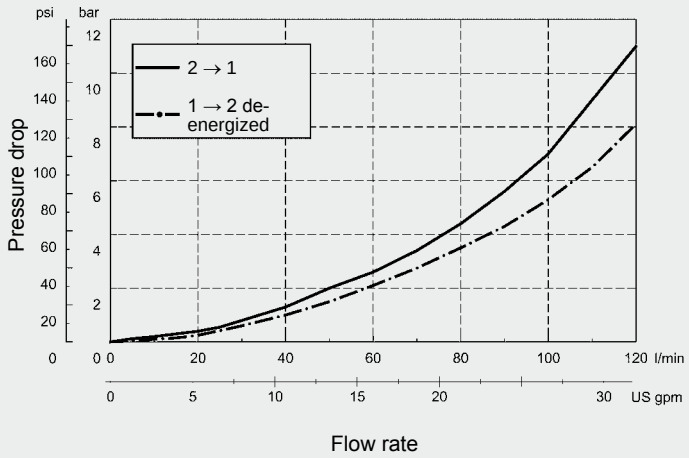
Other line bodies on request

Seal kits

Code	Material	Part No.
SEAL KIT 12120-NBR	NBR	3454001
SEAL KIT 12120-FKM	FKM	3454002

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



Flow rate

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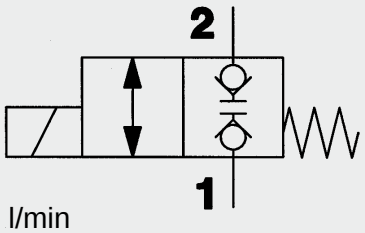


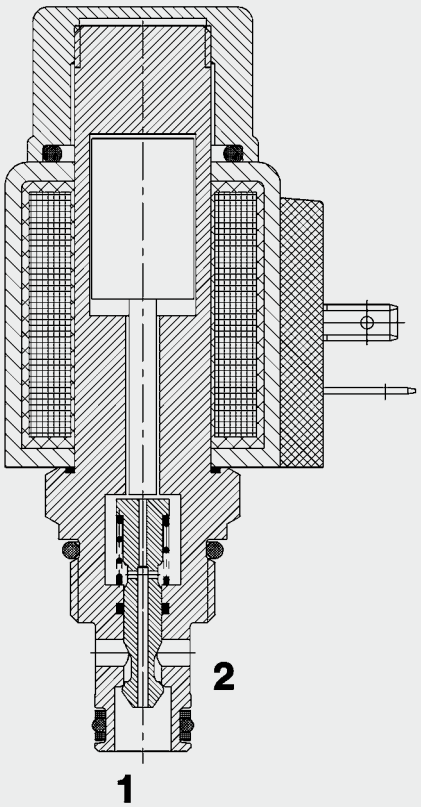
19 l/min
250 bar

2/2 Solenoid Directional Valve Poppet Type, Direct-Acting Normally Closed SAE-08 Cartridge – 250 bar

UNF

WS08W-01

FUNCTION



In the de-energized mode, the valve blocks flow in both directions.

When energized the valve allows flow in both directions.

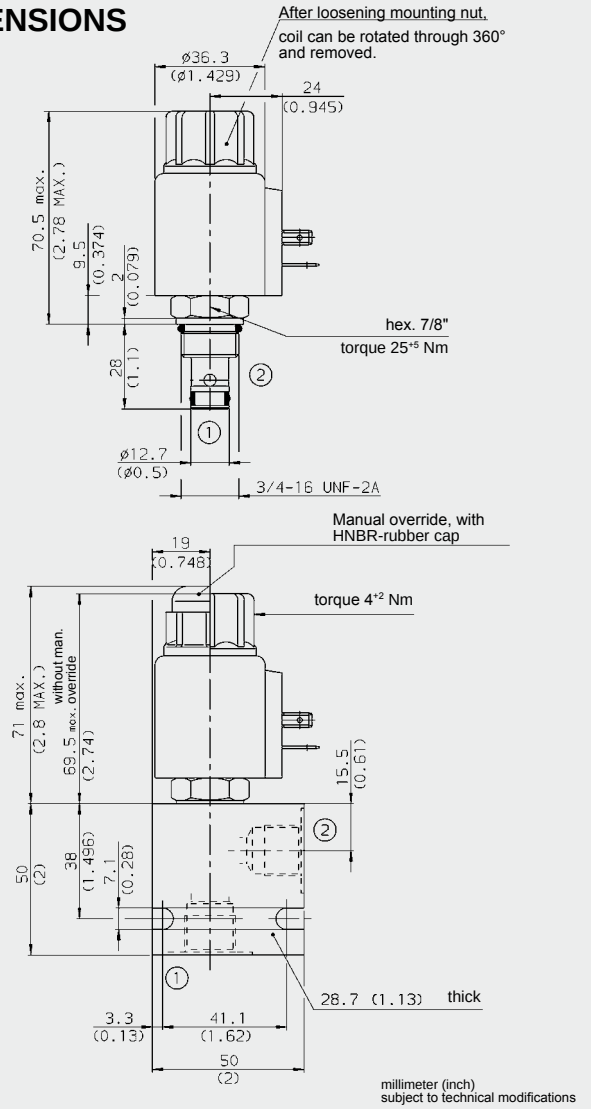
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 250 bar	
Nominal flow:	max. 19 l/min	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 250 bar)	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-2	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 50 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

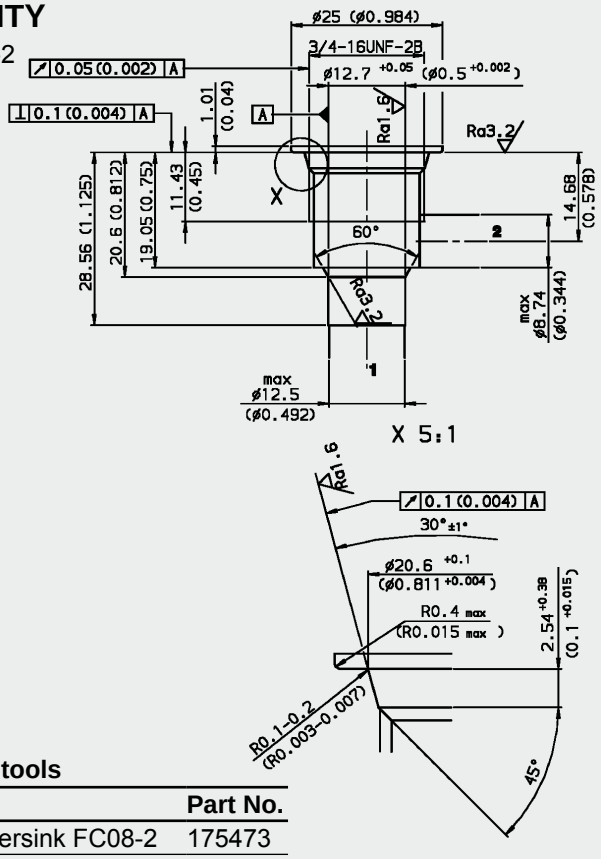
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

millimeter (inch)
subject to technical modifications

MODEL CODE

WS08W – 01 M – C – N – 24 DG

Basic model
Directional poppet valve UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and Ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS08W-01-C-N-24DG	3011913
WS08W-01-C-N-230AG	3043358

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

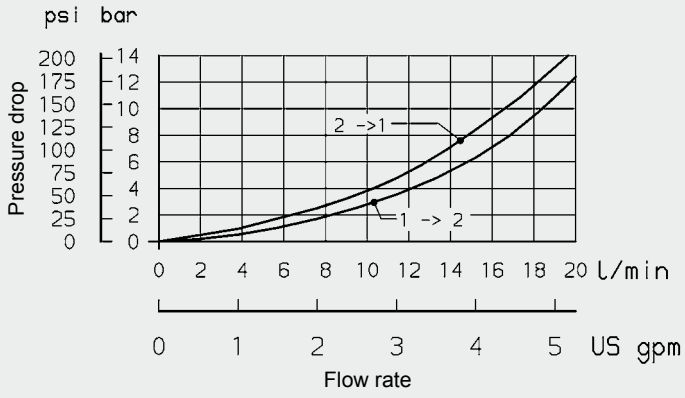
Other housings on request

Seal kits

Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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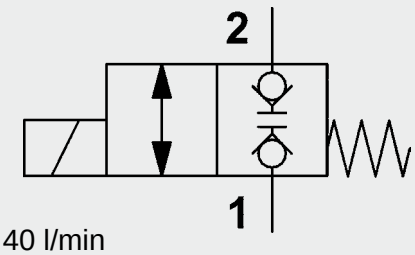
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

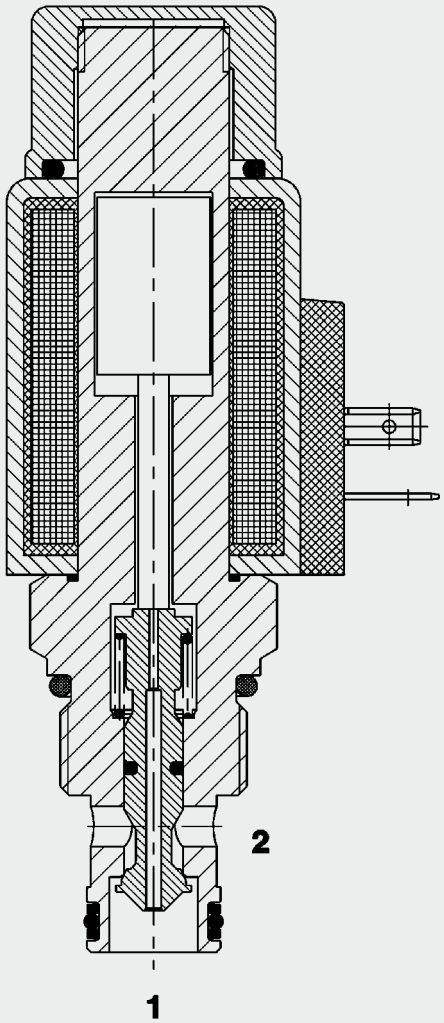


40 l/min
350 bar

2/2 Solenoid Directional Valve UNF
Poppet Type, Direct-Acting
Normally Closed
SAE-10 Cartridge – 350 bar

WS10W

FUNCTION



In the de-energized mode the valve blocks flow in both directions.

When energized the valve allows flow in both directions.

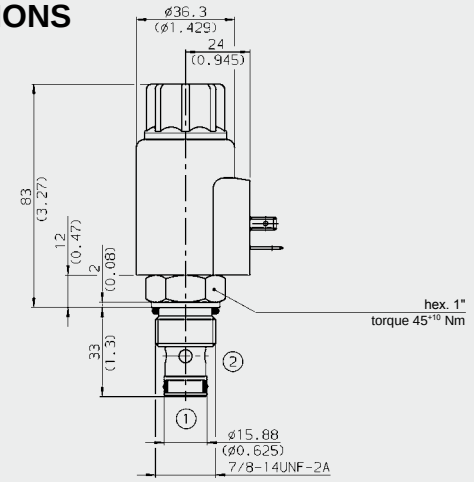
FEATURES

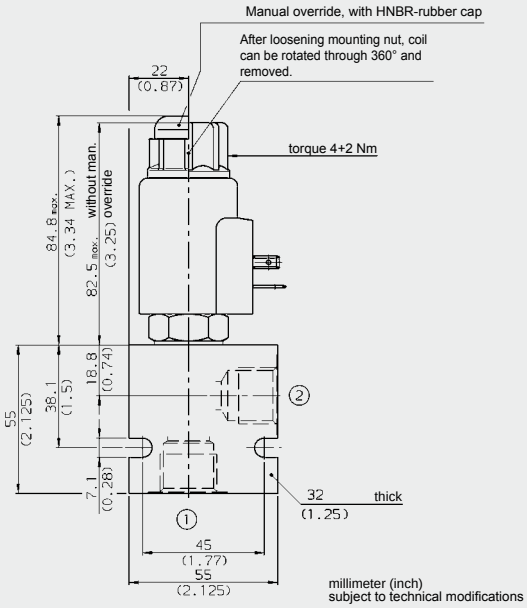
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connections available
- Excellent switching performance by high power HYDAC solenoid

SPECIFICATIONS

Operating pressure:	350 bar	
Nominal flow:	40 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel / Polyamide
Cavity:	FC10-2	
Weight:	Valve complete:	0.46 kg
	Coil only:	0.23 kg
Electrical data:		
Response time:	Energized:	approx. 50 ms
	De-energized:	approx. 50 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15 % of nominal voltage	
Coil duty rating:	Continuous up to max. 115% of nominal voltage at max. 60° C ambient temperature	
Coil type:	Coil…-50-1836	

DIMENSIONS

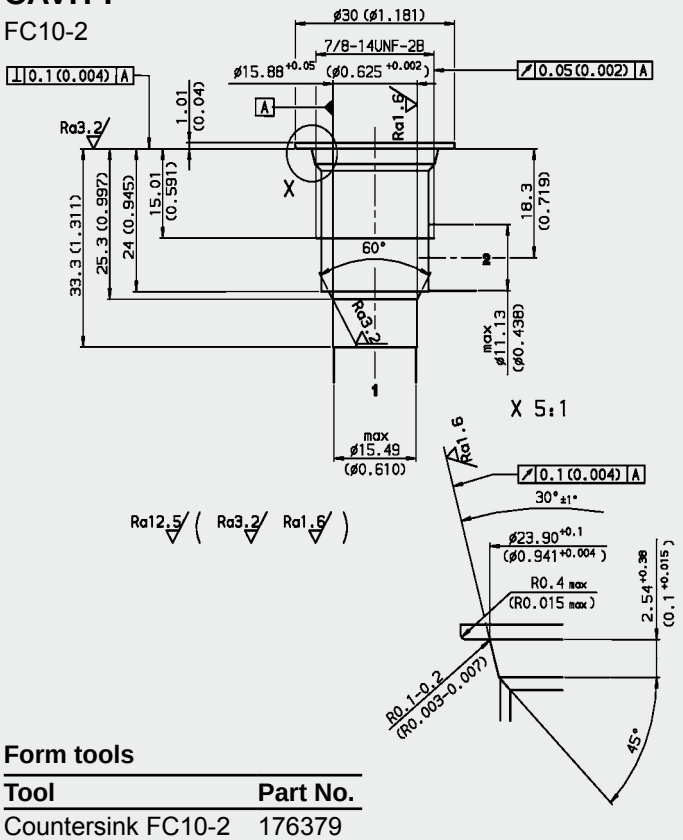




millimeter (inch)
subject to technical modifications

CAVITY

FC10-2



Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter (inch)
subject to technical modifications

MODEL CODE

WS10W - 01 M – C – N - 24 DG

Basic model
Directional poppet valve UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS10W-01-C-N-12DG	3105542
WS10W-01-C-N-24DG	3105385
WS10W-01-C-N-230AG	3105386

Other models on request

*Standard in-line bodies

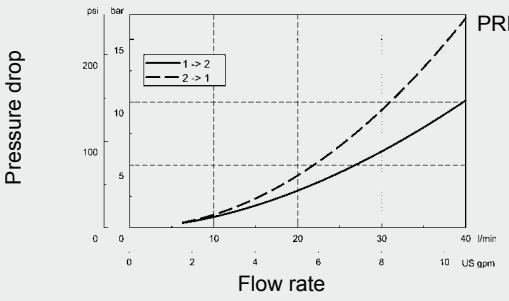
Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, clear anodized	G1/2	210 bar

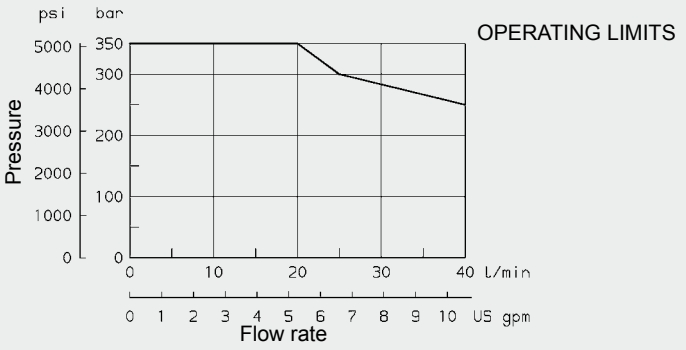
Seal kits

Code	Part No.	Material
Seal kit FS102-N	3033872	NBR
Seal kit FS102-N	3051757	FKM

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C





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HYDAC Fluidtechnik GmbH
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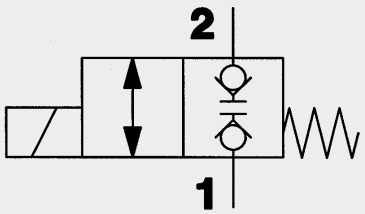
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

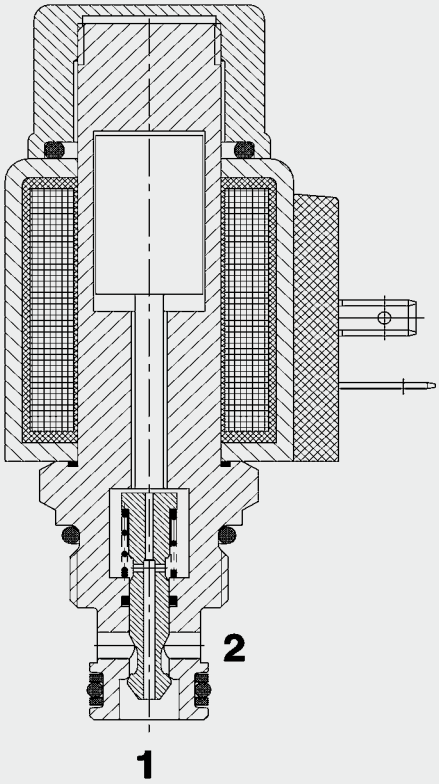
2/2 Solenoid Directional Valve Poppet Type, Direct Acting Normally Closed Metric Cartridge – 250 bar

WSM06020W-01



Up to 19 l/min
Up to 250 bar

FUNCTION



When the solenoid coil is de-energized, the valve blocks flow in both directions.

When energized the valve allows flow in both directions.

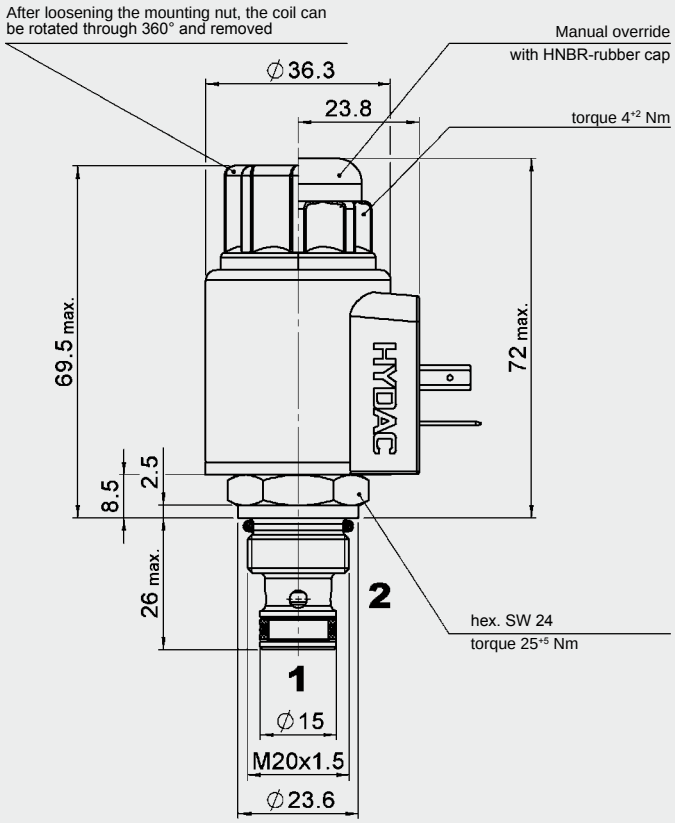
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground control piston to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- Coil seals protect the solenoid system
- External surfaces zinc-plated and corrosion-proof
- Compact design enables space-saving installation in connection housings and control blocks

SPECIFICATIONS

Operating pressure:	max. 250 bar	
Nominal flow:	max. 19 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	10 to 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	06020	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Nominal voltage:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	Energized: approx. 35 ms De-energized: approx. 50 ms	
Coil type:	Coil…-40-1836	

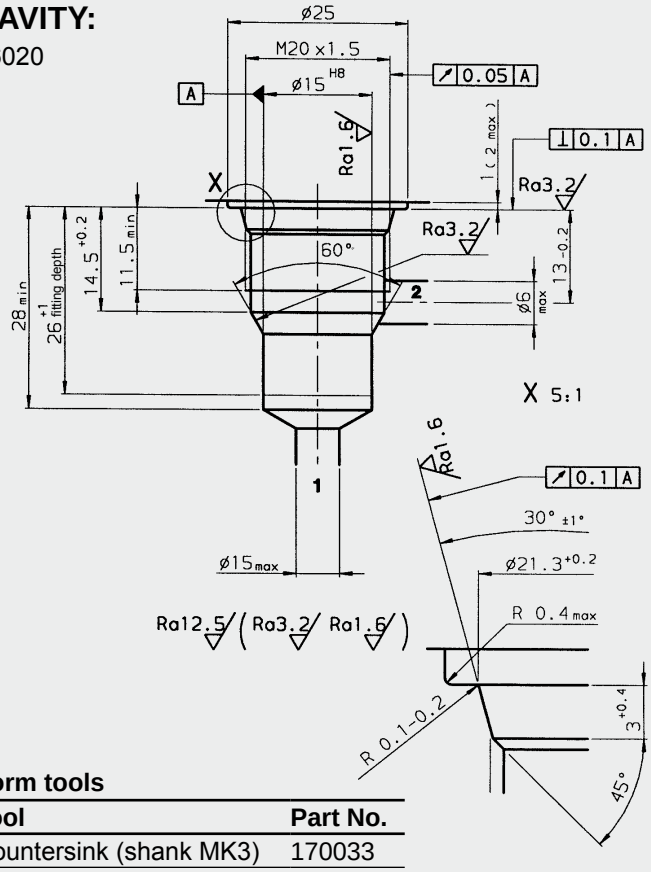
DIMENSIONS



millimeter
subject to technical modifications

CAVITY:

06020



Form tools

Tool	Part No.
Countersink (shank MK3)	170033
Reamer (shank MK2)	1000768

millimeter
subject to technical modifications

MODEL CODE

WSM06020W – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Nominal voltage for actuating solenoid
DC voltages:
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DT = AMP Junior Timer, 2-pole, radial
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads 475 mm long, 0.75 mm²
DN = Deutsch connector, axial
AC: AG = DIN connector to EN175301-803
Other connectors on request

Standard models

Model code	Part No.
WSM06020W-01-C-N-24DG	3055971
WSM06020W-01-C-N-230AG	3055969

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G 3/8	420 bar

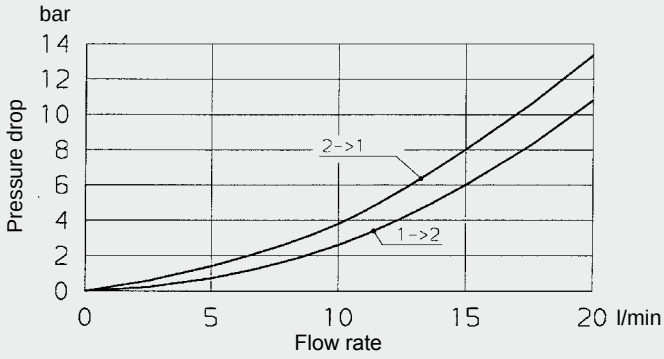
Other housings on request

Seal kits

Code	Material	Part No.
SEAL KIT 06020	NBR	3119017
SEAL KIT 06020	FKM	3262477

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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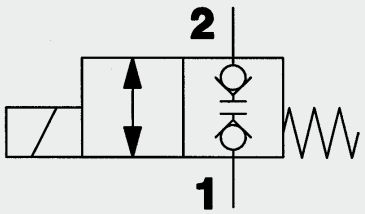
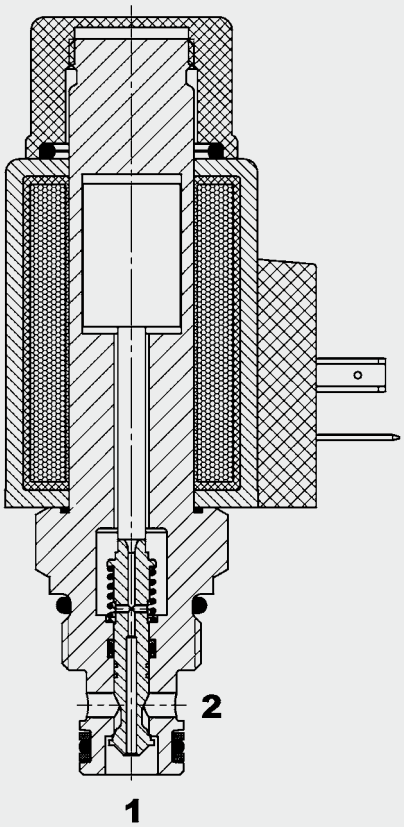
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

2/2 Solenoid Directional Valve Poppet Type, Direct Acting Normally Closed Metric Cartridge – 350 bar WSM06020W-61



Up to 25 l/min
Up to 350 bar

FUNCTION



The WSM06020W-61 is the high performance version of the standard WSM06020W-01. Owing to its larger coil and modified design, the valve switches up to 350 bar and permits a flow rate of 25 l/min.

When the solenoid coil is de-energized, the valve blocks flow in both directions. When energized the valve allows flow in both directions.

Caution: No orifice is permitted just before port 1.

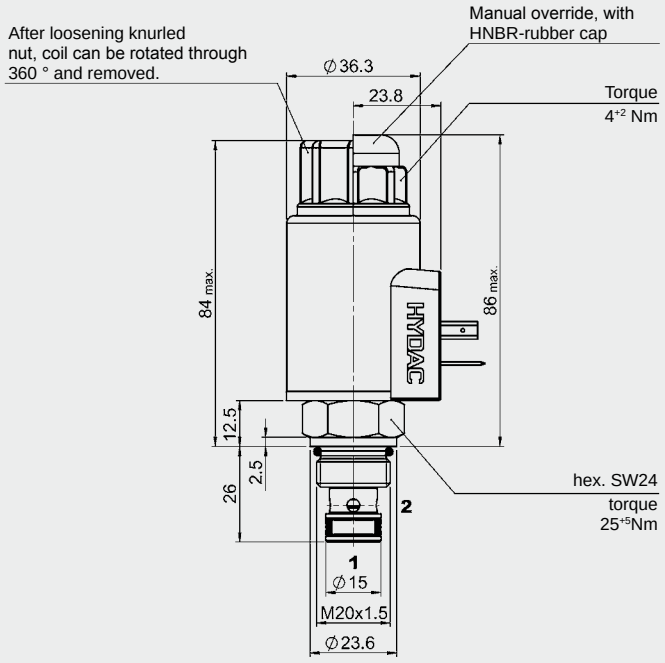
FEATURES

- High performance version for high pressures and long service life
- External surfaces zinc-plated
- Hardened and ground valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 25 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to 120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	06020	
Weight:	Complete valve:	0.42 kg
	Coil:	0.23 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw (at 20 °C):	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	Energized:	approx. 30 ms
	De-energized:	approx. 40 ms
Coil type:	Coil ...-50-1836	

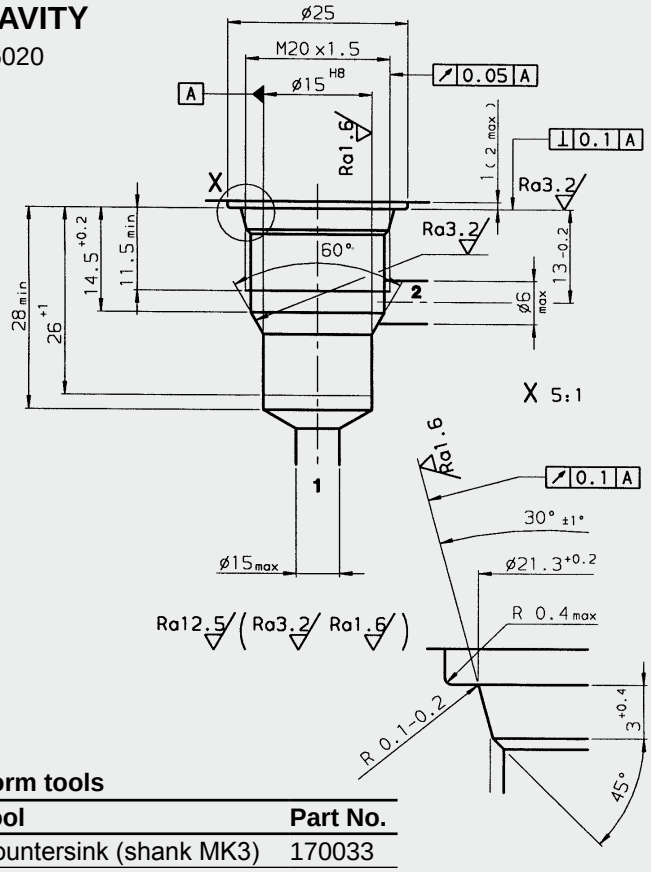
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

06020



Form tools

Tool	Part No.
Countersink (shank MK3)	170033
Reamer (shank MK2)	1000768

millimeter (inch)
subject to technical modifications

MODEL CODE

WSM06020W – 61 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
61 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge

Seals
N = NBR (standard)
F = FPM (optional)

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WSM06020W-61-C-N-24DG	3531890
WSM06020W-61-C-N-230AG	3531891

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports
R06020-01X-01	275266	Steel, zinc-plated	G 3/8

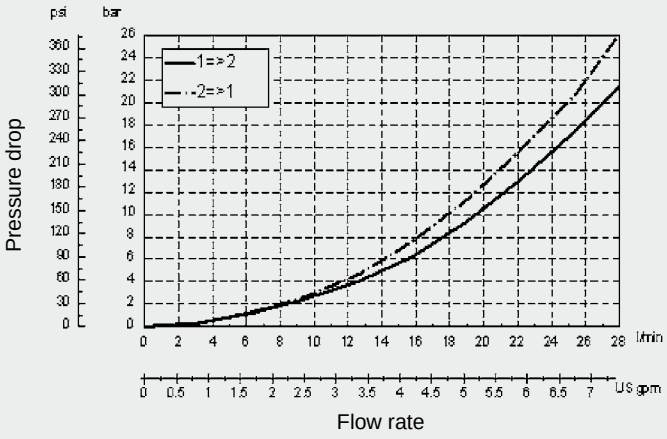
Other line bodies on request

Seal kits

Code	Part No.
SEAL KIT 06020-NBR	3119017
SEAL KIT 06020-FKM	3262477

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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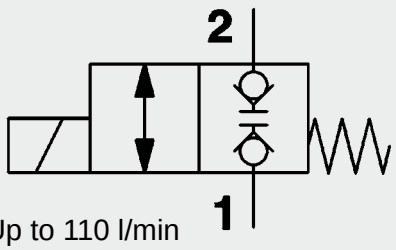
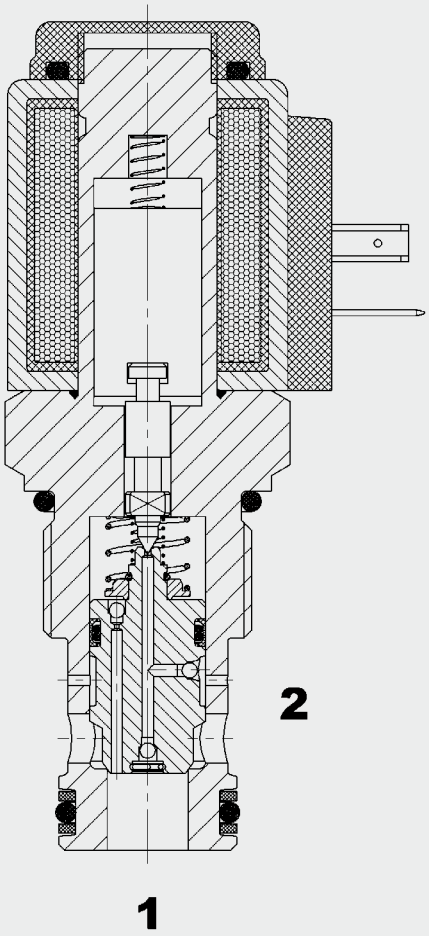


Up to 110 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Closed Metric Cartridge Valve – 350 bar

WSM12120W

FUNCTION



When the solenoid coil is de-energized, the valve blocks flow in both directions.

When energized the valve allows flow in both directions.

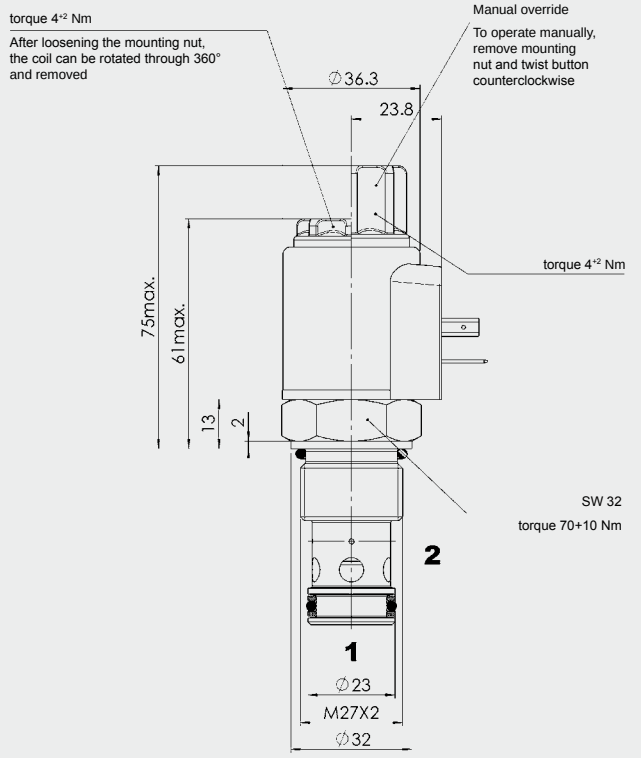
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 110 l/min	
Internal leakage:	leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	12120	
Weight:	Valve complete	0.46 kg
	Coil only:	0.19 kg
Electrical data		
Response time:	Energized:	approx. 30 ms
	De-energized:	approx. 70 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15 % of nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil...-40-1836	

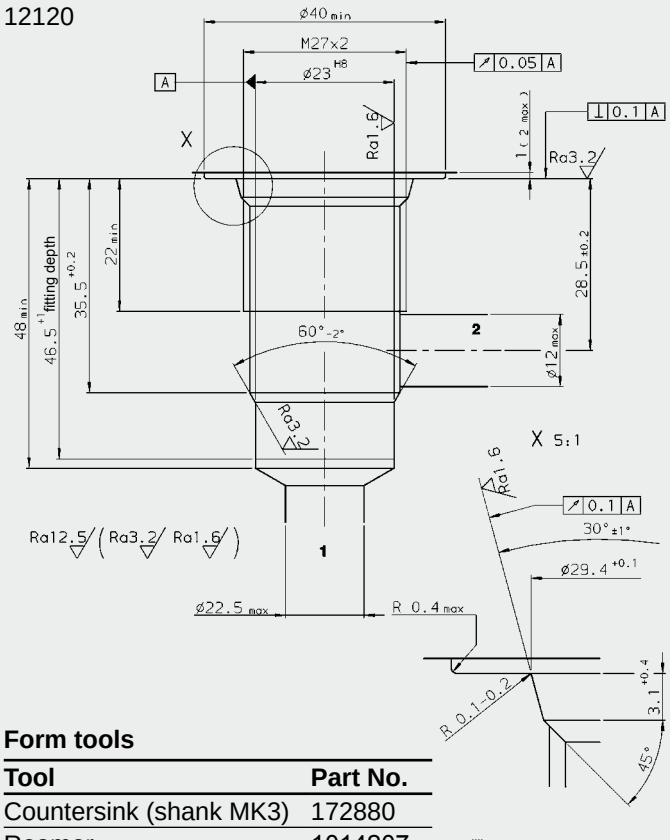
DIMENSIONS



Millimeter
Subject to technical modifications

CAVITY

12120



Form tools

Tool	Part No.
Countersink (shank MK3)	172880
Reamer	1014207

millimeter
subject to technical modifications

MODEL CODE

WSM12120W – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports *
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WSM12120W-01-C-N-12DG	3354399
WSM12120W-01-C-N-24DG	3354400

Other models on request

* Standard in-line bodies

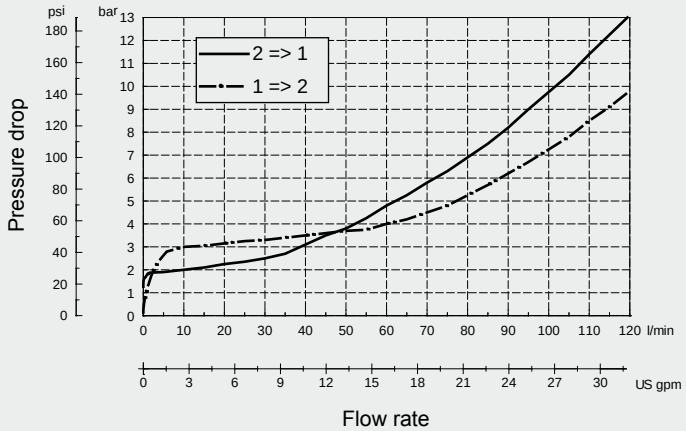
Code	Part No.	Material	Ports	Pressure
R12120-10X-01	396708	Steel, zinc-plated	G 3/4	max. 420 bar
R12120-10X-02	396707	Steel, zinc-plated	M27 x 2	max. 420 bar

Seal kits

Code	Material	Part No.
SEAL KIT 12120-NBR	NBR	3454001
SEAL KIT 12120-FKM	FKM	3454002

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



Note

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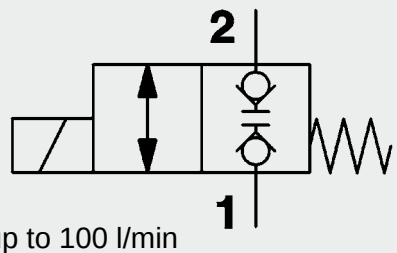
Subject to technical modifications.

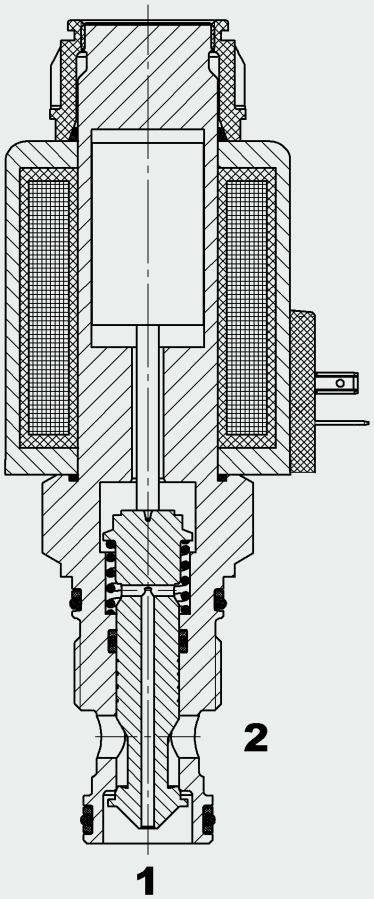
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



up to 100 l/min
up to 210 bar

2/2 Solenoid Directional Valve Poppet Type, Direct Acting Normally Closed Metric Cartridge – 210 bar WSM16520W

FUNCTION



FEATURES

- Main application is in fast-switching applications e.g. in injection moulding machines
- High flow with low Δp
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- Coil seals protect the solenoid system
- Low pressure drop due to CFD optimized flow path

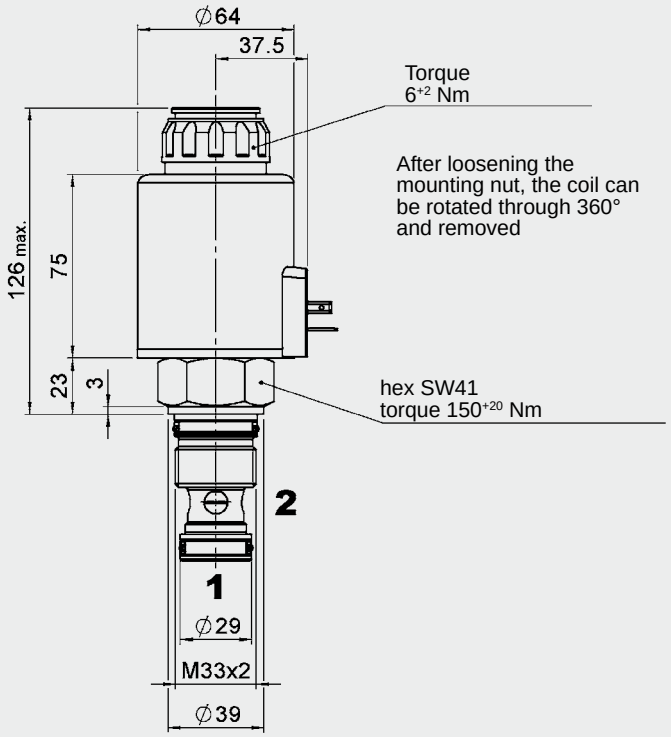
SPECIFICATIONS

Operating pressure:	max. 210 bar
Nominal flow:	max. 100 l/min
Internal leakage:	Leakage-free
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +50 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions
Materials:	Valve body: hardened steel Piston: hardened and ground steel Seals: NBR (standard) FKM (optional) Back-up rings: PTFE
Cavity:	Metric 16520
Weight:	Valve complete 2.05 kg Coil only 1.05 kg
Electrical data:	
Type of voltage:	DC solenoid, AC voltage can be rectified using a bridge rectifier, e.g. Z4 (not supplied)
Current draw at 20 °C:	2.9 A at 12 V DC; 1.45 A at 24 V DC
Voltage tolerance:	± 15% of nominal
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 50 °C ambient temperature
Response time:	On: approx. 70 ms Off: approx. 50 ms
Coil type:	Coil... –75-3164

The WSM16520W is a direct acting directional poppet valve – in the normal position, the valve is closed in both directions. When the solenoid is energized, the valve opens and allows flow in both directions.

Caution: No orifice is permitted just before port 1. Only "diffuser orifices" may be used.

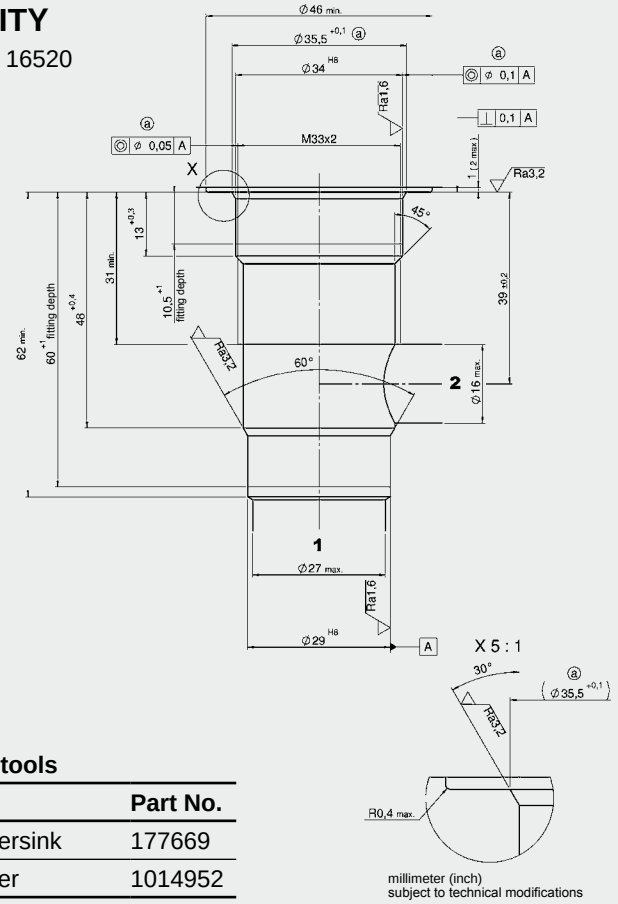
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

Metric 16520



millimeter (inch)
subject to technical modifications

Form tools

Tool	Part No.
Countersink	177669
Reamer	1014952

MODEL CODE

WSM 16520 W – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Cavity
16520 = 2-way cavity

Function symbol

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
Versions with bodies on request

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC: 12 = 12 Volt DC
24 = 24 Volt DC
Other voltages on request

Coil connectors (type 75-3164)
DC: DG = DIN connector to EN175301-803
DT = AMP Junior Timer, 2-pole, radial
Other connectors on request

Standard models

Model code	Part No.
WSM16520W-01-C-N-12DG	3432838
WSM16520W-01-C-N-24DG	3134104

Other models on request

*Standard in-line bodies

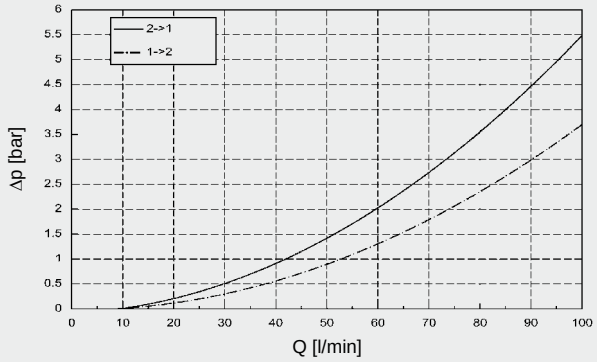
Code	Part No.	Material	Ports	Pressure
R16520-01X-01	3132532	Steel, zinc-plated	1 BSP	350 bar

Seal kits

Code	Part No.
SEAL KIT WSM16520 -NBR	3286856

PERFORMANCE

Measured at v = 33 mm²/s, T_{oil} = 46 °C



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HYDAC Fluidtechnik GmbH
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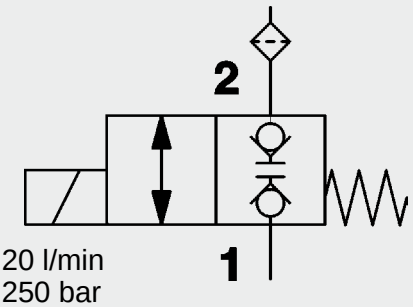
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com



20 l/min
250 bar

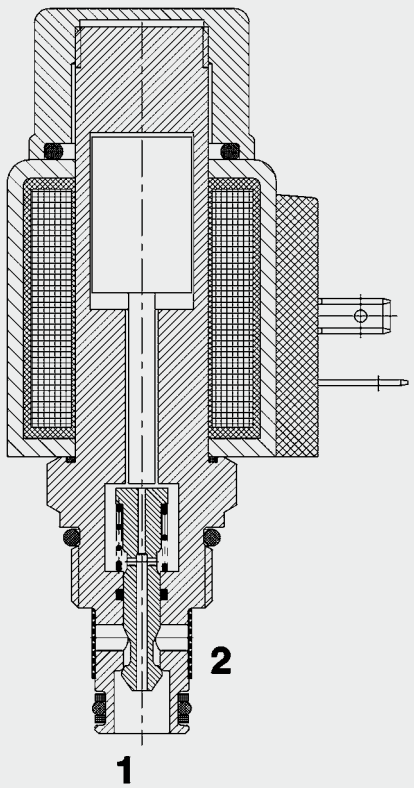
2/2 Solenoid Directional Valve Poppet Type, Direct-Acting Normally Closed, Double-Blocking Screen Filter SAE-08 Cartridge – 250 bar

WS08W-30

FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Wide variety of connectors available
- Low pressure drop due to CFD optimized flow path
- In flow direction 2 to 1 internal valve parts protected against coarse contamination by screen filter

FUNCTION



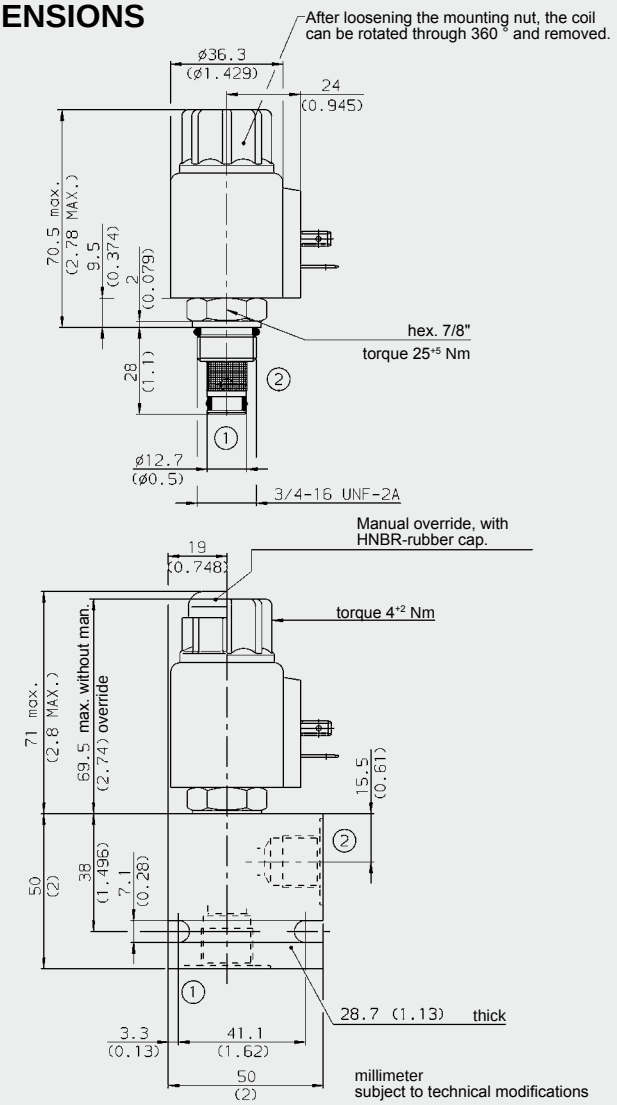
When the solenoid coil is de-energized, the valve blocks flow in both directions.

When energized the valve allows flow in both directions.

SPECIFICATIONS

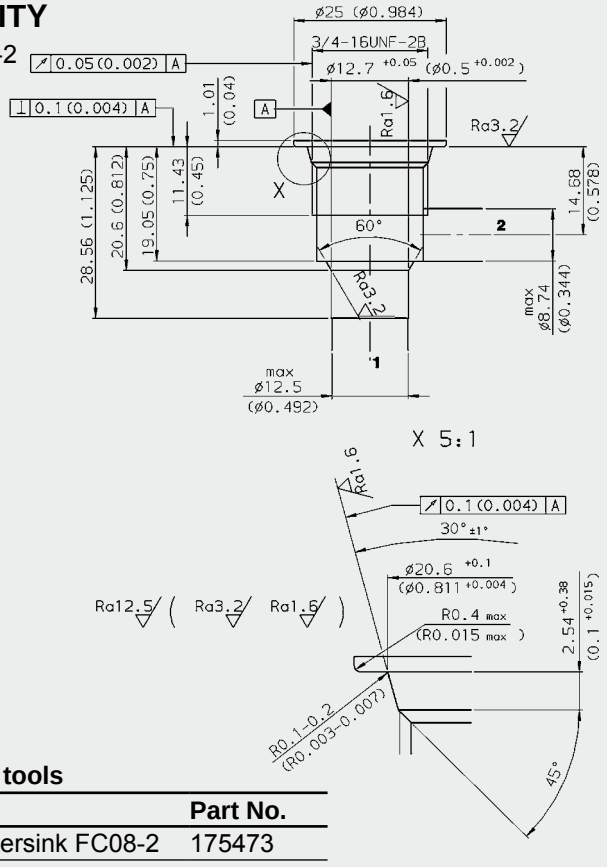
Operating pressure:	max. 250 bar	
Nominal flow:	max. 20 l/min	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 250 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
Screen filter:	330 µm mesh size	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-2	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 50 ms
Coil type:	Coil…-40-1836	

DIMENSIONS



CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

millimeter
subject to technical modifications

MODEL CODE

WS08W-30 M – C – N – 24 DG

Basic model
Directional poppet valve, UNF, with screen filter

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS08W-30-C-N-24DG	3132864
WS08W-30-C-N-230AG	3132865

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, anodized	G3/8	210 bar

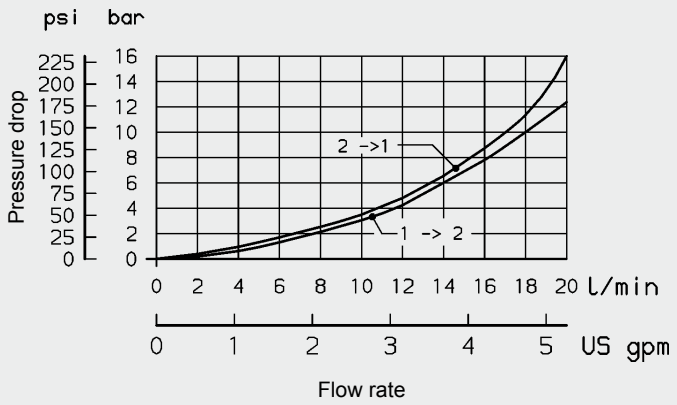
Other line bodies on request

Seal kits

Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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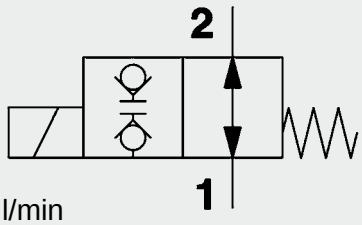
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

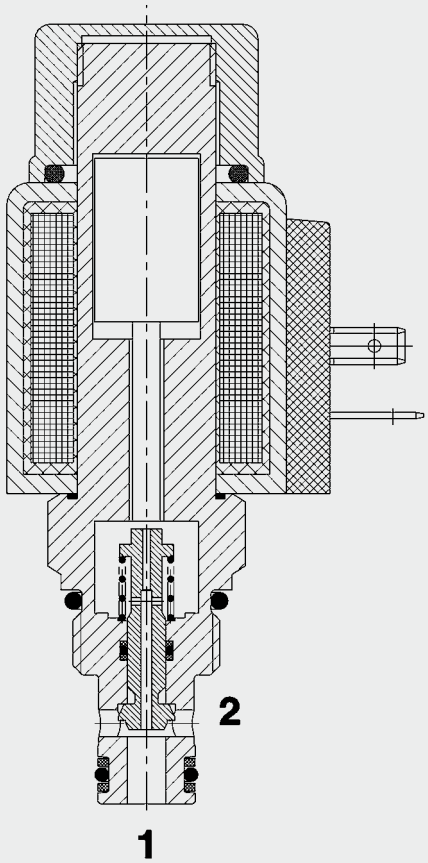


20 l/min
350 bar

3/2-Solenoid Directional Valve UNF
Poppet Type, Direct-Acting
Normally Open
SAE-08 Cartridge – 350 bar

WS08V-01

FUNCTION



When the solenoid coil is not energized, the valve is open in both directions.

When the solenoid coil is energized, the valve is closed in both directions.

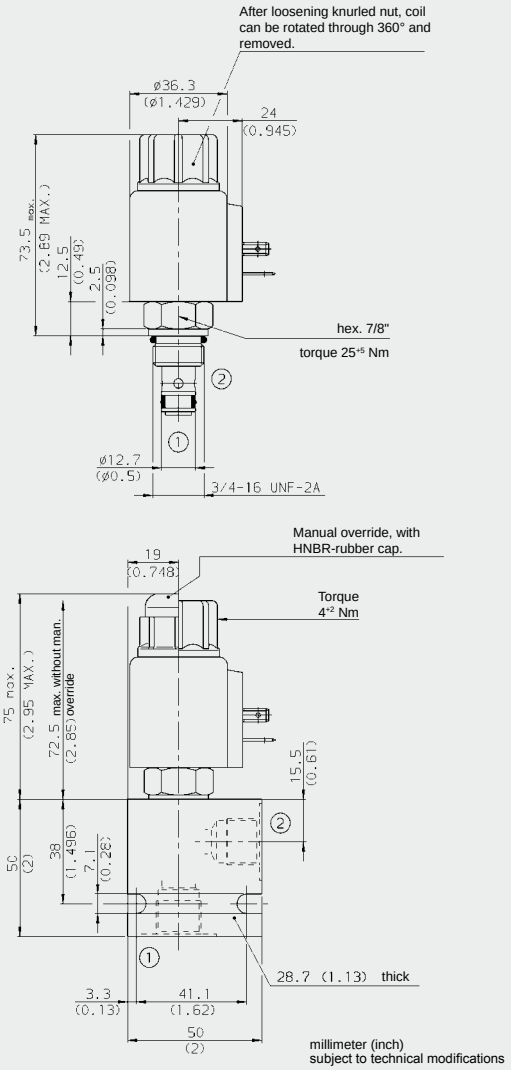
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Wide variety of connectors available
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

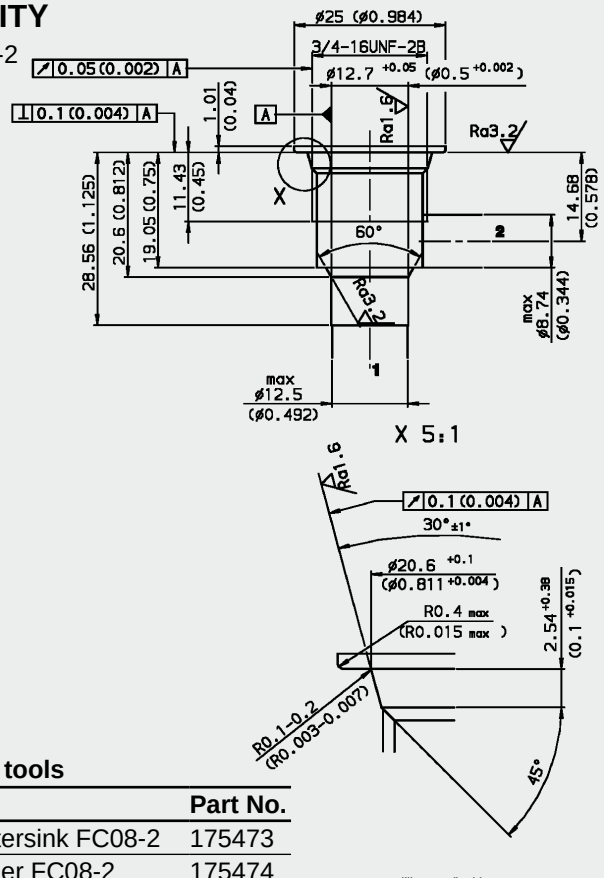
Operating pressure:	max. 350 bar	
Nominal flow:	max. 20 l/min	
Leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-2	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data:		
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Voltage tolerance	± 15 % of nominal voltage	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Switching time:	Energized: approx. 35 ms De-energized: approx. 70 ms	
Coil type:	Coil…-40-1836	

DIMENSIONS



CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

MODEL CODE

WS08V – 01 M – C – N – 24 DG

Basic model
Directional poppet valve UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Nominal voltage for actuating solenoid
DC:
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS08V-01-C-N-24DG	3138653
WS08V-01-C-N-230AG	3138654

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

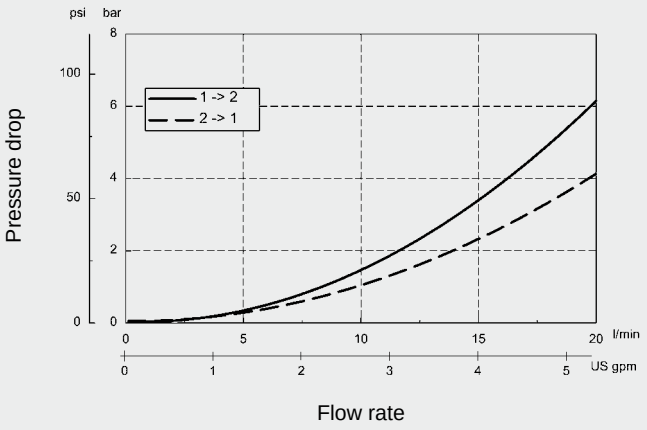
Other line bodies on request

Seal kits

Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
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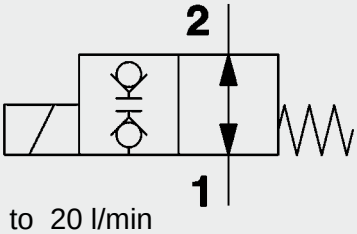
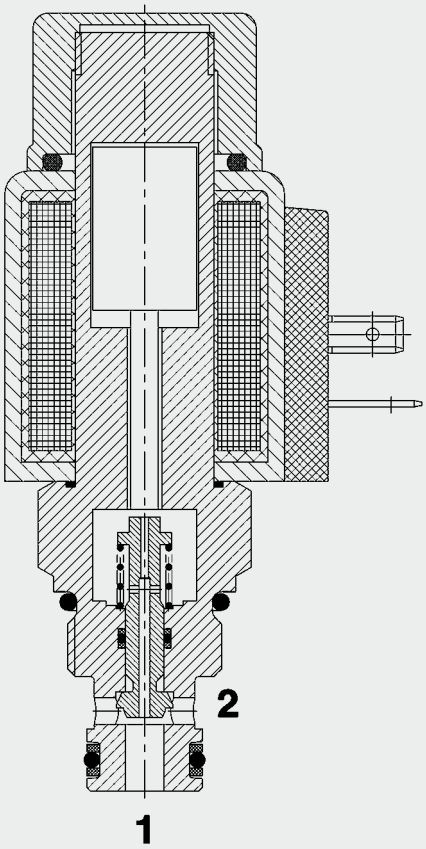


Up to 20 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Direct-Acting Normally Open Metric Cartridge – 350 bar

WSM06020V-01

FUNCTION



When the solenoid coil is de-energized, the valve is open in both directions.

When the solenoid coil is energized, the valve is closed in both directions.

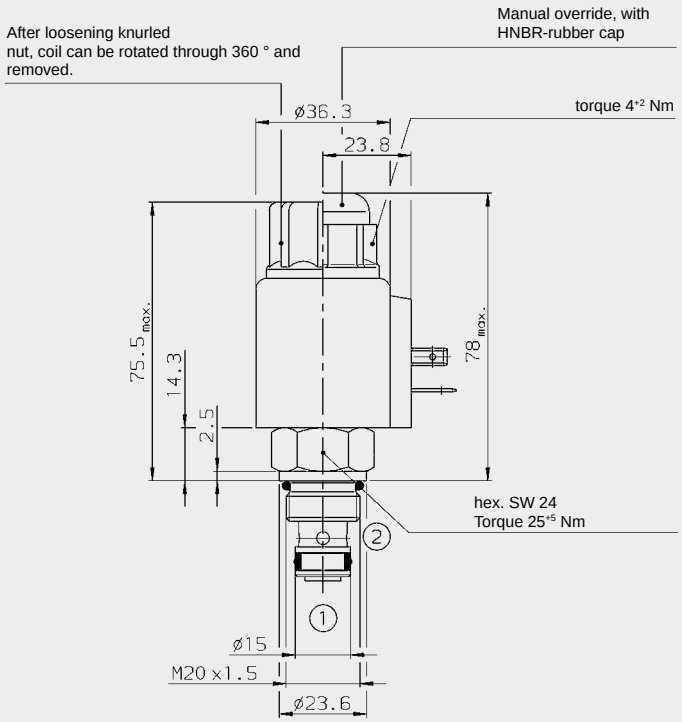
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 20 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	10 to 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	06020	
Weight:	Valve complete	0.33 kg
	Coil only	0.19 kg
Electrical data		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± -15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	Energized:	approx. 40 ms
	De-energized:	approx. 60 ms
Coil type:	Coil…-40-1836	

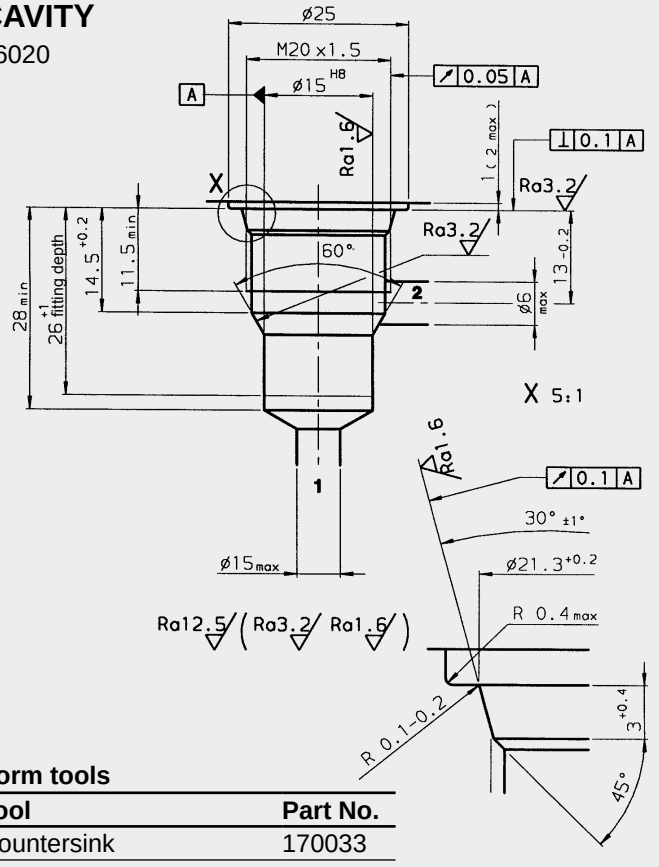
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

06020



Form tools

Tool	Part No.
Countersink	170033
Reamer	1000768

millimeter
subject to technical modifications

MODEL CODE

WSM06020V – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports *
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WSM06020V-01-C-N-24DG	3135462
WSM06020V-01-C-N-230AG	3135461

* Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G 3/8	420 bar

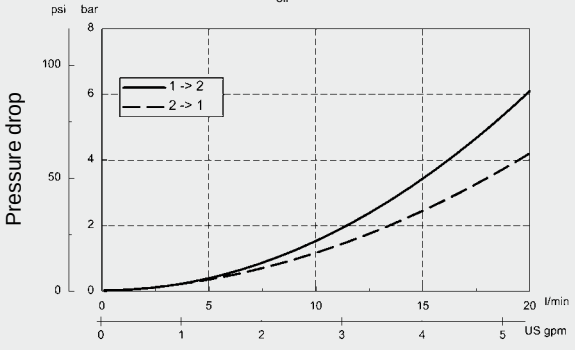
For other line bodies, see brochure no. E 5.252.

Seal kits

Code	Material	Part No.
SEAL KIT 06020-NBR	NBR	3119017
SEAL KIT 06020-FKM	FKM	3262477

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



Flow rate

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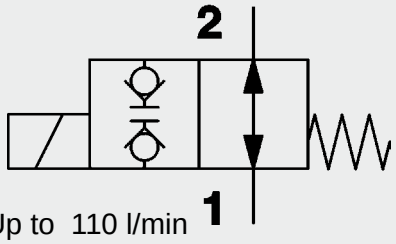
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

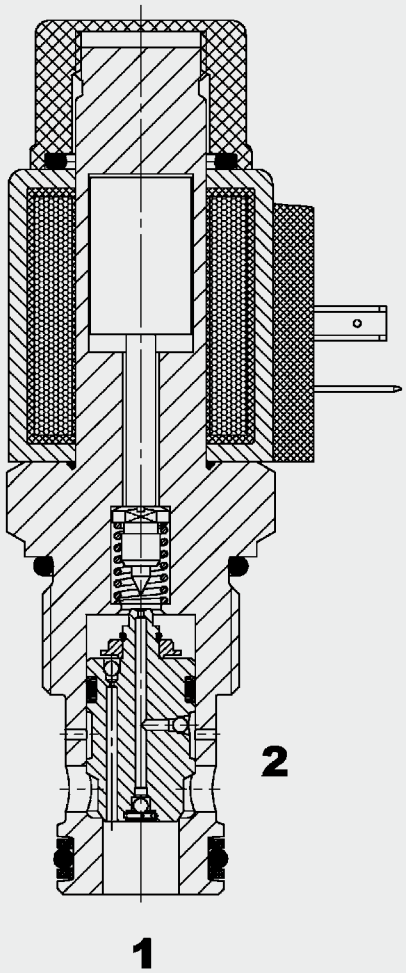


Up to 110 l/min
Up to 350 bar

2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Normally Open Metric Cartridge – 350 bar

WSM12120V-01

FUNCTION



When the solenoid coil is de-energized, the valve is open in both directions.

When the solenoid coil is energized, the valve is closed in both directions.

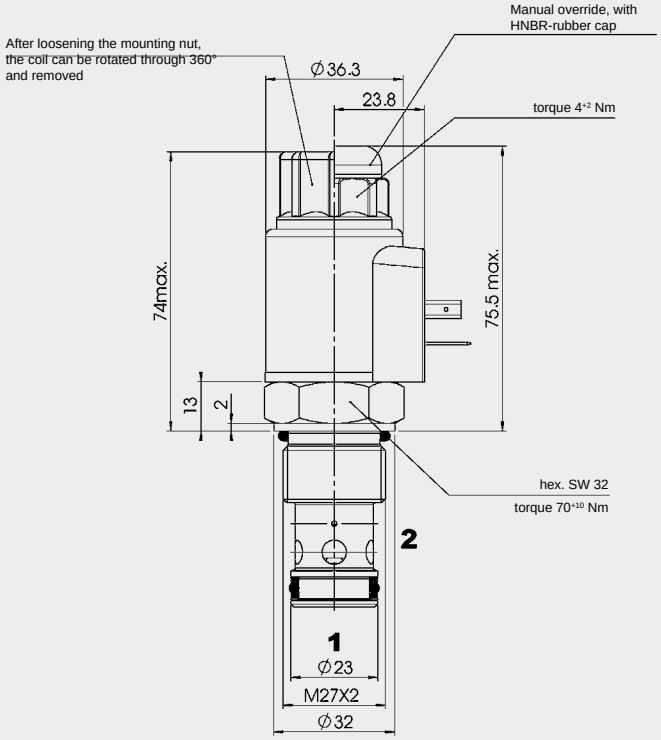
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 110 l/min	
Internal leakage:	leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
Installation:	No orientation restrictions	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Material:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel / Polyamide
Cavity:	12120	
Weight:	Valve complete	0.46 kg
	Coil only:	0.19 kg
Electrical data		
Response time:	Energized:	approx. 60 ms
	De-energized:	approx. 40 ms
	typical 24 V DC-coil	
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15 % of nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil...-40-1836	

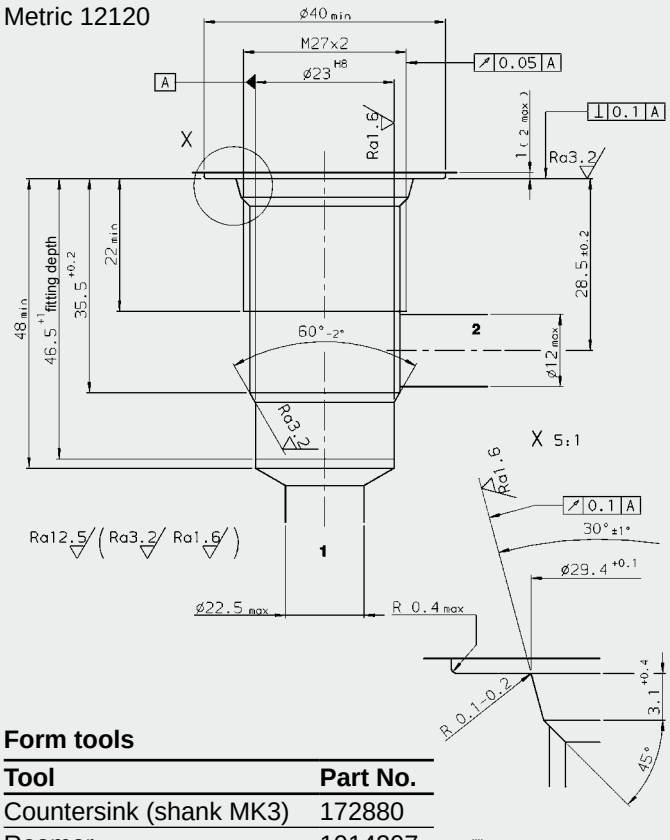
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

Metric 12120



Form tools

Tool	Part No.
Countersink (shank MK3)	172880
Reamer	1014207

millimeter
subject to technical modifications

MODEL CODE

WSM12120V – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports *
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WSM12120V-01-C-N-12DG	3350065
WSM12120V-01-C-N-24DG	3350066

Other models on request

Standard in-line bodies

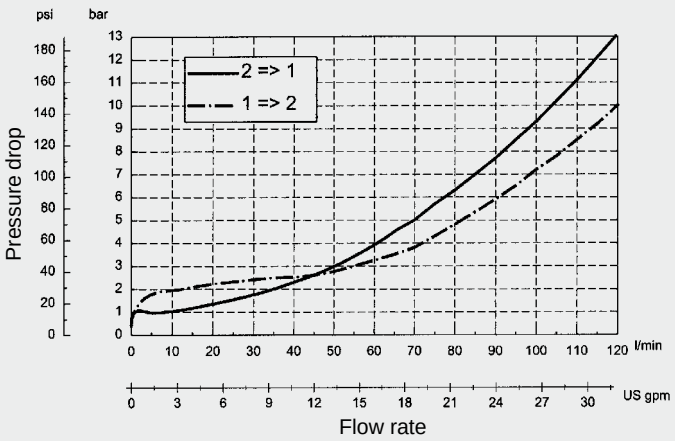
Code	Part No.	Material	Ports	Pressure
R12120-10X-01	396708	Steel, zinc-plated	G 3/4	max. 420 bar
R12120-10X-02	396707	Steel, zinc-plated	M27 x 2	max. 420 bar

Seal kits

Code	Material	Part No.
SEAL KIT 12120-NBR	NBR	3454001
SEAL KIT 12120-FKM	FKM	3454002

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



NOTE

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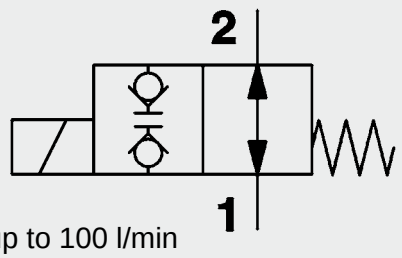
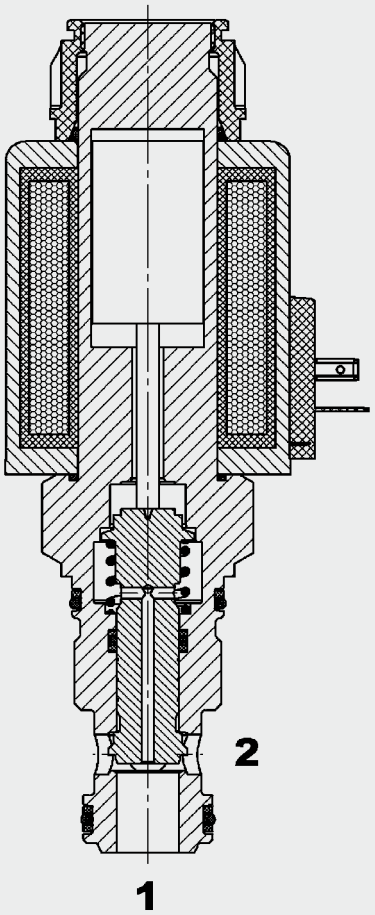
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



up to 100 l/min
up to 210 bar

2/2 Solenoid Directional Valve Poppet Type, Direct Acting Normally Open Metric Cartridge – 210 bar WSM16520V

FUNCTIONING



The WSM16520V is a direct acting directional poppet valve – in the normal position, the valve is open in both directions. When the solenoid is energized, the valve closes in both directions.

Caution: No orifice is permitted just before port 1. Only "diffuser orifices" may be used.

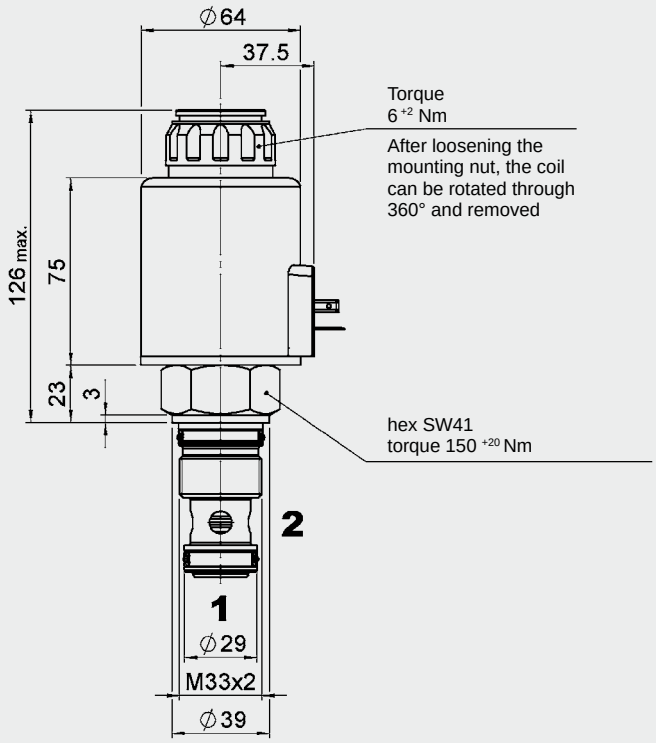
FEATURES

- Main application is in fast-switching applications e.g. in injection moulding machines
- High flow with low Δp
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- Coil seals protect the solenoid system
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 210 bar
Nominal flow:	max. 100 l/min
Internal leakage:	Leakage-free
Media operating temperature range::	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +50 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions
Materials:	Valve body: high tensile steel Piston: hardened and ground steel Seals: NBR (standard) FKM (optional) Back-up rings: PTFE
Cavity:	16520
Weight:	Valve complete 2.05 kg Coil only 1.05 kg
Electrical data:	
Type of voltage:	DC solenoid, AC voltage can be rectified using a bridge rectifier, e.g. Z4 (not supplied)
Current draw at 20 °C:	2.9 A at 12 V DC; 1.45 A at 24 V DC
Voltage tolerance:	± 15% of nominal
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 50 °C ambient temperature
Response time:	On: approx. 80 ms Off: approx. 80 ms
Coil type:	Coil... –75-3164

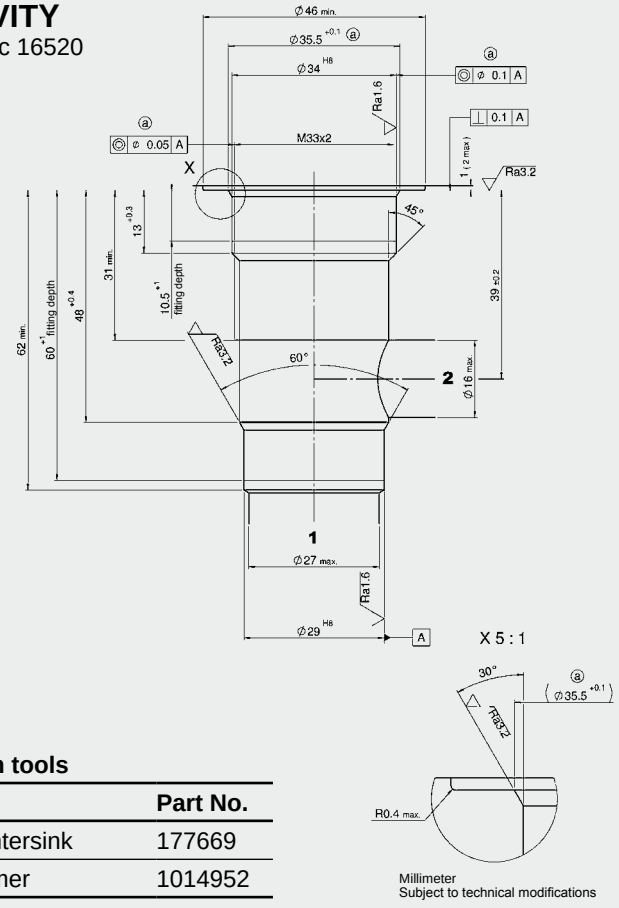
DIMENSIONS



Millimeter
Subject to technical modifications

CAVITY

Metric 16520



Form tools

Tool	Part No.
Countersink	177669
Reamer	1014952

Millimeter
Subject to technical modifications

MODEL CODE

WSM 16520 V – 01 M – C – N – 24 DG

Basic model
Directional poppet valve, metric

Cavity
16520 = 2-way cavity

Function symbol

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports
C = cartridge only
Versions with bodies on request

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC: 12 = 12 Volt DC
24 = 24 Volt DC
Other voltages on request

Coil connectors (type 75-3164)
DC: DG = DIN connector to EN175301-803
DT = AMP Junior Timer, 2-pole, radial
Other connectors on request

Standard models

Model code	Part No.
WSM16520V-01-C-N-12DG	3432835
WSM16520V-01-C-N-24DG	3134213

Other models on request

Standard in-line bodies

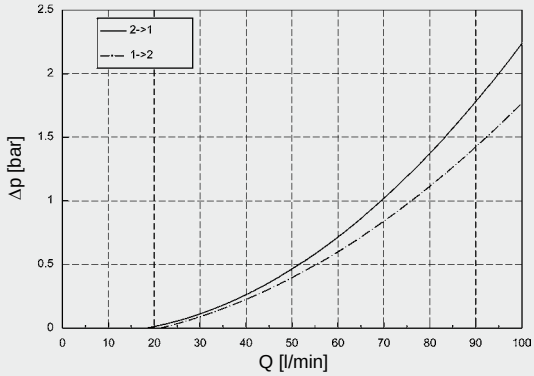
Code	Part No.	Material	Ports	Pressure
R16520-01X-01	3132532	Steel, zinc-plated	1 BSP	420 bar

Seal kits

Code	Part No.
SEAL KIT WSM16520 -NBR	3286856

PERFORMANCE

Measured at 33 mm²/s, T_{oil} = 46 °C



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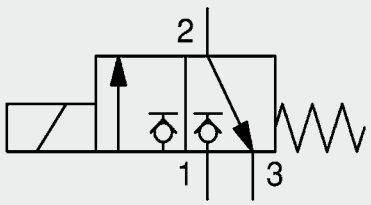
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

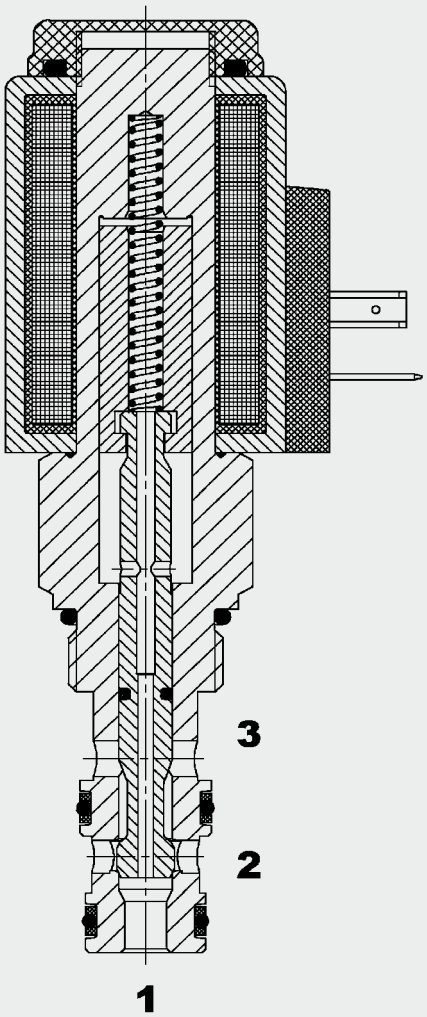
3/2 Solenoid Directional Valve Poppet Type, Direct-Acting Metric Cartridge – 350 bar

WSM08130C-01



Up to 22 l/min
Up to 350 bar

FUNCTION



When de-energized, there is free flow through the valve from port 2 to 3. Port 1 is closed.

When energized, there is free flow through the valve from port 1 to 2. Port 3 is closed.

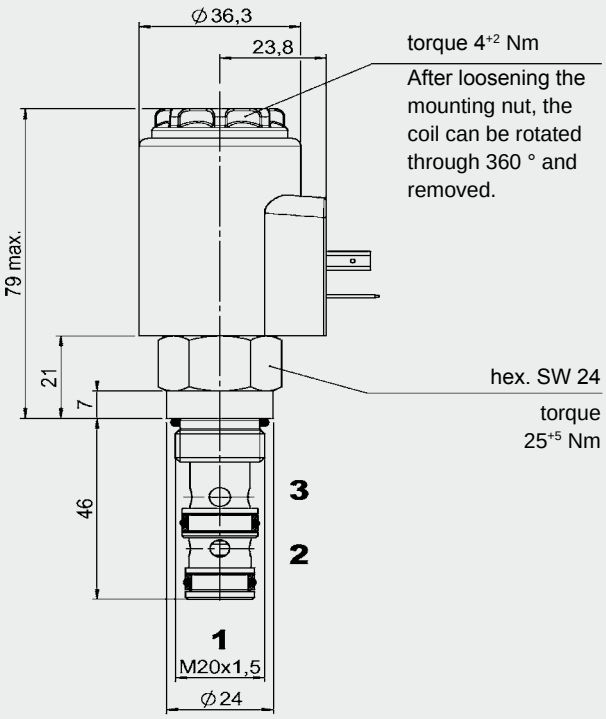
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 22 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max.+60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	08130 metric	
Weight:	Valve complete:	0.49 kg
	Coil only:	0.23 kg
Electrical data:		
Response time:	Energized:	approx. 30 ms
	De-energized:	approx. 20 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15 % of nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at max. 60° C ambient temperature	
Coil type:	Coil…-50-1836	

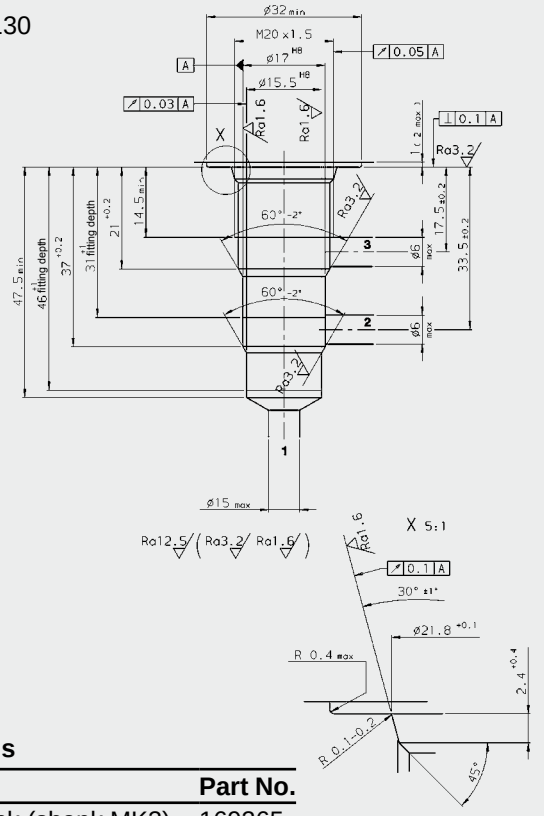
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

Metric 08130



Form tools

Tool	Part No.
Countersink (shank MK3)	169265
Reamer (shank MK2)	163639

millimeter
subject to technical modifications

MODEL CODE

WSM08130C – 01 – C – N – 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WSM08130C-01-C-N-12DG	3374096
WSM08130C-01-C-N-24DG	3374097
WSM08130C-01-C-N-230AG	3374098

Other bodies on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R08130-01X-01	394488	Steel, zinc-plated	G 3/8	420 bar
R08130-01X-02	394378	Steel, zinc-plated	M14 x 1.5	420 bar

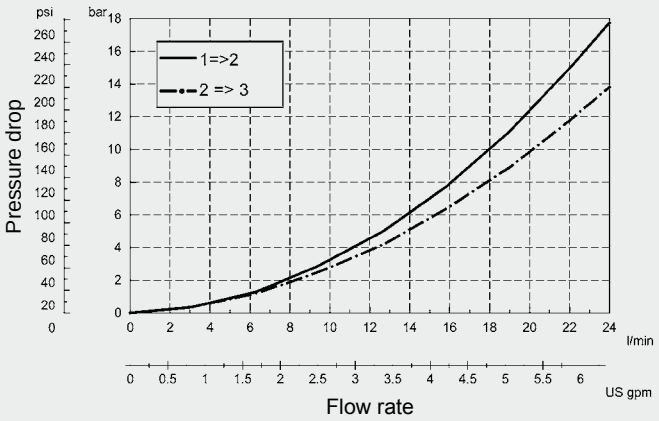
Other bodies on request

Seal kits

Code	Part No.
SEAL KIT 08130-NBR	3164596
SEAL KIT 08130-FKM	3183746

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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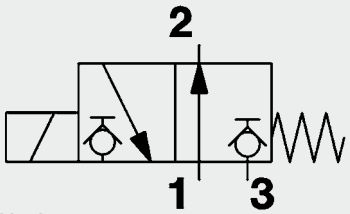
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

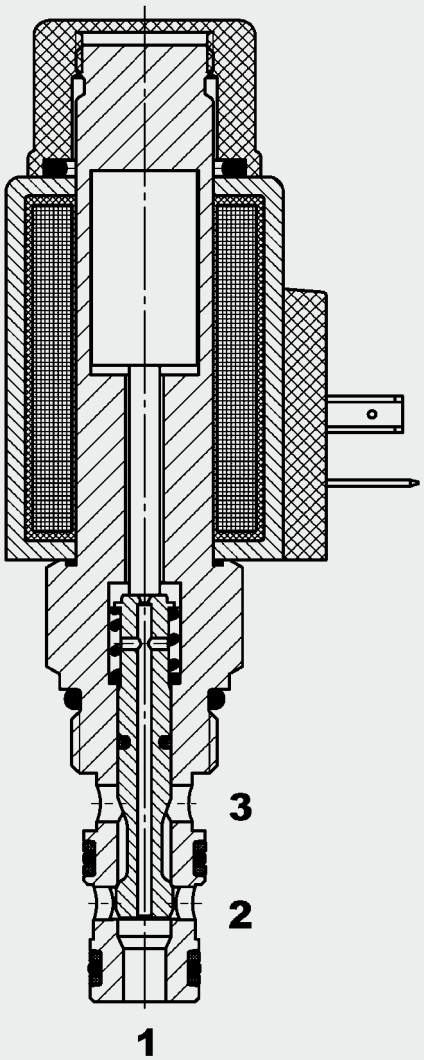
3/2 Solenoid Directional Valve UNF
Poppet Type, Direct-Acting
SAE-08 Cartridge – 350 bar

WS08D-01



23 l/min
350 bar

FUNCTION



When de-energized, there is free flow through the valve from port 1 to port 2. Port 3 is closed. When energized, the valve allows flow from port 2 to 3, while blocking flow at port 1.

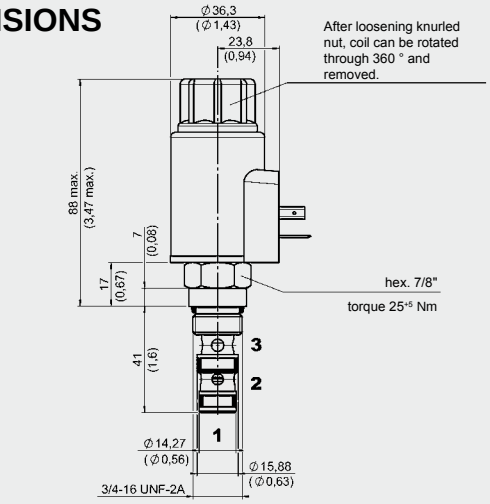
FEATURES

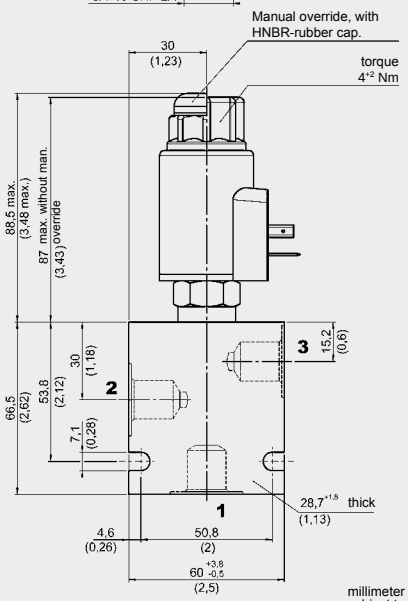
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 23 l/min	
Internal leakage:	leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	-20 °C to +100 °C	
Ambient temperature range:	-20 °C to +60 °C	
Fluids:	Hydraulic oil to DIN 51524 part 1 and 2	
Viscosity:	Min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	no orientation restrictions	
Material:	Valve body:	steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel/Polyamide
Cavity:	FC08-3	
Weights:	Valve complete:	0.45 kg
	Coil only:	0.23 kg
Electrical data:		
Reponse time:	Energized:	approx. 30 ms
	De-energized:	approx. 50 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	2.22 amps at 12 V DC	
	1.13 amps at 24 V DC	
Voltage tolerance:	±15% of nominal	
Coil duty rating:	Continuous up to 115% of nominal voltage at max 60 °C ambient temperature	
Coil type	Coil…-50-1836	

DIMENSIONS

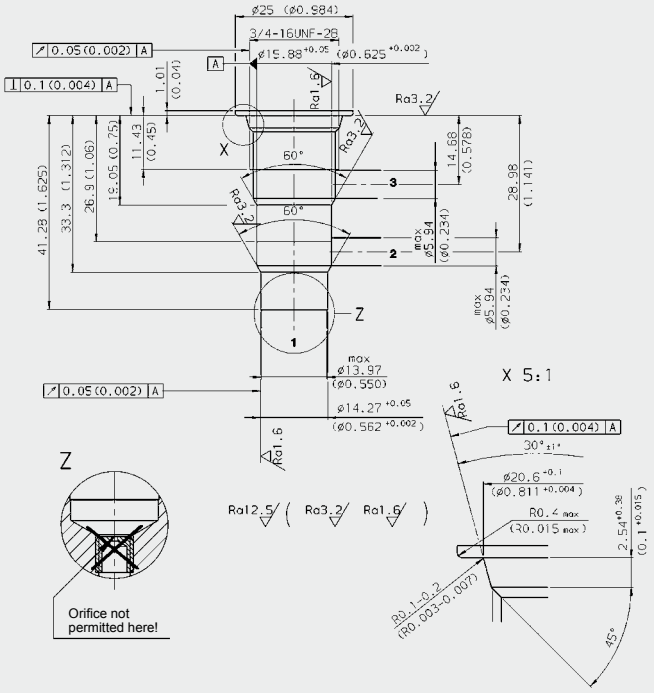




millimeter (inch)
subject to technical modifications

CAVITY

FC08-3



Form tools

Tool	Part No.
Countersink FC10-2	175644
Reamer FC10-2	175645

millimeter (inch)
subject to technical modifications

MODEL CODE

WS08D – 01 M – C – N – 24 DG

Basic model
Directional poppet valve UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WS08D-01-C-N-12DG	3229015
WS08D-01-C-N-24DG	3229020
WS08D-01-C-N-230AG	3229019

Other models on request

* Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH083-SB3	560922	Steel, zinc-plated	G3/8	420 bar
FH083-AB3	3011427	Aluminium, clear anodized	G3/8	210 bar

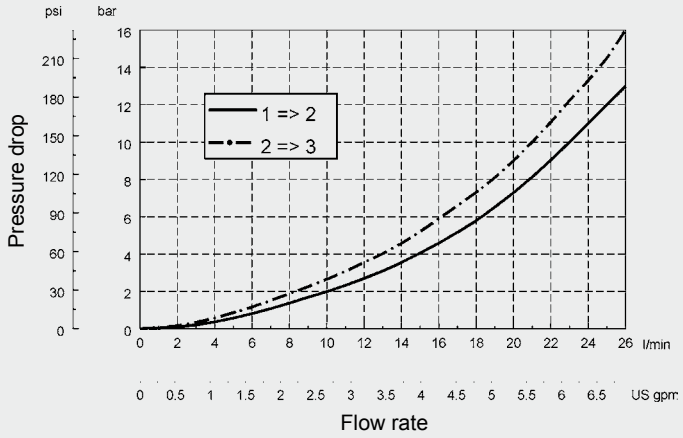
Other models on request

Seal kits

Code	Material	Part No.
FS083-N seal kit	NBR	3054795
FS083-V seal kit	FKM	2591059

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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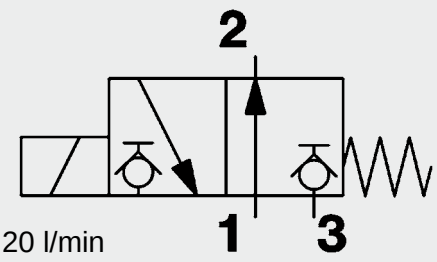
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

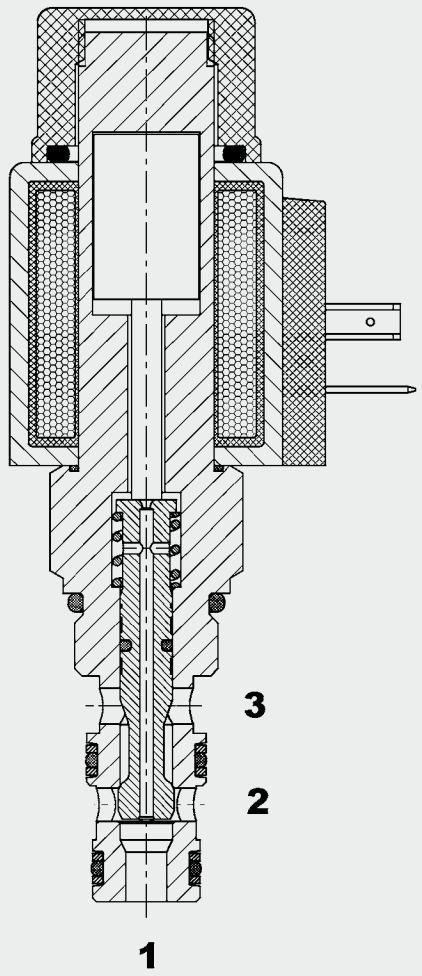


20 l/min
280 bar

3/2 Solenoid Directional Valve UNF
Poppet Type, Direct-Acting
SAE-08 Cartridge – 280 bar

WS08D-51

FUNCTION



When de-energized, there is free flow through the valve from port 1 to port 2. Port 3 is closed.

When energized, the valve allows flow from port 2 to port 3, while blocking flow at port 1.

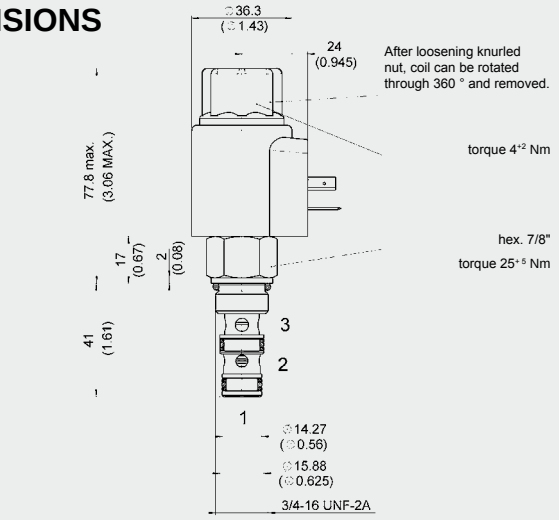
FEATURES

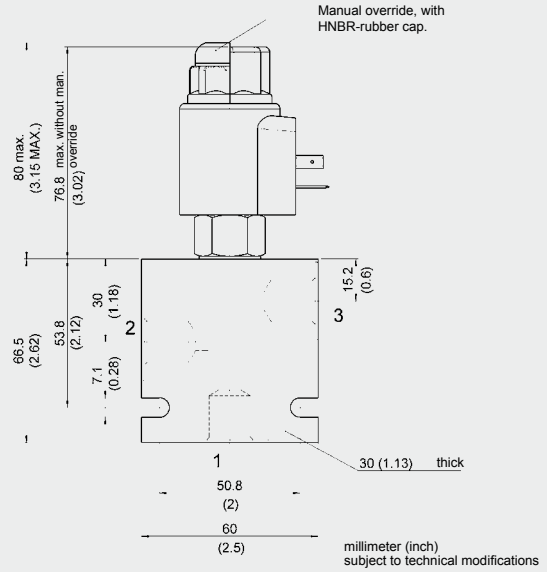
- Excellent switching performance due to high power HYDAC solenoid
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Wide variety of connectors available
- Low pressure drop by CFD optimized flow path
- Smaller dimensions by shorter coil in comparison to WS08D-01 (Limited switching performance)

SPECIFICATIONS

Operating pressure:	max. 280 bar	
Nominal flow:	max. 20 l/min	
Leakage:	Leak-free (max. 5 drops ≙ 0,25 cm³/min at 280 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temp. range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	Free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel/Polyamide
Cavity:	FC08-3	
Weight:	Valve complete	0.395 kg
	Coil only	0.19 kg
Electrical data:		
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Switching time:	Energized:	approx. 35 ms
	De-energized:	approx. 45 ms
Coil type:	Coil…-40-1836	

DIMENSIONS

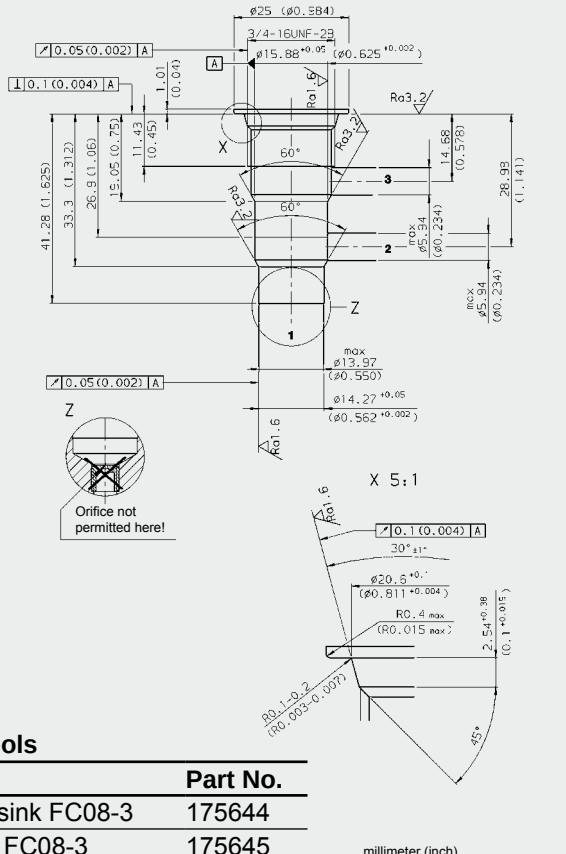




millimeter (inch)
subject to technical modifications

CAVITY

FC08-3



Form tools

Tool	Part No.
Countersink FC08-3	175644
Reamer FC08-3	175645

millimeter (inch)
subject to technical modifications

MODEL CODE

WS08D - 51 M - C - N - 24 DG

Basic model
Directional poppet valve UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Code	Part No.
WS08D-51-C-N-24DG	3079445
WS08D-51-C-N-230AG	3092948

* Standard in-line bodies

Code	Part No.	Material	Connections	Pressure
FH083-SB3	560922	Steel, zinc-plated	G3/8	420 bar
FH083-AB3	3011427	Aluminium, clear anodized	G3/8	210 bar

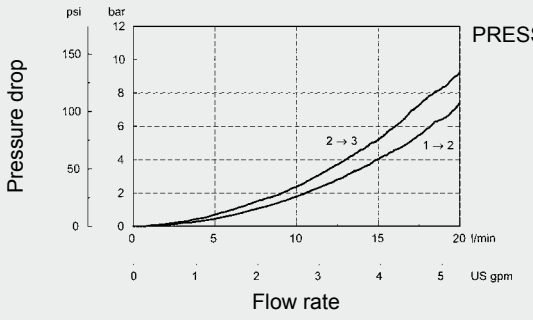
Other models on request

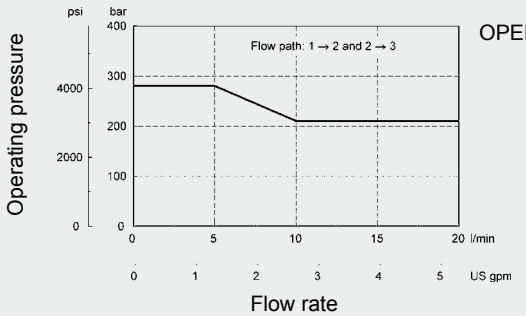
Seal kits

Code	Material	Part No.
FS083-N SEAL KIT	NBR	3054795
FS083-V SEAL KIT	FKM	2591059

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C





NOTE

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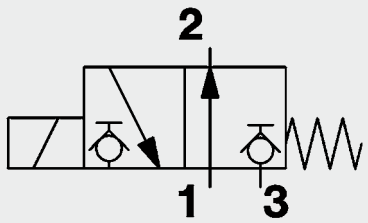
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

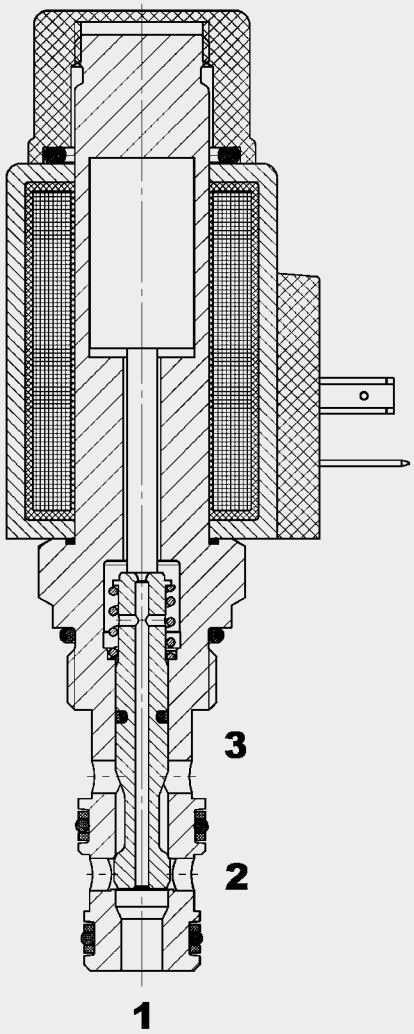


up to 22 l/min
up to 350 bar

3/2-Solenoid Directional Valve Poppet Type - Direct-Acting Normally Open Metric Cartridge – 350 bar

WSM08130D-01

FUNCTION



When the solenoid coil is not energized, there is free flow through the valve from port 1 to port 2. Port 3 is closed.

When energized, there is free flow through the valve from port 2 to port 3. Port 1 is closed.

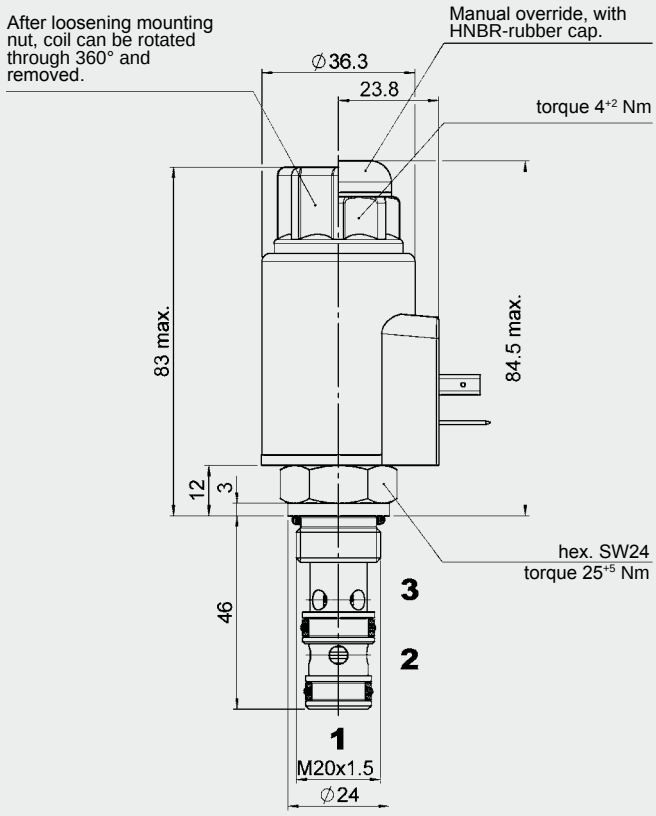
FEATURES

- External surfaces zinc-plated and corrosion proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connections available
- Excellent switching performance by high power HYDAC solenoid

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 22 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	08130 metric	
Weight:	Valve complete:	0.49 kg
	Coil only:	0.19 kg
Electrical data:		
Switching time:	energized:	approx. 30 ms
	non-energized:	approx. 50 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Nominal voltage at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	±15% of nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-50-1836	

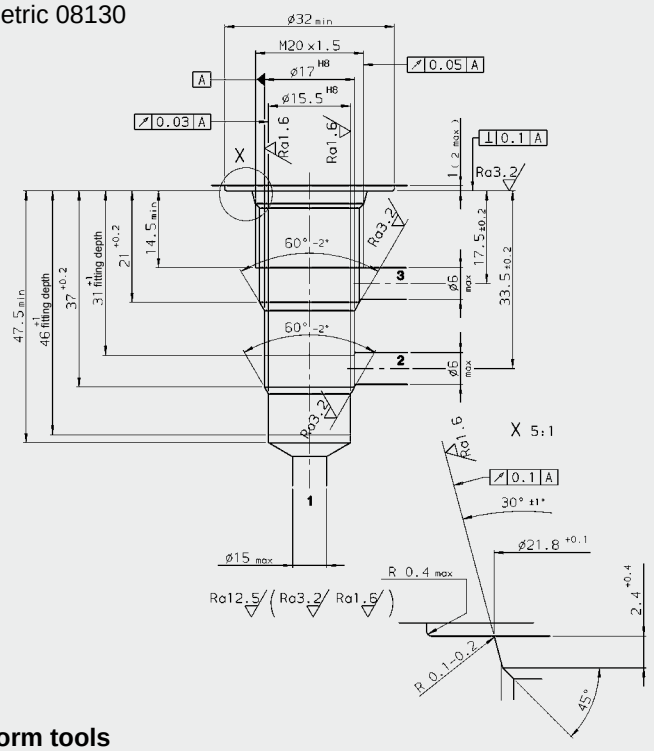
DIMENSIONS



Millimeter
Subject to technical modifications

CAVITY

Metric 08130



Form tools

Tool	Part No.
Countersink (shank MK3)	169265
Reamer (shank MK2)	163639

Millimeter
Subject to technical modifications

MODEL CODE

WSM08130D - 01 M - C - N - 24 DG

Basic model
Directional poppet valve, metric

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN175301-803
DT = AMP Junior Timer, 2 pole, radial
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads, 0.75 mm²
DN = Deutsch connector, axial, 2-pole
AC: AG = DIN connector to EN175301-803
Other connectors on request

Standard models

Model code	Part No.
WSM08130D-01-C-N-12DG	3229147
WSM08130D-01-C-N-24DG	3229152
WSM08130D-01-C-N-230AG	3229151

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R08130-01X-01	394488	Steel, zinc-plated	G3/8	420 bar
R08130-01X-02	394378	Steel, zinc-plated	M14 x 1.5	420 bar

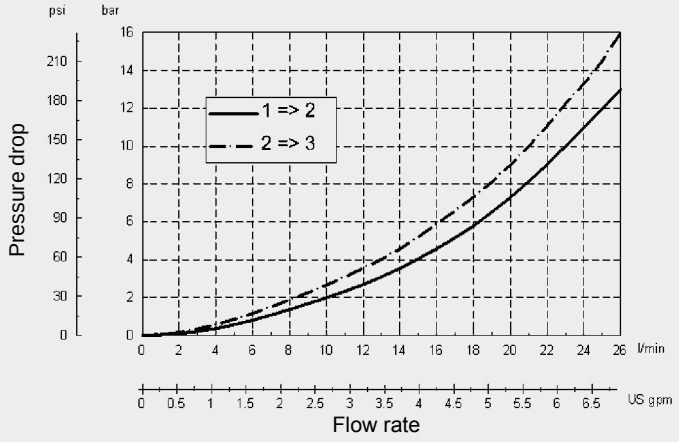
Other housings on request

Seal kits

Code	Part No.
SEAL KIT 08130 NBR	3164596
SEAL KIT 08130-FKM	3183746

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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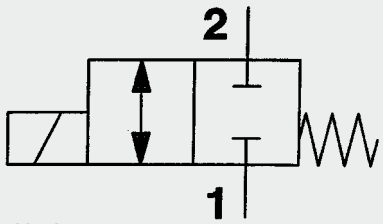
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

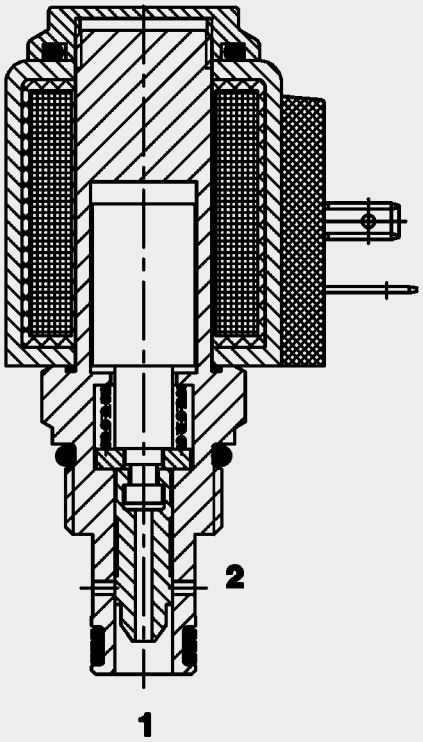


19 l/min
350 bar

2/2 Solenoid Directional Valve UNF
Spool Type, Direct-Acting
SAE-08 Cartridge – 350 bar

WK08W-01

FUNCTION



In the de-energized mode, the valve blocks flow in both directions. When energized the valve allows flow in both directions.

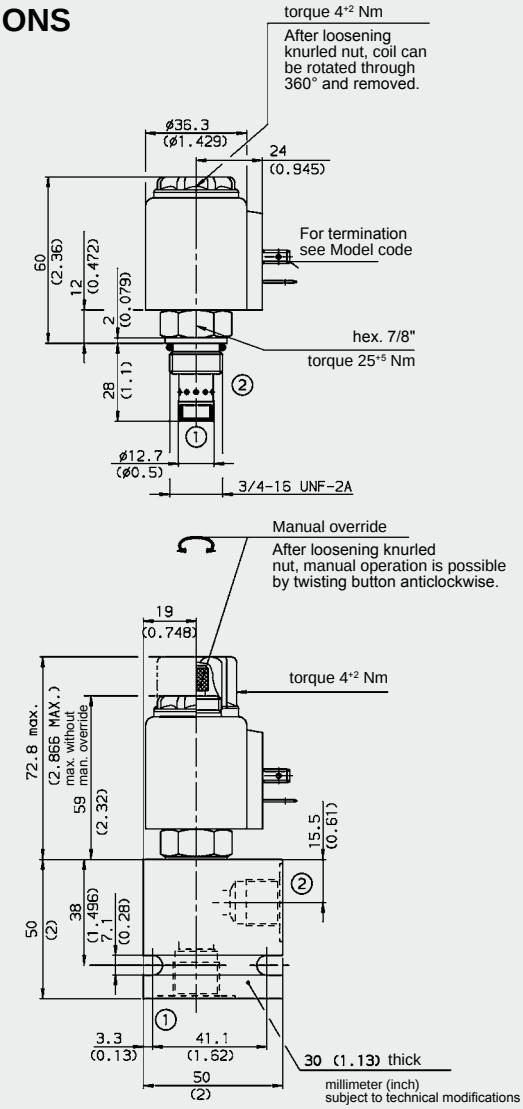
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

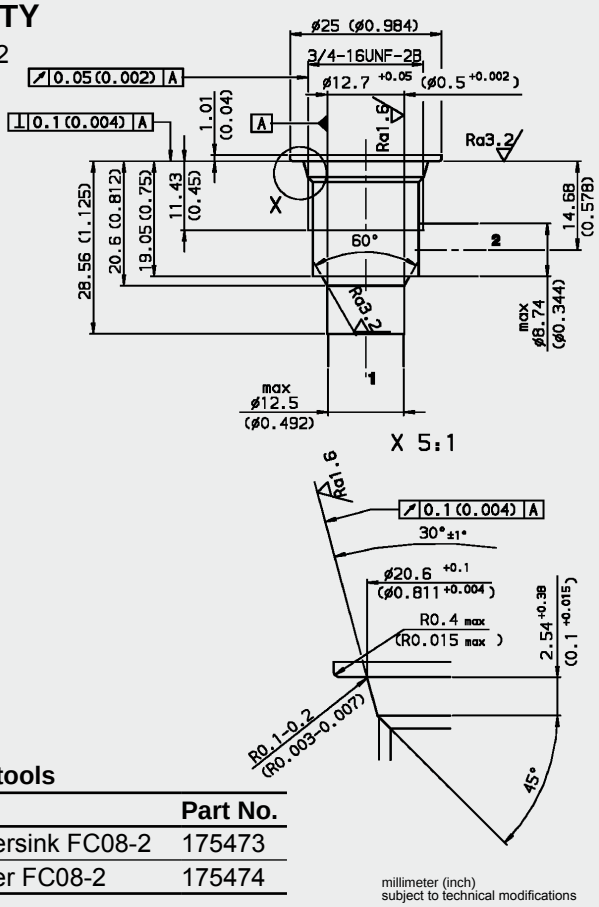
Operating pressure:	max. 350 bar	
Nominal flow:	max. 19 l/min	
Internal leakage:	150 cm³/min at 250 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Mounting position	No orientation restrictions	
Cavity:	FC08-2	
Weight:	Valve complete	0.36 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

DIMENSIONS



CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

MODEL CODE

WK08W – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK08W-01-C-N-24DG	3018585
WK08W-01-C-N-230AG	3044038

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

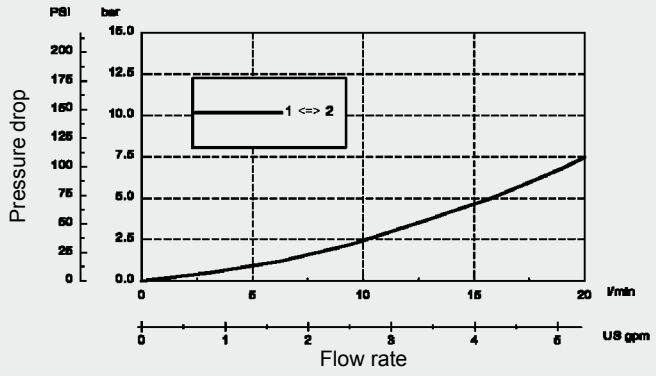
Other housings on request

Seal kits

Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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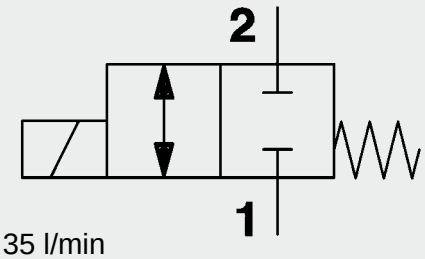
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

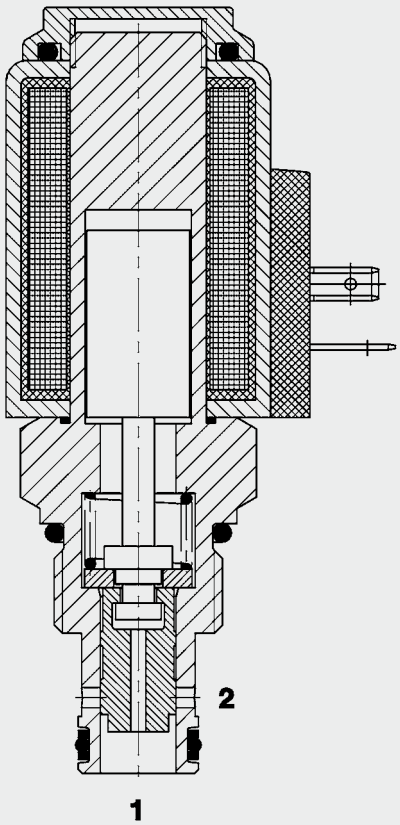


35 l/min
350 bar

2/2 Solenoid Directional Valve UNF Spool Type, Direct-Acting, SAE-10 Cartridge – 350 bar

WK10W-01

FUNCTION



When the solenoid coil is de-energized, the valve blocks flow in both directions.

When energized the valve allows flow in both directions.

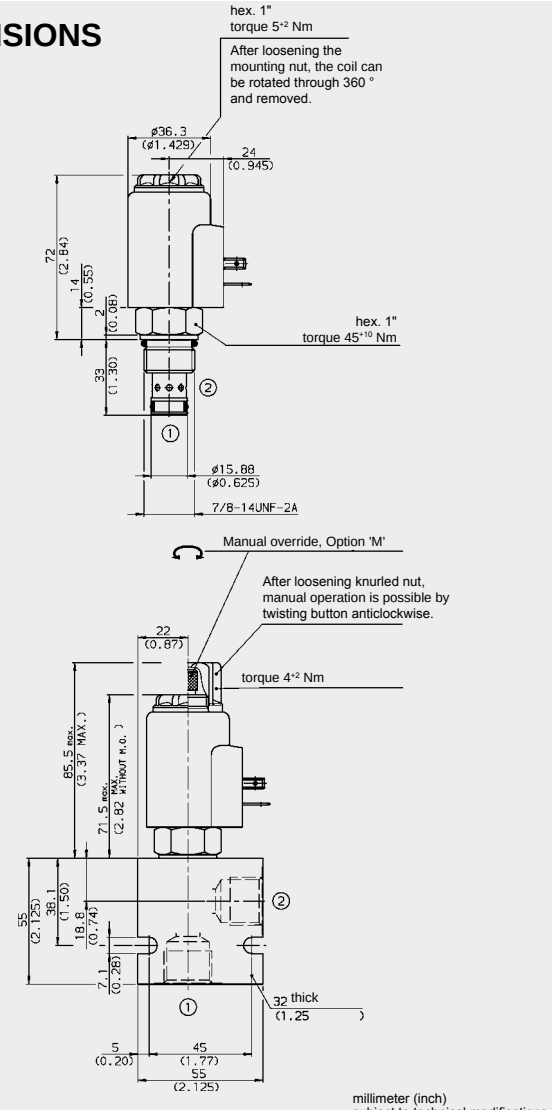
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 35 l/min	
Internal leakage:	max. 150 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-2	
Weight:	Valve complete	0.45 kg
	Coil only	0.23 kg
Electrical data:		
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 50 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-50-1836	

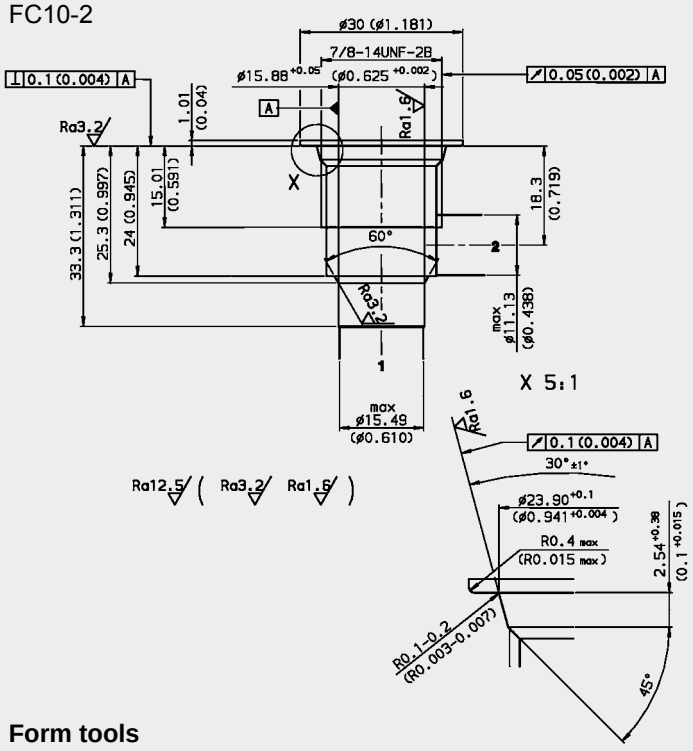
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC10-2



Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter (inch)
subject to technical modifications

MODEL CODE

WK10W-01 M - C - N - 24 DG

Basic model
Directional spool valve, UNF

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial

AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WK10W-01-C-N-24DG	3079726
WK10W-01-C-N-230AG	3094629

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, anodized	G1/2	210 bar

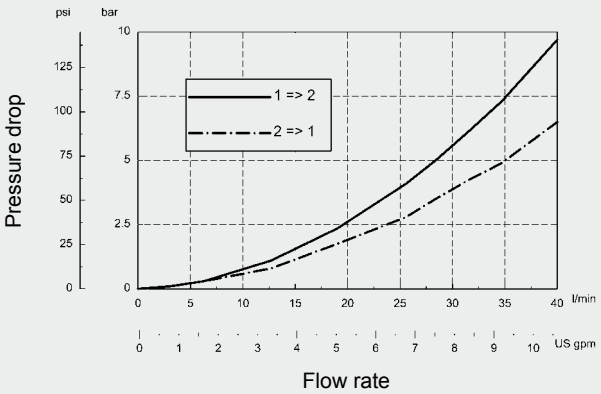
Other bodies on request

Seal kits

Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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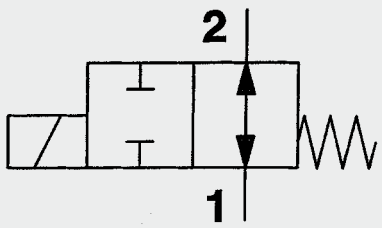
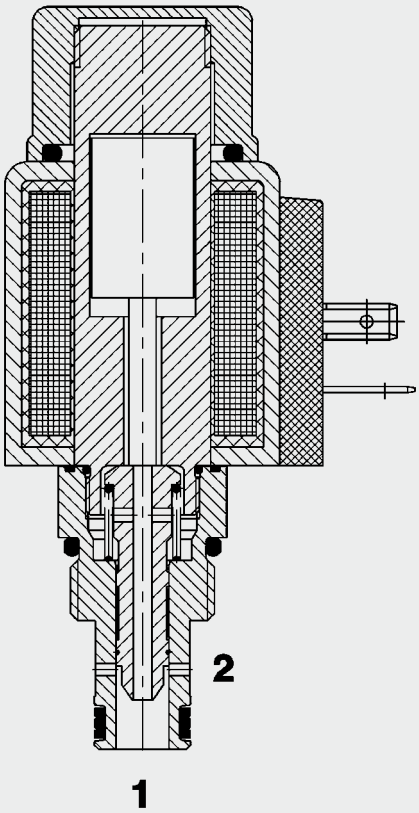
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

2/2 Solenoid Directional Valve UNF
Spool Type, Direct-Acting
SAE-08 Cartridge – 350 bar
WK08V-01



19 l/min
350 bar

FUNCTION



When the solenoid coil is de-energized, the valve is open in both directions.
When the solenoid coil is energized, the valve is closed in both directions.

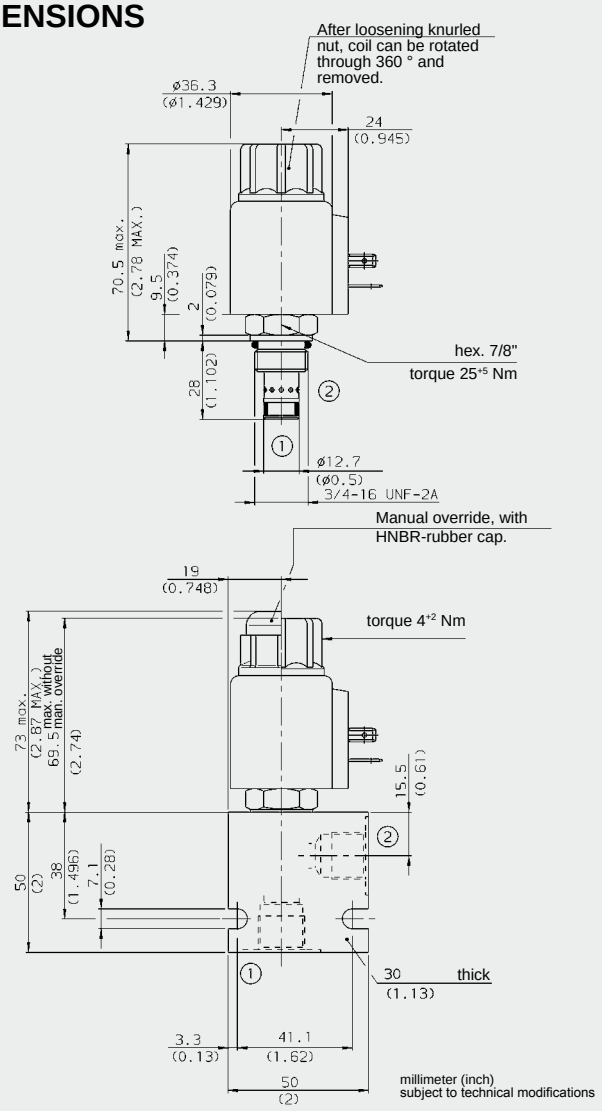
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

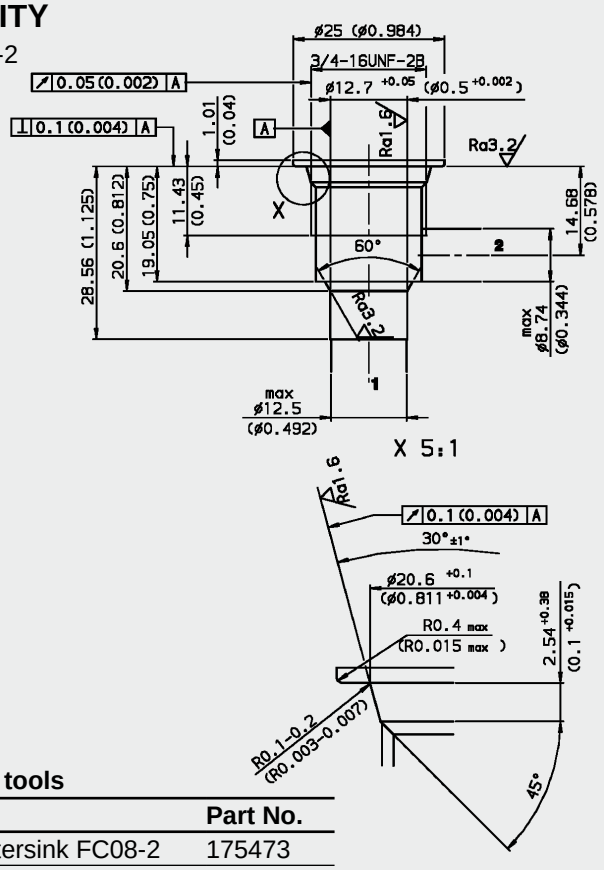
Operating pressure:	max. 350 bar	
Nominal flow:	max. 19 l/min	
Internal leakage:	90 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-2	
Weight:	Valve complete	0.36 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

DIMENSIONS



CAVITY

FC08-2



millimeter (inch)
subject to technical modifications

Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

MODEL CODE

WK08V – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages:
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model Code	Part No.
WK08V-01-C-N-24DG	3020235
WK08V-01-C-N-230AG	3044018

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

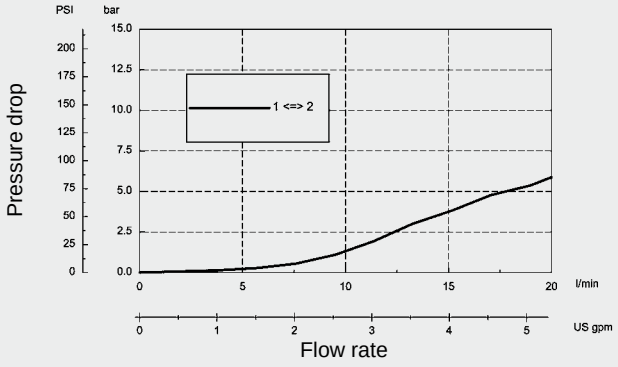
Other line bodies on request

Seal kits

Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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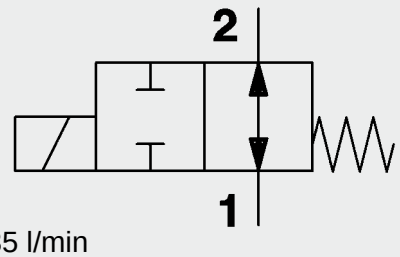
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

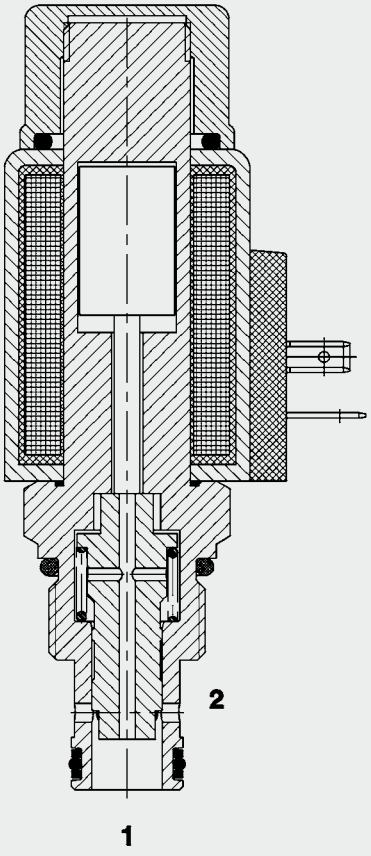


35 l/min
350 bar

2/2 Solenoid Directional Valve UNF Spool Type, Direct-Acting, SAE-10 Cartridge – 350 bar

WK10V-01

FUNCTION



When the solenoid coil is de-energized, the valve is open in both directions.

When the solenoid coil is energized, the valve is closed in both directions.

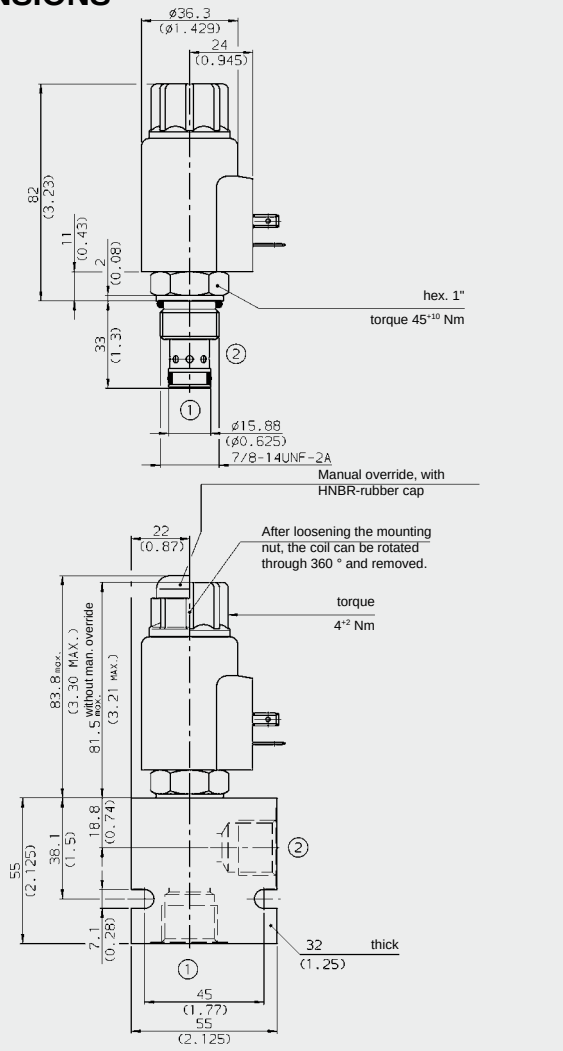
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 35 l/min	
Internal leakage:	max. 190 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-2	
Weight:	Valve complete	0.45 kg
	Coil only	0.23 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-50-1836	

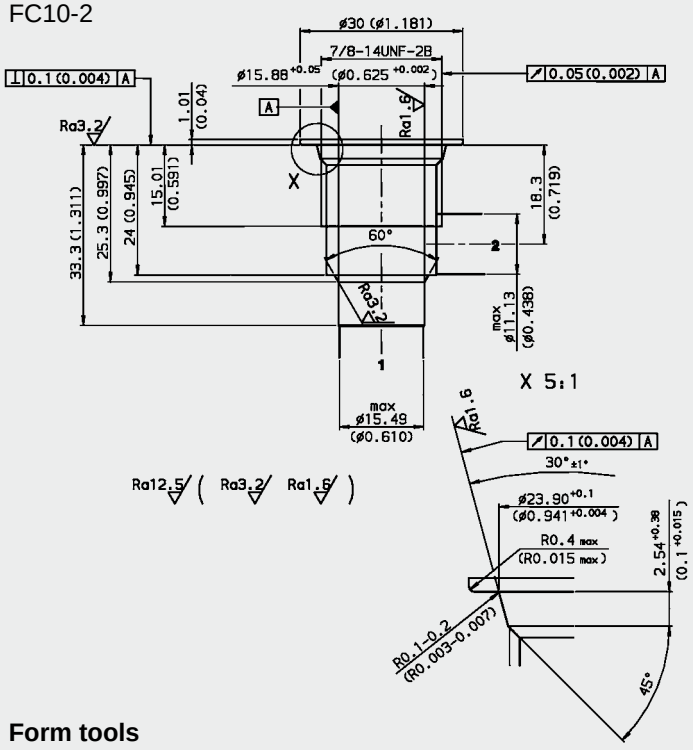
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC10-2



Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter (inch)
subject to technical modifications

MODEL CODE

WK10V – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10V-01-C-N-24DG	3094516
WK10V-01-C-N-230AG	3094517

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, anodized	G1/2	210 bar

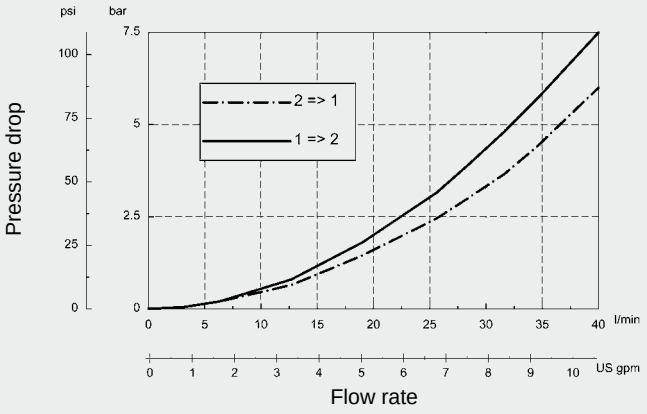
Other bodies on request

Seal kits

Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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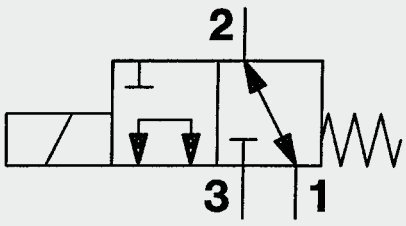
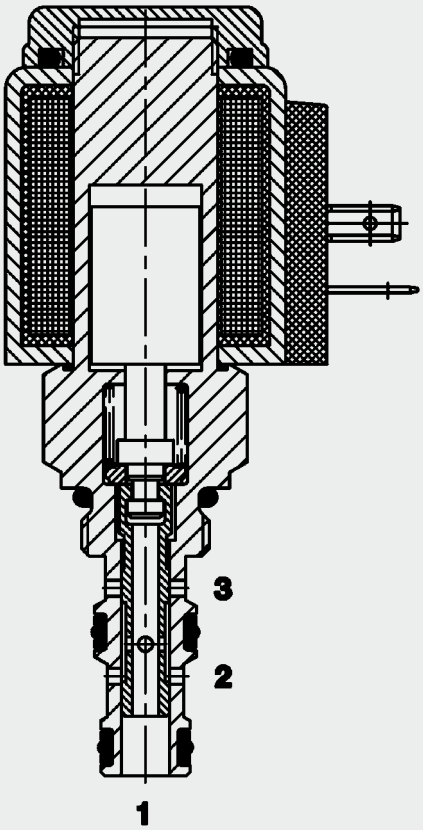
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

3/2 Solenoid Directional Valve UNF
Spool Type, Direct-Acting
SAE-07 Cartridge – 350 bar
WK07L-01



10 l/min
350 bar

FUNCTION



When the solenoid coil is de-energized, the valve allows flow from port 1 to 2 or from port 2 to 1, while blocking flow at port 3. When energized, the valve allows flow from port 3 to 1 or from port 1 to 3, while blocking flow at port 2.

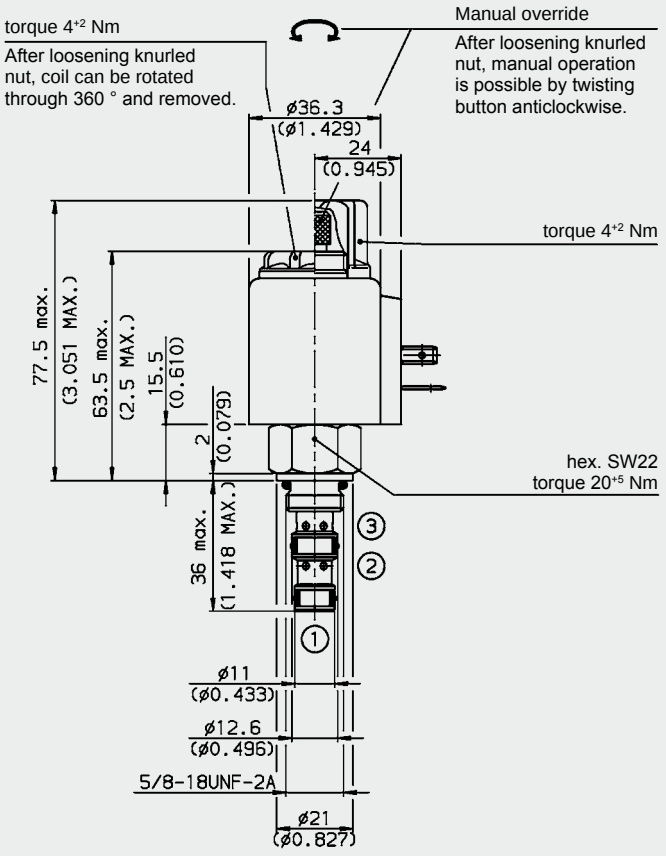
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 10 l/min	
Internal leakage:	150 cm³/min at 210 bar and 34 mm²/s	
Media operating temperature range:	-20 °C to +100 °C	
Ambient temperature range:	-20 °C to + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC07-3	
Weight:	Valve complete	0.34 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

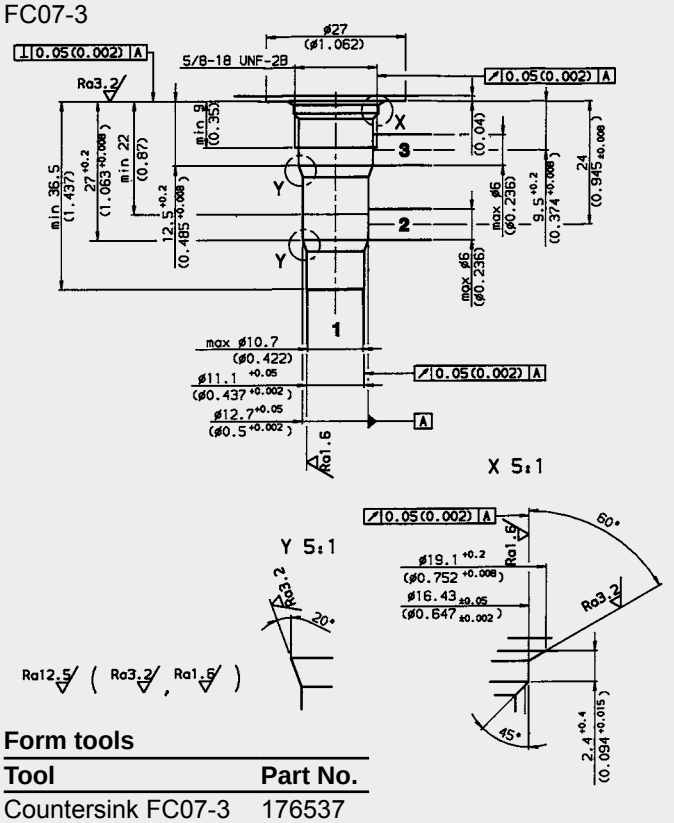
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC07-3



Form tools

Tool	Part No.
Countersink FC07-3	176537
Reamer FC07-3	176538

millimeter (inch)
subject to technical modifications

MODEL CODE

WK07L – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK07L-01-C-N-24DG	3034324
WK07L-01-C-N-230AG	3091310

Other models on request

Standard in-line bodies

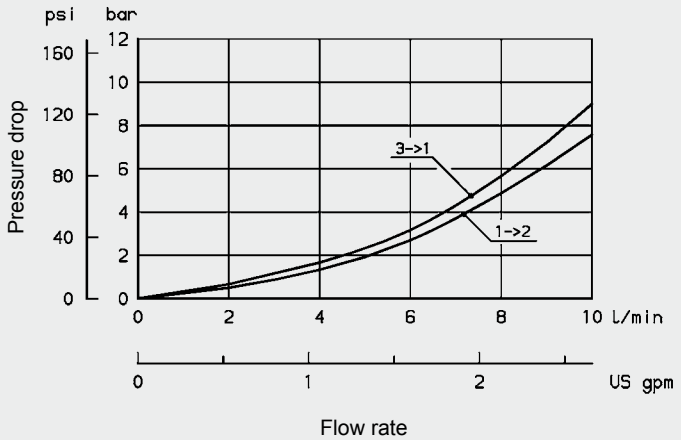
On request

Seal kits

Code	Material	Part No.
FS073-N SEAL KIT	NBR	3086946

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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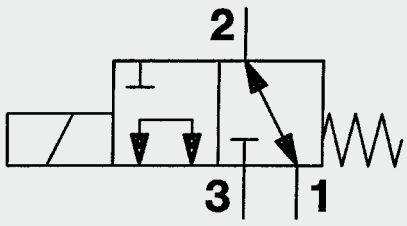
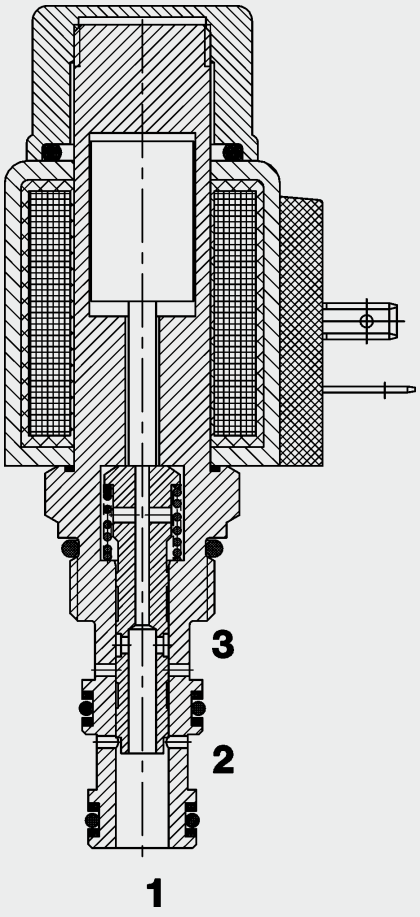
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



17 l/min
350 bar

3/2 Solenoid Directional Valve UNF
Spool Type - Direct-Acting
SAE-08 Cartridge – 350 bar
WK08L-01

FUNCTION



When de-energized, the valve allows flow from port 1 to 2 or from port 2 to 1, while blocking flow at port 3. When energized, the valve allows flow from port 3 to 1 or from port 1 to 3, while blocking flow at port 2.

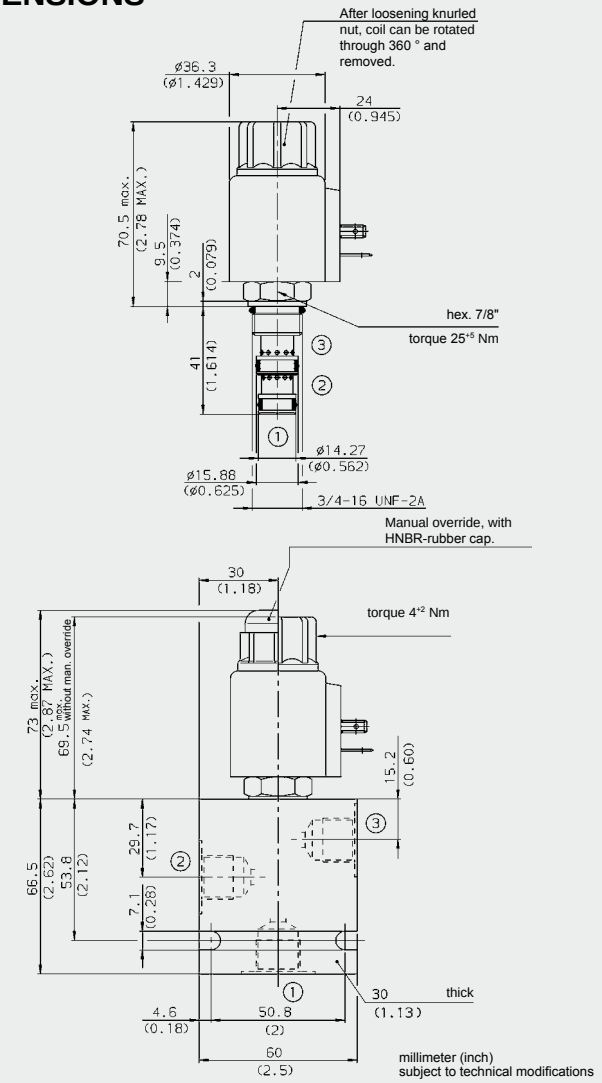
GENERAL

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

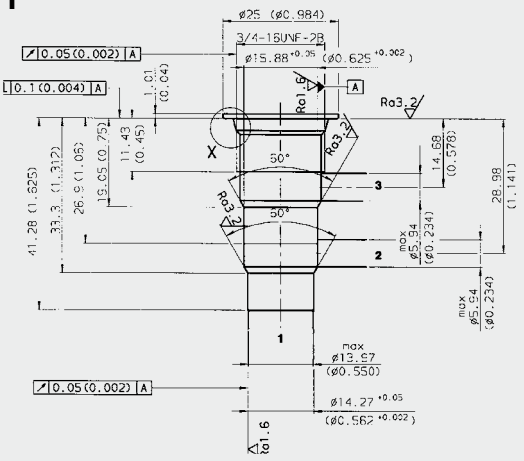
Operating pressure:	max. 350 bar	
Nominal flow:	max. 17 l/min Consult HYDAC for flow ratings above 207 bar	
Internal leakage:	90 cm³/min at 250 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-3	
Weight:	Valve complete	0.37 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

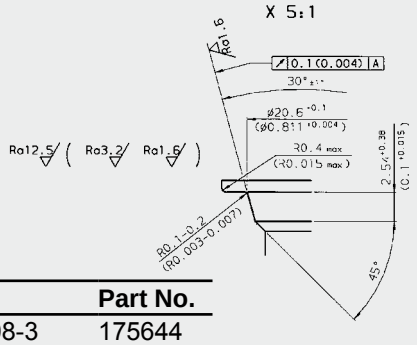
DIMENSIONS



CAVITY

FC08-3





Form tools

Code	Part No.
Countersink FC08-3	175644
Reamer FC08-3	175645

millimeter (inch)
subject to technical modifications

MODEL CODE

WK08L – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK08L-01-C-N-24DG	3021475
WK08L-01-C-N-230AG	3043947

Other models on request

* Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH083-SB3	560922	Steel, zinc-plated	G3/8	420 bar
FH083-AB3	3011427	Aluminium, clear anodized	G3/8	210 bar

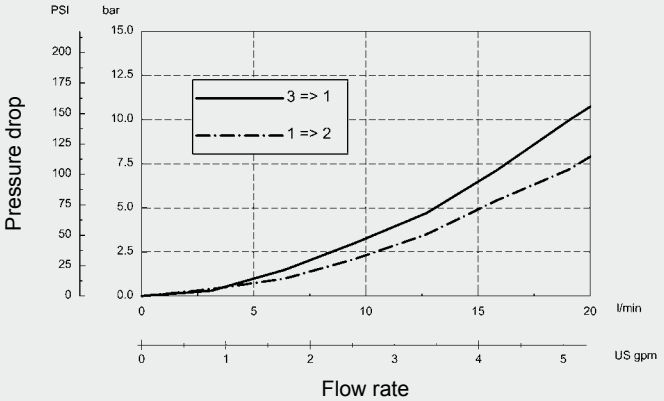
Other models on request

Seal kits

Code	Material	Part No.
FS083-N SEAL KIT	NBR	3054795
FS083-V SEAL KIT	FKM	2591059

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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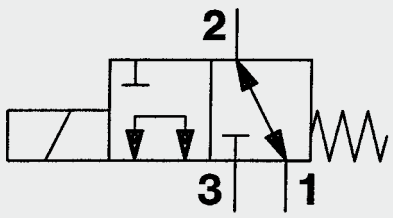
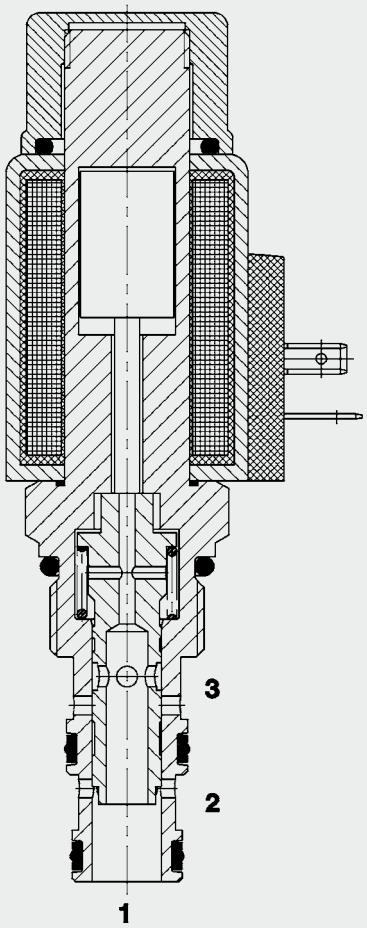
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



32 l/min
350 bar

3/2 Solenoid Directional Valve UNF
Spool Type, Direct-Acting
SAE-10 Cartridge – 350 bar
WK10L-01

FUNCTION



When the solenoid coil is de-energized, the valve allows flow from port 1 to 2 or from port 2 to 1, while blocking flow at port 3. When energized, the valve allows flow from port 3 to 1 or from port 1 to 3, while blocking flow at port 2.

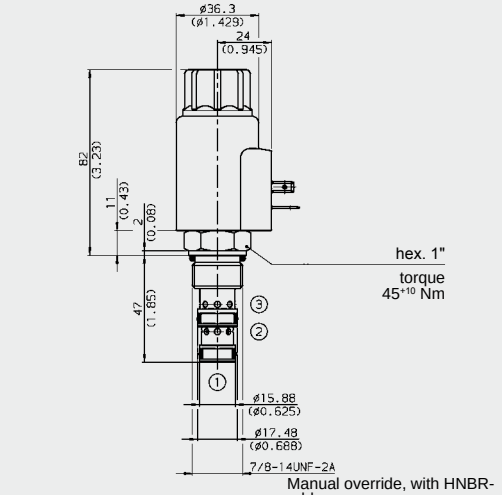
FEATURES

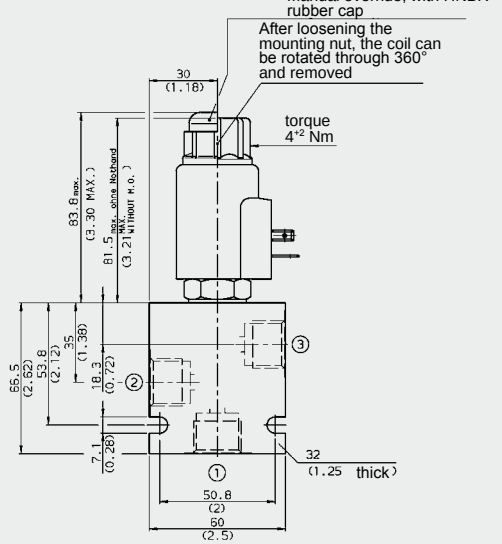
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 32 l/min	
Internal leakage:	max. 140 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-3	
Weight:	Valve complete	0.47 kg
	Coil only	0.23 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-50-1836 (2 pieces)	

DIMENSIONS

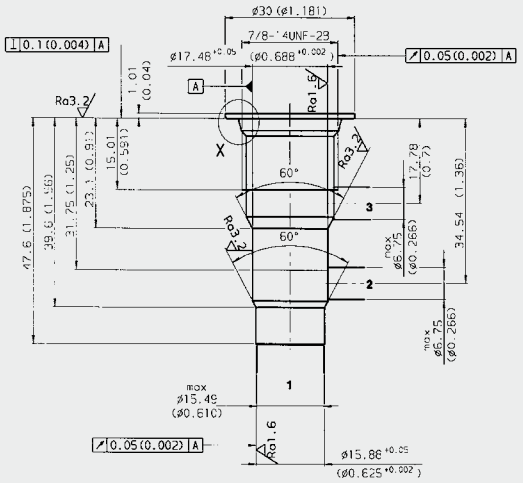


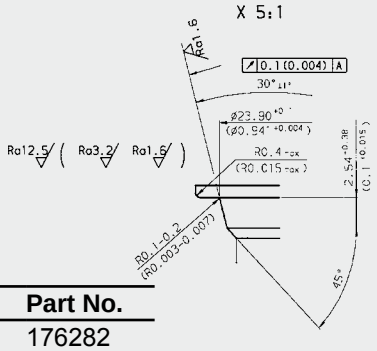


millimeter (inch)
subject to technical modifications

CAVITY

FC10-3





Form tools

Tool	Part No.
Countersink FC10-3	176282
Reamer FC10-3	176283

millimeter (inch)
subject to technical modifications

MODEL CODE

WK10L – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = Standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10L-01-C-N-24DG	3096315
WK10L-01-C-N-230AG	3096316

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH103-SB4	3037697	Steel, zinc-plated	G1/2	420 bar
FH103-AB4	3038092	Aluminium, clear anodized	G1/2	210 bar

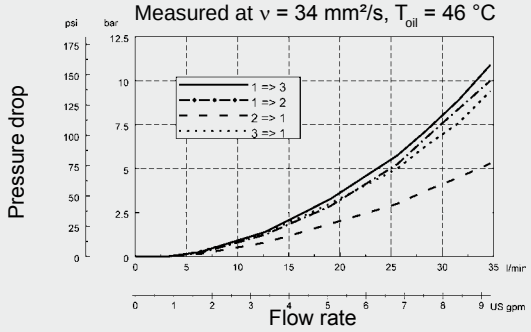
Other line bodies on request

Seal kits

Code	Material	Part No.
FS103-N SEAL KIT	NBR	3071274
FS103-V SEAL KIT	FKM	3049443

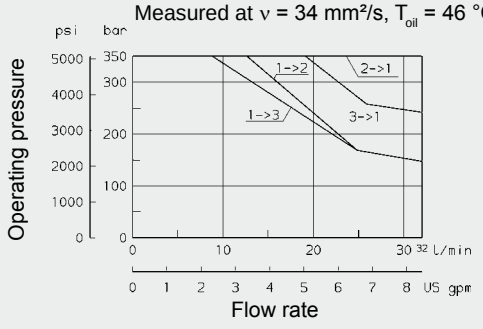
PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



OPERATING LIMITS

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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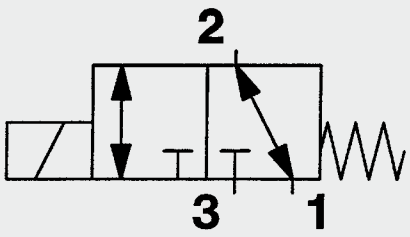
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

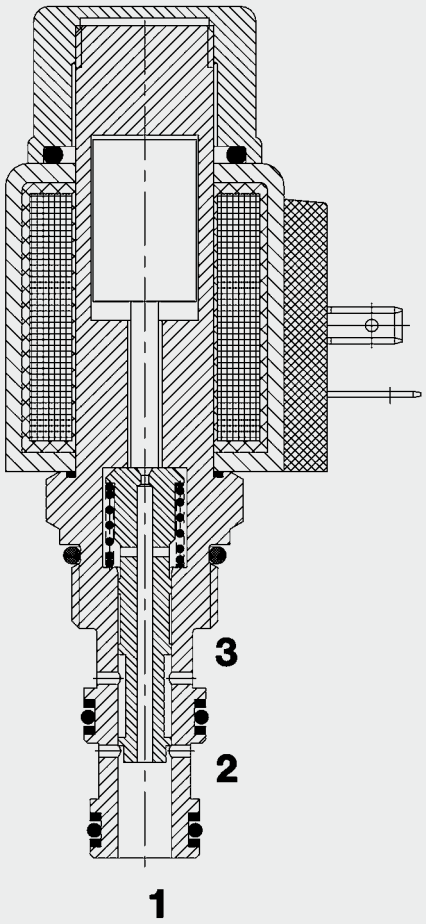


19 l/min
350 bar

3/2 Solenoid Directional Valve UNF Spool Type - Direct-Acting SAE08 Cartridge – 350 bar

WK08C-01

FUNCTION



When de-energized, the valve allows flow from port 1 to 2 or from port 2 to 1, while blocking flow at port 3. When energized, the valve allows flow from port 3 to 2 or from port 2 to 3, while blocking flow at port 1.

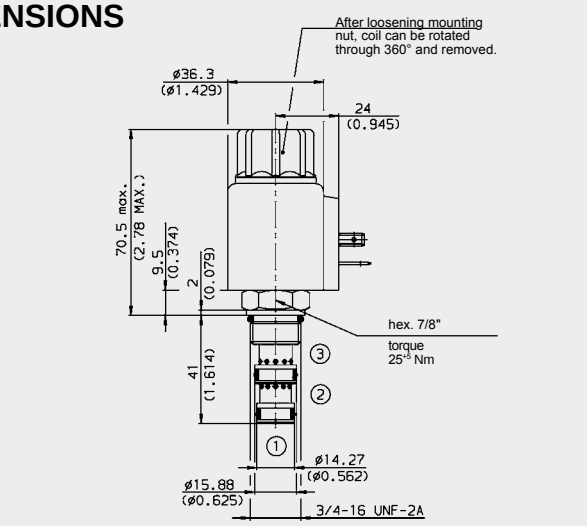
FEATURES

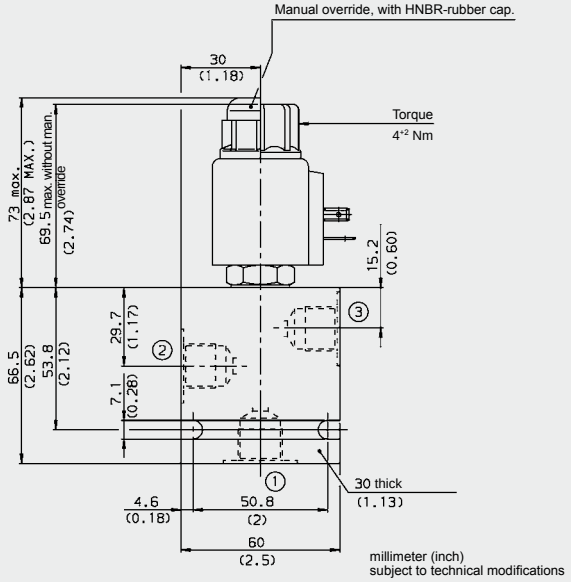
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 19 l/min	
Internal leakage:	max. 90 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Material	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel/polyamide
Cavity:	FC08-3	
Weight:	Valve complete	0.37 kg
	Coil only	0.19 kg
Electrical data:		
Switching time:	Energized:	approx. 20 - 85 ms
	De-energized:	approx. 40 - 80 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

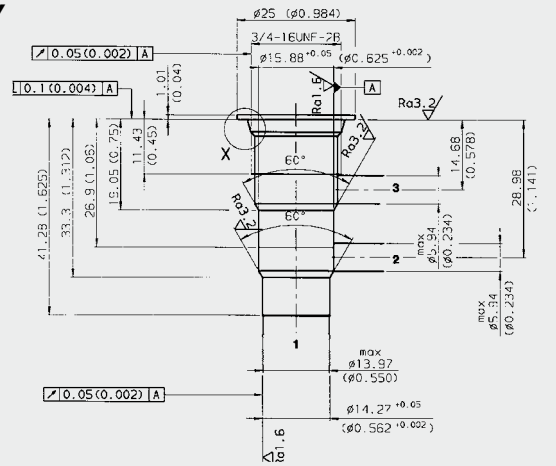
DIMENSIONS





CAVITY

FC08-3



Form tools

Tool	Part No.
Countersink FC08-3	175 6443
Reamer FC08-3	175 645

millimeter (inch)
subject to technical modifications

MODEL CODE

WK08C – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
N = NBR
V = FKM

Coil Voltage
DC voltages:
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Code	Part No.
WK08C-01-C-N-12DG	3020375
WK08C-01-C-N-24DG	3020388
WK08C-01-C-N-230AG	3043889

Other models on request

*Standard line body

Code	Part No.	Material	Connections	Pressure
FH083-SB3	560922	Steel, zinc-plated	G3/8	420 bar
FH083-AB3	3011427	Aluminium, clear anodized	G3/8	210 bar

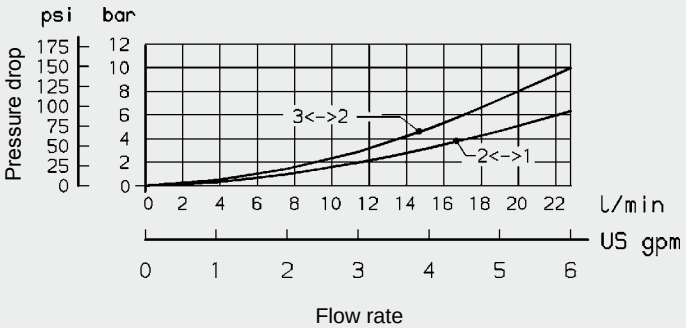
Other bodies on request

Seal kits

Code	Material	Part No.
FH083-N Seal kit	NBR	3054795
FH083-V Seal kit	FKM	2591059

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



Note

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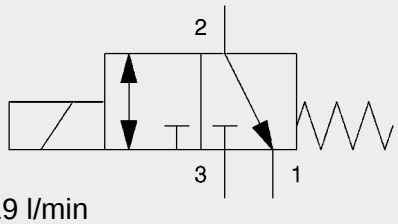
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

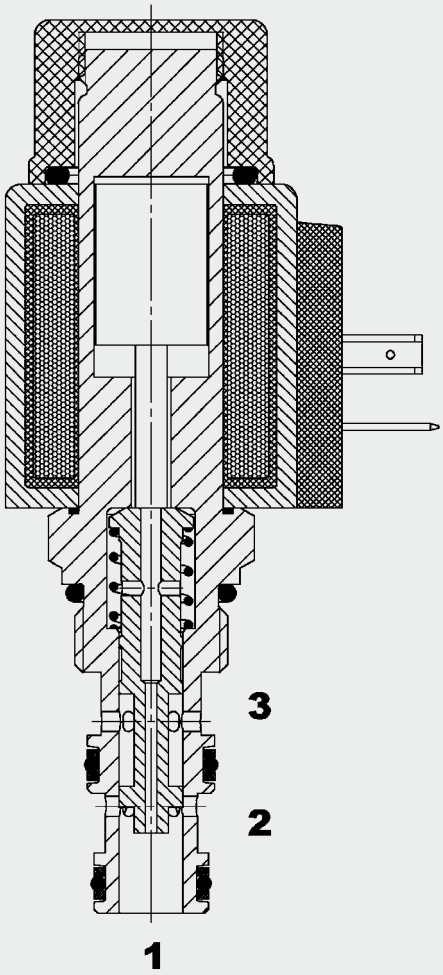
3/2 Solenoid Directional Valve UNF Spool Type - Direct-Acting SAE-08 Cartridge – 350 bar

WK08C-13



19 l/min
350 bar

FUNCTION



When de-energized, the valve allows flow from port 2 to 1, while blocking flow at port 3.

When energized, the valve allows flow from port 3 to 2 or from port 2 to 3, while blocking flow at port 1.

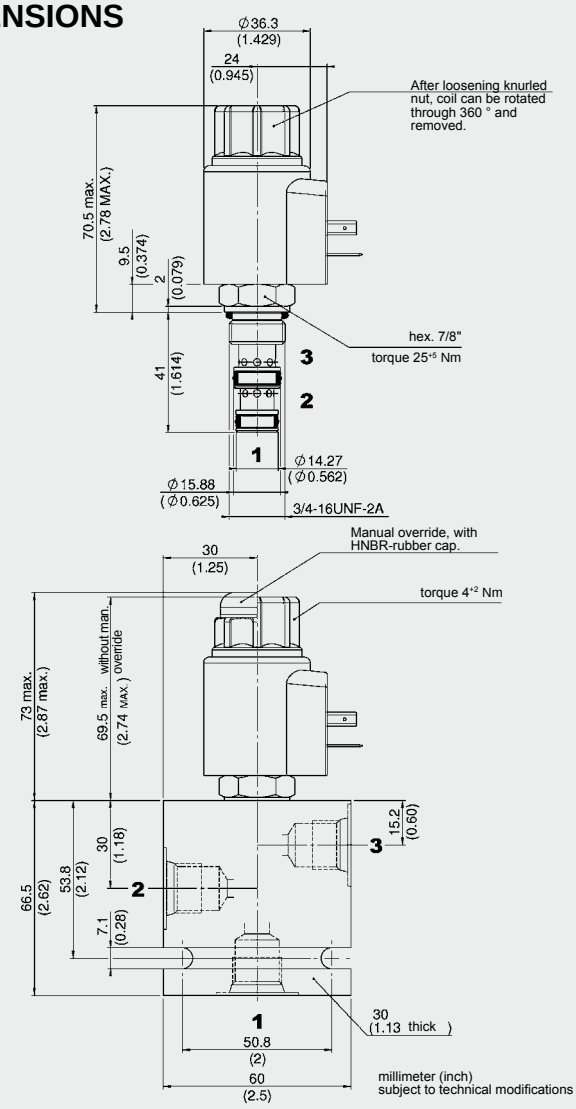
FEATURES

- Δp optimized, for lower pressure drop from port 2 to port 1
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid

SPECIFICATIONS

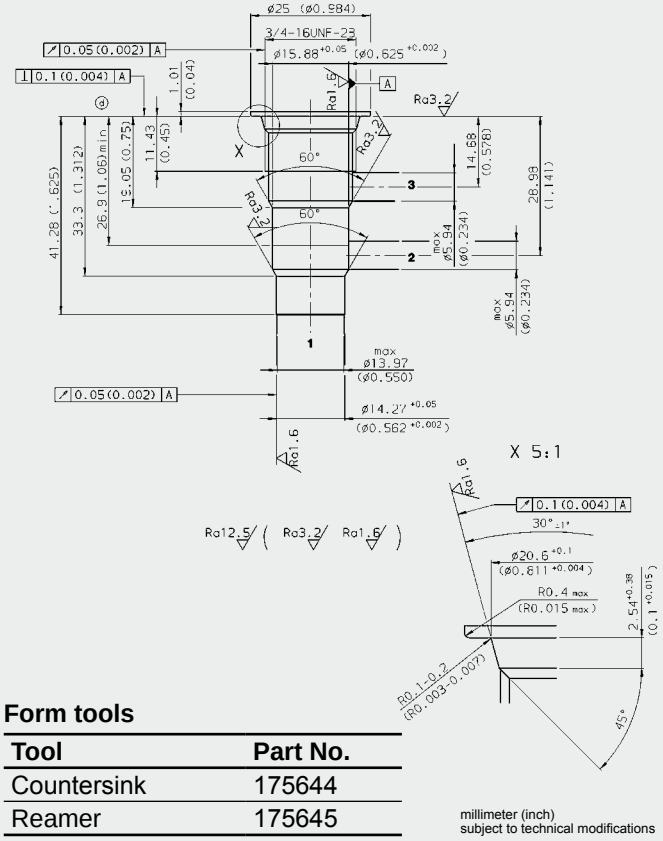
Operating pressure:	max. 350 bar	
Nominal flow:	max. 19 l/min	
Internal leakage:	max. 90 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temp. range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-3	
Weight:	Valve complete:	0.37 kg
	Coil only:	0.19 kg
Electrical data:		
Switching time:	Energized:	approx. 25 ms
	De-energized:	approx. 40 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15 % of nominal voltage	
Coil duty rating:	Continuous up to max. 115% of nominal voltage at max. 60° C ambient temperature	
Coil type:	Coil…-40-1836	

DIMENSIONS



CAVITY

FC08-3



Form tools

Tool	Part No.
Countersink	175644
Reamer	175645

millimeter (inch)
subject to technical modifications

MODEL CODE

WK08C – 13 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
13 = standard, with less pressure drop

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WK08C-13-C-N-12DG	3381283
WK08C-13-C-N-24DG	3257855

Other models on request

* Standard in-line bodies

Code	Part No.	Material	Connections	Pressure
FH083	560922	Steel, zinc-plated	G3/8	420 bar
FH083	3011427	Aluminium, clear anodized	G3/8	210 bar

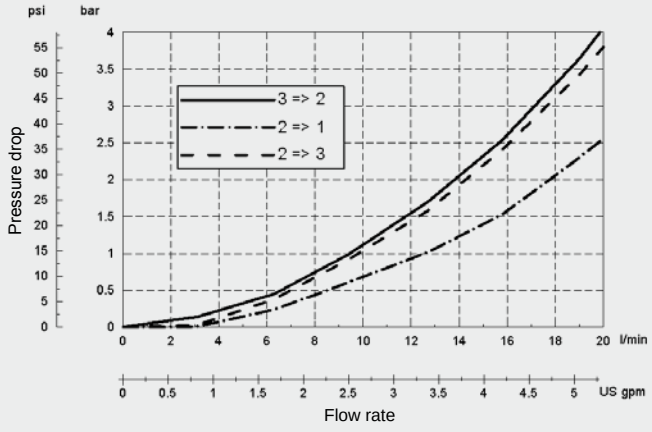
Other models on request

Seal kits

Code	Material	Part No.
Seal kit FS083-N	NBR	3054795
Seal kit FS083-V	FKM	2591059

PERFORMANCE

Measured at v = 33 mm²/s, T_{oil} = 46 °C



Note

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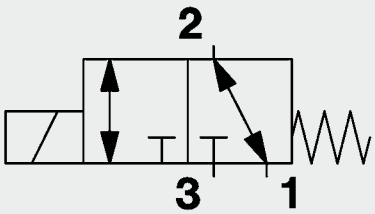
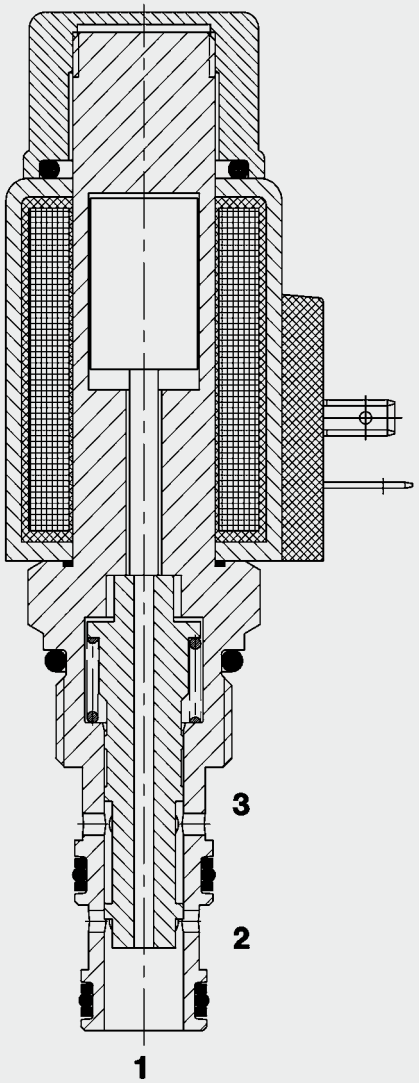
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

3/2 Solenoid Directional Valve UNF
Spool Type, Direct Acting
SAE-10 Cartridge – 350 bar
WK10C-01



32 l/min
350 bar

FUNCTION



When the solenoid coil is de-energized, the valve allows flow in both directions between ports 2 and 1, while blocking flow at port 3.

When energized, the valve allows flow in both directions between ports 3 and 2, while blocking flow at port 1.

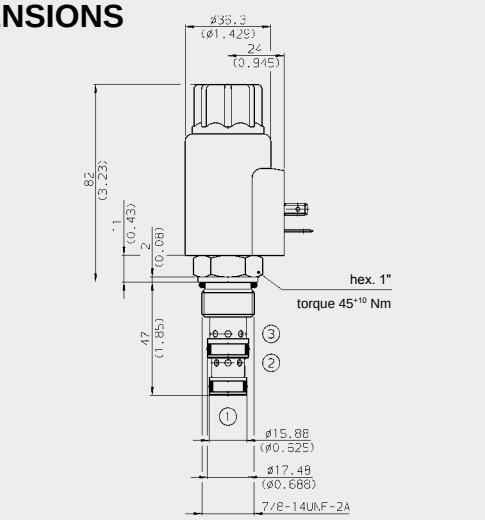
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 32 l/min	
Internal leakage:	max. 120 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-3	
Weight:	Valve complete	0.47 kg
	Coil only	0.23 kg
Electrical data:		
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil type:	Coil…-50-1836	

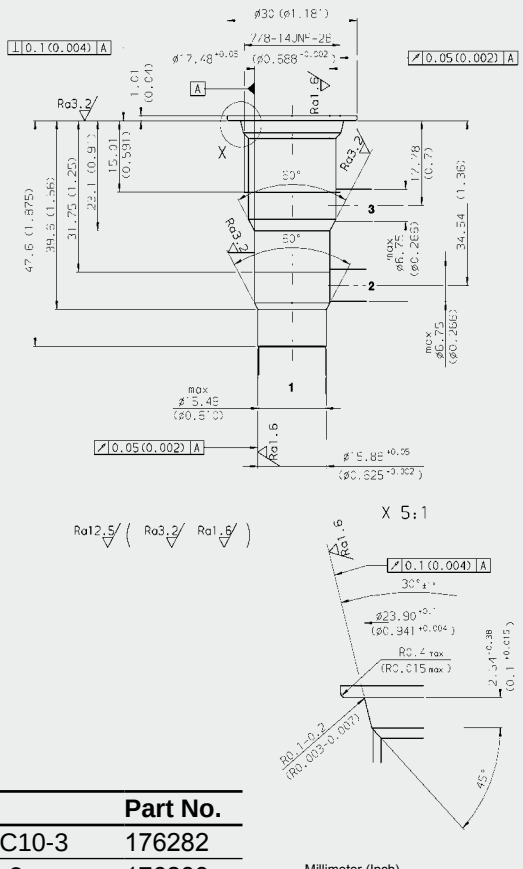
DIMENSIONS



Millimeter (Inch)
Subject to technical modifications

CAVITY

FC10-3



Form tools

Tool	Part No.
Countersink FC10-3	176282
Reamer FC10-3	176283

Millimeter (Inch)
subject to technical modifications

MODEL CODE

WK10C – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and Ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10C-01-C-N-24DG	3079848
WK10C-01-C-N-230AG	3094630

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH103-SB4	3037697	Steel, zinc-plated	G1/2	420 bar
FH103-AB4	3038092	Aluminium, anodized	G1/2	210 bar

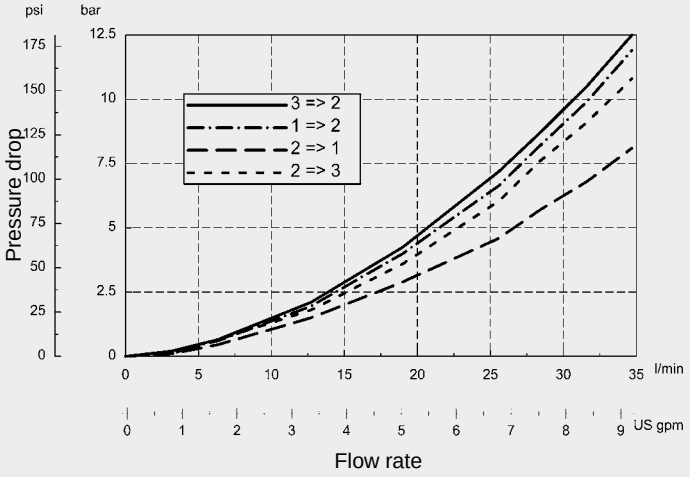
Other line bodies on request

Seal kits

Code	Material	Part No.
FS103-N SEAL KIT	NBR	3071274
FS103-V SEAL KIT	FKM	3049443

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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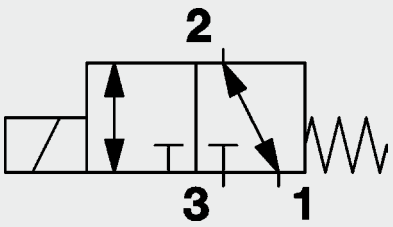
Subject to technical modifications.

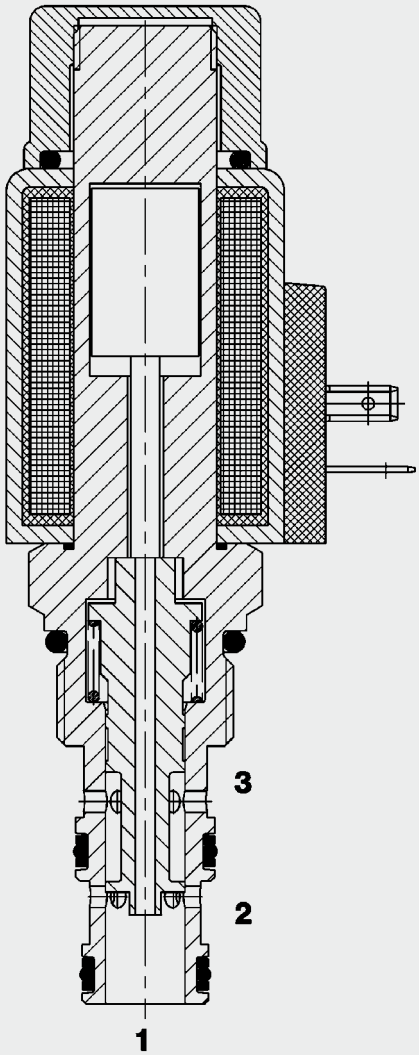
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

3/2 Solenoid Directional Valve UNF
Spool Type, Direct Acting
SAE-10 Cartridge – 350 bar
WK10C-40



32 l/min
350 bar

FUNCTION



When de-energized, the valve allows flow in both directions between ports 2 to 1, while blocking flow at port 3.

When energized, the valve allows flow in both directions between ports 3 and 2, while blocking flow at port 1.

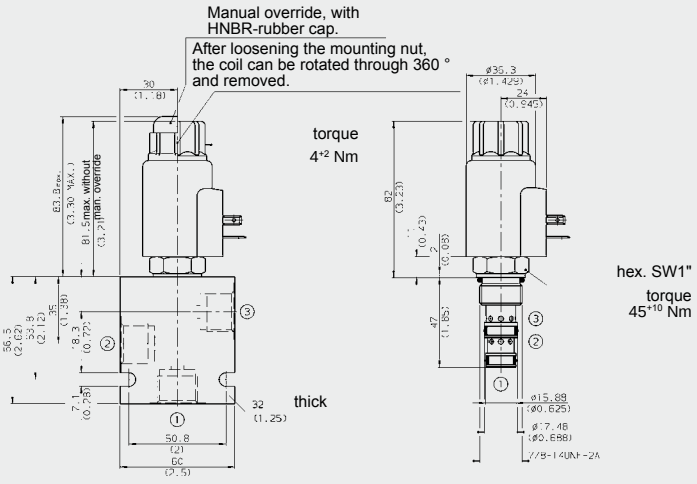
FEATURES

- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Wide variety of connectors available
- External surfaces zinc-plated and corrosion-proof
- Coil seals protect the solenoid system
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 32 l/min	
Internal leakage:	max. 250 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-3	
Weight:	Valve complete	0.47 kg
	Coil only	0.23 kg
Electrical data:		
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Coil type:	Coil…-50-1836	

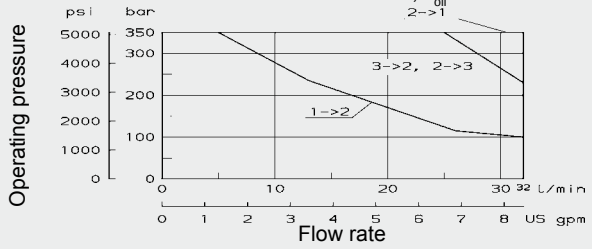
DIMENSIONS



millimeter
subject to technical modifications

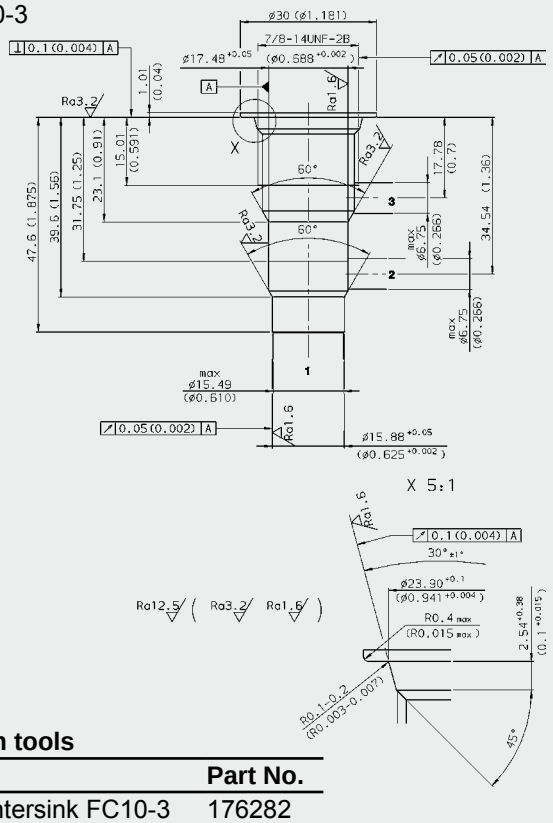
OPERATING LIMITS

ν = 34 mm²/s, T_{oil} = 46 °C



CAVITY

FC10-3



Form tools

Tool	Part No.
Countersink FC10-3	176282
Reamer FC10-3	176283

millimeter
subject to technical modifications

MODEL CODE

WK10C – 40 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
40 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10C-40-C-N-24DG	3129698
WK10C-40-C-N-230AG	3129699

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH103-SB4	3037697	Steel, zinc-plated	G1/2	420 bar
FH103-AB4	3038092	Aluminium, anodized	G1/2	210 bar

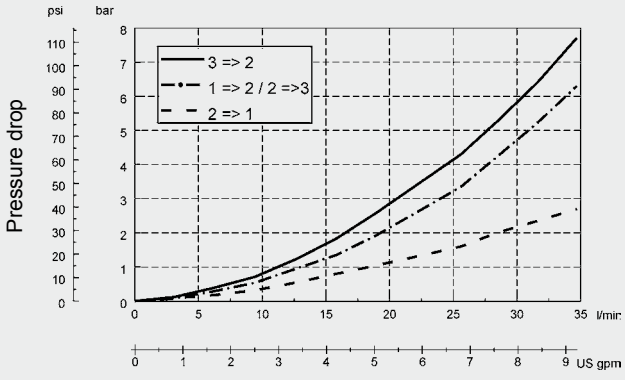
Other line bodies on request

Seal kits

Code	Material	Part No.
FS103-N SEAL KIT	NBR	3071274
FS103-V SEAL KIT	FKM	3049443

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



NOTE

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D-66280 Sulzbach/Saar
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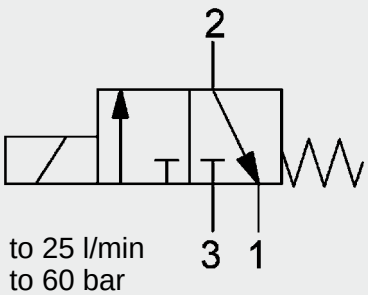
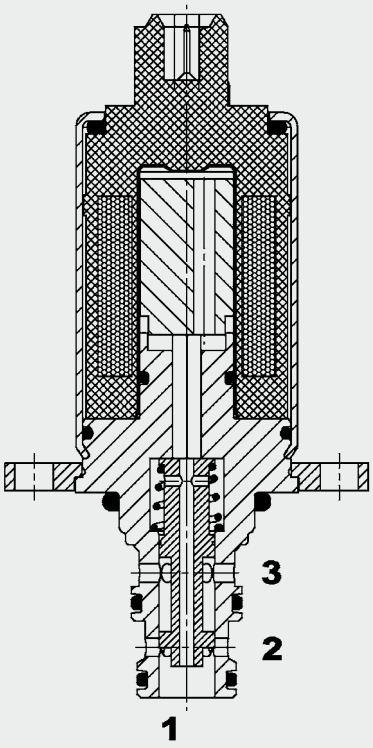


Up to 25 l/min
Up to 60 bar

3/2 Solenoid Directional Valve Spool Type Direct Acting Normally Open Slip-In – 60 bar WKC05S30C

FUNCTION



The solenoid directional valve WKC05S30C is a direct-acting, spool type valve. When de-energized there is flow from port 2 (consumer) to port 1 (tank). Port 3 (pump) is closed. When energized, there is flow from port 3 to port 2. Port 1 is closed.

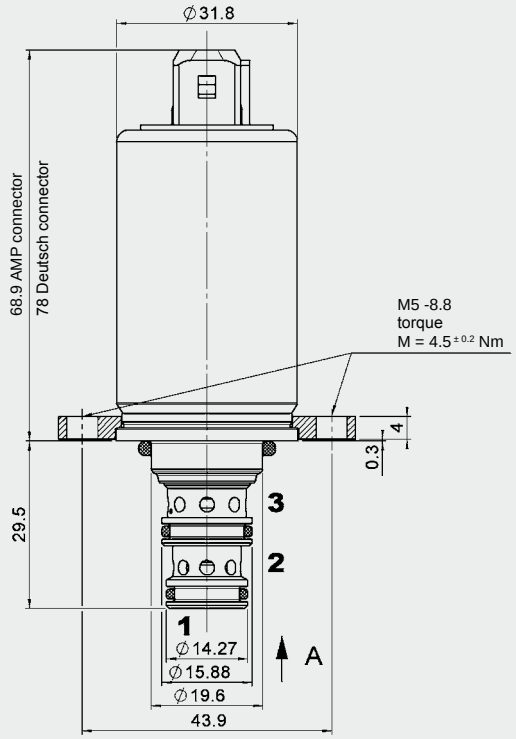
FEATURES

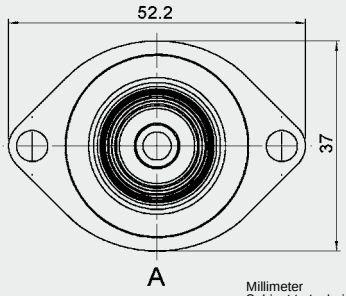
- Compact design (slip-in valve)
- Excellent dynamic performance
- Low pressure drop due to CFD optimized flow path
- Excellent stability throughout the entire flow range
- External surfaces corrosion-proof
- Coil seals protect the solenoid system
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- High switching capacity with compact design

SPECIFICATIONS

Operating pressure:	Max. 60 bar at port 2 and 3
Tank pressure at port 1: (Should be piped separately to tank)	Max. 10 bar dynamic
Nominal flow:	max. 25 l/min
Internal leakage:	60 ml/min (to the tank port 1) at maximum pressure
Pressure drop:	≈ 6 bar at 25 l/min
Media operating temperature range:	min. -30 °C to max. +105 °C
Ambient temperature range:	min. -30 °C to max. +80 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
MTTF d:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions
Materials:	Valve body: steel Spool: hardened and ground steel Seals: NBR (standard) FKM (optional, media temperature ranges -20 °C to +120 °C)
Cavity	05S30 Slip-In
Weight:	0.27 kg
Electrical data:	
Coil duty rating:	Continuous
Type of voltage:	DC solenoid
Current draw at 20 °C:	2.3 A 5.2 Ohm (12 V DC) 1.1 A 21.2 Ohm (24 V DC)
Voltage tolerance:	± 15 % of nominal voltage
Response time:	On: approx. 30 ms, Off: approx. 30 ms

DIMENSIONS

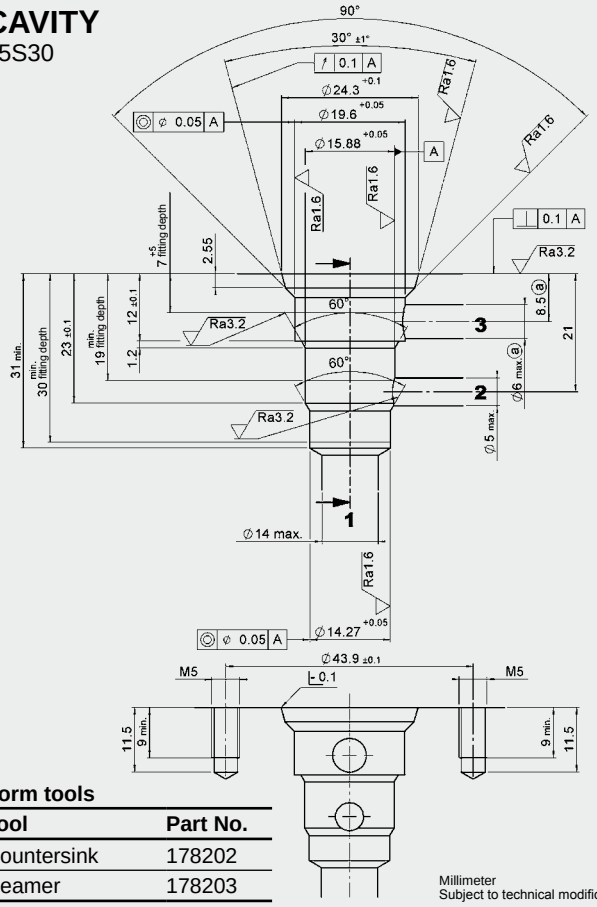




Millimeter
Subject to technical modifications

CAVITY

05S30



Form tools

Tool	Part No.
Countersink	178202
Reamer	178203

Millimeter
Subject to technical modifications

MODEL CODE

WKC 05S30 C – 01 – C – N – 12 DU01

Basic model
Directional spool valve, compact

Cavity
05S30 = slip-in

Function code
C = symbol C

Type
01 = standard

Body and ports
C = slip-in only

Seals
N = NBR (standard)
Others on request

Coil voltage
DC: 12 = 12 Volt (5.2 Ohm)
24 = 24 Volt (21.2 Ohm)

Coil connectors
DN = Deutsch connector, 2-pole, axial
DU = AMP Junior Timer, 2-pole, axial
DU01 = AMP Junior Timer, 2-pole, axial, with anti-surge diode

Standard models

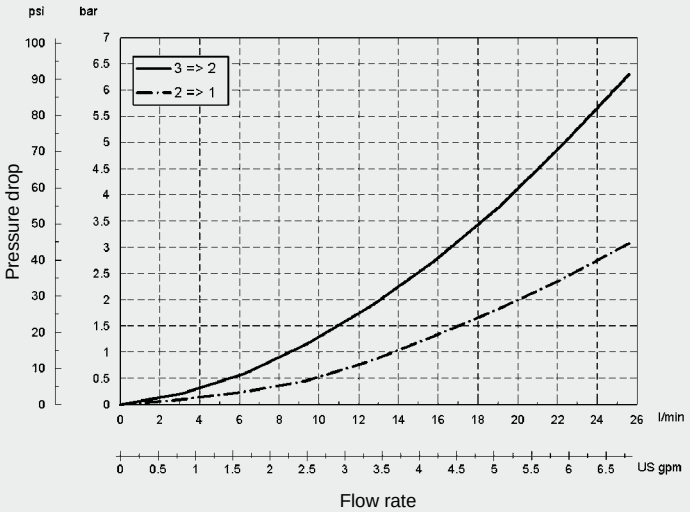
Model code	Part No.
WKC05S30C-01-C-N-12DU	3376841
WKC05S30C-01-C-N-24DU	3376842
WKC05S30C-01-C-N-12DN	3490508
WKC05S30C-01-C-N-24DN	3490476

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
In preparation				

PERFORMANCE

Measured at
ν = 33 mm²/s,
T_{oil} = 46 C



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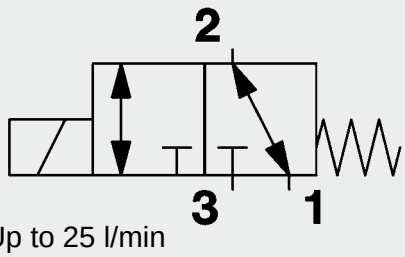
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

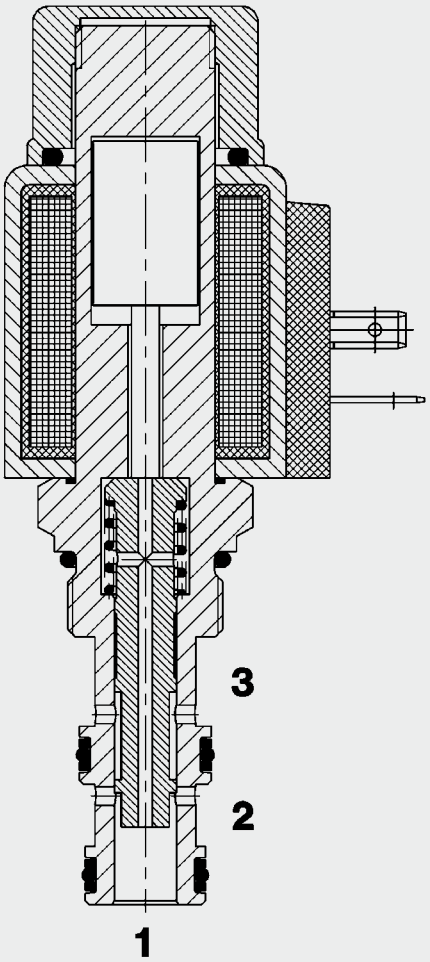
3/2 Solenoid Directional Valve Spool Type, Direct-Acting, Metric Cartridge – 350 bar

WKM08130C-01



Up to 25 l/min
Up to 350 bar

FUNCTION



When de-energized, the valve allows flow from port 2 to 1 or from 1 to 2, while port 3 is closed.

When energized, the valve allows flow from port 2 to 3 or from 3 to 2, while port 1 is closed.

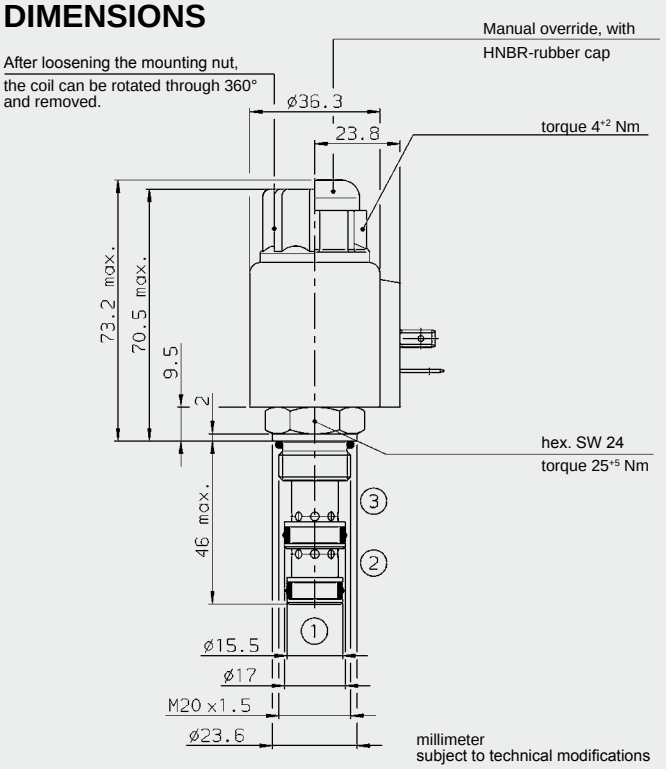
FEATURES

- Coil seals protect the solenoid system
- Wide variety of connectors available
- Hardened and ground valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- External surfaces zinc-plated and corrosion-proof
- Excellent stability throughout the entire flow range
- Compact design enables space-saving installation in connection housings and control blocks

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 25 l/min	
Internal leakage:	max. 150 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	08130	
Weight:	Valve complete	0.37 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	100% (continuous) up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Response time:	Energized:	approx. 40 ms
	De-energized:	approx. 30 ms
Coil type:	Coil…-40-1836	

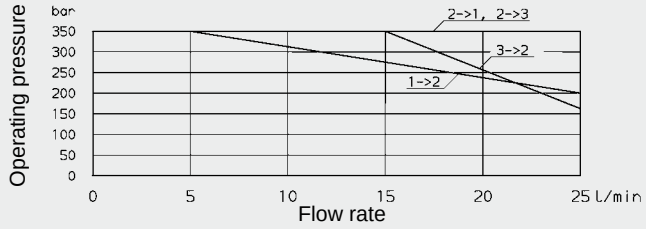
DIMENSIONS



millimeter
subject to technical modifications

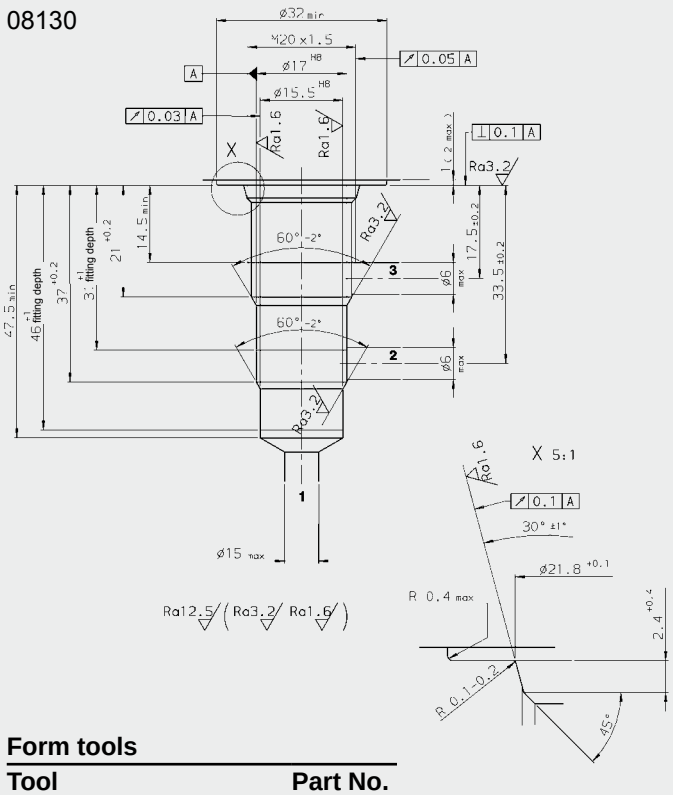
OPERATING LIMITS

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



CAVITY

08130



Form tools

Tool	Part No.
Countersink (shank MK3)	169265
Reamer (shank MK2)	163639

millimeter
subject to technical modifications

MODEL CODE

WKM08130C - 01 M - C - N - 24 DG

Basic model
Directional spool valve, metric

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DT = AMP Junior Timer, 2-pole, radial
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads 475 mm long, 0.75 mm²
DN = Deutsch connector, axial
AC: AG = DIN connector to EN175301-803

Other connectors on request

Standard models

Model code	Part No.
WKM08130C-01-C-N-24DG	3115602
WKM08130C-01-C-N-230AG	3115603

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R08130-01X-01	394488	Steel, zinc-plated	G 3/8	420 bar
R08130-01X-02	394378	Steel, zinc-plated	M 14 x 1.5	420 bar

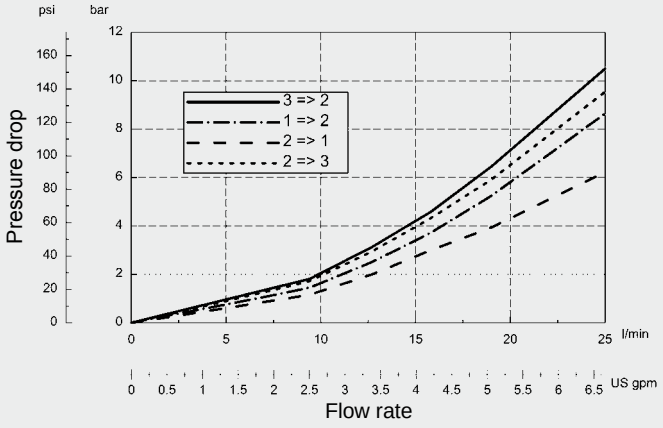
Other bodies on request

Seal kits

Code	Material	Part No.
SEAL KIT 08130-NBR	NBR	3164596
SEAL KIT 08130-FKM	FKM	3183746

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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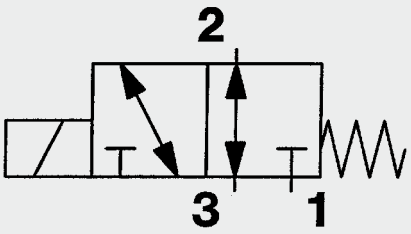
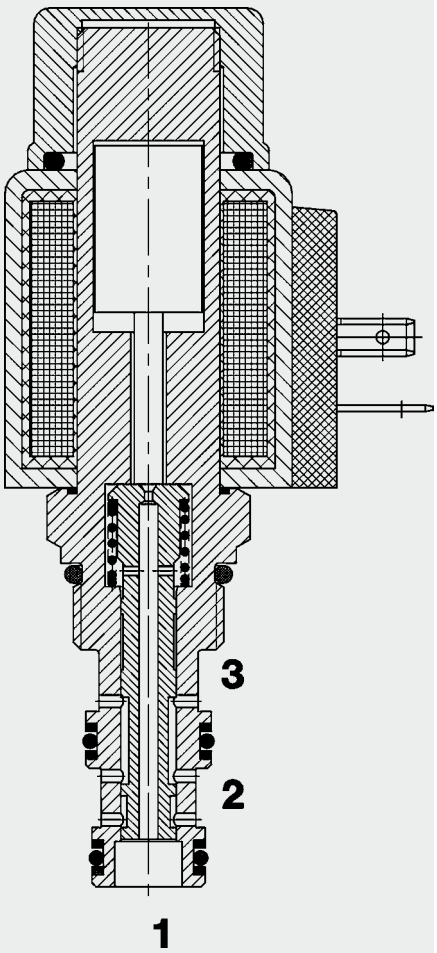


19 l/min
350 bar

3/2 Solenoid Directional Valve UNF Spool Type, Direct-Acting SAE-08 Cartridge – 350 bar

WK08D-01

FUNCTION



When the solenoid coil is de-energized, there is free flow through the valve from port 2 to 3 or from 3 to 2, while port 1 is closed. When energized, the valve allows flow from port 1 to 2 or from port 2 to 1, while blocking flow at port 3.

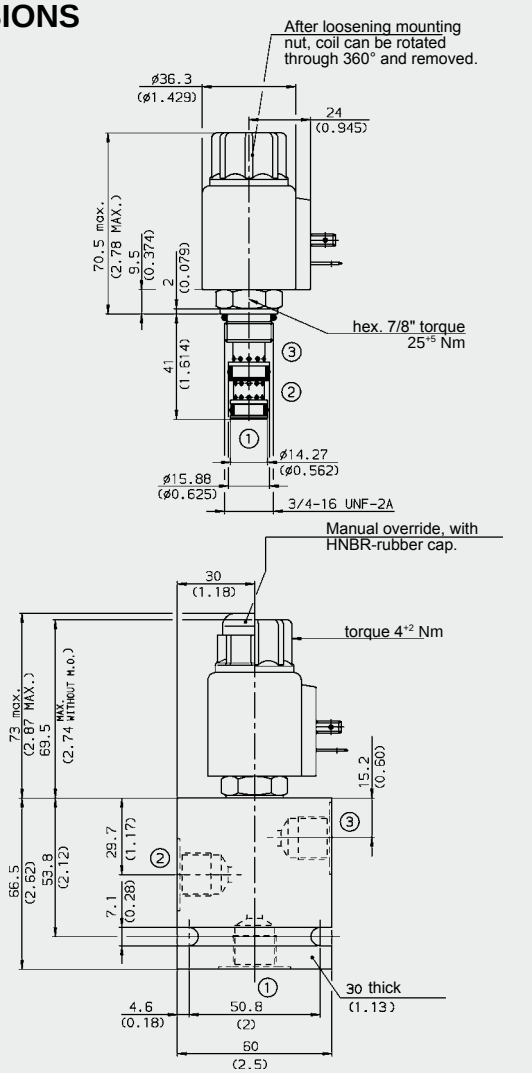
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 19 l/min (Consult HYDAC for flow rates above 207 bar)	
Internal leakage:	90 cm³/min at 250 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-3	
Weight:	Valve complete	0.37 kg
	Coil only	0.19 kg
Electrical data		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

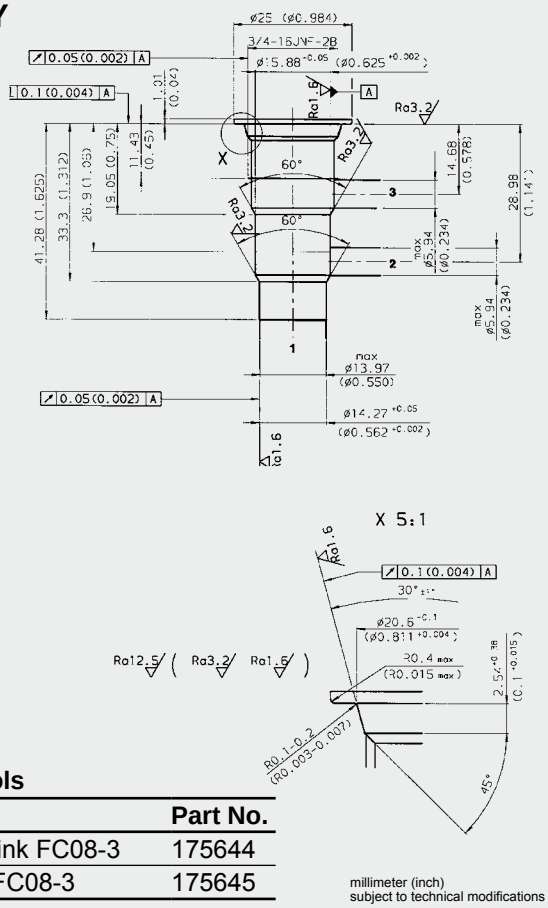
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-3



Form tools

Tool	Part No.
Countersink FC08-3	175644
Reamer FC08-3	175645

millimeter (inch)
subject to technical modifications

MODEL CODE

WK08D – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Code	Part No.
WK08D-01-C-N-24DG	3020504
WK08D-01-C-N-230AG	3043904

Other models on request

* Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH083-SB3	560922	Steel, zinc-plated	G3/8	420 bar
FH083-AB3	3011427	Aluminium, clear anodized	G3/8	210 bar

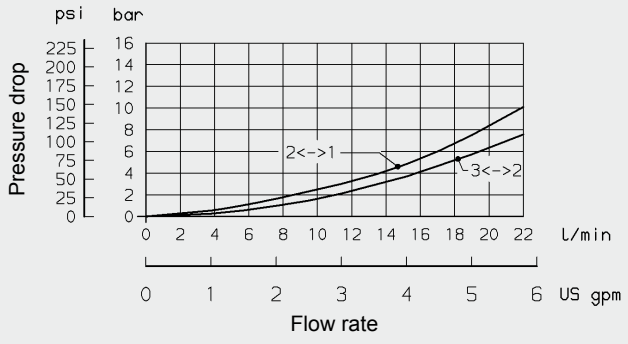
Other line bodies on request

Seal kits

Code	Material	Part No.
FS083-N SEAL KIT	NBR	3054795
FS083-V SEAL KIT	FKM	2591059

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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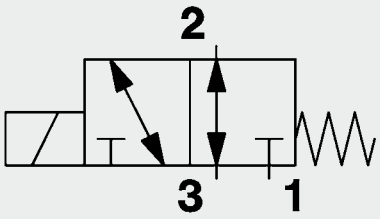
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

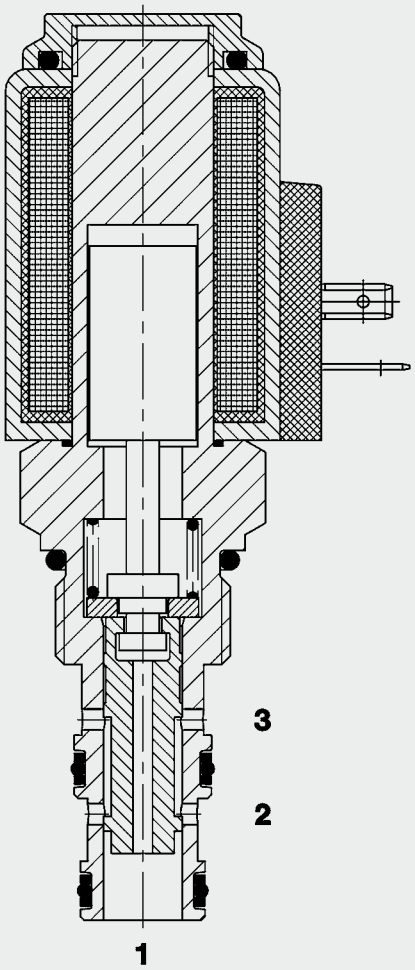
3/2 Solenoid Directional Valve UNF Spool Type, Direct-Acting SAE-10 Cartridge – 350 bar

WK10D-01



max. 32 l/min
max. 350 bar

FUNCTION



When de-energized, the valve allows flow in both directions between ports 3 and 2, while blocking flow at port 1.

When energized, the valve allows flow in both directions between ports 1 and 2, while blocking flow at port 3.

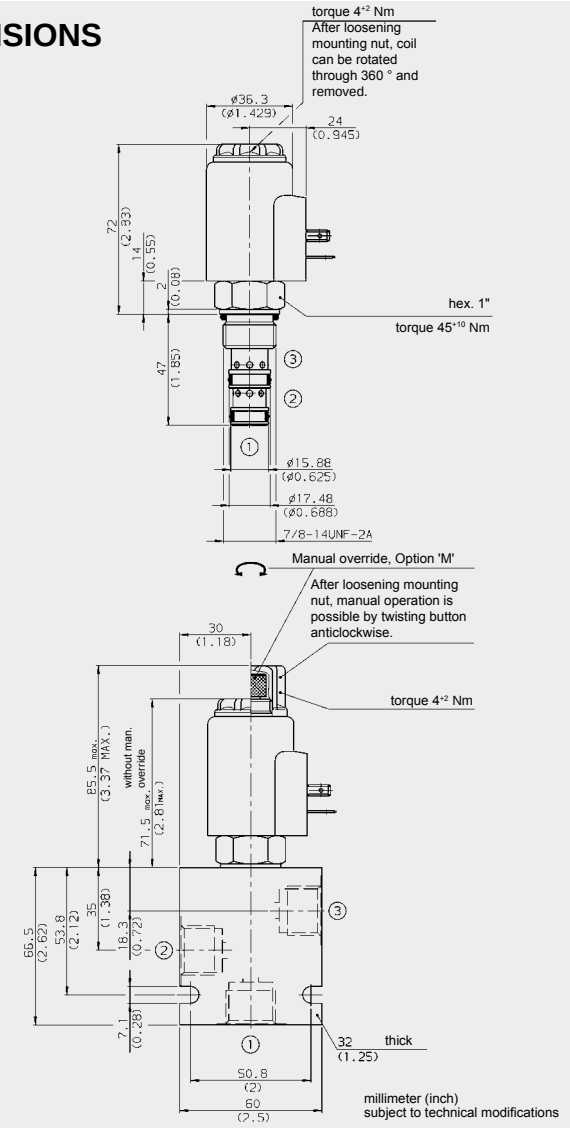
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

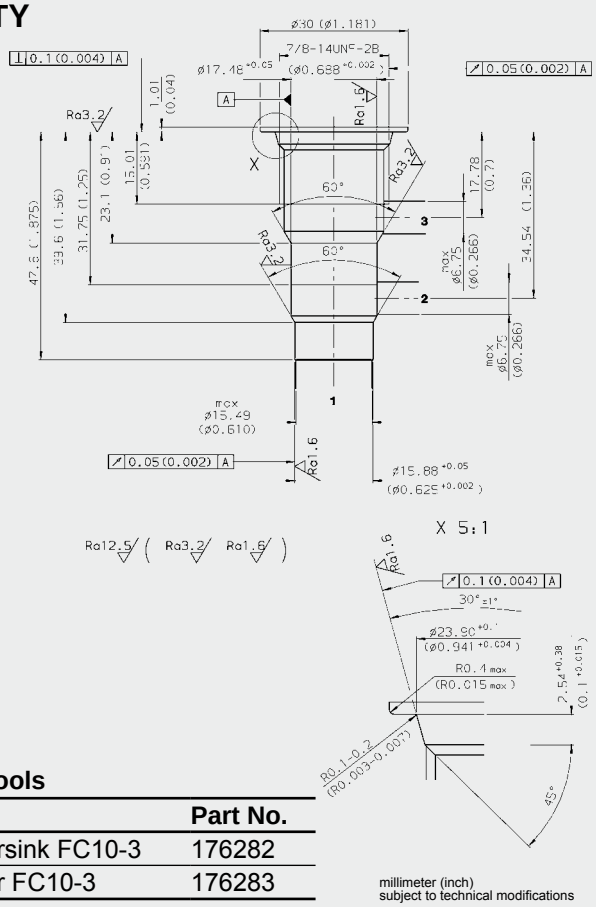
Operating pressure:	max. 350 bar	
Nominal flow:	max. 32 l/min	
Internal leakage:	max. 120 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel/Polyamide
Cavity:	FC10-3	
Weight:	Valve complete	0.47 kg
	Coil only	0.23 kg
Electrical data:		
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil type:	Coil…-50-1836	

DIMENSIONS



CAVITY

FC10-3



Form tools

Tool	Part No.
Countersink FC10-3	176282
Reamer FC10-3	176283

millimeter (inch)
subject to technical modifications

MODEL CODE

WK10D – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages:
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10D-01-C-N-24DG	3095107
WK10D-01-C-N-230AG	3095105

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH103-SB4	3037697	Steel, zinc-plated	G1/2	420 bar
FH103-AB4	3038092	Aluminium, anodized	G1/2	210 bar

Other bodies on request

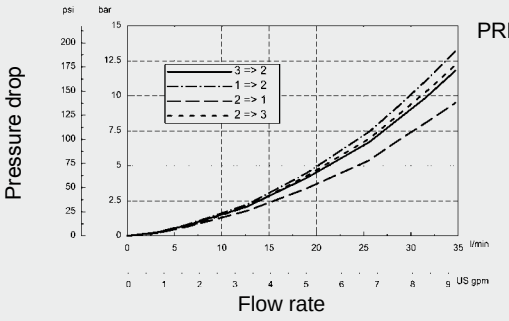
Seal kits

Code	Material	Part No.
FS103-N SEAL KIT	NBR	3071274
FS103-V SEAL KIT	FKM	3049443

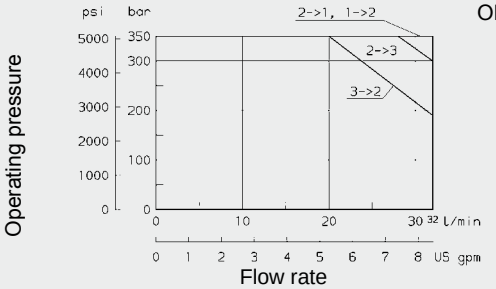
PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C

PRESSURE DROP



OPERATING LIMITS



NOTE

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D-66280 Sulzbach/Saar
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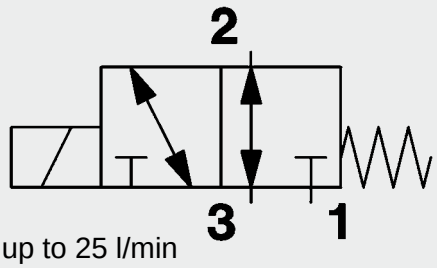
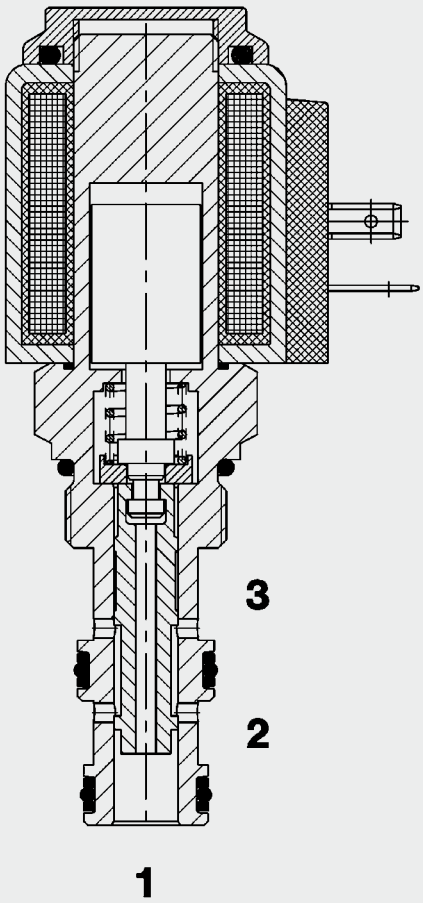


up to 25 l/min
up to 350 bar

3/2 Solenoid Directional Valve Spool Type, Direct-Acting, Metric Cartridge – 350 bar

WKM08130D-01

FUNCTION



When the solenoid coil is not energized, there is free flow through the valve from port 3 to 2 or from 2 to 3, while port 1 is closed.

When the solenoid coil is energized, there is free flow through the valve from port 2 to 1 or from 1 to 2, while port 3 is closed.

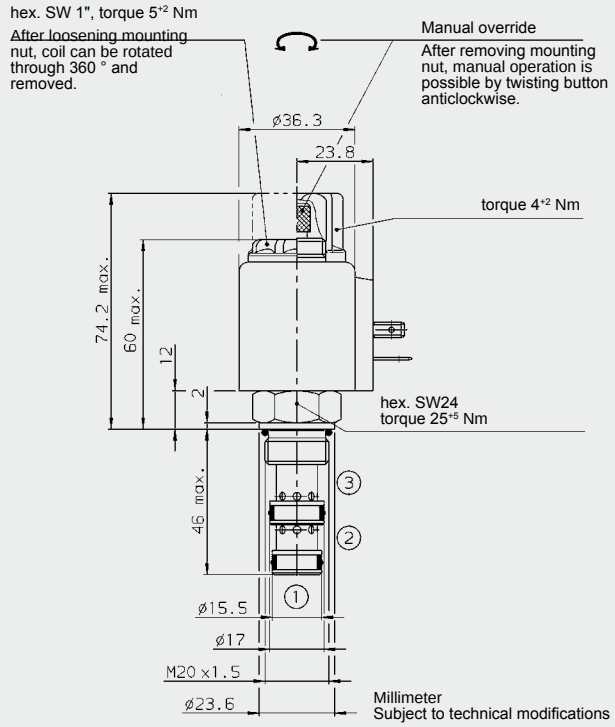
FEATURES

- Coil seals protect the solenoid system
- Wide variety of connectors available
- Hardened and ground control piston to ensure minimal wear and extended service life
- Low pressure drop by CFD optimized flow path
- External surfaces zinc-plated and corrosion proof
- Excellent stability throughout the entire flow range
- Compact design enables space-saving installation in connection housings and control blocks

SPECIFICATIONS

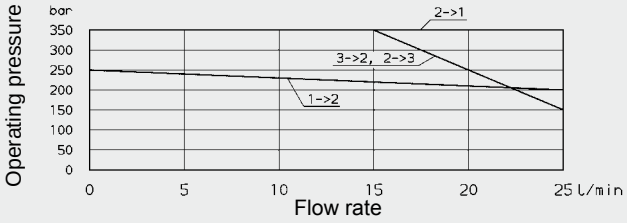
Operating pressure:	max. 350 bar	
Nominal flow:	max. 25 l/min	
Internal leakage:	max. 150 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/03/12 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	08130	
Weight:	Valve complete:	0.37 kg
	Coil only:	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Nominal voltage at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15 % of nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Switching time:	energized:	approx. 40 ms
	de-energized:	approx. 30 ms
Coil type:	Coil…-40-1836	

DIMENSIONS



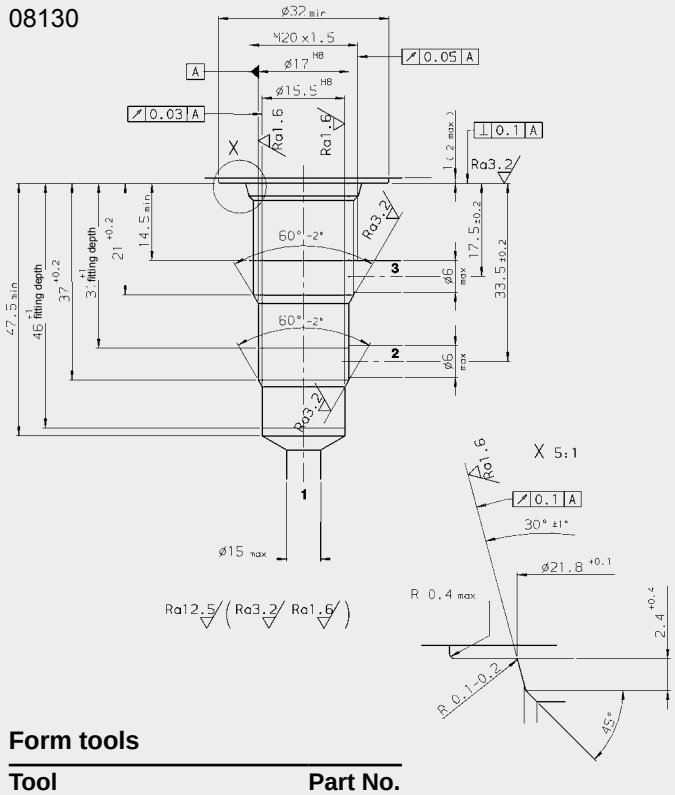
OPERATING LIMITS

ν = 34 mm²/s, T_{oil} = 46 °C



CAVITY

08130



Form tools

Tool	Part No.
Countersink (shank MK3)	169265
Reamer (shank MK2)	163639

Millimeter
Subject to technical modifications

MODEL CODE

WKM08130D – 01 M – C – N – 24 DG

Basic model
Directional spool valve, metric

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge valve only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DT = AMP Junior Timer, 2 pole, radial
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads, 475 mm long; 0.75 mm²
DN = Deutsch connector, axial
AC: AG = DIN connector to EN175301-803
Other connectors on request

Standard models

Model code	Part No.
WKM08130D-01-C-N-24DG	3112956
WKM08130D-01-C-N-230AG	3112957

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R08130-01X-01	394488	Steel, zinc-plated	G3/8	420 bar
R08130-01X-02	394378	Steel, zinc-plated	M 14 x 1.5	420 bar

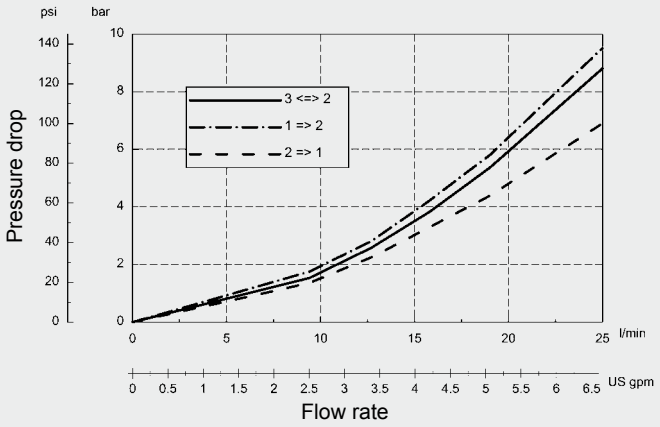
Other housings on request

Seal kits

Code	Material	Part No.
SEAL KIT 08130	NBR	3164596
SEAL KIT 08130	FKM	3183746

PERFORMANCE

measured at ν = 34 mm²/s, T_{oil} = 46 °C



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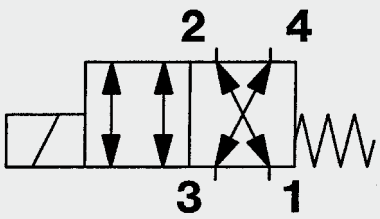
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

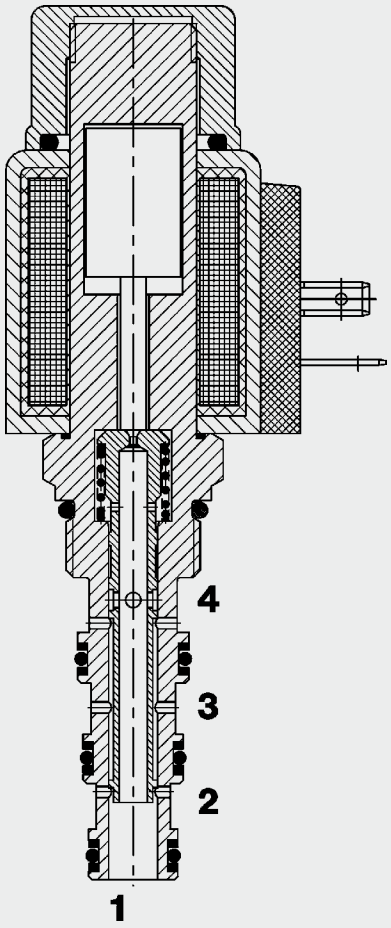
4/2 Solenoid Directional Valve UNF Spool Type, Direct-Acting SAE-08 Cartridge – 350 bar

WK08Y-01



19 l/min
350 bar

FUNCTION



In the de-energized mode, the valve allows flow from port 3 to 4 & port 4 to 3 and from port 2 to 1 & port 1 to 2. When the solenoid coil is energized, the valve allows flow in both directions between ports 3 and 2 and also between ports 4 and 1.

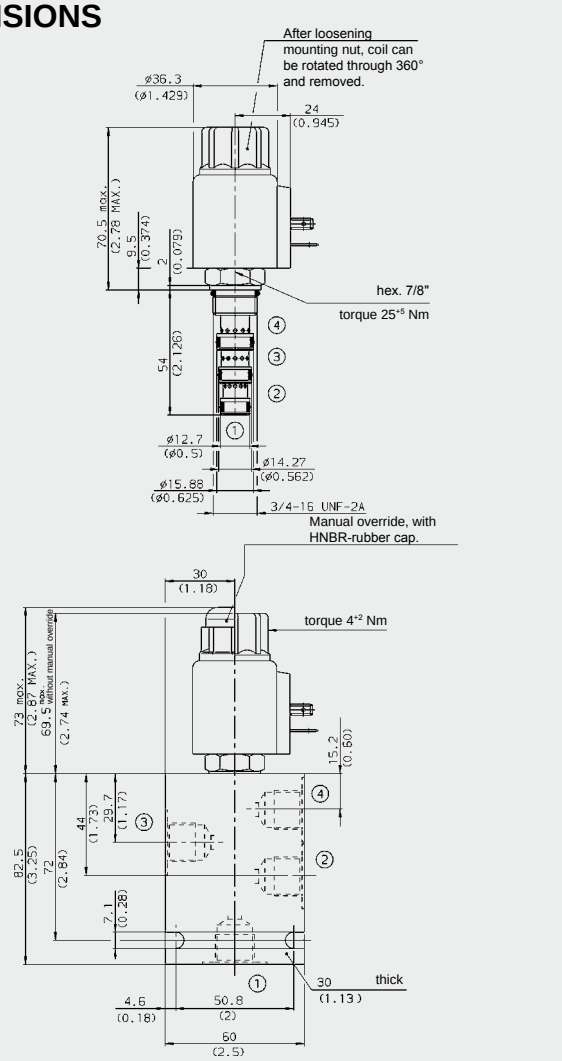
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop by CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	19 l/min (Consult HYDAC for flow ratings above 207 bar)	
Internal leakage:	90 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to 120 °C)
	Back-up rings:	PTFE
	Coil:	steel, polyamide
Cavity:	FC08-4	
Weight:	Valve complete	0.38 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Nominal voltage at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…40-1836	

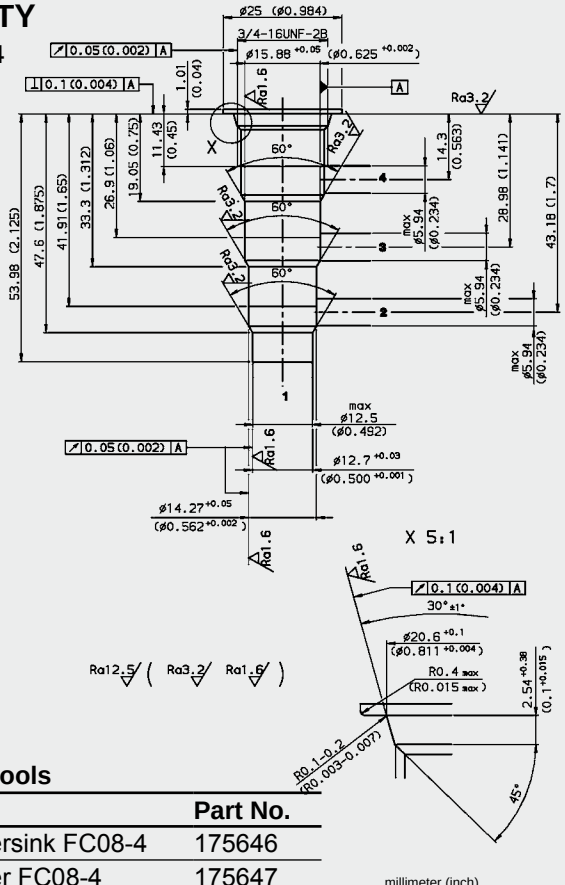
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-4



Form tools

Tool	Part No.
Countersink FC08-4	175646
Reamer FC08-4	175647

millimeter (inch)
subject to technical modifications

MODEL CODE

WK08Y – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages:
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WK08Y-01-C-N-24DG	3020645
WK08Y-01-C-N-230AG	3044084

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH084-SB3	563383	Steel, zinc-plated	G3/8	420 bar
FH084-AB3	3011407	Aluminium, clear anodized	G3/8	210 bar

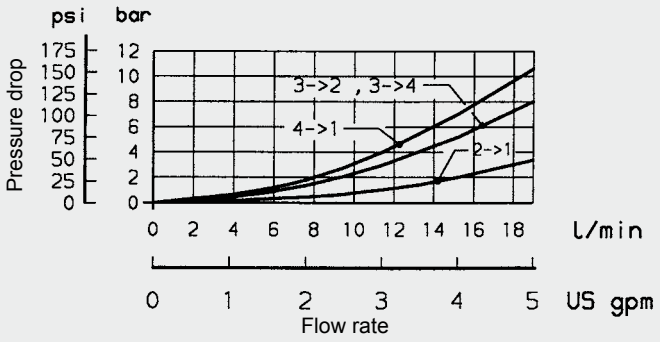
Other models on request

Seal kits

Code	Material	Part No.
FS084-N SEAL KIT	NBR	3071272
FS084-V SEAL KIT	FKM	3071273

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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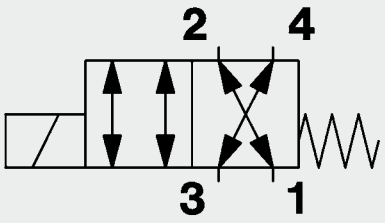
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

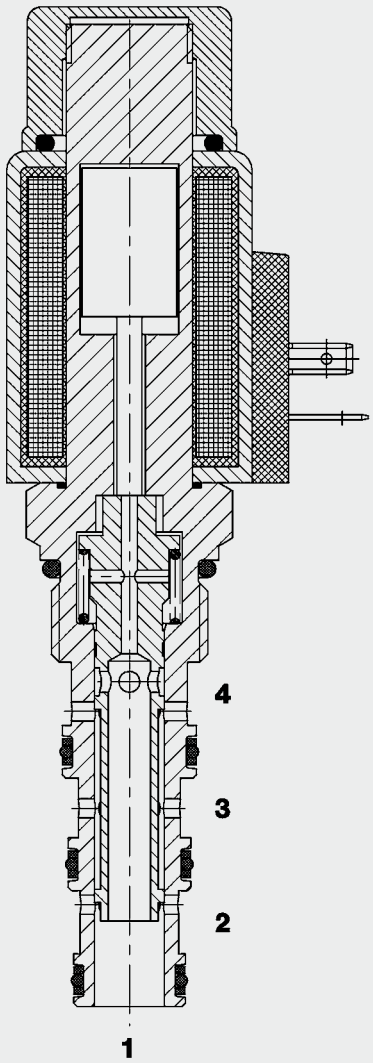
4/2 Solenoid Directional Valve UNF
Spool Type, Direct-Acting
SAE-10 Cartridge – 350 bar

WK10Y-01



32 l/min
350 bar

FUNCTION



When de-energized, the valve allows flow from port 3 to 4 or from 4 to 3 and from port 1 to 2 or 2 to 1.

When energized, the valve allows flow from port 2 to 3 or from 3 to 2 and from port 1 to 4 or 4 to 1.

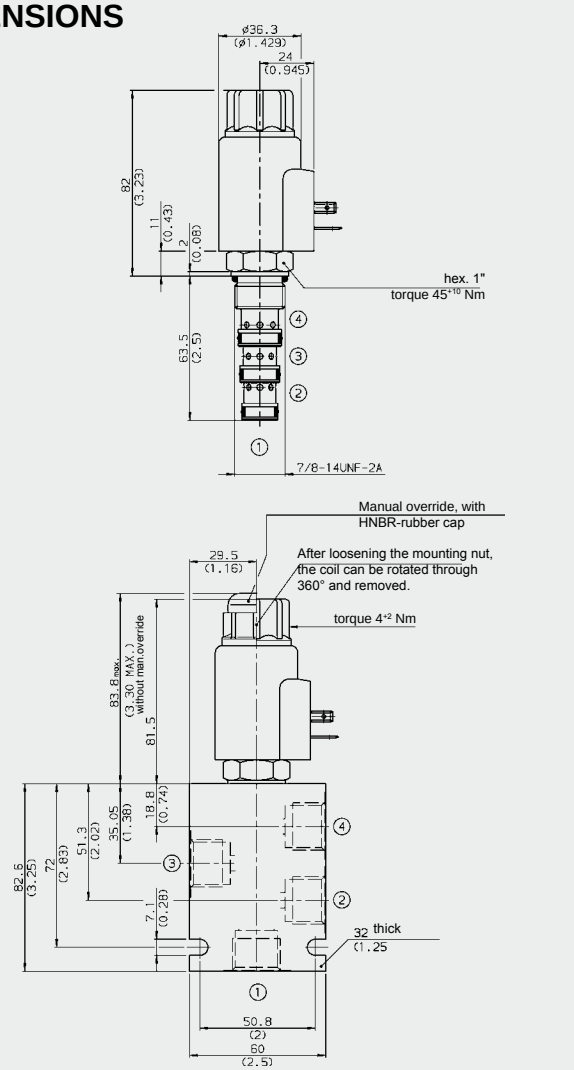
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 32 l/min	
Internal leakage:	max. 120 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-4	
Weight:	Valve complete	0.48 kg
	Coil only	0.23 kg
Electrical data:		
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 50 ms
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-50-1836	

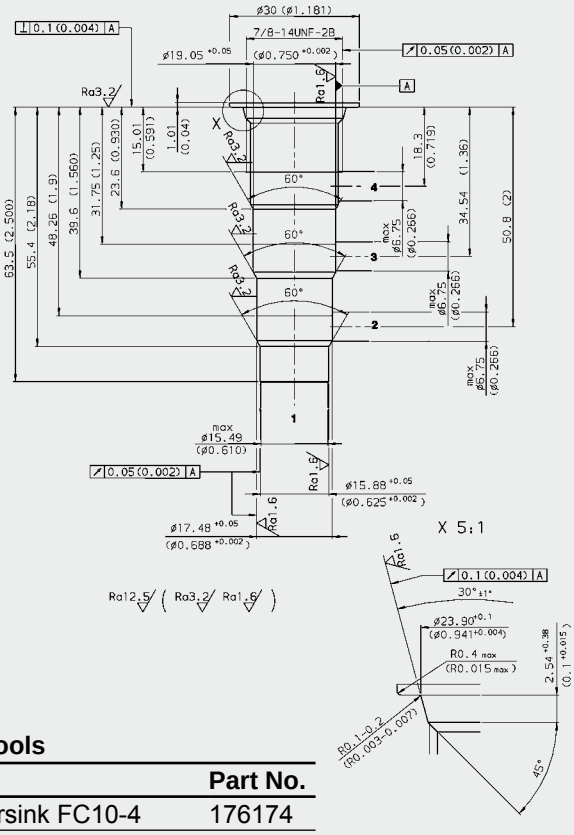
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC10-4



Form tools

Tool	Part No.
Countersink FC10-4	176174
Reamer FC10-4	176175

millimeter (inch)
subject to technical modifications

MODEL CODE

WK10Y - 01 M - C - N - 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL-threaded connection M27x1
DL = 2 flying leads, 457 mm long; 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10Y-01-C-N-12DG	3095462
WK10Y-01-C-N-24DG	3094514
WK10Y-01-C-N-230AG	3094515

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB4	3038097	Aluminium, anodized	G1/2	210 bar

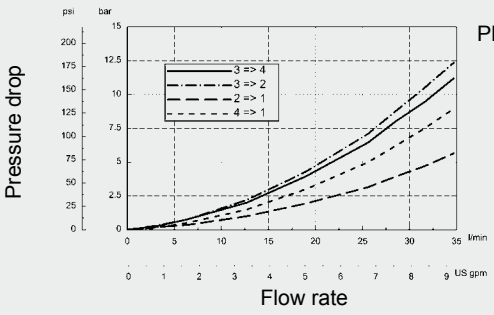
Other bodies on request

Seal kits

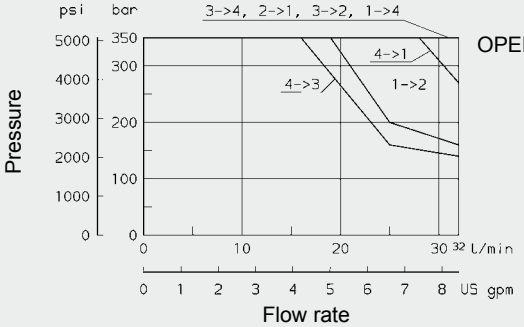
Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

PERFORMANCE

Measured at v = 34 mm²/s, T_{Oil} = 46 °C



PRESSURE DROP



OPERATING LIMITS

NOTE

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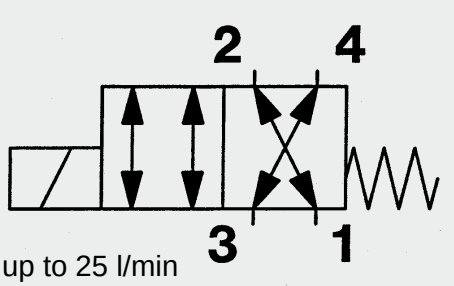
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

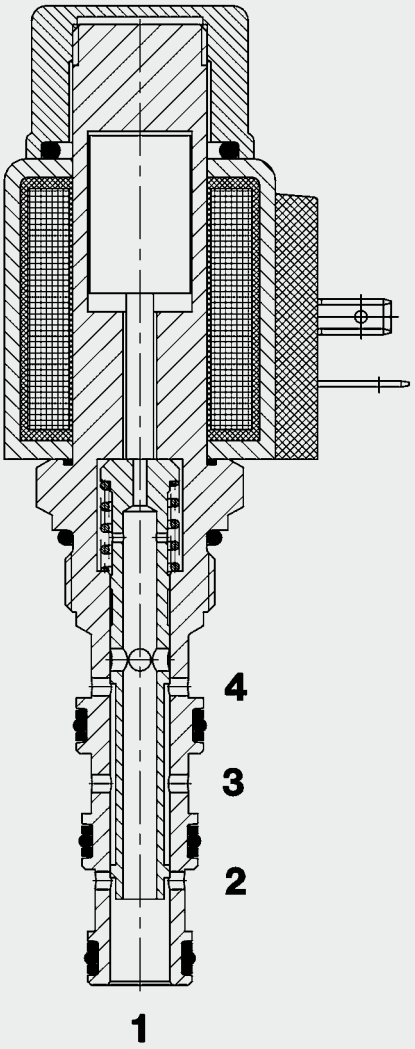


up to 25 l/min
up to 350 bar

4/2 Solenoid Directional Valve Spool Type, Direct-Acting, Metric Cartridge – 350 bar

WKM08140Y-01

FUNCTION



When the solenoid coil is not energized, there is free flow through the valve from port 3 to 4 or 4 to 3 and also from 2 to 1 or 1 to 2.

When the solenoid coil is energized, there is free flow through the valve from port 3 to 2 or from 2 to 3 and also from port 4 to 1 or from 1 to 4.

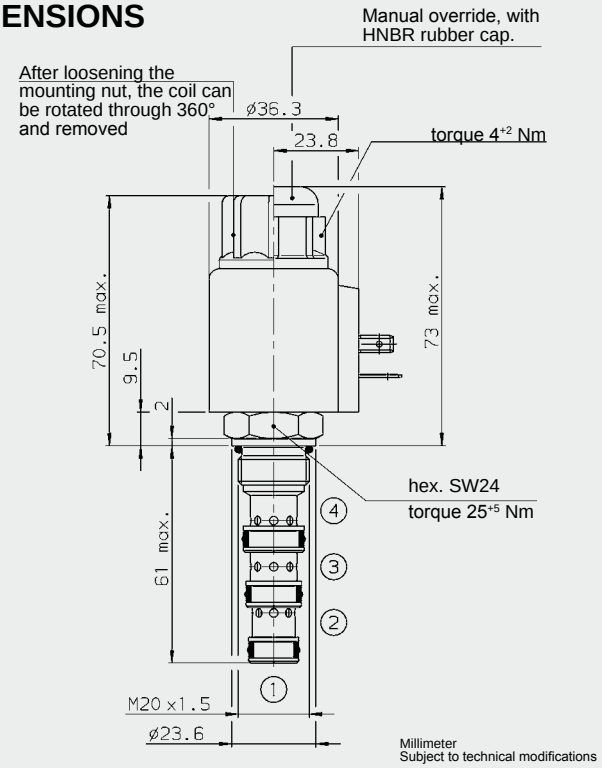
FEATURES

- External surfaces zinc-plated and corrosion proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop by CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 25 l/min	
Internal leakage:	150 cm³/min at 250 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	08140	
Weight:	Valve complete	0.38 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Nominal voltage at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Switching time:	energized:	approx. 40ms
	de-energized:	approx. 30ms
Coil type:	Coil…-40-1836	

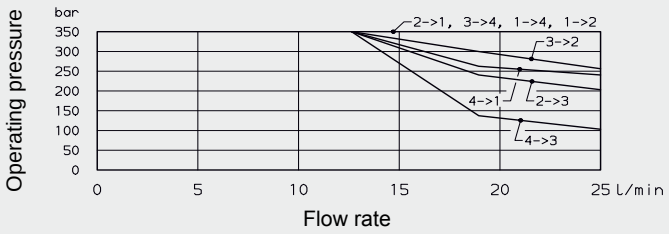
DIMENSIONS



Millimeter
Subject to technical modifications

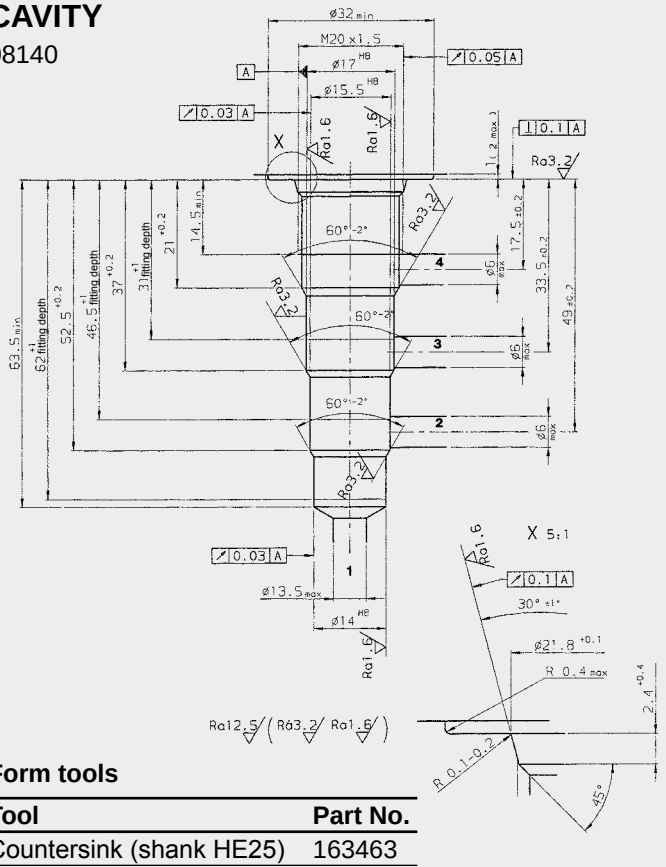
PERFORMANCE

ν = 34 mm²/s, T_{oil} = 46 °C



CAVITY

08140



Form tools

Tool	Part No.
Countersink (shank HE25)	163463
Reamer (shank MK2)	163464

Millimeter
Subject to technical modifications

MODEL CODE

WKM08140Y – 01 M – C – N – 24 DG

Basic model
Directional spool valve, metric

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DT = AMP Junior Timer, 2-pole, radial
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads 475 mm long, 0.75 mm²
DN = Deutsch connector, axial
AC: AG = DIN connector to EN175301-803

Other connectors on request

Standard models

Model code	Part No.
WKM08140Y-01-C-N-24DG	3086566
WKM08140Y-01-C-N-230AG	3091791

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R08140-01X-01	394473	Steel, zinc-plated	G3/8	420 bar
R08140-01X-01	393535	Steel, zinc-plated	M 14 x 1.5	420 bar

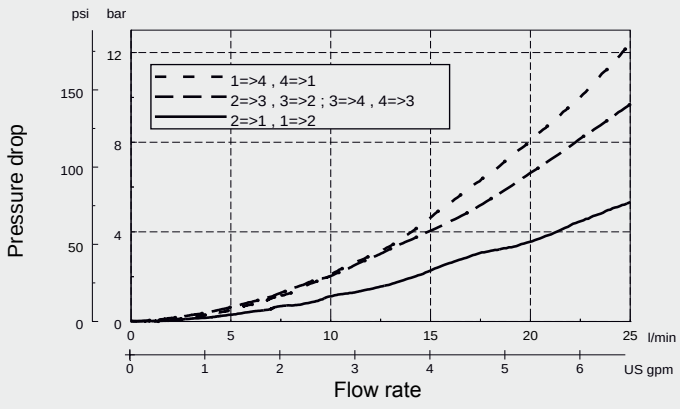
Other housings on request

Seal kits

Code	Material	Part No.
SEAL KIT WKM08140.-..-C-N	NBR	3098029

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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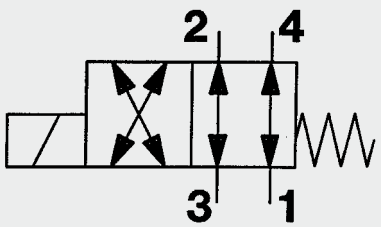
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

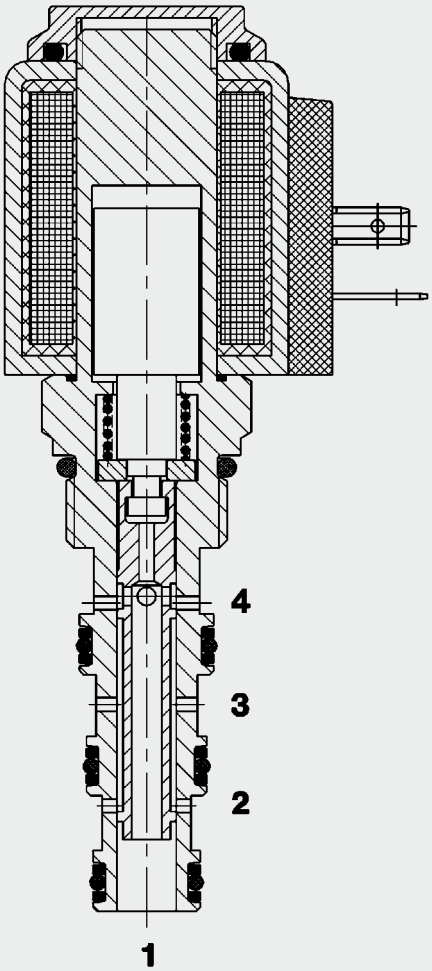
4/2 Solenoid Directional Valve Spool Type, Direct-Acting SAE-08 Cartridge – 350 bar

WK08X-01



17 l/min
350 bar

FUNCTION



When de-energized, the valve allows flow from port 3 to 2 or from 2 to 3 and from port 4 to 1 or 1 to 4. When the solenoid coil is energized, there is free flow through the valve from port 3 to 4 or from 4 to 3 and also from port 2 to 1 or from 1 to 2.

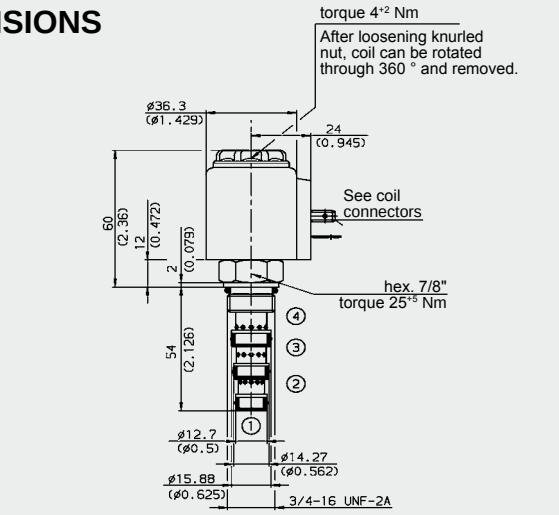
FEATURES

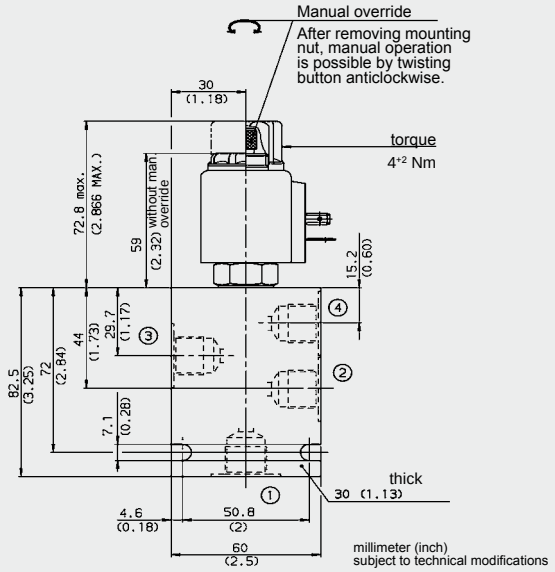
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 17 l/min Consult HYDAC for flow ratings above 207 bar	
Internal leakage:	90 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-4	
Weight:	Valve complete	0.38 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

DIMENSIONS

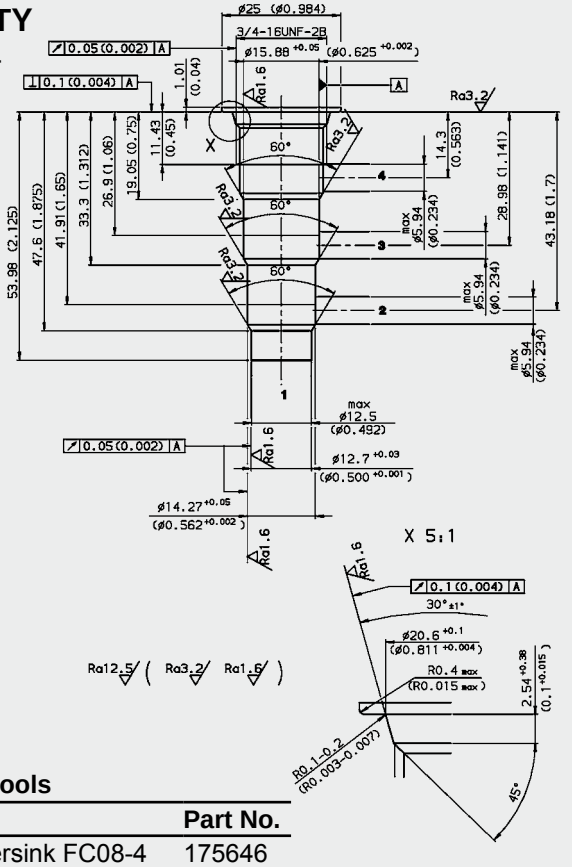




millimeter (inch)
subject to technical modifications

CAVITY

FC08-4



Form tools

Tool	Part No.
Countersink FC08-4	175646
Reamer FC08-4	175647

millimeter (inch)
subject to technical modifications

MODEL CODE

WK08X – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model Code	Part No.
WK08X-01-C-N-24DG	3021149
WK08X-01-C-N-230AG	3044054

Other housings on request

*Standard in-line bodies

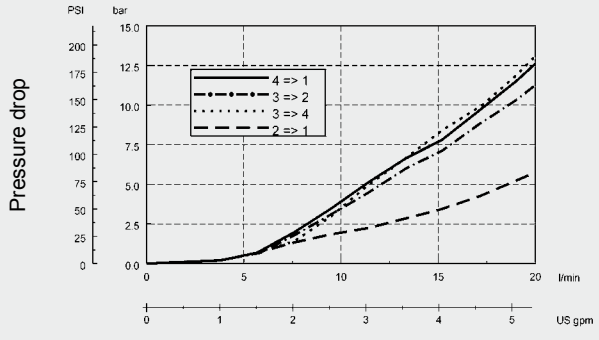
Code	Part No.	Material	Ports	Pressure
FH084-SB3	563383	Steel, zinc-plated	G3/8	420 bar
FH084-AB3	3011407	Aluminium, anodized	G3/8	210 bar

Seal kits

Code	Material	Part No.
FS084-N SEAL KIT	NBR	3071272
FS084-V SEAL KIT	FKM	3071273

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



Note

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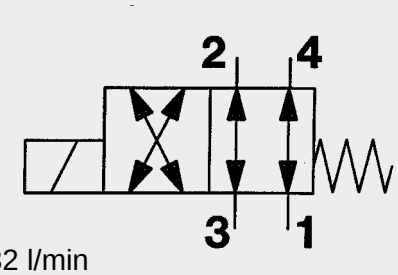
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

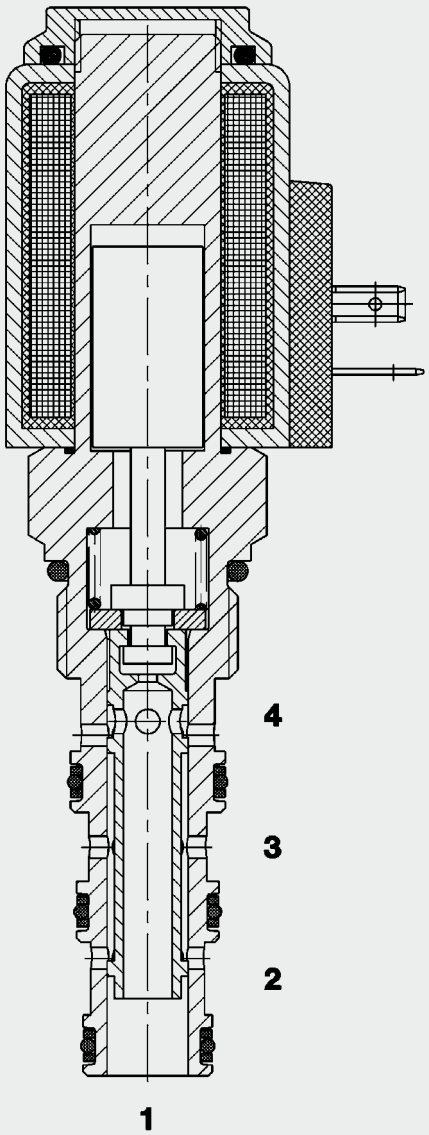


32 l/min
350 bar

4/2 Solenoid Directional Valve UNF Spool Type, Direct-Acting SAE-10 Cartridge – 350 bar

WK10X-01

FUNCTION



When the solenoid coil is de-energised, the valve allows flow in both directions between ports 3 and 2 and in both directions between ports 4 and 1. When the solenoid coil is energized, there is free flow through the valve in both directions between ports 3 and 4 and also between ports 1 and 2.

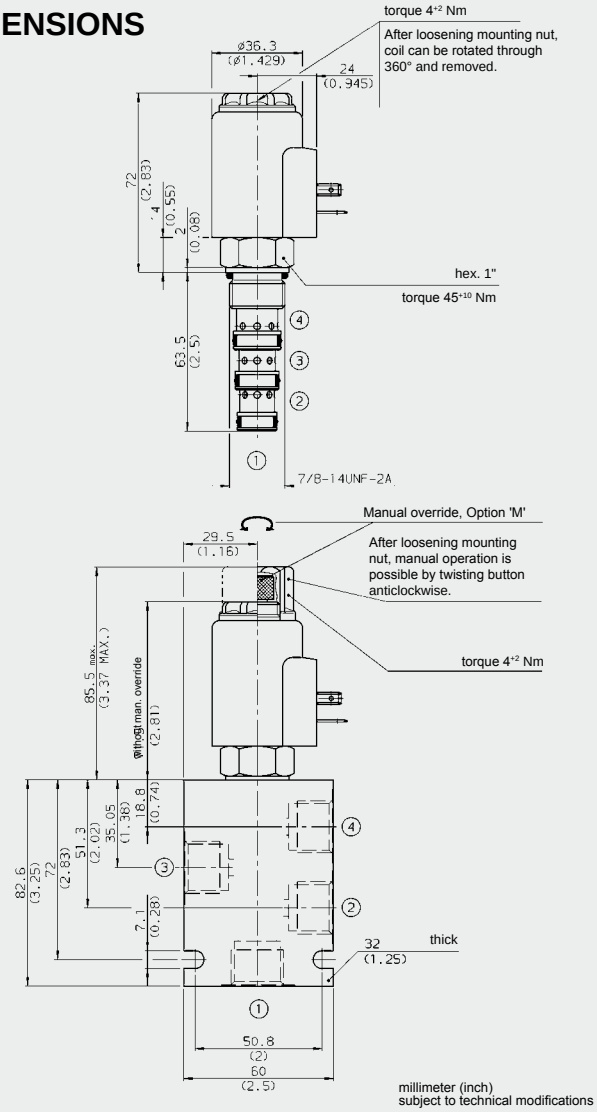
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connections available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 32 l/min	
Internal leakage:	max. 100 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
Installation:	No orientation restrictions	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel/Polyamide
Cavity:	FC10-4	
Weight:	Valve complete	0.48 kg
	Coil only	0.23 kg
Electrical data:		
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Coil type:	Coil…-50-1836	

DIMENSIONS



millimeter (inch)
subject to technical modifications

MODEL CODE

WK10X - 01 M - C - N - 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10X-01-C-N-24DG	3079851
WK10X-01-C-N-230AG	3096314

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB3	3038097	Aluminium, anodized	G1/2	210 bar

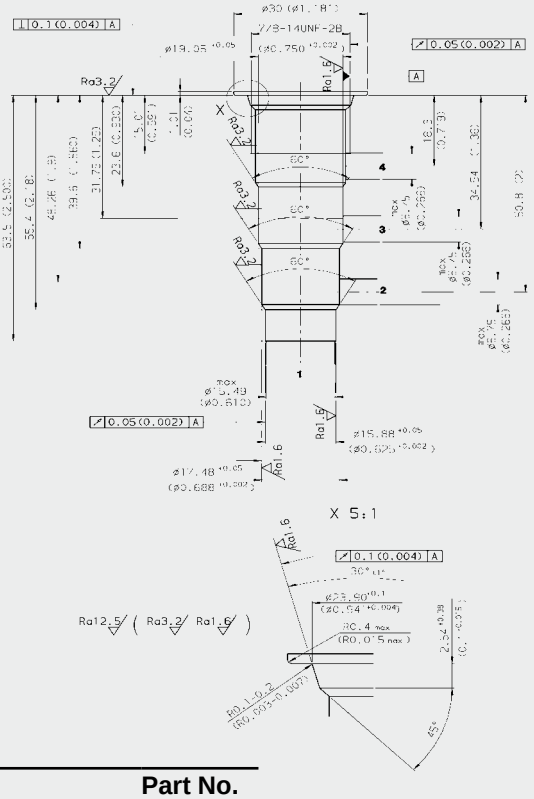
Other housings on request

Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

CAVITY

FC10-4



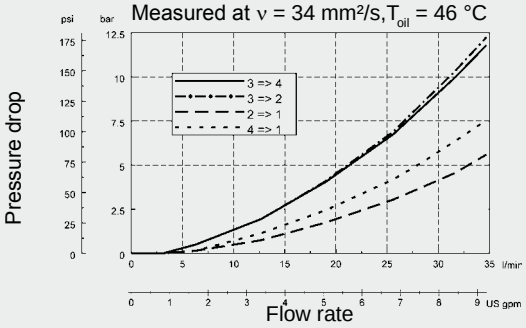
Form tools

Tool	Part No.
Countersink FC10-4	176174
Reamer FC10-4	176175

millimeter (inch)
subject to technical modifications

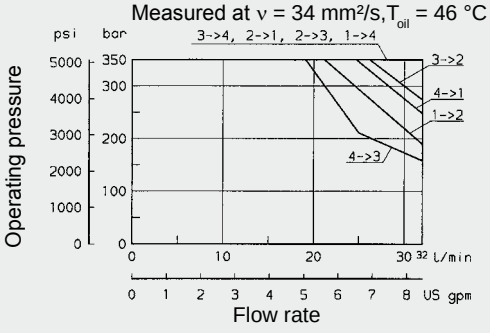
PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



OPERATING LIMITS

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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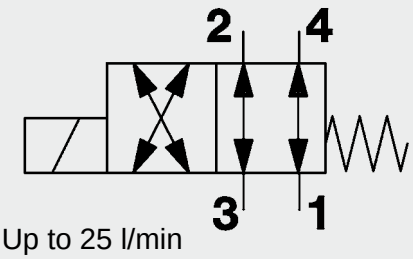
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

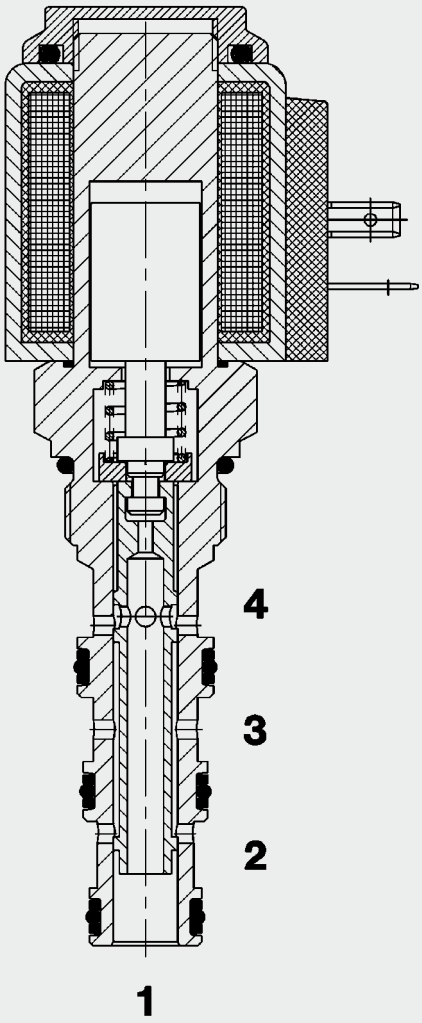


Up to 25 l/min
Up to 350 bar

4/2 Solenoid Directional Valve Spool Type, Direct-Acting, Metric Cartridge – 350 bar

WKM08140X-01

FUNCTION



When the solenoid coil is de-energised, the valve allows flow from port 3 to 2 or 2 to 3 and from port 4 to 1 and 1 to 4.

When energised, the valve allows flow from port 3 to 4 or 4 to 3 and from port 2 to 1 and 1 to 2.

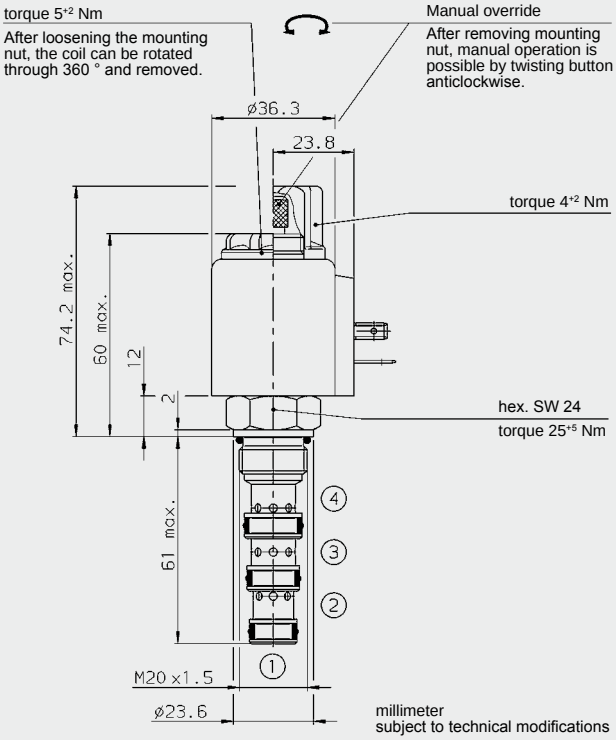
FEATURES

- Coil seals protect the solenoid system
- Wide variety of connectors available
- Hardened and ground control spool to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- External surfaces zinc-plated and corrosion-proof
- Excellent stability throughout the entire flow range
- Compact design enables space-saving installation in connection housings and control blocks

SPECIFICATIONS

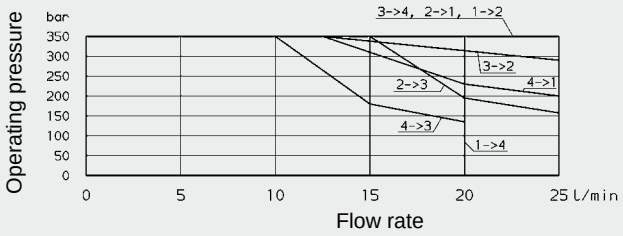
Operating pressure:	max. 350 bar	
Nominal flow:	max. 25 l/min	
Internal leakage:	max. 150 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	08140	
Weight:	Valve complete	0.38 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	100% (continuous) up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

DIMENSIONS



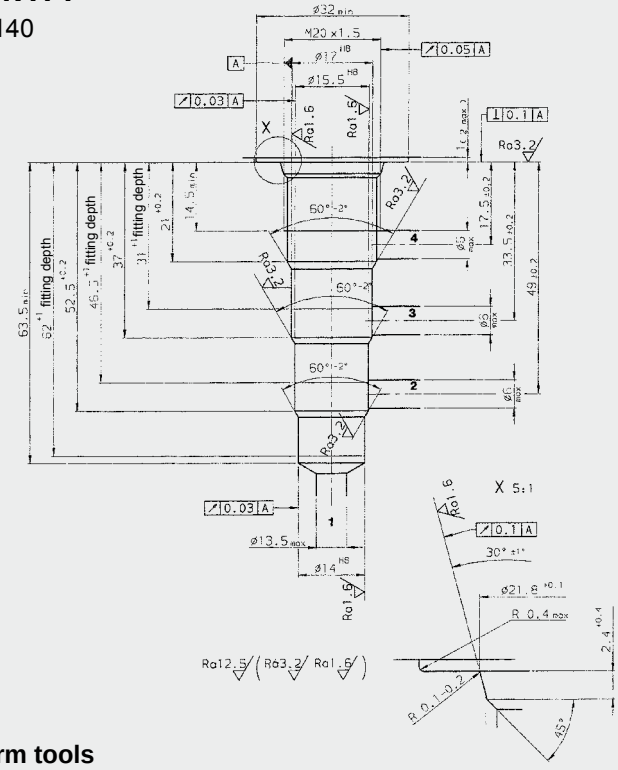
OPERATING LIMITS

ν = 34 mm²/s, T_{oil} = 46 °C



CAVITY

08140



Form tools

Tool	Part No.
Countersink (shank HE25)	163463
Reamer (shank MK2)	163464

millimeter
subject to technical modifications

MODEL CODE

WKM08140X – 01 M – C – N – 24 DG

Basic model
Directional spool valve, metric

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Nominal voltage for actuating solenoid
DC voltages:
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DT = AMP Junior Timer, 2 pole, radial
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads, 475 mm long; 0.75 mm²
DN = Deutsch connector, axial
AC: AG = DIN connector to EN175301-803

Other connectors on request

Standard models

Model code	Part No.
WKM08140X-01-C-N-24DG	3121197
WKM08140X-01-C-N-230AG	3121258

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R08140-01X-01	394473	Steel, zinc-plated	G 3/8	420 bar
R08140-01X-02	393535	Steel, zinc-plated	M 14 x 1.5	420 bar

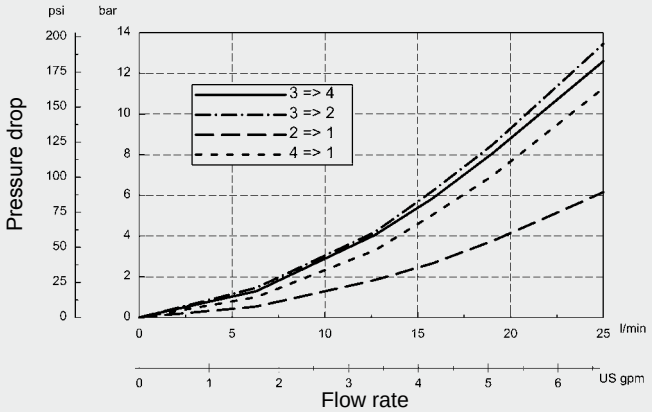
Other bodies on request

Seal kits

Code	Material	Part No.
SEAL KIT WKM08140.-..-C-N-	NBR	3098029

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



NOTE

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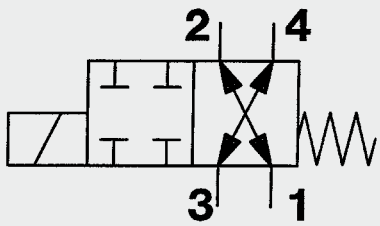
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

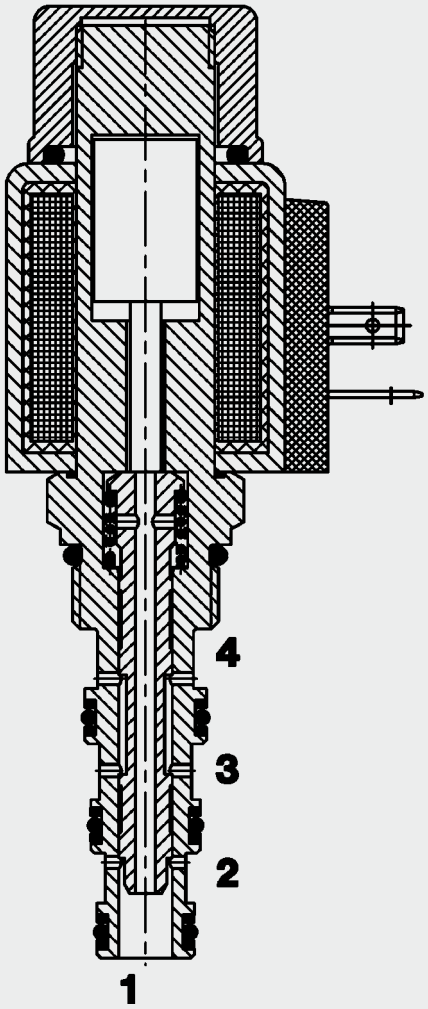


19 l/min
350 bar

4/2 Solenoid Directional Valve UNF Spool Type - Direct-Acting SAE-08 Cartridge – 350 bar

WK08A-01

FUNCTION



When the solenoid coil is not energized, there is free flow through the valve from port 3 to 4 or from 4 to 3 and also from port 2 to 1 or from 1 to 2.
In the energized mode, the valve blocks flow in all directions.

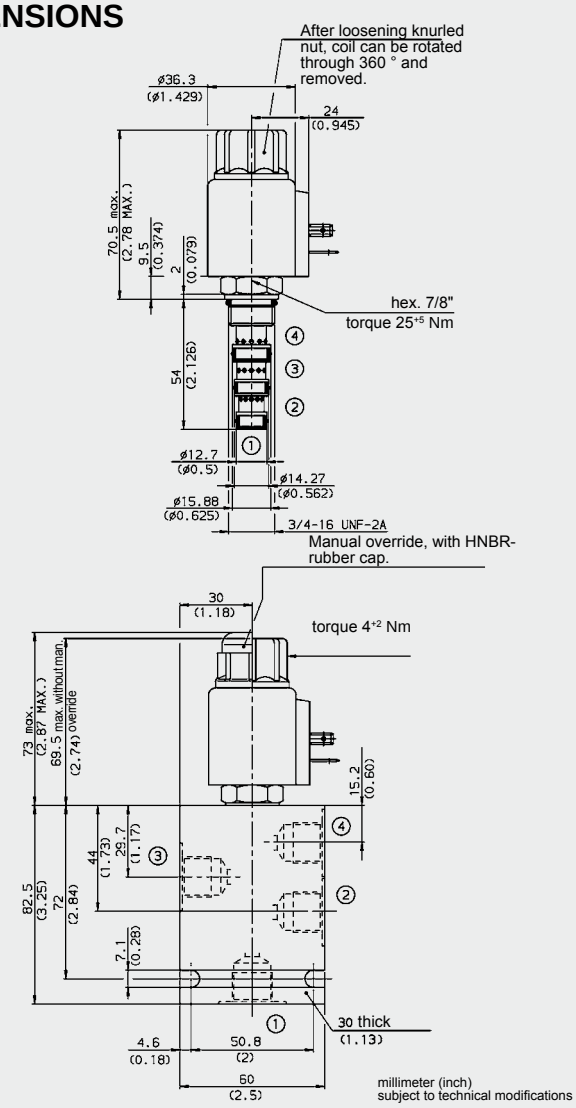
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

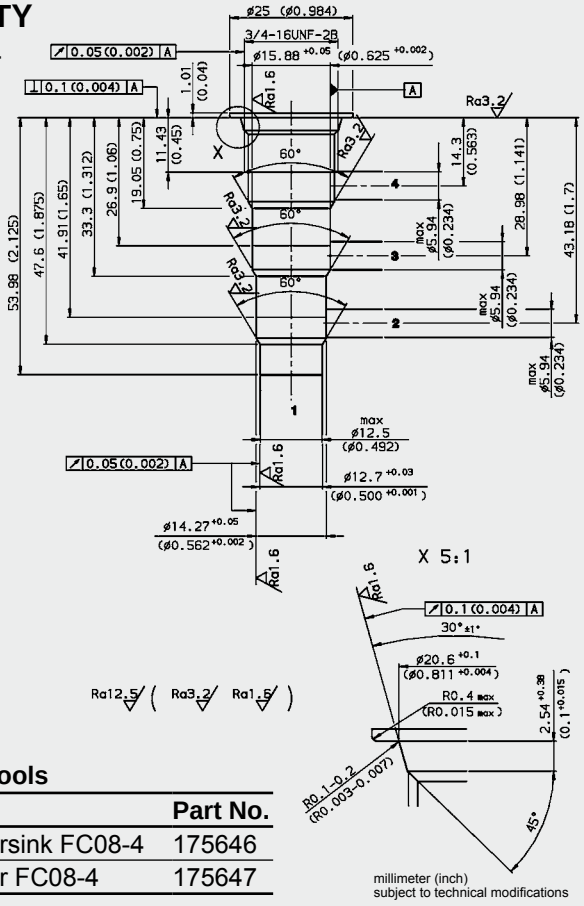
Operating pressure:	max. 350 bar	
Nominal flow:	19 l/min (Consult HYDAC for flow rates above 207 bar)	
Internal leakage:	max. 90 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temp. range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel/Polyamide
Cavity:	FC08-4	
Weight:	Valve complete	0.38 kg
	Coil only	0.19 kg
Electrical data		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

DIMENSIONS



CAVITY

FC08-4



Form tools

Tool	Part No.
Countersink FC08-4	175646
Reamer FC08-4	175647

MODEL CODE

WK08A – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK08A-01-C-N-24DG	3022017
WK08A-01-C-N-230AG	3043866

Other models on request

* Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH084-SB3	563383	Steel, zinc-plated	G3/8	420 bar
FH084-AB3	3011407	Aluminium, clear anodized	G3/8	210 bar

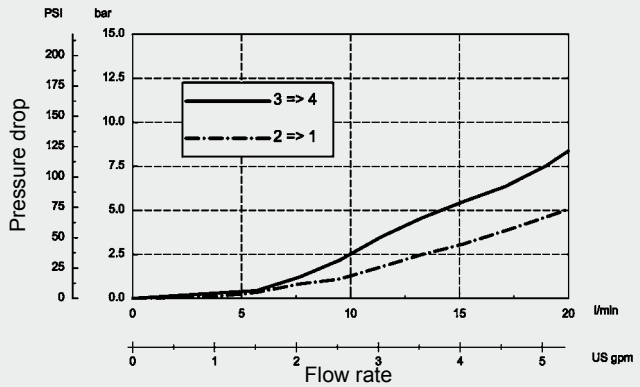
Other housings on request

Seal kits

Code	Material	Part No.
FS084-N SEAL KIT	NBR	3071272
FS084-V SEAL KIT	FKM	3071273

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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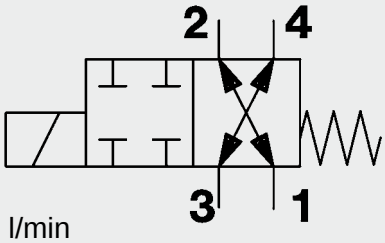
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

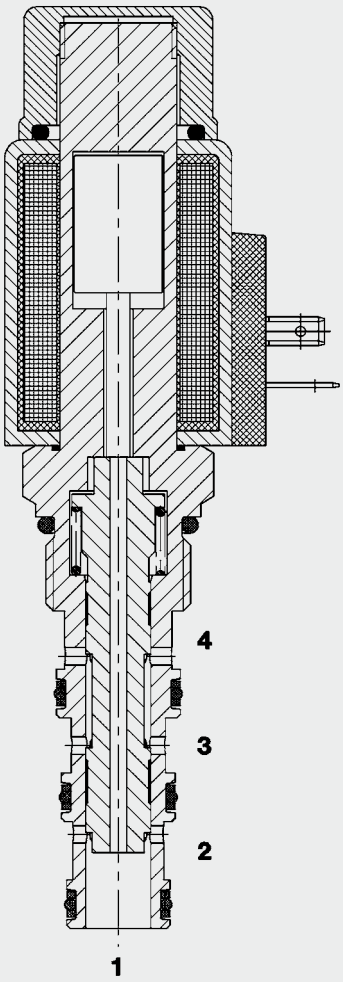
4/2 Solenoid Directional Valve UNF
Spool Type, Direct Acting
SAE-10 Cartridge – 350 bar

WK10A-01



32 l/min
350 bar

FUNCTION



When de-energized, the valve allows flow in both directions between ports 3 and 4 and also in both directions between ports 1 and 2.

When the solenoid coil is energized, the valve is closed in both directions.

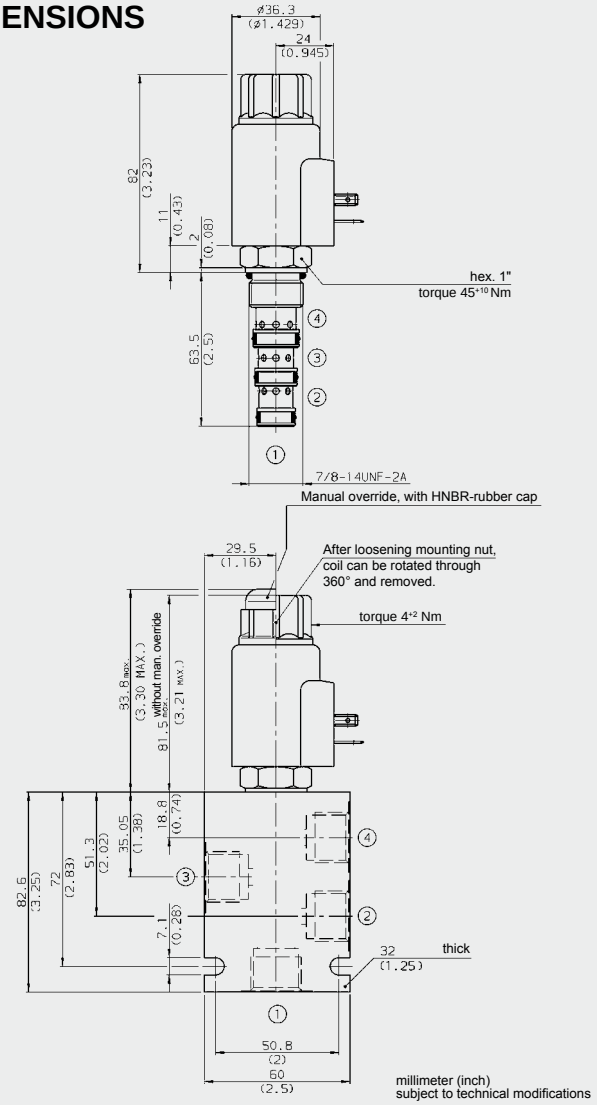
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

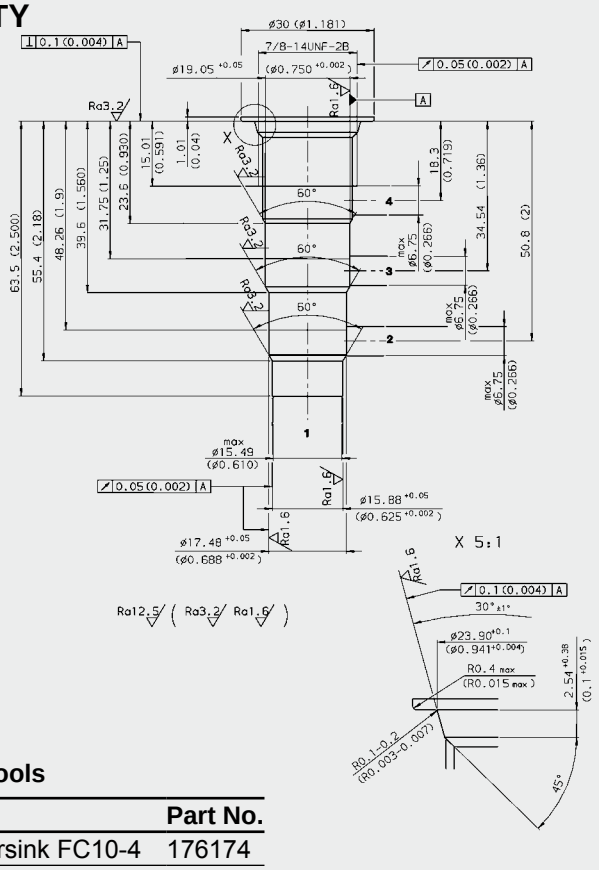
Operating pressure:	max. 350 bar	
Nominal flow:	max. 32 l/min	
Internal leakage:	max. 160 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-3	
Weight:	Valve complete	0.48 kg
	Coil only	0.23 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-50-1836	

DIMENSIONS



CAVITY

FC10-4



Form tools

Tool	Part No.
Countersink FC10-4	176174
Reamer FC10-4	176175

MODEL CODE

WK10A - 01 M - C - N - 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10A-01-C-N-24DG	3098530
WK10A-01-C-N-230AG	3098531

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	350 bar
FH104-AB4	3038097	Aluminium, anodized	G1/2	210 bar

Other bodies on request

Seal kits

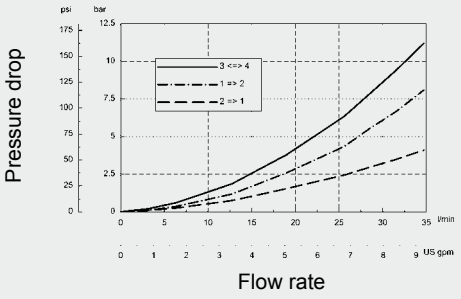
Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

Other models on request

PERFORMANCE

Measured at ν = 34 mm²/s T_{Oil} = 46 °C

PRESSURE DROP



Flow rate

OPERATING LIMITS

Flow rate

NOTE

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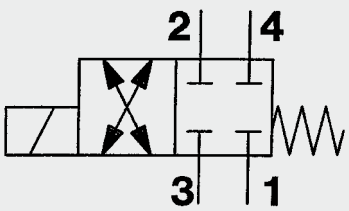
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

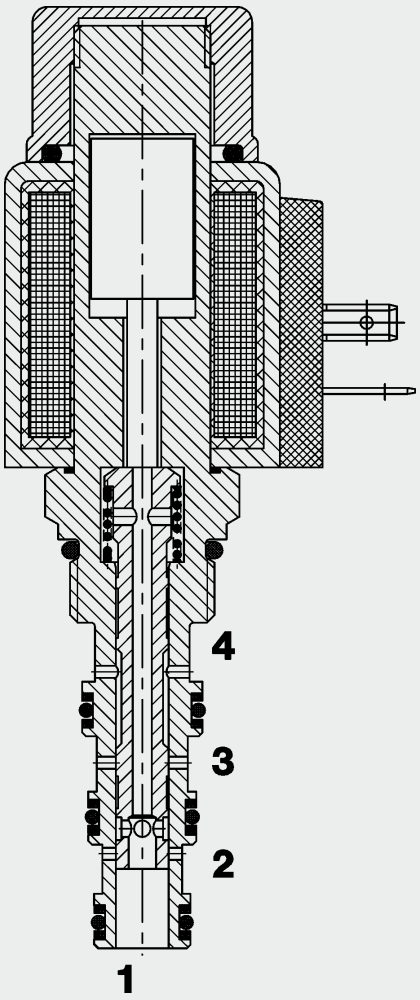
4/2 Solenoid Directional Valve UNF
Spool Type, Direct-Acting
SAE-08 Cartridge – 350 bar

WK08Z-01



19 l/min
350 bar

FUNCTION



When the solenoid coil is de-energized, all ports are closed. When the solenoid coil is energized, there is free flow through the valve from port 1 to 2 or from 2 to 1 and also from port 3 to 4 or from 4 to 3.

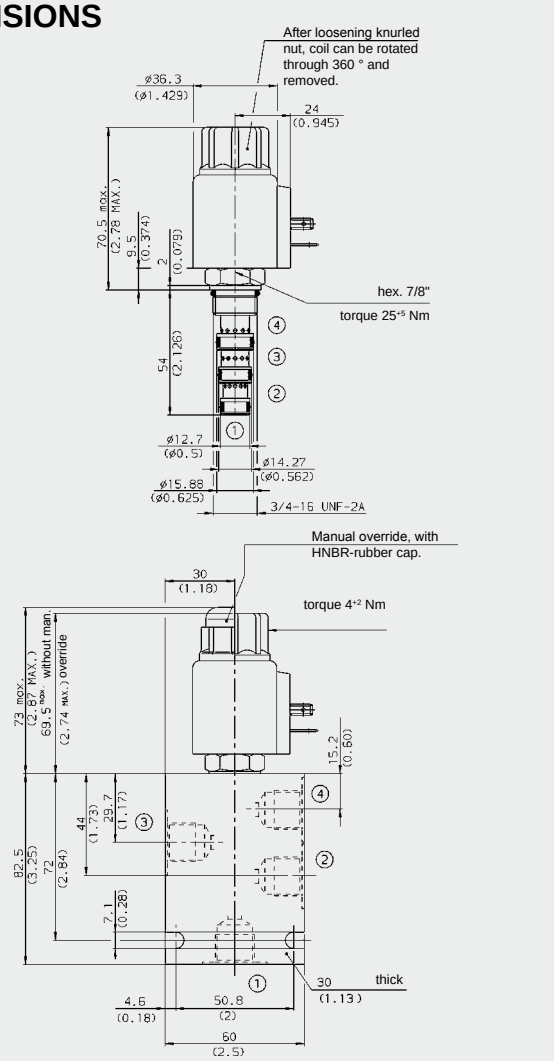
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 19 l/min (Consult HYDAC for flow rates above 207 bar)	
Internal leakage:	90 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-4	
Weight:	Valve complete	0.38 kg
	Coil only	0.19 kg
Electrical data		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

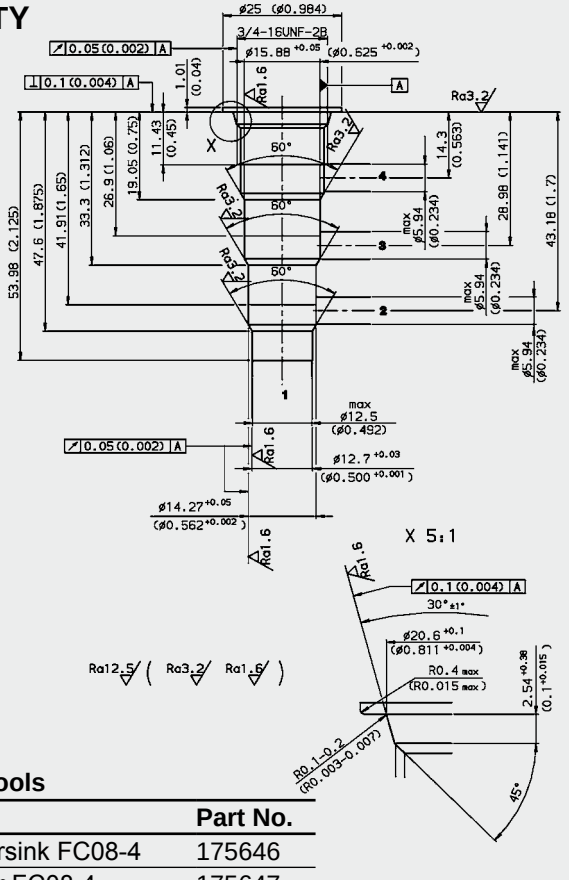
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-4



Form tools

Tool	Part No.
Countersink FC08-4	175646
Reamer FC08-4	175647

millimeter (inch)
subject to technical modifications

MODEL CODE

WK08Z – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Code	Part No.
WK08Z-01-C-N-24DG	3022108
WK08Z-01-C-N-230AG	3044097

Other models on request

* Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH084-SB3	563383	Steel, zinc-plated	G3/8	420 bar
FH084-AB3	3011407	Aluminium, clear anodized	G3/8	210 bar

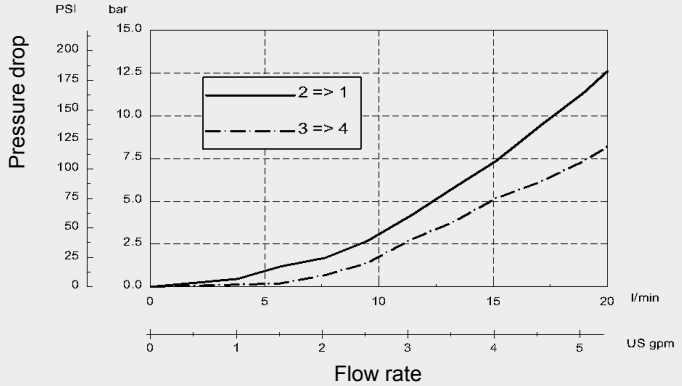
Other housings on request

Seal kits

Code	Material	Part No.
FS084-N SEAL KIT	NBR	3071272
FS084-V SEAL KIT	FKM	3071273

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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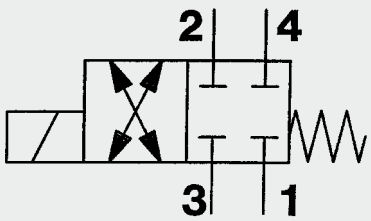
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

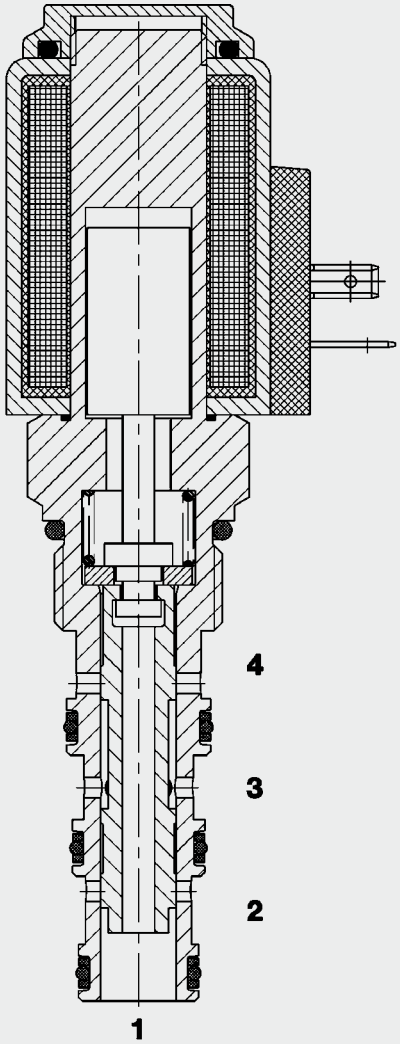
4/2 Solenoid Directional Valve UNF
Spool Type, Direct-Acting
SAE-10 Cartridge – 350 bar

WK10Z-01



32 l/min
350 bar

FUNCTION



In the de-energized mode the valve blocks flow in all directions.

When energised, the valve allows flow from port 3 to 4 or port 3 to 4 and from port 2 and 1 or port 1 to 2.

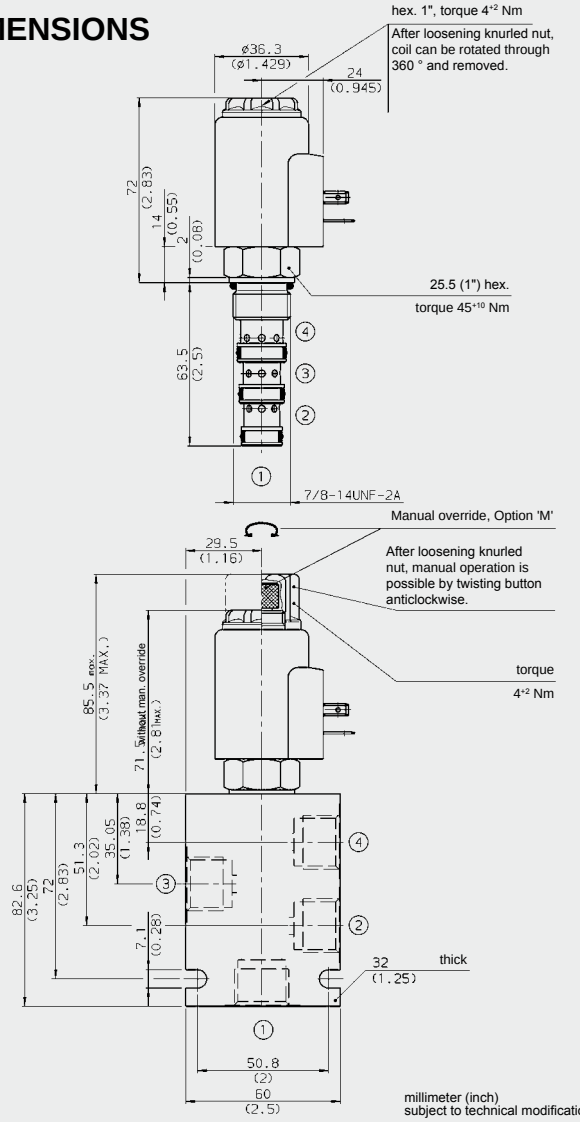
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 32 l/min	
Internal leakage:	max. 160 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
Installation:	No orientation restrictions	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-4	
Weight:	Valve complete	0.48 kg
	Coil only	0.23 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-50-1836	

DIMENSIONS



MODEL CODE

WK10Z - 01 M - C - N - 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10Z-01-C-N-24DG	3094511
WK10Z-01-C-N-230AG	3094512

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB4	3038097	Aluminium, clear anodized	G1/2	210 bar

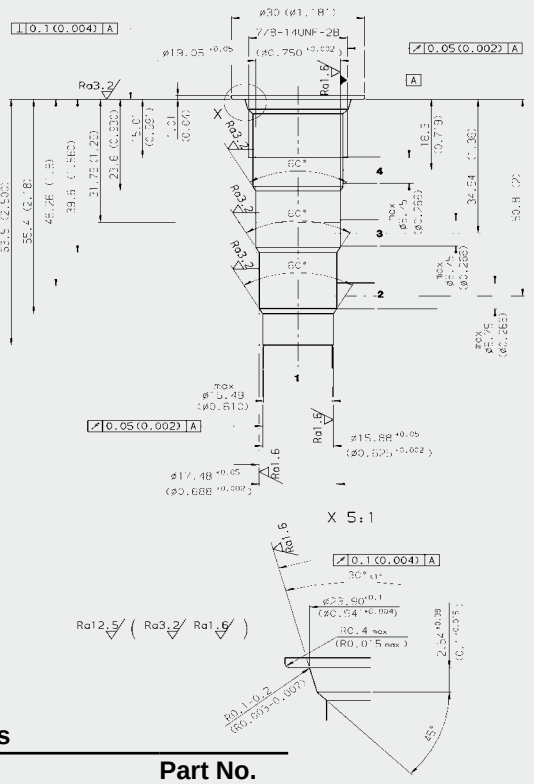
Other housings on request

Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

CAVITY

FC10-4

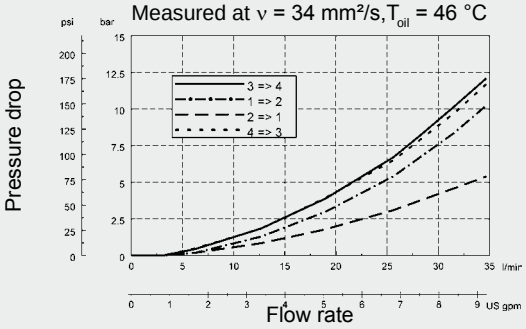


Form tools

Tool	Part No.
Countersink FC10-4	176174
Reamer FC10-4	176175

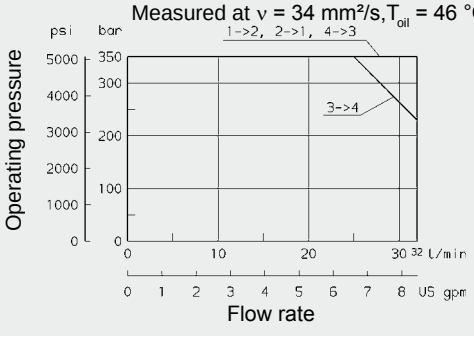
PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



OPERATING LIMITS

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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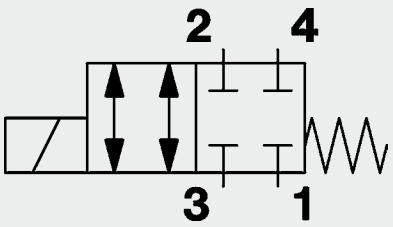
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

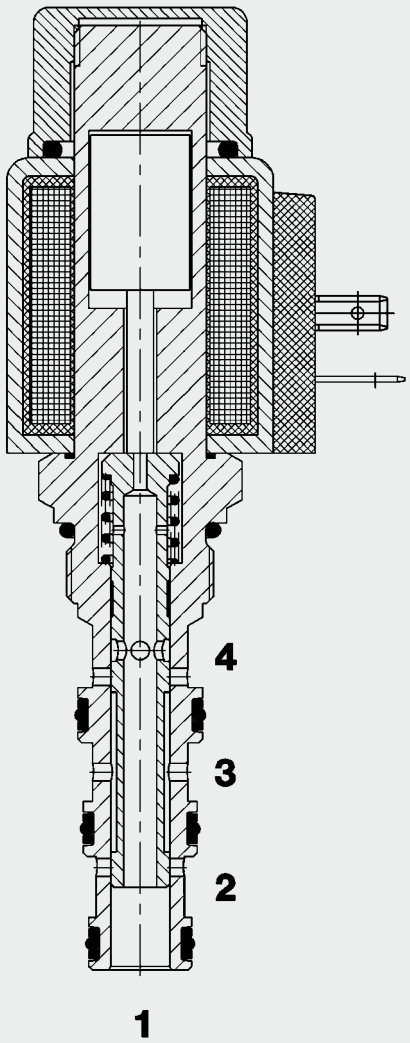


Up to 25 l/min
Up to 350 bar

4/2 Solenoid Directional Valve Spool Type, Direct-Acting, Metric Cartridge – 350 bar

WKM08140EB-01

FUNCTION



When the solenoid coil is de-energized, all ports are closed.

When the solenoid coil is energized, there is free flow through the valve from port 3 to 2 or from 2 to 3 and also from port 4 to 1 or from 1 to 4.

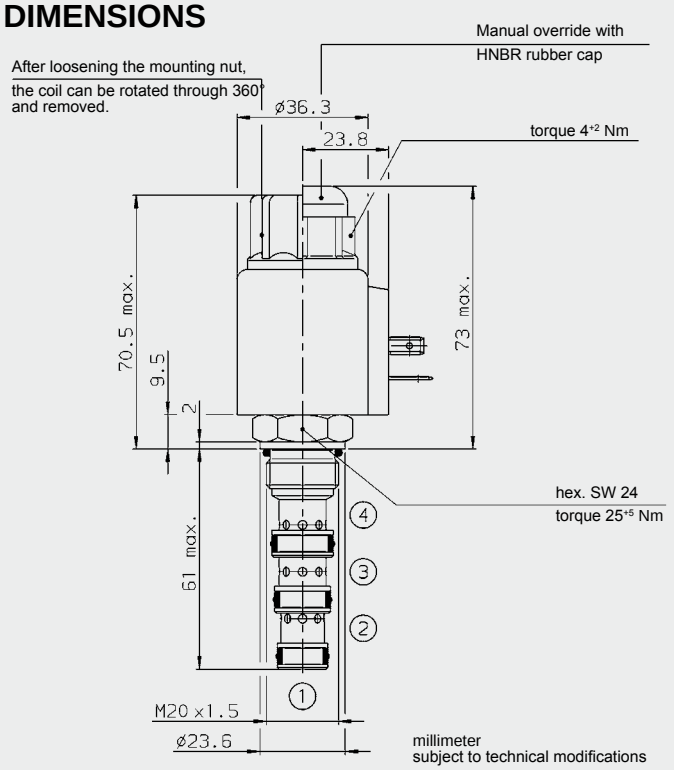
FEATURES

- Coil seals protect the solenoid system
- Wide variety of connectors available
- Hardened and ground control spool to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- External surfaces zinc-plated and corrosion-proof
- Excellent stability throughout the entire flow range
- Compact design enables space-saving installation in connection housings and control blocks

SPECIFICATIONS

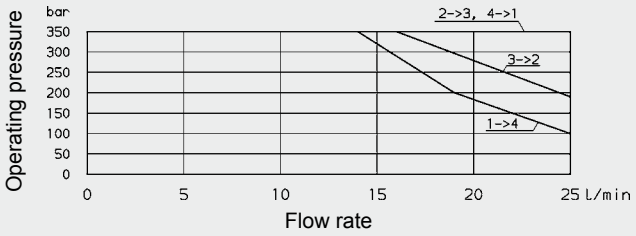
Operating pressure:	max. 350 bar	
Nominal flow:	max. 25 l/min	
Internal leakage:	max. 150 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to 120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	08140	
Weight:	Valve complete	0.38 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 50 °C ambient temperature	
Response time:	Energized:	approx. 40 ms
	De-energized:	approx. 30 ms
Coil type:	Coil…-40-1836	

DIMENSIONS



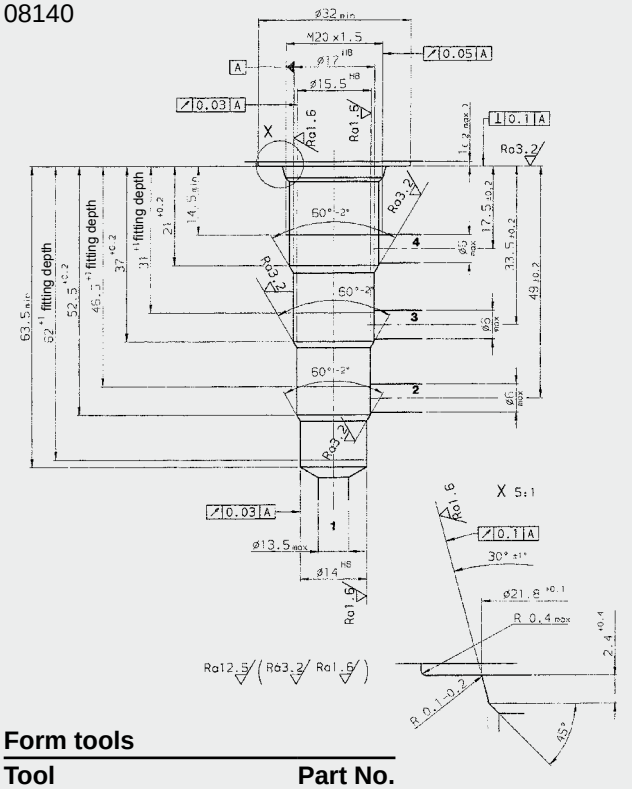
OPERATING LIMITS

ν = 34 mm²/s, T_{oil} = 46 °C



CAVITY

08140



Form tools

Tool	Part No.
Countersink (shank HE25)	163463
Reamer (shank MK2)	163464

millimeter
subject to technical modifications

MODEL CODE

WKM08140EB – 01 M – C – N – 24 DG

Basic model
Directional spool valve, metric

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DT = AMP Junior Timer, 2-pole, radial
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads 475 mm long, 0.75 mm²
DN = Deutsch connector, axial
AC: AG = DIN connector to EN175301-803

Other connectors on request

Standard models

Model code	Part No.
WKM08140EB-01-C-N-24DG	3117855
WKM08140EB-01-C-N-230AG	3117854

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R08140-01X-01	394473	Steel, zinc-plated	G 3/8	420 bar
R08130-01X-02	393535	Steel, zinc-plated	M 14 x 1.5	420 bar

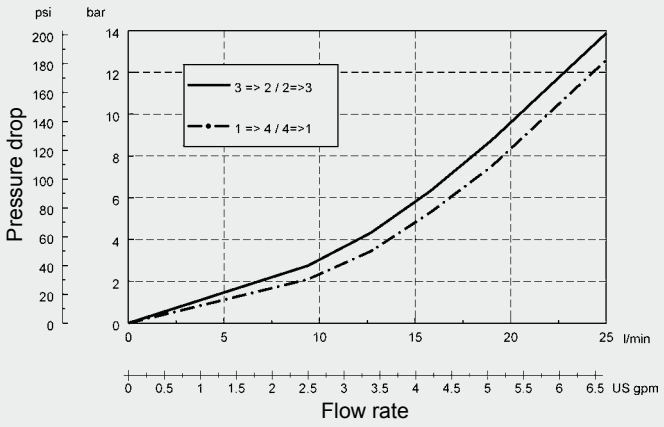
Other bodies on request

Seal kits

Code	Material	Part No.
SEAL KIT 08130-NBR	NBR	3164596
SEAL KIT 08130-FKM	FKM	3183746

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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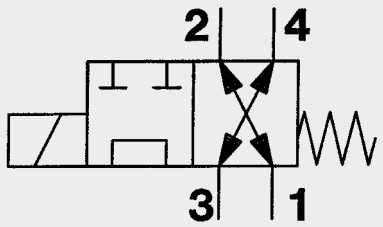
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

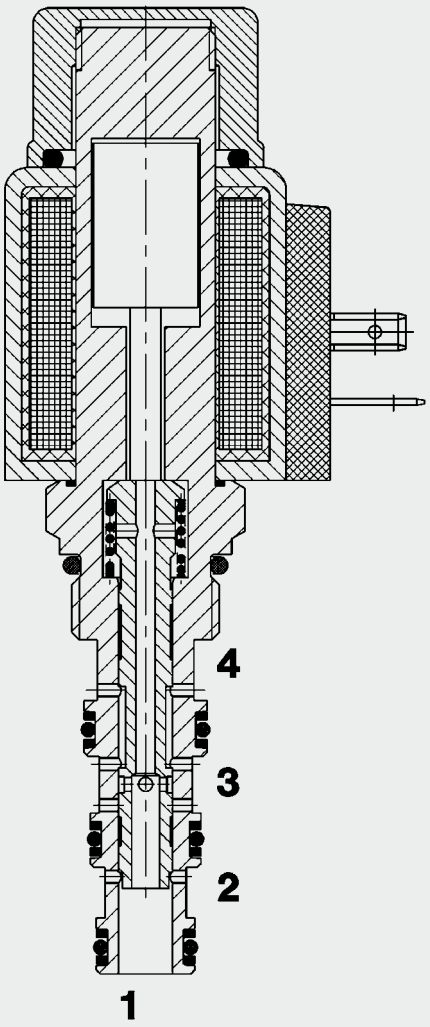


15 l/min
350 bar

4/2 Solenoid Directional Valve UNF Spool Type, Direct-Acting SAE-08 Cartridge – 350 bar

WK08K-01

FUNCTION



In the de-energized mode, the valve allows flow from port 3 to 4 & port 4 to 3, and from port 1 to 2 & port 2 to 1. When the solenoid coil is energized, the valve allows flow in both directions between ports 3 and 1, while blocking flow at ports 2 and 4.

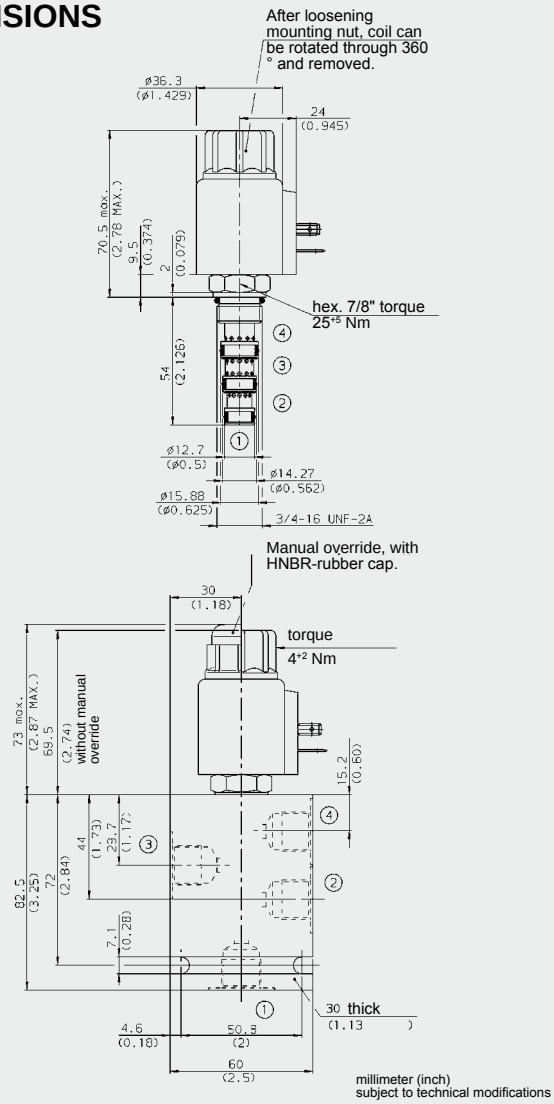
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

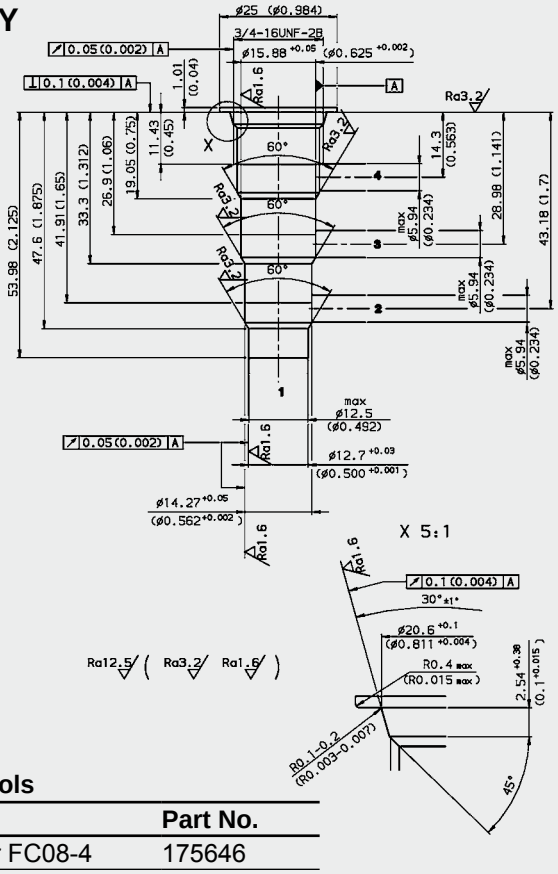
Operating pressure:	max. 350 bar	
Nominal flow:	max. 15 l/min (consult HYDAC for flow rates above 207 bar)	
Internal leakage:	max. 90 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-4	
Weight:	Valve complete	0.38 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Nominal voltage at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil...-40-1836	

DIMENSIONS



CAVITY

FC08-4



Form tools

Tool	Part No.
Rougher FC08-4	175646
Reamer FC08-4	175647

MODEL CODE

WK08K-01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK08K-01-C-N-24DG	3021093
WK08K-01-C-N-230AG	3043933

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH084-SB3	563383	Steel, zinc-plated	G3/8	420 bar
FH084-AB3	3011407	Aluminium, clear anodized	G3/8	210 bar

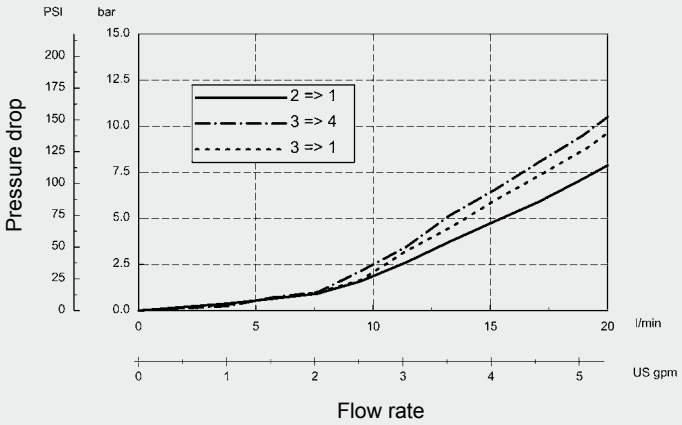
Other housings on request

Seal kits

Code	Material	Part No.
FS084-N SEAL KIT	NBR	3071272
FS084-V SEAL KIT	FKM	3071273

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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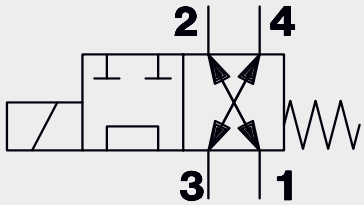
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

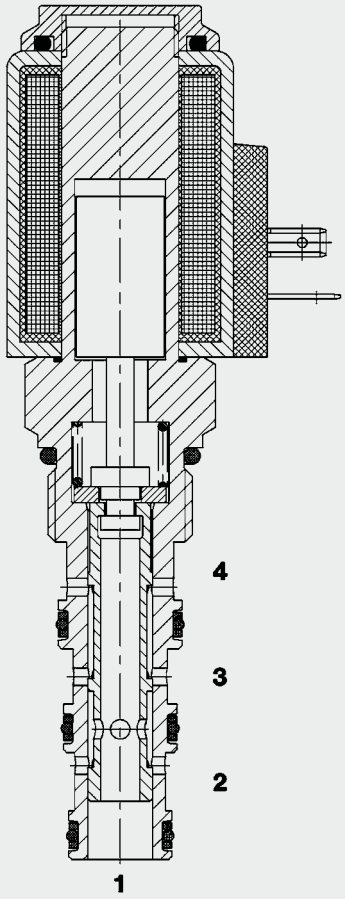
4/2 Solenoid Directional Valve UNF Spool Type, Direct-Acting SAE-10 Cartridge – 350 bar

WK10K-01



32 l/min
350 bar

FUNCTION



When de-energized, the valve allows flow in both directions between ports 3 and 4 and in both directions between ports 1 and 2. When energized, the valve allows flow in both directions between ports 3 and 1, while blocking flow at ports 2 and 4.

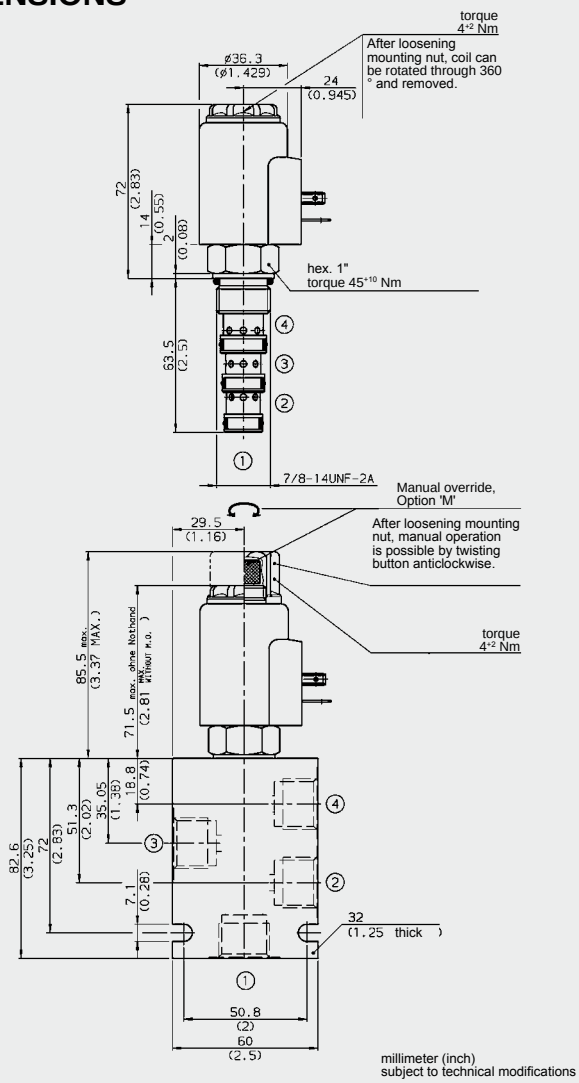
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 32 l/min	
Internal leakage:	max. 140 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material	Valve body:	high tensile steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-4	
Weight:	Valve complete Coil only	0.48 kg 0.23 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	

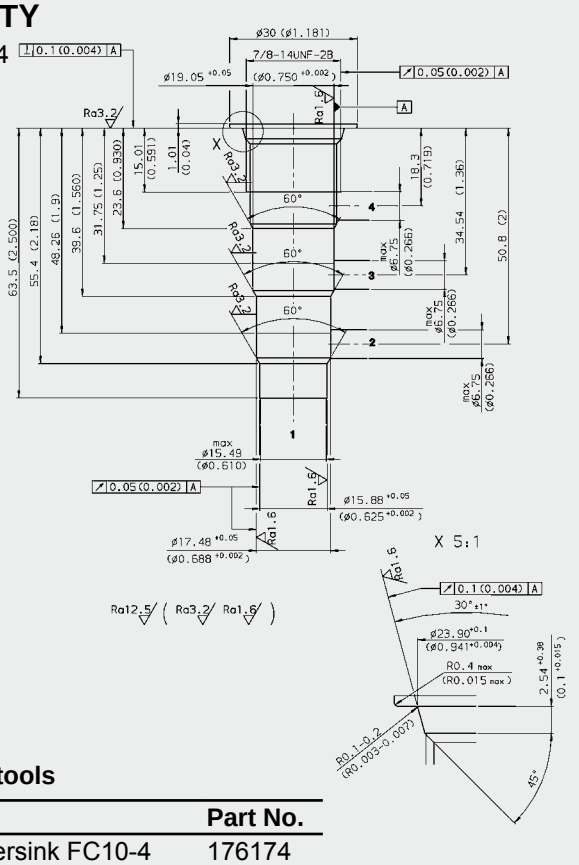
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC10-4



Form tools

Tool	Part No.
Countersink FC10-4	176174
Reamer FC10-4	176175

millimeter (inch)
subject to technical modifications

MODEL CODE

WK10K-01 M - C - N - 24 DG

Basic model
Directional spool valve, UNF

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL-threaded connection M27x1
DL = 2 flying leads, 457 mm long; 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10K-01-C-N-24DG	3105400
WK10K-01-C-N-230AG	3105046

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB4	3038097	Aluminium, anodized	G1/2	210 bar

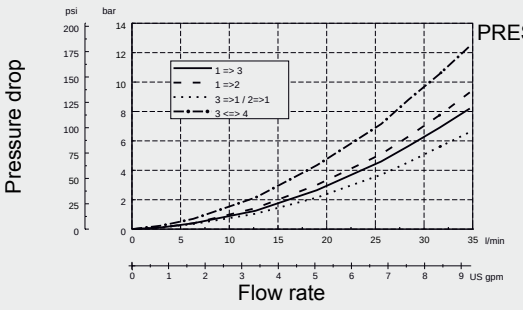
Other line bodies on request

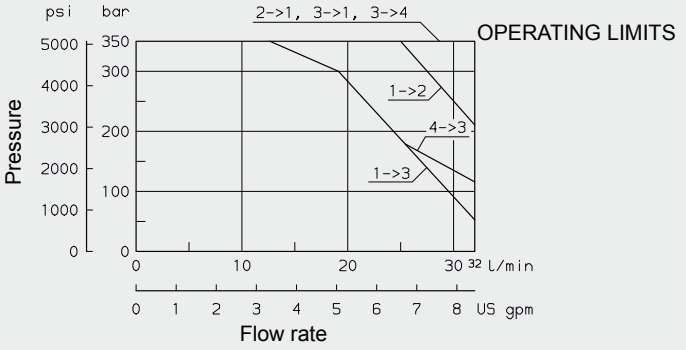
Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C





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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

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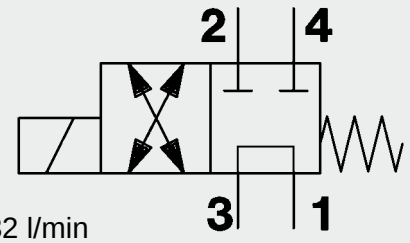
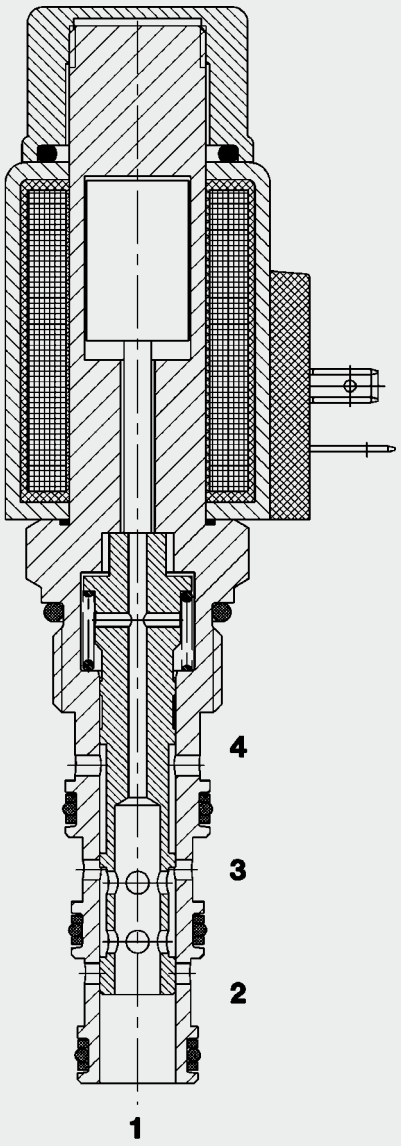


32 l/min
350 bar

4/2 Solenoid Directional Valve UNF
Spool Type, Direct-Acting
SAE-10 Cartridge – 350 bar

WK10N-01

FUNCTION



When de-energized, the valve allows flow from port 3 to 1 or from 1 to 3, while blocking flow at ports 2 and 4.

When energized, the valve allows flow from port 3 to 4 or from 4 to 3 and from port 1 to 2 or 2 to 1.

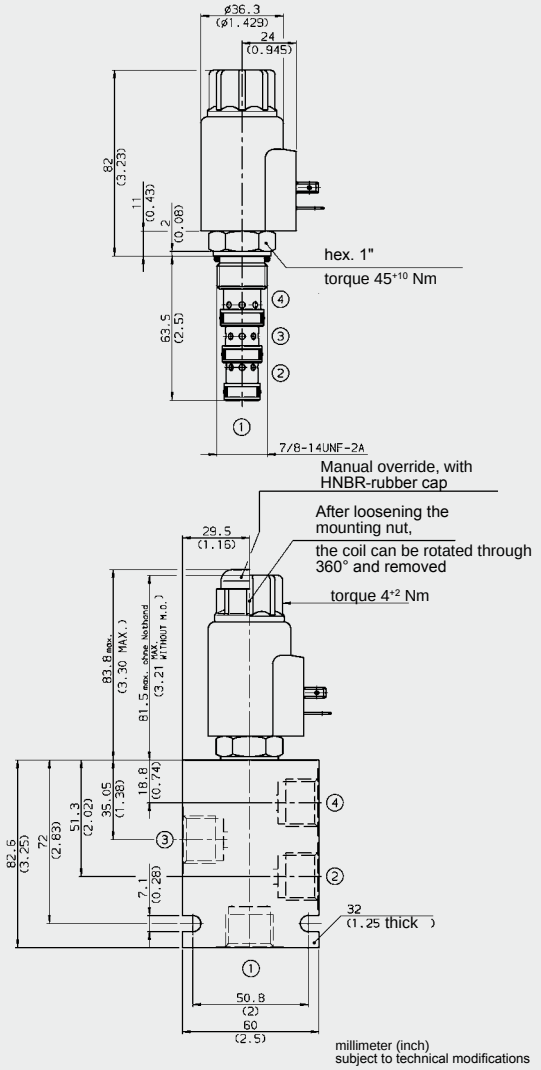
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	350 bar	
Nominal flow:	32 l/min	
Internal leakage:	max. 140 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to 120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-4	
Weight:	Valve complete:	0.48 kg
	Coil only:	0.23 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at max. 60° C ambient temperature	
Coil type:	Coil…-50-1836	

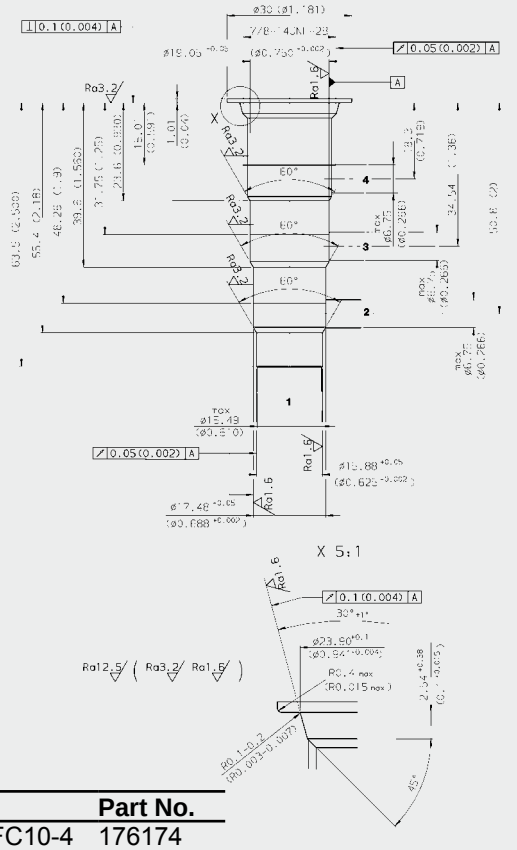
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC10-4



Form tools

Tool	Part No.
Countersink FC10-4	176174
Reamer FC10-4	176175

millimeter (inch)
subject to technical modifications

MODEL CODE

WK10N - 01 M - C - N - 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
24 = 24 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10N-01-C-N-24DG	3109892
WK10N-01-C-N-230AG	3109893

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB4	3038097	Aluminium, anodized	G1/2	210 bar

Other bodies on request

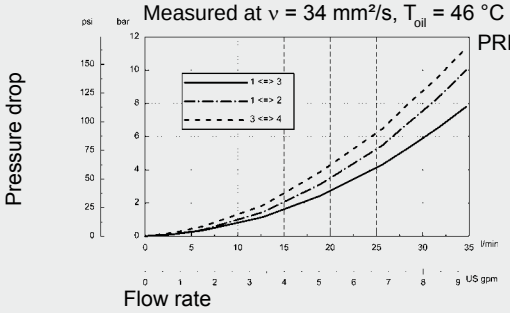
Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

PERFORMANCE

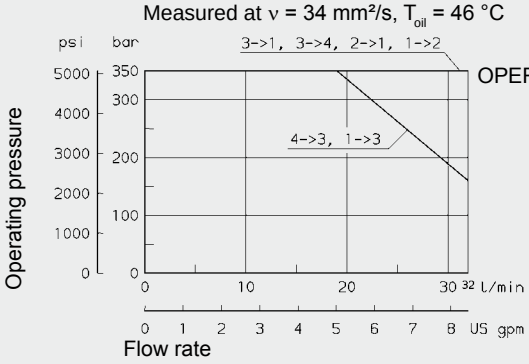
Measured at ν = 34 mm²/s, T_{oil} = 46 °C

PRESSURE DROP



Measured at ν = 34 mm²/s, T_{oil} = 46 °C

OPERATING LIMITS



NOTE

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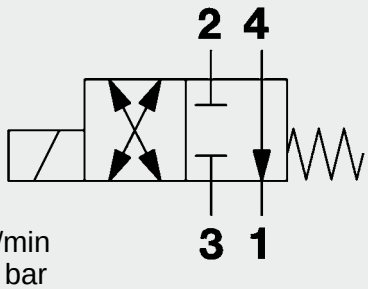
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

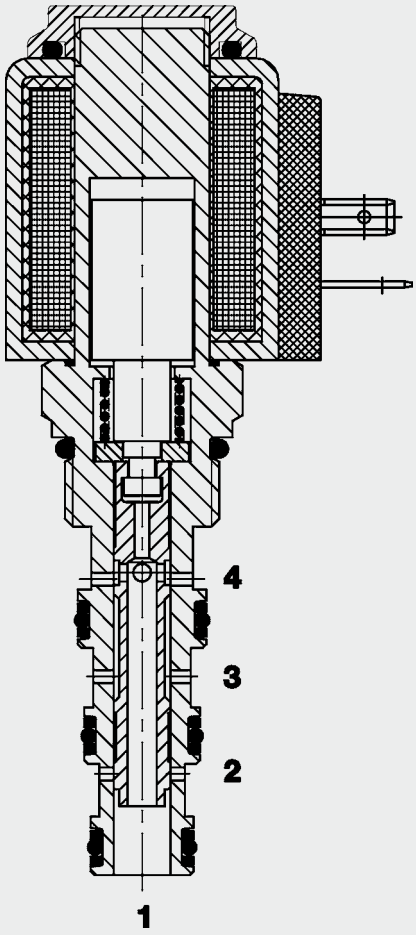
4/2 Solenoid Directional Valve UNF
Spool Type - Direct-Acting
SAE-08 Cartridge – 350 bar

WK08P-01



15 l/min
350 bar

FUNCTION



When the solenoid coil is de-energized, there is flow through the valve from port 4 to port 1. Ports 2 and 3 are closed. When the solenoid coil is energized, there is free flow through the valve from port 3 to 4 or from 4 to 3 and also from port 2 to 1 or from 1 to 2.

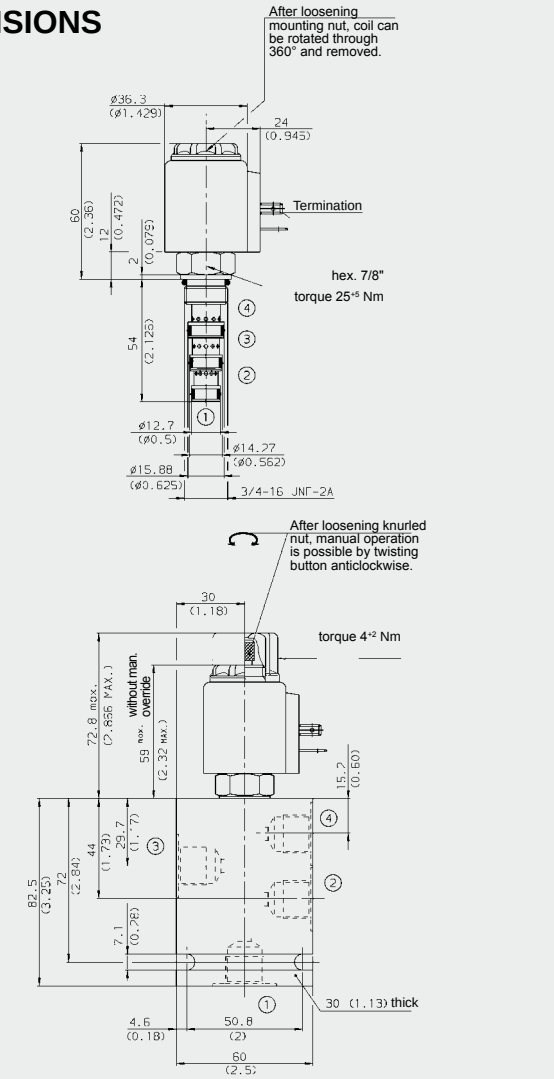
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

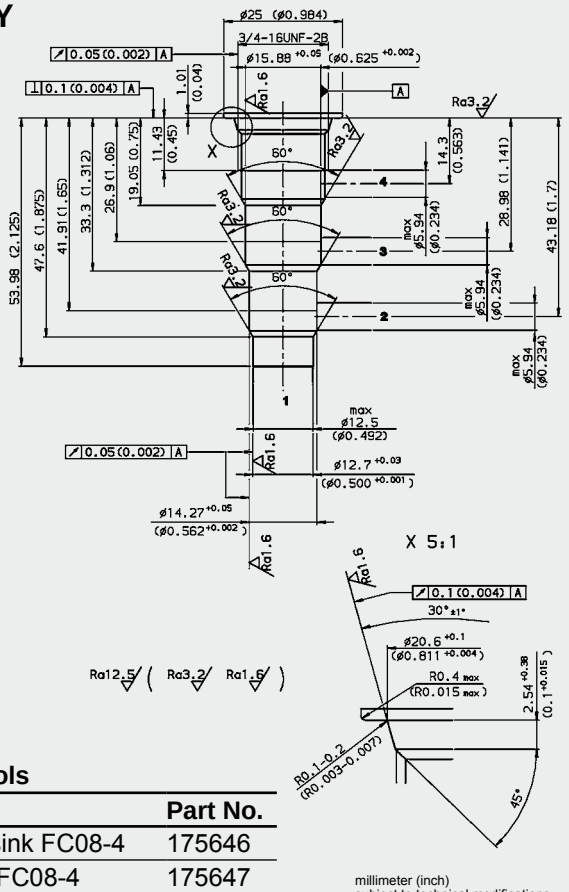
Operating pressure:	max. 350 bar	
Nominal flow:	max. 15 l/min (Consult HYDAC for flow rates above 207 bar)	
Internal leakage:	max. 90 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Materials:	Valve body:	free-cutting steel
	Closing elements:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel/Polyamide
Cavity:	FC08-4	
Weight:	Valve complete	0.38 kg
	Coil only	0.19 kg
Electrical data		
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836	

DIMENSIONS



CAVITY

FC08-4



Form tools

Tool	Part No.
Countersink FC08-4	175646
Reamer FC08-4	175647

MODEL CODE

WK08P – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and Ports*
C = Cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Code	Part No.
WK08P-01-C-N-24DG	3021285
WK08P-01-C-N-230AG	3043980

Other models on request

* Standard in-line bodies

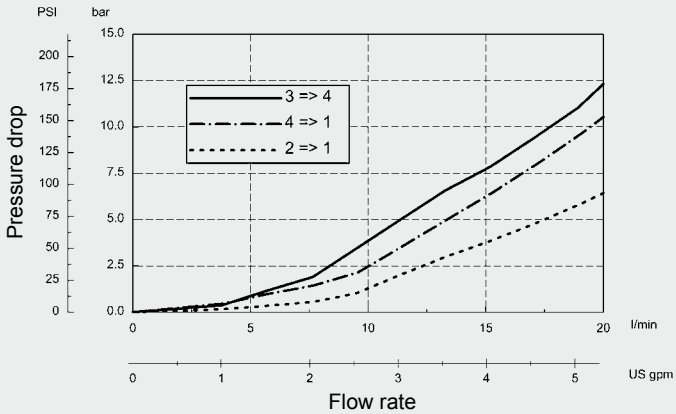
Code	Part No.	Material	Ports	Pressure
FH084-SB3	563383	Steel, zinc-plated	G3/8	420 bar
FH084-AB3	3011407	Aluminium, clear anodized	G3/8	210 bar

Seal kits

Code	Material	Part No.
FS084-N SEAL KIT	NBR	3071272
FS084-V SEAL KIT	FKM	3071273

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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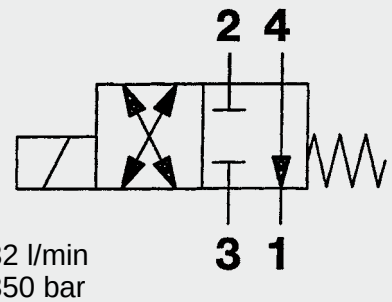
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

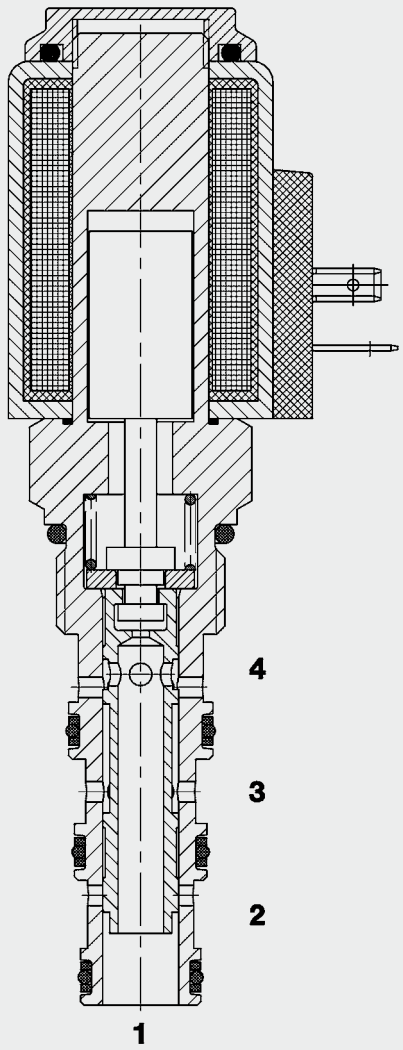


32 l/min
350 bar

4/2 Solenoid Directional Valve UNF Spool Type, Direct-Acting, SAE-10 Cartridge – 350 bar

WK10P-01

FUNCTION



When de-energized, the valve allows flow from port 4 to 1, while blocking flow at ports 2 and 3.

When energized, the valve allows flow from port 3 to 4 or from 4 to 3 and from port 1 to 2 or 2 to 1.

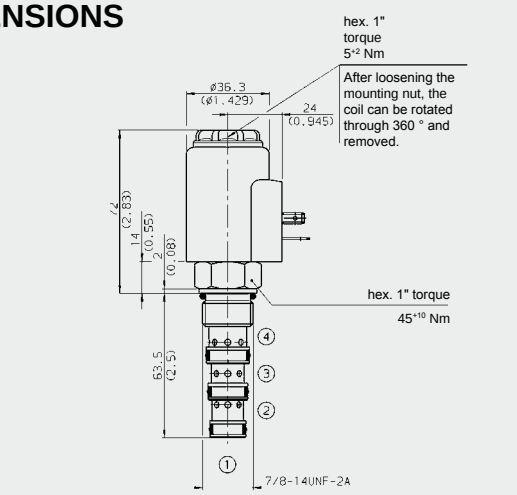
FEATURES

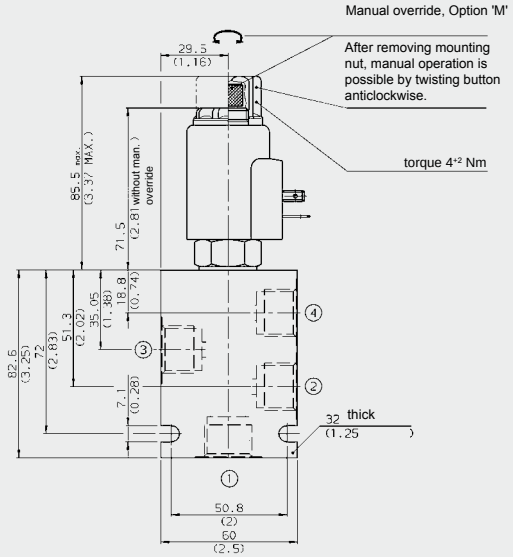
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 32 l/min	
Internal leakage:	max. 160 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to + max. 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-4	
Weight:	Valve complete	0.48 kg
	Coil only	0.23 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-50-1836	

DIMENSIONS

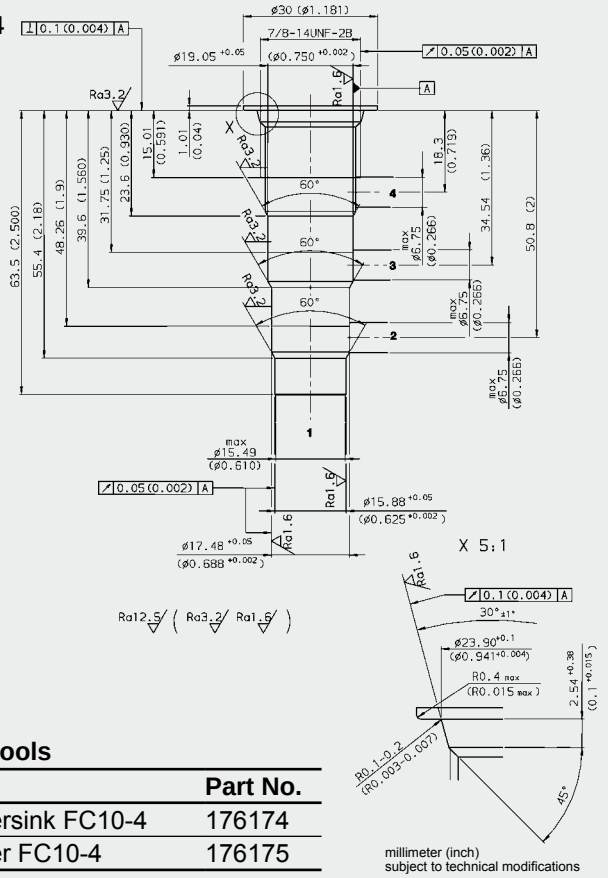




millimeter (inch)
subject to technical modifications

CAVITY

FC10-4



millimeter (inch)
subject to technical modifications

Form tools

Tool	Part No.
Countersink FC10-4	176174
Reamer FC10-4	176175

MODEL CODE

WK10P-01 M - C - N - 24 DG

Basic model
Directional spool valve, UNF

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10P-01-C-N-24DG	3098533
WK10P-01-C-N-230AG	3098534

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB4	3038097	Aluminium, anodized	G1/2	210 bar

Other bodies on request

Seal kits

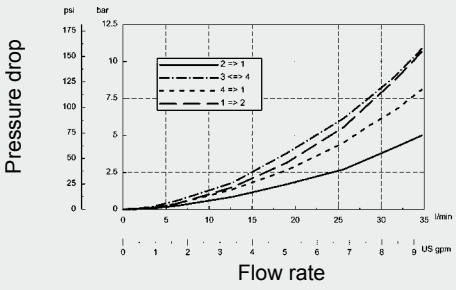
Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

Other seal kits on request

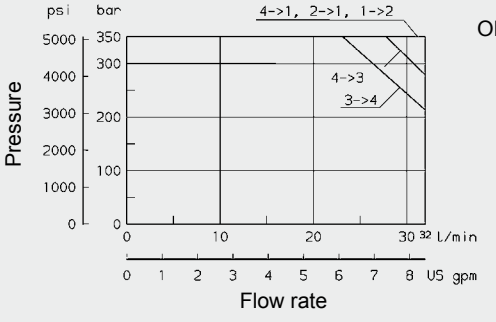
PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C

PRESSURE DROP



OPERATING LIMITS



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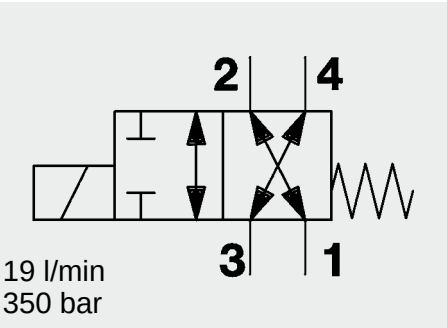
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

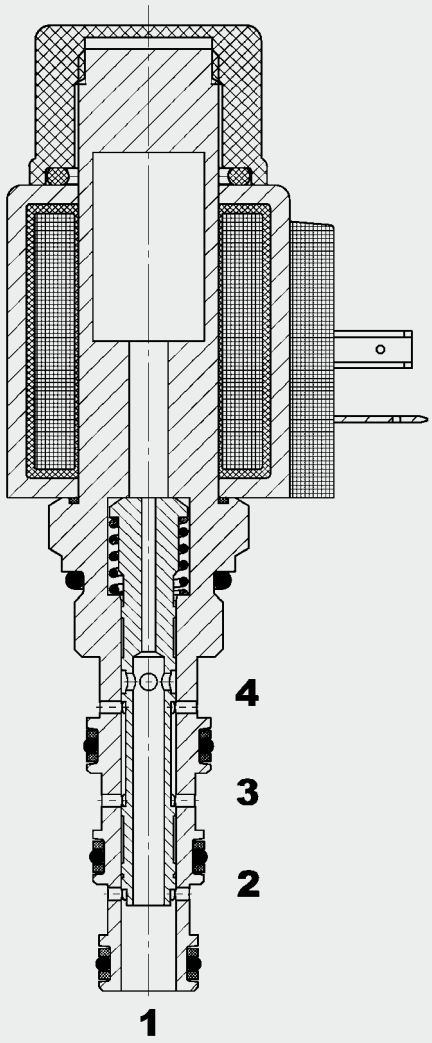


19 l/min
350 bar

4/2 Solenoid Directional Valve UNF
Spool Type, Direct-Acting
SAE-08 Cartridge – 350 bar

WK08R-01

FUNCTION



When de-energized, the valve allows flow from port 3 to 4 or from 4 to 3 and from port 1 to 2 or 2 to 1.

When energized, the valve allows flow from port 1 to 4 or from port 4 to 1, while blocking flow at ports 3 and 2.

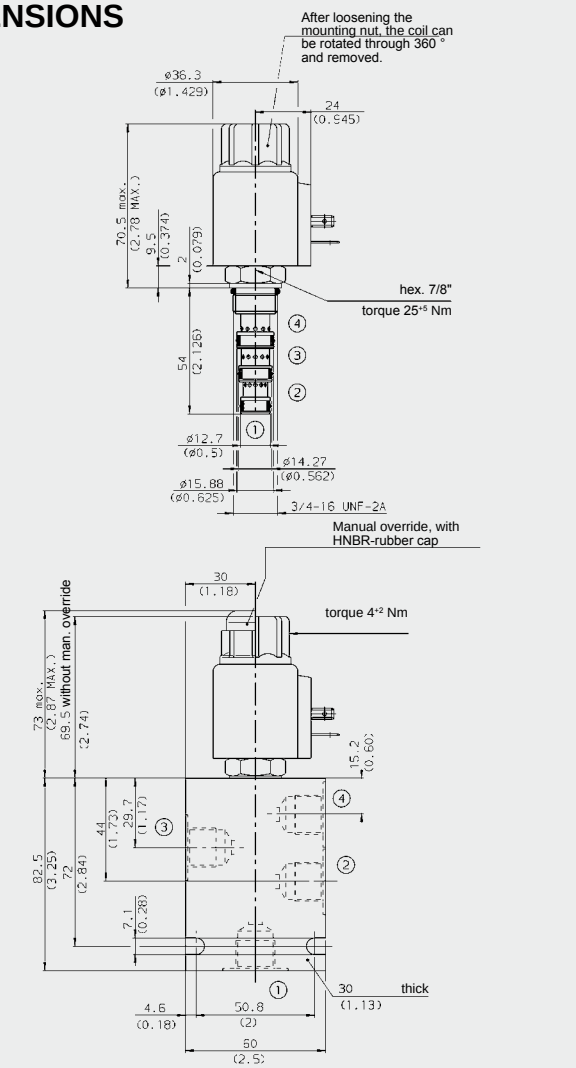
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connections available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

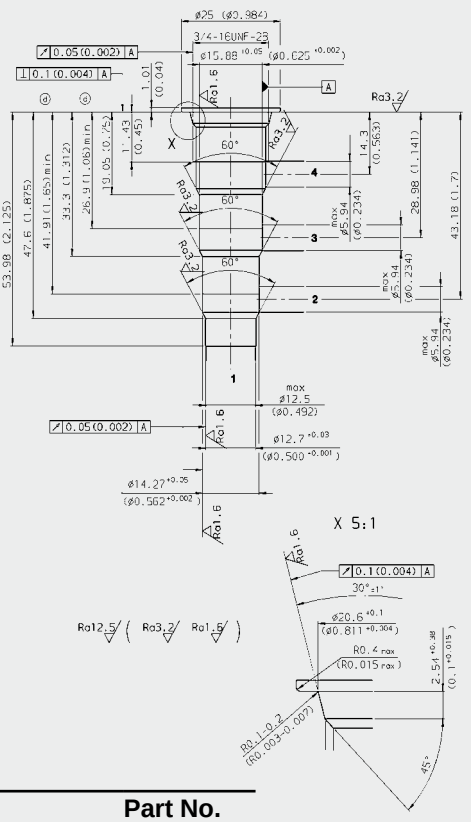
Operating pressure:	350 bar	
Nominal flow:	19 l/min	
Internal leakage:	max. 90 cm³/min at 250 bar and 36 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-4	
Weight:	Valve complete:	0.38 kg
	Coil only:	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15 % of nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at max. 60° C ambient temperature	
Coil type:	Coil…-40-4836	

DIMENSIONS



CAVITY

FC08-4



Form tools

Tool	Part No.
Countersink FC08-4	175646
Reamer FC08-4	175647

millimeter (inch)
subject to technical modifications

MODEL CODE

WK08R - 01 M - C - N - 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN Connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK08R-01-C-N-12DG	3110609
WK08R-01-C-N-24DG	3038912
WK08R-01-C-N-230AGWK08R-01-C-N-230AG	3108340

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH084-SB3	563383	Steel, zinc-plated	G3/8	420 bar
FH084-AB3	3011407	Aluminium, anodized	G3/8	210 bar

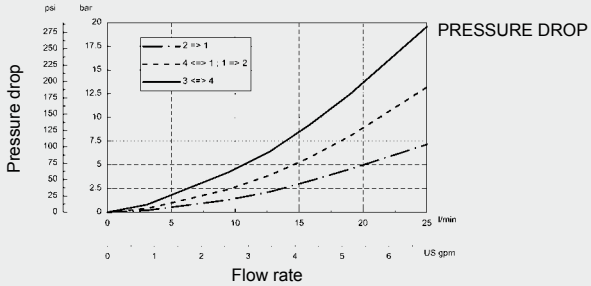
Other bodies on request

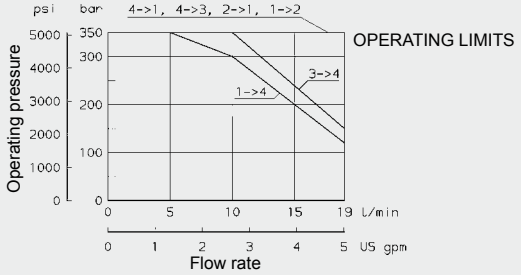
Seal kits

Code	Material	Part No.
Seal kit FS084-N	NBR	3071272
Seal kit FS084-V	FKM	3071273

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C





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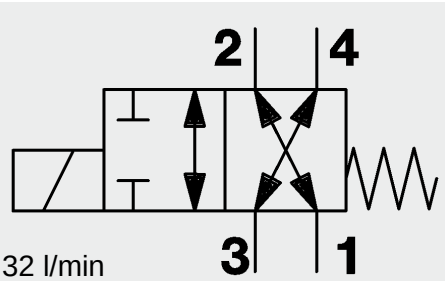
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

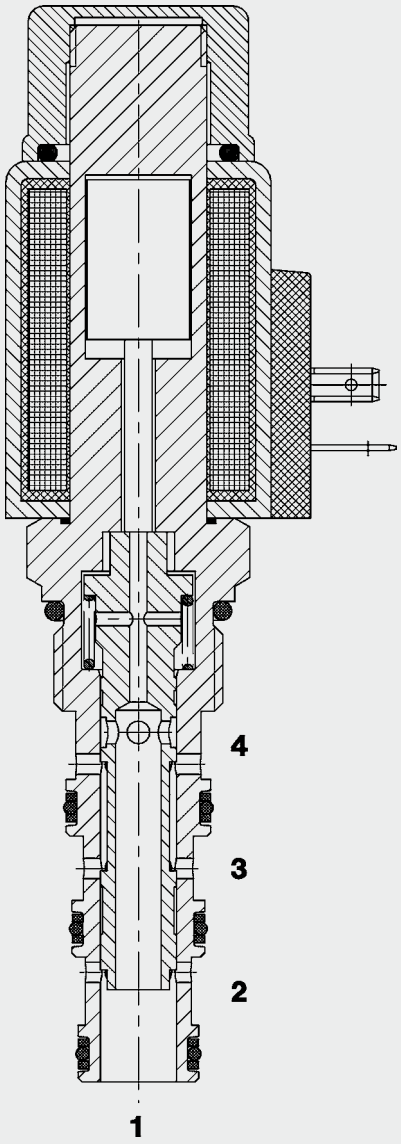


32 l/min
350 bar

4/2 Solenoid Directional Valve UNF Spool Type, Direct-Acting SAE-10 Cartridge – 350 bar

WK10R-01

FUNCTION



When de-energized, the valve allows flow in both directions between ports 3 and 4 and between ports 1 and 2. When energized, the valve allows flow in both directions between ports 4 and 1, while blocking flow at ports 2 and 3.

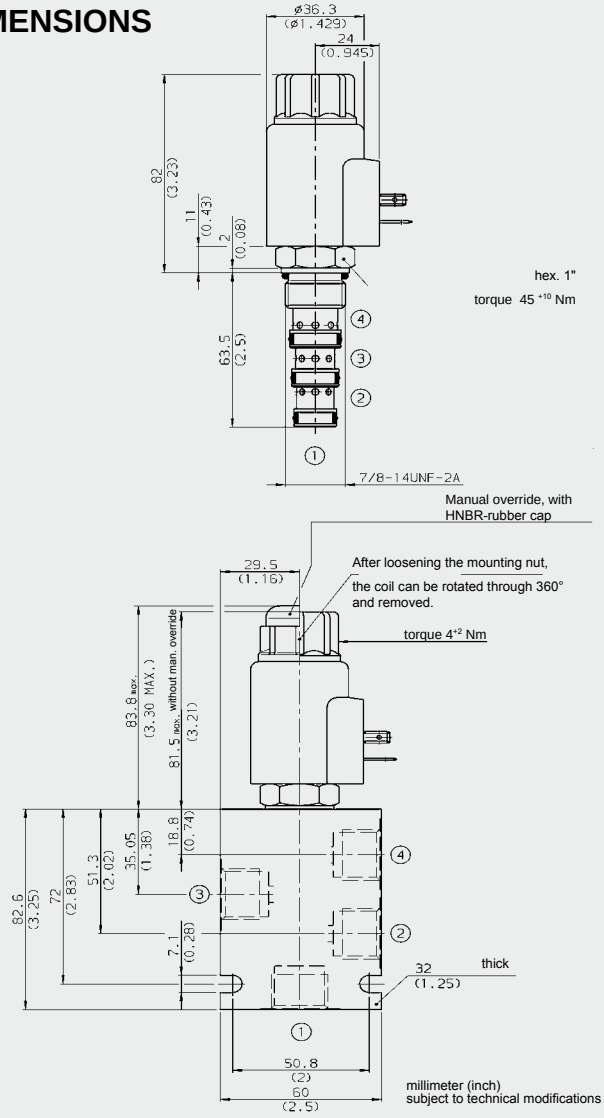
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

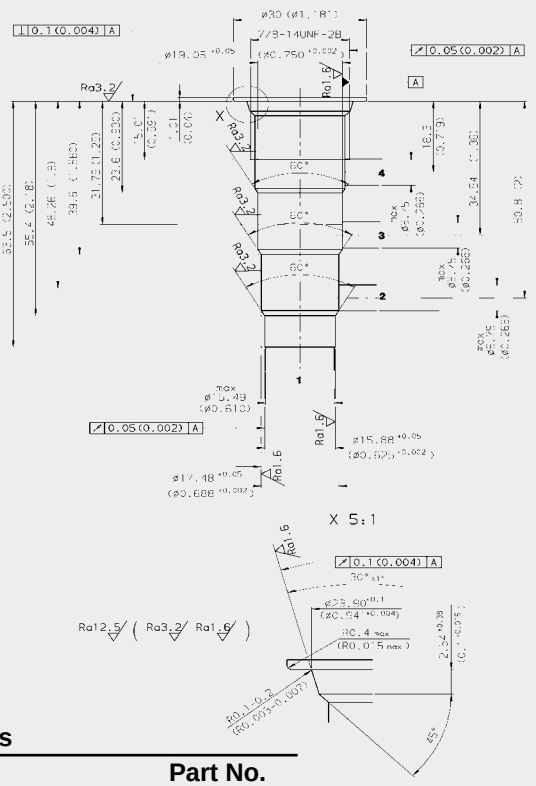
Operating pressure:	max. 350 bar	
Nominal flow:	max. 32 l/min	
Internal leakage:	max. 160 cm³/min at 250 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel/Polyamide
Cavity:	FC10-4	
Weight:	Valve complete	0.48 kg
	Coil only	0.23 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-50-1836	

DIMENSIONS



CAVITY

FC10-4



Form tools

Tool	Part No.
Countersink FC10-4	176174
Reamer FC10-4	176175

millimeter (inch)
subject to technical modifications

MODEL CODE

WK10R – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
24 = 24 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 50-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10R-01-C-N-24DG	3097259
WK10R-01-C-N-230AG	3097260

Other models on request

*Standard line body

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB4	3038097	Aluminium, anodized	G1/2	210 bar

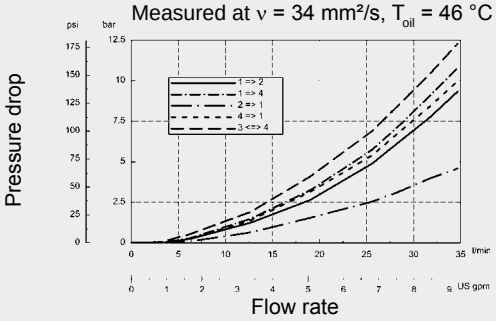
Other bodies on request

Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

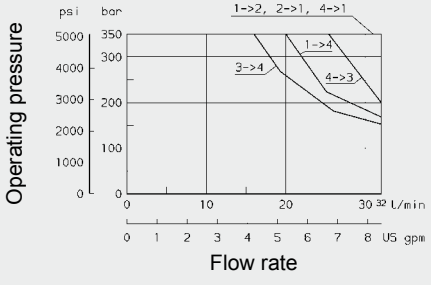
PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



OPERATING LIMITS

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



Note

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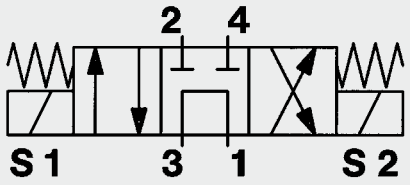
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

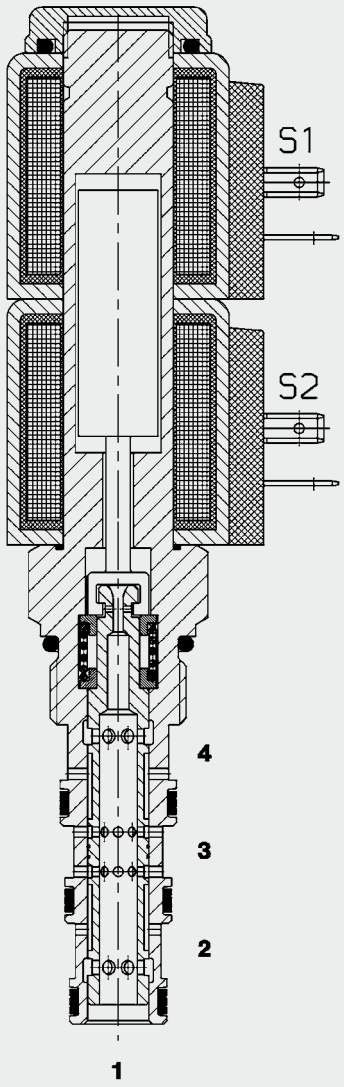


23 l/min
350 bar

4/3 Solenoid Directional Valve Spool Type, Direct-Acting SAE-10 Cartridge – 350 bar UNF

WK10G-01

FUNCTION



When de-energized, the valve allows flow from port 3 to 1, while blocking flow at ports 2 and 4. When solenoid coil S1 is energized, there is free flow through the valve from port 3 to 2 and from port 4 to 1. When solenoid coil S2 is energized, there is free flow through the valve from port 3 to 4 and from port 2 to 1.

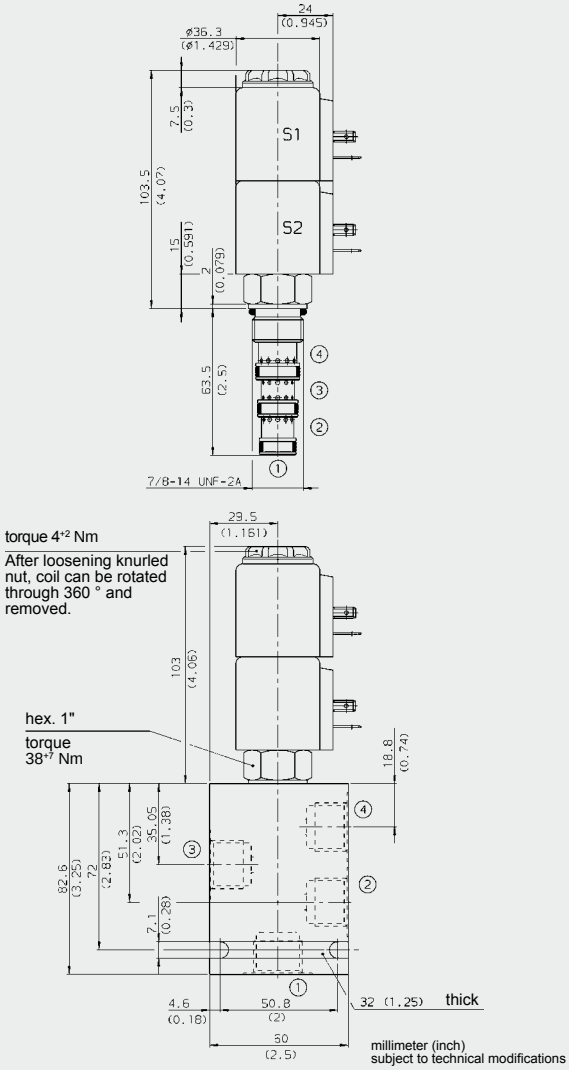
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid

SPECIFICATIONS

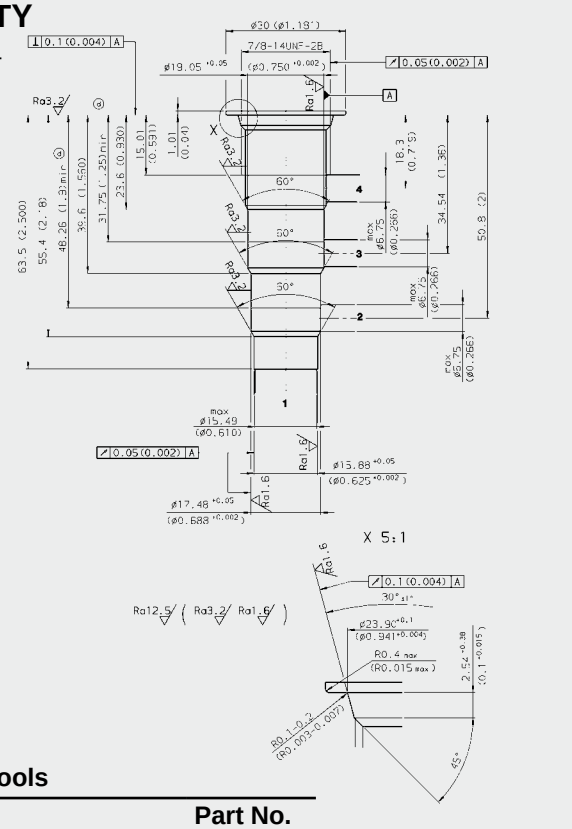
Operating pressure:	350 bar	
Nominal flow:	max. 23 l/min (Consult HYDAC for flow ratings above 207 bar)	
Internal leakage:	max. 280 cm³/min at 207 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 to max. 420 mm²/s	
Filtration	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel / Polyamide
Cavity:	FC10-4	
Weight:	Valve complete:	0.67 kg
	Coil only:	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15 % of nominal voltage	
Coil duty rating:	Continuous up to max. 115% of nominal voltage at max. 60° C ambient temperature	
Coil type:	Coil…-40-1836 (2 pieces)	

DIMENSIONS



CAVITY

FC10-4



Form tools

Tool	Part No.
Countersink FC10-4	176174
Reamer FC10-4	176175

MODEL CODE

WK10G – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL-threaded connection M27x1
DL = 2 flying leads, 457 mm long; 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10G-01-C-N-12DG	3044464
WK10G-01-C-N-24DG	3038913
WK10G-01-C-N-230AG	3044482

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB4	3038097	Aluminium, clear anodized	G1/2	210 bar

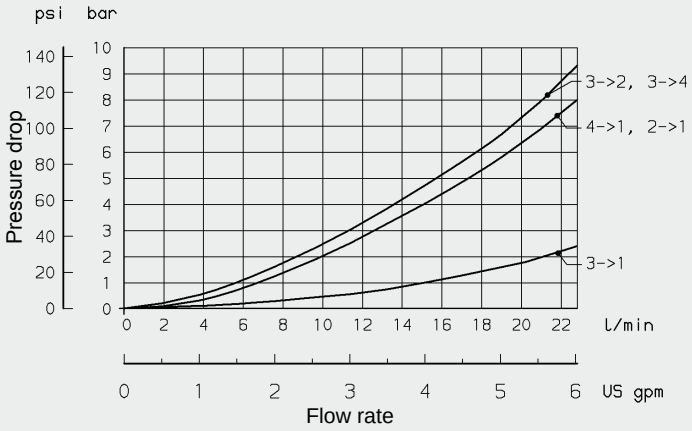
Other models on request

Seal kits

Code	Material	Part No.
Seal kit FS104-N	NBR	3051912
Seal kit FS104-N	FKM	3071275

PERFORMANCE

Measured at ν = 34 mm²/s, Toil = 46 °C



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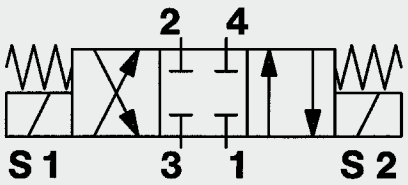
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



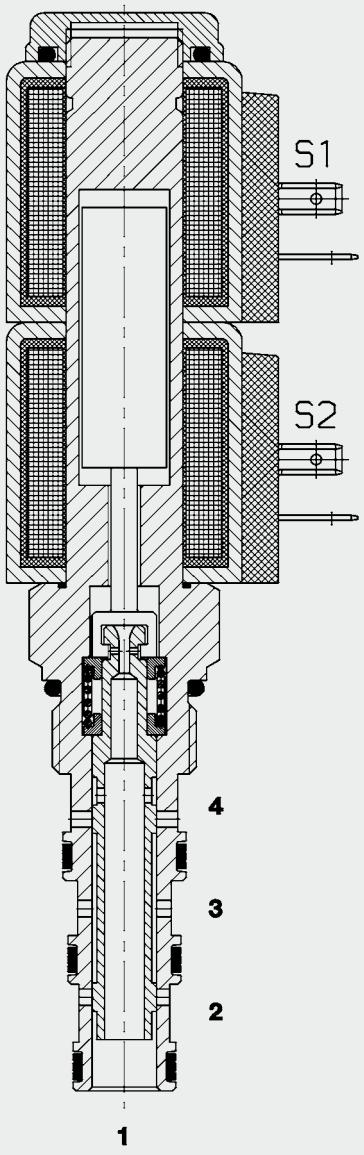
23 l/min
350 bar

4/3 Solenoid Directional Valve Spool Type, Direct-Acting Closed Center, SAE-10 Cartridge – 350 bar

UNF

WK10E-01

FUNCTION



When the solenoid coil is de-energized, all ports are closed. When the solenoid coil S1 is energized, there is free flow through the valve from port 3 to port 4 and from port 2 to port 1. When solenoid coil S2 is energized, there is free flow through the valve from port 3 to 2 and from port 4 to 1.

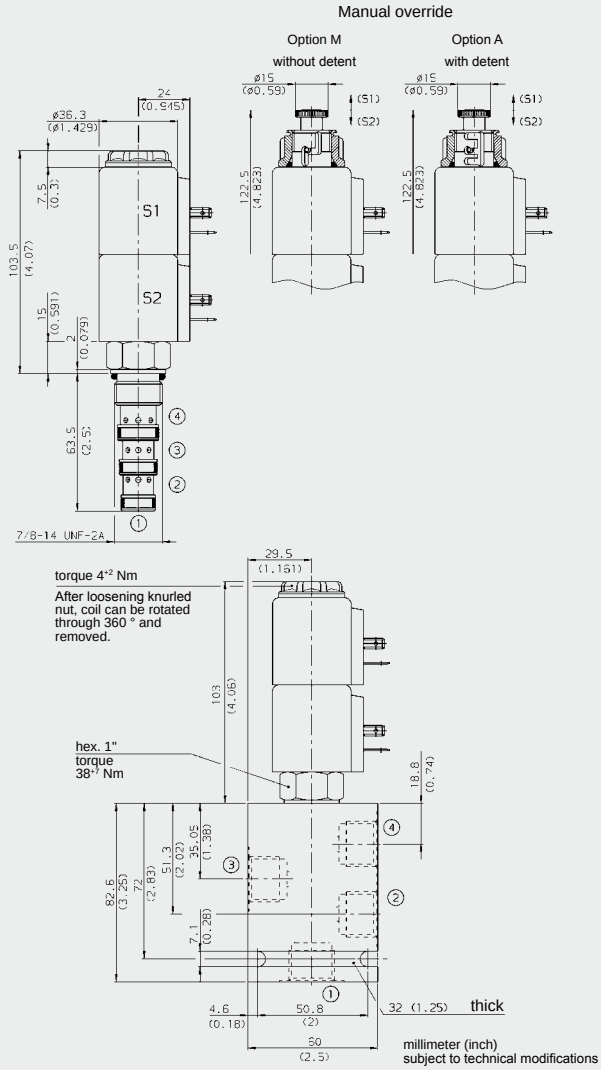
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

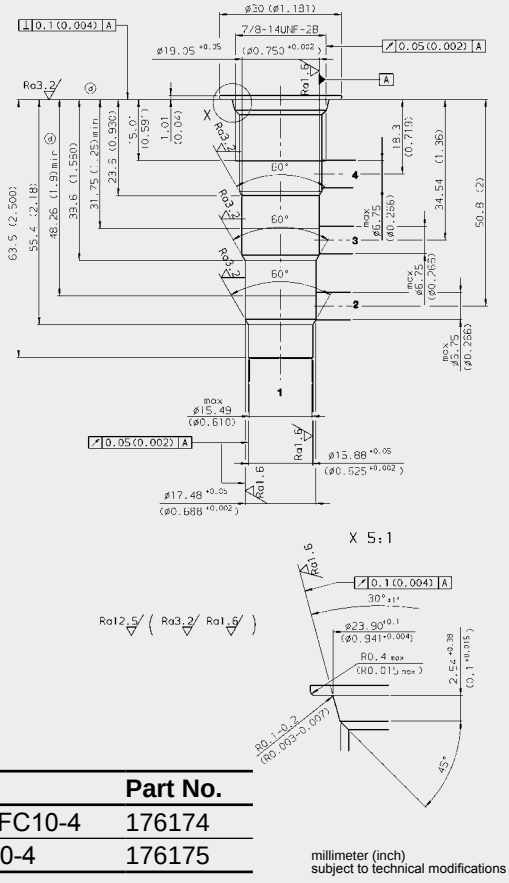
Operating pressure:	350 bar	
Nominal flow:	23 l/min (Consult HYDAC for flow ratings above 207 bar)	
Internal leakage:	max. 120 cm³/min at 207 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	7.4 to 420 mm²/s	
Filtration	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	steel
	Spool:	hardened and ground steel
	Seals:	N = NBR (standard) V = FKM (optional, media temperature range -20 °C to 120 °C)
	Coil:	Steel / Polyamide
	Back-up rings:	PTFE
Cavity:	FC10-4	
Weight:	Valve complete:	0.67 kg
	Coil only:	0.19 kg (2 pieces are required)
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15 % of nominal voltage	
Coil duty rating:	Continuous up to max. 115% of nominal voltage at max. 60° C ambient temperature	
Coil type:	Coil…-40-1836 (2 pieces)	

DIMENSIONS



CAVITY

FC10-4



Form tools

Tool	Part No.
Countersink FC10-4	176174
Reamer FC10-4	176175

MODEL CODE

WK10E – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads, 0.75 mm²
DN = Deutsch connector, 2-pole
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN Connector to EN 175301-803

Other connectors on request

Standard models

Code	Part No.
WK10E-01-C-N-12DG	3044407
WK10E-01-C-N-24DG	3044428
WK10E-01-C-N-230AG	3044426

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB4	3038097	Aluminium, anodized	G1/2	210 bar

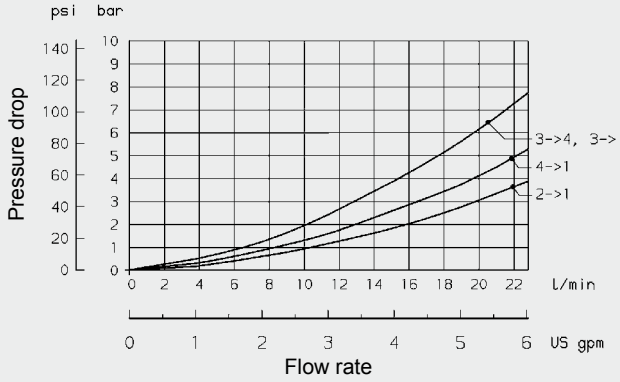
Other models on request

Seal kits

Code	Part No.	Material
Seal kit FS104-N	3051912	NBR
Seal kit FS104-N	3071275	FKM

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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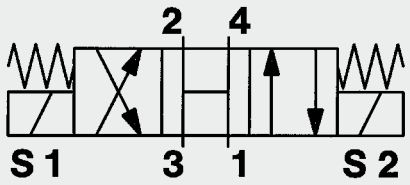
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

4/3 Solenoid Directional Valve Spool Type, Direct-Acting SAE-10 Cartridge – 350 bar

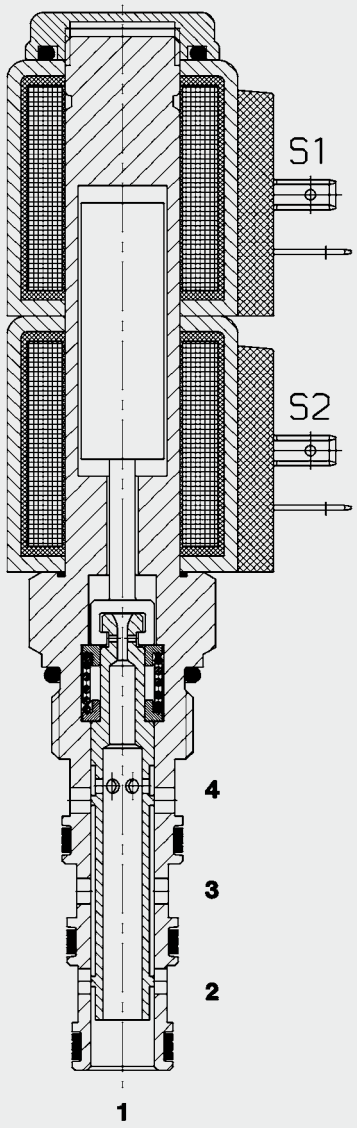
UNF

WK10H-01



23 l/min
350 bar

FUNCTION



When de-energized, there is free flow through the valve from ports 2 and 4 to ports 3 and 1. When the solenoid coil S1 is energized, there is free flow through the valve from port 3 to port 4 and from port 2 to port 1. When solenoid coil S2 is energized, there is free flow through the valve from port 3 to 2 and from port 4 to 1.

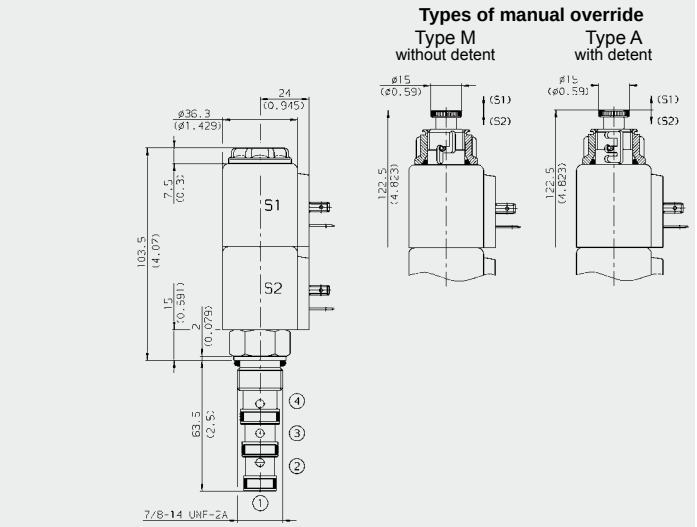
FEATURES

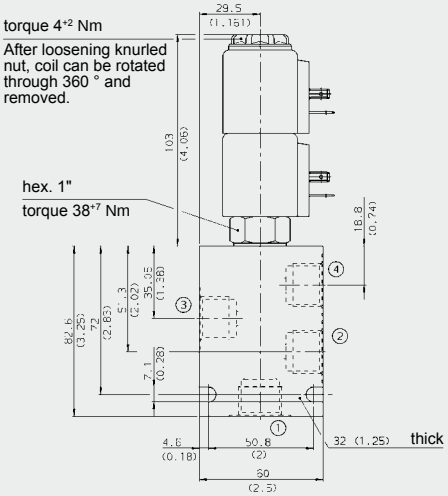
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	350 bar	
Nominal flow:	23 l/min (Consult HYDAC for flow ratings above 207 bar)	
Internal leakage:	max. 160 cm3/min at 207 bar and 34 mm2/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 to max. 420 mm²/s	
Filtration:	Class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	Steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	Steel / Polyamide
Cavity:	FC10-4	
Weight:	Valve complete:	0.67 kg
	Coil only:	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15 % of nominal voltage	
Coil duty rating:	Continuous up to max. 115% of nominal voltage at max. 60° C ambient temperature	
Coil type:	Coil…-40-1836 (2 pieces)	

DIMENSIONS

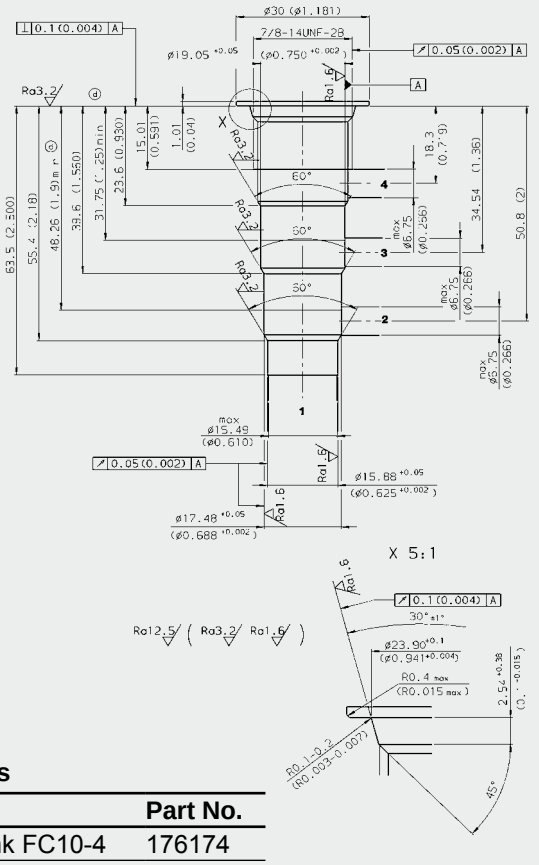




millimeter (inch)
subject to technical modifications

CAVITY

FC10-4



Form tools

Tool	Part No.
Countersink FC10-4	176174
Reamer FC10-4	176175

millimeter (inch)
subject to technical modifications

MODEL CODE

WK10H – 01 M – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Manual override
No details = without manual override
M = manual override
A = manual override, lockable

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803

Other connectors on request

Standard models

Model code	Part No.
WK10H-01-C-N-12DG	3044518
WK10H-01-C-N-24DG	3038914
WK10H-01-C-N-230AG	3044526

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB4	3038097	Aluminium, anodized	G1/2	210 bar

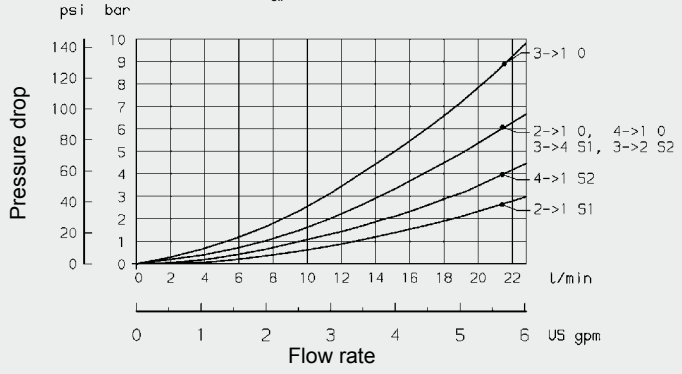
Other line bodies on request

Seal kits

Code	Material	Part No.
Seal kit FS104-N	NBR	3051912
Seal kit FS104-N	FKM	3071275

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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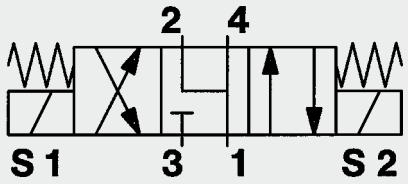
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

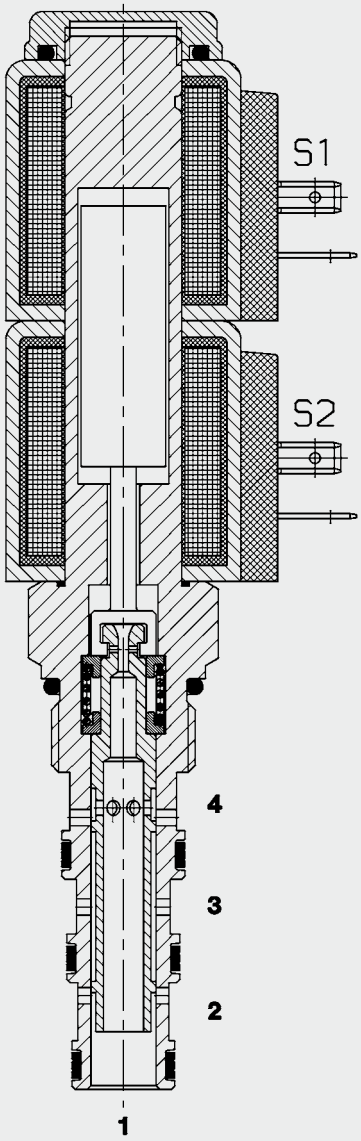


23 l/min
350 bar

4/3 Solenoid Directional Valve UNF
Spool Type, Direct-Acting
SAE-10 Cartridge – 350 bar

WK10J-01

FUNCTION



When de-energized, the valve allows flow from ports 2 and 4 to port 1, while blocking flow at port 3. When solenoid coil S1 is energized, there is free flow through the valve from port 3 to 4 and from port 2 to 1. When solenoid coil S2 is energized, there is free flow through the valve from port 3 to 2 and from port 4 to 1.

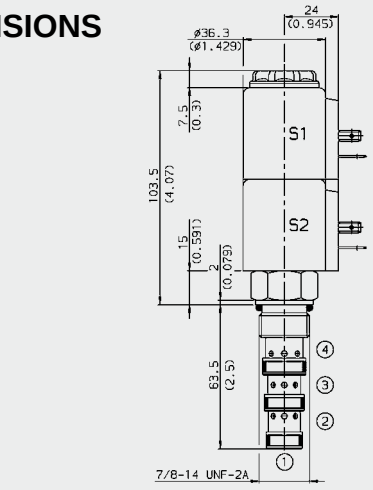
FEATURES

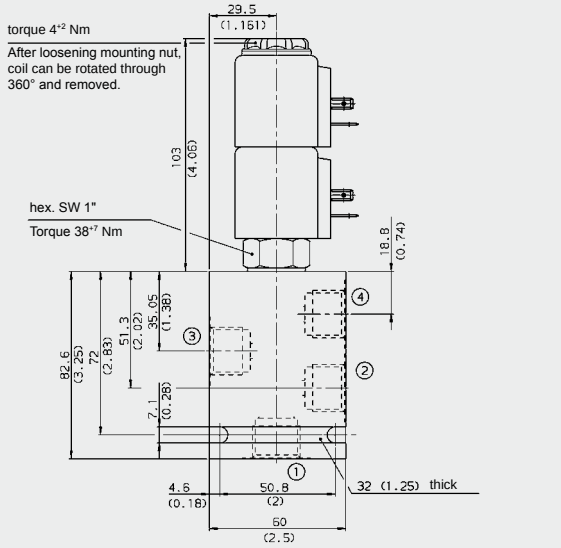
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 23 l/min (Consult HYDAC for flow ratings above 207 bar)	
Internal leakage:	164 cm³/min at 207 bar and 34 mm²/s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-4	
Weight:	Valve complete	0.67 kg
	Coil only	0.19 kg
Electrical data:		
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil	
Current draw at 20 °C:	1.5 A at 12 V DC 0.8 A at 24 V DC	
Voltage tolerance:	± 15% of the nominal voltage	
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature	
Coil type:	Coil…-40-1836 (2 pieces)	

DIMENSIONS

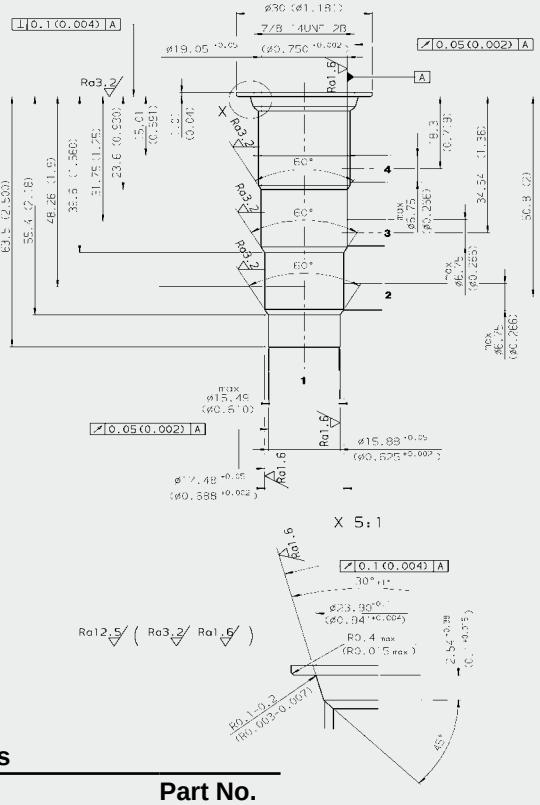




millimeter (inch)
subject to technical modifications

CAVITY

FC10-4



Form tools

Tool	Part No.
Countersink FC10-4	176174
Reamer FC10-4	176175

millimeter (inch)
subject to technical modifications

MODEL CODE

WK10J – 01 – C – N – 24 DG

Basic model
Directional spool valve, UNF

Type
01 = standard

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Standard models

Model code	Part No.
WK10J-01-C-N-24DG	3045614
WK10J-01-C-N-230AG	3051523

Other housings on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB4	3038097	Aluminium, anodized	G1/2	250 bar

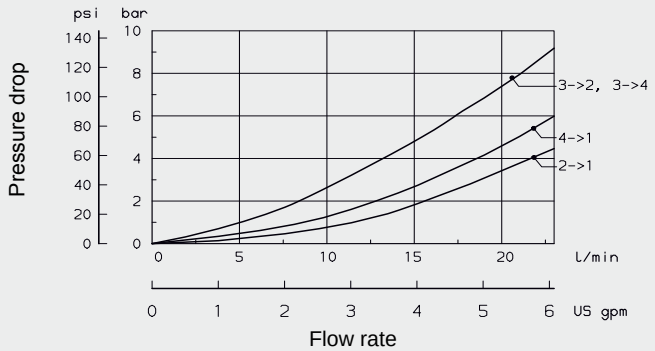
Other models on request

Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



NOTE

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Subject to technical modifications.

HYDAC Fluidtechnik GmbH
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D-66280 Sulzbach/Saar
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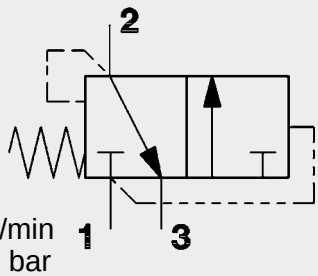
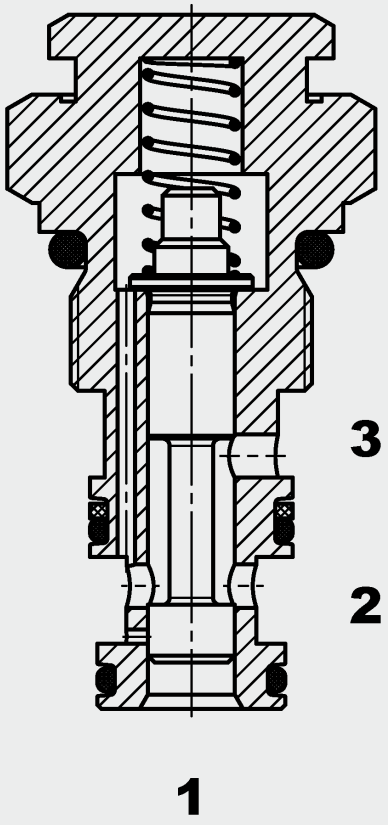


3/2 Directional Spool Valve Hydraulically Operated Direct Acting Metric Cartridge – 350 bar

WKH05330

FUNCTION



The WKH05330 is a hydraulically operated, 3/2 directional valve. Pump port 1 is closed in the normal position. There is free flow through the valve from port 2 (consumer) to port 3 (tank) below the spring pressure.

With an increase in pressure at port 1 against the spring force, the valve opens from pump port 1 to port 2. The tank port 3 is then closed.

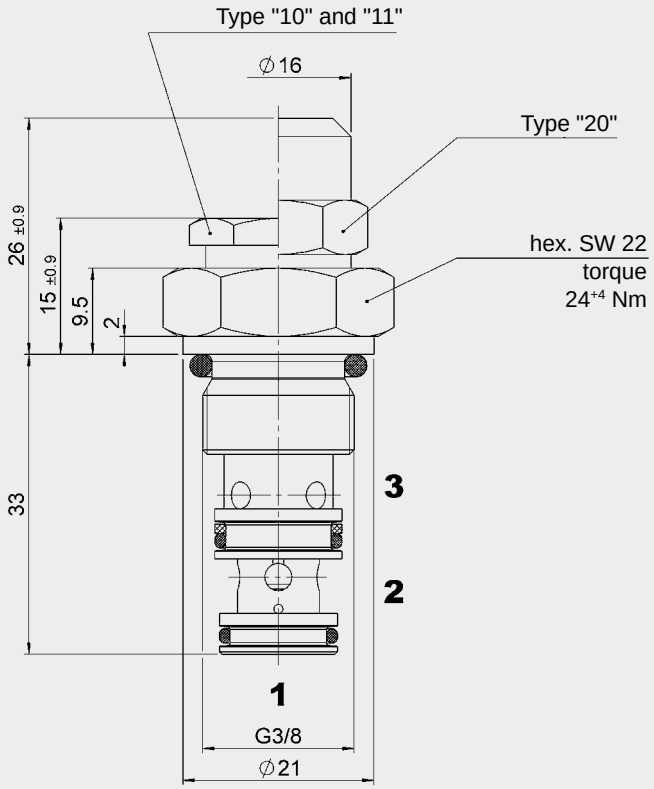
FEATURES

- Excellent stability throughout the entire flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground control spool to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 250 bar	
Nominal flow:	max. 15 l/min	
Internal leakage:	max. 120 cm³/min at 250 bar and 36 mm²/s	
Media operating temperature range:	min. -20 °C to max. +120 °C	
Ambient temperature range:	min. -20 °C to max. +120 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	FKM
	Back-up rings:	PTFE
Cavity	05330 metric	
Weight:	approx. 0.065 kg	

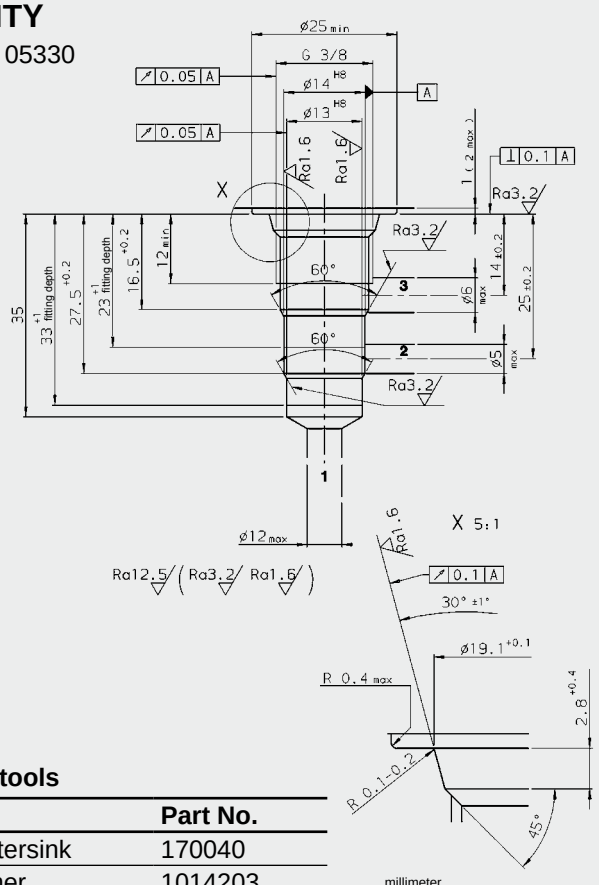
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

Metric 05330



Form tools

Tool	Part No.
Countersink	170040
Reamer	1014203

millimeter
subject to technical modifications

TYPENSCHLÜSSEL

WKH05330 – 10 X

Basic model
Directional valve, hydraulically operated

Type
10 = 2.5 bar spring pressure
11 = 5 bar spring pressure
20 = 20 bar spring pressure

Series
(determined by manufacturer)

Standard models

Model code	Part No.
WKH05330-10X	710273
WKH05330-11X	710272
WKH05330-20X	3341739

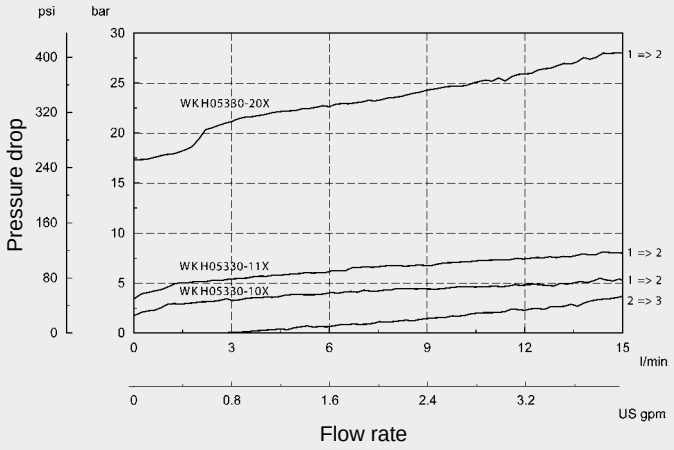
Other models on request

Seal kits

Code	Part No.
Seal kit WKH05330-XXXFKM	3006592

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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HYDAC Fluidtechnik GmbH
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D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
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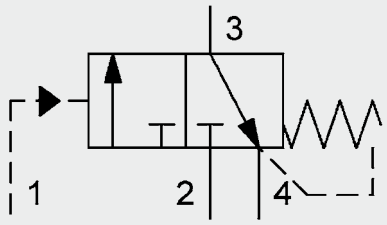
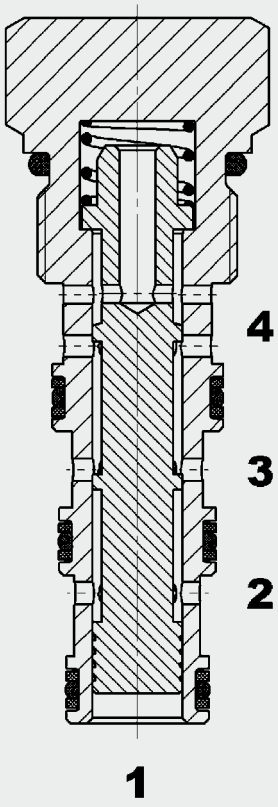
3/2 Directional Spool Valve Hydraulically Operated Direct-Acting SAE-10 Cartridge – 250 bar WKH10C

UNF



Up to 10 l/min
Up to 250 bar

FUNCTION



The WKH10C is a hydraulically operated 3/2 directional valve. Normally closed at the pump port 2, oil can flow from port 3 (consumer) to port 4 (tank) below the spring pressure.

With an application of pressure at port 1 against the spring force, the valve opens from pump port 2 to port 3. The tank port 4 is then closed.

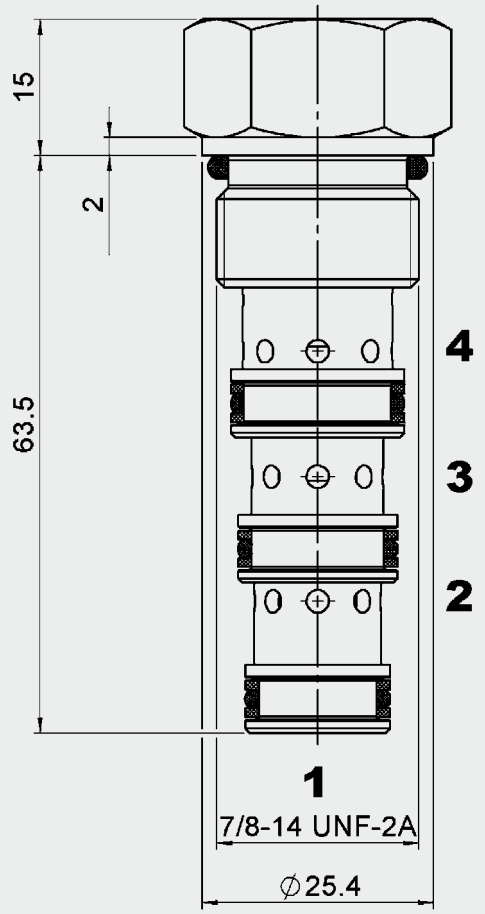
FEATURES

- Low pressure drop throughout flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life

SPECIFICATIONS

Operating pressure:	max. 250 bar
Nominal flow:	max. 10 l/min
Internal leakage:	max. 120 cm³/min at 250 bar and 36 mm²/s
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +80 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions
Materials:	Valve body: steel Spool: hardened and ground steel Seals: NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C) Back-up rings: PTFE
Cavity:	FC10-4
Weight:	approx. 0.15 kg

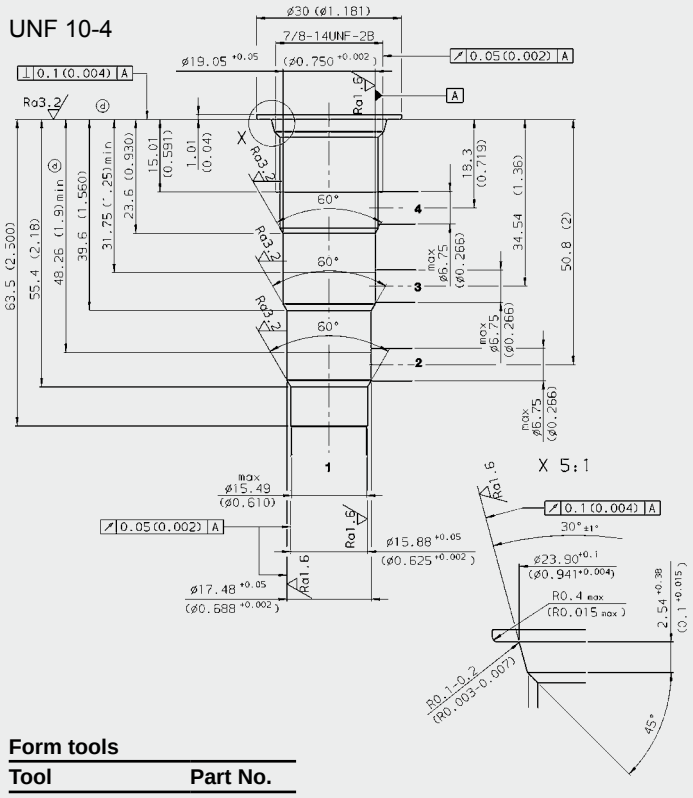
DIMENSIONS



Millimeter
Subject to technical modifications.

CAVITY

UNF 10-4



Form tools

Tool	Part No.
Countersink	176174
Reamer	176175

Millimeter (inch)
Subject to technical modifications.

MODEL CODE

WKH 10 C – 01 – C – N – 26

Basic model
Directional valve, hydraulically operated

Cavity

Symbol

Type
01 = standard
(negative overlap)

Body and ports
C = cartridge only
Versions with bodies on request*

Seals
N = NBR (standard)
V = FKM (optional)

Switch pressure
26 = 1.8 bar (26 PSI) up to 3.6 bar (52 PSI)
Others on request

Standard models

Model code	Part No.
WKH10C-01-C-N-26	3036366

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	1/2 BSP	420 bar
FH104-AB4	3038097	Aluminium, anodized	1/2 BSP	210 bar

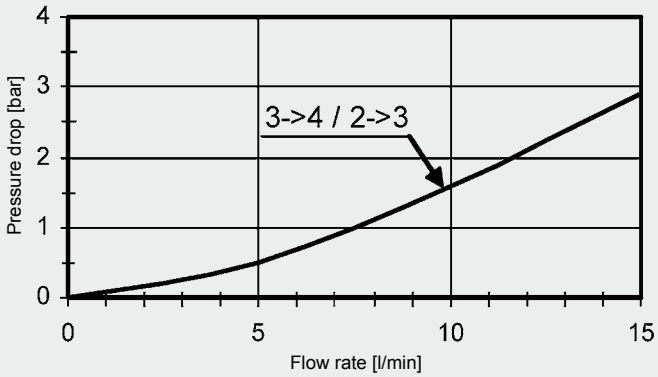
Other line bodies on request

Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

PERFORMANCE

measured at ν = 33 mm²/s, T_{oil} = 46 °C,



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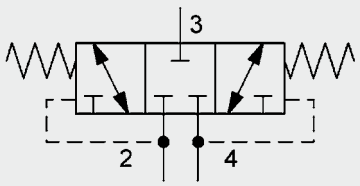
3/3 Directional Valve Hydraulically Operated, Direct Acting SAE-10 Cartridge – 250 bar

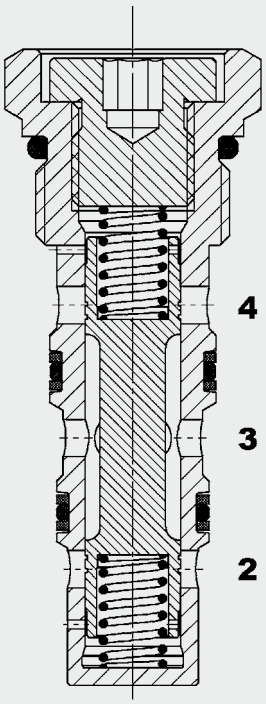
UNF

WKH10DC



Up to 45 l/min
Up to 350 bar

FUNCTION



The WKH10DC is a hydraulically operated 3/3 directional valve in a 4-way cavity. In the spring-centred normal position, all ports are closed.

When there is an increase in pressure at port 2 against the spring force, the valve opens between port 3 and port 4. Oil can flow through the valve in both directions.

Alternatively, when there is an increase in pressure at port 4 against the spring force, the valve opens between port 2 and port 3. Oil can flow through the valve in both directions.

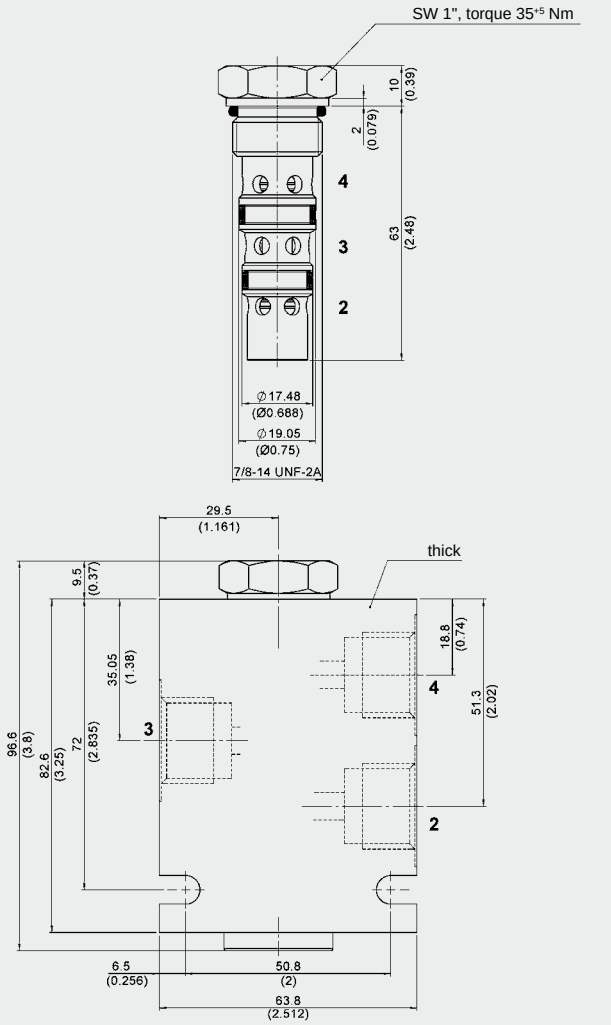
FEATURES

- Principal application is as a flushing valve for hydrostatic drives
- Excellent stability throughout the entire flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Versions available with various switch pressures

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 45 l/min	
Internal leakage:	Max. 400 cm³/min at 350 bar and 36 mm²/s	
Media operating temperature range:	-20 °C to +100 °C	
Ambient temperature range:	-20 °C to +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity:	min. 10mm²/s to max. 420mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional)
	Back-up ring:	PTFE
Cavity	FC10-4 (port 1 not used)	
Weight:	approx. 0.115 kg	

DIMENSIONS



millimeter (inch)
subject to technical modifications

MODEL CODE

WKH 10 DC / 24 – 01 – C – N – 050

Basic model
3/3 directional valve, hydraulically operated

Cavity
UNF, nominal size 10

Function symbol

Internal pressure tap
24 = at port 2 and port 4

Type
01 = standard, negative overlap in centre position
14 = positive overlap in centre position
81 = def. leakage 2-3 l/min at 9 bar in centre position

Body and ports*
C = cartridge only
Versions with bodies on request*

Seals
N = NBR (standard)
V = FKM (optional)

Switch pressure
050 = 3.5 bar (50 PSI)

Standard models

Model code	Part No.
WKH10DC/24-14-C-N-050	3481315
WKH10DC/24-81-C-N-050	3543256

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	1/2 BSP	420 bar
FH104-AB4	3038097	Aluminium, clear anodized	1/2 BSP	210 bar

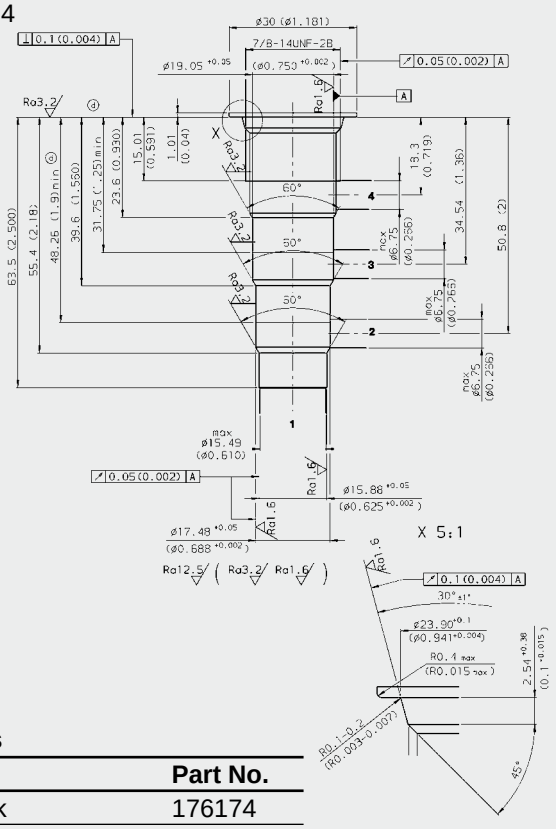
Other bodies on request

Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

CAVITY

UNF FC10-4



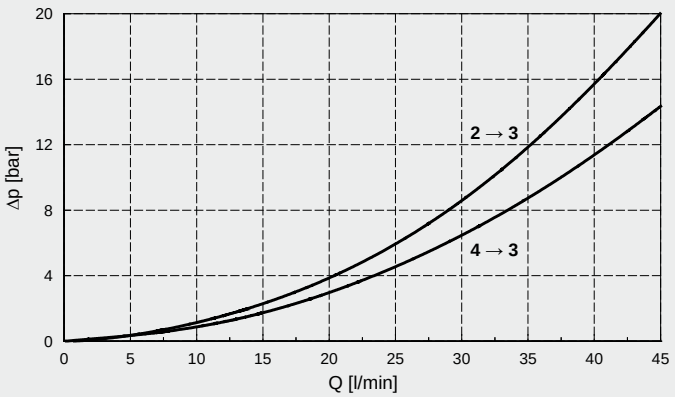
Form tools

Tool	Part No.
Countersink	176174
Reamer	176175

millimeter (inch)
subject to technical modifications

PERFORMANCE

Measured at ν = 46 mm²/s
T_{oil} = 40 °C



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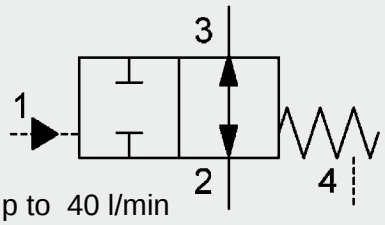


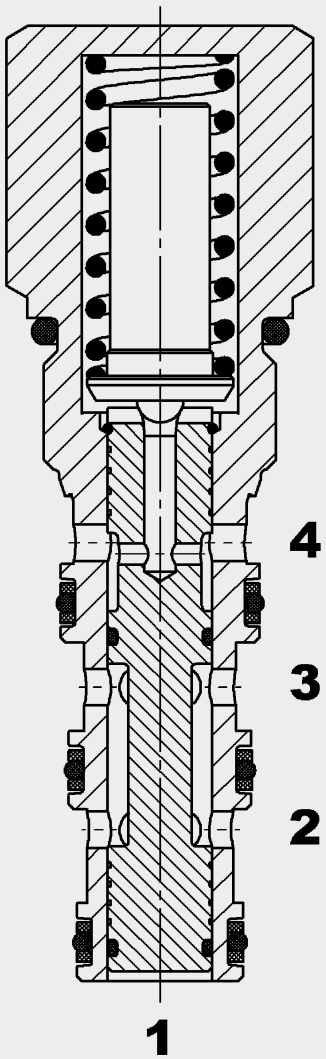
Up to 40 l/min
Up to 350 bar

2/2 Directional Spool Valve Hydraulically-Operated Direct-Acting Normally Open SAE-10 Cartridge – 350 bar

UNF

WKH10V/14

FUNCTION



The WKH10V is a hydraulically-operated, 2/2 directional valve. Valve is normally open, i.e. free flow between ports 3 and 2 in both directions.

When there is an increase in pressure at port 1 against the spring force, the valve closes in both directions. Any pressure at port 4 is additive to the spring value.

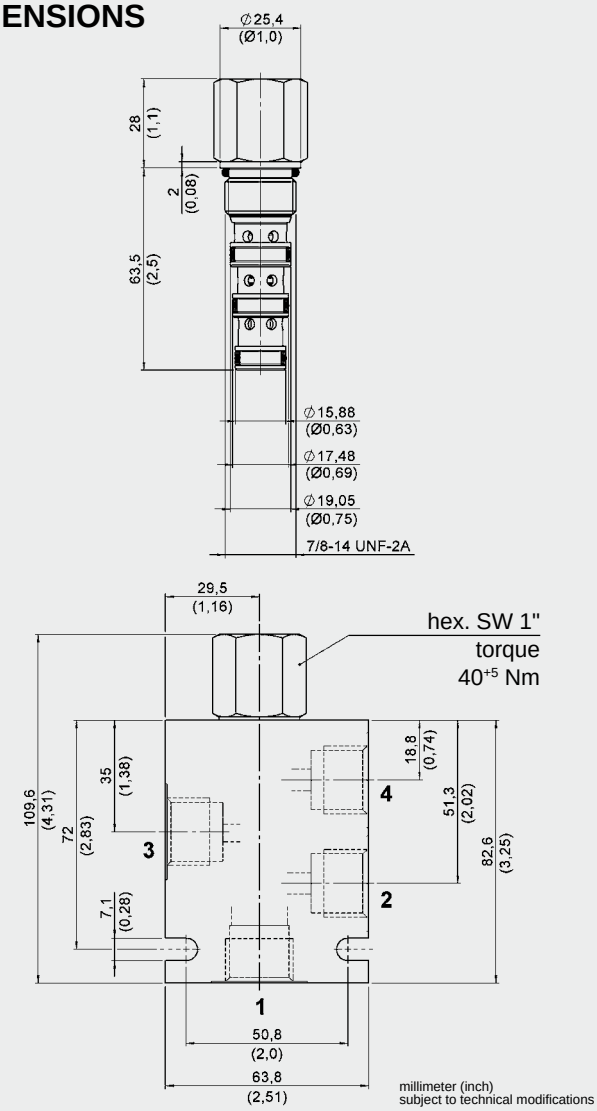
FEATURES

- Low pressure drop throughout flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life

SPECIFICATIONS

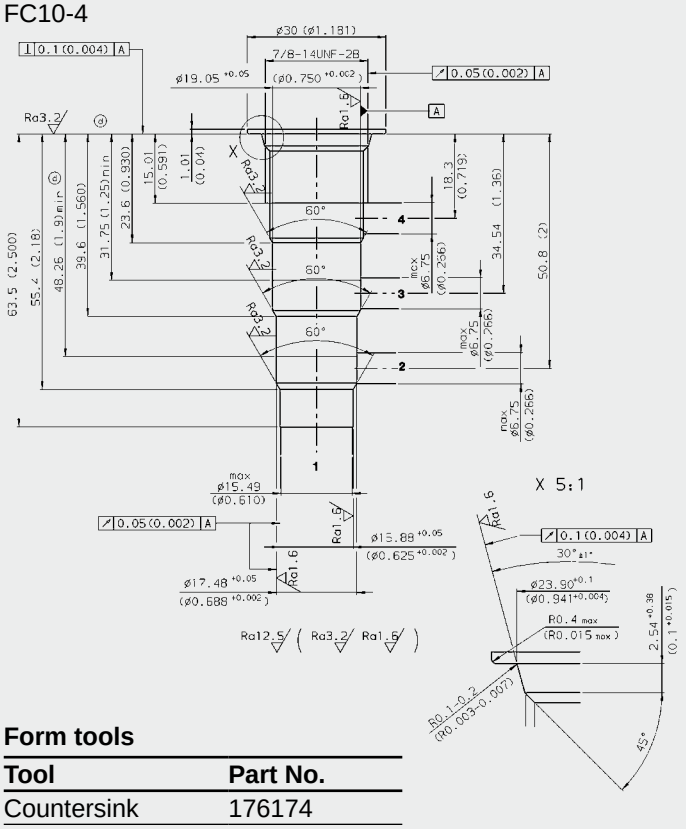
Operating pressure:	max. 350 bar	
Nominal flow:	max. 40 l/min	
Internal leakage:	max. 200 cm³/min at 350 bar and 36 mm²/s	
Media operating temperature range:	min. -30 °C to +100 °C	
Ambient temperature range:	min. -30 °C to +80 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity:	min. 7.4mm²/s to max. 420mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up ring:	PTFE
Cavity:	FC10-4	
Weight:	approx. 0.192 kg	

DIMENSIONS



CAVITY

FC10-4



Form tools

Tool	Part No.
Countersink	176174
Reamer	176175

MODEL CODE

WKH 10 V / 14 – 01 – C – NS – 070

Basic model
Directional valve, hydraulically operated

Cavity

Symbol
V = normally open

Internal pressure pilot
14 = port 1 and port 4

Type
01 = standard

Body and ports*
C = cartridge only
Versions with bodies on request*

Seals
N = NBR (standard)
NS = NBR standard with additional O-ring on control spool
V = FKM (optional)
VS = FKM standard with additional O-ring on control spool

Switch pressure
70 = 4.8 bar (70 PSI)
90 = 6.2 bar (90 PSI)
30 = 9 bar (130 PSI)
180 = 12.4 bar (180 PSI)

Higher switch pressures on version with O-ring on control spool!

Standard models

Model code	Part No.
WKH10V/14-01-C-N-070	3633166
WKH10V/14-01-C-N-090	3633167
WKH10V/14-01-C-N-130	3633168
WKH10V/14-01-C-N-180	3633170

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	1/2 BSP	420 bar
FH104-AB4	3038097	Aluminium, anodized	1/2 BSP	210 bar

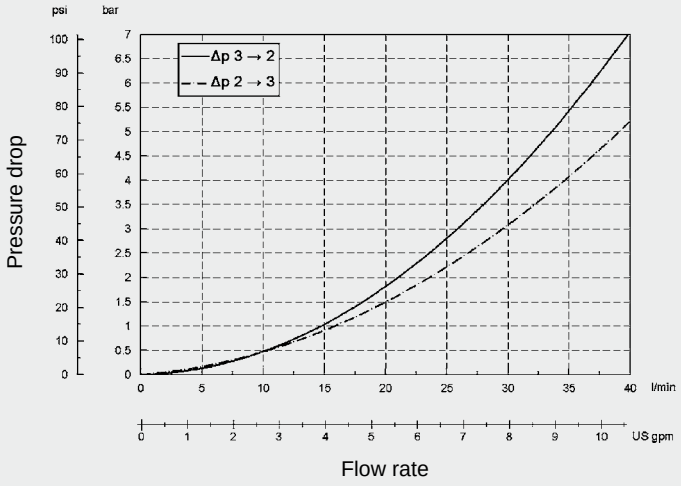
Other line bodies on request

Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



NOTE

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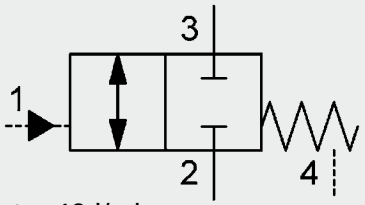
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



Up to 40 l/min
Up to 350 bar

2/2 Directional Spool Valve Hydraulically Operated, Direct-Acting Normally Closed SAE-10 Cartridge – 350 bar

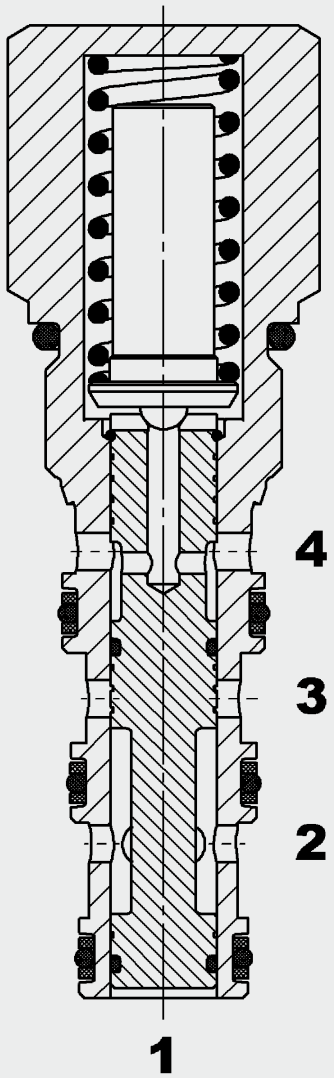
UNF

WKH10W/14

FEATURES

- Low pressure drop throughout flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life

FUNCTION



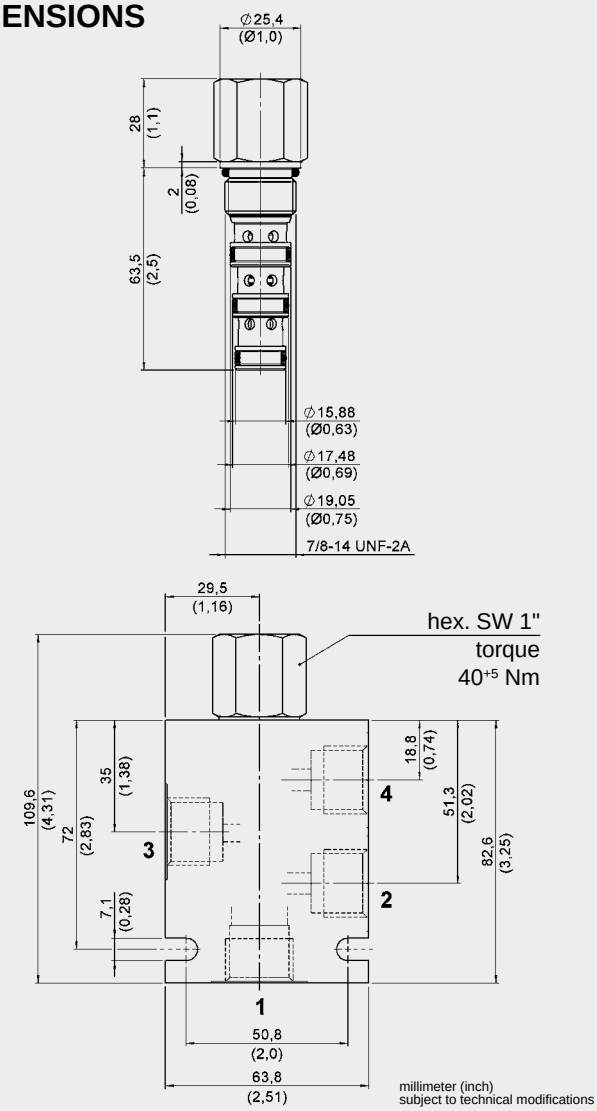
The WKH10W is a hydraulically-operated, 2/2 directional valve. Ports 3 and 2 are closed in the normal position.

When there is an increase in pressure at port 1 against the spring force, the valve opens between port 3 and port 2. Oil can flow through the valve in both directions. Any pressure at port 4 is additive to the spring value.

SPECIFICATIONS

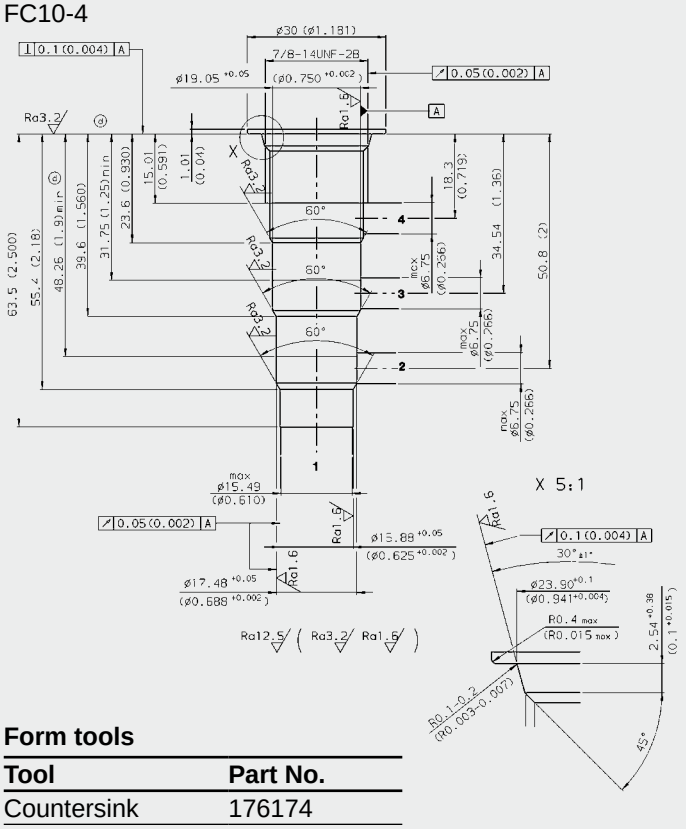
Operating pressure:	max. 350 bar	
Nominal flow:	max. 40 l/min	
Internal leakage:	max. 200 cm³/min at 350 bar and 36 mm²/s	
Media operating temperature range:	-30 °C to +100 °C	
Ambient temperature range:	min. -30 °C to +80 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up ring:	PTFE
Cavity:	FC10-4	
Weight:	approx. 0.192 kg	

DIMENSIONS



CAVITY

FC10-4



Form tools

Tool	Part No.
Countersink	176174
Reamer	176175

MODEL CODE

WKH 10 W / 14 – 01 – C – NS – 070

Basic model
Directional valve, hydraulically operated

Cavity

Symbol
W = normally closed

Internal pressure pilot
14 = port 1 and port 4

Type
01 = standard

Body and ports*
C = cartridge only
Versions with bodies on request*

Seals
N = NBR (standard)
NS = NBR standard with additional O-ring on control spool
V = FKM (optional)
VS = FKM standard with additional O-ring on control spool

Switch pressure
70 = 4.8 bar (70 PSI)
90 = 6.2 bar (90 PSI)
30 = 9 bar (130 PSI)
180 = 12.4 bar (180 PSI)

Higher switch pressures on version with O-ring on control spool!

Standard models

Model code	Part No.
WKH10W/14-01-C-N-070	3633171
WKH10W/14-01-C-N-090	3633172
WKH10W/14-01-C-N-130	3633173
WKH10W/14-01-C-N-180	3633174

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	1/2 BSP	420 bar
FH104-AB4	3038097	Aluminium, anodized	1/2 BSP	210 bar

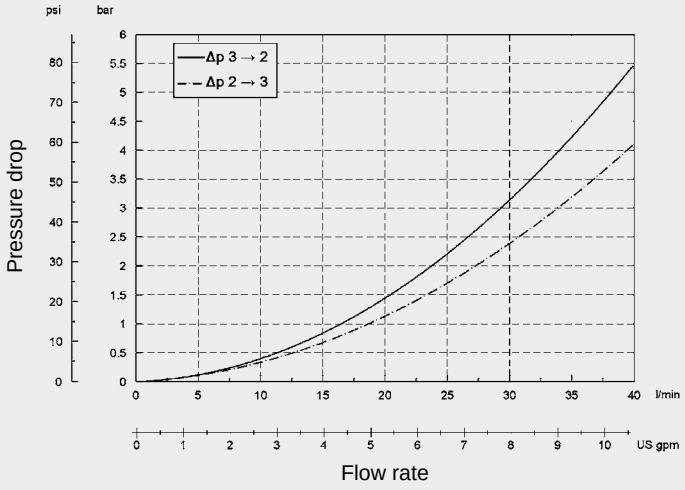
Other line bodies on request

Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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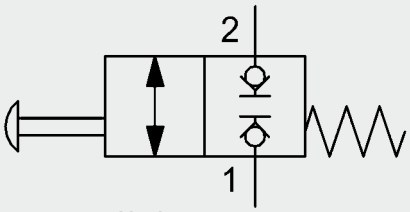
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

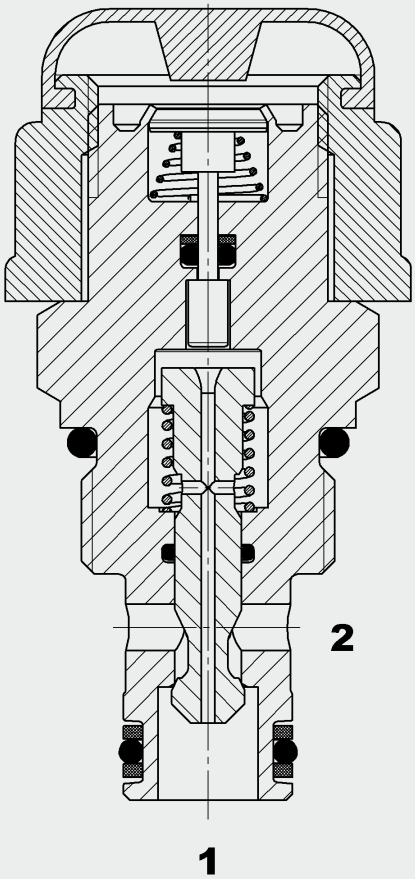
2/2 Directional Poppet Valve UNF
Manually Operated
Normally Closed
SAE-08 Cartridge – 250 bar

WS08W…M



Up to 20 l/min
Up to 250 bar

FUNCTION



The directional valve WS08W...M is a normally closed, manually operated poppet valve.

The valve is operated manually and, as long as the mechanical plunger is pressed, allows flow between port 1 and port 2 in both directions.

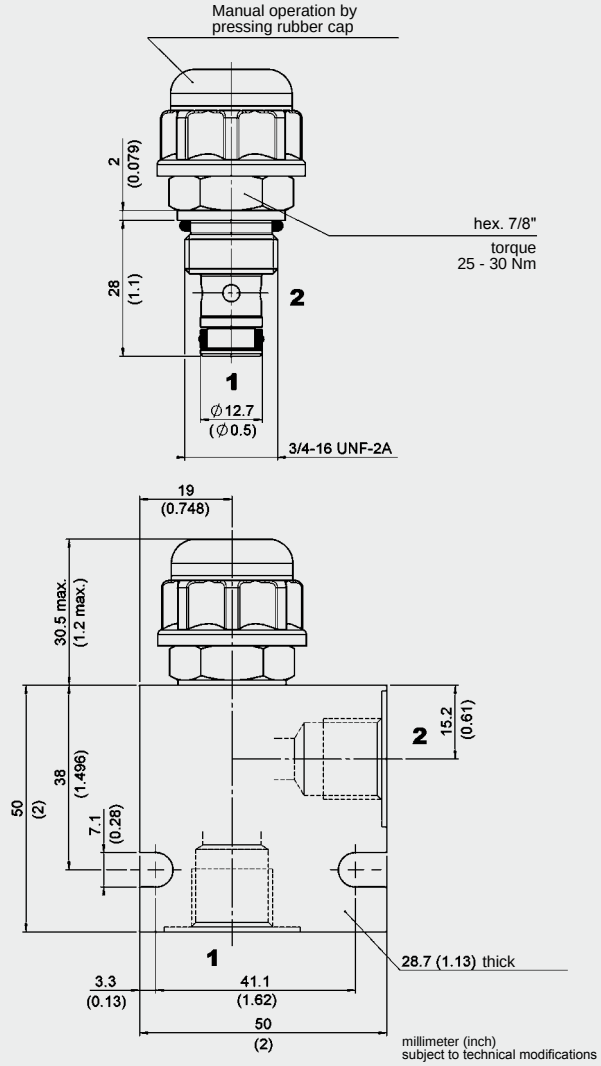
FEATURES

- For use in systems to be controlled manually
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

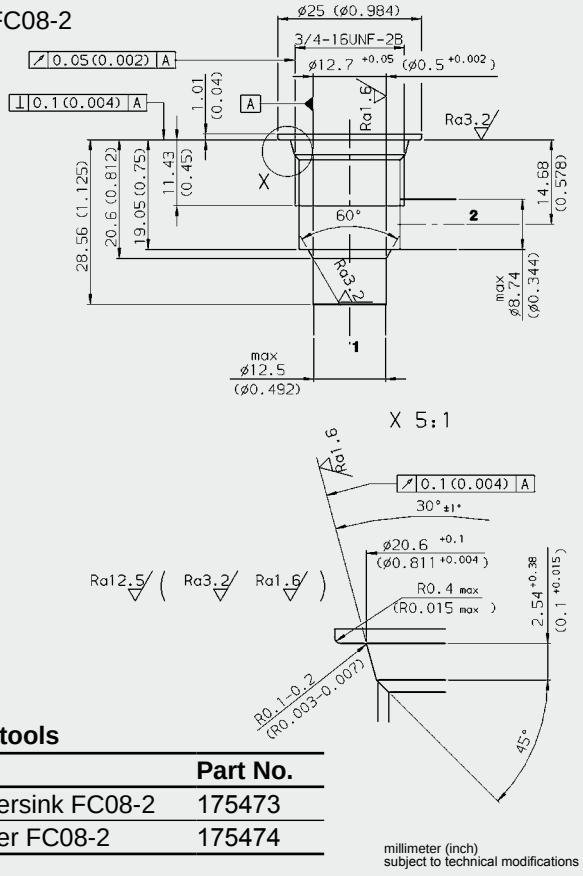
Operating pressure:	max. 250 bar	
Nominal flow:	max. 20 l/min	
Operating force:	Thumb pressure (approx. 40 - 70 N)	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	FC08-2	
Weight:	0.09 kg	

DIMENSIONS



CAVITY

UNF FC08-2



Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

millimeter (inch)
subject to technical modifications

MODEL CODE

WS08W – 01 – C – N – M

Designation
Directional poppet valve, manually operated

Type
01 = standard
Other models on request

Body and ports*
C = cartridge only
SB3 = G3/8 port, steel housing
AB3 = G3/8 port, aluminium housing

Seals
N = NBR (standard)
V = FKM (optional)

Type of operation
M = manual

Standard models

Model code	Part No.
WS08WM-01-C-N	3054918

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar

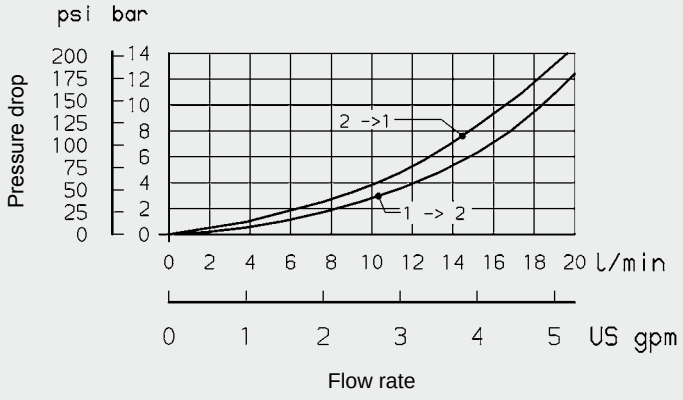
Other line bodies on request

Seal kits

Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
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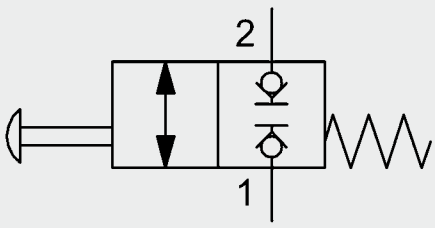
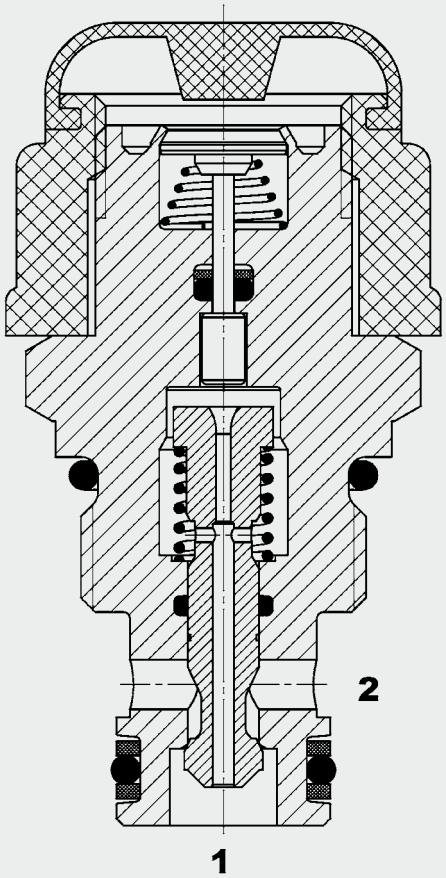


Up to 20 l/min
Up to 250 bar

2/2 Directional Poppet Valve Manually Operated, Normally Closed Metric Cartridge – 250 bar WSM06020W...M

FUNCTION



The directional valve WSM06020W...M is a normally closed, manually operated poppet valve.

The valve is operated manually and, as long as the mechanical plunger is pressed, allows flow between port 1 and port 2 in both directions.

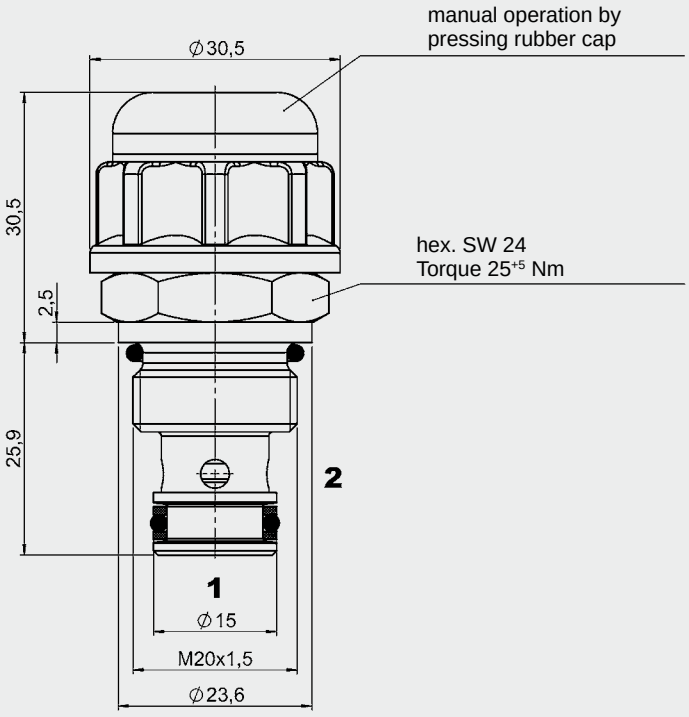
FEATURES

- For use in systems to be controlled manually
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure	max. 250 bar	
Nominal flow:	max. 20 l/min	
Operating force:	Thumb pressure (approx. 40 - 70 N)	
Internal leakage:	Leakage-free	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	06020 metric	
Weight:	0.09 kg	

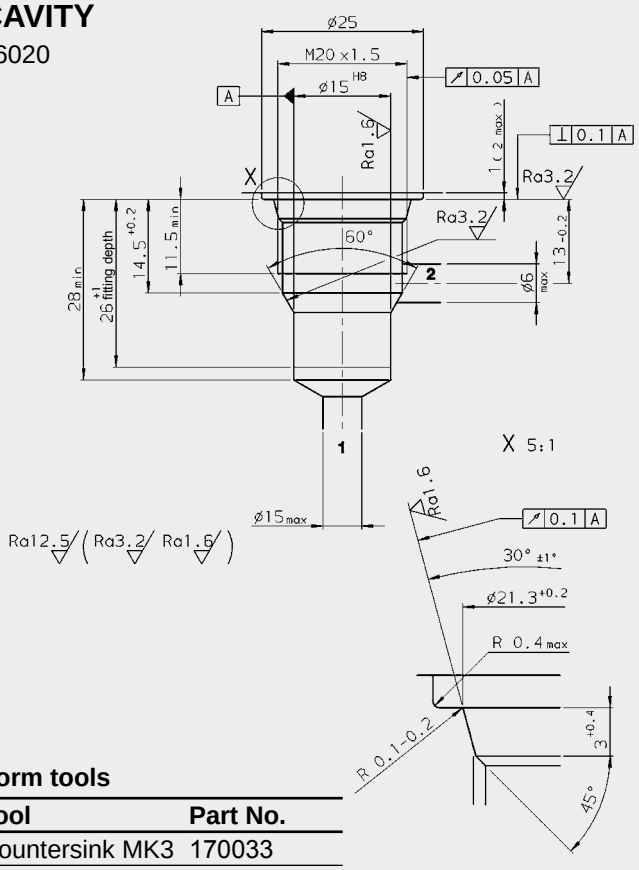
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

06020



Form tools

Tool	Part No.
Countersink MK3	170033
Reamer MK2	1000768

millimeter
subject to technical modifications

MODEL CODE

WSM06020W – 01 – C – N – M

Basic model
Directional poppet valve, metric

Type
01 = standard

Body and ports
C = cartridge

Seals
N = NBR (standard)
V = FPM

Type of operation
M = manual

Standard models

Model code	Part No.
WSM06020W-01-C-N-M	3059183

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G 3/8	420 bar
R06020-10X-01	276842	Steel, zinc-plated	G 3/8	420 bar

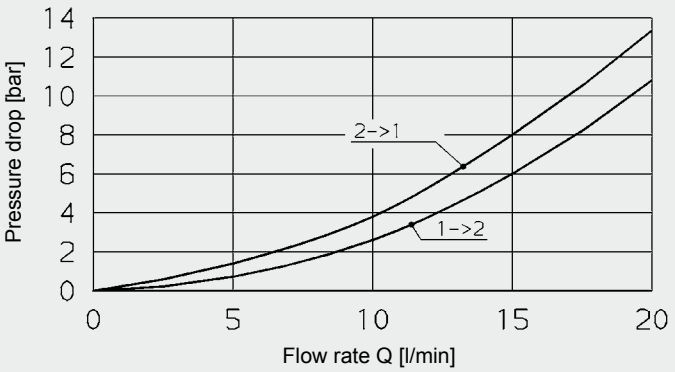
Other line bodies on request

Seal kits

Code	Part No.
SEAL KIT 06020-NBR	3119017
SEAL KIT 06020-FKM	3262477

PERFORMANCE

Measured at ν = 33 mm²/s, T_{oil} = 46 °C



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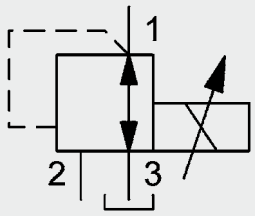


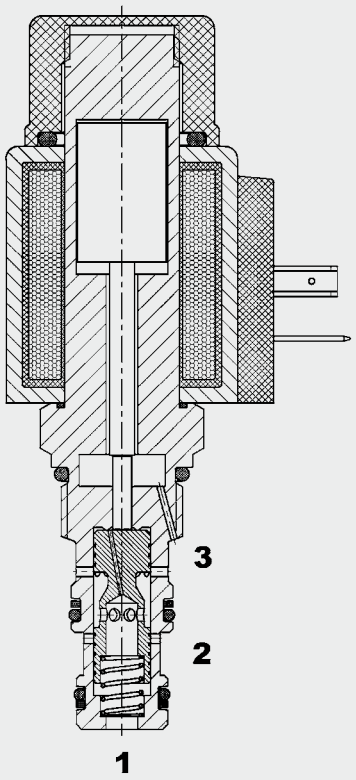
12 l/min
350 bar

3-Way Proportional Pressure Reducing Valve Spool Type, Direct Acting SAE-08 Cartridge – 350 bar

UNF

PDR08-01

FUNCTION



The proportional pressure reducing valve PDR08-01 is a direct-acting 3-way spool-type valve, with relief included. Its function is to maintain a constant pressure at the consumer. When de-energized, port 2 is closed and port 1 (consumer) is connected to port 3 (tank). When the control current increases, the solenoid coil exerts a force on the control spool which is proportional to the control current and thereby defines the regulated pressure at port 2. This setting is proportional to the control current.
In addition the valve has a pressure relieving function: If the pressure across consumer port 1 rises above the control pressure due to external force, the control piston is pushed further against the spring and relieves the consumer to tank port 3.
Any pressure at port 3 is additive to the pre-set control pressure.

FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar at port 2	
Nominal flow:	12 l/min	
Operating pressure ranges:	up to 14 bar up to 20 bar up to 35 bar	up to 48 bar up to 75 bar up to 138 bar
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 18/16/13 to 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body: Spool: Seals: Back-up rings: Coil:	free-cutting steel hardened and ground steel NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C) PTFE Steel / Polyamide
Cavity:	FC08-3	
Weight:	Valve complete Coil only	0.364 kg 0.19 kg
Electronic data:		
Control current:	1050 mA, 8.8 Ohm (24 Volt) 2100 mA, 2.2 Ohm (12 Volt)	
Internal leakage:	< 50 ml/min at 350 bar	
Dither frequency:	approx. 140 Hz - 250 Hz	
Response time:	energized: de-energized:	approx. 40 ms approx. 30 ms
Hysteresis with dither:	2-4% of I_{nom}	
Repeatability:	≤ 2% of I_{nom}	
Hysteresis:	≤ 2% of I_{nom}	
Response sensitivity:	≤ 1 % of I_{nom}	
Coil type:	Coil…-40-1836	

The PDR08 can also be supplied with an emergency pressure adjustment (version -01M). This allows a manual pressure adjustment of the valve if the electrical signal is interrupted. This adjustment should be used only in the case of electrical failure since the manual setting would be additive to the electrical setting and the system could be damaged when power is restored.

MODEL CODE

PDR08–01 M - C - N - 110 - 24 PG - 8.8

Basic model
Proportional pressure reducing valve, UNF

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Pressure range
20 = up to 14 bar (200 PSI)
30 = up to 20 bar (300 PSI)
50 = up to 35 bar (500 PSI)
110 = up to 75 bar (1100 PSI)
200 = up to 138 bar (2000 PSI)

Coil voltage
12 = 12 V DC (2.2 Ohm)
24 = 24 V DC (8.8 Ohm)

Coil connectors (type 40-1836)
DC: PG = DIN connector to EN175301-803
PU = AMP Junior Timer, 2-pole, axial
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial, DT04-22P-EF 04
Other connectors on request

Coil resistance
2.2 = 2.2 Ohm (12 V)
8.8 = 8.8 Ohm (24 V)

Standard models

Model code	Part No.
PDR08-01-C-N-20-12PG-2.2	3111707
PDR08-01-C-N-110-12PG-2.2	3111705
PDR08-01-C-N-200-12PG-2.2	3111728
PDR08-01-C-N-20-24PG-2.2	3109439
PDR08-01-C-N-110-24PG-2.2	3111706
PDR08-01-C-N-200-24PG-2.2	3111729

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH083-SB3	560922	Steel, zinc-plated	G3/8	420 bar
FH083-AB3	3011427	Aluminium, anodized	G3/8	210 bar

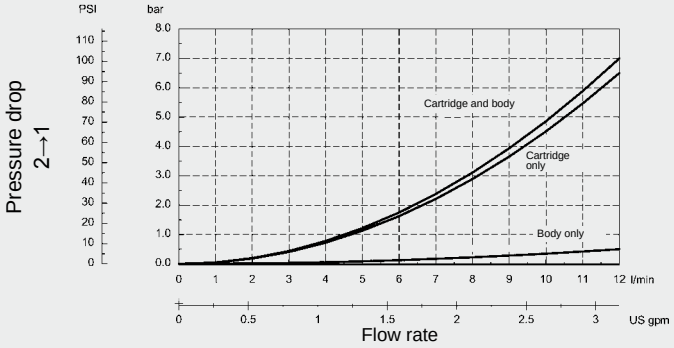
Other bodies on request

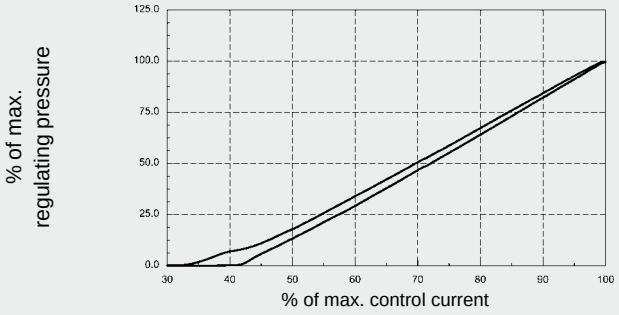
Seal kits

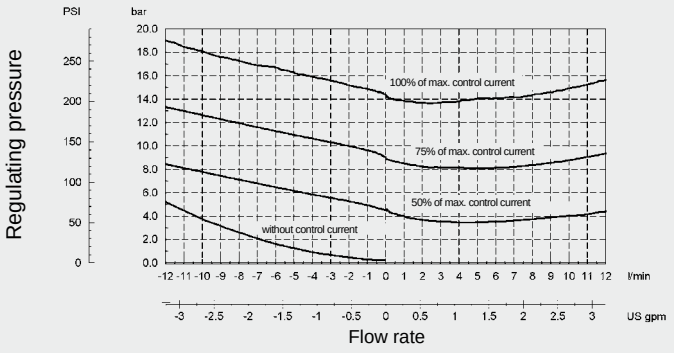
Code	Material	Part No.
FS083-N SEAL KIT	NBR	3054795
FS083-V SEAL KIT	FKM	2591059

PERFORMANCE

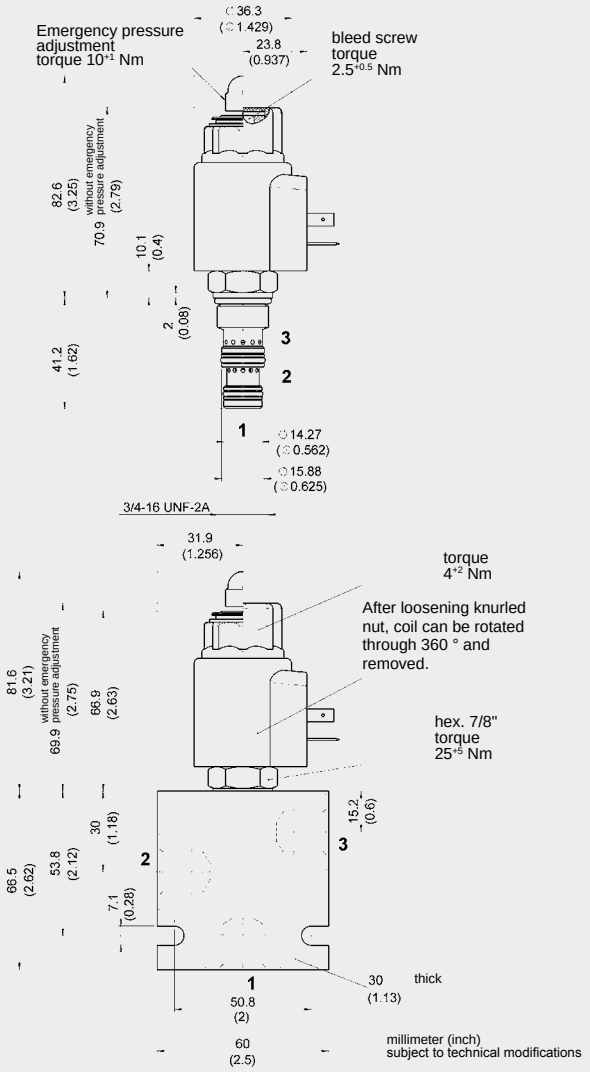
Measured at ν = 34 mm²/s, T_{oil} = 46 °C





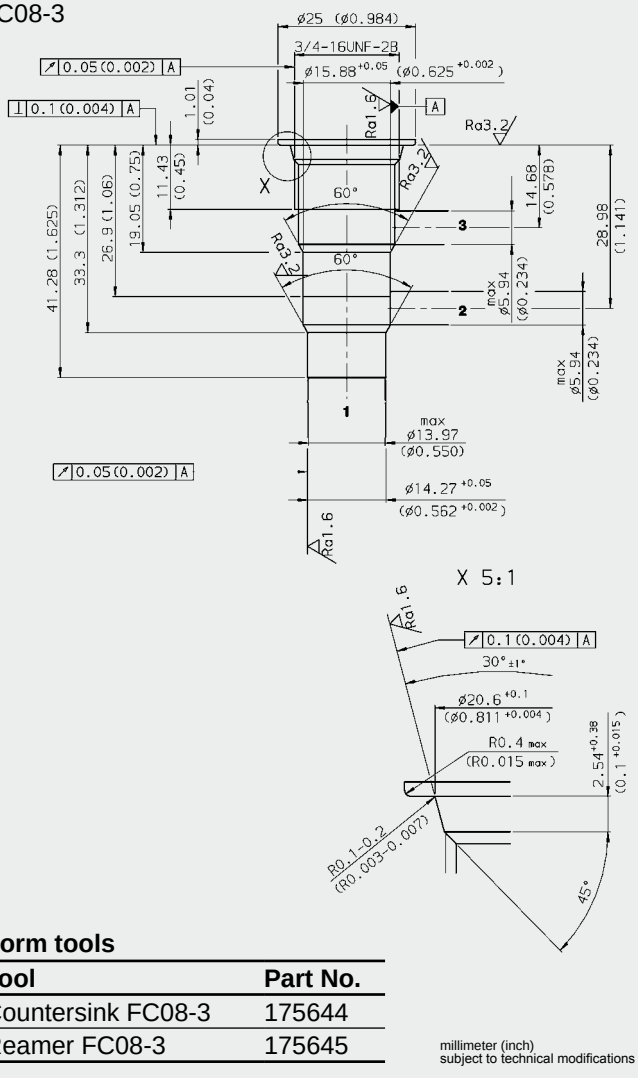


DIMENSIONS



CAVITY:

FC08-3



Form tools

Tool	Part No.
Countersink FC08-3	175644
Reamer FC08-3	175645

millimeter (inch)
subject to technical modifications

Note

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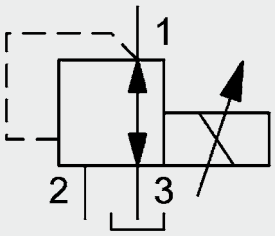
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

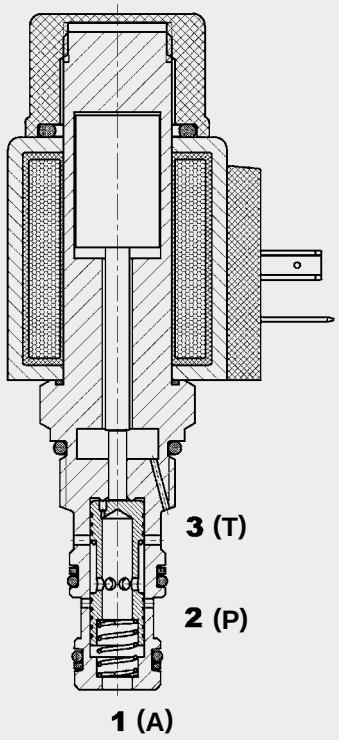


Up to 17 l/min
Up to 138 bar

3-Way Proportional Pressure Reducing Valve Spool Type, Direct Acting SAE-08 Cartridge – 138 bar PDR08-02

UNF

FUNCTION



The proportional pressure reducing valve PDR08-02 is a direct-acting 3-way spool-type valve, with relief included. In the normal position (no current signal), the valve is closed on the inlet side (port 2) and the outlet side (port 1) is connected to tank (port 3). If the solenoid is energized, pressure is applied to the control piston in proportion to the electrical current.
The control piston therefore moves and allows flow from port 2 to port 1. Any pressure at tank port 3 is additive to the pre-set control pressure. If, as a result of external factors, the pressure at port 1 rises above the set pressure, the valve opens from port 1 to tank port 3. To function correctly, the inlet pressure must be greater than the control pressure.

FEATURES

- Main application is in accumulator charging circuits and as a pilot control for directional valves
- Particularly low pressure step when transferring from pressure reducing to pressure relief function
- External surfaces zinc-plated and corrosion-proof
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Low pressure drop due to CFD optimized flow path
- Fine adjustment available as an option
- **Differences between PDR08-02 and PDR08-01**: In contrast to the PDR08-01, the PDR08-02 is designed asymmetrically, i.e. the valve is rated from P to A (pressure reducing function) up to 17 l/min and from A to T (pressure relief function) up to 10 l/min. Moreover the valve has zero overlap which has the effect of reducing the hysteresis and leakage.

SPECIFICATIONS

Operating pressure:	At port 2: max. 350 bar
Control pressure:	At port 1: max. 138 bar
Tank pressure:	At port 3: max. 300 bar
Pressure ranges:	14 / 20 / 35 / 38 / 49 / 75 / 138 bar
Nominal flow:	max. 10 l/min A→T / max. 17 l/min P→A
Internal leakage from 2 to 1:	Less than 50 cm^3/min at 350 bar, at port 2 (0 mA)
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm^2/s to max. 420 mm^2/s
Filtration:	Class 19/17/14 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions
Materials:	Valve body: steel Spool: hardened and ground steel Seals: NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C) Back-up rings: PTFE
Cavity:	FC08-3 UNF
Weight:	Valve only: 0.5 kg, Coil: 0.22 kg
Electronic data:	
Type of voltage:	1050 mA, 8.8 Ohm (24 V) 2100 mA, 2.2 Ohm (12 V)
Voltage tolerance:	± 15% of nominal
Dither frequency:	140 – 250 Hz
Hysteresis with dither:	2 – 4 % of the max. control current
Repeatability:	≤ 1 % of the max. pressure
Hysteresis:	≤ 1 % of the max. control current
Response sensitivity:	≤ 1 % of the max. control current
Coil type:	Coil (12 or 24) P ...40-1836

Note:
The PDR08 can also be supplied with an emergency pressure adjustment (version -02M).
This allows a manual pressure adjustment of the valve if the electrical signal is interrupted.
This adjustment should be used only in the case of electrical failure since the manual setting would be additive to the electrical setting and the system could be damaged when power is restored.
In order to achieve optimal function, any trapped air should be vented using the venting screw on the face of the pole tube (not fitted to version -02M).

MODEL CODE

PDR08-02 M – C – N – 50 – 12 PG – 2.2

Basic model
Proportional pressure reducing valve, UNF

Type
02 = standard

Options
No details = no option
M = manual override
T = tolerance compensation (on request, with fine adjustment)

Body and ports*
C = cartridge only
Versions with bodies on request

Seals
N = NBR (standard)
V = FKM (optional)

Pressure range
20 = up to 14 bar outlet pressure (200 PSI ÷10)
30 = up to 20 bar outlet pressure (300 PSI ÷10)
50 = up to 35 bar outlet pressure (500 PSI ÷10)
55 = up to 38 bar outlet pressure (550 PSI ÷10) (model T only)
60 = up to 42 bar outlet pressure (600 PSI ÷10)
70 = up to 49 bar outlet pressure (700 PSI ÷10)
110 = up to 75 bar outlet pressure (1100 PSI ÷10)
200 = up to 138 bar outlet pressure (2000PSI ÷10)

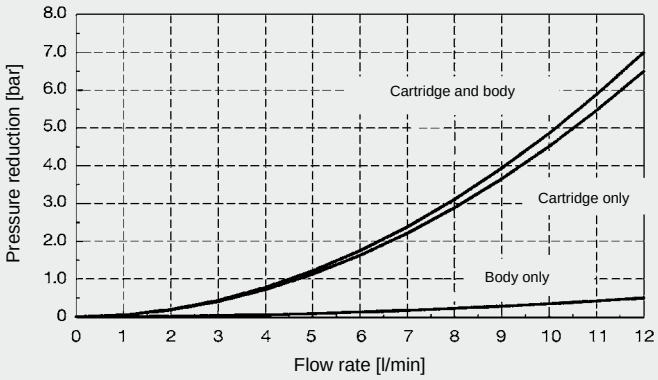
Coil voltage
12 = 12 V (2.2 Ohm)
24 = 24 V (8.8 Ohm)

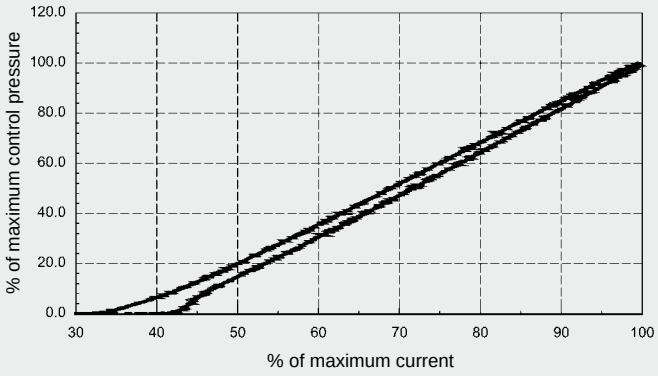
Coil connectors ... 40-1836
PG = DIN connector to EN175301-803
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial
PU = AMP Junior Timer, 2-pole, axial
Other connectors on request

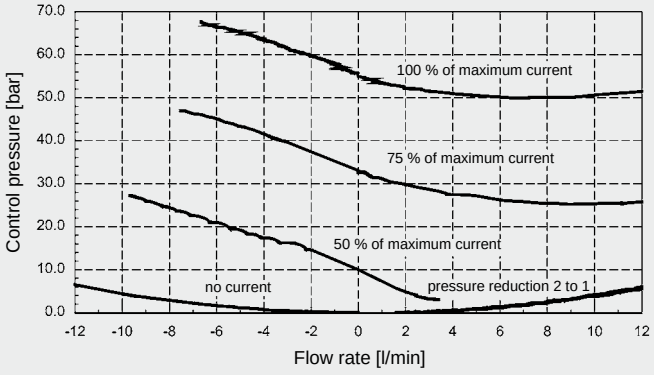
Coil resistance
2.2 = 2.2 Ohm (12 V)
8.8 = 8.8 Ohm (24 V)

PERFORMANCE

T_{oil} = 46 °C, ν = 34 mm²/s







Standard models

Model code	Part No.
PDR08-02-C-N-20-12PG-2.2	3437006
PDR08-02-C-N-30-12PG-2.2	3437007
PDR08-02-C-N-50-12PG-2.2	3436994
PDR08-02-C-N-70-12PG-2.2	3437008
PDR08-02-C-N-110-12PG-2.2	3437009
PDR08-02-C-N-200-12PG-2.2	3437010
PDR08-02-C-N-20-24PG-8.8	3437011
PDR08-02-C-N-30-24PG-8.8	3437012
PDR08-02-C-N-50-24PG-8.8	3437005
PDR08-02-C-N-70-24PG-8.8	3437013
PDR08-02-C-N-110-24PG-8.8	3437014
PDR08-02-C-N-200-24PG-8.8	3437015
PDR08-02T-C-N-55-24PU-8.8	3386613

Other models on request

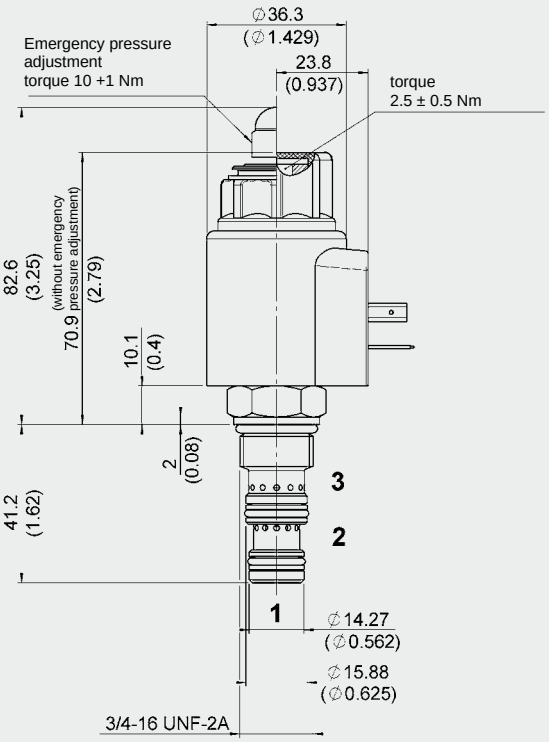
*Standard in-line bodies

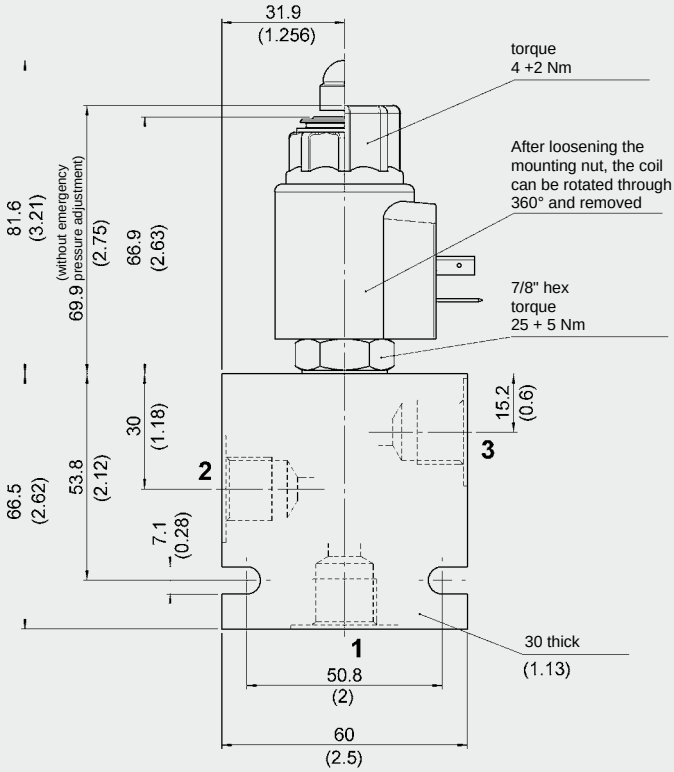
Code	Part No.	Material	Ports	Max. pressure
FH083-SB3	560922	Steel, zinc-plated	G 3/8	420 bar
FH083-AB3	3011427	Aluminium, clear anodized	G 3/8	210 bar

Seal kits

Code	Part No.	Material
FS083-N SEAL KIT	3054795	NBR
FS083-V SEAL KIT	2591059	FKM

DIMENSIONS

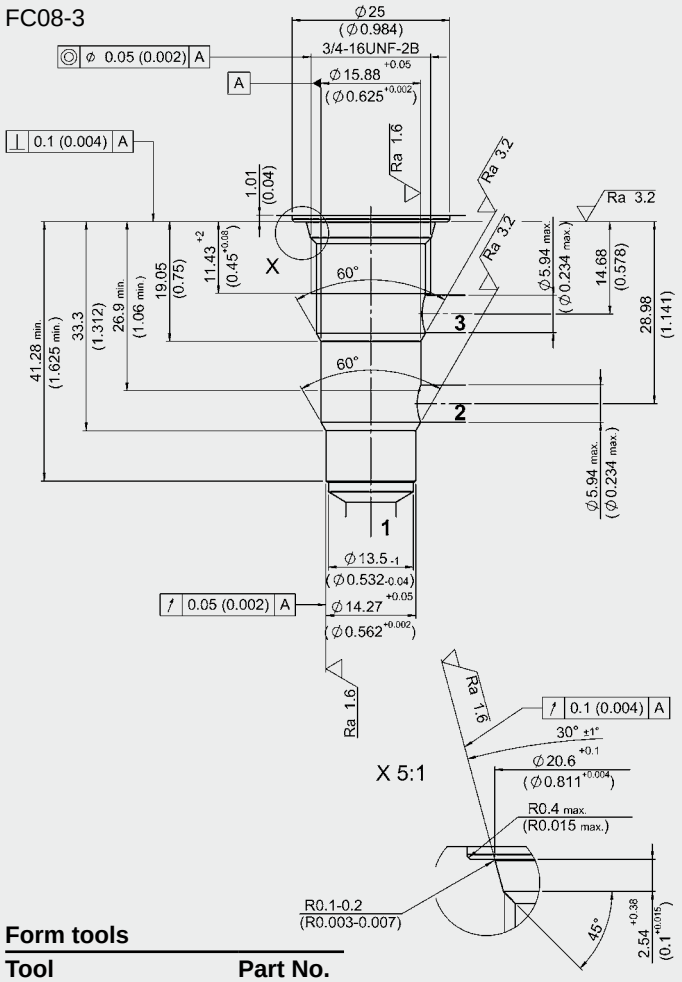




mm (inch)
Subject to technical modifications.

CAVITY

FC08-3



Form tools

Tool	Part No.
Countersink FC08-3	175644
Reamer FC08-3	175645

mm (inch)
Subject to technical modifications.

NOTE

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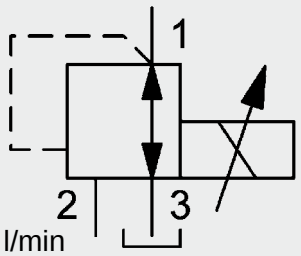
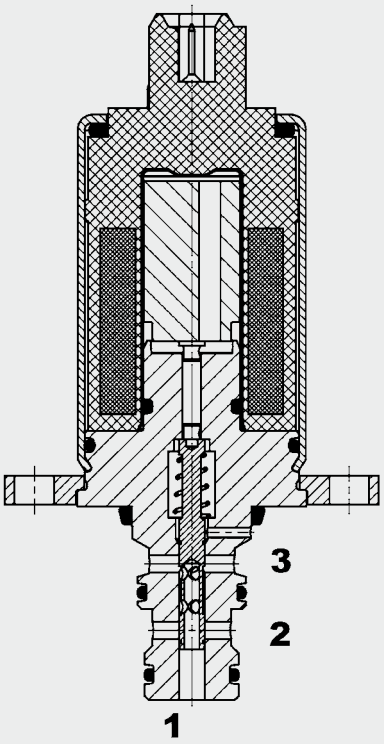
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

3-Way Proportional Pressure Reducing Valve Spool Type, Direct-Acting Slip-In Valve – 60 bar PDMC04S30D



Up to 4 l/min
Up to 60 bar

FUNCTION



The proportional pressure reducing valve PDMC04S30D is a direct-acting 3-way spool-type valve. When de-energized, port 2 is closed and port 1 (consumer) is connected to port 3 (tank). When the inlet pressure fluctuates it provides an almost constant outlet pressure - depending on the energization of the coil. When the control current increases, the solenoid coil exerts a force on the control spool which is proportional to the control current and thereby defines the regulated pressure at port 1. This setting is proportional to the control current. Any pressure at tank port 3 is additive to the pre-set control pressure. If, as a result of external factors, the pressure at port 1 rises above the pre-set pressure, the valve opens from port 1 to tank port 3. The valve has been specially developed for pilot applications. For these applications, the requirement is primarily for high dynamic performance and low pressure drop, in order to ensure rapid oil filling and fast draining of the consumer.

FEATURES

- Compact design
- Excellent dynamic performance
- Low pressure drop due to CFD optimized flow path
- Excellent curve characteristics, also when there is inadequate primary pressure
- External surfaces corrosion-proof
- Coil seals protect the solenoid system
- Hardened and ground valve components to ensure minimal wear and extended service life
- Main applications: pilot valve for directional spool valves and other main-stage valves, accumulator charging circuits, slewing angle adjustment on pumps, clutches
- Excellent small signal characteristics

SPECIFICATIONS

Primary pressure at port 2:	max. 60 bar
Control pressure at port 1:	max. 32 bar
Tank pressure at port 3: (Should be piped separately to tank)	max. 10 bar
Nominal flow:	max. 4 l/min
Pressure ranges:	0 – 25 bar, 0 – 32 bar
Pressure drop:	7 bar from 2 → 1 at 4 l/min 8.5 bar from 2 → 1 with strainer (values given are based on clean strainer) 7 bar from 1 → 3 at 4 l/min (PWM-f = 130 Hz)
Leakage:	Energized: < 0.03 l/min De-energized: < 0.01 l/min (at 60 bar pump pressure, PWM 130 Hz
Media operating temperature range:	min. -30 °C to max. +100 °C (only for NBR)
Ambient temperature range:	min. -30 °C to max. +80 °C *(see note on thermal load capacity of the coil)
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions
Materials:	Valve body: steel Spool: hardened and ground steel Seals: NBR, others on request U-Polyurethane (only for Type 03)
Cavity:	04S30
Weight:	0.28 kg
Electronic data:	
Duty cycle:	100 % duty rating * (see note on thermal load capacity of the coil)
Control currents:	0 – 750 mA, 21.2 Ω (24 V) 0 – 1,500 mA, 5.2 Ω (12 V)
Response time:	On: < 50 ms, Off: < 30 ms
Dither frequency:	130 Hz recommended (110 – 160 Hz)
Hysteresis with dither:	2 % of the max. control current
Repeatability:	≤ 1 % of the max. pressure range
Hysteresis:	≤ 1 % of the max. control current
Response sensitivity:	≤ 1 % of the max. control current
Insulation material class:	H to VDE0580, 180 °C

MODEL CODE

PDMC 04S30 D – 01 – C – N – 25 – 12 PU01 – 5.2

Basic model
Proportional pressure reducing valve, compact

Cavity
04S30 = slip-in

Design
D = direct-acting

Type
01 = standard
02 = increased primary pressure, polyurethane O-rings
03 = with strainer in port 2 (w = 150 µm)*

Body and ports
C = slip-in only

Seals
N = NBR (standard)
U = polyurethane (only in type 03)

Pressure range
25 = 0 to 25 bar
32 = 0 to 32 bar

Coil voltage
12 = 12 Volt (5.2 Ω)
24 = 24 Volt (21.2 Ω)

Coil connectors
PN = Deutsch connector DT04, 2-pole, axial
PU = AMP Junior Timer, 2-pole, axial

Coil resistance
5.2 = 5.2 Ω (12 V)
21.2 = 21.2 Ω (24 V)

*w = mesh size

Standard models

Model code	Part No.
PDMC04S30D-01-C-N-25-12PU-5.2	3451383
PDMC04S30D-01-C-N-25-24PU-21.2	3371734
PDMC04S30D-01-C-N-32-12PU-5.2	3456387
PDMC04S30D-01-C-N-32-24PU-21.2	3396178
PDMC04S30D-03-C-N-25-12PU-5.2	3486396
PDMC04S30D-03-C-N-25-24PU-21.2	3486397
PDMC04S30D-03-C-N-25-12PN-5.2	3491096
PDMC04S30D-03-C-N-25-24PN-21.2	3567187

Other models on request

Standard in-line bodies

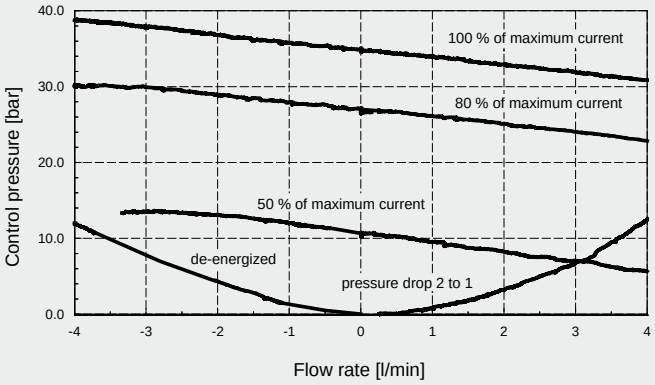
Code	Part No.	Material	Ports
Dual housing: B-BM 2X PDMC04S30D	3482029	Aluminium	A, B = G¼ P, T = G⅜

Other bodies on request

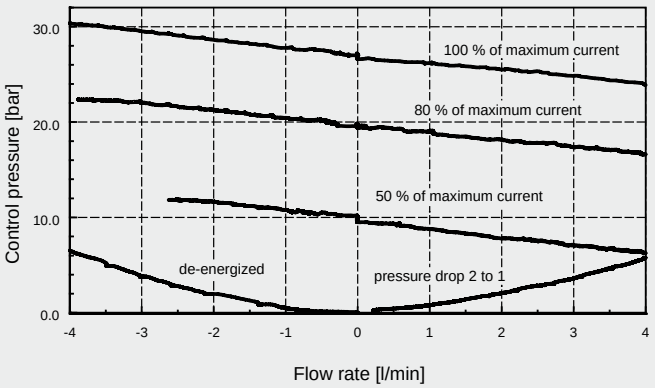
PERFORMANCE

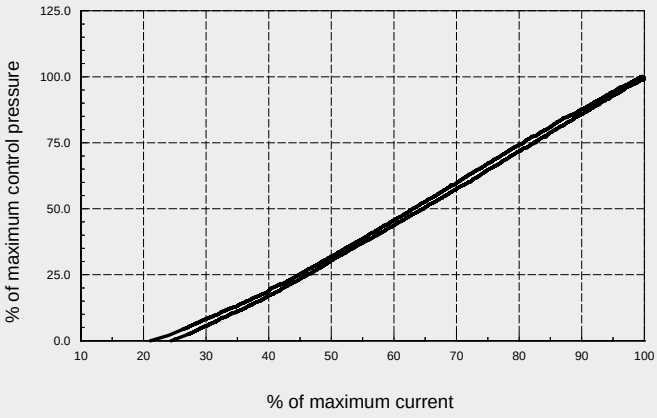
Measured at ν = 34 mm²/s, T_{oil} = 46 °C

Pressure range 32 bar



Pressure range 25 bar

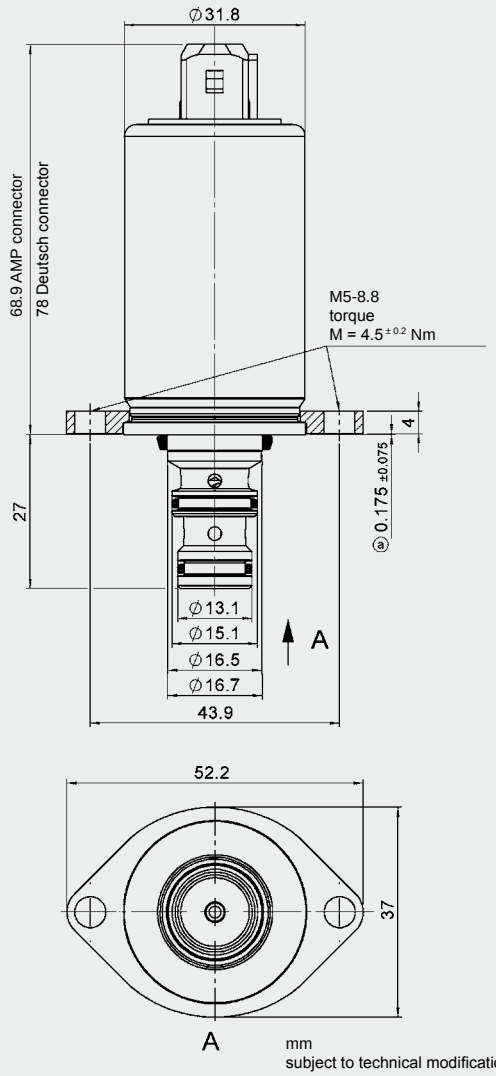




*Thermal load capacity of the coil:
100% duty cycle at $T_{A, max}$ = 80 °C

Please note: The data is based on the complete valve, mounted in a line body (block temperature: 105 °C, aluminium or steel; dimensions 40 x 60 x 56 mm), flanged to a base block (block temperature 105 °C, steel, dimensions 200 x 150 x 100 mm). The air in the climatic test cabinet is circulated by the cabinet ventilator.

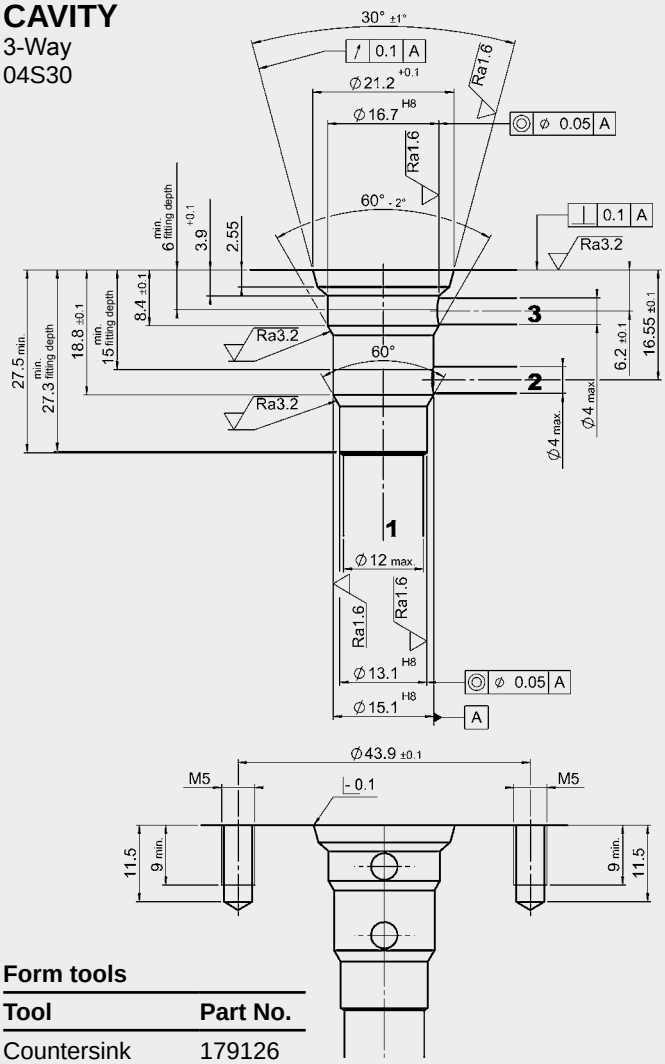
DIMENSIONS



mm
subject to technical modifications

CAVITY

3-Way
04S30



Form tools

Tool	Part No.
Countersink	179126
Reamer	179200

mm
subject to technical modifications

NOTE

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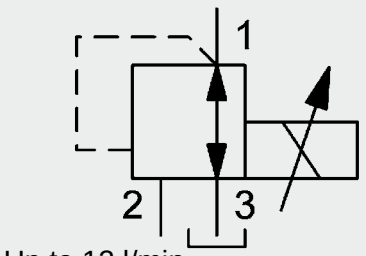
Subject to technical modifications.

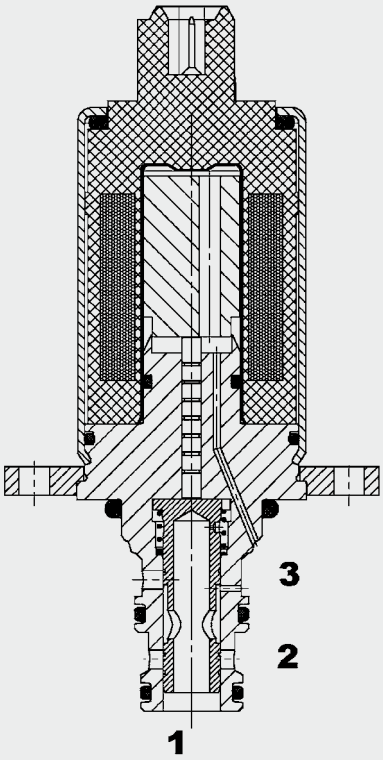
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com



Up to 12 l/min
Up to 60 bar

3-Way Proportional Pressure Reducing Valve Spool Type, With Area-Ratio Advantage Slip-In Valve – 60 bar PDMC05S30A-11

FUNCTION



The proportional pressure reducing valve PDMC05S30A is a direct-acting spool-type valve. When de-energized, port 2 is closed and port 1 (consumer) is connected to port 3 (tank). When the inlet pressure fluctuates it provides an almost constant outlet pressure - depending on the energization of the coil. When the control current increases, the solenoid coil exerts a force on the control spool which is proportional to the control current and thereby defines the regulated pressure at port 1. This setting is proportional to the control current. Any pressure at tank port 3 is additive to the pre-set control pressure. If, as a result of external factors, the pressure at port 1 rises above the preset pressure, the valve opens from port 1 to tank port 3.

FEATURES

- Compact design
- Excellent dynamic performance
- Low pressure drop due to CFD optimized flow path
- Excellent stability throughout the entire flow range
- External surfaces corrosion-proof
- Coil seals protect the solenoid system
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Adjustable throughout flow range
- Excellent small signal characteristics

SPECIFICATIONS

Primary pressure at port 2:	max. 60 bar
Control pressure at port 1:	max. 35 bar
Tank pressure at port 3: (Should be piped separately to tank, i.e not connected to the working hydraulics)	max. 10 bar
Nominal flow:	max. 12 l/min
Pressure ranges:	0 – 25 bar, 0 – 35 bar
Leakage:	Energized: <0.1 l/min De-energized: <0.02 l/min (at 60 bar pump pressure, PWM 110 Hz
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +80 °C *(see note on thermal load capacity of the coil)
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s
Filtration:	Class 19/17/14 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions
Materials:	Valve body: steel Spool: hardened and ground steel Seals: NBR (standard) FKM (optional, media temperature range -20 °C to +210 °C)
Cavity:	05S30
Weight:	0.27 kg
Electronic data:	
Coil duty rating:	100% duty cycle (continuous)
Control currents:	0 – 950 mA, 10.5 Ω (24 V) 0 – 2000 mA, 5.2 Ω (12 V) *(see note on thermal load capacity of the coil)
Response time:	On: < 40 ms, Off: < 30 ms
Dither frequency:	110 Hz recommended
Hysteresis with dither:	2 – 4 % of the max. control current
Repeatability:	≤ 1 % of the max. pressure range
Hysteresis:	≤ 1 % of the max. control current
Response sensitivity:	≤ 1 % of the max. control current
Insulation material class:	H to VDE0580, 180 °C

MODEL CODE

PDMC 05S30 A – 11 – C – N – 35 – 24 PU01 – 10.5

Basic model
Proportional pressure reducing valve, compact

Cavity
05S30 = slip-in

Design
A = with area-ratio advantage

Type
11 = standard

Body and ports*
C = slip-in only

Seals
N = NBR
Others on request

Pressure range
25 = 0 to 25 bar
35 = 0 to 35 bar

Coil voltage
12 = 12 Volt (2.65 Ω)
24 = 24 Volt (10.5 Ω)

Coil connectors
PN = Deutsch connector DT04, 2-pole, axial
PU = AMP Junior Timer, 2-pole, axial

Coil resistance
5.2 = 5.2 Ω (12 V)
10.5 = 10.5 Ω (24 V)

Standard models

Model code	Part No.
PDMC05S30A-11-C-N-25-12PU-5.2	3497963
PDMC05S30A-11-C-N-25-24PU-10.5	3508509
PDMC05S30A-11-C-N-35-12PU-5.2	3364455
PDMC05S30A-11-C-N-35-24PU-10.5	3270226
PDMC05S30A-11-C-N-35-24PN-10.5	3509704

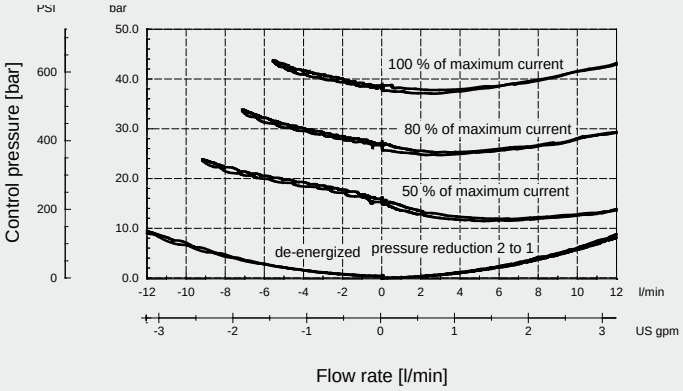
Other models on request

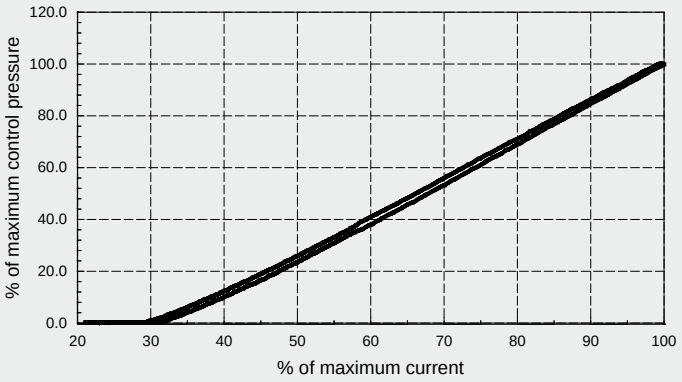
***Standard in-line bodies**

Code	Part No.	Material	Ports	Pressure
R05S30-010-01	3364559	Alu	G 3/8	60 bar

PERFORMANCE

Measured at ν = 34 mm²/s , T_{oil} = 46 °C

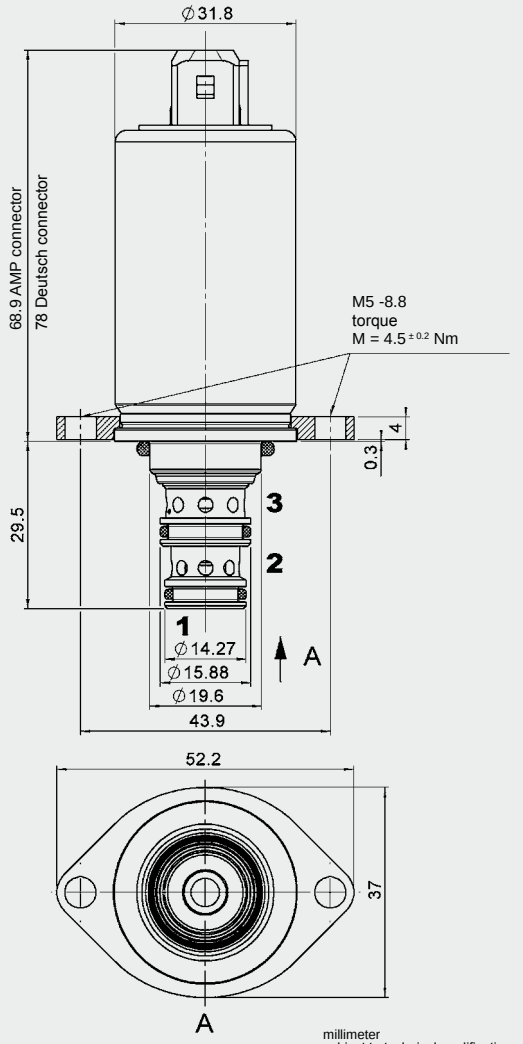




*Thermal load capacity of the coil:
100% duty cycle at $T_{A, max}$ = 80 °C

Please note: The data is based on the complete valve, mounted in a line body (block temperature: 105 °C, aluminium or steel; dimensions 40 x 60 x 56 mm), flanged to a base block (block temperature 105 °C, steel, dimensions 200 x 150 x 100 mm). The air in the climatic test cabinet is circulated by the cabinet ventilator.

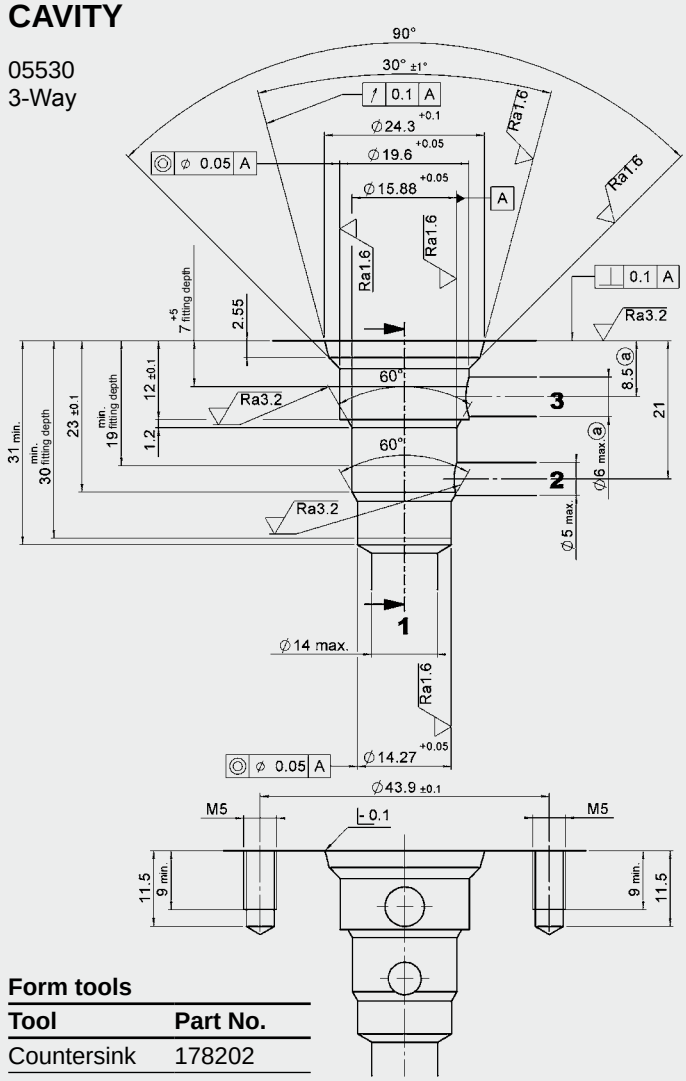
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

05530
3-Way



Form tools

Tool	Part No.
Countersink	178202
Reamer	178203

millimeter
subject to technical modifications

NOTE

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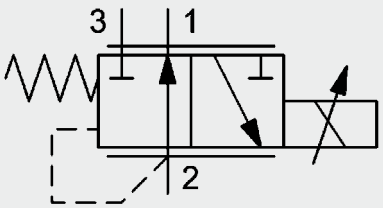
Subject to technical modifications.

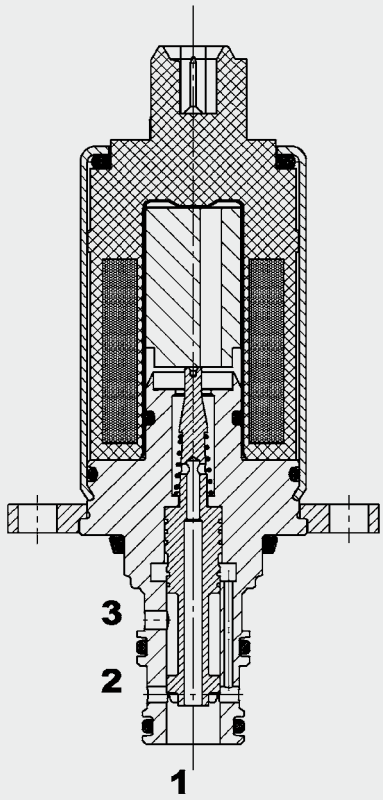
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com



Up to 20 l/min
Up to 60 bar

3-Way Proportional Pressure Reducing Valve Spool Type, With Area-Ratio Advantage Slip-In Valve – 60 bar PDMC05S30A-50

FUNCTION



The proportional pressure reducing valve PDMC05S30A-50 is a direct-acting spool-type valve. When de-energized, the spring pushes the control spool towards the solenoid system. There is flow through the valve from port 2 (consumer) to the tank port 1. When the inlet pressure fluctuates it provides an almost constant outlet pressure - depending on the energization of the coil. When the control current increases, the coil exerts a force on the control spool and connects port 2 (consumer) with pump port 3. This compresses the reset spring of the control spool. The pressure at port 2 acts against the solenoid force over a circular ring area and when the pre-set value is reached, the pressure plus spring force and solenoid force are in balance. The connection between pump and consumer ports is thus restricted. Any pressure at tank port 1 is additive to the pre-set control pressure. The valves have been developed specifically for high dynamic performance and low pressure drops.

FEATURES

- Compact design
- Excellent dynamic performance
- Low pressure drop due to CFD optimized flow path
- Excellent stability throughout the entire flow range
- External surfaces corrosion-proof
- Coil seals protect the solenoid system
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Adjustable throughout flow range
- Excellent small signal characteristics

SPECIFICATIONS

Primary pressure at port 3:	max. 60 bar
Control pressure at port 2:	max. 20 bar
Tank pressure at port 1: (Should be piped separately to tank)	max. 10 bar dynamic, 30 bar static
Nominal flow:	max. 20 l/min
Pressure ranges:	0 - 20 bar
Pressure drop:	2.5 bar from 2 to 1 at 19 l/min 7 bar from 3 to 2 at 19 l/min
Leakage:	Energized: <0.05 l/min De-energized: <0.03 l/min (at 60 bar pump pressure, PWM 130 Hz
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +80 °C *(see note on thermal load capacity of the coil)
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm²/s to max. 2,000 mm²/s
Filtration:	Class 22/20/17 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions
Materials:	Valve body: tempered free-cutting steel Spool: hardened and ground steel Seals: NBR (standard) FKM (optional, media temperature range -20 °C to +210 °C)
Cavity:	05S30 compact
Weight:	0.27 kg
Electronic data:	
Duty cycle:	100 % duty rating * (see note on thermal load capacity of the coil)
Control currents:	0 – 950 mA, 10.5 Ω (24 V) 0 – 2,000 mA, 2.65 Ω (12 V)
Dither frequency:	130 Hz recommended (100 – 150 Hz)
Hysteresis with dither:	2 % of the max. control current
Repeatability:	≤ 1 % of the max. pressure range
Hysteresis:	≤ 1 % of the max. control current
Response sensitivity:	≤ 1 % of the max. control current
Insulation material class:	H to VDE0580, 180 °C

MODEL CODE

PDMC 05S30 A – 50 – C – N – 25 – 24 PU – 10.5

Basic model
Proportional pressure reducing valve, compact

Cavity
05S30 = slip-in valve

Design
A = with area-ratio advantage

Type
50 = standard

Body and ports*
C = slip-in only

Seals
N = NBR
V = FKM (optional)

Pressure range
20 = 0 to 20 bar

Coil voltage
12 = 12 Volt (2.65 Ω)
24 = 24 Volt (10.5 Ω)

Coil connectors
PN = Deutsch connector DT04, 2-pole, axial
PU = AMP Junior Timer, 2-pole, axial

Coil resistance
2.65 = 2.65 Ω (12 V)
10.5 =10.5 Ω (24 V)

Standard models

Model code	Part No.
PDMC05S30A-50-C-N-20-12PU-2.65	3587264
PDMC05S30A-50-C-N-20-24PN-10.5	3587285

Other models on request

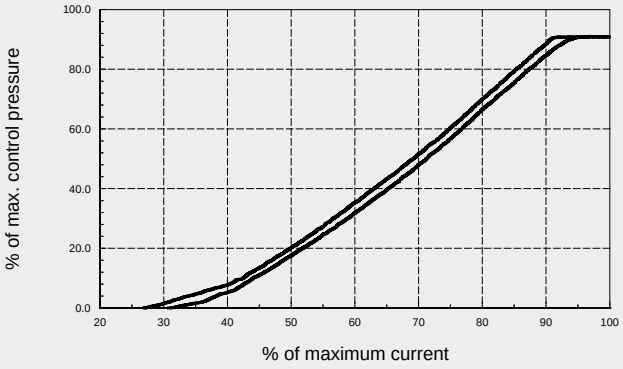
***Standard in-line bodies**

Code	Part No.	Material	Ports	Pressure
R05S30-010-01	3364559	Aluminium	G 3/8	60 bar

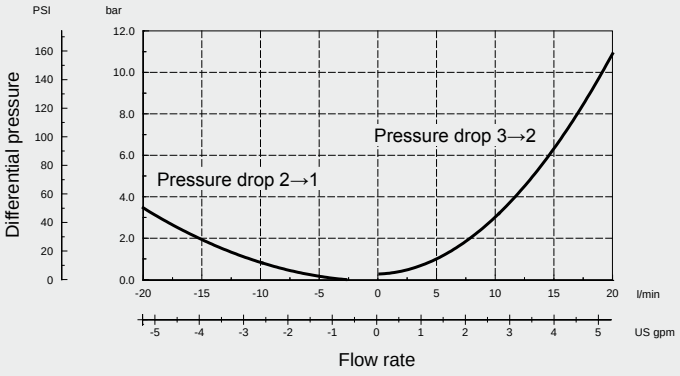
PERFORMANCE

Measured at:
ν = 34 mm²/s
T_{oil} = 46 °C

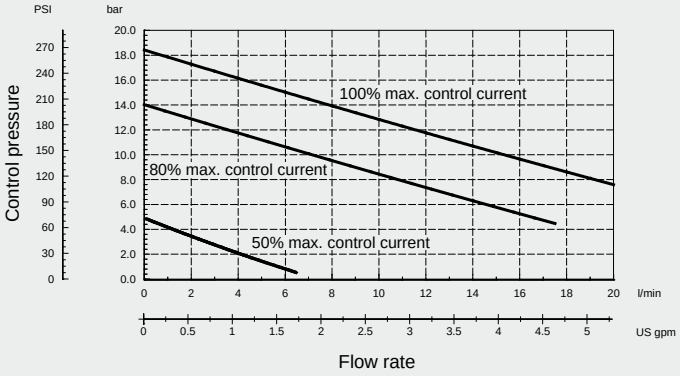
p/I
Supply pressure
p = 19 bar / 275 psi



Δp/Q



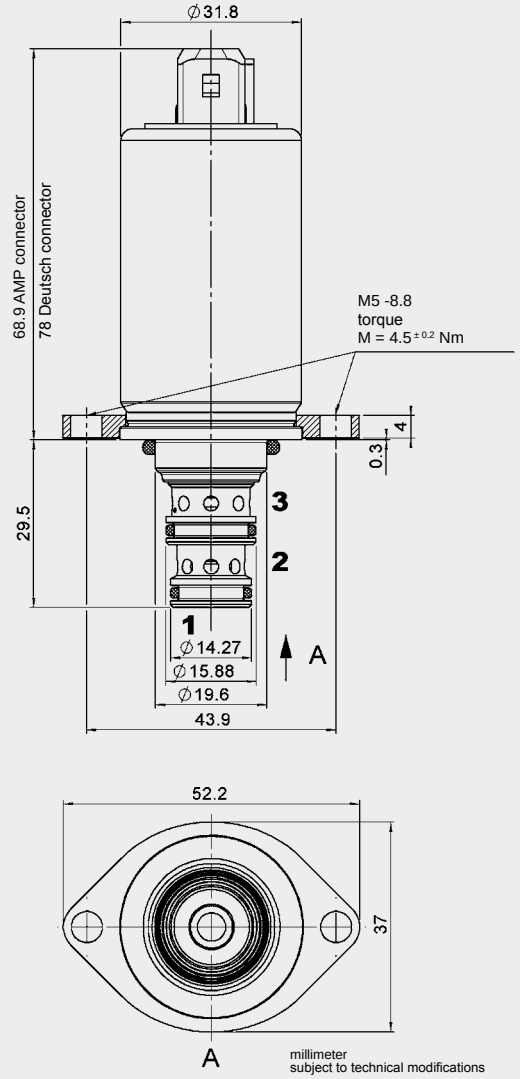
p/Q
Supply pressure
p = 19 bar / 275 psi



*Thermal load capacity of the coil:
100% duty cycle at $T_{A, max}$ = 80 °C

Please note: The data is based on the complete valve, mounted in a line body (block temperature: 105 °C, aluminium or steel; dimensions 40 x 60 x 56 mm), flanged to a base block (block temperature 105 °C, steel, dimensions 200 x 150 x 100 mm). The air in the climatic test cabinet is circulated by the cabinet ventilator.

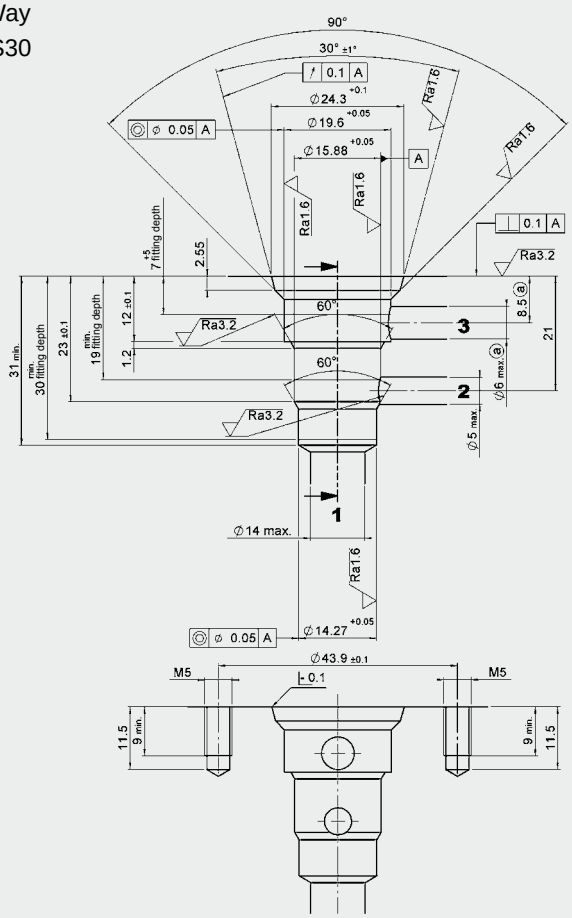
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

3-Way
05S30



Form tools

Tool	Part No.
Countersink	178202
Reamer	178203

millimeter
subject to technical modifications

NOTE

The information in this brochure relates to the operating conditions and applications described. For applications and operating conditions not described, please contact the relevant technical department.
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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
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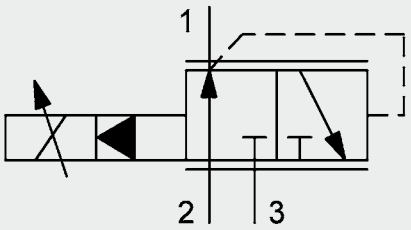


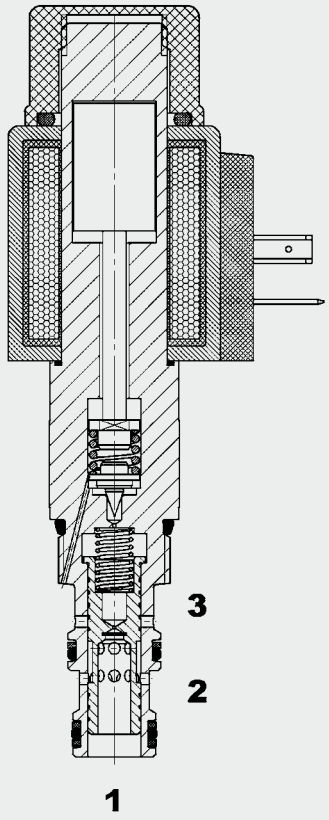
60 l/min
350 bar

3-Way Proportional Pressure Reducing Valve Spool Type, Pilot-Operated SAE-08 Cartridge – 350 bar

UNF

PDR08P-01

FUNCTION



The proportional pressure reducing valve PDR08P is a pilot-operated 3-way spool-type valve, with relief included.
If the pressure exceeds the setting defined by the electrical signal, the pilot-stage opens and oil flows from behind the main spool to the tank port 3. The resulting pressure differential causes the main spool to move against the reset-spring and allows oil to flow from port 2 to port 1. This continues until the system pressure is equal to the adjusted tension and the valve goes in control positionagain.
If the pressure at port 1 suddenly rises due to external force the valve is relieved to tank port 3 (maximum pressure relief).
Any pressure at port 3 is additive to the valve pressure setting.

FEATURES

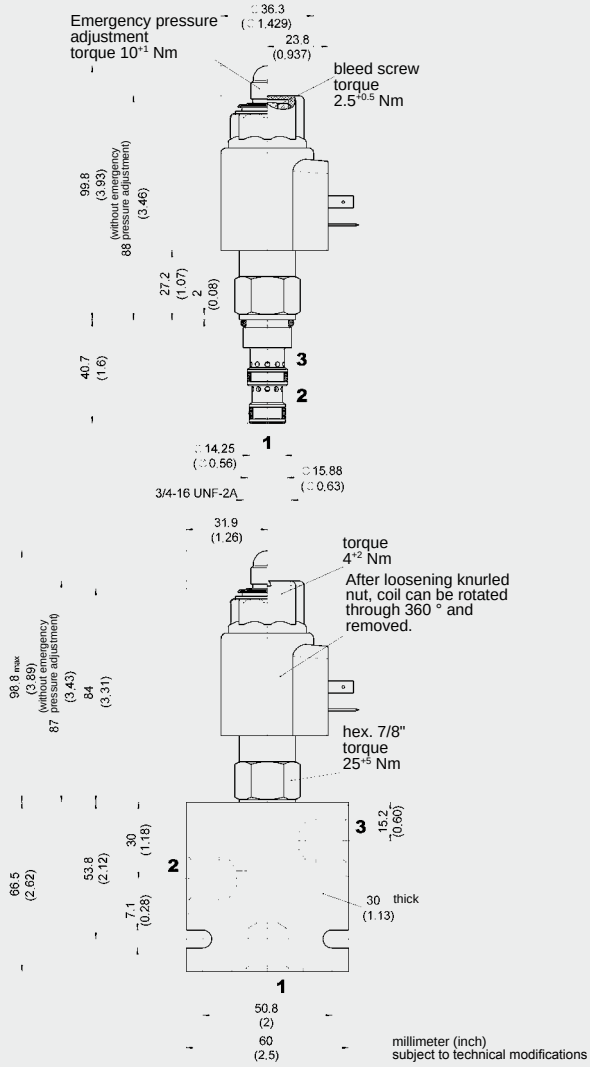
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- Low pressure drop due to CFD optimized flow path
- Screen protected metering orifice enhances safety

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 60 l/min	
Operating pressure ranges:	up to 60 bar up to 230 bar up to 350 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 18/16/13 to class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-3	
Weight:	Valve complete	0.45 kg
	Coil only	0.23 kg
Electronic data:		
Control currents:	1050 mA, 8.8 Ω (24 Volt) 2100 mA, 2.2 Ω (12 Volt)	
Internal leakage:	less than 0.5 l/min at 350 bar	
Dither frequency:	approx. 160 Hz - 250 Hz	
Response time:	energized: de-energized:	approx. 60 ms approx. 40 ms
Hysteresis with dither:	2-4% of I_{nom}	
Repeatability:	2-4% of I_{nom}	
Hysteresis:	≤ 2% of I_{nom}	
Response sensitivity:	≤ 1 % of I_{nom}	
Coil type:	Coil…-40-1836	

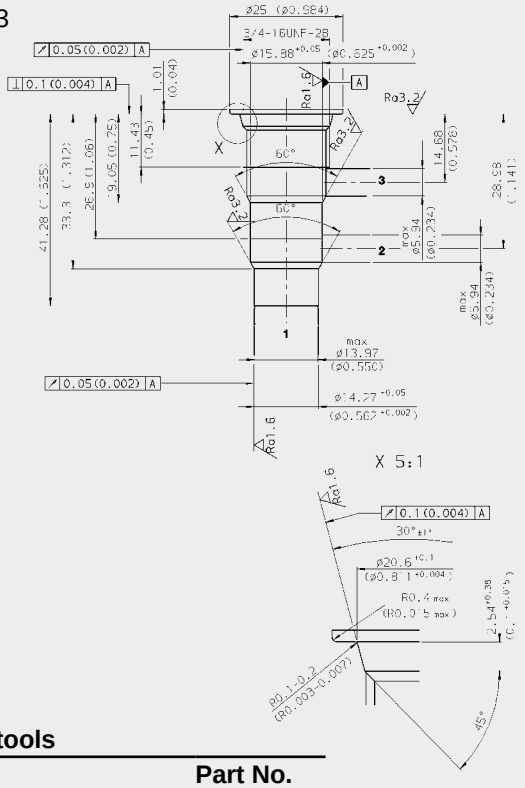
The PDR08P can also be supplied with an emergency pressure adjustment (version –01M). This allows a manual pressure adjustment of the valve if the electrical signal is interrupted. This adjustment should be used only in the case of electrical failure since the manual setting would be additive to the electrical setting and the system could be damaged when power is restored.

DIMENSIONS



CAVITY:

FC08-3



Form tools

Tool	Part No.
Countersink FC08-3	175644
Reamer FC08-3	175645

MODEL CODE

PDR08P–01 M - C - N - 330 - 24 PG - 8.8

Basic model
Directional spool valve, UNF

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Pressure range
87 = up to 60 bar (870 PSI)
330 = up to 230 bar (3300 PSI)
500 = up to 350 bar (5000 PSI)

Coil voltage
12 = 12 V DC
24 = 24 V DC

Coil connectors (type 40-1836)
DC: PG = DIN connector to EN175301-803
PU = AMP Junior Timer, 2-pole, axial
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial, DT04-22P-EF 04
Other connectors on request

Coil resistance
2.2 = 2.2 Ω (12 V)
8.8 = 8.8 Ω (24 V)

Standard models

Model code	Part No.
PDR08P-01-C-N-87-12PG-2.2	3147475
PDR08P-01-C-N-330-12PG-2.2	3147476
PDR08P-01-C-N-500-12PG-2.2	3147477
PDR08P-01-C-N-87-24PG-8.8	3147488
PDR08P-01-C-N-330-24PG-8.8	3147489
PDR08P-01-C-N-500-24PG-8.8	3147490

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH083-SB3	560922	Steel, zinc-plated	G3/8	420 bar
FH083-AB3	3011427	Aluminium, anodized	G3/8	210 bar

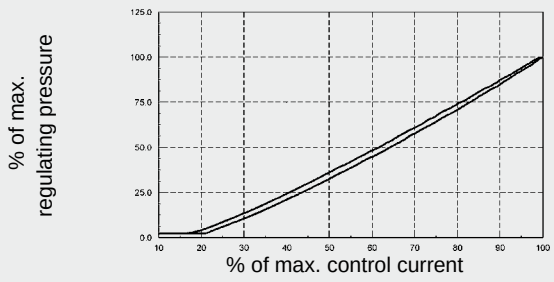
Other bodies on request

Seal kits

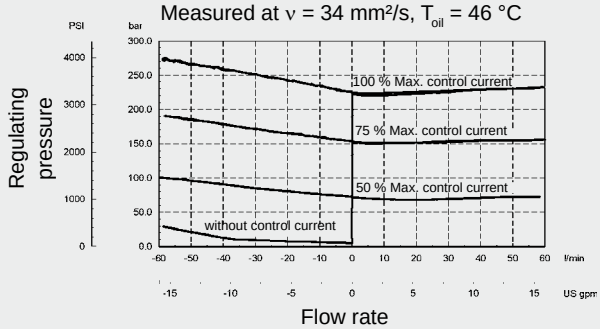
Code	Material	Part No.
FS083-N SEAL KIT	NBR	3054795
FS083-V SEAL KIT	FKM	2591059

PERFORMANCE

Measured at ν = 34 mm²/s,T_{oil} = 46 °C



Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
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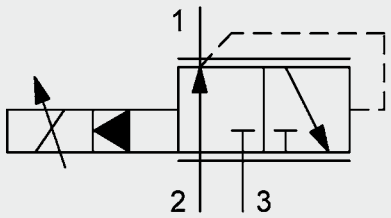


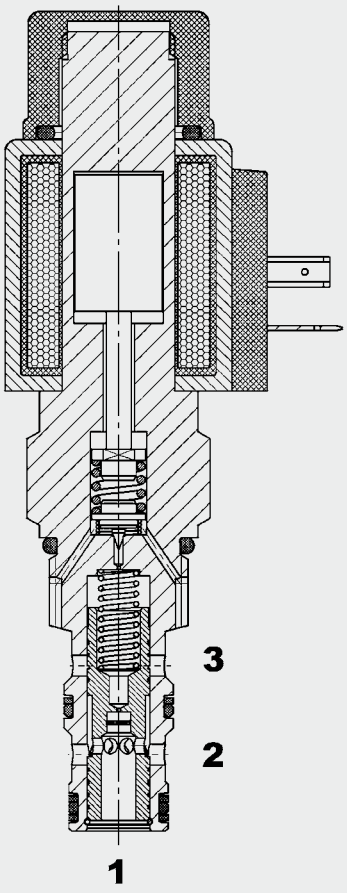
Up to 100 l/min
Up to 350 bar

3-Way Proportional Pressure Reducing Valve Spool Type, Pilot-Operated SAE-10 Cartridge – 350 bar

UNF

PDR10P-01

FUNCTION



The proportional pressure reducing valve PDR10P is a pilot-operated, 3-way spool-type valve. Its function is to maintain a constant pressure at consumer port 1. As a function of the electrical control signal the regulated pressure can be changed steplessly - irrespective of the pump pressure.
If the pressure at port 1 rises above the setting, the pilot stage opens and oil flows from behind the main spool to tank port 3 to maintain the set pressure.
Any pressure at tank port 3 is additive to the pre-set control pressure!

FEATURES

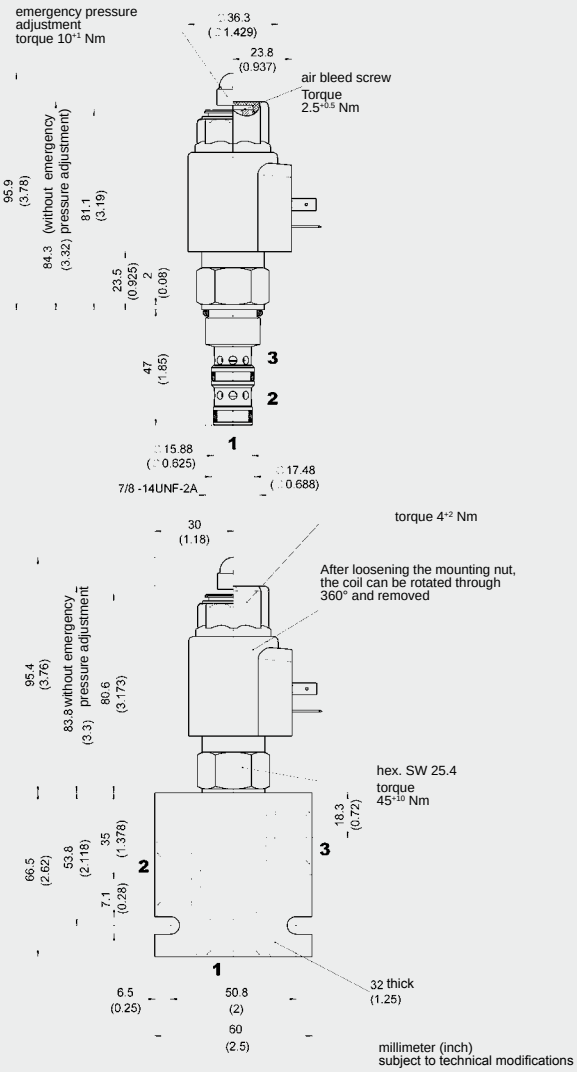
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- Screen-protected metering orifice enhances safety

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 100 l/min	
Setting pressure range:	up to 60 bar up to 180 bar up to 230 bar up to 350 bar	
Internal leakage:	< 0.5 l/min at 350 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 18/16/13 to class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-3	
Weight:	Valve complete	0.49 kg
	Coil only	0.23 kg
Electronic data:		
Control current range:	1050 mA, 8.8 Ohm (24 Volt) 2100 mA, 2.2 Ohm (12 Volt)	
Dither frequency:	approx. 160 Hz - 250 Hz	
Response time:	Energized: approx. 50 ms De-energized: approx. 30 ms	
Hysteresis with dither:	2 - 4% of I_{nom}	
Repeatability:	≤ 1.5 % of I_{nom}	
Hysteresis:	≤ 2 % of I_{nom}	
Response sensitivity:	≤ 1 % of I_{nom}	
Coil type:	Coil...-40-1836	

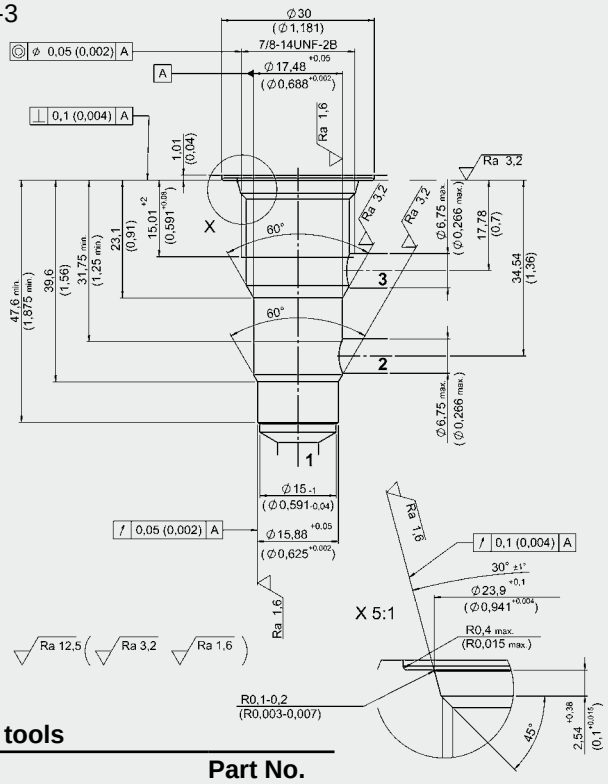
The PDR10P can also be supplied with an emergency pressure adjustment (version –01M). This allows a manual pressure adjustment of the valve if the electrical signal is interrupted. This adjustment should be used only in the case of electrical failure since the manual setting would be additive to the electrical setting and the system could be damaged when power is restored.

DIMENSIONS



CAVITY:

FC10-3



Form tools

Tool	Part No.
Countersink FC10-3	176282
Reamer FC10-3	176283

MODEL CODE

PDR10P–01 M - C - N - 330 - 24 PG - 8.8

Basic model
Proportional pressure reducing valve, UNF

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Pressure range
87 = up to 60 bar (870 PSI)
260 = up to 180 bar (2600 PSI)
330 = up to 230 bar (3300 PSI)
500 = up to 350 bar (5000 PSI)

Coil voltage
12 = 12 V DC (2.2 Ohm)
24 = 24 V DC (8.8 Ohm)

Coil connectors (type 40-1836)
DC: PG = DIN connector to EN175301-803
PU = AMP Junior Timer, 2-pole, axial
PL= 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial, DT04-22P-EF 04
Other connectors on request

Coil resistance
2.2 = 2.2 Ohm (12 V)
8.8 = 8.8 Ohm (24 V)

Standard models

Model code	Part No.
PDR10P-01-C-N-87-12PG-2.2	3124431
PDR10P-01-C-N-260-12PG-2.2	3124432
PDR10P-01-C-N-330-12PG-2.2	3124433
PDR10P-01-C-N-330-12PG-2.2	3124433
PDR10P-01-C-N-500-12PG-2.2	3124434

Other models on request

*Standard in-line bodies

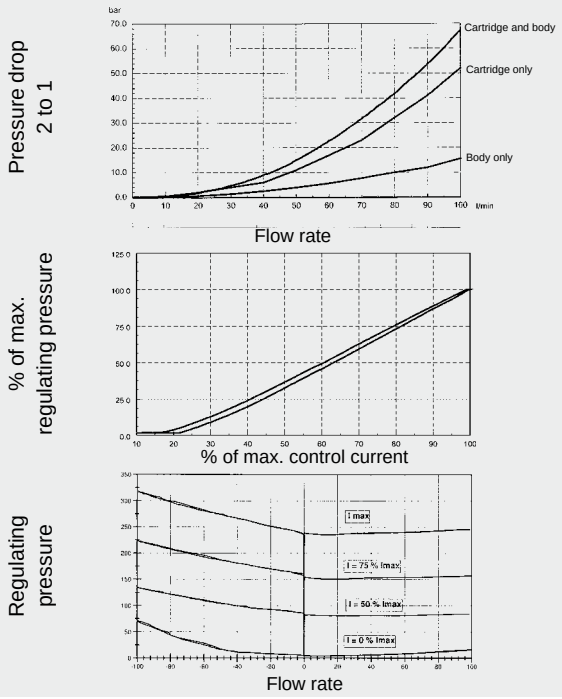
Code	Part No.	Material	Ports	Pressure
FH103-SB4	3037697	Steel, zinc-plated	G1/2	420 bar
FH103-AB4	3038092	Aluminium, anodized	G1/2	210 bar

Seal kits

Code	Material	Part No.
FS103-N SEAL KIT	NBR	3071274
FS103-V SEAL KIT	FKM	3049443

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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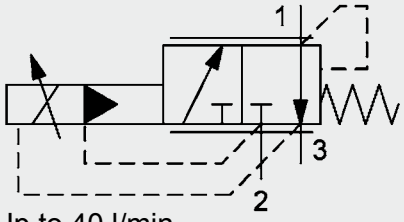
Subject to technical modifications.

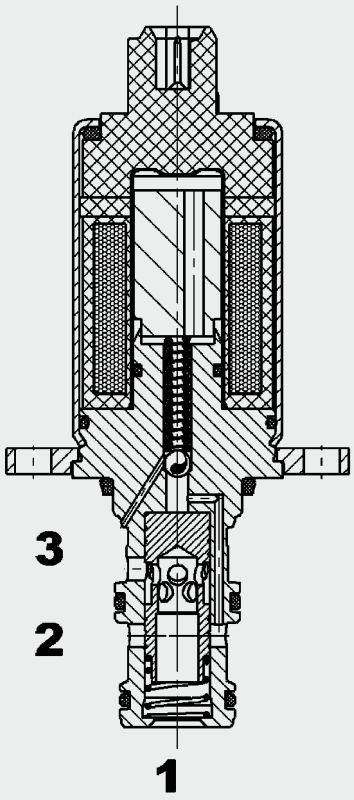
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

3-Way Proportional Pressure Reducing Valve Spool Type, Pilot-Operated Slip-In Valve – 60 bar PDMC10S30P



Up to 40 l/min
Up to 60 bar

FUNCTION



The proportional pressure reducing valve PDMC10S30P is a pilot-operated, 3-way spool-type valve. When de-energized, port 1 (consumer) is vented via tank port 3. Pump port 2 provides a constant small flow of pilot oil to tank port 3. When the inlet pressure and the volume required fluctuates, it provides an almost constant outlet pressure - depending on the energization of the coil. When the control current increases, the solenoid coil exerts a force via the pilot line on the pilot spool and thereby connects port 2 (consumer) with pump port 3. This compresses the reset spring of the control spool. If, as a result of external factors, the pressure at port 1 rises above the preset pressure, the valve opens from port 1 (consumer) to tank port 3. This reduces the flow from pump port 2 to port 1 (consumer) until the pressure across port 1 is equal to the pre-set pressure value. Any pressure at tank port 3 is additive to the pre-set control pressure.

FEATURES

- Compact design
- Excellent dynamic performance
- Low pressure drop due to CFD optimized flow path
- Control pressure reduction is possible right down to 0 bar.
- Excellent curve characteristics, also when there is inadequate primary pressure (the max. control pressure is 1.3 bar below the primary pressure)
- External surfaces corrosion-proof
- Hardened and ground valve components to ensure minimal wear and extended service life
- Application example: clutch control
- Screen filter protects the pilot from contamination

SPECIFICATIONS

Primary pressure at port 2:	max. 60 bar
Control pressure at port 1:	max. 35 bar
Tank pressure at port 3:	Max. 10 bar dynamic (30 bar static)
(Should be piped separately to tank, i.e not connected to the working hydraulics)	
Nominal flow:	max. 40 l/min
Pressure ranges:	0 – 25 bar, 0 – 35 bar
Pressure drop:	approx. 8 bar at 40 l/min (from 2 → 1, 1 → 3)
Leakage:	Energized: < 0.4 l/min De-energized: < 0.8 l/min (at 60 bar pump pressure)
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +80 °C * (see note on thermal load capacity of the coil)
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm²/s to max. 2000 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)
Installation:	No orientation restrictions
Materials:	Valve body: free-cutting steel Spool: hardened and ground steel Seals: NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C) Back-up rings: PTFE
Cavity:	10S30 compact
Weight:	0.28 kg
Electronic data:	
Coil duty rating:	100 % duty cycle * (see note on thermal load capacity of the coil)
Control currents:	0 – 950 mA,10.5 Ω (24 V) 0 – 2,000 mA, 2.65 Ω (12 V)
Dither frequency:	130 Hz recommended (110 – 200 Hz)
Hysteresis with dither:	2 % of the max. control current
Repeatability:	≤ 1 % of the max. pressure range
Hysteresis:	≤ 1 % of the max. control current
Response sensitivity:	≤ 1 % of the max. control current
Insulation material class:	H to VDE0580, 180 °C

MODEL CODE

PDMC10S30 P – 01 – C – N – 25 – 12 PU – 10.5

Basic model
Proportional pressure reducing valve, compact

Cavity
10S30

Design
P = pilot-operated

Type
01 = standard
03 = strainer at port 2

Body and ports
C = slip-in only

Seals
N = NBR (standard)
V = FKM (optional)

Pressure range
25 = 0 to 25 bar
35 = 0 to 35 bar

Coil voltage
12 = 12 Volt (2.65 Ω)
24 = 24 Volt (10.5 Ω)

Coil connectors
PN = Deutsch connector DT04, 2-pole, axial
PU = AMP Junior Timer, 2-pole, axial

Coil resistance
2.65 =2.65 Ω (12 V)
10.5 =10.5 Ω (24 V)

Standard models

Model code	Part No.
PDMC10S30P-01-C-N-25-12PU-5.2	3450702
PDMC10S30P-01-C-N-25-24PU-21.2	3396732
PDMC10S30P-01-C-N-35-12PU-5.2	3450703
PDMC10S30P-01-C-N-35-24PU-21.2	3422416

Other models on request

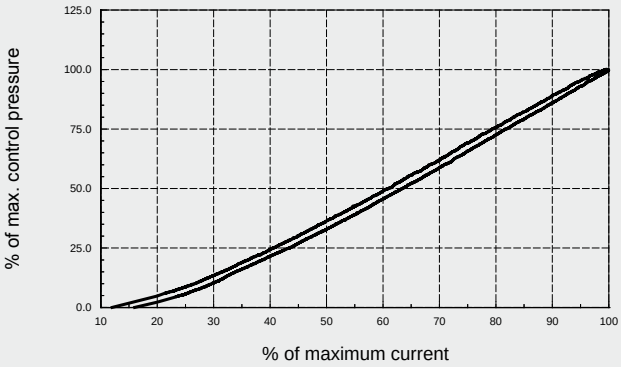
Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R10S30-010-01	3426652	Steel	G3/8	60 bar

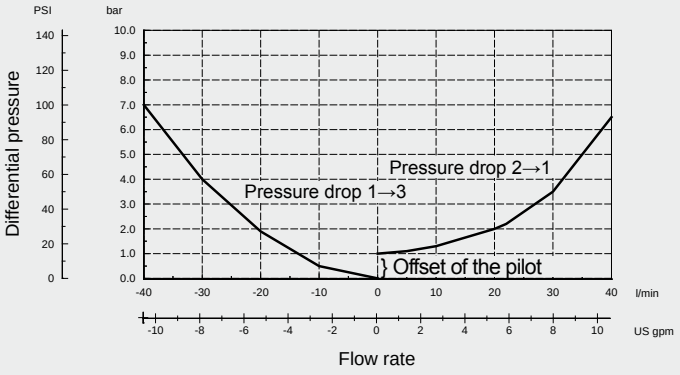
PERFORMANCE

Measured at
ν = 34 mm²/s
T_{oil} = 46 °C

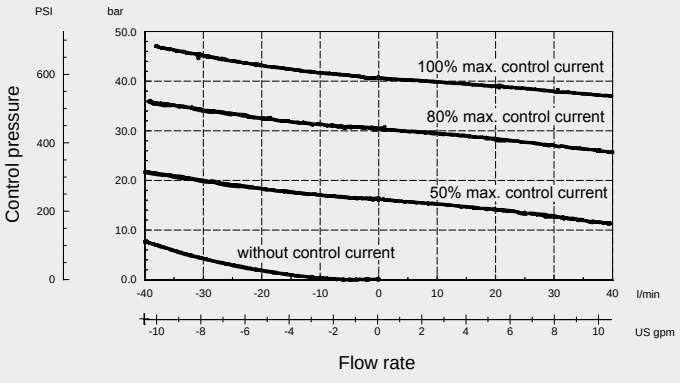
p/I



Δp/Q



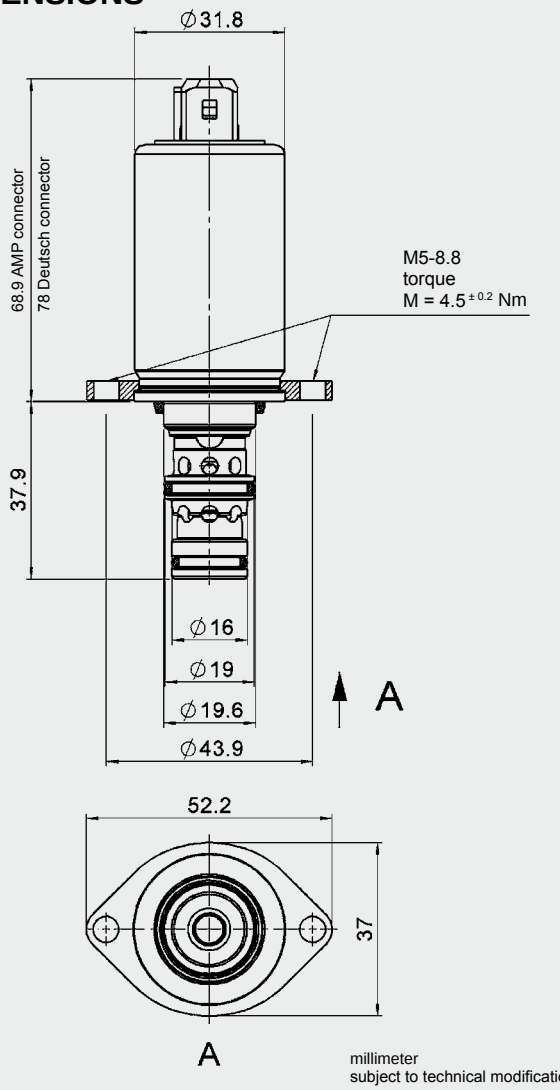
p/Q



*Thermal load capacity of the coil:
100% duty cycle at $T_{A, max}$ = 80 °C

Please note: The data is based on the complete valve, mounted in a line body (block temperature: 105 °C, aluminium or steel; dimensions 40 x 60 x 56 mm), flanged to a base block (block temperature 105 °C, steel, dimensions 200 x 150 x 100 mm). The air in the climatic test cabinet is circulated by the cabinet ventilator.

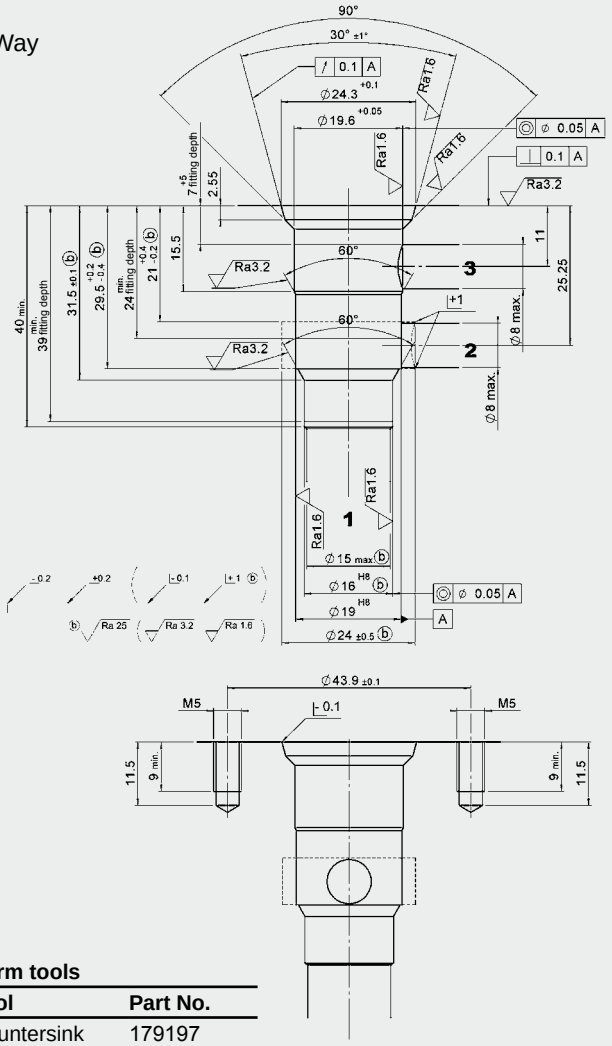
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

3-Way



Form tools

Tool	Part No.
Countersink	179197
Reamer	179199

millimeter
subject to technical modifications

NOTE

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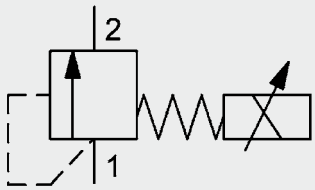
HYDAC INTERNATIONAL

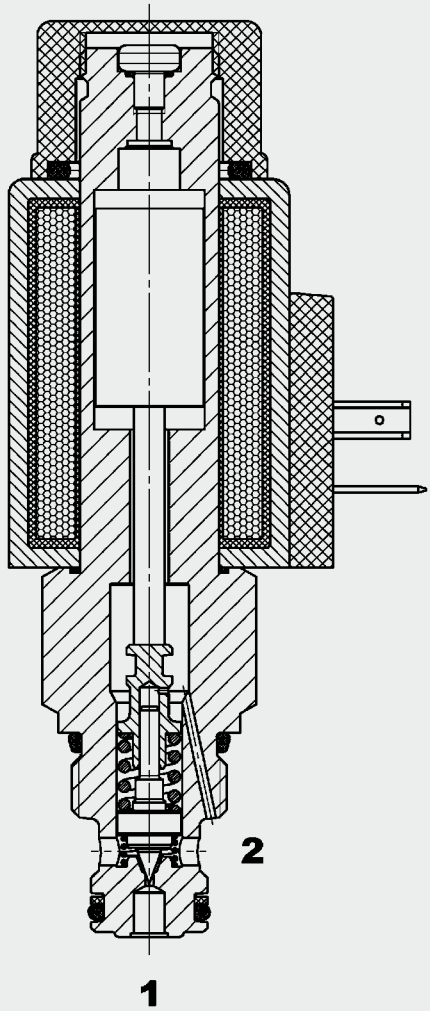
Proportional Pressure Relief Valve Poppet Type, Direct-Acting, Metric Cartridge – 350 bar

PDBM06020



Up to 10 l/min
Up to 350 bar

FUNCTION



The PDBM06020 is a direct-acting, poppet type proportional pressure relief valve.

If the pressure at port 1 exceeds the setting defined by the electrical signal, the valve opens and allows flow from port 1 to tank port 2. As a function of the electrical signal, the relief pressure at port 1 can be changed steplessly.

FEATURES

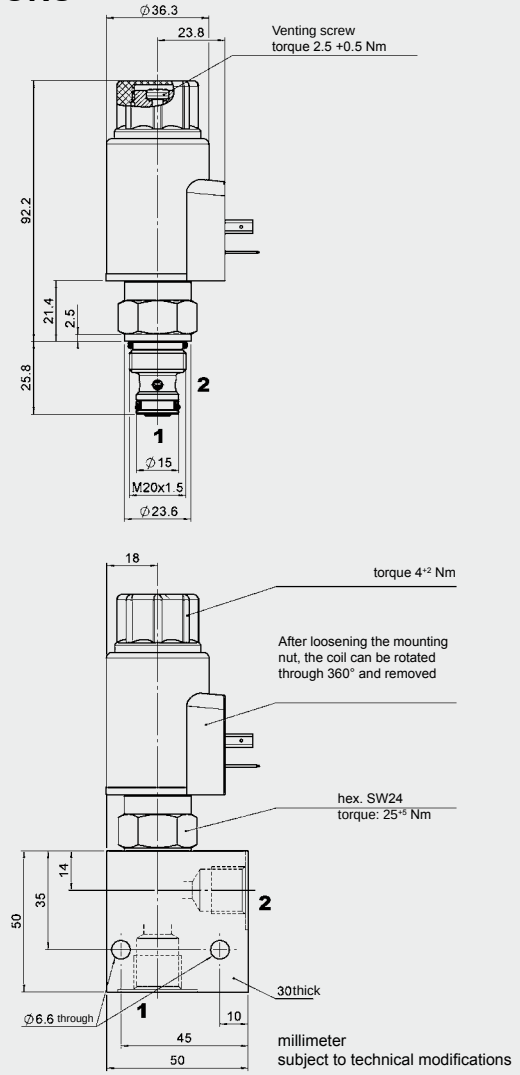
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- Patented design for guided poppet
- Excellent dynamic performance
- Screen-protected metering orifice enhances safety

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	Pressure range 070 bar...max.10 l/min Pressure range 210 bar...max. 6 l/min Pressure range 350 bar...max. 4 l/min	
Internal leakage:	< 0.1 cm³/min at 80% nominal pressure	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class19/17/14 according to ISO 4406 or cleaner	
Installation:	No orientation restrictions	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Material:	Valve body:	free-cutting steel
	Poppet:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	06020 metric	
Weight:	Valve complete	0.44 kg
	Coil only:	0.22 kg
Electronic data:		
Control currents:	850 mA; 18 Ohm (24V) 1750 mA; 4.1 Ohm (12V)	
PWM frequency:	160 - 250 Hz	
Hysteresis with dither:	2-4% of I_{max}	
Repeatability:	≤ 1.5% of max. pressure range	
Hysteresis:	≤ 2-4 % of I_{max}	
Response sensitivity:	≤ 1% of I_{max}	
Coil type:	Coil...-50-1836	

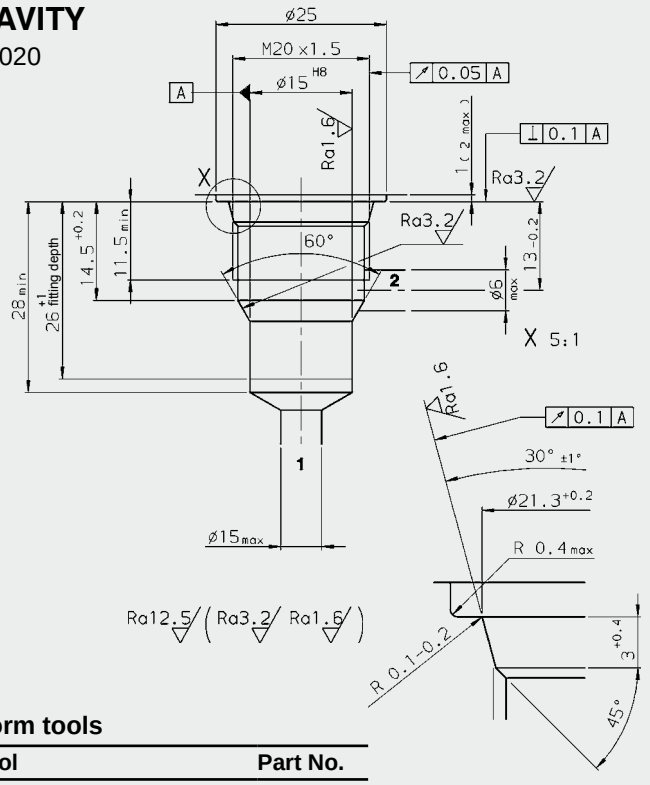
Note:
The PDBM06020 can also be supplied with an emergency pressure adjustment (version -02M). This allows a manual pressure adjustment of the valve if the electrical signal is interrupted. This adjustment should be used only in the case of electrical failure since the manual setting would be additive to the electrical setting and the system could be damaged when power is restored. In order to achieve optimal function, any trapped air should be vented using the venting screw on the face of the pole tube (not fitted to version -02M).

DIMENSIONS



CAVITY

06020



Form tools

Tool	Part No.
Countersink (shank MK3)	170033
Reamer (shank MK2)	1000768
Tap	1002648
Plug gauge	168840

millimeter
subject to technical modifications

MODEL CODE

PDBM06020 - 01 - C - N - 350 - 24 PG - 18.0

Basic model
Proportional
pressure relief valve

Type
01 = standard

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Pressure range
070 = up to 70 bar
210 = up to 210 bar
350 = up to 350 bar

Coil voltage
12 = 12 V (4.1 Ohm)
24 = 24 V (18 Ohm)

Coil connectors (type 50-1836)
PG = DIN connector to EN175301-803
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial
PU = AMP Junior Timer, 2-pole, axial
Other connectors on request

Coil resistance
4.1 = 4.1 Ohm (12 V)
18.0 = 18.0 Ohm (24 V)

Standard models

Model code	Part No.
PDBM06020-01-C-N-070-12PG-4.1	3362793
PDBM06020-01-C-N-070-24PG-18.0	3362790
PDBM06020-01-C-N-210-12PG-4.1	3362794
PDBM06020-01-C-N-210-24PG-18.0	3362791
PDBM06020-01-C-N-350-12PG-4.1	3362825
PDBM06020-01-C-N-350-24PG-18.0	3258051

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G3/8	max. 420 bar

Other bodies on request

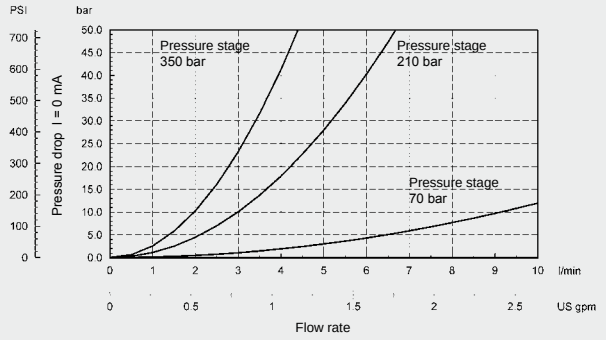
Seal kits

Code	Material	Part No.
SEAL KIT 06020-NBR	NBR	3119017
SEAL KIT 06020-FKM	FKM	3262477

PERFORMANCE

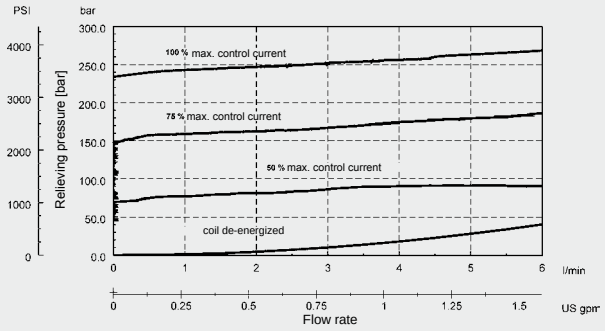
Δp-Q curve

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



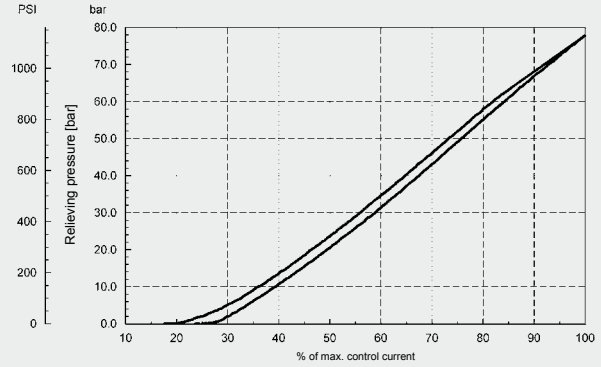
p-Q curve, Pressure range 210 bar

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



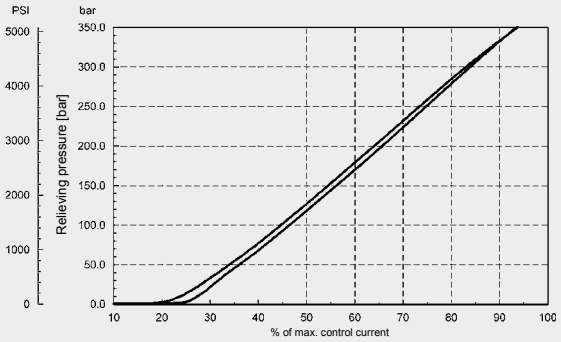
p-I curve, Pressure range 70 bar

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



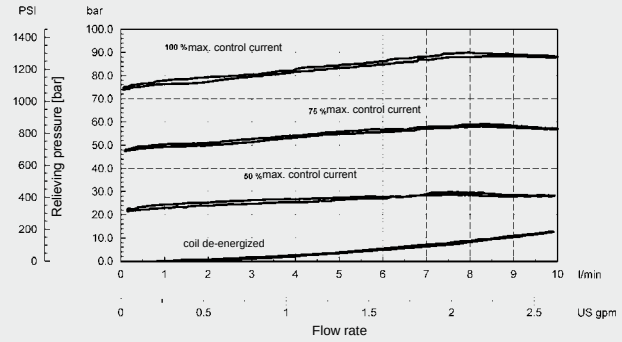
p-I curve, Pressure range 350 bar

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



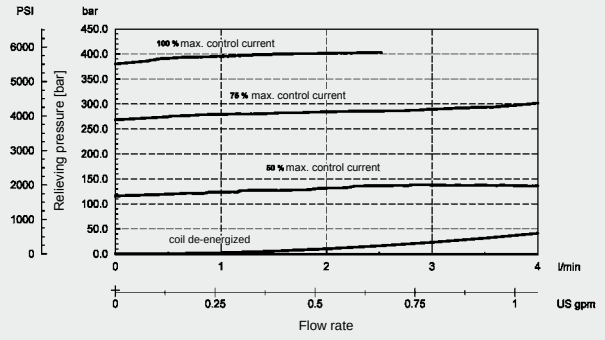
Q curve, Pressure range 70 bar

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



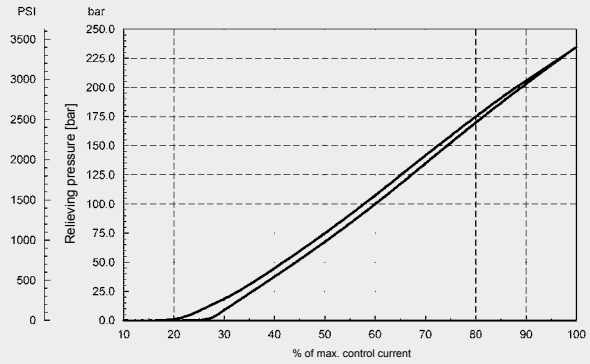
p-Q curve, Pressure range 350 bar

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



p-I curve, Pressure range 210 bar

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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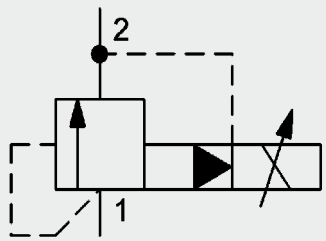


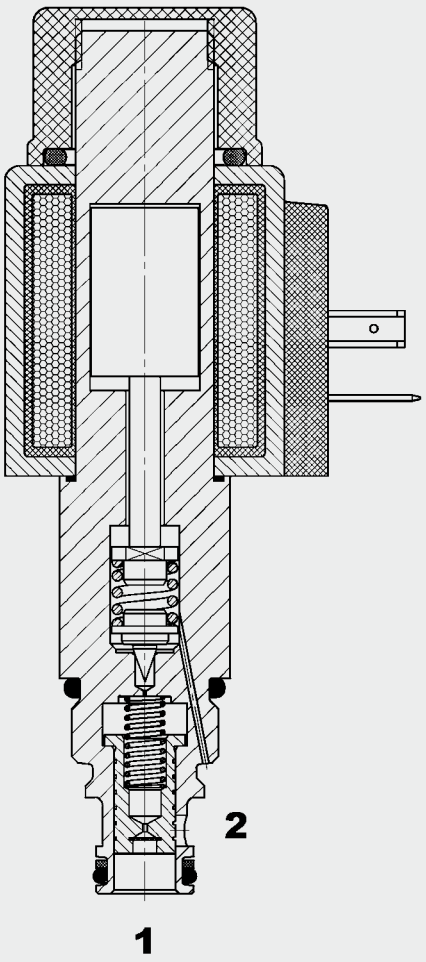
60 l/min
350 bar

Proportional Pressure Relief Valve Spool Type, Pilot-Operated SAE-08 Cartridge – 350 bar

UNF

PDB08P-01

FUNCTION



The PDB08P is a pilot-operated, spool type proportional pressure relief valve. If pressure at port 1 exceeds the setting defined by the electrical signal, the pilot poppet opens and oil flows from behind the main spool to tank port 2. The resulting pressure differential causes the main spool to lift against the return spring and allows flow from port 1 to port 2. As a function of the electrical signal the relief pressure at port 1 can be changed steplessly.

FEATURES

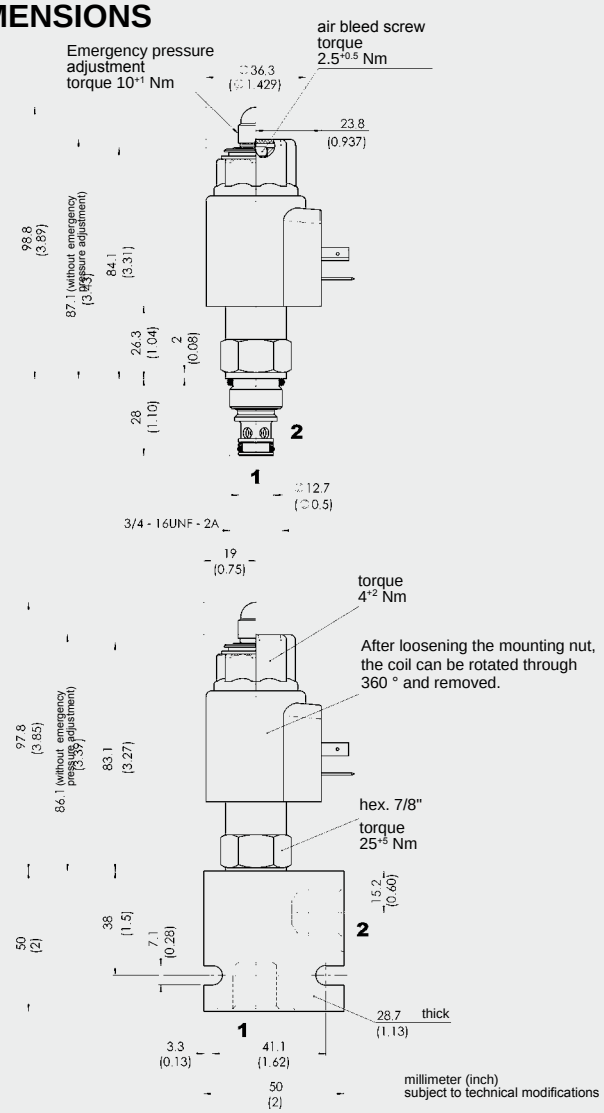
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- Low pressure drop due to CFD optimized flow path
- Screen-protected metering orifice enhances safety
- Hydrodynamic damping available as an option

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 60 l/min	
Operating pressure ranges:	up to 60 bar up to 230 bar up to 350 bar	
Internal leakage:	< 0.5 l/min at 350 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	7.4 to 420 mm²/s	
Filtration:	Class 18/16/13 to class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Coil:	steel / polyamide
Cavity:	FC08-2	
Weight:	Valve complete:	0.43 kg
	Coil only:	0.23 kg
Electronic data:		
Control current range:	1050 mA, 8.8 Ohm (24 Volt) 2100 mA, 2.2 Ohm (12 Volt)	
Dither frequency:	180 – 250 Hz	
Response time:	Energized:	approx. 50 ms
	De-energized:	approx. 30 ms
Hysteresis with dither:	2 – 4 % of the max. control current	
Repeatability:	1.5 % of max. pressure range	
Hysteresis:	≤ 2% of I_{nom}	
Response sensitivity:	≤ 1 % of I_{nom}	
Coil type:	Coil…40-1836	

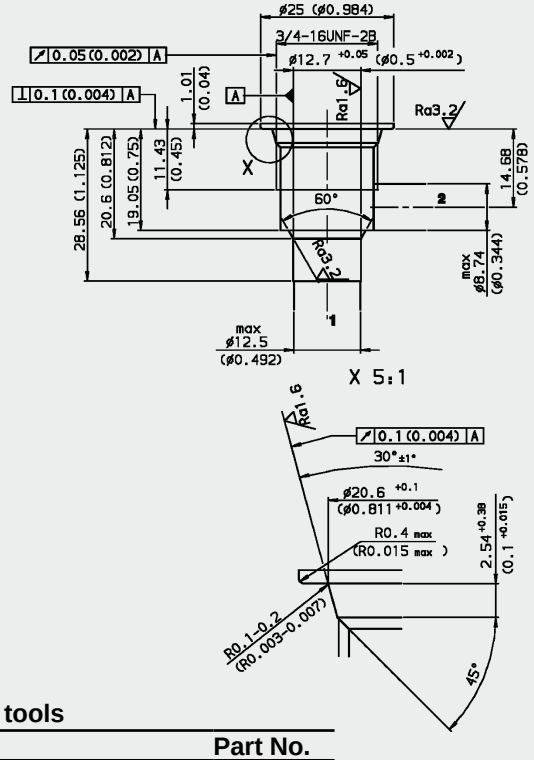
The PDB08P can also be supplied with an emergency pressure adjustment (version –01M). This allows a manual pressure adjustment of the valve if the electrical signal is interrupted. This adjustment should be used only in the case of electrical failure since the manual setting would be additive to the electrical setting and the system could be damaged when power is restored.
In order to achieve optimal function, any trapped air should be vented using the air bleed screw on the face of the pole tube (not fitted to version -02M).

DIMENSIONS



CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

MODEL CODE

PDB08P–01 M - C - N - 330 - 24 PG - 8.8

Basic model
Proportional pressure relief valve UNF

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB3 = G3/8 ports, steel body
AB3 = G3/8 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Pressure range
87 = to 60 bar
330 = to 230 bar
500 = to 350 bar

Coil voltage
12 = 12 V DC (2.2 Ohm)
24 = 24 V DC (8.8 Ohm)

Coil connectors (type 40-1836)
DC: PG = DIN connector to EN175301-803
PU = AMP Junior Timer, 2-pole, axial
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial, DT04-22P-EF 04
Other connectors on request

Coil resistance
2.2 = 2.2 Ω (12 V)
8.8 = 8.8 Ω (24 V)

Standard models

Model code	Part No.
PDB08P-01-C-N-87-12PG-2.2	3144426
PDB08P-01-C-N-330-12PG-2.2	3144427
PDB08P-01-C-N-500-12PG-2.2	3144458
PDB08P-01-C-N-87-24PG-8.8	3144459
PDB08P-01-C-N-330-24PG-8.8	3144460
PDB08P-01-C-N-500-24PG-8.8	3144461

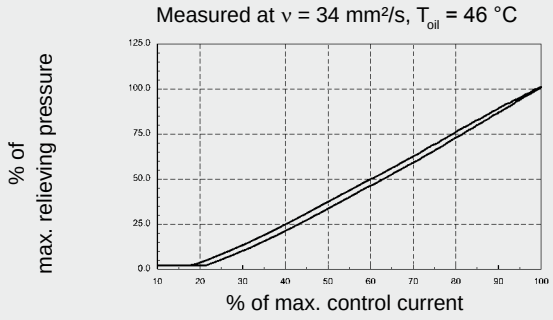
*Standard in-line bodies

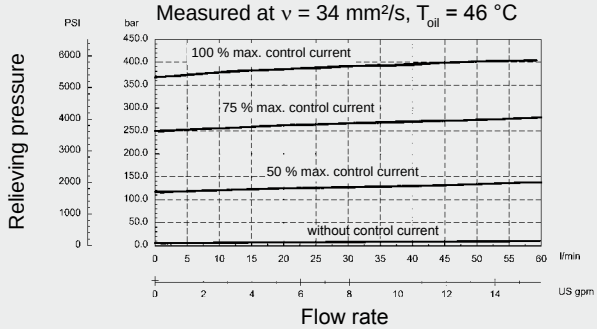
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, anodized	G3/8	210 bar

Seal kits

Code	Material	Part No.
FH082-N SEAL KIT	NBR	3033920
FH082-V SEAL KIT	FKM	3051756

PERFORMANCE





NOTE

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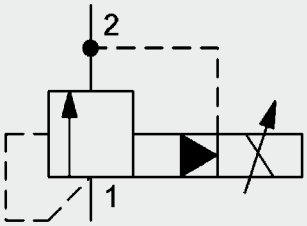
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

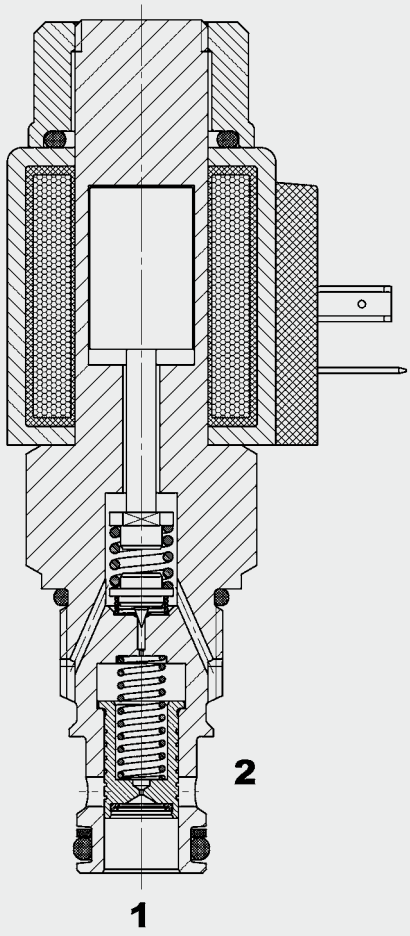


Up to 120 l/min
Up to 350 bar

Proportional Pressure Relief Valve Spool Type, Pilot-Operated Normally Open Metric Cartridge – 350 bar

PDBM10120AP

FUNCTION



The PDBM10120AP is a pilot-operated, spool-type proportional pressure relief valve. If the pressure at port 1 exceeds the setting defined by the electrical signal, the pilot-stage opens and oil flows from behind the main spool to the tank port 2. The resulting pressure differential causes the main spool to move against the reset-spring and allows oil to flow from port 1 to port 2. As a function of the electrical signal, the relief pressure at port 1 can be changed steplessly.

FEATURES

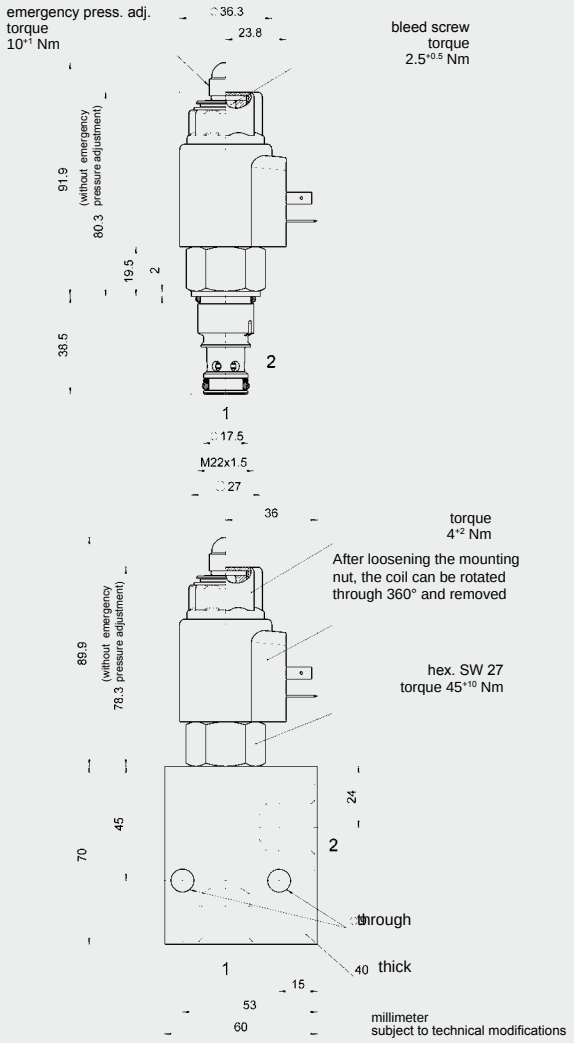
- Hardened and ground control spool to ensure minimal wear and extended service life
- Quick response
- Low hysteresis and excellent stability throughout the flow range
- Increased operating reliability due to protective strainer
- Low pressure drop due to CFD optimized flow path
- External surfaces zinc-plated and corrosion-proof

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 120 l/min	
Operating pressure ranges:	up to 60 bar up to 230 bar up to 350 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 18/16/13 to 19/17/14 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	10120A	
Weight:	Valve complete	0.47 kg
	Coil only	0.23 kg
Electronic data:		
Control current range:	1050 mA, 8.8 Ohm (24 Volt) 2100 mA , 2.2 Ω	
Internal leakage:	max. 170 cm³/min at 350 bar and 34 mm²/s	
Dither frequency:	approx. 160 Hz - 250 Hz	
Response time:	Energized:	approx. 50 ms
	De-energized:	approx. 30 ms
Hysteresis with dither:	2-4% of I_{nom}	
Repeatability:	≤ 1.5% of I_{nom}	
Sensitivity:	≤ 1 % of I_{nom}	
Coil type:	Coil…-40-1836	

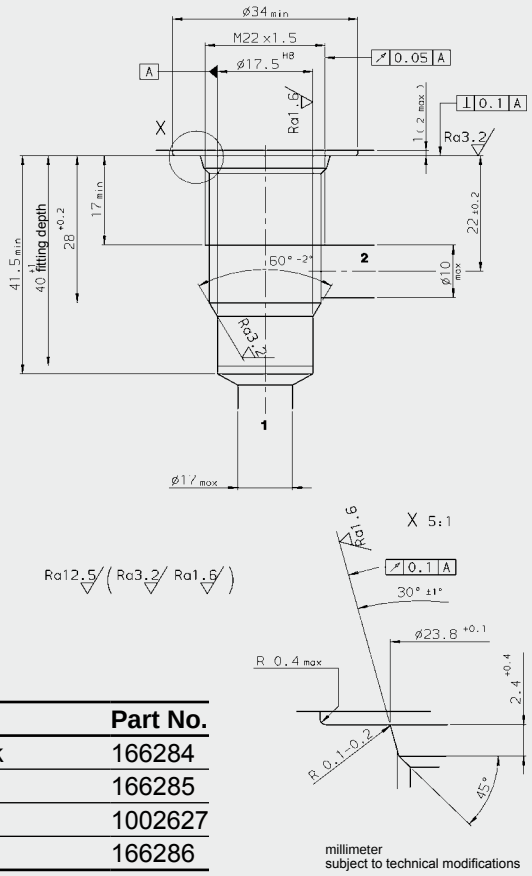
The PDBM10120AP can also be supplied with an emergency pressure adjustment (version -02M). This allows a manual pressure adjustment of the valve if the electrical signal is interrupted. This adjustment should be used only in the case of electrical failure since the manual setting would be additive to the electrical setting and the system could be damaged when power is restored.

DIMENSIONS



CAVITY

10120A



Form tools

Tool	Part No.
Countersink	166284
Reamer	166285
Tap	1002627
Plug gauge	166286

MODEL CODE

PDBM10120AP - 01 M - C - N - 350 - 24 PG - 8.8

Basic model
Proportional pressure relief valve

Type
01 = standard

Emergency pressure adjustment
no details = without emergency press. adj.
M = emergency pressure adjustment

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Pressure setting range
60 = to 60 bar
250 = to 250 bar
350 = to 350 bar

Coil voltage
12 = 12 Volt DC (2.2 Ω)
24 = 24 Volt DC (8.8 Ω)

Coil connectors (type 40-1836)
DC: PG = DIN connector to EN175301-803
PT = AMP Junior Timer, 2-pole, radial
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial, DT04-22P-EF 04
Other connectors on request

Coil resistance
2.2 = 2.2 Ohm (12 V)
8.8 = 8.8 Ohm (24 V)

Standard models

Model code	Part No.
PDBM10120AP-01-C-N-60-12PG-2.2	3122655
PDBM10120AP-01-C-N-230-12PG-2.2	3122656
PDBM10120AP-01-C-N-350-12PG-2.2	3122657
PDBM10120AP-01-C-N-60-24PG-8.8	3122622
PDBM10120AP-01-C-N-230-24PG-8.8	3122621
PDBM10120AP-01-C-N-350-24PG-8.8	3105357

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R10120A-01X-01	395232	Steel, zinc-plated	G1/2	420 bar

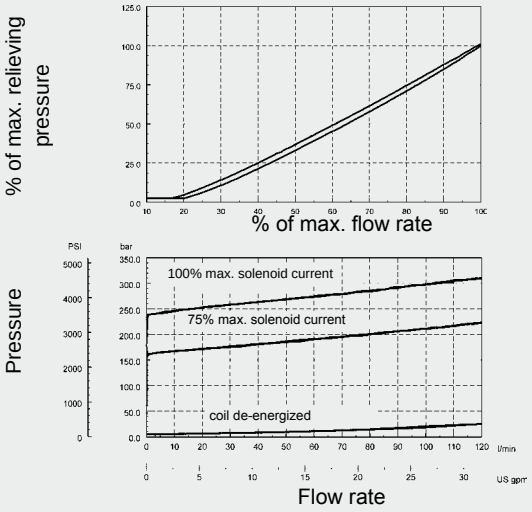
Other bodies on request

Seal kits

Code	Material	Part No.
SEAL KIT DB10120A...NBR	NBR	3085499
SEAL KIT DB10120A...FKM	FKM	560222

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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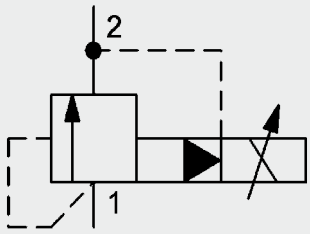


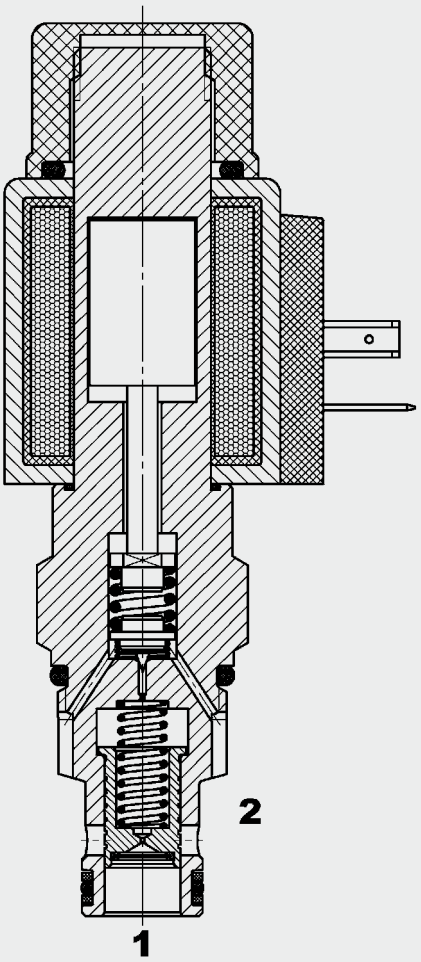
Up to 120 l/min
Up to 350 bar

Proportional Pressure Relief Valve Spool Type, Pilot-Operated SAE-10 Cartridge – 350 bar

UNF

PDB10P-01

FUNCTION



The PDB10P is a pilot-operated, spool type proportional pressure relief valve. If pressure at port 1 exceeds the setting defined by the electrical signal, the pilot poppet opens and oil flows from behind the main spool to tank port 2. The resulting pressure differential causes the main spool to lift against the return spring and allows flow from port 1 to port 2. As a function of the electrical signal, the relief pressure at port 1 can be changed steplessly.

FEATURES

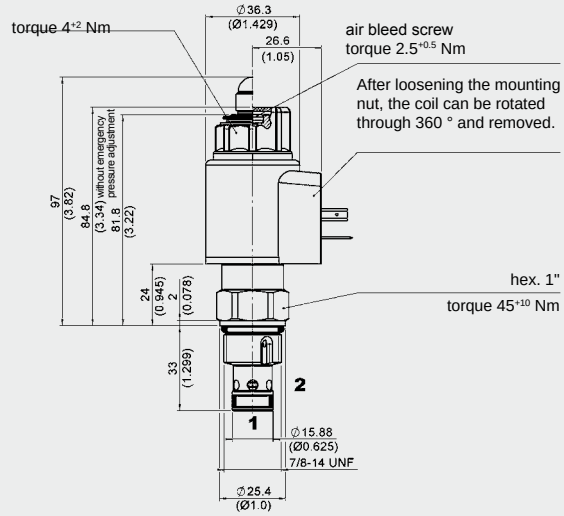
- External surfaces zinc-plated and corrosion-proof
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Low pressure drop due to CFD optimized flow path
- Screen protected metering orifice enhances safety
- Hydrodynamic damping available as an option

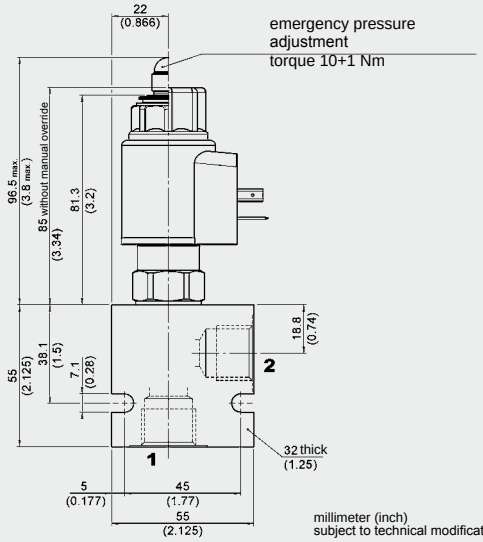
SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 120 l/min	
Operating pressure ranges:	up to 60 bar up to 230 bar up to 350 bar	
Internal leakage:	< 0.5 l/min at 350 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 18/16/13 to class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity	FC10-2	
Weight:	Valve complete	0.49 kg
	Coil only	0.23 kg
Electronic data:		
Control currents:	1050 mA, 8.8 Ohm (24 Volt) 2100 mA, 2.2 Ohm (12 Volt)	
Dither frequency:	approx. 160 Hz - 250 Hz	
Response time:	Energized: approx. 50 ms De-energized: approx. 30 ms	
Hysteresis with dither:	2 - 4% of I_{nom}	
Repeatability:	≤ 1.5 % of I_{nom}	
Hysteresis:	≤ 2 % of I_{nom}	
Response sensitivity:	≤ 1 % of I_{nom}	
Coil type:	Coil…-40-1836	

The PDR08 can also be supplied with an emergency pressure adjustment (version -02M). This allows a manual pressure adjustment of the valve if the electrical signal is interrupted. This adjustment should be used only in the case of electrical failure since the manual setting would be additive to the electrical setting and the system could be damaged when power is restored.

DIMENSIONS

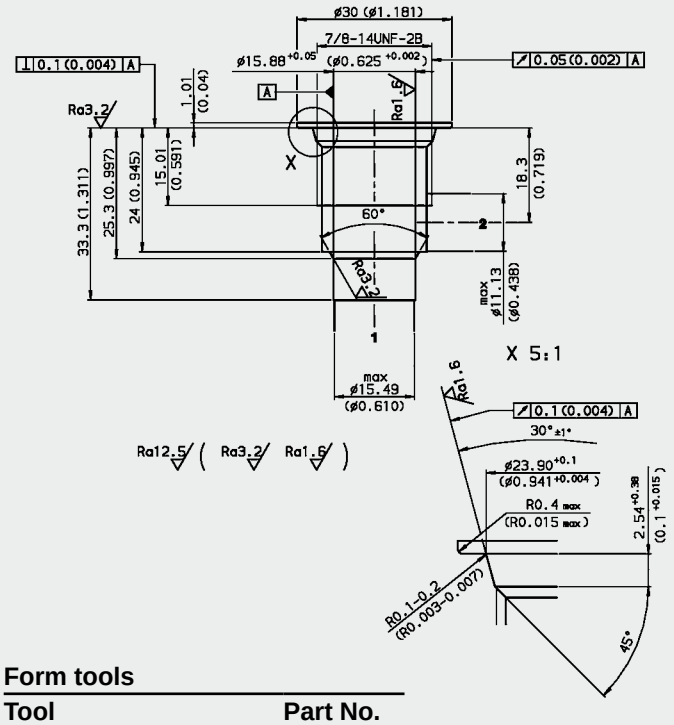




millimeter (inch)
subject to technical modifications

CAVITY

FC10-2



Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter (inch)
subject to technical modifications

MODEL CODE

PDB10P–01 M - C - N - 330 - 24 PG - 8.8

Basic model
Proportional pressure relief valve, UNF

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB4 = G1/2 ports, steel body
AB4 = G1/2 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Setting pressure range
87 = up to 60 bar (870 PSI)
330 = up to 230 bar (3300 PSI)
500 = up to 350 bar (5000 PSI)

Coil voltage
12 = 12 V DC (2.2 Ohm)
24 = 24 V DC (8.8 Ohm)

Coil connectors (type 40-1836)
DC: PG = DIN connector to EN175301-803
PT = AMP Junior Timer, 2-pole, radial
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial, DT04-22P-EF 04
Other connectors on request

Coil resistance
2.2 = 2.2 Ohm (12 V)
8.8 = 8.8 Ohm (24 V)

Standard models

Model code	Part No.
PDB10P-01-C-N-87-12PG-2.2	3122867
PDB10P-01-C-N-330-12PG-2.2	3122958
PDB10P-01-C-N-500-12PG-2.2	3122959
PDB10P-01-C-N-87-24PG-8.8	3122964
PDB10P-01-C-N-330-24PG-8.8	3122965
PDB10P-01-C-N-500-24PG-8.8	3122966

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, anodized	G1/2	210 bar

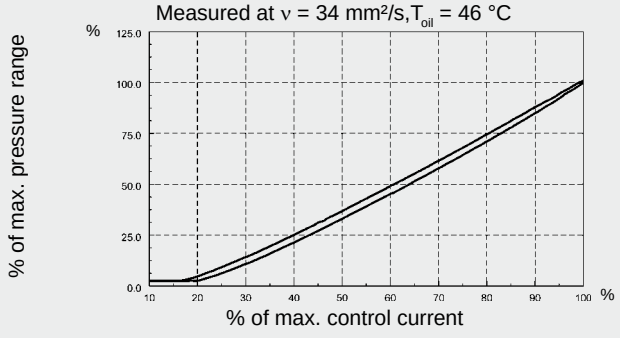
For other line bodies, see brochure no. E 5.252.

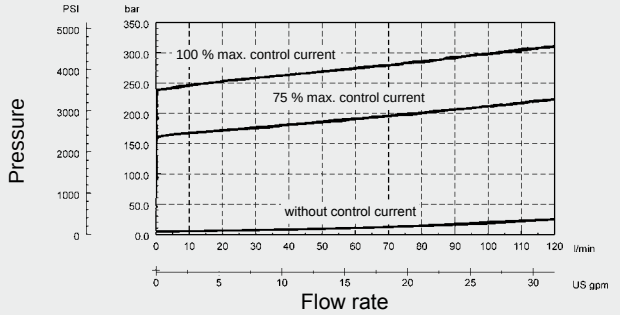
Seal kits

Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C





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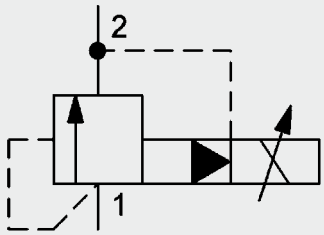


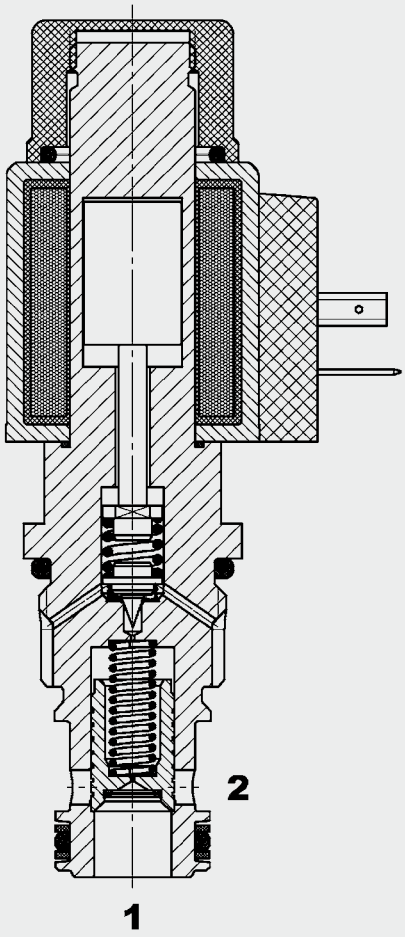
200 l/min
350 bar

Proportional Pressure Relief Valve Spool Type, Pilot-Operated SAE-12 Cartridge – 350 bar

UNF

PDB12P-01

FUNCTION



The PDB12P is a pilot-operated, spool type proportional pressure relief valve. If pressure at port 1 exceeds the setting defined by the electrical signal, the pilot poppet opens and oil flows from behind the main spool to tank port 2. The resulting pressure differential causes the main spool to lift against the return spring and allows flow from port 1 to port 2. As a function of the electrical signal, the relief pressure at port 1 can be changed steplessly.

FEATURES

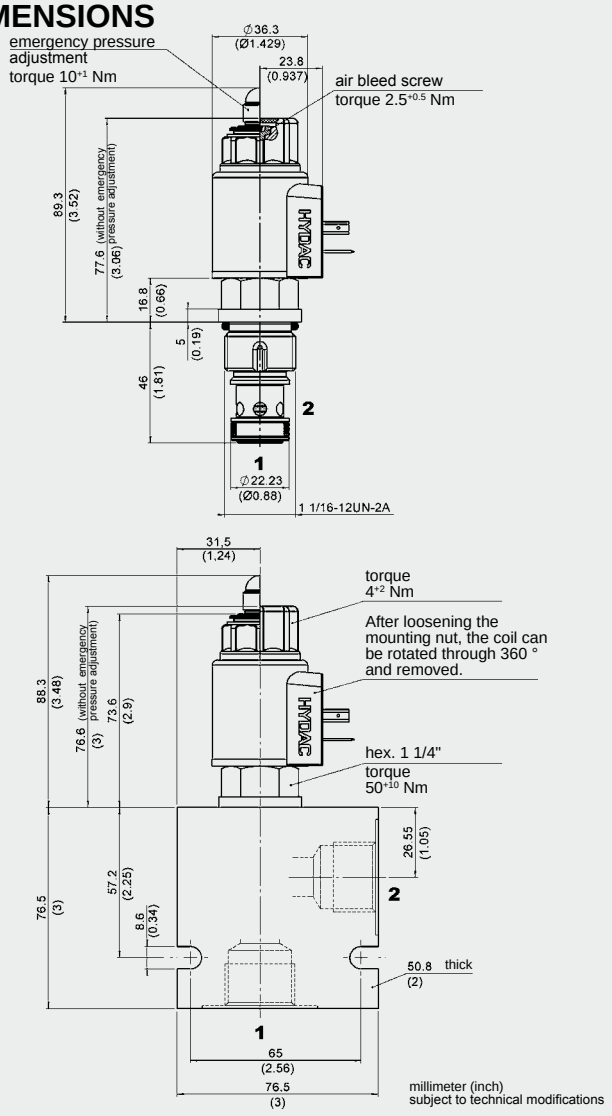
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- Low pressure drop due to CFD optimized flow path
- Screen-protected metering orifice enhances safety

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 200 l/min	
Operating pressure ranges:	up to 60 bar up to 230 bar up to 350 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 18/16/13 to class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC12-2	
Weight:	Valve complete	0.55 kg
	Coil only	0.23 kg
Electronic data:		
Control currents:	1050 mA, 8.8 Ohm (24 Volt) 2100 mA, 2.2 Ohm (12 Volt)	
Internal leakage:	< 0.5 l/min at 350 bar	
Dither frequency:	approx. 160 Hz - 250 Hz	
Response time:	Energized: De-energized:	approx. 50 ms approx. 30 ms
Hysteresis with dither:	2 - 4% of I_{nom}	
Repeatability:	≤ 1.5 % of I_{nom}	
Hysteresis:	≤ 2 % of I_{nom}	
Response sensitivity:	≤ 1 % of I_{nom}	
Coil type:	Coil…-40-1836	

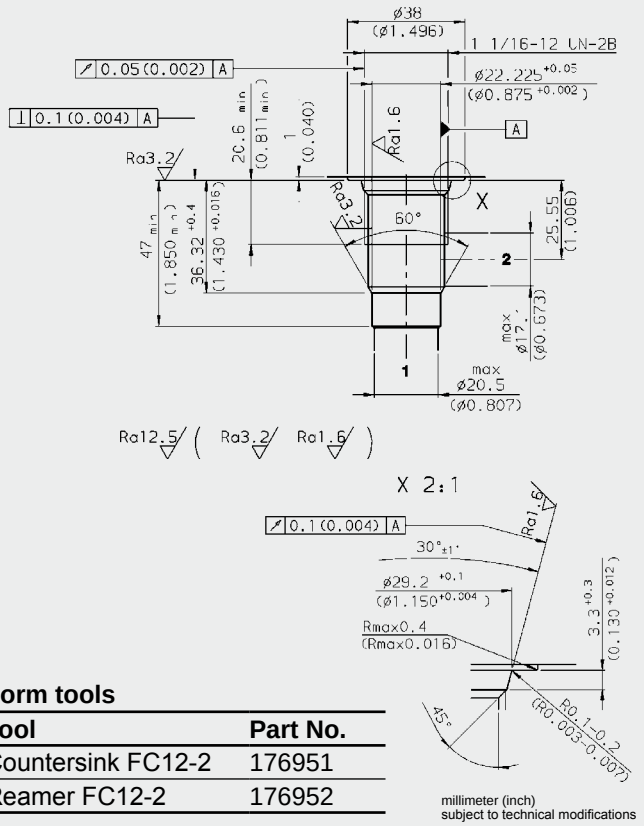
The PDB12P can also be supplied with an emergency pressure adjustment (version –01M). This allows a manual pressure adjustment of the valve if the electrical signal is interrupted. This adjustment should be used only in the case of electrical failure since the manual setting would be additive to the electrical setting and the system could be damaged when power is restored.

DIMENSIONS



CAVITY

FC12-2



Form tools

Tool	Part No.
Countersink FC12-2	176951
Reamer FC12-2	176952

MODEL CODE

PDB12P-01 M - C - N - 330 - 24 PG - 8.8

Basic model
Proportional pressure relief valve, UNF

Manual override
no details = without manual override
M = manual override

Body and ports*
C = cartridge only
SB6 = G3/4 ports, steel body
AB6 = G3/4 ports, aluminium body

Seals
N = NBR
V = FKM

Pressure range
87 = up to 60 bar (870 PSI)
330 = up to 230 bar (3300 PSI)
500 = up to 350 bar (5000 PSI)

Coil voltage
12 = 12 V DC (2.2 Ohm)
24 = 24 V DC (8.8 Ohm)

Coil connectors (type 40-1836)
DC: PG = DIN connector to EN175301-803
PU = AMP Junior Timer, 2-pole, axial
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial, DT04-22P-EF 04
Other connectors on request

Coil resistance
2.2 = 2.2 Ohm (12V)
8.8 = 8.8 Ohm (24V)

Standard models

Model code	Part No.
PDB12P-01-C-N-87-12PG-2.2	3144462
PDB12P-01-C-N-330-12PG-2.2	3144463
PDB12P-01-C-N-500-12PG-2.2	3144464
PDB12P-01-C-N-87-24PG-8.8	3144465
PDB12P-01-C-N-330-24PG-8.8	3144466
PDB12P-01-C-N-500-24PG-8.8	3144467

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH122-SB6	3053782	Steel, zinc-plated	G3/4	420 bar
FH122-AB6	3053843	Aluminium, anodized	G3/4	210 bar

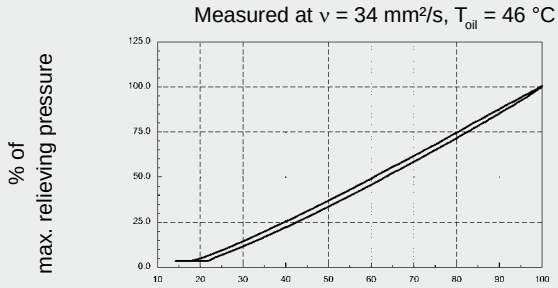
Other bodies on request

Seal kits

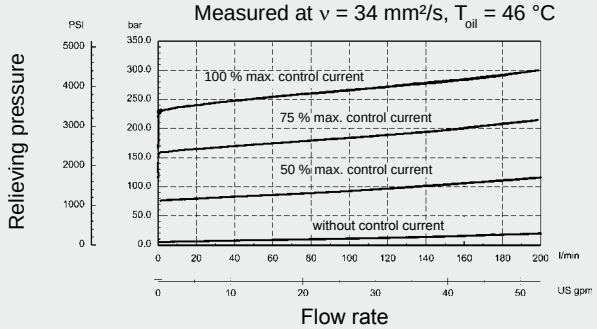
Code	Material	Part No.
FS122-N SEAL KIT	NBR	3071298
FS122-V SEAL KIT	FKM	3071299

PERFORMANCE

Measured at ν = 34 mm²/s, T_{oil} = 46 °C



Measured at ν = 34 mm²/s, T_{oil} = 46 °C



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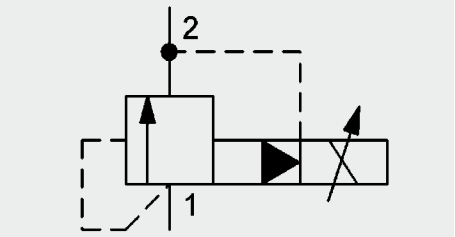


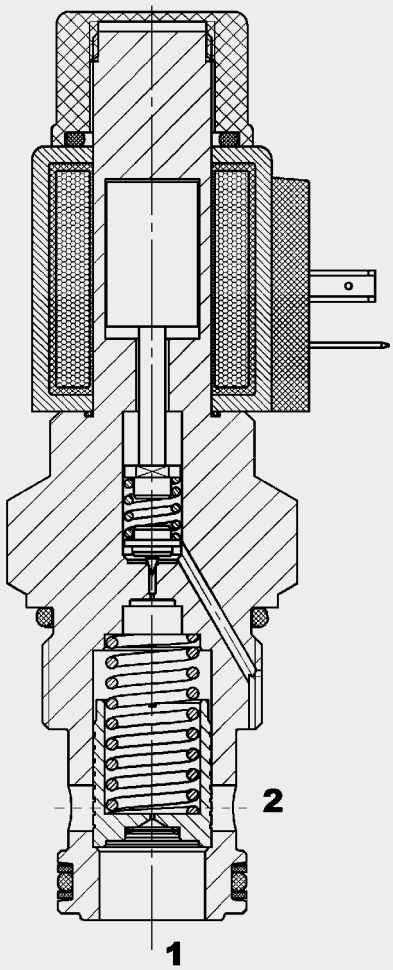
300 l/min
350 bar

Proportional Pressure Relief Valve Spool Type, Pilot-Operated SAE-16 Cartridge – 350 bar

UNF

PDB16P-01

FUNCTION



The PDB16P is a pilot-operated, spool type proportional pressure relief valve. If pressure at port 1 exceeds the setting defined by the electrical signal, the pilot poppet opens and oil flows from behind the main spool to tank port 2. The resulting pressure differential causes the main spool to lift against the return spring and allows flow from port 1 to port 2. As a function of the electrical signal, the relief pressure at port 1 can be changed steplessly.

FEATURES

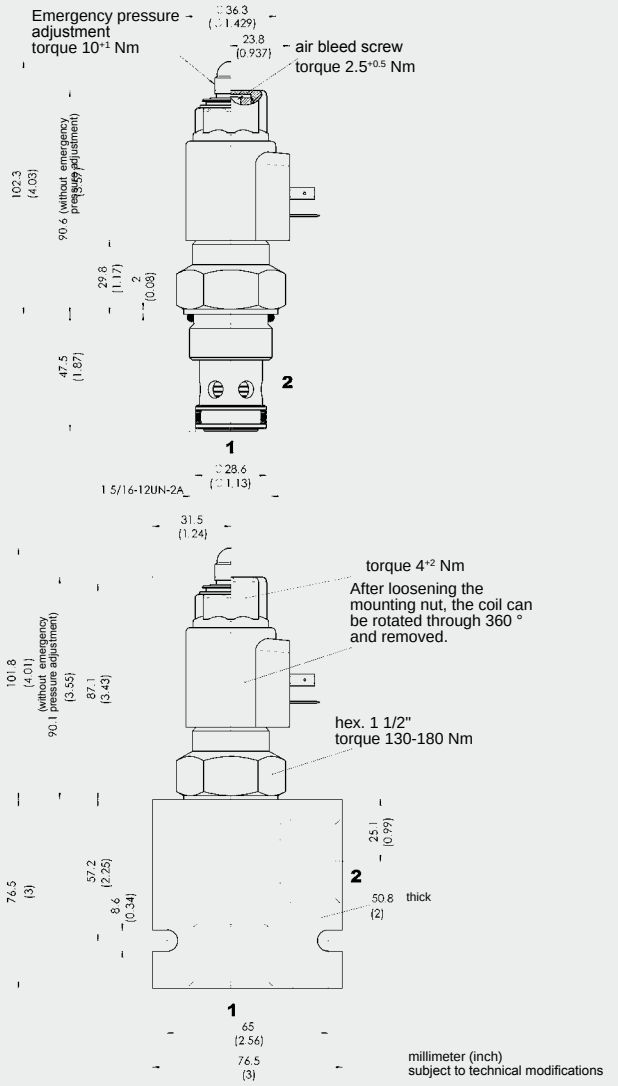
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- Low pressure drop due to CFD optimized flow path
- Screen-protected metering orifice enhances safety

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 300 l/min	
Operating pressure ranges:	up to 60 bar up to 230 bar up to 350 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 18/16/13 to class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC16-2	
Weight:	Valve complete	0.79 kg
	Coil only	0.23 kg
Electronic data:		
Control currents:	1050 mA, 8.8 Ohm (24 Volt) 2100 mA, 2.2 Ohm (12 Volt)	
Internal leakage:	< 1 l/min at 350 bar	
Dither frequency:	approx. 160 Hz - 250 Hz	
Response time:	Energized: De-energized:	approx. 70 ms approx. 40 ms
Hysteresis with dither:	2 - 4% of I_{nom}	
Repeatability:	≤ 1.5 % of I_{nom}	
Hysteresis:	≤ 2 % of I_{nom}	
Response sensitivity:	≤ 1 % of I_{nom}	
Coil type:	Coil…-40-1836	

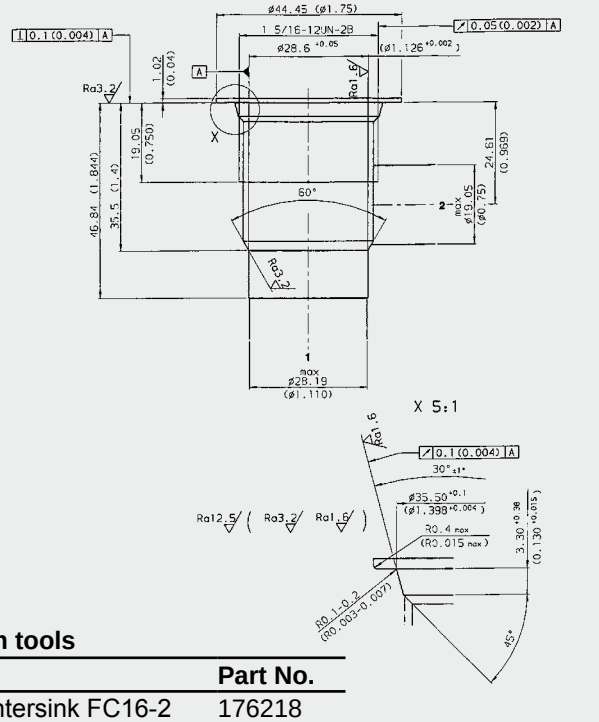
The PDB16P can also be supplied with an emergency pressure adjustment (version –01M). This allows a manual pressure adjustment of the valve if the electrical signal is interrupted. This adjustment should be used only in the case of electrical failure since the manual setting would be additive to the electrical setting and the system could be damaged when power is restored.

DIMENSIONS



CAVITY

FC16-2



Form tools

Tool	Part No.
Countersink FC16-2	176218
Reamer FC16-2	176219

MODEL CODE

PDB16P-01 M - C - N - 330 - 24 PG - 8.8

Basic model
Proportional pressure relief valve, UNF

Manual override
No details = without manual override
M = manual override

Body and Ports*
C = cartridge only
SB8 = G1 ports, steel body
AB8 = G1 ports, aluminium body

Seals
N = NBR (standard)
V = FKM

Pressure range
87 = up to 60 bar (870 PSI)
330 = up to 230 bar (2300 PSI)
500 = up to 350 bar (5000 PSI)

Coil voltage
12 = 12 V DC (2.2 Ohm)
24 = 24 V DC (8.8 Ohm)

Coil connectors (type 40-1836)
DC: PG = DIN connector to EN175301-803
PU = AMP Junior Timer, 2-pole, axial
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial, DT04-22P-EF 04
Other connectors on request

Coil resistance
2.2 = 2.2 Ω (12 V)
8.8 = 8.8 Ω (24 V)

Standard models

Model code	Part No.
PDB16P-01-C-N-87-12PG-2.2	3144468
PDB16P-01-C-N-330-12PG-2.2	3144469
PDB16P-01-C-N-500-12PG-2.2	3144470
PDB16P-01-C-N-87-24PG-8.8	3144471
PDB16P-01-C-N-330-24PG-8.8	3144472
PDB16P-01-C-N-500-24PG-8.8	3144473

*Standard in-line bodies

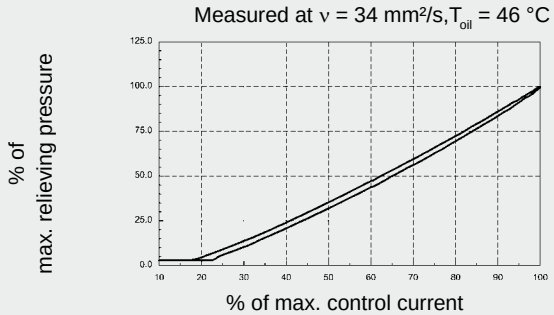
Code	Part No.	Material	Ports	Pressure
FH162-SB8	3032496	Steel, zinc-plated	G1	420 bar
FH162-AB8	3037193	Aluminium, anodized	G1	210 bar

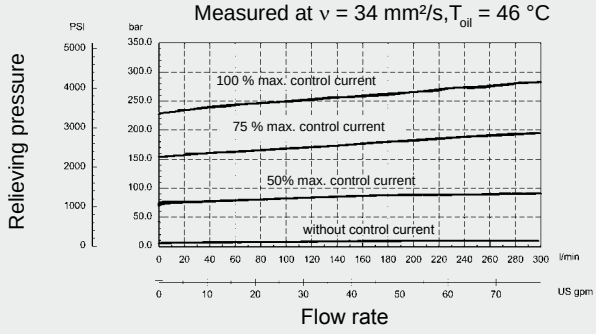
Other bodies on request

Seal kits

Code	Material	Part No.
FS162-N SEAL KIT	NBR	3052427
FS162-V SEAL KIT	FKM	3051758

PERFORMANCE





NOTE

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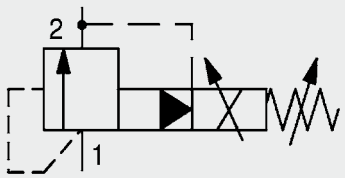
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



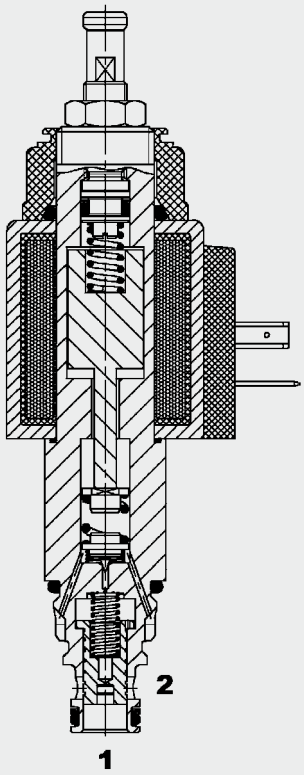
60 l/min
350 bar

Proportional Pressure Relief Valve Inversely Controlled Spool Type, Pilot-Operated SAE-08 Cartridge – 350 bar

UNF

PDB08PZ-08

FUNCTION



The PDB08PZ is a pilot-operated, spool type proportional pressure relief valve. If pressure at port 1 exceeds the setting defined by the electrical signal, the pilot poppet opens and oil flows from behind the main spool to tank port 2. The resulting pressure differential causes the main spool to lift against the return spring and allows flow from port 1 to port 2. As a function of the electrical signal the relief pressure at port 1 can be changed steplessly.

The valve is inversely controlled: with decreasing control current the pilot poppet of the valve closes, the main stage follows the pilot stage and a counter-pressure is created at port 1. When de-energized, the pressure is the highest pressure that has been pre-set (fail-safe function). The maximum pressure can be pre-set mechanically.

FEATURES

- Reduces cavitation
- External surfaces zinc-plated and corrosion-proof
- Good stability across the whole pressure and flow range
- Excellent dynamic performance
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- Adjustable throughout flow range
- Available in different versions with hydropneumatic damping and reduced overlap for the reduction of pressure peaks

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Pressure ranges:	4 to 60, 230, 350 bar	
Nominal flow:	max. 60 l/min	
Internal leakage:	< 0.5 l/min at 80% of p_{nom}	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 18/16/13 to class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to 120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC08-2	
Weight:	Valve complete	0.43 kg
	Coil only	0.22 kg
Electronic data:		
Control currents:	1050 mA, 8.8 Ohm (24 Volt) 2100 mA, 2.2 Ohm (12 Volt)	
PWM frequency:	160 - 250 Hz	
Hysteresis with dither:	2 - 4% of I_{nom}	
Repeatability:	≤ 2% of I_{nom}	
Hysteresis:	≤ 2% of I_{nom}	
Response sensitivity:	≤ 1% of I_{nom}	
Coil type:	Coil...-40-1836	

NOTE
In order to achieve optimal function, any trapped air should be vented using the air bleed screw on the face of the pole tube.

MODEL CODE

PDB08PZ -08 -C -N -330 -V -330- 24 PG - 8.8

Basic model
Proportional
pressure relief valve

Type
08 = standard, without damping
18 = as 08, with
hydrodynamic damping

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Pressure range
087 = 4 - 60 bar (870 PSI)
330 = 4 - 228 bar (3300 PSI)
500 = 4 - 345 bar (5000 PSI)

Type of adjustment
V = adjustable using tool

Setting
No details = no setting, spring relaxed
330 = 230 bar, specific cracking pressure (3300 PSI) on request

Coil voltage
DC voltages:
12 = 12 V DC (2.2 Ohm)
24 = 24 V DC (8.8 Ohm)

Coil connectors (type 40-1836)
DC: DG = DIN connector to EN175301-803
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial

Coil resistance
2.2 = 2.2 Ohm (12 V)
8.8 = 8.8 Ohm (24 V)

Standard models

Model code	Part No.
PDB08PZ-08-C-N-087V087-12PG-2.2	3356340
PDB08PZ-08-C-N-087V087-24PG-8.8	3356404
PDB08PZ-08-C-N-330V330-12PG-2.2	3356342
PDB08PZ-08-C-N-330V330-24PG-8.8	3356435
PDB08PZ-08-C-N-500V500-12PG-2.2	3356344
PDB08PZ-08-C-N-500V500-24PG-8.8	3356438

Other models on request

*Standard in-line bodies

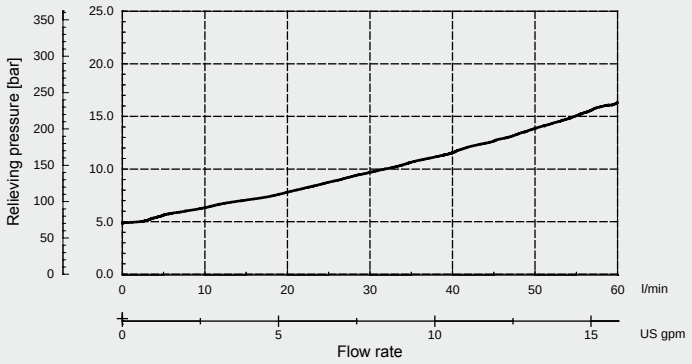
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	max. 420 bar
FH082-AB3	3011423	Aluminium, anodized	G3/8	max. 210 bar

Seal kits

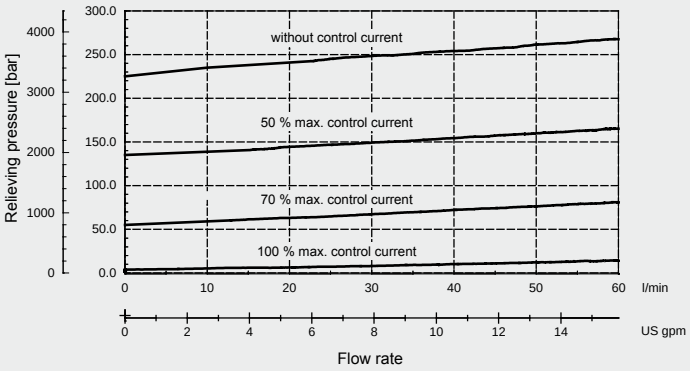
Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

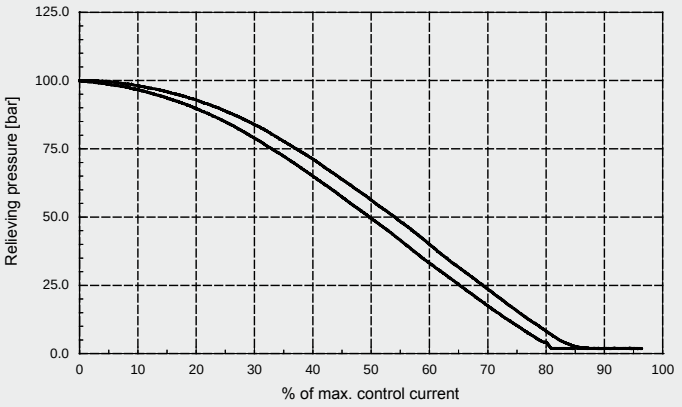
Measured at ν = 34 mm²/s, T_{oil} = 46 °C



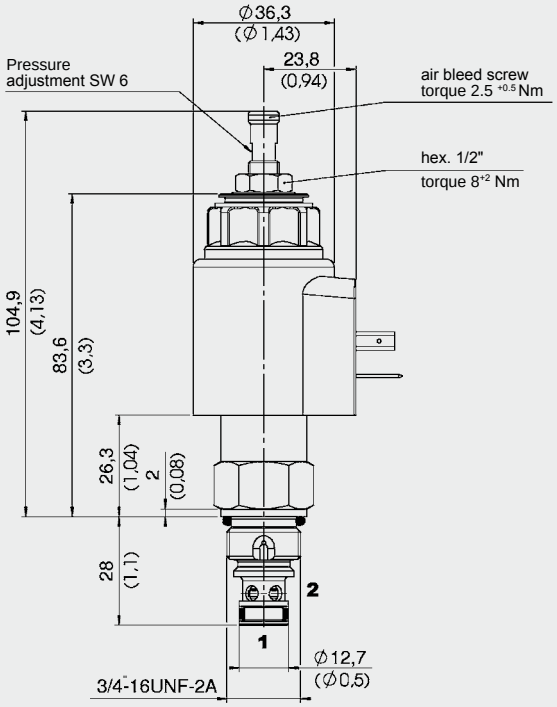
Measured at ν = 34 mm²/s, T_{oil} = 46 °C

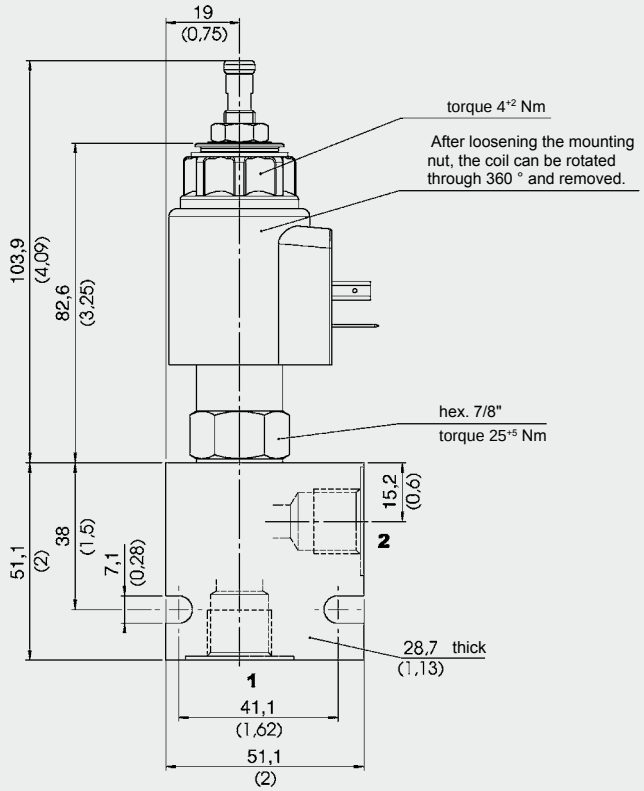


Measured at ν = 34 mm²/s, T_{oil} = 46 °C



DIMENSIONS

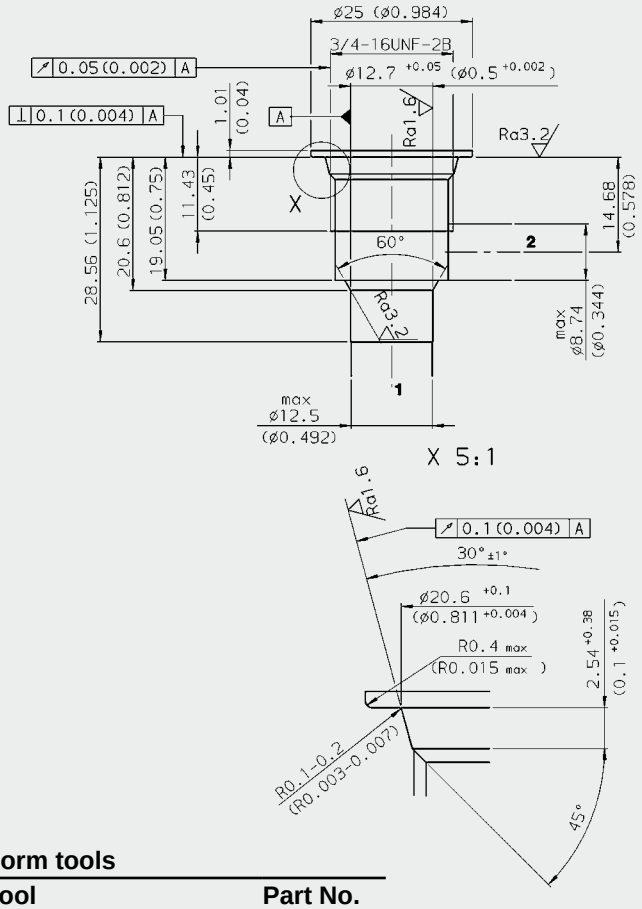




millimeter (inch)
subject to technical modifications

CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink FC08-2	175473
Reamer FC08-2	175474

millimeter (inch)
subject to technical modifications

NOTE

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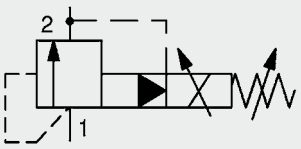
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



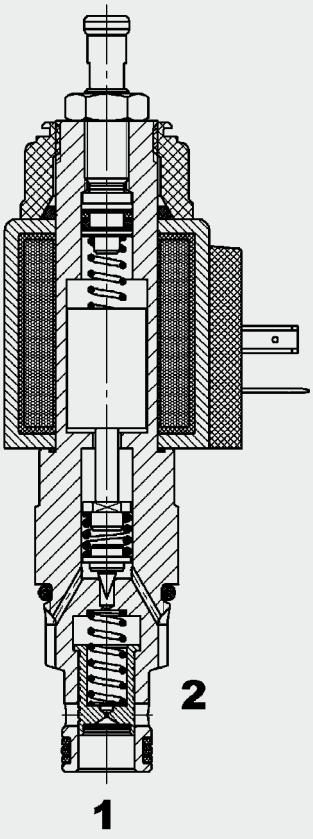
120 l/min
350 bar

Proportional Pressure Relief Valve Inverse Controlled Spool Type, Pilot-Operated SAE-10 Cartridge – 350 bar

UNF

PDB10PZ-08/-09

FUNCTION



The PDB10PZ is a pilot-operated, spool type proportional pressure relief valve. If pressure at port 1 exceeds the setting defined by the electrical signal, the pilot poppet opens and oil flows from behind the main spool to tank port 2. The resulting pressure differential causes the main spool to lift against the return spring and allows flow from port 1 to port 2. As a function of the electrical signal, the relief pressure at port 1 can be changed steplessly.

The valve is inversely controlled: with decreasing control current the pilot poppet closes, the main stage follows the pilot stage and a counter-pressure is created at port 1.

FEATURES

- Reduces cavitation
- External surfaces zinc-plated and corrosion-proof
- Good stability across the whole pressure and flow range
- Excellent dynamic performance
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Low pressure drop due to CFD optimized flow path
- Adjustable throughout flow range

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Pressure ranges:	4 to 60, 230, 350 bar	
Nominal flow:	max. 120 l/min	
Internal leakage:	< 0.5 l/min at 80% of p_{nom}	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 18/16/13 to class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity:	FC10-2	
Weight:	Valve complete	0.50 kg
	Coil only	0.22 kg
Electronic data:		
Control currents:	1050 mA, 8.8 Ohm (24 Volt) 2100 mA, 2.2 Ohm (12 Volt)	
PWM frequency:	200 Hz	
Hysteresis with dither:	2-4% of I_{nom}	
Repeatability:	≤ 2% of p_{nom}	
Hysteresis:	≤ 2% of p_{nom}	
Response sensitivity:	≤ 1% of p_{nom}	
Coil type:	Coil (12 or 24) P...-40-1836	

NOTE
In order to achieve optimal function, any trapped air should be vented using the air bleed screw on the face of the pole tube.

MODEL CODE

PDB 10PZ - 08 -C - N - 330 - V - 330 - 24 PG - 8.8

Basic model
Proportional
pressure relief valve

Type
08 = standard
09 = flow Δp 2-2.5

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Pressure range
087 = 4 - 60 bar (870 PSI)
330 = 4 - 228 bar (3300 PSI)
500 = 4 - 345 bar (5000 PSI)

Type of adjustment
V = adjustable using tool

Setting
No details = no setting, spring relaxed
029 = 20 bar, specific cracking pressure (290 PSI)

Coil voltage
DC voltages:
12 = 12 V DC (2.2 Ohm)
24 = 24 V DC (8.8 Ohm)

Coil connectors (type 40-1836)
PG = DIN connector to EN175301-803
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial
PT = AMP Junior Timer, 2-pole, radial

Coil resistance
2.2 = 2.2 Ω (12 V)
8.8 = 8.8 Ω (24 V)

Standard models

Model code	Part No.
PDB10PZ-09-C-N-087V087-12PG-2.2	3356441
PDB10PZ-09-C-N-087V087-24PG-8.8	3356455
PDB10PZ-08-C-N-300V300-12PG-2.2	3356442
PDB10PZ-08-C-N-300V300-24PG-8.8	3356456
PDB10PZ-08-C-N-500V500-12PG-2.2	3356444
PDB10PZ-08-C-N-500V500-24PG-8.8	3356457

Other models on request

Standard in-line bodies

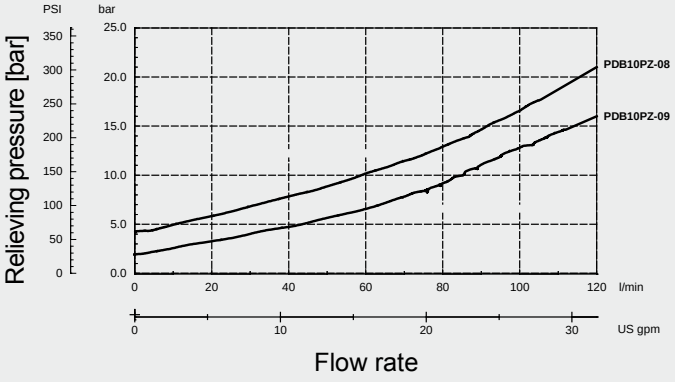
Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, anodized	G1/2	210 bar

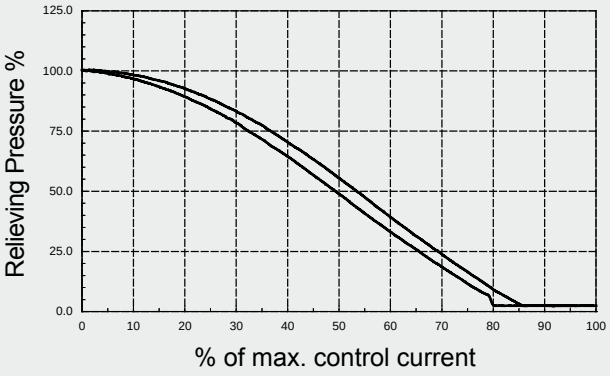
Seal kits

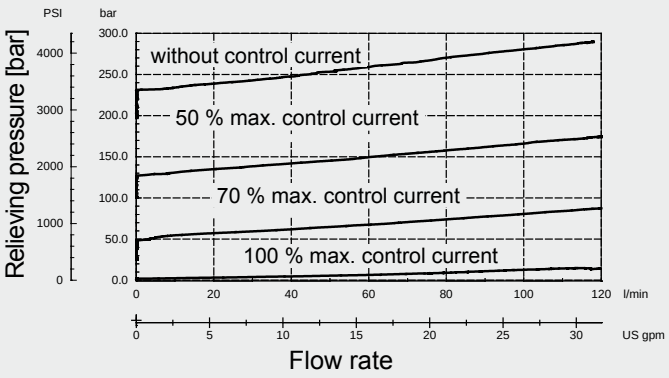
Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

PERFORMANCE

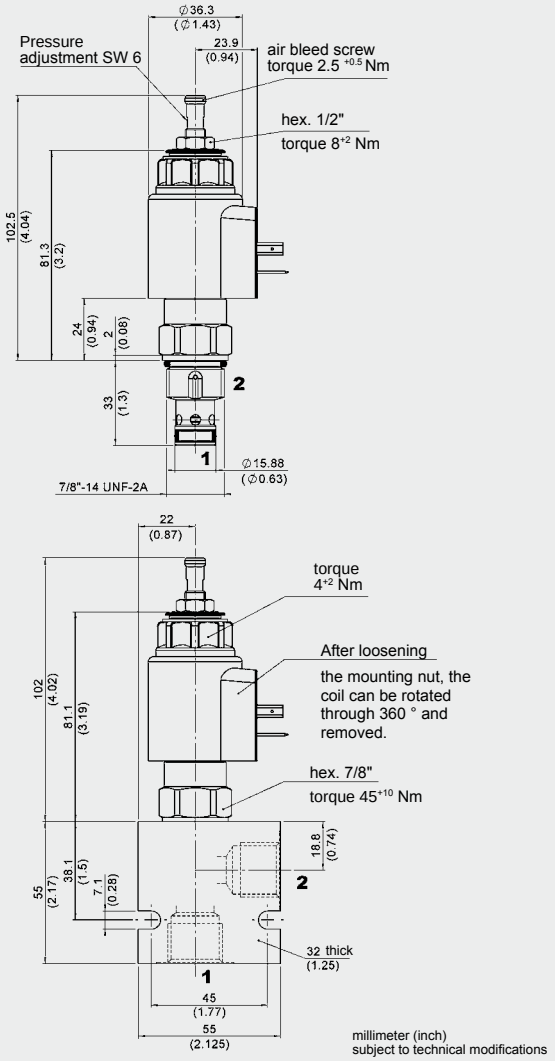
Measured at ν = 34 mm²/s, T_{oil} = 46 °C





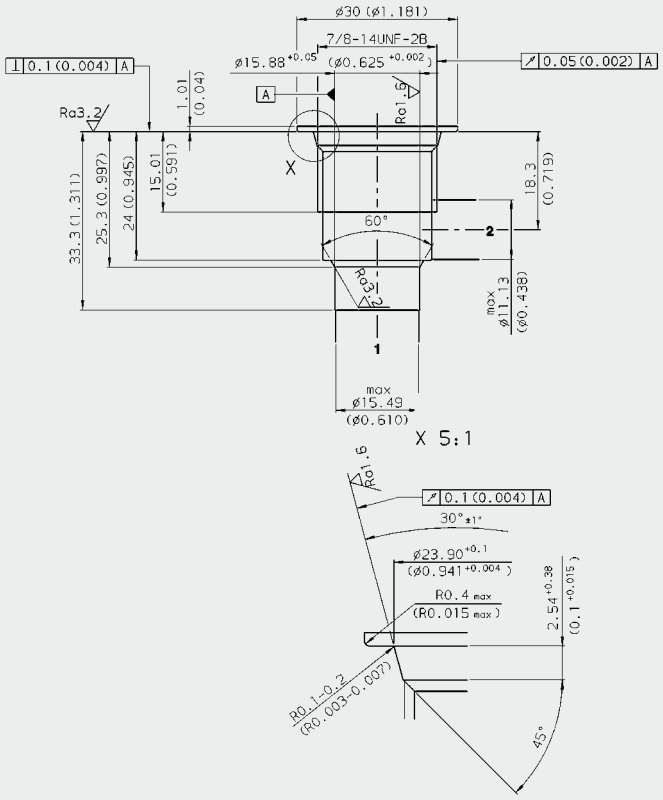


DIMENSIONS



CAVITY

FC10-2



Form tools

Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

millimeter (inch)
subject to technical modifications

NOTE

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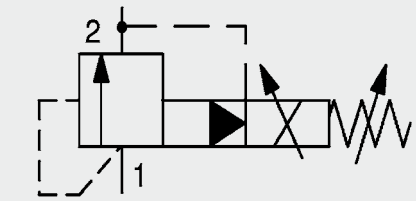
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



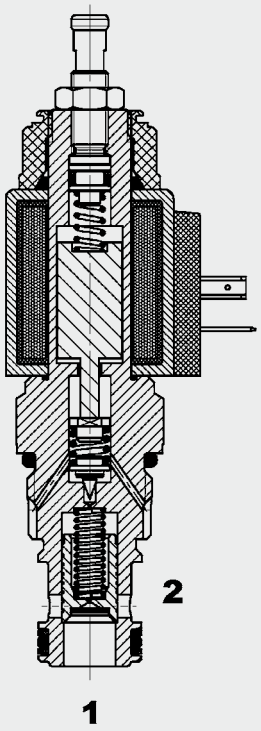
200 l/min
350 bar

Proportional Pressure Relief Valve Inversely Controlled Spool Type, Pilot-Operated SAE-12 Cartridge – 350 bar

UNF

PDB12PZ-08/-09

FUNCTION



The PDB12PZ is a pilot-operated, spool type proportional pressure relief valve. If pressure at port 1 exceeds the setting defined by the electrical signal, the pilot poppet opens and oil flows from behind the main spool to tank port 2. The resulting pressure differential causes the main spool to lift against the return spring and allows flow from port 1 to port 2. As a function of the electrical signal, the relief pressure at port 1 can be changed steplessly.

The valve is inversely controlled: with decreasing control current the pilot poppet closes, the main stage follows the pilot stage and a counter-pressure is created at port 1, e.g. to drive a fan motor.

The maximum pressure can be pre-set mechanically.

FEATURES

- Reduces cavitation
- External surfaces zinc-plated and corrosion-proof
- Good stability across the whole pressure and flow range
- Excellent dynamic performance
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Low pressure drop due to CFD optimized flow path
- Adjustable throughout flow range

SPECIFICATIONS

Operating pressure:	max. 350 bar (port 1) / 50 bar (port 2)	
Nominal flow:	max. 200 l/min	
Internal leakage:	< 0.5 l/min at 80% of p_{nom}	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 18/16/13 to class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity	FC12-2	
Weight:	Valve complete	0.58 kg
	Coil only	0.22 kg
Electronic data:		
Control currents:	1050 mA, 8.8 Ohm (24 Volt) 2100 mA, 2.2 Ohm (12 Volt)	
PWM frequency:	200 Hz	
Hysteresis with dither:	2 - 4% of I_{nom}	
Repeatability:	≤ 2% of p_{nom}	
Hysteresis:	≤ 2 % of I_{nom}	
Response sensitivity:	≤ 1 % of I_{nom}	
Type of coil:	Coil (12 or 24) P ...-40-1836	

NOTE
In order to achieve optimal function, any trapped air should be vented using the air bleed screw on the face of the pole tube.

MODEL CODE

PDB 12PZ - 08 - C - N - 330 - V - 330 - 24 PG - 8.8

Basic model
Proportional
pressure relief valve

Type
08 = higher basic Δp:
improved opening and
closing characteristics
(pressure range 330 - 500)
09 = lower basic Δp:
main application =
fan control
(pressure ranges 087 - 330)

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Pressure range
087 = 4 - 60 bar (870 PSI)
140 = 4 - 96 bar (1400 PSI)
330 = 4 - 228 bar (3300 PSI)
500 = 4 - 345 bar (5000 PSI)

Type of adjustment
V = adjustable using tool

Setting
No details = no setting, spring relaxed
330 = 230 bar, specific cracking pressure (3300 PSI)

Coil voltage
DC voltages:
12 = 12 V DC (2.2 Ohm)
24 = 24 V DC (8.8 Ohm)

Coil connectors
DC: DG = DIN connector to EN175301-803
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial

Coil resistance
2.2 = 2.2 Ω (12 V)
8.8 = 8.8 Ω (24 V)

Standard models

Model code	Part No.
PDB12PZ-09-C-N-087V087-12PG-2.2	3370981
PDB12PZ-09-C-N-087V087-24PG-8.8	3370980
PDB12PZ-08-C-N-330V330-12PG-2.2	3370977
PDB12PZ-08-C-N-330V330-24PG-8.8	3370978
PDB12PZ-08-C-N-500V500-12PG-2.2	3370953
PDB12PZ-08-C-N-500V500-24PG-8.8	3370976

Other models on request

*Standard in-line bodies

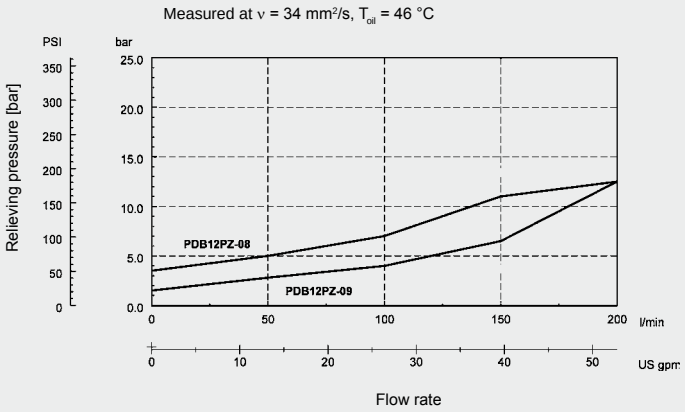
Code	Part No.	Material	Ports	Pressure
FH122-SB6	3053782	Steel, zinc-plated	G3/4	max. 420 bar
FH122-AB6	3053843	Aluminium, anodized	G3/4	max. 210 bar

Seal kits

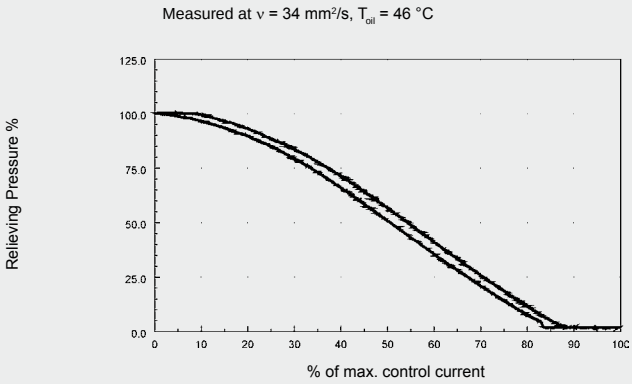
Code	Material	Part No.
FS122-N SEAL KIT	NBR	3071298
FS122-V SEAL KIT	FKM	3071299

PERFORMANCE

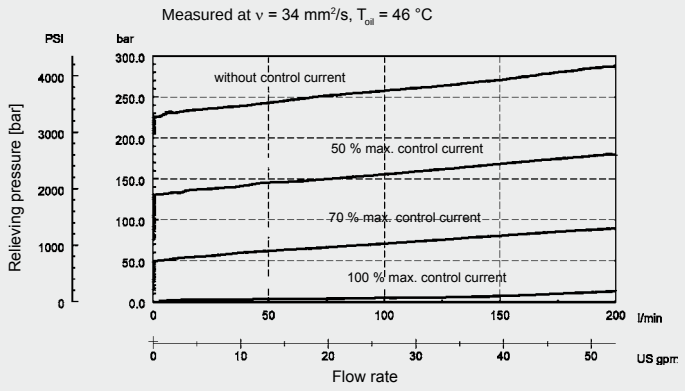
Δp-Q graph



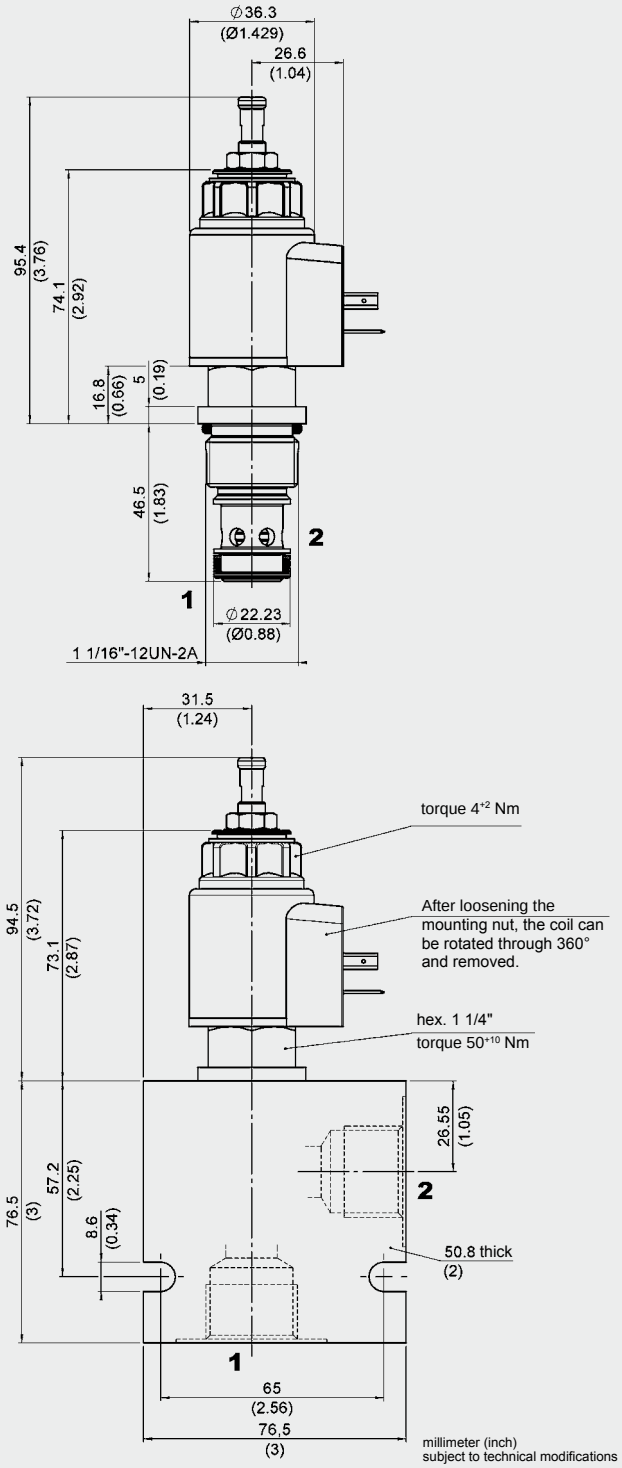
P-I graph



P-Q graph, typical

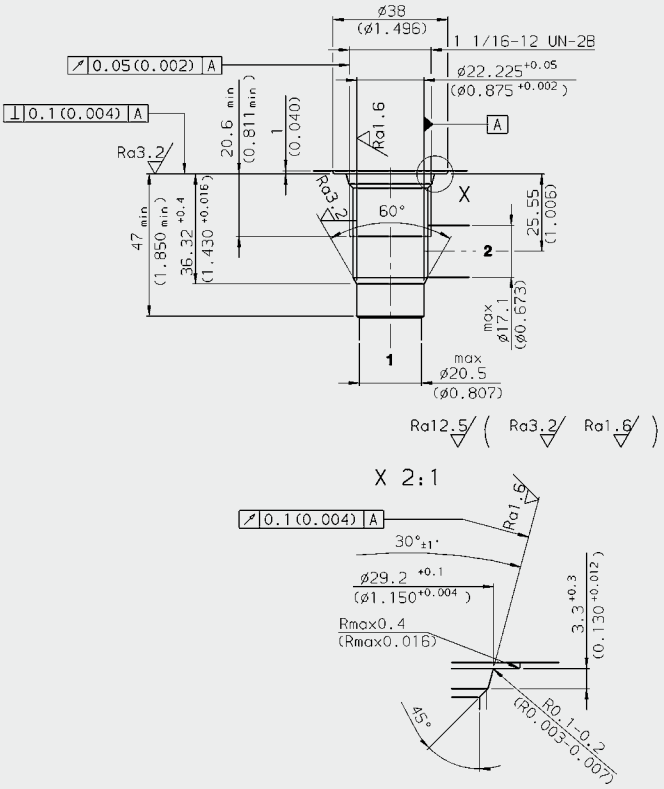


DIMENSIONS



CAVITY

FC12-2



Form tools

Tool	Part No.
Countersink FC12-2	176951
Reamer FC12-2	176952

millimeter (inch)
subject to technical modifications

NOTE

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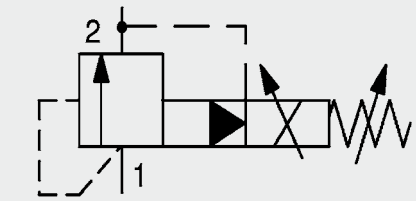
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



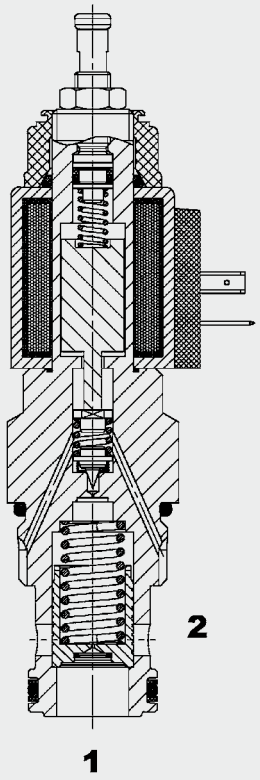
300 l/min
365 bar

Proportional Pressure Relief Valve Inversely Controlled Spool Type, Pilot-Operated SAE-16 Cartridge – 365 bar

UNF

PDB16PZ-08/-09

FUNCTION



The PDB16PZ is a pilot-operated, spool type proportional pressure relief valve. If pressure at port 1 exceeds the setting defined by the electrical signal, the pilot poppet opens and oil flows from behind the main spool to tank port 2. The resulting pressure differential causes the main spool to lift against the return spring and allows flow from port 1 to port 2. As a function of the electrical signal, the relief pressure at port 1 can be changed steplessly.

The valve is inversely controlled: with decreasing control current the pilot poppet closes, the main stage follows the pilot stage and a counter-pressure is created at port 1.

The maximum pressure can be pre-set mechanically.

FEATURES

- Reduced cavitation tendency
- External surfaces zinc-plated and corrosion-proof
- Good stability across the whole pressure and flow range
- Excellent dynamic performance
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Low pressure drop due to CFD optimized flow path
- Adjustable throughout flow range

SPECIFICATIONS

Operating pressure:	max. 365 bar (port 1) / 50 bar (port 2)	
Nominal flow:	max. 300 l/min	
Internal leakage:	< 0.5 l/min at 80% of p_{nom}	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 18/16/13 to class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel / polyamide
Cavity	FC16-2	
Weight:	Valve complete	0.82 kg
	Coil only	0.22 kg
Electronic data:		
Control currents:	1050 mA, 8.8 Ohm (24 Volt) 2100 mA, 2.2 Ohm (12 Volt)	
PWM frequency:	200 Hz	
Hysteresis with dither:	2 - 4% of I_{nom}	
Repeatability:	≤ 2% of p_{nom}	
Hysteresis:	≤ 2 % of I_{nom}	
Response sensitivity:	≤ 1 % of I_{nom}	
Type of coil:	Coil (12 or 24) P ...-40-1836	

NOTE
In order to achieve optimal function, any trapped air should be vented using the air bleed screw on the face of the pole tube.

MODEL CODE

PDB 16PZ - 08 - C - N - 330 - V - 330 - 24 PG - 8.8

Basic model
Proportional
pressure relief valve

Type
08 = standard
09 = low pressure drop
(version 87 and 330 only)

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM

Pressure range
087 = 4 - 60 bar (870 PSI)
140 = 4 - 96 bar (1400 PSI)
330 = 4 - 228 bar (3300 PSI)
500 = 4 - 345 bar (5000 PSI)

Type of adjustment
V = adjustable using tool

Pressure setting
Value = factory preset relief pressure (value PSI/10)

Coil voltage
DC voltages:
12 = 12 V DC (2.2 Ohm)
24 = 24 V DC (8.8 Ohm)

Coil connectors
DC: DG = DIN connector to EN175301-803
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial

Coil resistance
2.2 = 2.2 Ω (12 V)
8.8 = 8.8 Ω (24 V)

Standard models

Model code	Part No.
PDB16PZ-08-C-N-530V530-12PG-2.2	3370906
PDB16PZ-08-C-N-530V530-24PG-8.8	3370945
PDB16PZ-09-C-N-330V330-12PG-2.2	3370947
PDB16PZ-09-C-N-330V330-24PG-8.8	3370948
PDB16PZ-09-C-N-087V087-12PG-2.2	3370950
PDB16PZ-09-C-N-087V087-24PG-8.8	3370951

Other models on request

*Standard in-line bodies

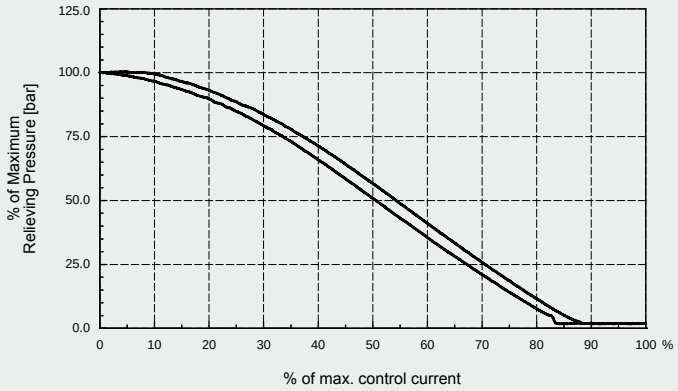
Code	Part No.	Material	Ports	Pressure
FH162-SB8	3032496	Steel, zinc-plated	G1	max. 420 bar
FH162-AB8	3037193	Aluminium, anodized	G1	max. 210 bar

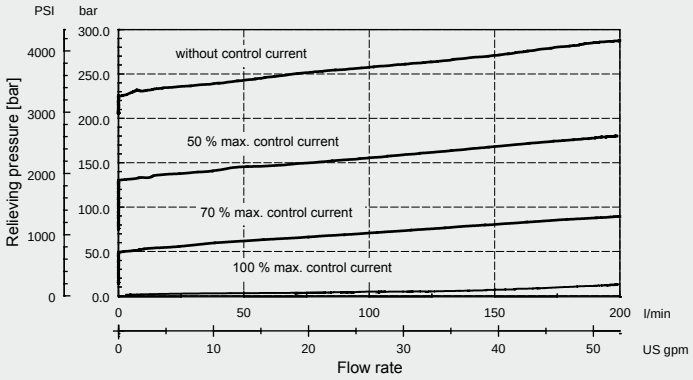
Seal kits

Code	Material	Part No.
FS162-N SEAL KIT	NBR	3052427
FS162-V SEAL KIT	FKM	3051758

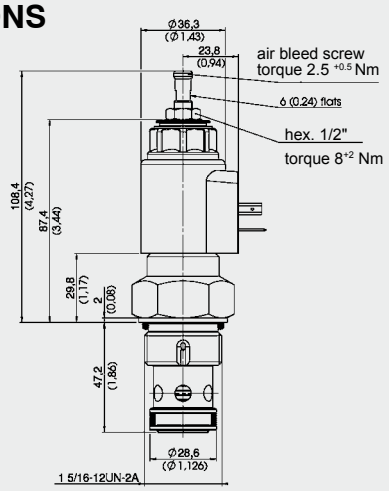
PERFORMANCE

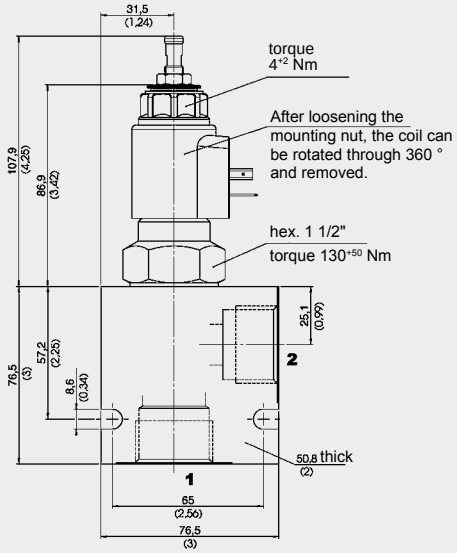
Measured at ν = 34 mm²/s, T_{oil} = 46 °C





DIMENSIONS

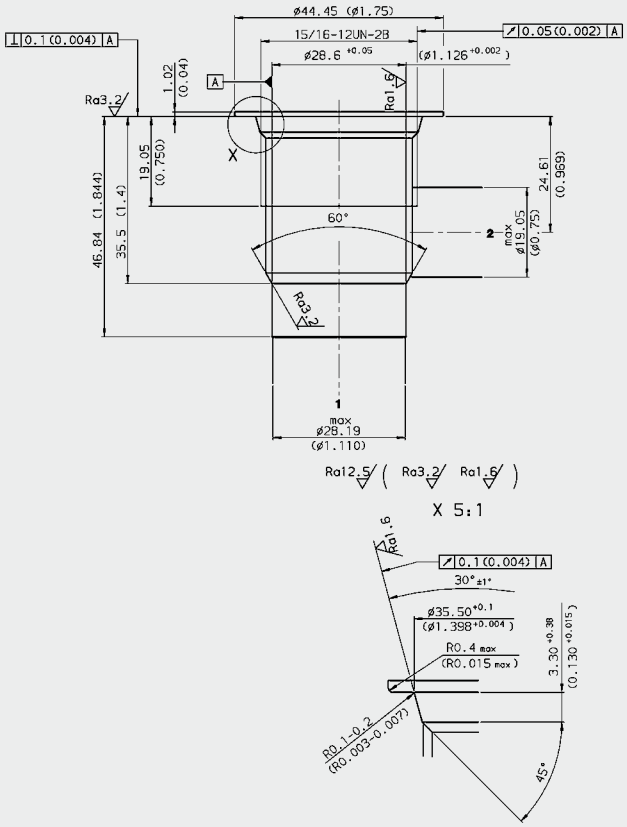




millimeter (inch)
subject to technical modifications

CAVITY

FC16-2



Form tools

Tool	Part No.
Countersink FC16-2	176218
Reamer FC16-2	176219

millimeter (inch)
subject to technical modifications

NOTE

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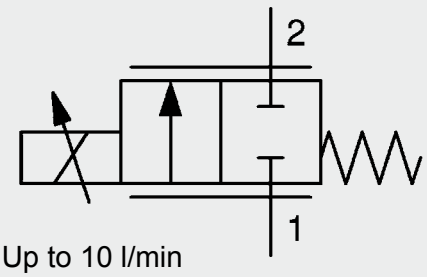
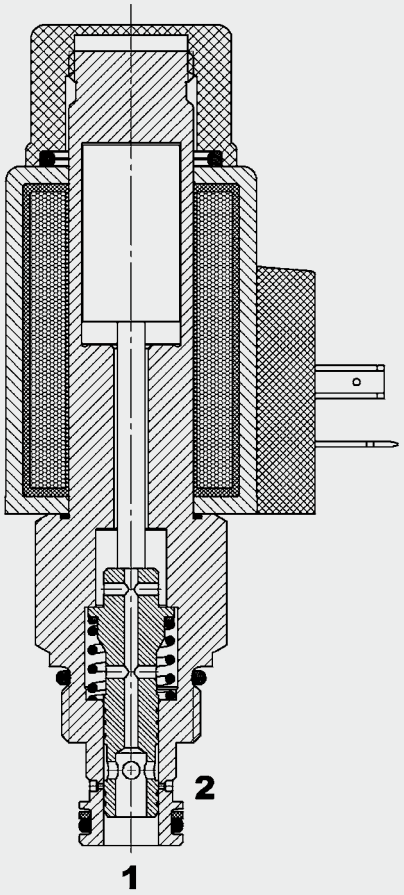
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



Up to 10 l/min
Up to 350 bar

Proportional Flow Control Valve Spool Type, Direct-Acting, Normally Closed Metric Cartridge – 350 bar PWK06020W

FUNCTION



The PWK06020W is a normally closed, direct-acting, spring-loaded proportional flow control valve. It is non-compensated and its function is to control the flow from port 1 to port 2 smoothly.

The energization of the coil reduces or increases an orifice cross-section and thus controls the flow.

Together with a pressure compensator the proportional flow control valve can be used as a 2-way flow regulator – for example when required to lift/lower variable loads at the same velocity.

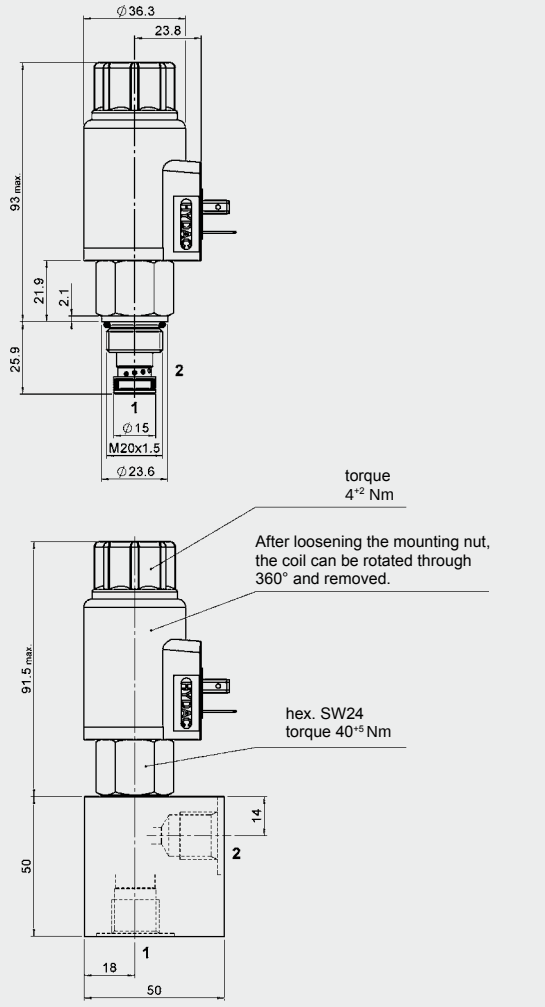
FEATURES

- Stepless adjustment of the effective oil flow, depending on the coil current.
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available

SPECIFICATIONS

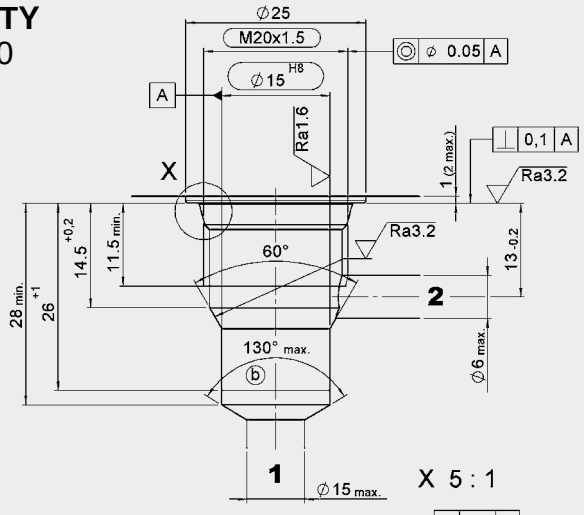
Operating pressure:	max. 350 bar	
Nominal flow:	max. 10 l/min	
Internal leakage:	Max. 0.9 l/min (at 350 bar / 32 mm²/s)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s	
Filtration:	Class 19/17/14 according to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	high tensile steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FPM (optional, media temperature range -20 °C to +210 °C)
	Back-up rings:	PTFE
Cavity:	Metric 06020	
Weight:	0.46 kg	
Electronic data:		
Control currents:	1750 mA; 4.1 Ohm (12V) / 850 mA; 18 Ohm (24V)	
Dither frequency:	80 - 100 Hz	
Hysteresis with dither:	4 - 6 % of I nom	
Repeatability:	< 1 % of I nom	
Hysteresis:	< 1 % of I nom	
Response sensitivity:	< 1 % of I nom	
Coil type:	Coil ... P...-50-1836	

DIMENSIONS



millimeter
subject to technical modifications

CAVITY
06020



Form tools

Tool	Part No.
Countersink	170033
Reamer	1000768

millimeter
subject to technical modifications

MODEL CODE

PWK06020W - 01 M - C - N - 6 - 24 PG - 4.1

Basic model
Proportional flow control valve
Normally closed

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Flow rate
6 = 6 l/min
Other flow rates on request

Coil voltage
DC: 12 = 12 Volt DC
24 = 24 Volt DC
Other voltages on request

Coil connector types P...
DC: PG = DIN connector to EN175301-803
PT = AMP Junior Timer, 2 pole, radial
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2 pole
Other connectors on request

Coil resistance
4.1 = 4.1 Ω (1750 mA, 12 Volt)
18.0 = 18.0 Ω (850 mA, 12 Volt)

Standard models

Model code	Part No.
PWK06020W-01-C-N-6 –12 PG-4.1	3579226
PWK06020W-01-C-N-6 –24 PG-18.0	3579225

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G3/8	420 bar

Other line bodies on request

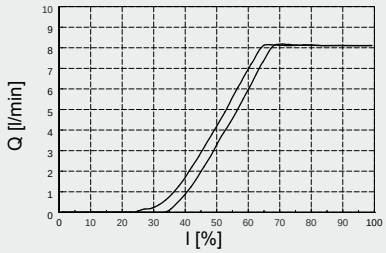
Seal kits

Code	Part No.
SEAL KIT 06020-NBR	3119017
SEAL KIT 06020-FKM	3262477

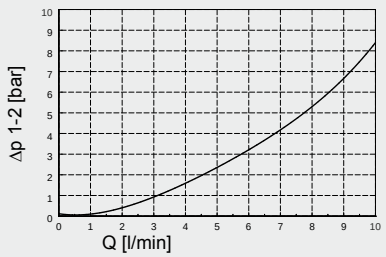
PERFORMANCE

T_{oil} = 46 °C
ν = 33 mm²/s

PWM = 80 Hz



T_{oil} = 46 °C
ν = 33 mm²/s



NOTE

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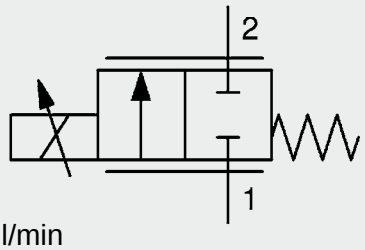
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

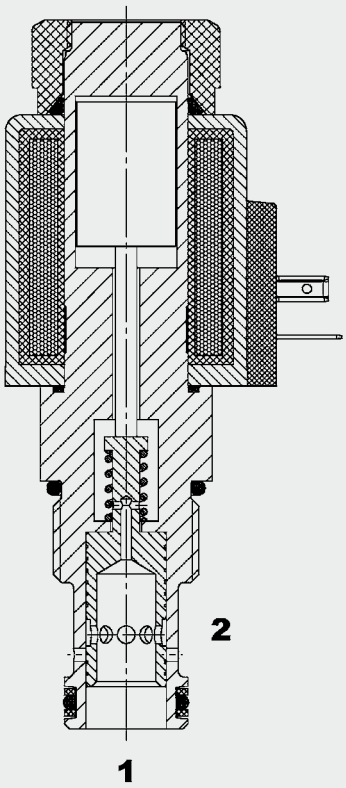


70 l/min
250 bar

Proportional Flow Control Valve Spool Type, Direct-Acting, Normally Closed Metric Cartridge – 250 bar

PWK12120W

FUNCTION



The PWK12120W is a normally closed, direct-acting, spring-loaded, spool type proportional flow control valve.

It smoothly controls the flow from port 1 to port 2.

The energization of the coil reduces or increases an orifice cross-section and thus controls the flow.

Together with a pressure compensator the proportional flow control valve can be used as a proportional flow regulator – for example when required to lift/lower variable loads at the same velocity.

FEATURES

- Stepless adjustment of the effective oil flow, depending on the coil current.
- Excellent stability throughout the entire flow range
- Low hysteresis
- Excellent dynamic performance
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Low pressure drop due to CFD optimized flow path
- Different flow rate ranges available

SPECIFICATIONS

Operating pressure:	max. 250 bar	
Nominal flow:	max. 70 l/min	
Internal leakage:	max. 900 ml/min at 250 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Spool:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +210 °C)
	Back-up rings:	PTFE
Cavity:	Metric 12120	
Weight:	Valve complete	0.75 kg
	Coil only	0.35 kg
Electronic data:		
Control currents:	800 mA, 19.2 Ohm (24 Volt) 1600 mA, 5.0 Ohm (12 Volt)	
Dither frequency:	approx. 120 Hz	
Coil duty rating:	100 %	
Hysteresis with dither:	≤ 5 % of I nom	
Repeatability:	≤ 1 % of I nom	
Hysteresis:	≤ 1 % of I nom	
Response sensitivity:	≤ 1 % of I nom	
Coil type:	Coil...-50-2345	

MODEL CODE

PWK12120 W - 01 M - C - N - 25 - 24 PG - 19.2

Basic model
Proportional flow control valve
Cavity
12120 = metric

Function symbol
W = normally closed

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
V = FKM (standard)
N = NBR (optional)

Flow rate code
20 = 20 l/min at 5 bar Δp and I_{max}
25 = 25 l/min at 5 bar Δp and I_{max}
45 = 45 l/min at 5 bar Δp and I_{max}

Coil voltage
12 = 12 Volt DC (5.0 Ohm)
24 = 24 Volt DC (19.2 Ohm)
Other voltages on request

Coil connectors (type 50-2345)
PG = DIN connector to EN175301-803
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial
PT = AMP Junior Timer, 2-pole, radial

Coil resistance
5.0 = 5.0 Ohm (12V)
19.2 = 19.2 Ohm (24V)

Standard models

Model code	Part No.
PWK12120W-01-C-V-20-24PG-19.2	3578776
PWK12120W-01-C-V-25-24PG-19.2	3578775
PWK12120W-01-C-V-45-24PG-19.2	3356245
PWK12120W-01M-C-V-20-12PG-5.0	3578798
PWK12120W-01M-C-V-25-12PG-5.0	3578796
PWK12120W-01M-C-V-45-12PG-5.0	3354970

Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R12120-10X-01	396708	Steel, zinc-plated	G3/4	420 bar
R12120-10X-02	396707	Steel, zinc-plated	M 27 x 2	420 bar

Other line bodies on request

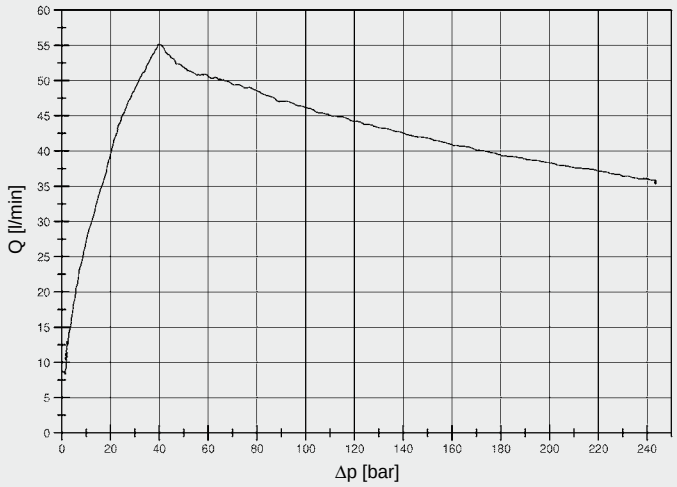
Seal kits

Code	Part No.
SEAL KIT 12120-NBR	3454001
SEAL KIT 12120-FKM	3454002

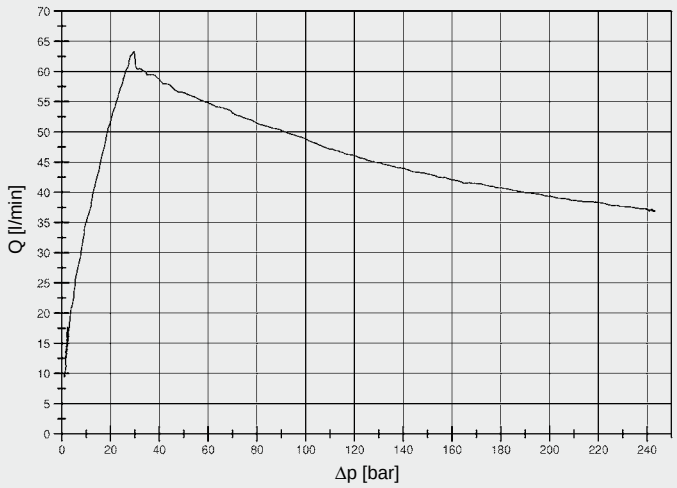
Δp/Q CURVES*

Measured at ν = 40 mm²/s
T_{oil} = 42 °C

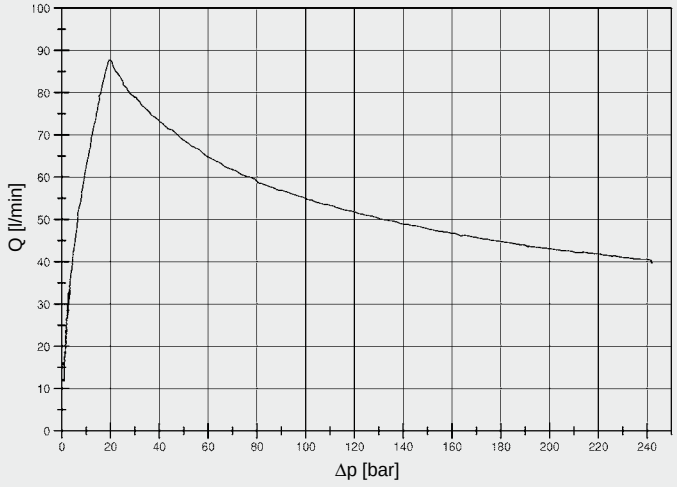
Flow rate: 20 l



Flow rate: 25 l



Flow rate: 45 l

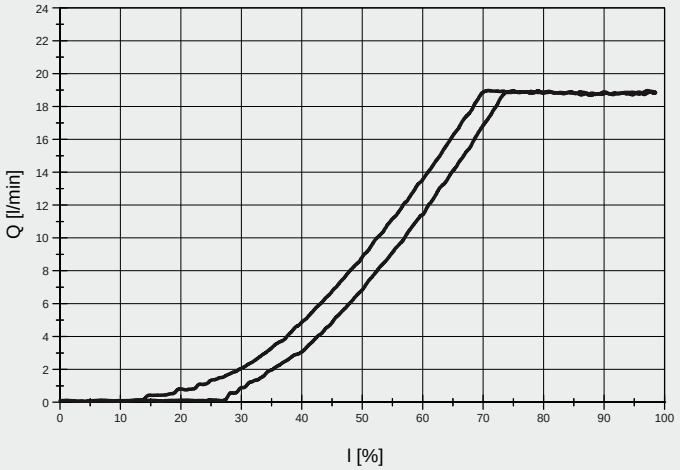


* Curves are measured without pressure compensator! By using a pressure compensator with Δp=15 bar please refer to x-axis.

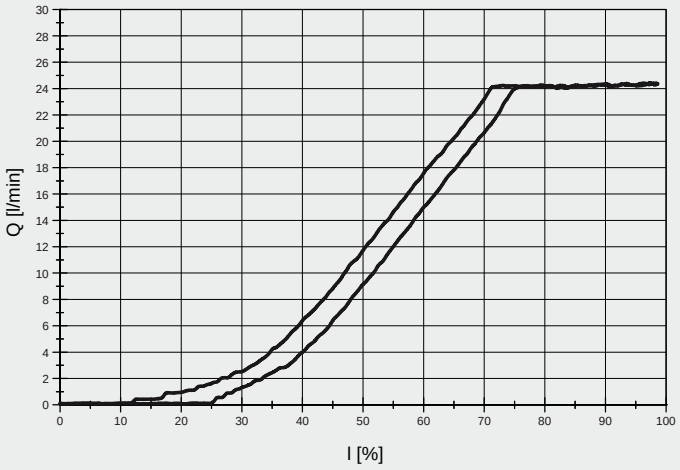
Q/I CURVES*

Measured at ν = 40 mm²/s
T_{oil} = 42 °C

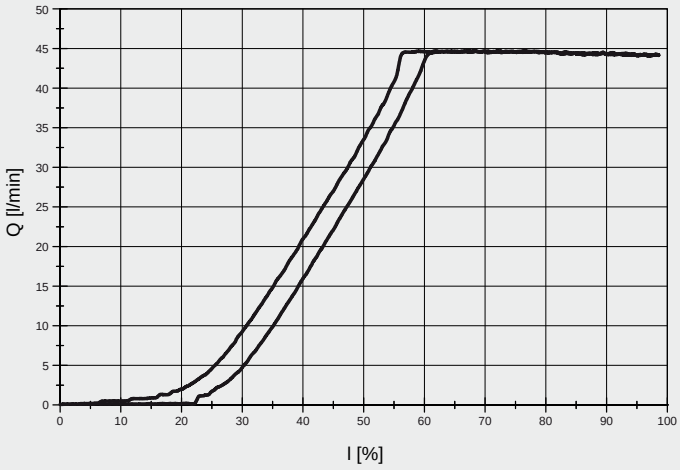
Flow rate: 20 l, Δp: 5 bar



Flow rate: 25 l, Δp: 5 bar

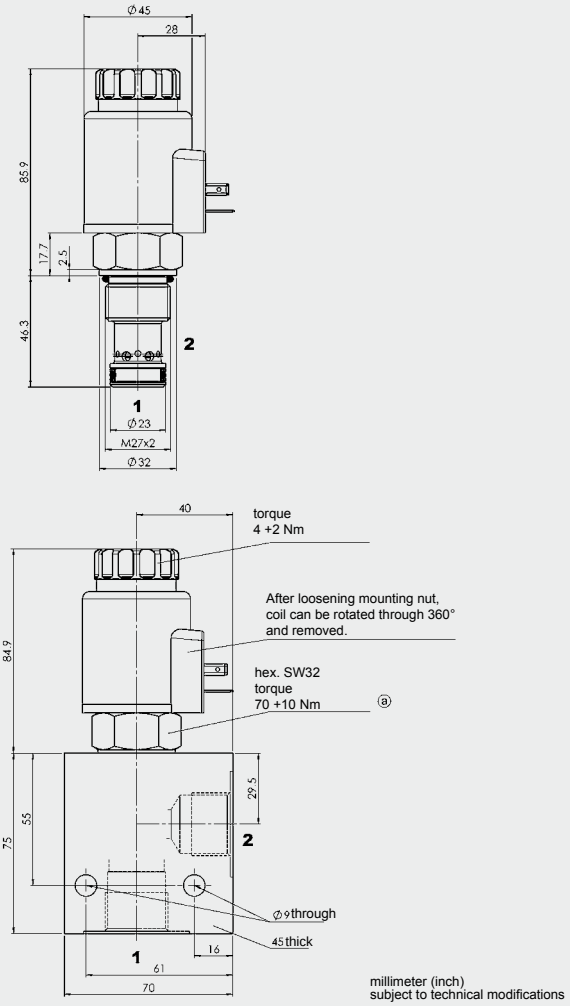


Flow rate: 45 l, Δp: 5 bar



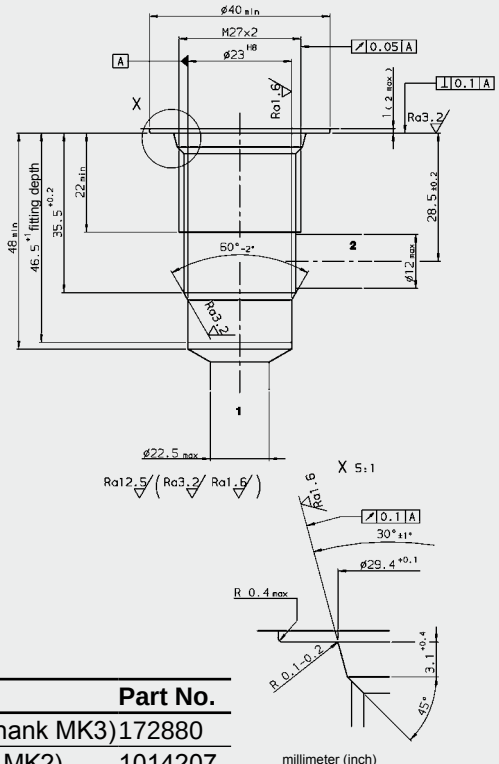
* Curves are measured at Δp=5 bar.
By using a different pressure compensator with Δp=15 bar the valve reaches 70 l/min!

DIMENSIONS



CAVITY

Metric 12120



Form tools

Tool	Part No.
Countersink (shank MK3)	172880
Reamer (shank MK2)	1014207

NOTE

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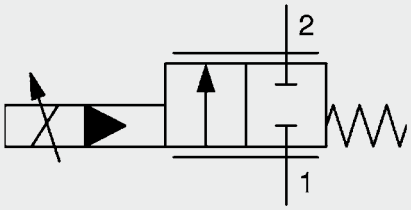
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

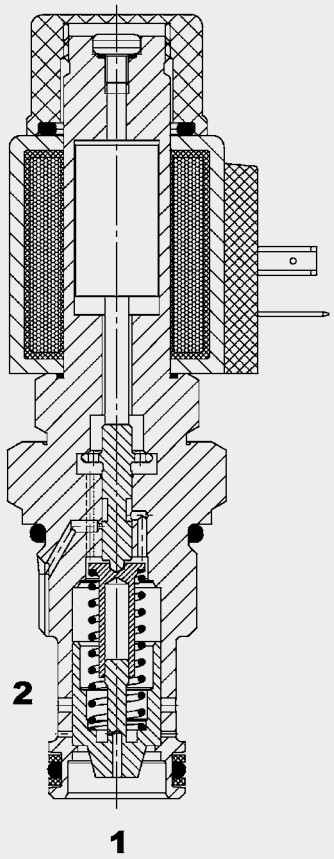


200 l/min
280 bar

Proportional Flow Control Valve Spool Type, Pilot-Operated Normally Closed Metric Cartridge – 280 bar

PWK12120WP

FUNCTION



The PWK12120WP is a normally closed, spool type, pilot-operated proportional flow control valve. Together with a pressure compensator, which maintains a constant differential between the inlet pressure (port 1) and the outlet pressure (port 2), it can be used as a proportional flow regulator.

The energization of the coil reduces or increases an orifice cross-section via the pilot stage and thus controls the effective oil flow.
The spring fitted between the main and pilot spools acts against the solenoid force - this force feedback ensures that the flow control spool always maintains a stable position.

FEATURES

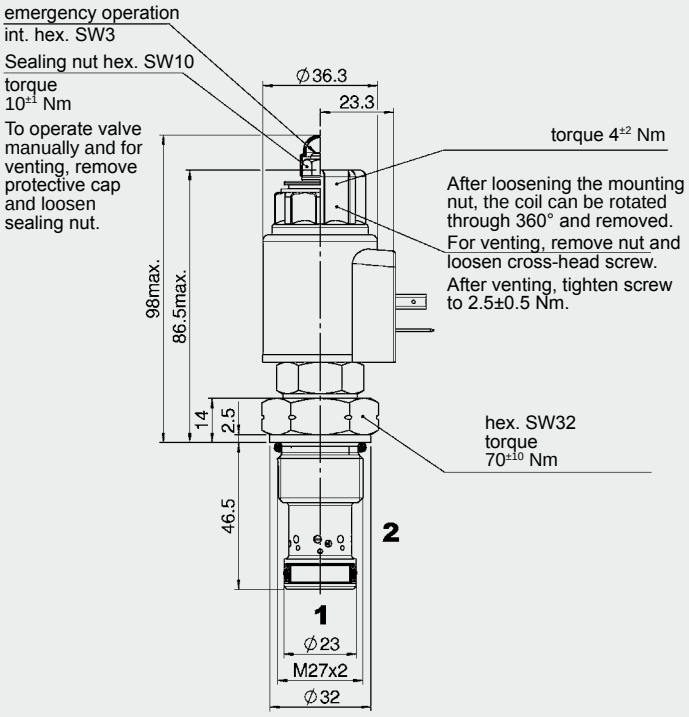
- Reliable and cost-effective proportional control of the flow by controlling the position of the flow control spool using force feedback
- Smooth opening and closing
- Excellent dynamic performance
- Low hysteresis
- Excellent repeatability
- Optional internal damping of the control spool to dampen vibrations in applications prone to vibrations such as lifting equipment
- External surfaces zinc-plated and corrosion-proof
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Different flow rate ranges available

SPECIFICATIONS

Operating pressure:	max. 280 bar	
Nominal flow:	max. 200 l/min	
Permitted pressure differential between ports 1 and 2:	max. 50 bar	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	steel
	Spool:	hardened and ground steel
	Seals:	FKM (standard) NBR (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
Cavity:	Metric 12120	
Weight:	Valve complete:	0.33 kg
	Coil only:	0.19 kg
Electronic data:		
Control currents:	max. 2.1 A; 2.2 Ohm (12V coil) max. 1.05 A; 8.8 Ohm (24V coil)	
Dither frequency:	approx. 160 Hz	
Coil duty rating:	100 %	
Hysteresis with dither:	≤5 % of max. control current (undampened) ≤8 % of max. control current (dampened)	
Coil type:	Coil P...-40-1836	

NOTE: In order to achieve optimal function, any trapped air should be vented using the air bleed screw on the face of the pole tube.

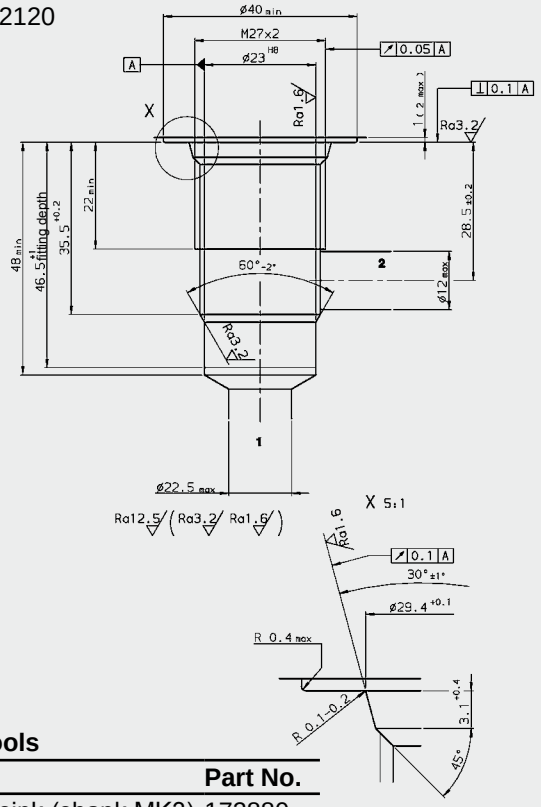
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

Metric 12120



Form tools

Tool	Part No.
Countersink (shank MK3)	172880
Reamer (shank MK2)	1014207

millimeter (inch)
subject to technical modifications

MODEL CODE

PWK12120 WP - 01 M - C - V - P40 - 24 PG - 8.8

Basic model
Proportional flow control valve

Function symbol
Normally closed, pilot-operated

Type
01 = with damping
02 = without damping

Manual override
No details = without manual override
M = manual override

Body and ports*
C = cartridge only

Seals
V = FKM (standard)
N = NBR (optional)

Flow rate range and control characteristics
Types P40, P80, P100, L30, L45, L65, L100
see Q-I graphs

Coil voltage
12 = 12 Volt DC (2.2 Ohm)
24 = 24 Volt DC (8.8 Ohm)
Other voltages on request

Coil connectors (type 40-1836)
PG = DIN connector to EN175301-803
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial
PT = AMP Junior Timer, 2-pole, radial

Coil resistance
2.2 = 2.2 Ω (12 V)
8.8 = 8.8 Ω (24 V)

Standard models

Model code	Part No.
PWK12120WP-01-C-V-P40-24PG-8.8	3398440
PWK12120WP-01-C-V-P80-24PG-8.8	3398441
PWK12120WP-01-C-V-P100-24PG-8.8	3398442
PWK12120WP-02-C-V-L30-24PG-8.8	3653578
PWK12120WP-02-C-V-L45-24PG-8.8	3398444
PWK12120WP-02-C-V-L65-24PG-8.8	3615569
PWK12120WP-02-C-V-L100-24PG-8.8	3398485

Other models on request

Seal kits

Code	Part No.
SEAL KIT 12120-NBR	3454001
SEAL KIT 12120-FKM	3454002

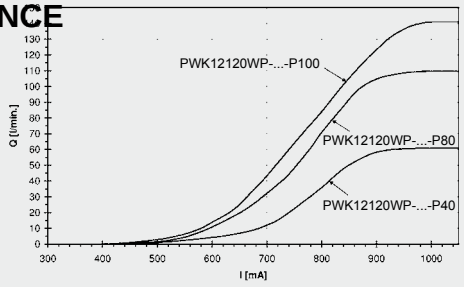
*Standard in-line bodies

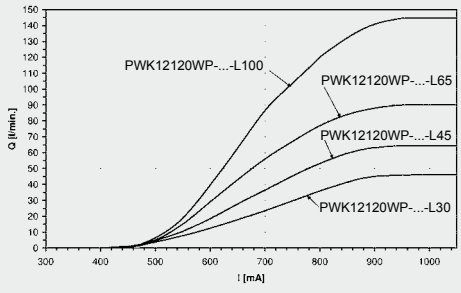
Code	Part No.	Material	Ports	Pressure
R12120-10X-01	396708	Steel, zinc-plated	G3/4	350 bar
R12120-10X-02	396707	Steel, zinc-plated	M 27 x 2	350 bar

Other line bodies on request

PERFORMANCE

Measured at
ν = 34 mm²/s
T_{oil} = 46 °C
and 10 bar
pressure differential
Coil
24P.-8.8,
Control current
PWM 160 Hz





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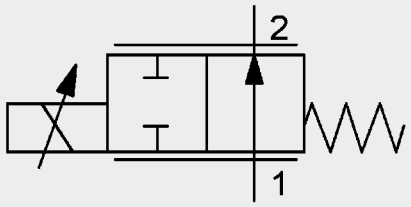
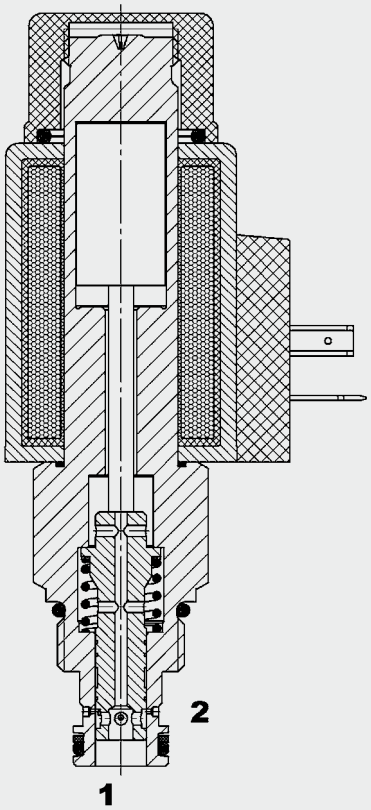
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



up to 10 l/min
up to 350 bar

Proportional Flow Control Valve Spool Type, Direct-Acting, Normally Open Metric Cartridge – 350 bar PWK06020V

FUNCTION



The PWK06020V is a normally closed, direct-acting, spring-loaded, spool type proportional flow control valve.

It is non-compensated and its function is to control the flow from port 1 to port 2 smoothly. The energization of the coil reduces or increases an orifice cross-section and thus controls the flow. Together with a pressure compensator the proportional flow control valve can be used as a 2-way flow regulator – for example when required to lift/lower variable loads at the same velocity.

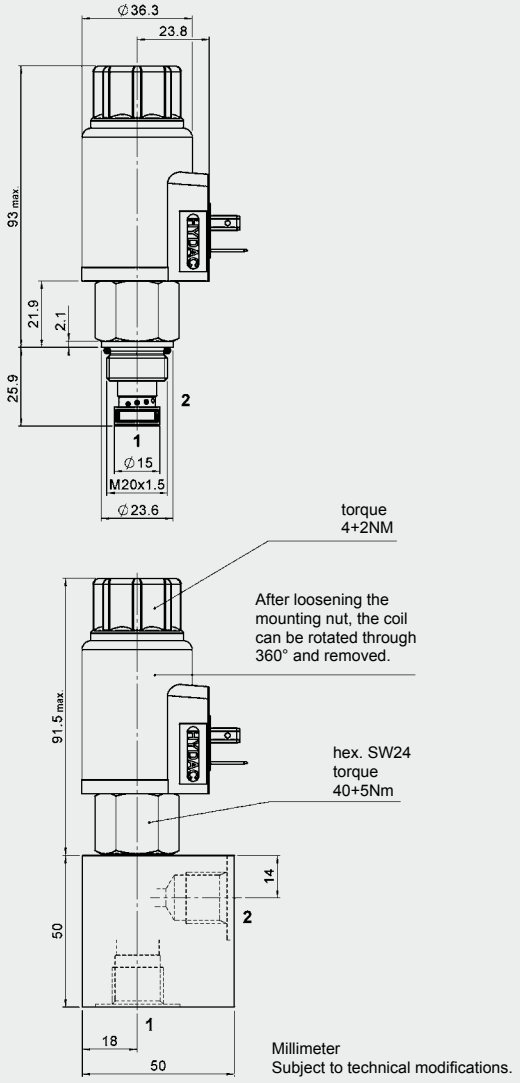
FEATURES

- Stepless adjustment of the effective oil flow, depending on the coil current.
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

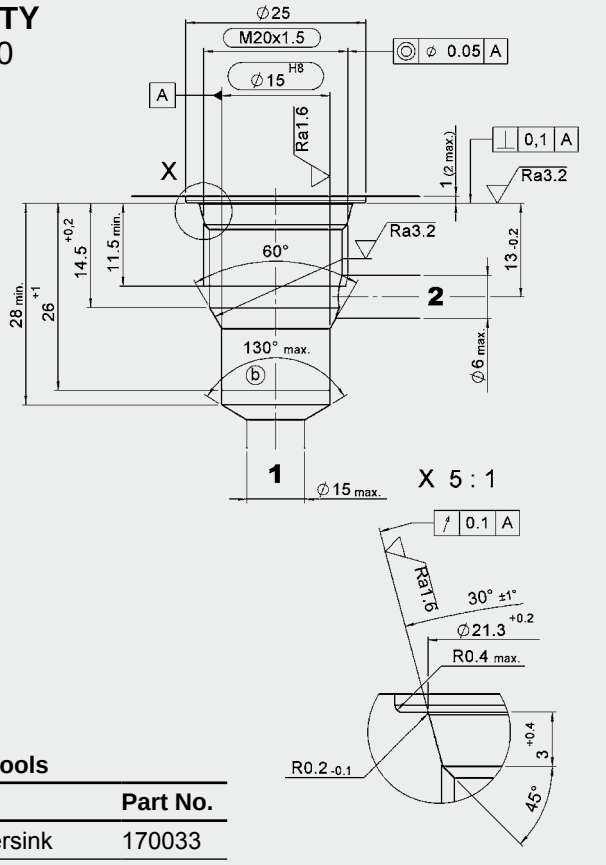
Operating pressure:	max. 350 bar
Nominal flow:	max. 10 l/min
Internal leakage:	max. 0.9 l/min (at 350 bar / 32 mm²/s)
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s
Filtration:	Class 19/17/14 according to ISO 4406 or cleaner
Installation:	No orientation restrictions
Materials:	Valve body: high tensile steel Spool: hardened and ground steel Seals: NBR (standard) FKM (optional) Back-up rings: PTFE
Cavity:	Metric 06020
Weight:	0.46 kg
Electronic data:	
Control currents:	1750 mA; 4.1 Ohm (12V) / 850 mA; 17.6 Ohm (24V)
Dither frequency:	80 - 100 Hz
Hysteresis with dither:	4 - 6 % of I nom
Repeatability:	< 1 % of I nom
Hysteresis:	< 1 % of I nom
Response sensitivity:	< 1 % of I nom
Coil type:	Coil ... P...-4...-50-1836

DIMENSIONS



Millimeter
Subject to technical modifications.

CAVITY
06020



Form tools

Tool	Part No.
Countersink	170033
Reamer	1000768

Millimeter
Subject to technical modifications.

MODEL CODE

PWK 06020V – 01 M – C – N – 6 – 24 PG

Basic model
Proportional flow control valve

Function symbol
V = normally open

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports
C = cartridge only

Seals
N = NBR (standard)
V = FKM (optional)

Flow rate
6 = 6 l/min
Other flow rates on request

Coil voltage
DC: 12 = 12 Volt DC
24 = 24 Volt DC
Other voltages on request

Coil connector types 50-1836
DC: PG = DIN connector to EN175301-803
PT = AMP Junior Timer, 2 pole, radial
PL = Lead-wires, 457mm long
PN = Deutsch connector, 2 pole
Other connectors on request

Standard models

Model code	Part No.
PWK06020V-01-C-N-6-0 –12 PG	3526096
PWK06020V-01-C-N-6-0 –24 PG	3526100

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G1/4	420 bar

Other line bodies on request

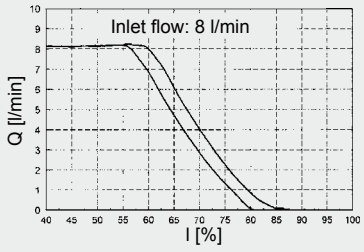
Seal kits

Code	Part No.
SEAL KIT 06020-NBR	3119017
SEAL KIT 06020-FKM	3262477

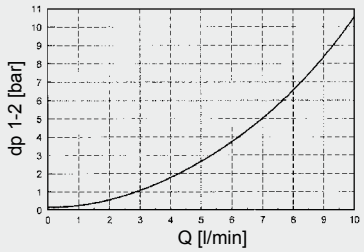
PERFORMANCE

T_{oil} = 46 °C
ν = 33 mm²/s

PWM = 80 Hz



T_{oil} = 46 °C
ν = 33 mm²/s



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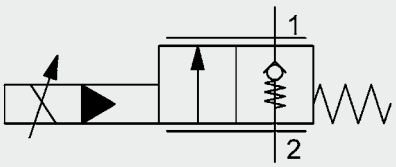
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



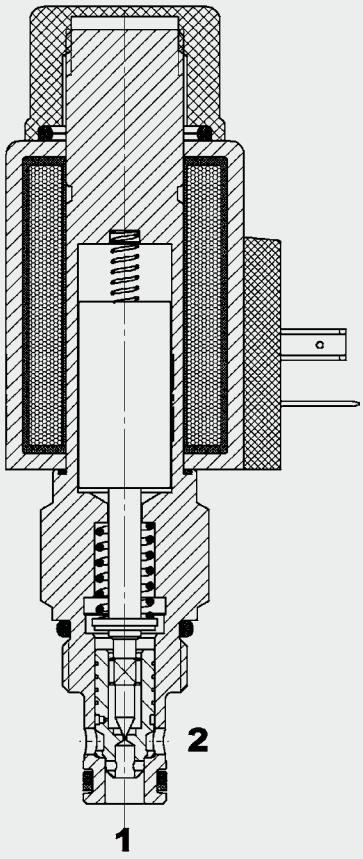
55 l/min
350 bar

Proportional Flow Controller Poppet Type, Pilot-Operated, Normally Closed SAE-08 Cartridge – 350 bar

UNF

PWS08Z-01

FUNCTION



The proportional flow controller PWS08Z is a pilot-operated, normally closed, spring-loaded poppet-type flow control valve.
It is non-compensated and its function is to smoothly control the flow from port 2 to port 1.
The energization of the coil opens the pilot stage and oil flows across an orifice to the back of the main piston. The resulting pressure differential causes the main piston to follow the pilot stage. When combined with a pressure compensator the proportional flow controller can be used as a 2-way flow regulator – for example when required to lift/lower variable loads at the same velocity.

FEATURES

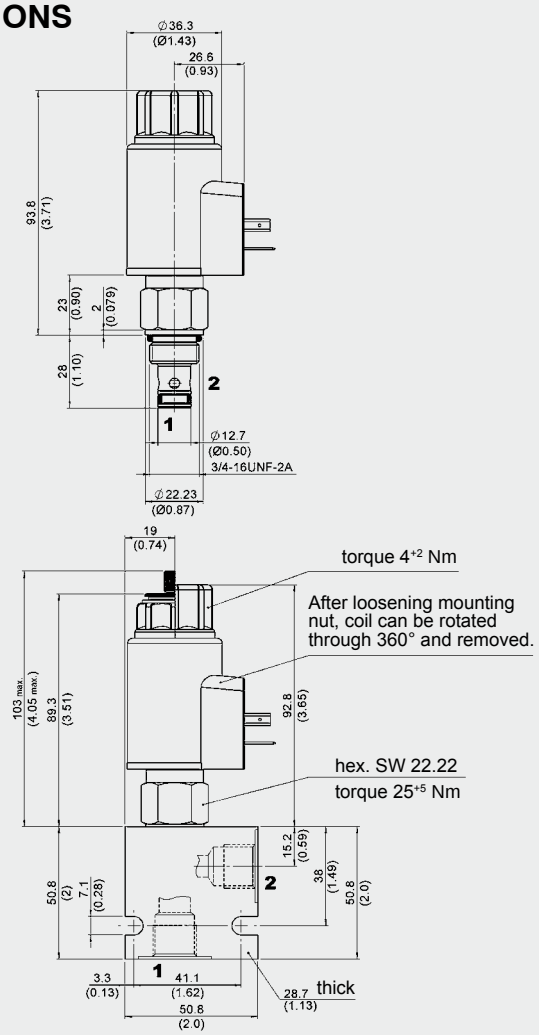
- Stepless adjustment of the flow, depending on the coil current.
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- External surfaces zinc-plated
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Low pressure drop by CFD optimized flow path
- On request: mechanical adjustment of one point of the curve (Version 01, without option M)
- Optional: Soft shift function with extended switching times possible

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 55 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel, polyamide
Cavity:	FC08-2	
Weight:	0.5 kg	
Electronic data:		
Control current:	850 mA, 18.0 Ohm (24 Volt) 1750 mA, 4.1 Ohm (12 Volt)	
Dither frequency:	120 Hz – 250 Hz (120 Hz recommended)	
Hysteresis with dither:	4-6% of I_{nom}	
Repeatability:	≤ 1.5 % of I_{nom}	
Reversal error:	≤ 2 % of I_{nom}	
Response sensitivity:	≤ 1 % of I_{nom}	
Type of coil:	Coil (12 or 24) P...-50-1836	

NOTE
In order to achieve optimal function, any trapped air should be vented using the bleed screw on the face of the pole tube.

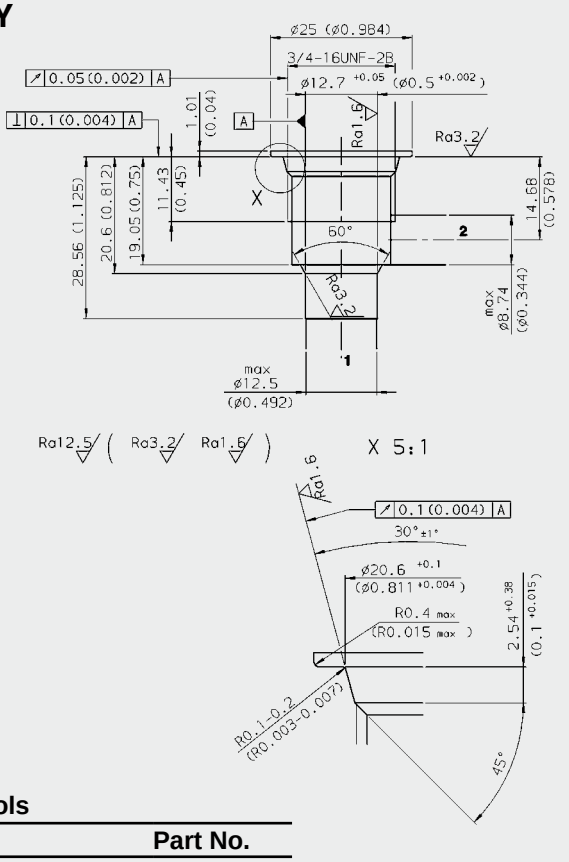
DIMENSIONS



Millimeter (Inch)
Subject to technical modifications

CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink	175473
Reamer	175474

Millimeter (Inch)
Subject to technical modifications

MODEL CODE

PWS08Z – 01 M – C – N – 20 – 24 PG 18.0

Basic model
Proportional flow control valve

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports
C = cartridge only
*Combinations with body on request

Seals
N = NBR (standard)
V = FKM (optional)

Flow rate
20 = 20 l/min
Other flow rates on request

Coil voltage
DC: 12 = 12 Volt DC
24 = 24 Volt DC
Other voltages on request

Coil connectors (type 50-1836)
DC: PG = DIN connector to EN175301-803
PT = AMP Junior Timer, 2-pole, radial
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial
Other connectors on request

Coil resistance
4.1 = 4.1 Ω (12 V)
18.0 = 18.0 Ω (24 V)

Standard models

Model code	Part No.
PWS08Z-01-C-N-20-12PG-4.1	3525174
PWS08Z-01-C-N-20-24PG-18.0	3486507

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

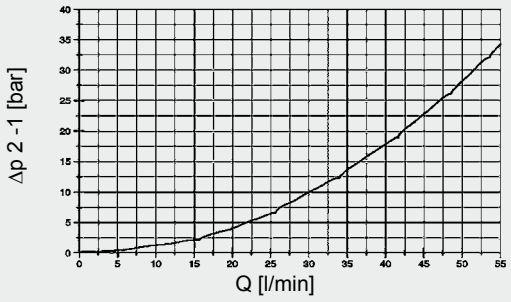
Other line bodies on request

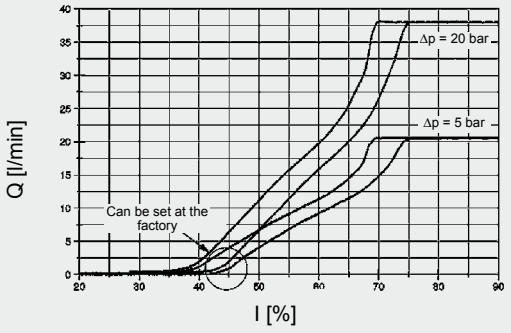
Seal kits

Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

Measured at
ν = 34 mm²/s,
T_{oil} = 46 °C





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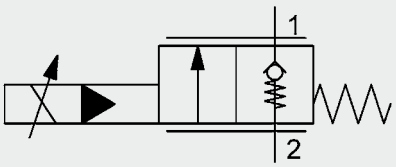
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com



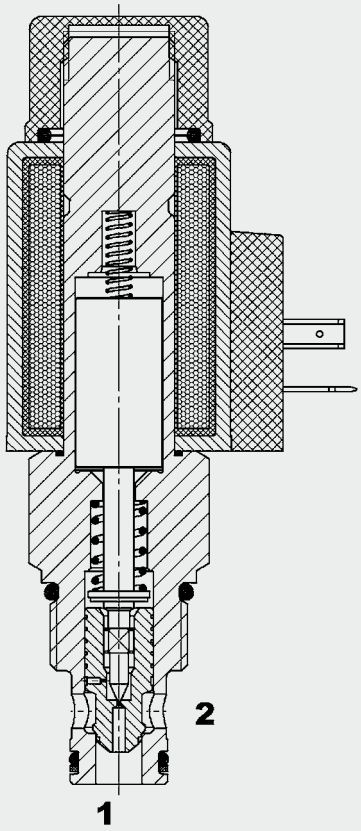
100 l/min
350 bar

Proportional Flow Controller Poppet Type, Pilot-Operated, Normally Closed SAE-10 Cartridge – 350 bar

UNF

PWS10Z-11

FUNCTION



The proportional flow controller PWS10Z-11 is a pilot-operated, normally closed, spring-loaded poppet-type flow control valve.
It is non-compensated and its function is to smoothly control the flow from port 2 to port 1.
The energization of the coil opens the pilot stage and oil flows across an orifice to the back of the main piston. The resulting pressure differential causes the main piston to follow the pilot stage. When combined with a pressure compensator the proportional flow controller can be used as a 2-way flow regulator – for example when required to lift/lower variable loads at the same velocity.

FEATURES

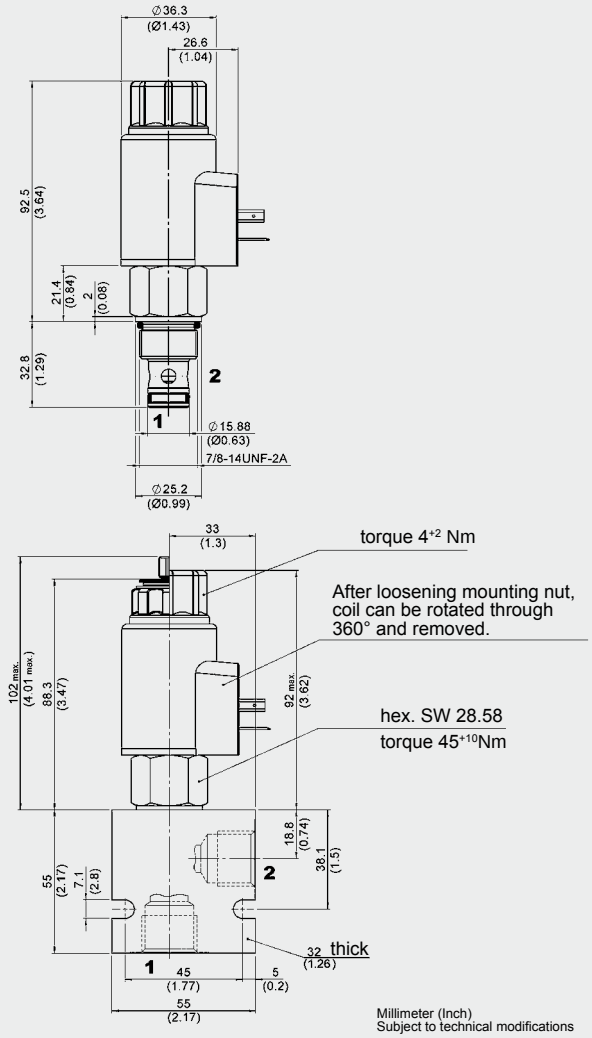
- Stepless adjustment of the flow, depending on the coil current.
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- External surfaces zinc-plated
- Hardened and ground valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Low pressure drop by CFD optimized flow path
- On request: mechanical adjustment of one point of the curve (Version 11, without option M)
- Optional: Soft shift function with extended switching times possible

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 100 l/min	
Internal leakage:	leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Material:	Valve body:	free-cutting steel
	Piston:	hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel, polyamide
Cavity:	FC10-2	
Weight:	0.5 kg	
Electronic data:		
Control current:	850 mA, 18.0 Ohm (24 Volt) 1750 mA, 4.1 Ohm (12 Volt)	
Dither frequency:	120 Hz recommended (120 – 250 Hz)	
Hysteresis with dither:	4-6% of I_{nom}	
Repeatability:	≤ 1.5 % of I_{nom}	
Reversal error:	≤ 2 % of I_{nom}	
Response sensitivity:	≤ 1 % of I_{nom}	
Type of coil:	Coil (12 or 24) P ...50-1836	

NOTE
In order to achieve optimal function, any trapped air should be vented using the bleed screw on the face of the pole tube.

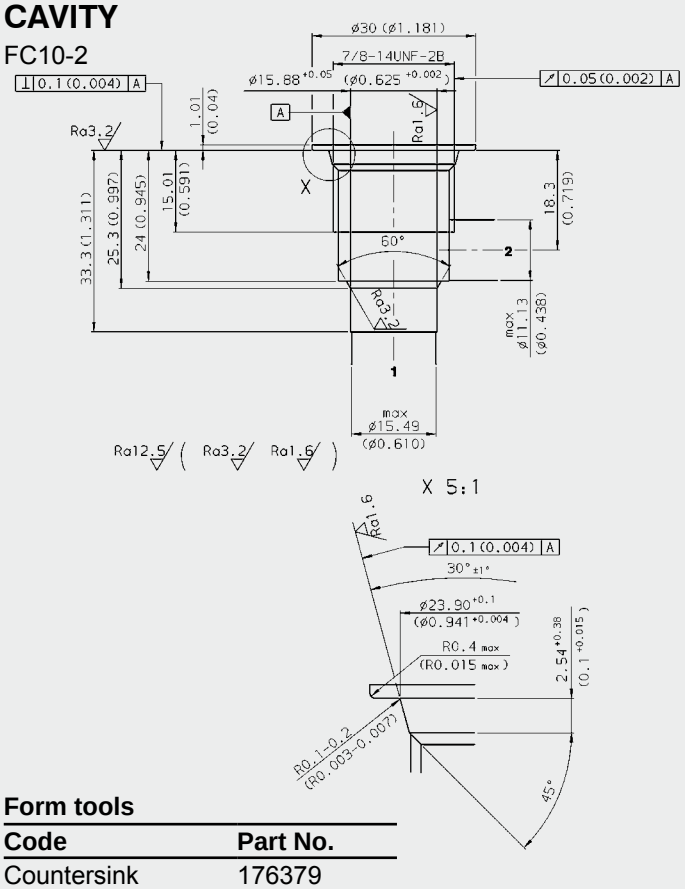
DIMENSIONS



Millimeter (Inch)
Subject to technical modifications

CAVITY

FC10-2



Form tools

Code	Part No.
Countersink	176379
Reamer	165706

Millimeter (Inch)
Subject to technical modifications

MODEL CODE

PWS10Z - 11 M - C - N - 40 - 24 PG - 18.0

Basic model
Proportional flow control valve

Type
11 = standard

Manual override
No details = without manual override
M = manual override

Body and ports
C = cartridge only
*Combinations with body on request

Seals
N = NBR (standard)
V = FKM (optional)

Flow rate
40 = 40 l/min
Other flow rates on request

Coil voltage
DC: 12 = 12 Volt DC
24 = 24 Volt DC
Other voltages on request

Coil connectors (type 50-1836)
DC: PG = DIN connector to EN175301-803
PT = AMP Junior Timer, 2-pole, radial
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial
Other connectors on request

Coil resistance
4.1 = 4.1 Ω (12 V)
18.0 = 18.0 Ω (24 V)

Standard models

Model code	Part No.
PWS10Z-11-C-N-40-12PG-4.1	3525207
PWS10Z-11-C-N-40-24PG-18.0	3525205

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, anodized	G1/2	210 bar

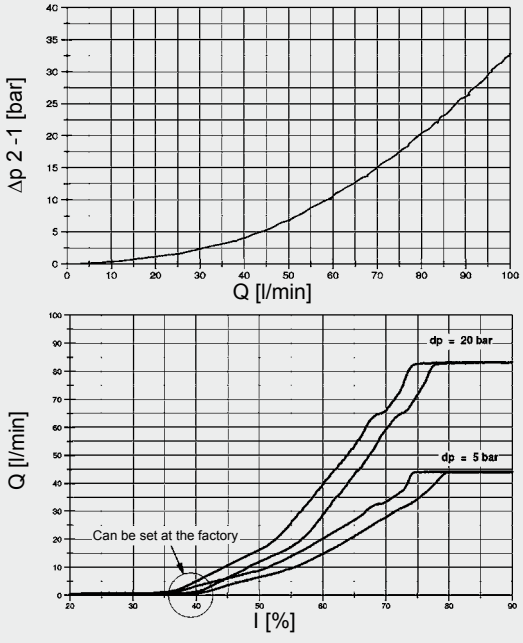
Other line bodies on request

Seal kits

Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

PERFORMANCE

Measured at ν = 34 mm²/s
T_{oil} = 46 °C



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Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
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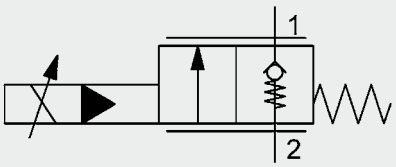


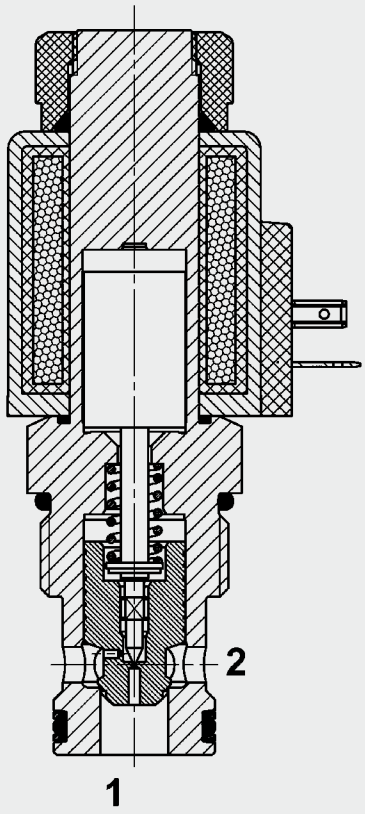
200 l/min
350 bar

Proportional Flow Controller Poppet Type, Pilot-Operated, Normally Closed SAE-16 Cartridge – 350 bar

UNF

PWS16Z-01

FUNCTION



The proportional flow controller PWS16Z is a pilot-operated, normally closed, spring-loaded poppet-type flow control valve.
It is non-compensated and its function is to smoothly control the flow from port 2 to port 1.
The energization of the coil opens the pilot stage and oil flows across an orifice to the back of the main piston. The resulting pressure differential causes the main piston to follow the pilot stage. When combined with a pressure compensator the proportional flow controller can be used as a 2-way flow regulator – for example when required to lift/lower variable loads at the same velocity.

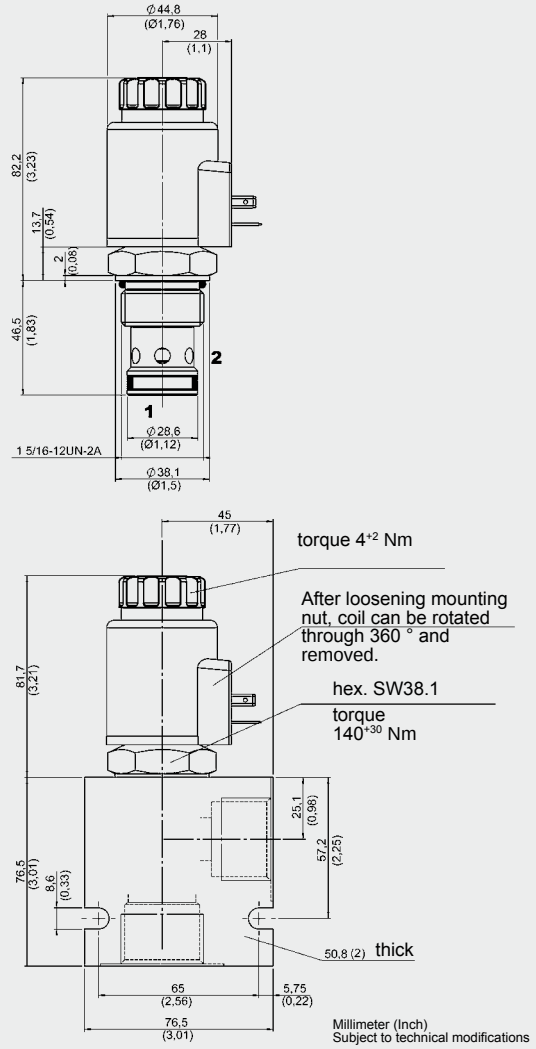
FEATURES

- Stepless adjustment of the flow, depending on the coil current.
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- External surfaces zinc-plated
- Hardened and ground valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Low pressure drop by CFD optimized flow path
- Optional: Soft shift function with extended switching times possible

SPECIFICATIONS

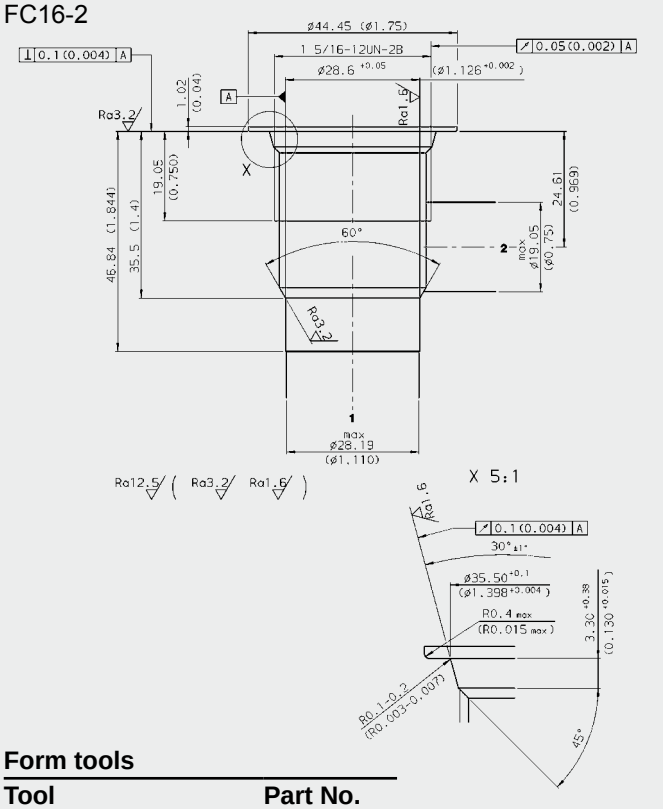
Operating pressure:	max. 350 bar	
Nominal flow:	max. 200 l/min	
Internal leakage:	Leakage-free (max. 5 drops ≙ 0,25 cm³/min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm²/s to max. 420 mm²/s	
Filtration:	Class 19/17/14 to ISO 4406 or cleaner	
$MTTF_d$:	150 years (see "Conditions and instructions for valves" in brochure 5.300)	
Installation:	No orientation restrictions	
Materials:	Valve body:	free-cutting steel
	Piston:	Hardened and ground steel
	Seals:	NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)
	Back-up rings:	PTFE
	Coil:	steel, polyamide
Cavity:	FC16-2	
Weight:	0.9 kg	
Electronic data:		
Control currents:	800 mA, 19.2 Ohm (24 Volt) 1600 mA, 5 Ohm (12 Volt)	
Dither frequency:	120 Hz – 250 Hz (120 Hz recommended)	
Hysteresis with dither:	6-8% of I_{nom}	
Repeatability:	≤ 2 % of I_{nom}	
Reversal error:	≤ 2 % of I_{nom}	
Response sensitivity:	≤ 1 % of I_{nom}	
Type of coil:	Coil (12 or 24) P...-50-2345	

DIMENSIONS



CAVITY

FC16-2



Form tools

Tool	Part No.
Countersink	176218
Reamer	165219

Millimeter (Inch)
Subject to technical modifications

MODEL CODE

PWS16Z - 01 M - C - N - 80 - 24 PG 19.2

Basic model
Proportional flow control valve

Type
01 = standard

Manual override
No details = without manual override
M = manual override

Body and ports
C = Cartridge only
*Combinations with body on request

Seals
N = NBR (standard)
V = FKM (optional)

Flow rate
80 = 80 l/min
Other flow rates on request

Coil voltage
DC: 12 = 12 Volt DC
24 = 24 Volt DC
Other voltages on request

Coil connectors (type 50-1836)
DC: PG = DIN connector to EN175301-803
PT = AMP Junior Timer, 2-pole, radial
PL = 2 flying leads, 457 mm long; 0.75 mm²
PN = Deutsch connector, 2-pole, axial
Other connectors on request

Coil resistance
5.0 = 5.0 Ω (12 V)
19.2 = 19.2 Ω (24 V)

Standard models

Model code	Part No.
PWS16Z-01-C-N-80-12PG-5	3525225
PWS16Z-01-C-N-80-24PG-19.2	3525213

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH162-SB8	3032496	Steel, zinc-plated	G1	420 bar
FH162-AB8	3037193	Aluminium, anodized	G1	210 bar

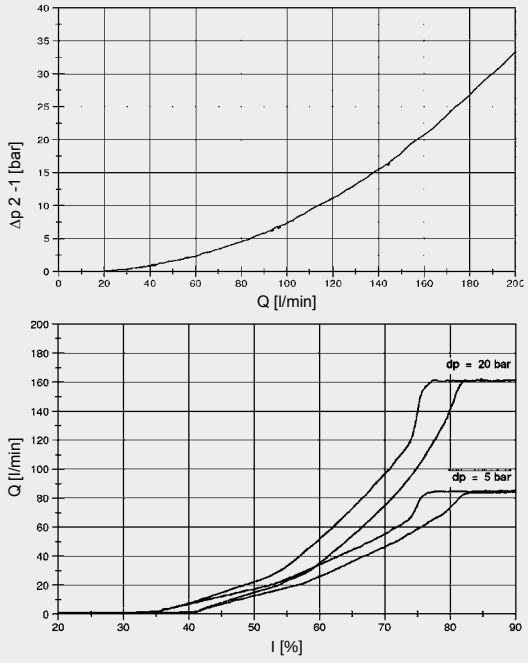
Other line bodies on request

Seal kits

Code	Material	Part No.
FS162-N SEAL KIT	NBR	3052427
FS162-V SEAL KIT	FKM	3051758

PERFORMANCE

Measured at ν = 34 mm²/s
T_{oil} = 46 °C



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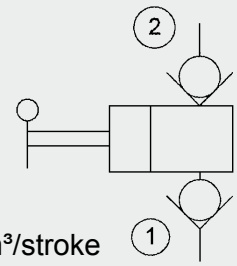
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

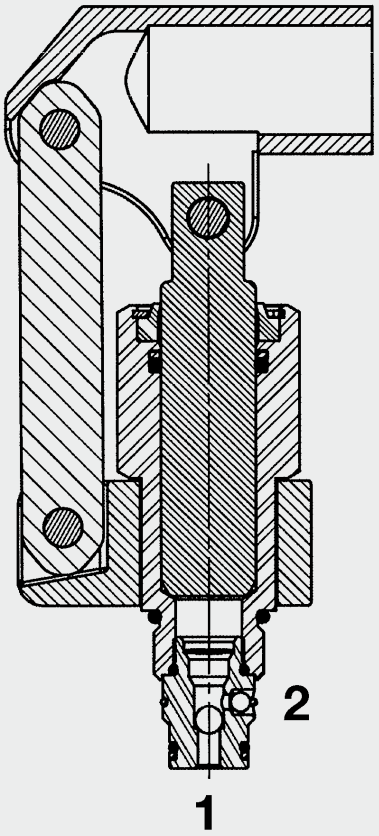
Hand Pump
Manual Operation
SAE-10 Cartridge – 207 bar
MP10

UNF



Up to 7.5 cm³/stroke
Up to 207 bar

FUNCTION



The hand pump MP10 is a hand pump with built-in check valves on the inlet and outlet. When the lever is raised, fluid is drawn from port 1 into the space created; when the lever is pressed down, the check valve closes and the fluid is discharged at port 2.

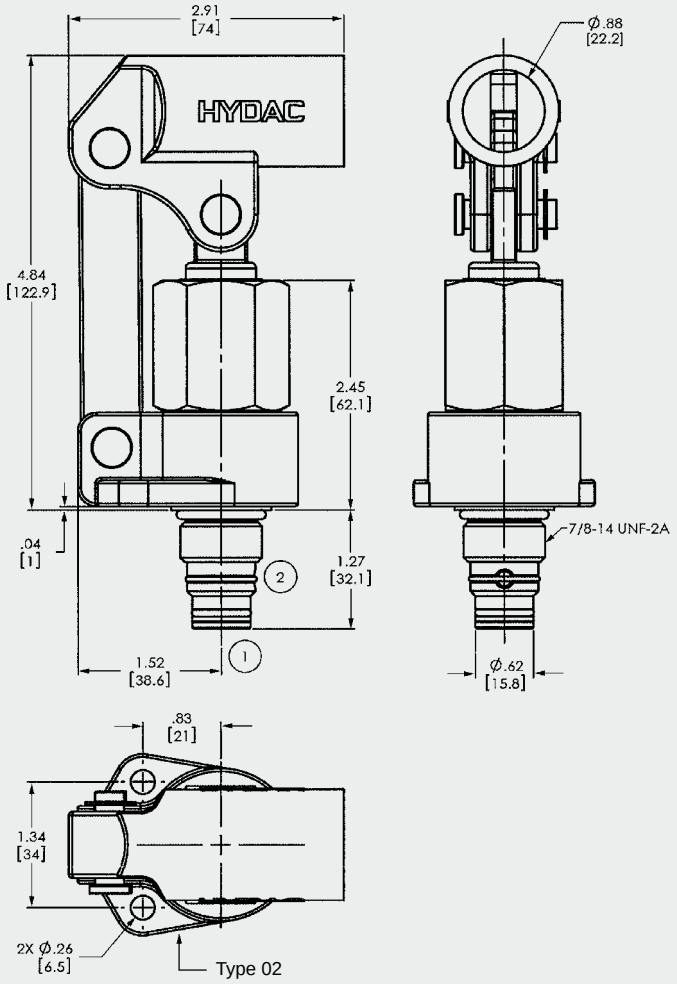
FEATURES

- Robust design for high loads
- Built-in check valves on inlet and outlet
- Handle can be turned through 360°
- Type 02 has fixing lugs to secure the lever assembly

SPECIFICATIONS

Operating pressure:	max. 207 bar
Nominal flow:	max. 7.5 cm³/stroke
Leakage:	Leakage-free (max. 0.35 cm³/min at nominal pressure)
Media operating temperature range:	min. –30 °C to max. +100 °C
Ambient temperature range:	min. –30 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm²/s to max. 420 mm²/s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Installation:	No orientation restrictions
Materials:	Valve body: high tensile steel Piston: steel Seals: NBR (standard) FKM (optional, media temperature range -20 °C to +210 °C) Back-up rings: PTFE
Cavity:	FC10-2
Weight:	0.65 kg

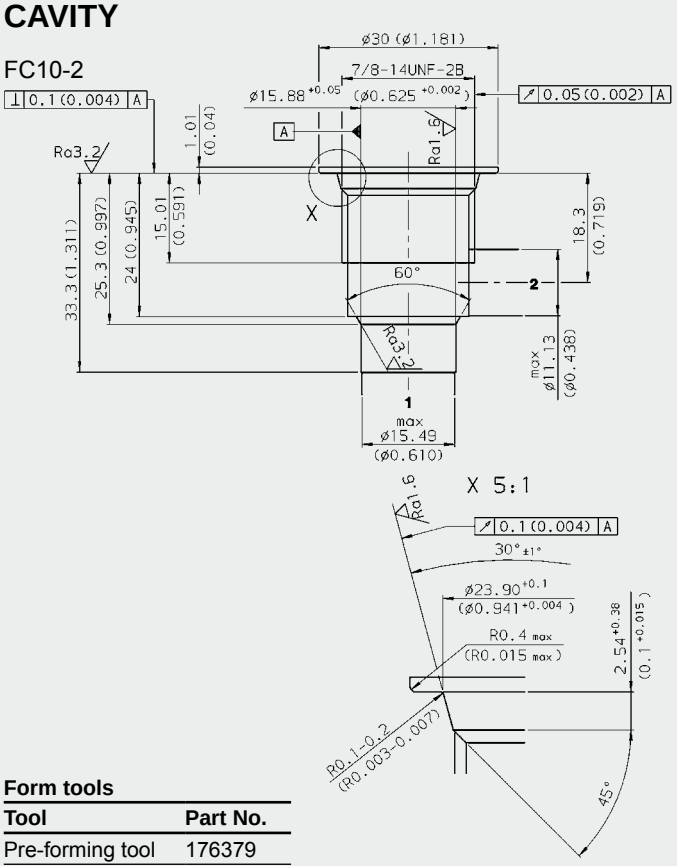
DIMENSIONS



inch [mm]
Subject to technical modifications.

CAVITY

FC10-2



mm (inch)
Subject to technical modifications.

Form tools

Tool	Part No.
Pre-forming tool	176379
Reamer	165706

MODEL CODE

MP10 – 01

Basic model
Hand pump

Cavity
FC10-2 = UNF cavity 2-way

Type
01 = without fixing lugs
02 = with fixing lugs

Standard models

Model code		Part No.
MP10-01	HAND PUMP	2610181
MP10-02	HAND PUMP	2610196

Other models on request

Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	1/2 BSP	420 bar
FH102-AB4	3037777	Aluminium, clear anodized	1/2 BSP	210 bar

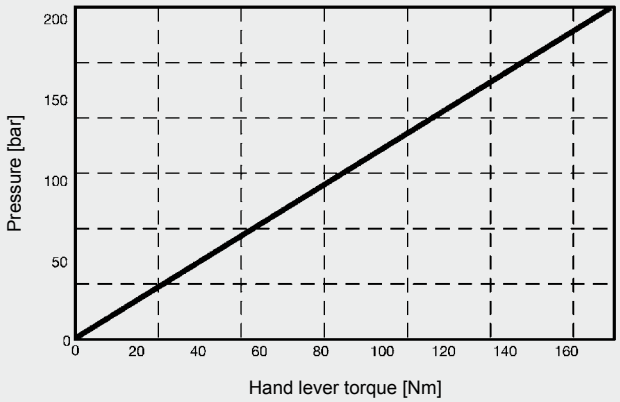
Other line bodies on request

Seal kits

Code		Material	Part No.
FS102-N	SEAL KIT	NBR	3033872
FS102-V	SEAL KIT	FKM	3051757

PERFORMANCE

T_{oil} = 46 °C
ν = 33 mm²/s



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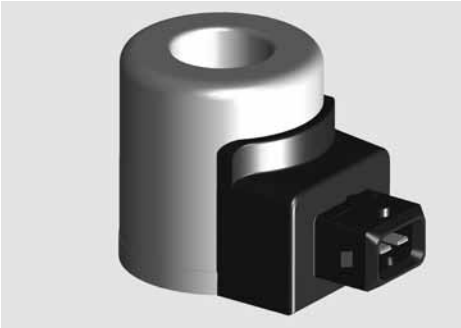
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

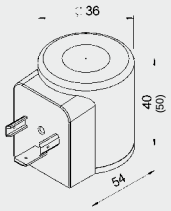
Solenoid Coils for Directional Valves (Solenoid Operated)



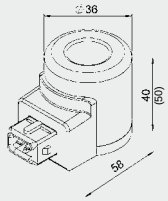
Types

For the following valves:

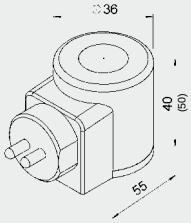
40-1836	50-1836
WSM06020 Y, YR, Z, ZR, V, W …	WS10 W …
WSM10120 Y, YR, Z, ZR, W …	WSM08130 C, D …
WSM12120 Y, YR, Z, ZR, V, W …	WS08 C, D …
WS08 C, Y, YR, Z, ZR, V, W …	WK10 A, C, D, K, L, N, P …
WS10 Y, YR, Z, ZR, W …	WK10 R, V, W, X, Y, Z …
WS12 Y, YR, Z, ZR …	
WS16 Y, YR, Z, ZR …	
WKM08140 X, EB, Y …	
WK08 (07) (081) A, C, D, K, L, P, R, V, W, X, Z …	
WK10 E, F, G, H, J, S, (2x) …	
WSM20121 W …	



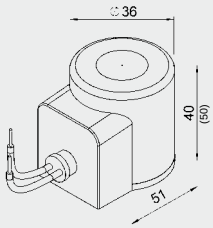
Connector type G
DIN connector to EN175-301-803



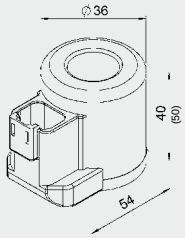
Connector type T
AMP Junior Timer, 2-pole



Connector type K
Kostal connector, 2-pole



Connector type L
Lead-wires, 457 mm



Connector type N
Deutsch connector, 2-pole

FEATURES

- **Maximum power for minimum space requirement**
  Coil is layer-wound which ensures maximum copper fill for minimum space requirement. This prevents damage to the wire insulation.
  (Prevents failure due to short circuit)
- **Fully encapsulated coil**
  Internal coil seal prevents moisture from penetrating and therefore prevents short circuits in the winding
- **Designed for 100% duty cycle**
  At I_{max} and ambient temperatures of -20° to +60°C
- **Low energy consumption**
  Optimum power/energy ratio
- **High mechanical resistance**
  Zinc-plated steel casing
- **High thermal load capacity**
  Insulation material class H (180°C, VDE 0580)
- **5 different types of electrical connection as standard, with protection classes IP65, IP67 and IP6K9K**
  DIN/EN connector (G) IP65, Junior Timer (T) IP65/IP67
  Kostal connector (K) IP67, Lead-wires (L) IP65/IP67,
  Deutsch connector (N) IP65/IP67/IP6K9K and others on request
- **Mounting direction optional**
  Symmetrical coil construction
- **Coil dimensions = type code**
  Type 40-1836 = 40 mm high (18 mm internal Ø, 36 mm external Ø)
  Type 50-1836 = 50 mm high (18 mm internal Ø, 36 mm external Ø)

SPECIFICATIONS

Coil duty rating:		Continuous up to max. 115% of the nominal voltage at max. 60 °C ambient temperature
Max. permitted coil temperature:		180 °C
Power consumption:	40 type coil	18 - 20 Watt at nominal voltage and 20 °C coil temperature
	50 type coil	25 - 27.2 Watt at nominal voltage and 20 °C coil temperature
Coil wire:		Insulation material class H
Coil casing:		Steel, zinc-plated
Connector socket:		Polyamide, black
(all specifications relate to coil when fitted on a valve)		

DESCRIPTION

The solenoid coil is manufactured as a DC coil as standard.

On request, solenoid coils can be fitted with an integrated reverse polarity protected diode for reducing the switch-off induction voltage, to protect against voltage surges. Solenoid coils for connection to alternating current have an integrated bridge rectifier.

For coils with a DIN connector to EN 175301-803 a corresponding connecting socket (Part No. 394287) can be supplied separately.

As a general rule, special coils can be manufactured to customer specification. Please consult your sales partner.

For the various connector electronics for coils, please see the relevant valve brochure.

MODEL CODE

Coil 12 DG01 - 40-1836

Basic model

Coil voltage
12 V DC
24 V DC
115 V AC (AG termination only)
230 V AC (AG termination only)
Other voltages on request

Type of voltage
D = DC, control valve
A = AC, control valve

Type of connector
G = Connector to EN 175301-803, protection class IP65
T = Junior Timer 2-pole, radial, protection class IP65/IP67
K = Kostal threaded connection, M 27x1, 2-pole, protection class IP65/IP67
L = 2 lead-wires, 0.75mm², 457 mm (18") long, protection class IP65/IP67
N = Deutsch connector 2-pole, protection class IP65/IP67/IP6K9K
Other connectors on request

Version (depending on connector)
No details = standard
01, 02... = e.g. protection diodes, different cable lengths...

Type code
40-1836 = principal dimensions (height, internal diameter, external diameter)

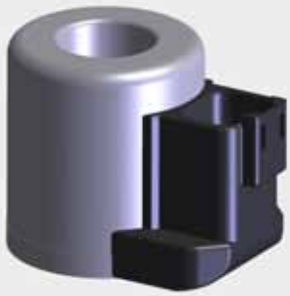
The model code is for information only. For the types available, see table below:

BASIC MODEL AND RELEVANT PART NUMBERS

Nominal voltage [Volt]	Coil length [mm]	Coil power [Watt]	Nominal resistance [Ohm]	Nom. current [Amp.]	Part numbers for type of connector				
					DIN (G)	Junior Timer (T)	Kostal (K)	Lead-wires (L)	Deutsch (N)
12 V DC	40	18.00	8.00	1.50	3000489	3008275	3003133	3002244	3012600
					12DG-40-1836	12DT-40-1836	12DK-40-1836	12DL-40-1836	12-DN-40-1836
	50	26.70	5.40	2.20	915151	3001033	3091679	3091633	3091665
					12DG-50-1836	12DT-50-1836	12DK-50-1836	12DL-50-1836	12-DN-50-1836
24 V DC	40	19.00	30.00	0.80	3000249	3008279	3003138	3003119	3012599
					24DG-40-1836	24DT-40-1836	24DK-40-1836	24DL-40-1836	24DN-40-1836
	50	26.70	21.20	1.10	915142	3001503	3091681	3112951	3091667
					24DG-50-1836	24DT-50-1836	24DK-50-1836	24DL-50-1836	24DN-50-1836
115 V AC	40	20.00	500.00	0.20	3003156	–	–	–	–
					115AG-40-1836				
110 V AC	50	25.00	383.00	0.26	3019735	–	–	–	–
					110AG-50-1836				
230 V AC	40	20.00	2137.00	0.10	3002594	–	–	–	–
					230AG-40-1836				
	50	25.00	1680.00	0.12	3019736	–	–	–	–
					230AG-50-1836				

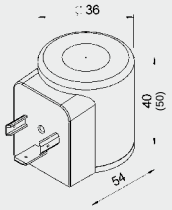
NOTE
The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

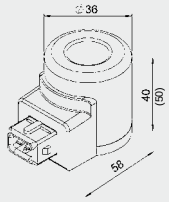


Solenoid Coils for Proportional Valves (Solenoid Operated)

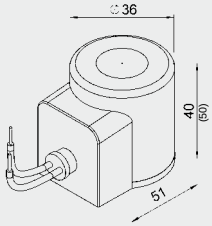
Types	40-1836	50-1836
For the following valves (amongst others):	PDR08 P (-01)(-02)… PDR10 P (PZ)v PDB08 P (PZ)… PDB10 P (PZ) (SPE)… PDB12 P (PZ)… PDB16 P (PZ)… PDBM10120 AP(APZ)… PDB12121 PE (PF)… PDB16221 PE… PWKM10120 WP…	PDR08-11(-20)(-50)… PWKM06020 V (W)… PWKM10120 V (W)… PWKM12120 V (W)… PDBM06020… PWS08… PWS10…



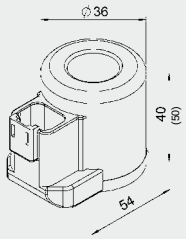
Connector type G
(DIN connector to EN175-301-803)



Connector type T
AMP Junior Timer, 2-pole



Connector type L
Lead-wires, 457 mm



Connector type N
Deutsch connector, 2-pole

FEATURES

- **Maximum power for minimum space requirement**
  Coil is layer-wound which ensures maximum copper fill for minimum space requirement. This prevents damage to the wire insulation.
  (Prevents failure due to short circuit)
- **Fully encapsulated coil**
  Internal coil seal prevents moisture from penetrating and therefore prevents short circuits in the winding
- **Designed for 100% duty cycle**
  At I_{max} and ambient temperatures of -20° to +60°C
- **Low energy consumption**
  Optimum power/energy ratio
- **High mechanical resistance**
  Zinc-plated steel casing
- **High thermal load capacity**
  Insulation material class H (180 °C, VDE 0580)
- **4 different types of electrical connection as standard, with protection classes IP65, IP67 and IP6K9K**
  DIN/EN connector (G) IP65, Junior Timer (T) IP65/IP67
  Lead-wires (L) IP65/IP67, Deutsch connector (N) IP65/IP67/IP6K9K
  and others on request
- **Mounting direction optional**
  Symmetrical coil construction
- **Coil dimensions = type code**
  Type 40-1836 = 40 mm high (18 mm internal Ø, 36 mm external Ø)
  Type 50-1836 = 50 mm high (18 mm internal Ø, 36 mm external Ø)

SPECIFICATIONS

Coil duty rating:	Continuous up to max. control current at max. 60 °C ambient temperature
Max. permitted coil temperature:	180 °C
Coil wire:	Insulation material class H
Coil casing:	Steel, zinc-plated
Connector socket:	Polyamide, black
(all specifications relate to coil when fitted on a valve)	

DESCRIPTION

For coils with a DIN connector to EN 175301-803 a corresponding connecting socket (Part No. 394287) can be supplied separately.

As a general rule, special coils can be manufactured to customer specification. Please consult your sales partner.

For the various connector electronics for coils, please see the relevant valve brochure.

MODEL CODE

Coil 12 PG01 - 2.2 - 40-1836

Basic model

Coil voltage
12 V DC
24 V DC
Other voltages on request

Type of valve
P = Proportional valve

Type of connector
G = Connector to EN 175301-803, protection class IP65
T = Junior Timer 2-pole, radial, protection class IP65/IP67
L = 2 lead-wires, 0.75mm², protection type IP65/IP67
N = Deutsch connector, protection class IP65/IP67/IP6K9K
Other connectors on request

Version (depending on connector)
No details = standard

Resistance (dependent on voltage and type)
Type 40-1836 = 2.2 Ohm (12 V)
Type 50-1836 = 4.1 Ohm (12 V)
Type 40-1836 = 8.8 Ohm (24 V)
Type 50-1836 = 17.6 Ohm (24 V)
(see table)

Type code
40-1836 = principal dimensions (height, internal diameter, external diameter)

The model code is for information only. For the types available, see table below:

BASIC MODEL AND RELEVANT PART NUMBERS

Coil length [mm]	PWM Base voltage [Volt]	Nominal resistance [Ohm]	Nominal current [Amp.]	Part numbers for type of connector			
				DIN	Junior timer	Lead-wires	Deutsch
				(G)	(T)	(L)	(N)
40	12 V DC	2.2	2.10	3109230	3162388	3109947	3110056
				12PG-2.2-40-1836	12PT-2.2-40-1836	12PL-2.2-40-1836	12PN-2.2-40-1836
	24 V DC	8.8	1.05	3109229	3162390	3110048	3110057
				24PG-8.8-40-1836	24PT-8.8-40-1836	24PL-8.8-40-1836	24PN-8.8-40-1836
50	12 V DC	4.1	1.75	3179976 12PG-4.1-50-1836	3120939 12PT-4.1-50-1836	3179980 12PL-4.1-50-1836	3179990 12PN-4.1-50-1836
	24 V DC	17.6	0.85	3179953 24PG-18-50-1836	3120938 24PT-18-50-1836	3179985 24PL-18-50-1836	3179991 24PN-18-50-1836

NOTE
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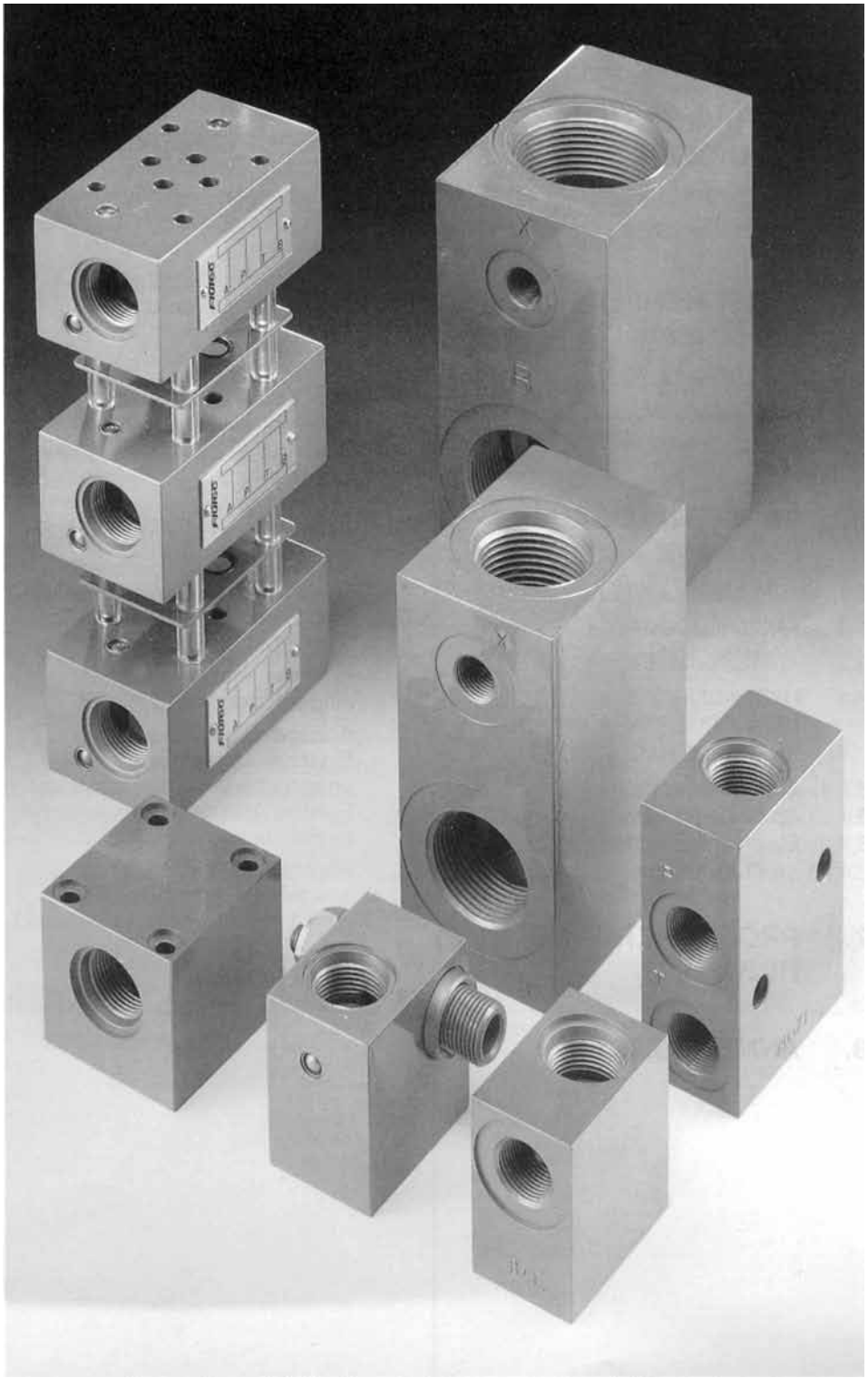
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

HYDAC INTERNATIONAL

Connection Housings for Cartridge Valves

Standard Inline Bodies
Sandwich Bodies
Subplate Bodies



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1. DESCRIPTION

1.1. GENERAL

The wide range of HYDAC valve connection housings provides highly flexible solutions to oil hydraulic control functions.

Different valve functions in the same housing are possible by having standardised threaded ports for cartridge valves of the same size and interface.

The user therefore has a wide range of housings available. Depending on the control function required, pressure control, flow control, shut off, directional and special valves are used.

The following types are available as standard:

– standard inline body ISO/metric, see point 4
– standard inline body UNF, see point 5
– sandwich body with standard interface, see point 6
– subplate body with standard interface, see point 7

1.2. RECOMMENDATIONS

To ensure correct and safe operation the following points must be taken into account:

– installation dimensions of cartridge valve and housing must correspond
– port configuration of cartridge valve and housing must correspond
– connection according to valve function used
– torque of cartridge valve in accordance with technical details in the corresponding valve literature - the wrong torque can cause malfunctions
– connection threads are largely to DIN 3852, page 1 or 2, form X
– interfaces to DIN 24340 and Cetop R 35
Installation height to Cetop RP99H

2. TECHNICAL SPECIFICATIONS

2.1. GENERAL

Hydraulic and technical details as per relevant valve literature.

2.1.1 **Type of construction**
Standard inline body
ISO/metric
Type R …
Type A …
Type X …

Standard inline body UNF
Type FH …

Sandwich body
Type Z …

Subplate body
Type D …

2.1.2 **Type of mounting**
Depending on the housing type, with pipes, through-holes or tie rods.

2.1.3 **Installation**
Please note restrictions regarding cartridge valves.

Ensure correct installation of sandwich and subplate bodies.

2.1.4 **Weights**
See points 4 - 7.

2.1.5 **Materials**
Free-cutting steel

For sandwich body type ZAB08021-02X, aluminium

For UNF standard inline bodies, free-cutting steel and aluminium

2.1.6 **Surface treatment**
Standard inline body
ISO/metric
Type R…
Type A…
Type X…
Zinc-plated and yellow-chromed coating EN 12329-Fe//Zn5-8//C/T4

Standard inline body
Type FH ...
Zinc-plated and blue-chromed coating EN 12329-Fe//Zn5-8//B/T4

Sandwich body
Type Z…
Phosphate-plated coating EN 12476-Fe//Znph/r/3/T4
(not for type ZAB08021-02X)

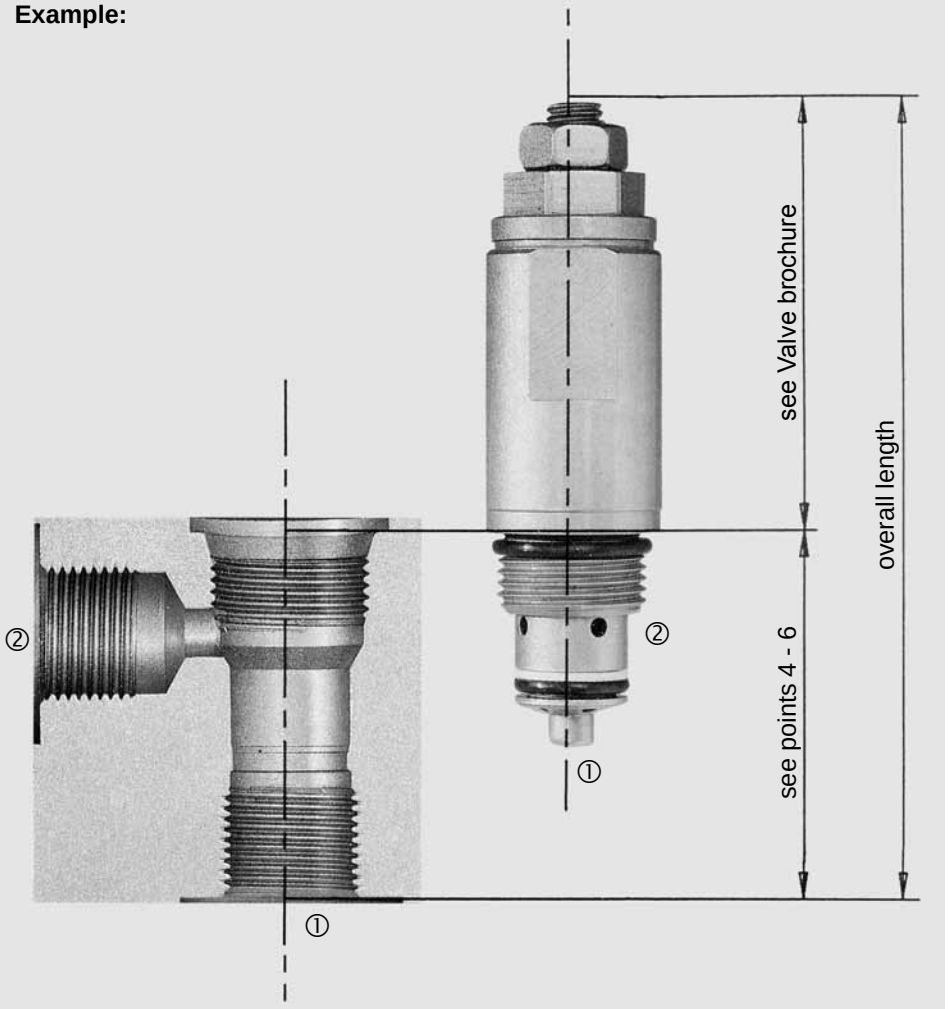
Subplate body
Type D…
Phosphate-plated coating EN 12476-Fe//Znph/r/3/T4

3. DIMENSIONS

3.1. GENERAL

In order to determine the overall dimensions (valve and housing) please refer to the appropriate valve brochures.

Example:



4. STANDARD LINE BODIES ISO/metric

4.1. MODEL CODE

R 06020 – 01 X – 01

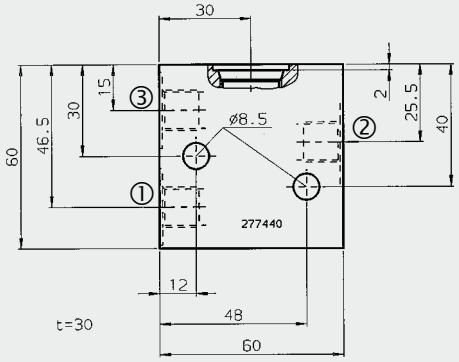
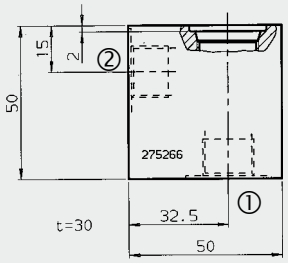
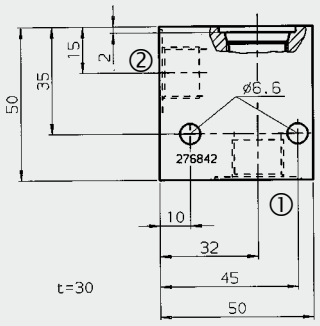
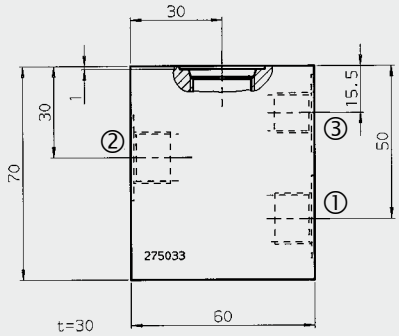
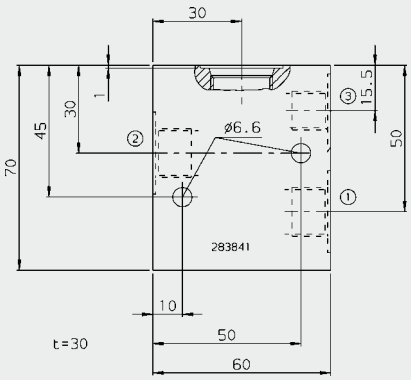
R: Standard inline body
A: Cylinder connection housing
X: Internal valve housing

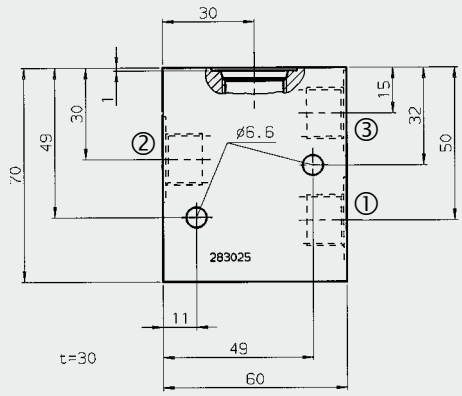
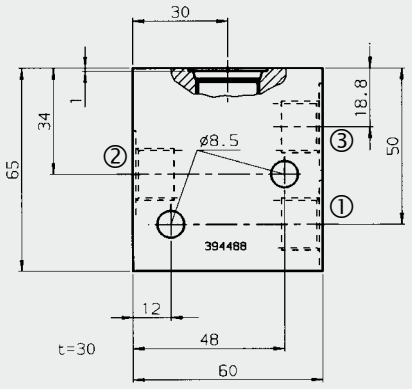
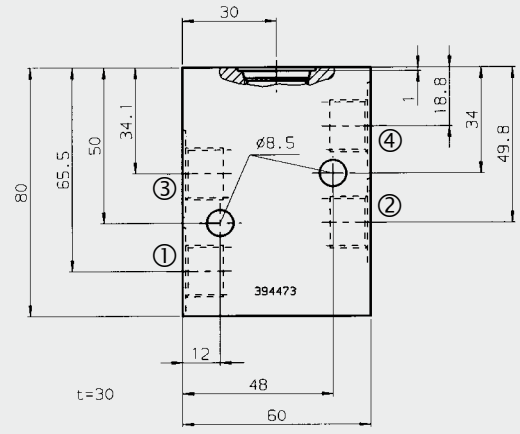
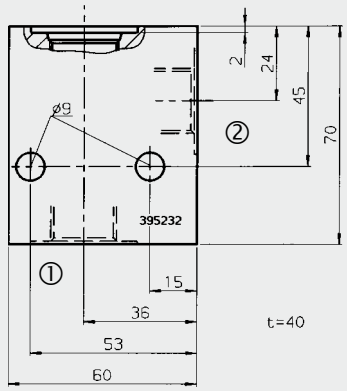
Cartridge valve cavity
see valve brochure

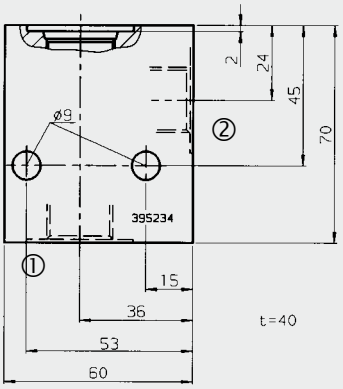
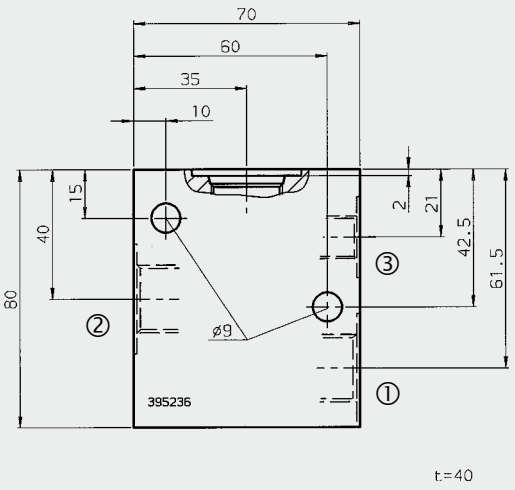
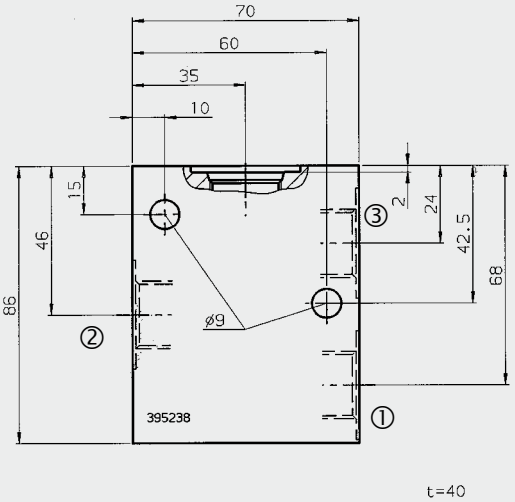
Type
(describes individual condition;
e. g. surface, dimensions,
functional properties ...)

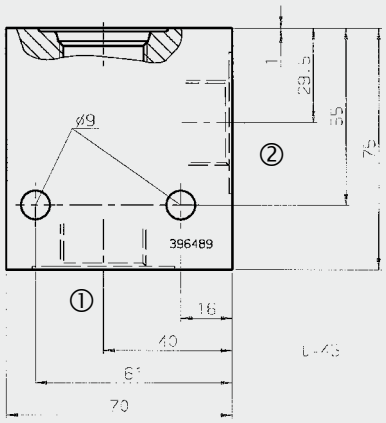
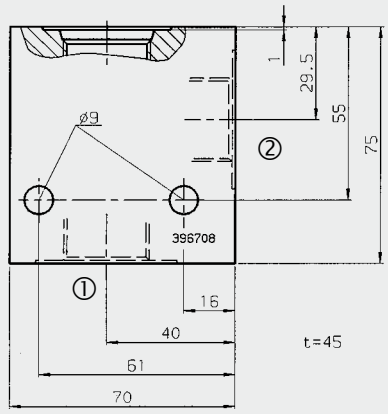
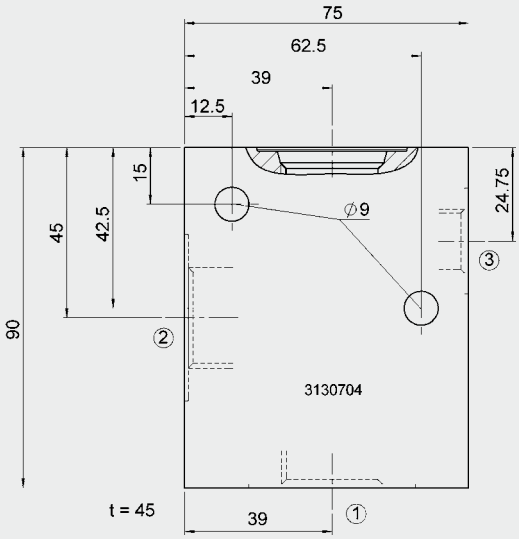
Series
(determined by manufacturer)

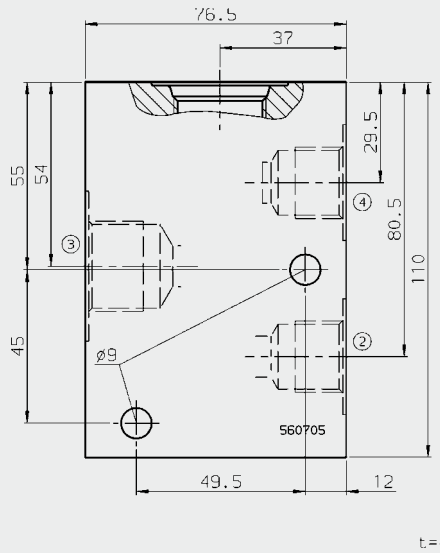
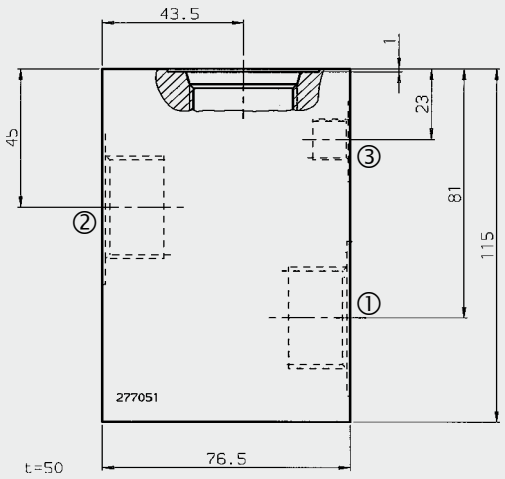
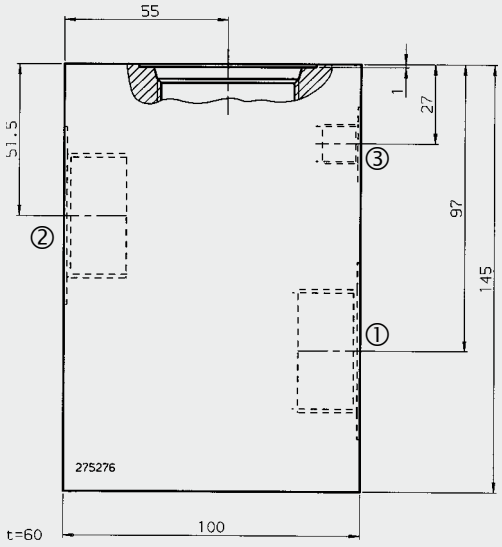
Housing connection thread
see point 4.2

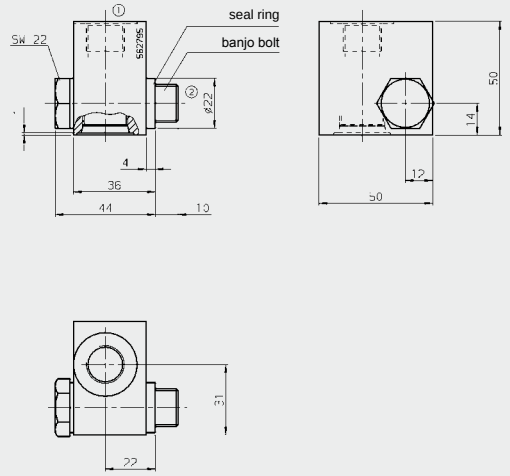
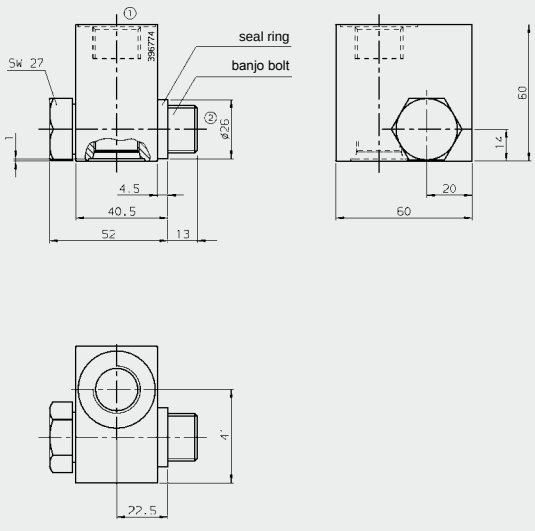
Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
277440	**R03230-01X-01**	① G 1/4 ② G 1/4 ③ G 1/4	 Weight: 0.67 kg	WSE 3	5.203
275266	**R06020-01X-01**	① G 3/8 ② G 3/8	 Weight: 0.45 kg	DB4E	5.161
				DSR5E	393400
				DZ5E	5.166
				PDB 06020	5.164
				DV5E	5.113
				SR5E	5.117
				RV5E	5.175
276842	**R06020-10X-01**	① G 3/8 ② G 3/8	 Weight: 0.44 kg	WSM06020Z	5.943
				WSM06020ZR	5.946
				WSM06020Y	5.947
				WSM06020YR	5.948
				WSM06020W	5.949
				WSM06020V	
275033	**R08021-01X-01** Plug Port 3 when using ERVM-G1/2	① G 3/8 ② G 3/8 ③ G 1/4	 Weight: 0.77 kg	ERVE-R 1/2	5.172
				SBVE-R 1/2	5.177
				RPR08021-01	396487
				ERVM-G1/2	283843
283841	**R08021-10X-01** Plug Port 3 when using ERVM-G1/2	① G 3/8 ② G 3/8 ③ G 1/4	 Weight: 0.76 kg	ERVE-R 1/2	5.172
				SBVE-R 1/2	5.177
				RPR08021-01	396487
				ERVM-G1/2	283843

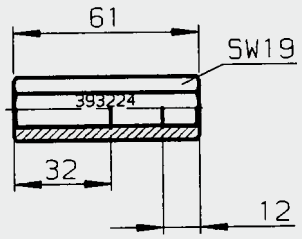
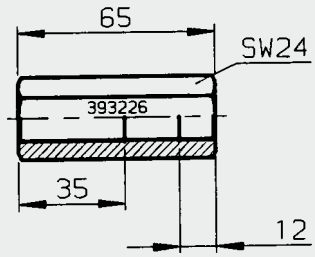
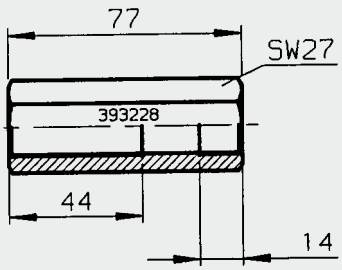
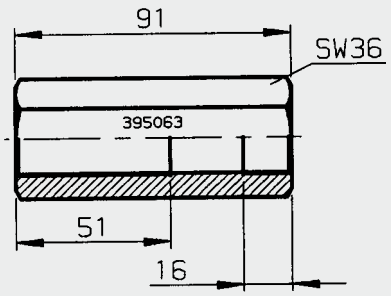
Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
283025	**R08030-01X-01**	① G 3/8 ② G 3/8 ③ G 3/8	 Weight: 0.74 kg	DMVE-G ½	5.162
394488	**R08130-01X-01**	① G 3/8 ② G 3/8 ③ G 3/8	 Weight: 0.70 kg	PDM08130	5.168
				WSEC08130	5.935
				WSED08130	5.934
				WKM08130C	5.976
				WKM08130D	5.977
394378	**R08130-01X-02**	① M 14x1.5 ② M 14x1.5 ③ M 14x1.5		WKM08130L	
				WSM08130D	
394473	**R08140-01X-01**	① G 3/8 ② G 3/8 ③ G 3/8 ④ G 3/8	 Weight: 0.86 kg	WKM08140Y	5.942
				WKM08140X	5.985
				WKM08140A	
				WKM08140Z	
				WKM08140K	
393535	**R08140-01X-02**	① M 14x1.5 ② M 14x1.5 ③ M 14x1.5 ④ M 14x1.5		WKM08140P	
				WKM08140EB	5.981
395232	**R10120A-01X-01**	① G 1/2 ② G 1/2	 Weight: 1.04 kg	DB10120A	5.167
				DB10-13X	3122049
395233	**R10120A-01X-02**	① M 22x1.5 ② M 22x1.5		PDBM10120AP	5.978

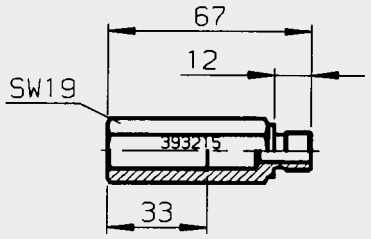
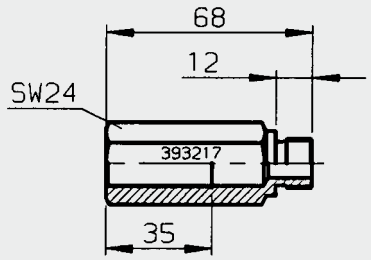
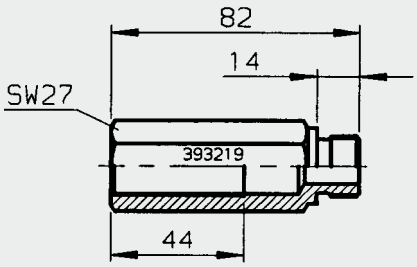
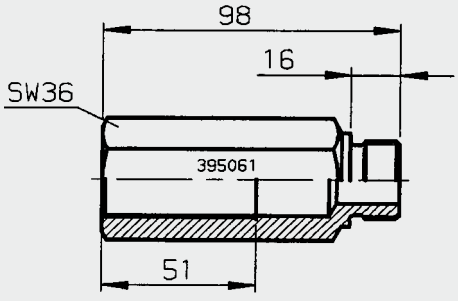
Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
395234	**R10120-01X-01**	① G 1/2 ② G 1/2	 Weight: 1.04 kg	RV10120	5.179
				SD10120	5.114
				WSE10120	5.206
				RVM10120	
395235	**R10120-01X-02**	① M 22x1.5 ② M 22x1.5			
395236	**R10121-01X-01**	① G 1/2 ② G 1/2 ③ G 1/4	 Weight: 1.45 kg	RP 10121	284115
				RPL 10121	395294
395237	**R10121-01X-02**	① M 22x1.5 ② M 22x1.5 ③ M 14x1.5			
395238	**R10130-01X-01**	① G 1/2 ② G 1/2 ③ G 1/2	 Weight: 1.48 kg	DM 10130	284475
				SRA10130	284857
				PDM10130	
				WKM10130C	
				WKM10130D	
				WKM10130L	
395239	**R10130-01X-02**	① M 22x1.5 ② M 22x1.5 ③ M 22x1.5			

Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
396489	**R12120A-01X-01**	① G 3/4 ② G 3/4	 Weight: 1.40 kg	DB 12120 A	5.169
396708	**R12120-10X-01**	① G 3/4 ② G 3/4	 Weight: 1.39 kg	WSM12120	396324
396707	**R12120-10X-02**	① M 27x2 ② M 27x2			
3130704	**R12121-01X-01**	① G 3/4 ② G 3/4 ③ G 3/8	 Weight: 1.89 kg	DB12121PE DB12121PF PDB12121PE PDB12121PF	5.996 5.997

Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
560705	**R12230-01X-01**	① G 1/2 ② G 3/4 ③ G 1/2	 Weight: 2.40 kg	ST12230	560637
277051	**R16021-01X-01**	① G 1 ② G 1 ③ G 1/4	 Weight: 2.52 kg	ERVE16021 SBVE-R1	5.172 5.177
275276	**R20021-01X-01**	① G 1 1/4 ② G 1 1/4 ③ G 1/4	 Weight: 4.60 kg	ERVE-20021	5.172

Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
562795	**A06020-04X-01**	① G $^{3}/_{8}$ ② G $^{3}/_{8}$	 Weight: 0.56 kg	WSM06020Z	5.943
				WSM06020ZR	5.946
				WSM06020Y	5.947
				WSM06020YR	5.948
				WSM06020W	5.949
				WSM06020V	
396774	**A06020-14X-01**	① G $^{1}/_{2}$ ② G $^{1}/_{2}$	 Weight: 0.92 kg	WSM06020Z	5.943
				WSM06020ZR	5.946
				WSM06020Y	5.947
				WSM06020YR	5.948
				WSM06020W	5.949
				WSM06020V	

Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
393224	**XX05520-01X**	G 1/4	 Weight: 0.09 kg	SRE 1	5.118
				RBE-R ¼	5.174
	on request	M 14x1.5			
393226	**XX08520-01X**	G 3/8	 Weight: 0.15 kg	SRE 2	5.118
				RBE-R 3/8	5.174
	on request	M 18x1.5			
393228	**XX10520-01X**	G 1/2	 Weight: 0.19 kg	SRE 3	5.118
				RBE-R ½	5.174
	on request	M 22x1.5			
395063	**XX12520-01X**	G 3/4	 Weight: 0.44 kg	SRE 4	5.118
				RBE-R ¾	5.174
	on request	M 27x2			

Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
393215	**XB05520-01X**	G 1/4	 Weight: 0.09 kg	SRE 1	5.118
				RBE-R ¼	5.174
	on request	M 14x1.5			
393217	**XB08520-01X**	G 3/8	 Weight: 0.14 kg	SRE 2	5.118
				RBE-R 3/8	5.174
	on request	M 18x1.5			
393219	**XB10520-01X**	G 1/2	 Weight: 0.20 kg	SRE 3	5.118
				RBE-R ½	5.174
	on request	M 22x1.5			
395061	**XB12520-01X**	G 3/4	 Weight: 0.43 kg	SRE 4	5.118
				RBE-R ¾	5.174
	on request	M 27x2			

5. STANDARD INLINE BODY UNF

5.1. MODEL CODE

FH 082 – S – S6

Standard inline body

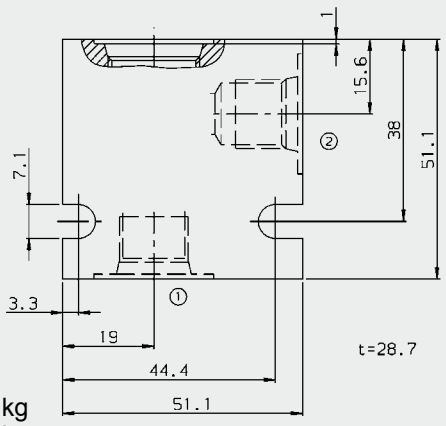
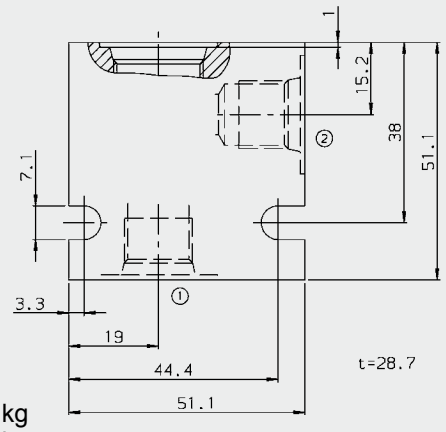
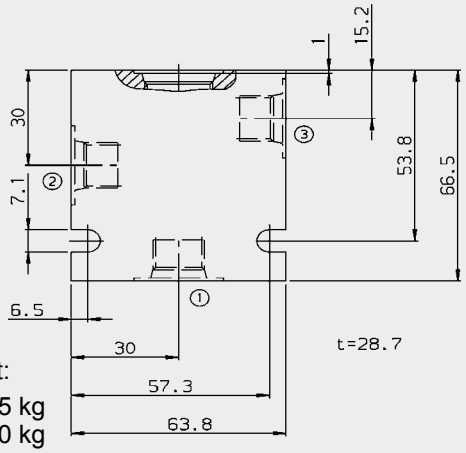
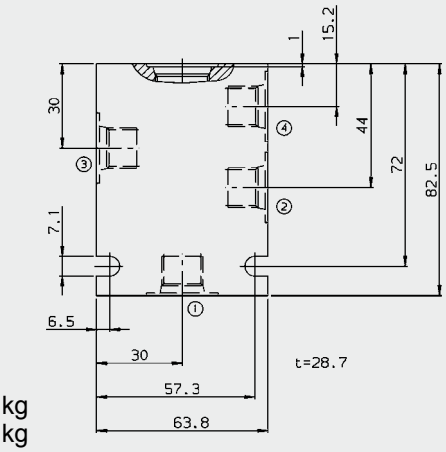
Cartridge valve cavity
see valve brochure

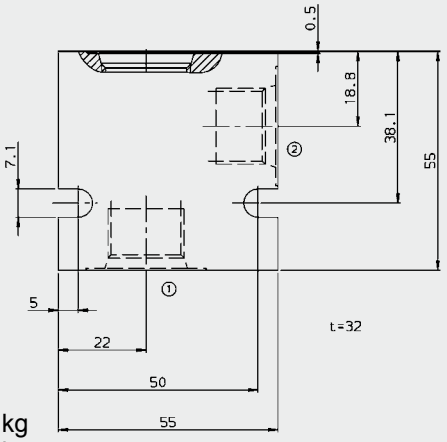
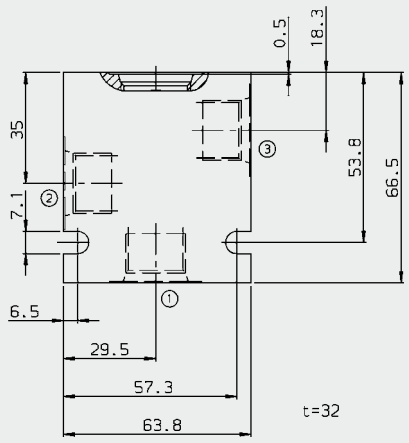
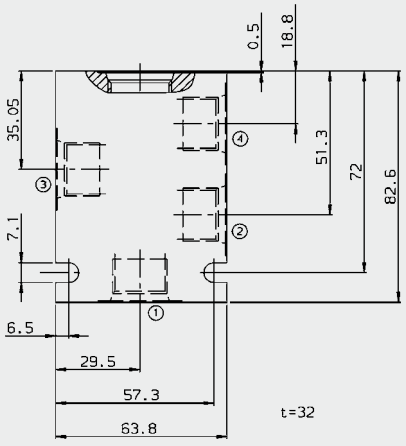
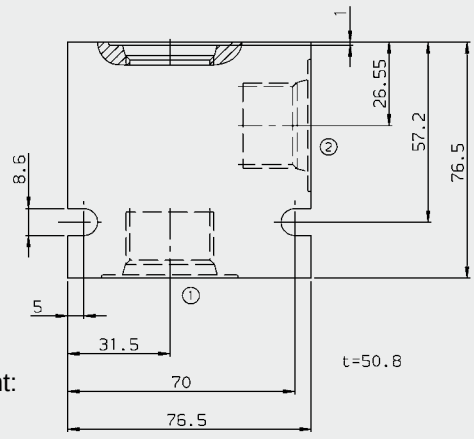
Housing material
S = free-cutting steel
A = aluminium

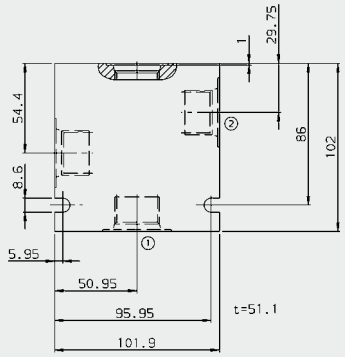
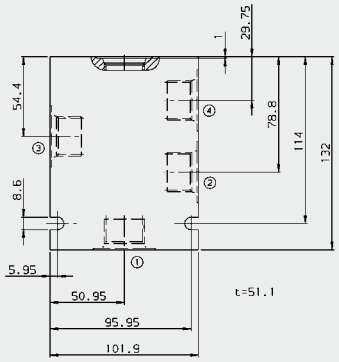
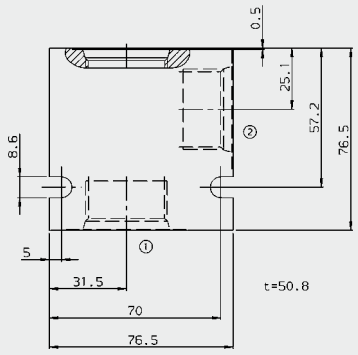
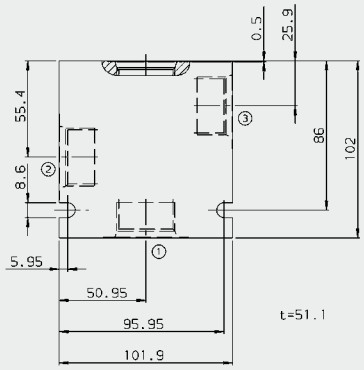
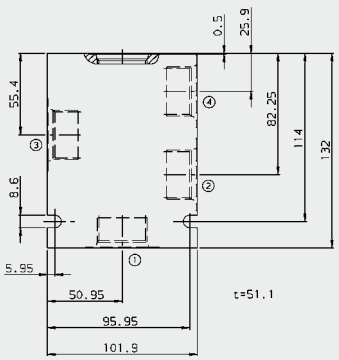
Housing connection thread

S6 = SAE 6	N3 = 3/8" NPTF	B3 = 3/8" BSP
S8 = SAE 8	N4 = 1/2" NPTF	B4 = 1/2" BSP
S12 = SAE 12	N8 = 1" NPTF	B6 = 3/4" BSP
S16 = SAE16		B8 = 1" BSP

Others on request

Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
3067477	**FH0812-AB3**	① 3/8"BSP ② 3/8"BSP	 Weight: Al: 0.15 kg St: 0.42 kg	WKM081W-01	5.956
3067468	**FH0812-SB3**			WS081Z-01	5.980
3067619	**FH0812-AN3**	① 3/8"NPTF ② 3/8"NPTF		WS081ZR-01	5.979
3067472	**FH0812-SN3**			WS081Y-01	5.987
3067518	**FH0812-AS6**	① SAE6 ② SAE6		WS081YR-01	5.986
3076471	**FH0812-SS6**				
3011423	**FH082-AB3**	① 3/8"BSP ② 3/8"BSP	 Weight: Al: 0.15 kg St: 0.42 kg	WS08ZR-01J	5.984
560919	**FH082-SB3**			DB08A	5.922
3011411	**FH082-AN3**	① 3/8"NPTF ② 3/8"NPTF		DB08P	5.922.1
560918	**FH082-SN3**			RV08A	5.912
3011409	**FH082-AS6**	① SAE6 ② SAE6		SD08-01	5.928
560917	**FH082-SS6**			SR08-01	5.930
				WS08Z-01	5.907
				WS08ZR-01	5.911
				WS08Y-01	5.917
				WS08YR-01	5.908
				WS08W-01	5.924
				WK08W-01	5.925
				WK08V-01	5.918
				WS08WM-01	
				WS08WL-01	
				WS08Z-01J	5.983
				PDB08P-01	5.991.1
				WS08Z-30	5.993
				WS08Y-30	5.992
				WS08W-30	5.994
3011427	**FH083-AB3**	① 3/8"BSP ② 3/8"BSP ③ 3/8"BSP	 Weight: Al: 0.25 kg St: 0.70 kg	DR08-01	5.920
560922	**FH083-SB3**			RP08A	5.923
3011425	**FH083-AN3**	① 3/8"NPTF ② 3/8"NPTF ③ 3/8"NPTF		RS08-01	5.933
560921	**FH083-SN3**			SRP08-01	5.929
3011424	**FH083-AS6**	① SAE6 ② SAE6 ③ SAE6		WK08L-01	5.913
560920	**FH083-SS6**			WK08C-01	5.906
3116230	**FH083-SM14F**	① M14x1.5 ② M14x1.5 ③ M14x1.5		WK08D-01	5.915
				WS08D-01	
				DR08P-01	5.920.1
				PDR08P-01	5.990.1
				PDR08-01	
				PDR08-10	
				PDR08-20	
3011407	**FH084-AB3**	① 3/8"BSP ② 3/8"BSP ③ 3/8"BSP ④ 3/8"BSP	 Weight: Al: 0.31 kg St: 0.86 kg	WK08Y-01	5.905
563383	**FH084-SB3**			WK08X-01	5.919
3011406	**FH084-AN3**	① 3/8"NPTF ② 3/8"NPTF ③ 3/8"NPTF ④ 3/8"NPTF		WK08A-01	5.910
563382	**FH084-SN3**			WK08Z-01	5.916
3011404	**FH084-AS6**	① SAE6 ② SAE6 ③ SAE6 ④ SAE6		WK08K-01	5.904
563381	**FH084-SS6**			WK08P-01	5.909

Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
3037777	**FH102-AB4**	① 1/2"BSP ② 1/2"BSP	 Weight: Al: 0.20 kg St: 0.54 kg	DP10P-01	5.954
3037594	**FH102-SB4**			RV10A-01	5.953
3037779	**FH102-AN4**	① 1/2"NPTF ② 1/2"NPTF		SR10-01	5.958
3037599	**FH102-SN4**			WS10Z-01	5.926
3037778	**FH102-AS8**	① SAE8 ② SAE8		WS10ZR-01	5.927
3037612	**FH102-SS8**			WS10Y-01	5.914
				WS10YR-01	5.921
				WK10W-01	
				WK10V-01	
				SDR10A-01	5.988
				PDB10P-01	5.991
				SD10-01	5.989
3038092	**FH103-AB4**	① 1/2"BSP ② 1/2"BSP ③ 1/2"BSP	 Weight: Al: 0.26 kg St: 0.72 kg	DR10-01	5.950
3037697	**FH103-SB4**			RP10A-01	5.932
3038093	**FH103-AN4**	① 1/2"NPTF ② 1/2"NPTF ③ 1/2"NPTF		WK10L-01	5.957
3037743	**FH103-SN4**			WK10C-01	5.963
3038095	**FH103-AS8**	① SAE8 ② SAE8 ③ SAE8		WK10D-01	5.964
3037704	**FH103-SS8**			WS10C-01	
				WS10D-01	
				DR10P-01	5.982
				PDR10P-01	5.990
				WK10C-40	5.995
3038097	**FH104-AB4**	① 1/2"BSP ② 1/2"BSP ③ 1/2"BSP ④ 1/2"BSP	 Weight: Al: 0.32 kg St: 0.88 kg	WK10G-01	5.938
3037784	**FH104-SB4**			WK10E-01	5.937
3038109	**FH104-AN4**	① 1/2"NPTF ② 1/2"NPTF ③ 1/2"NPTF ④ 1/2"NPTF		WK10H-01	5.936
3037932	**FH104-SN4**			WK10J-01	5.939
3038110	**FH104-AS8**	① SAE8 ② SAE8 ③ SAE8 ④ SAE8		WK10Y-01	5.971
3037868	**FH104-SS8**			WK10X-01	5.961
				WK10A-01	5.968
				WK10Z-01	5.960
				WK10K-01	5.966
				WK10P-01	5.972
				WKH10C-01	
				ST10-01	5.967
				WK10R-01	5.962
				WK10F-01	
3053843	**FH122-AB6**	① 3/4"BSP ② 3/4"BSP	 Weight: Al: St:	RV12A-01	5.952
3053782	**FH122-SB6**			WS12Z-01	5.998
3053845	**FH122-AS12**	① SAE12 ② SAE12		WS12ZR-01	5.998.1
3053772	**FH122-SS12**			WS12Y-01	5.998.2
				WS12YR-01	5.998.3
				DP12P-01	5.922.2
				PDB12P-01	5.991.2

Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
3053872	**FH123-AB6**	① 3/4"BSP ② 3/4"BSP ③ 3/4"BSP	 Weight: Al: St:		
3053908	**FH123-SB6**				
3053897	**FH123-AS12**	① SAE12 ② SAE12 ③ SAE12			
3053909	**FH123-SS12**				
3054099	**FH124-AB6**	① 3/4"BSP ② 3/4"BSP ③ 3/4"BSP ④ 3/4"BSP	 Weight: Al: St:		
3054097	**FH124-SB6**				
3054208	**FH124-AS12**	① SAE12 ② SAE12 ③ SAE12 ④ SAE12			
3054206	**FH124-SS12**				
3037193	**FH162-AB8**	① 1"BSP ② 1"BSP	 Weight: Al: 0.56 kg St: 1.55 kg	RV16A-01	5.951
3032496	**FH162-SB8**			WS16Z-01	5.945
3037207	**FH162-AN8**	① 1"NPTF ② 1"NPTF		WS16ZR-01	5.841
3032660	**FH162-SN8**			WS16Y-01	5.840
3037195	**FH162-AS16**	① SAE16 ② SAE16		WS16YR-01	5.844
3032655	**FH162-SS16**			DB16P-01	5.822.3
				PDB16P-01	5.991.3
3037208	**FH163-AB8**	① 1BSP ② 1BSP ③ 1BSP	 Weight: Al: 1.10 kg St: 3.05 kg	RP16A-01	5.931
3036257	**FH163-SB8**				
3037212	**FH163-AN8**	① 1NPTF ② 1NPTF ③ 1NPTF			
3036312	**FH163-SN8**				
3037210	**FH163-AS16**	① SAE16 ② SAE16 ③ SAE16			
3036285	**FH163-SS16**				
3037213	**FH164-AB8**	① 1"BSP ② 1"BSP ③ 1"BSP ④ 1"BSP	 Weight: Al: 1.43 kg St: 3.95 kg	ST16-01	
3032902	**FH164-SB8**				
3037216	**FH164-AN8**	① 1"NPTF ② 1"NPTF ③ 1"NPTF ④ 1"NPTF			
3035700	**FH164-SN8**				
3037214	**FH164-AS16**	① SAE16 ② SAE16 ③ SAE16 ④ SAE16			
3036672	**FH164-SS16**				

6. SANDWICH PLATE HOUSINGS

6.1. MODEL CODE

Z AB 06020 – 01 X

Sandwich body
with interface A6 DIN 24340

Function of each working line
see symbol point 6.3

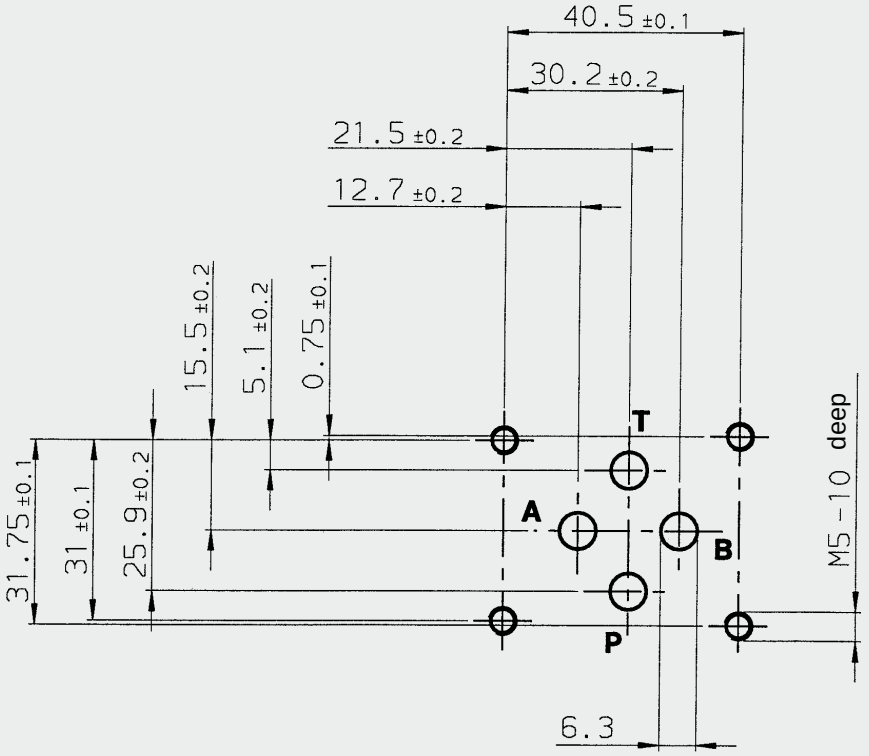
Cartridge valve cavity
see valve brochure

Type
(describes individual condition;
e. g. surface, dimensions,
functional properties ...)

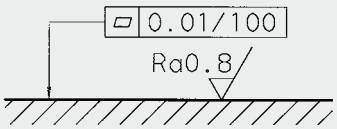
Series
(determined by manufacturer)

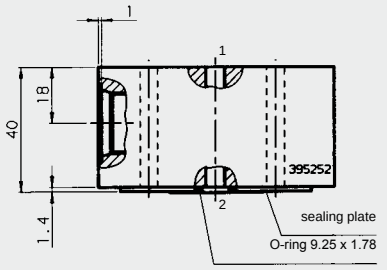
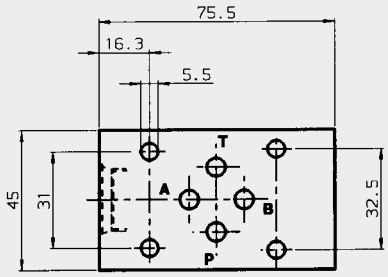
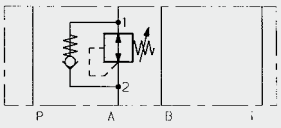
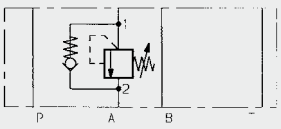
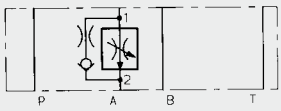
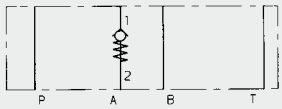
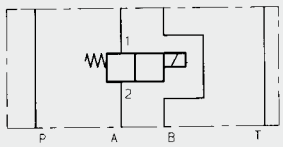
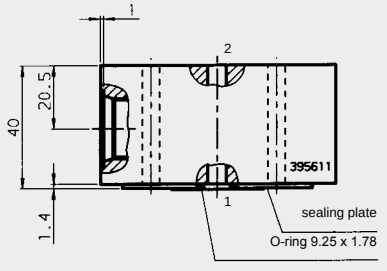
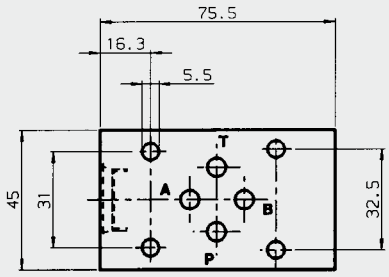
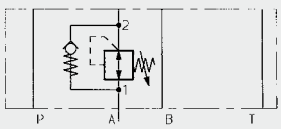
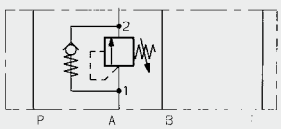
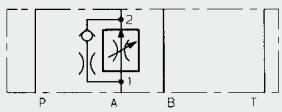
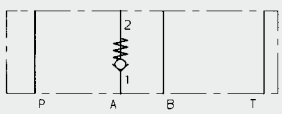
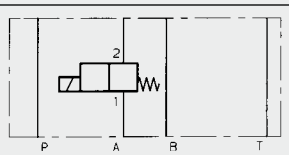
6.2. CONNECTION DIMENSIONS

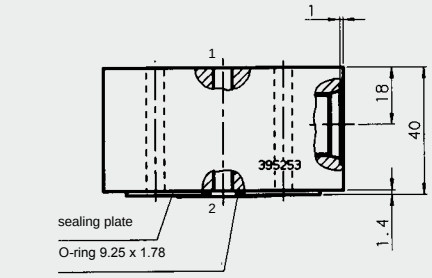
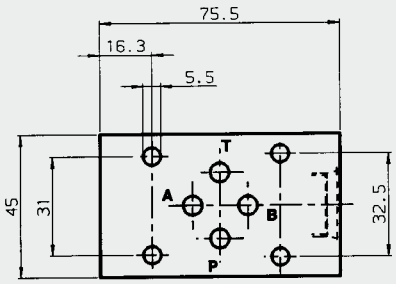
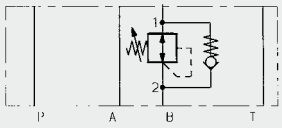
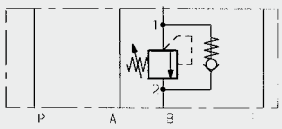
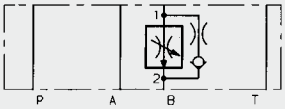
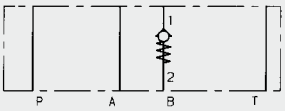
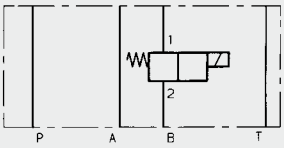
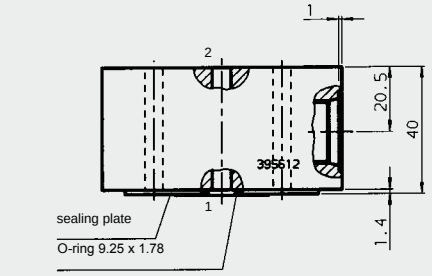
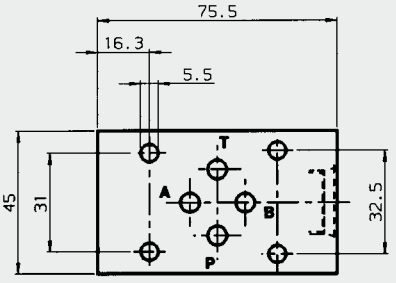
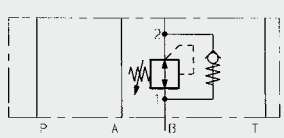
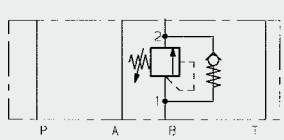
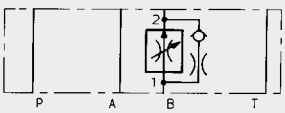
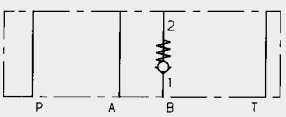
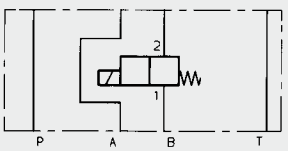
Interface A6 DIN 24340 and CETOP R 35 H-4.2-4-03
Installation height to CETOP RP 99H-4-03
(view onto connection plate)

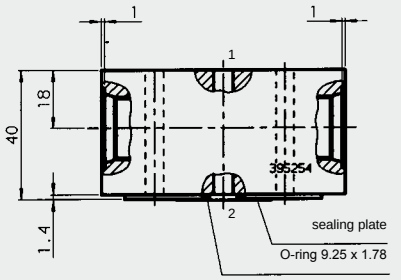
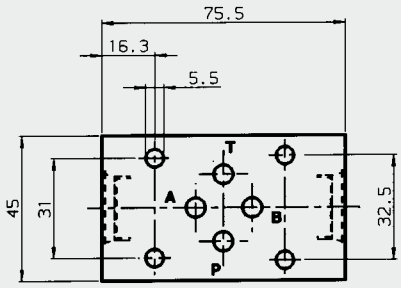
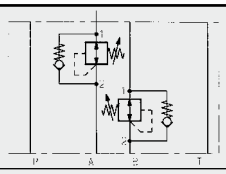
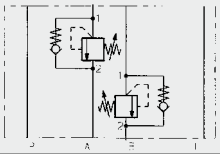
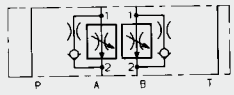
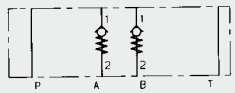
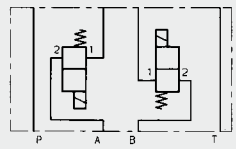
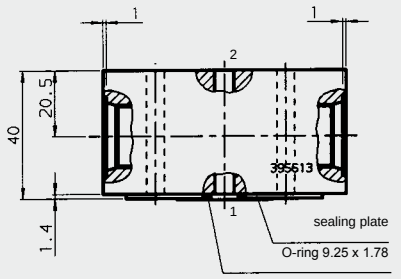
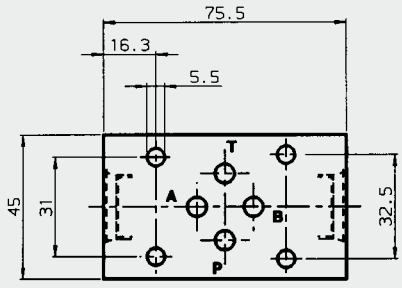
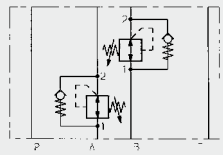
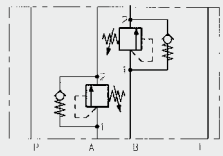
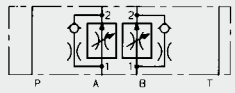
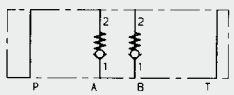
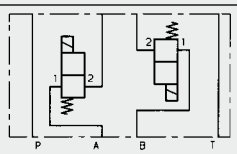


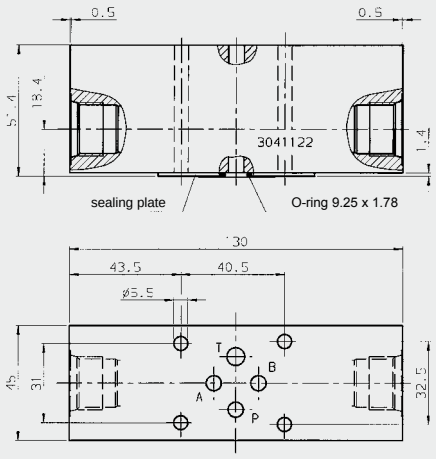
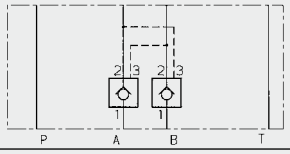
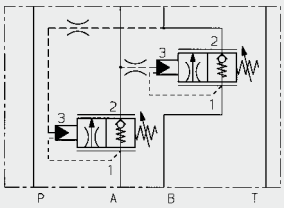
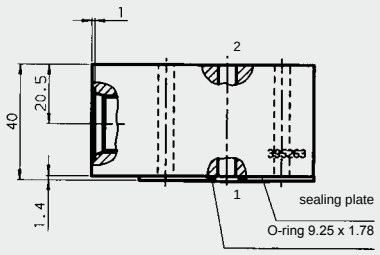
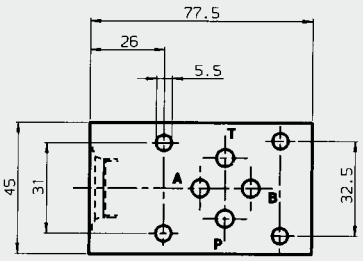
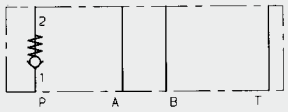
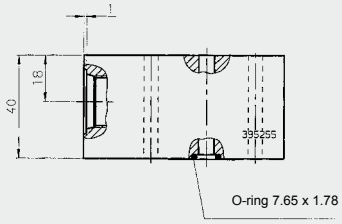
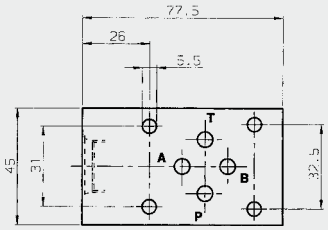
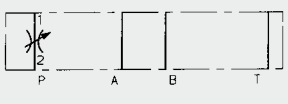
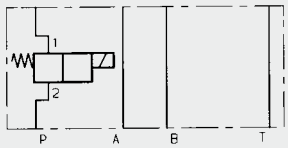
required surface finish
of mounting plate

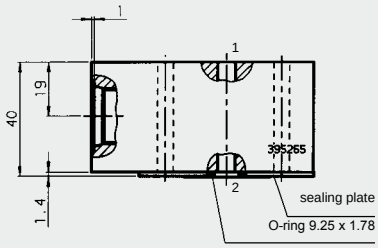
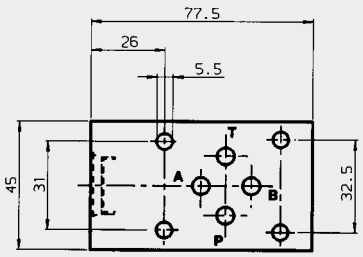
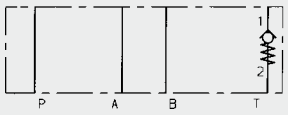
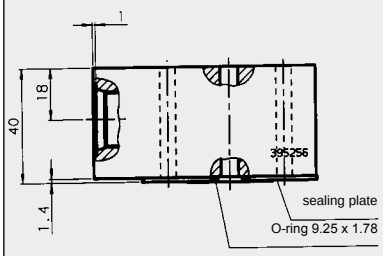
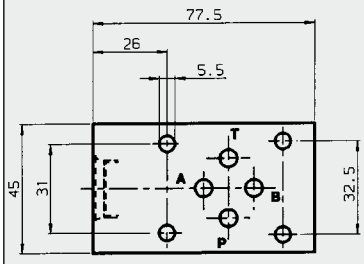
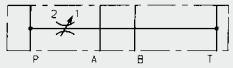
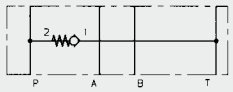
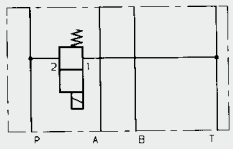
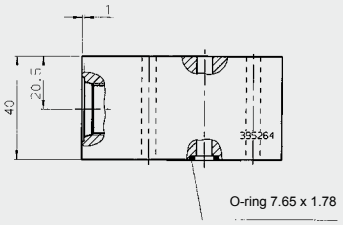
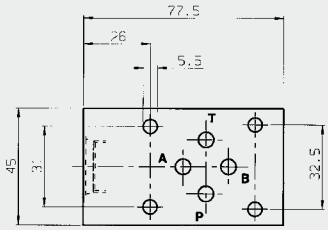
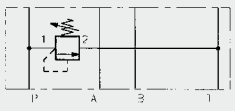
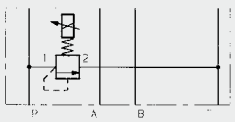
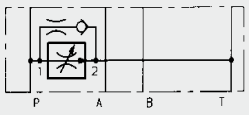


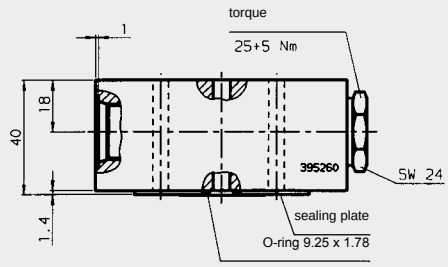
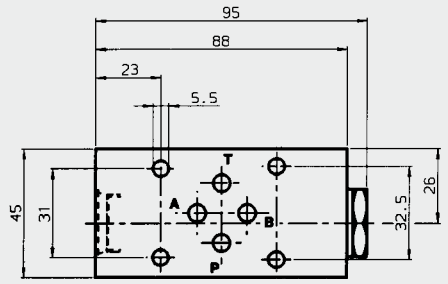
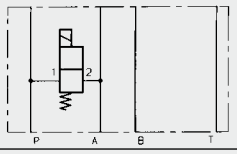
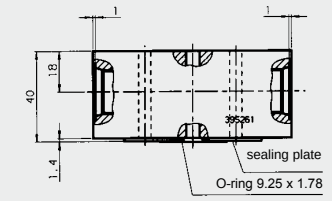
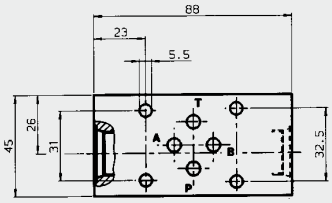
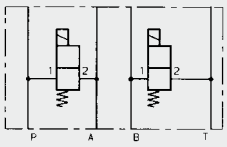
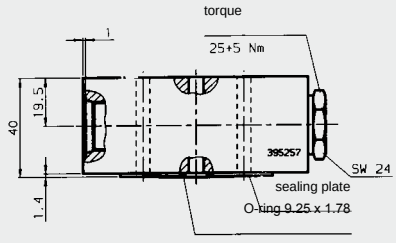
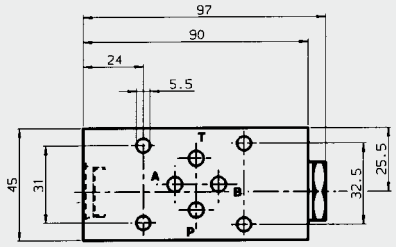
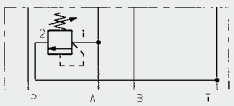
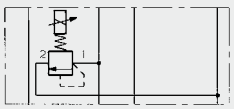
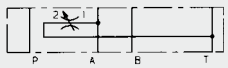
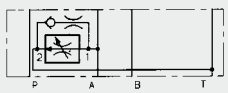
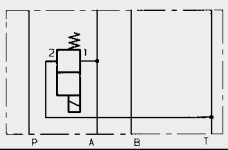
Part No.	Model Code	Dimensions	Cartridge valve Type	Brochure / Data Sheet No.	Symbol
395252	**ZA06020-01X** Cartridge valve in line A	  Weight: 0.92 kg	DSR5E	393400	
			DZ5E	5.166	
			DV5E	5.113	
			SR5E	5.117	
			RV5E	5.175	
			WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	
395611	**ZA06020-10X** Cartridge valve in line A	  Weight: 0.92 kg	DSR5E	393400	
			DZ5E	5.166	
			SR5E	5.117	
			RV5E	5.175	
			WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	

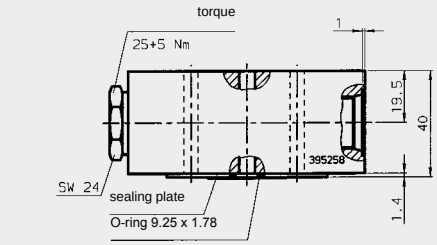
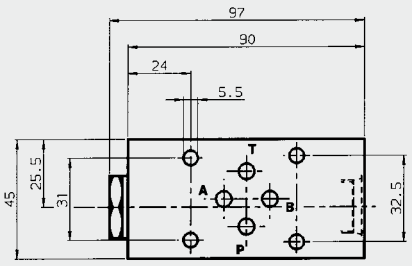
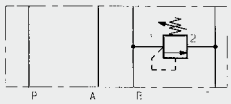
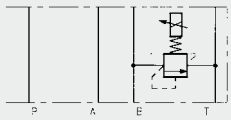
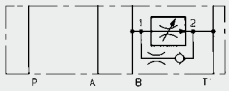
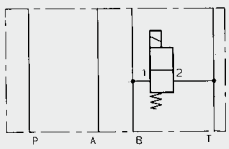
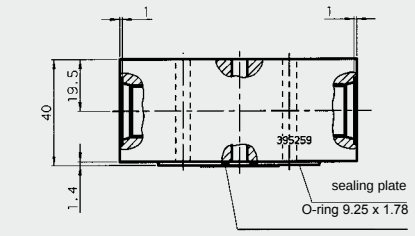
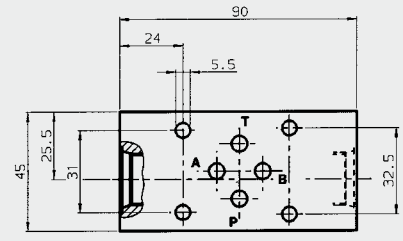
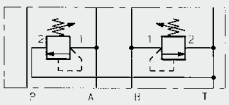
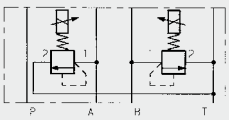
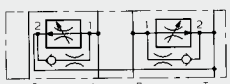
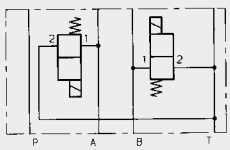
Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
395253	**ZB06020-01X** Cartridge valve in line B	  Weight: 0.92 kg	DSR5E	393400	
			DZ5E	5.166	
			DV5E	5.113	
			SR5E	5.117	
			RV5E	5.175	
			WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	
395612	**ZB06020-10X** Cartridge valve in line B	  Weight: 0.92 kg	DSR5E	393400	
			DZ5E	5.166	
			SR5E	5.117	
			RV5E	5.175	
			WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	

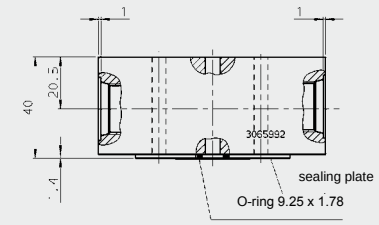
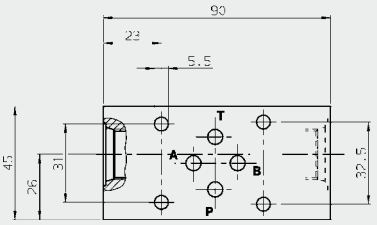
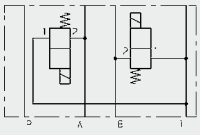
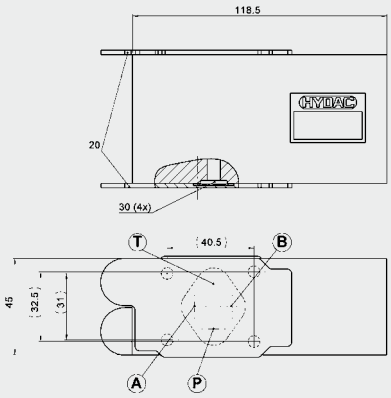
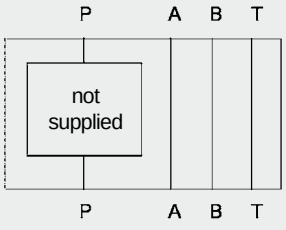
Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
395254	**ZAB06020-01X** Cartridge valve in lines A and B	  Weight: 0.87 kg	DSR5E	393400	
			DZ5E	5.166	
			DV5E	5.113	
			SR5E	5.117	
			RV5E	5.175	
			WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	
395613	**ZAB06020-10X** Cartridge valve in lines A and B	  Weight: 0.87 kg	DSR5E	393400	
			DZ5E	5.166	
			SR5E	5.117	
			RV5E	5.175	
			WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
3041122	**ZAB08021-02X** Cartridge valve in lines A and B	Material: aluminium max. pressure: p_{max} = 210 bar  Weight: 0.69 kg	ERVE08021	5.172	
			SBVE-R½	5.177	
395263	**ZP06020-01X** Cartridge valve in line P	  Weight: 0.91 kg	SR5E	5.117	
			RV5E	5.175	
395255	**ZP06020-10X** Cartridge valve in line P	  Weight: 0.91 kg	DV5E	5.113	
			WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
395265	**ZT06020-01X** Cartridge valve in line T	  Weight: 0.91 kg	RV5E	5.175	
395256	**ZPT06020-01X** Cartridge valve between lines P and T	  Weight: 0.91 kg	DV5E	5.113	
			RV5E	5.175	
			WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	
395264	**ZPT06020-10X** Cartridge valve between lines P and T	  Weight: 0.91 kg	DB4E	5.161	
			PDB06020	5.164	
			SR5E	5.117	

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
395260	**ZAP06020-01X** Cartridge valve between lines A and P	  Weight: 1.08 kg	WSM06020W WSM06020V	5.949	
395261	**ZAPBT06020-01X** Cartridge valve between lines A and P and lines B and T	  Weight: 1.01 kg	WSM06020W WSM06020V	5.949	
395257	**ZAT06020-01X** Cartridge valve between lines A and T	  Weight: 1.04 kg	DB4E	5.161	
			PDB06020	5.164	
			DV5E	5.113	
			SR5E	5.117	
			WSM06020W WSM06020V	5.949	

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
395258	**ZBT06020-01X** Cartridge valve between lines B and T	  Weight: 1.04 kg	DB4E	5.161	
			PDB06020	5.164	
			DV5E	5.113	
			SR5E	5.117	
			WSM06020W WSM06020V	5.949	
395259	**ZABT06020-01X** Cartridge valve between lines A and T and lines B and T	  Weight: 0.99 kg	DB4E	5.161	
			PDB06020	5.164	
			DV5E	5.113	
			SR5E	5.117	
			WSM06020W WSM06020V	5.949	

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
3065992	**ZABT06020-02X**	  Weight: 0.98 kg	WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	
3578184	**ZP10121**		DMM10121	5.169.9	

7. SUBPLATE BODIES

7.1. MODEL CODE

D AB 06020 01 X

Subplate body
with interface A6 DIN 24340

Function of each working line
see symbol under point 7.3

Cartridge valve cavity
see valve brochure

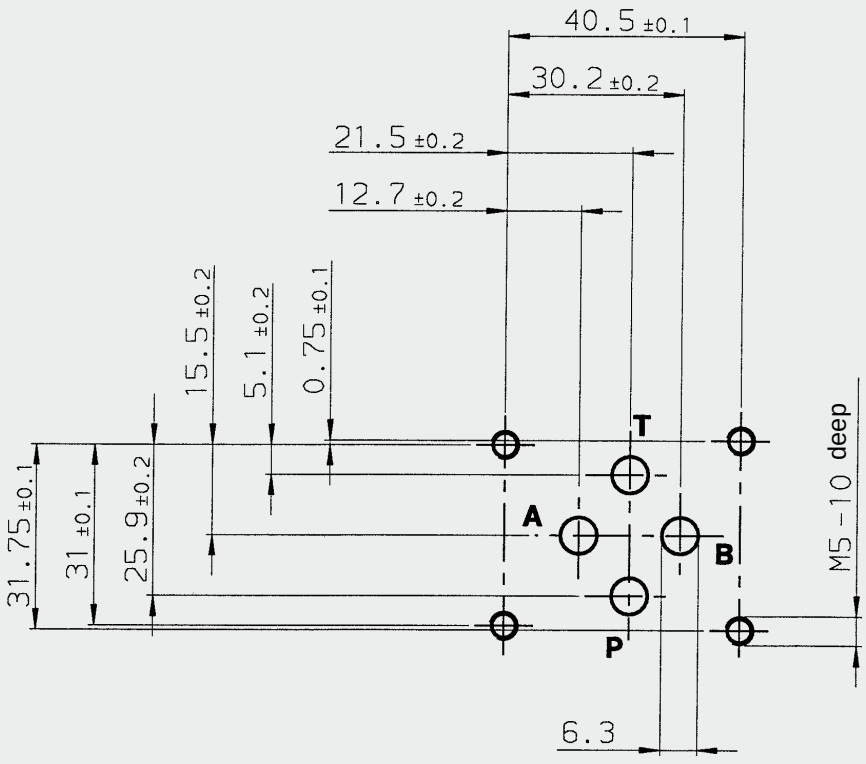
Type
(describes individual condition; e. g. surface, dimensions, functional properties ...)

11	=	orifice dia. 1.1	in line P
12	=	orifice dia. 1.2	
13	=	orifice dia. 1.3	
15	=	orifice dia. 1.5	
30	=	check valve insert	

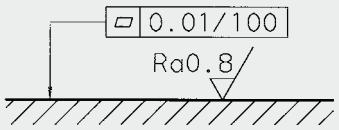
Series
(determined by manufacturer)

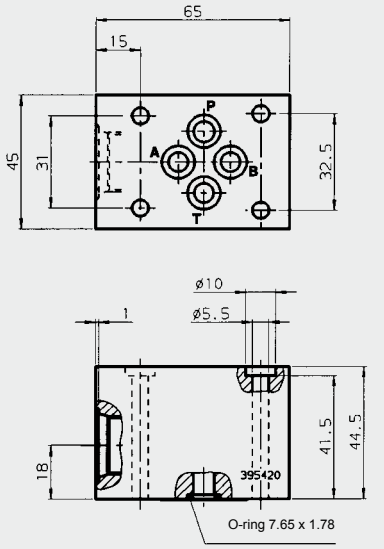
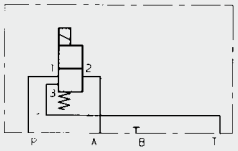
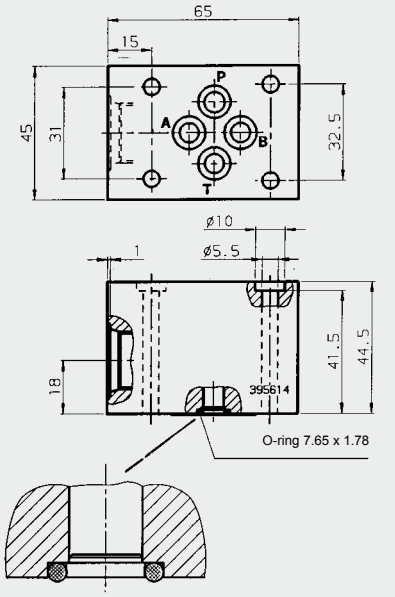
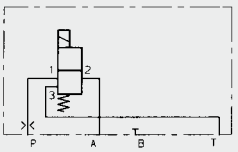
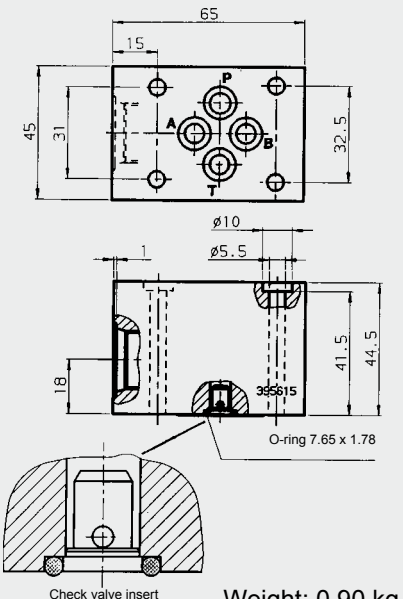
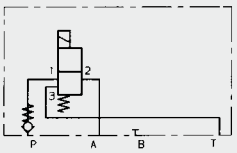
7.2. CONNECTION DIMENSION

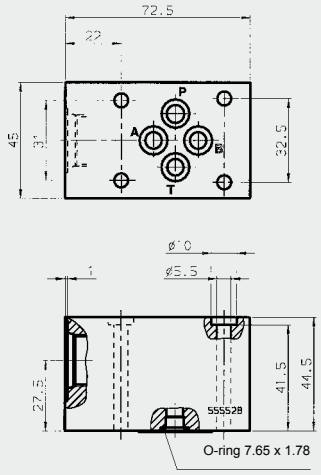
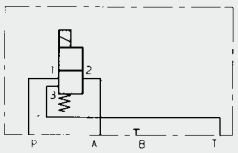
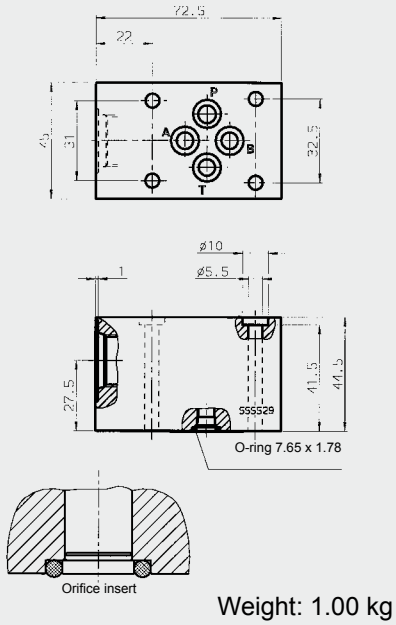
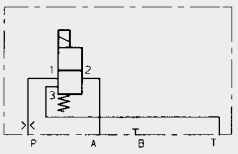
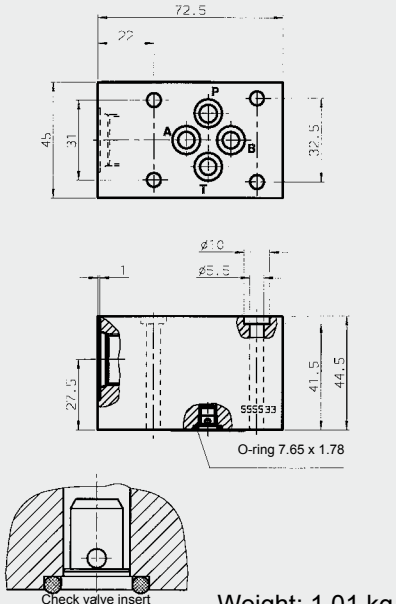
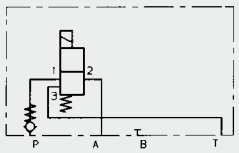
Interface A6 DIN 24340 and CETOP R 35 H-4.2-4-03
Installation height to CETOP RP 99H-4-03
(view onto connection plate)

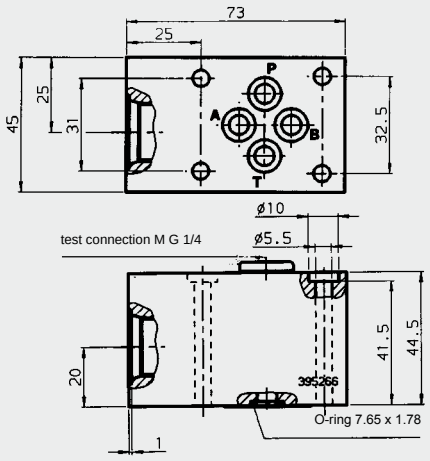
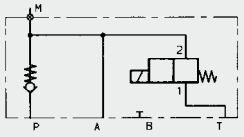
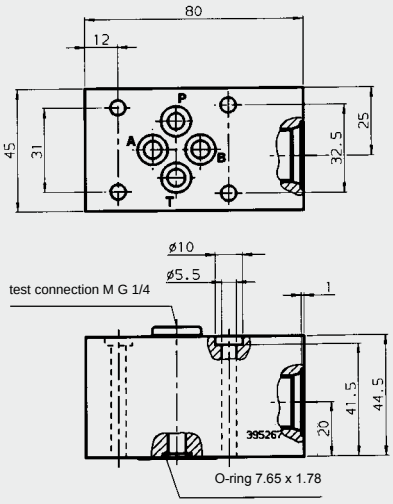
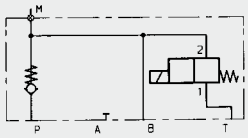


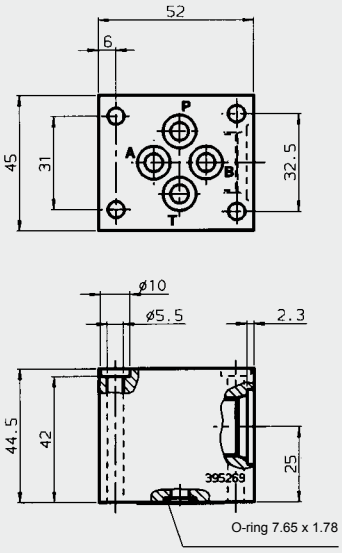
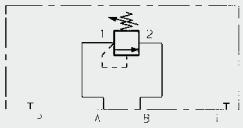
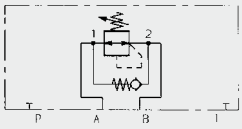
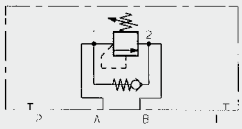
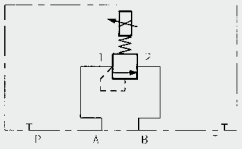
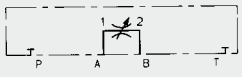
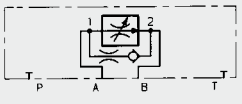
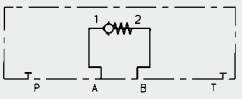
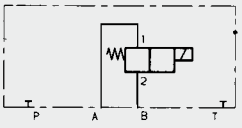
required surface finish
of mounting plate

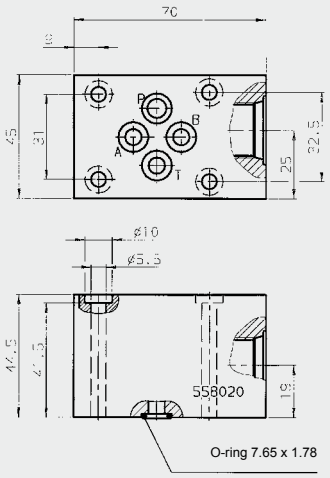
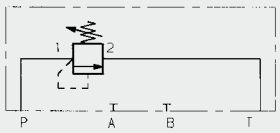
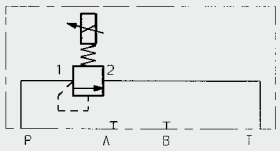
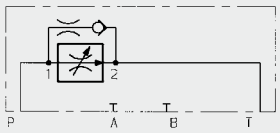
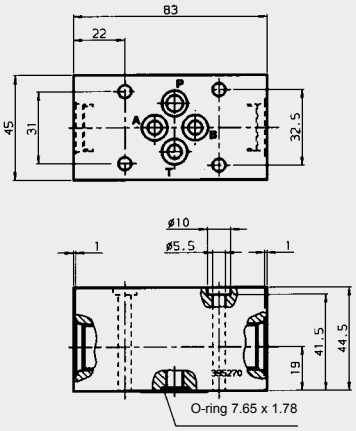
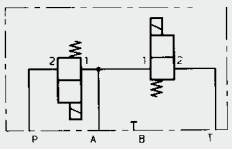
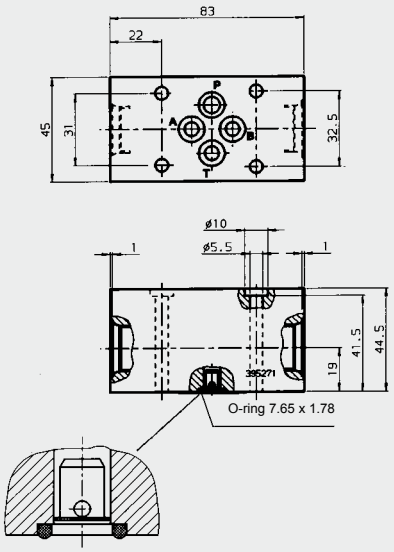
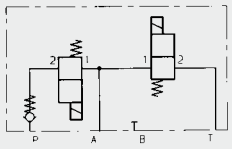


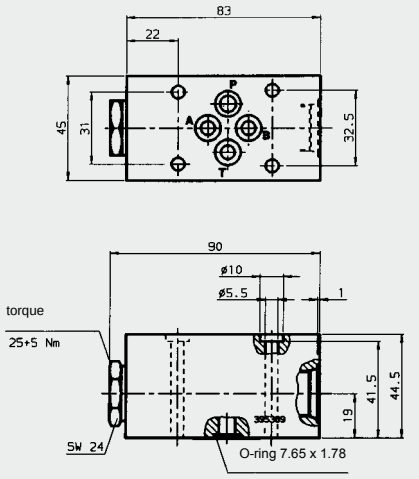
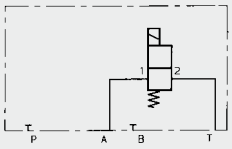
Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
395420	**D03230-01X**	 Weight: 0.89 kg	WSE 3	5.203	
395614	**D03230-11X**	 Weight: 0.89 kg	WSE 3	5.203	
395621	**D03230-12X**				
395622	**D03230-13X**				
395623	**D03230-15X**				
	For model code see point 7.1 For curves see point 7.4				
395615	**D03230-30X**	 Weight: 0.90 kg	WSE 3	5.203	
	For curves see point 7.4				

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
555528	**D08130-01X**	 Weight: 1.00 kg	PDM08130 WSEC08130 WSED08130 WKM08130C WKM08130D WKM08130L WSM08130D	5.168 5.935 5.934 5.976 5.977	
555529	**D08130-11X**	 Weight: 1.00 kg	PDM08130 WSEC08130 WSED08130 WKM08130C WKM08130D WKM08130L WSM08130D	5.168 5.935 5.934 5.976 5.977	
555530	**D08130-12X**				
555531	**D08130-13X**				
555532	**D08130-15X**				
	For model code see point 7.1 For curves see point 7.4				
555533	**D08130-30X**	 Weight: 1.01 kg	PDM08130 WSEC08130 WSED08130 WKM08130C WKM08130D WKM08130L WSM08130D	5.168 5.935 5.934 5.976 5.977	
	For curves see point 7.4				

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
395266	**DA06020-01X** Cartridge valve between A and T with check valve in line P	 Weight: 0.98 kg	WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	
395267	**DB06020-01X** Cartridge valve between B and T with check valve in line P	 Weight: 0.98 kg	WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
395269	**DAB06020-01X** Cartridge valve between A and B	 Weight: 0.69 kg	DB4E	5.161	
			DSR5E	393400	
			DZ5E	5.166	
			PDB06020	5.164	
			DV5E	5.113	
			SR5E	5.117	
			RV5E	5.175	
			WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
558020	**DPT06020-01X** Cartridge valve between P and T	 Weight: 0.90 kg	DB4E	5.161	
				5.164	
			PDB06020 SR5E	5.117	
395270	**DPAT06020-01X** Cartridge valve between P and A and between A and T	 Weight: 1.10 kg	WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	
			between A and T only symbol V and W		
395271	**DPRAT06020-01X** Cartridge valve between P and A and between A and T with check valve in port P	 Weight: 1.11 kg	WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	
			between A and T only symbol V and W		

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
395389	**DAT06020-01X** Cartridge valve between A and T	 Weight: 1.17 kg	WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949	

7.4. HYDRAULIC DETAILS

Subplate body type D
Either orifices or a check valve can be fitted into port P as an additional function. Both at the same time is not possible.

7.4.1. **Orifice insert**
An orifice is used when unacceptably high flow rates can overload the valve. This is the case for example with accumulator
operation or when used as a valve
for internal pilot oil control.

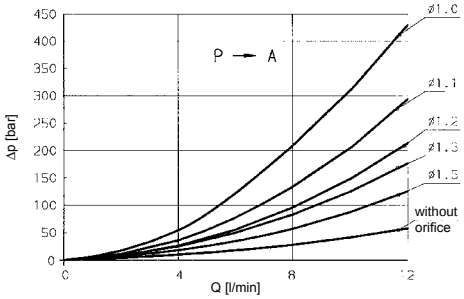
Irrespective of the maximum pressure, the orifice diameter must
be selected so that the permissible
flow rate of the cartridge valve used
is not exceeded.

7.4.1.1 **Pressure drop curves**
Dependent on flow rate, measured
at ν = 34 mm²/s and t_{oil} = 46 °C

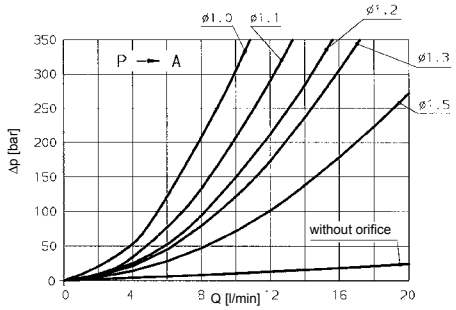
7.4.2. **Check valve insert**
The check valve allows free flow in only one direction and shuts off the other direction leak-free. This prevents an uncontrolled return flow or a pressure return into the P-line. Thus it prevents mutual interference of valves connected in parallel.

7.4.2.1 **Pressure drop curves**
Dependent on flow rate, measured at ν = 34 mm²/s and t_{oil} = 46 °C

D03230–… with WSE30C…



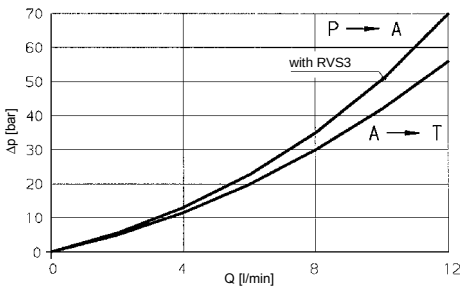
D08130–… with WSEC08130–…



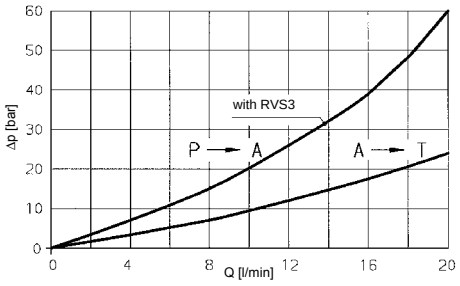
8. DESIGN RECOMMENDATIONS

Sandwich bodies and subplate bodies with two inlet ports for cartridge valves can also be provided with different valve functions.

D03230–… with WSE3E0C…



D08130–… with WSEC08130–…



9. NOTES

The information in this brochure relates to the operating conditions and applications described.
For applications and operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

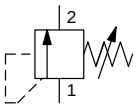
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

HYDAC INTERNATIONAL

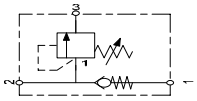
Compact Hydraulics
Minivalves

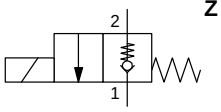
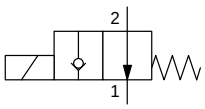
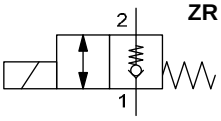
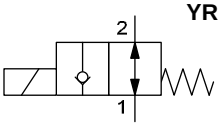
E 51.400.1 /01.13

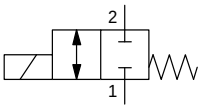
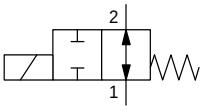
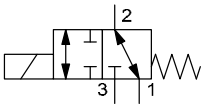
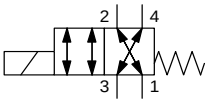
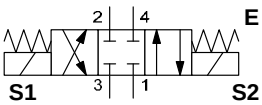
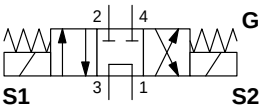
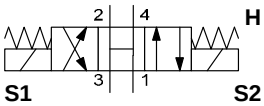
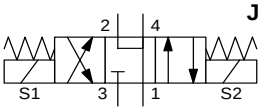
Content

Pressure valves	Symbol	Type	Q_{max} l/min)	P_{max} (bar)	Cavity		Brochure no.
Pressure relief valve direct acting		**DB06A-01**	15	350	**U**	FC06-2	5.140.0
		DB06C-01	20	350	**U**	FC06-2	5.141.0

Flow valves	Symbol	Type	Q_{max} (l/min)	P_{max} (bar)	Cavity		Brochure no.
2-way flow control valve		**SR06-01**	15	350	**U**	FC06-2	5.142.0

Check valves	Symbol	Type	Q_{max} l/min)	P_{max} (bar)	Cavity		Brochure no.
Check valve		**RV06A-01**	20	350	**U**	FC06-2	5.143.0
Check valve with integrated pressure relief		**RV06B-01**	15	350	**U**	FC06-3	5.144.0
		RV06C-01	20	350	**U**	FC06-3	5.145.0

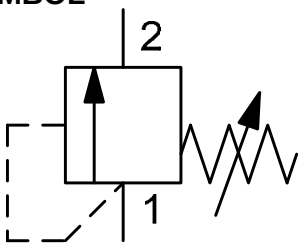
Directional poppet valves	Symbol	Type	Q_{max} (l/min)	P_{max} (bar)	Cavity		Brochure no.
2/2-poppet valve normally closed	**Z** 	**WS06Z-01**	20	350	**U**	FC06-2	5.146.0
2/2-poppet valve normally open	**Y** 	**WS06Y-01**	20	350	**U**	FC06-2	5.147.0
2/2-poppet valve normally closed	**ZR** 	**WS06ZR-01** **Part no. 2610333**	20	350	**U**	FC06-2	cf
2/2-poppet valve normally open	**YR** 	**WS06YR-01** **Part no. 2610394**	20	350	**U**	FC06-2	cf

Directional spool valves	Symbol	Type	Q_{max} (l/min)	p_{max} (bar)	cavity		Brochure no.
2/2-spool valve, normally closed	W 	WK06W-01	10	350	U	FC06-2	5.148.0
2/2-spool valve, normally open	V 	WK06V-01	15	350	U	FC06-2	5.156.0
3/2-spool valve	C 	WK06C-01	10	350	U	FC06-3	5.149.0
4/2-spool valve	Y 	WK06Y-01	10	350	U	FC06-4	5.150.0
4/3-spool valve	E 	WK06E-01	11	350	U	FC06-4	5.151.0
4/3-spool valve	G 	WK06G-01	7	350	U	FC06-4	5.152.0
4/3-spool valve	H 	WK06H-01	9	350	U	FC06-4	5.153.0
4/3-spool valve	J 	WK06J-01	11	350	U	FC06-4	5.154.0

Coils for Minivalves	Type (Part No.)	Nominal voltage	Electrical connection	Brochure No.
Plug Type G	2610160	12 VDC	Plug to EN 175301-803 Form B, DIN 43650B	5.155.0
	2610161	24 VDC		
	2610156	105 VDC	Plug for DC coils Part No. 2600570	
	2610159	205 VDC		
*Plug with rectifier	2610156 + 2600582*	115 VAC	Plug with integrated rectifier for AC coils Part No. 2600582	
(see right side)	2610159 + 2600582*	230 VAC		
Plug Type N	2610149	12 VDC	Deutsch plug, axial	5.155.0
	2610150	24 VDC		
Plug Type L	2610151	12 VDC	Coil with 2 leadwires 0,75mm², 450 mm long	5.155.0
	2610162	24 VDC		

HYDAC INTERNATIONAL

SYMBOL

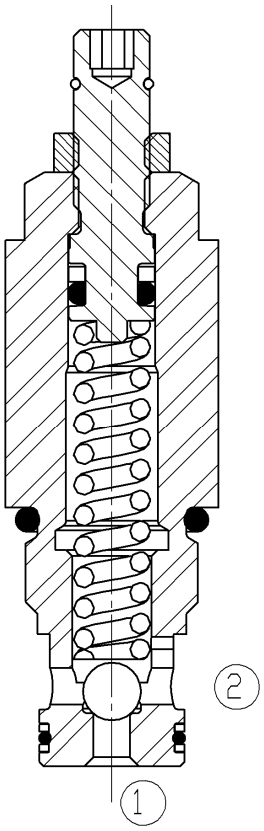


up to 15 l/min
up to 350 bar

Pressure Relief Valve
Ball type, direct acting
Cartridge-Minivalve – 350 bar
DB06A-01

UNF

FUNCTION



The Pressure relief valve DB06A is a direct acting, spring loaded ball valve. Its job is to limit the pressure in the system. The spring acts with a certain force on the ball and presses it on the valve seat. On the opposite side the system pressure works at port 1. If the hydraulic force is lower than the spring pressure the valve remains closed. Only if the force is higher, the valve opens and the flow will be let to port 2 (tank). If the system pressure is equal to the spring pressure the valve closes again.
Attention: Pressure at port 2 increases the opening pressure! If ports are interchanged or the pressure adjustment is higher than the operating pressure, the function of the valve is invalid.

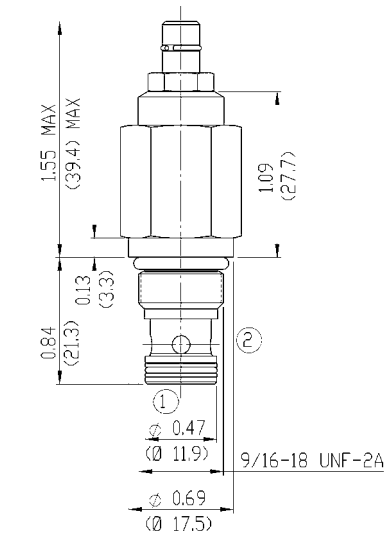
FEATURES

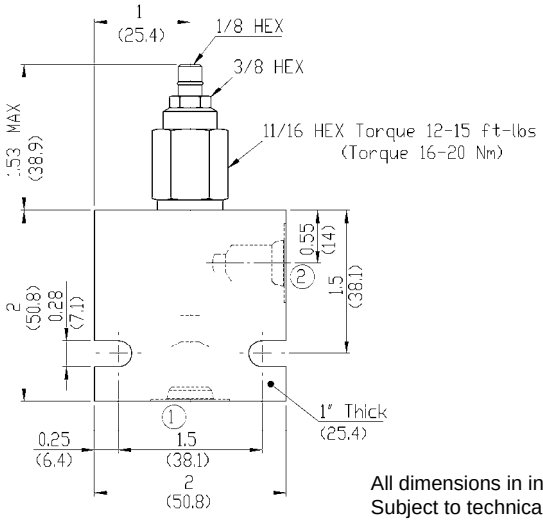
- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extend service life
- Quick response
- Adjustable under full system pressure
- Adjustable across the entire pressure range
- Various pressure ranges up to 350 bar
- Foreseen for the maximal pressure protection of the system

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 15 l/min
Pressure ranges:	0 up to 125 bar 0 up to 210 bar 35 up to 350 bar
Leakage:	leakage-free, < max. 0,35 cm³/min at 75% nominal pressure
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
Installation:	no orientation restrictions
Materials:	Valve body: steel with hardened work surfaces Ball: hardened steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-2
Weight:	0,068 kg

DIMENSIONS

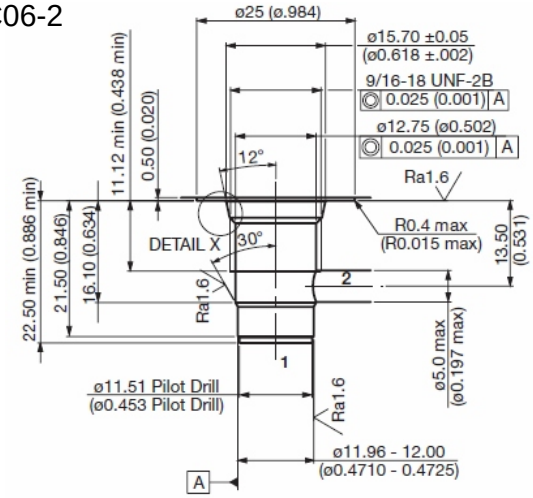


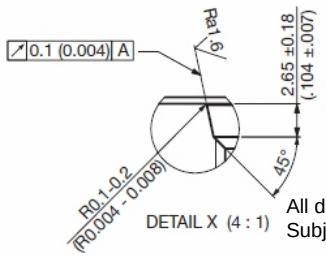


All dimensions in inch (mm)
Subject to technical modification

CAVITY

FC06-2





All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582046
Countersink	2582047

MODEL CODE

DB06A – 01 – C – N – 300 V 100

Basic model
Pressure relief valve, direct acting

Type
01 = Standard

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Pressure range
180 = 0 up to 125 bar (1800PSI)
300 = 0 up to 210 bar (3000PSI)
500 = 35 up to 350 bar (5000PSI)

Adjustment option
V = adjustable by tool

Setting
omission = 50% of max. Pressure
100 = factory preset, pressure in PSI (/10)
Other pressures on request

Standard models

Name	Part No.
DB06A-01-C-N-180V	2610428
DB06A-01-C-N-330V	2610235
DB06A-01-C-N-500V	2610155

Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH062-SB2	3740528	steel, zinc plated	G1/4	420 bar
FH062-AB2	3741297	Alu, anodized	G1/4	245 bar

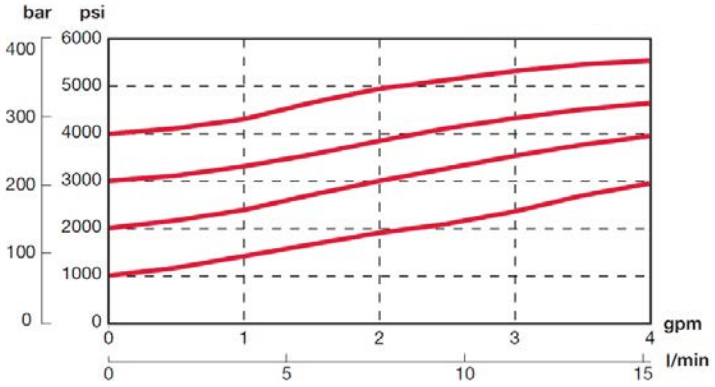
other line bodies on request

Seal kits

Code	Part No.
Seal kit-NBR	2610184
Seal kit-FKM	2610185

PERFORMANCE

Measured at 28 mm²/s and T oil = 38°C



Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

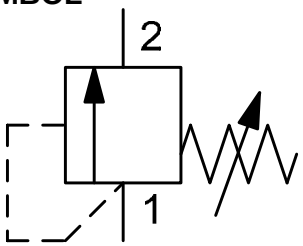
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

Pressure Relief Valve
Poppet type, direct acting
Cartridge-Minivalve – 350 bar
DB06C-01

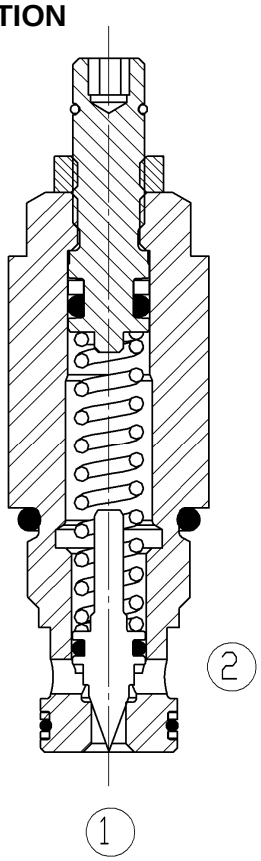
UNF

SYMBOL



up to 20 l/min
up to 350 bar

FUNCTION



The Pressure relief valve DB06C is a direct acting, spring loaded valve with damped characteristics. Its job is to limit the pressure in the system. The spring acts with a certain force on the piston and presses it on the valve seat. On the opposite side the system pressure works at port 1. If the hydraulic force is lower than the spring pressure the valve remains closed. Only if the force is higher, the valve opens and the flow will be let to port 2 (tank). If the system pressure is equal to the spring pressure the valve closes again.
Attention: Pressure at port 2 increases the opening pressure! If ports are interchanged or the pressure adjustment is higher than the operating pressure, the function of the valve is invalid.

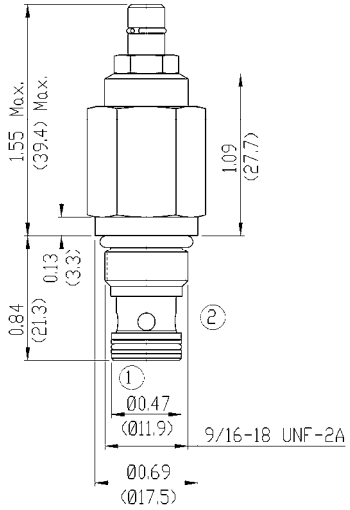
FEATURES

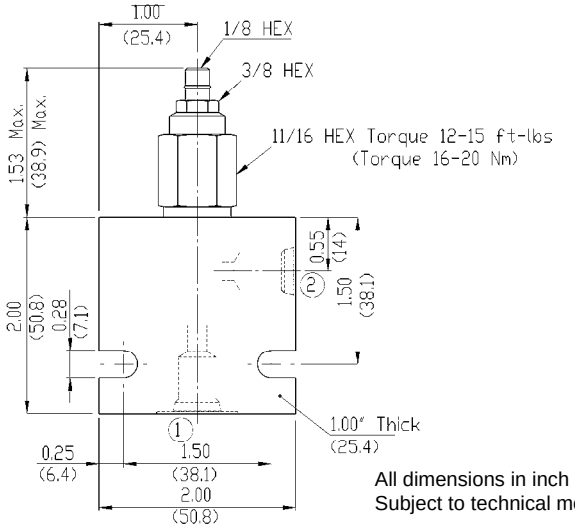
- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extend service life
- Fast response
- Adjustable under full system pressure
- Adjustable over the u.m. pressure range
- Various pressure ranges up to 350 bar
- Poppet type valve with damped characteristics

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 20 l/min
Pressure ranges:	0 up to 125 bar 0 up to 210 bar 35 up to 350 bar
Leakage:	leakage-free, < max. 0,35 cm³/min at 75% nominal pressure
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Materials:	Valve body: steel with hardened work surfaces Piston: hardened and ground steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-2
Weight:	0,068 kg

DIMENSIONS

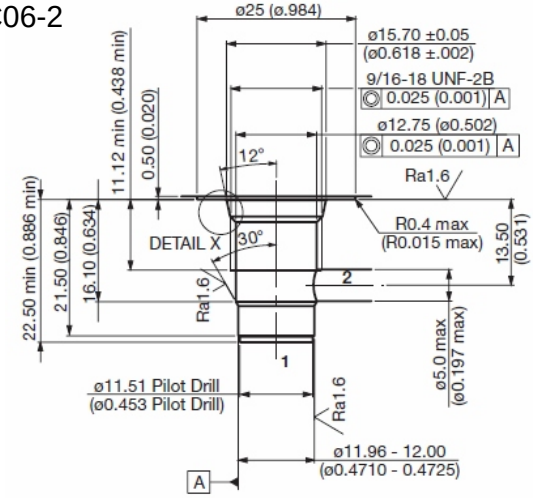


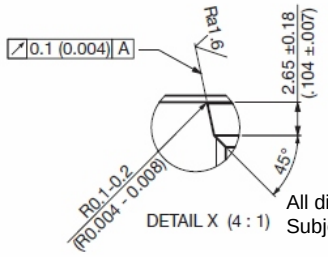


All dimensions in inch (mm)
Subject to technical modification

Cavity

FC06-2





All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582046
Countersink	2582047

MODEL CODE

DB06C – 01 – C – N – 400 V 300

Basic model
Pressure relief valve, direct acting

Type
01 = Standard

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Pressure range
180 = 0 up to 125 bar (1800PSI)
300 = 0 up to 210 bar (3000PSI)
500 = 35 up to 350 bar (5000PSI)

Adjustment option
V = adjustable by tool

Setting
omission = 50% of max. Pressure
300 = factory preset pressure in PSI (/10)
Other pressures on request

Standard models

Name	Part No.
DB06C-01-C-N-180V	2610322
DB06C-01-C-N-300V	2610324
DB06C-01-C-N-500V	2610342

Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH062-SB2	3740528	steel, zinc plated	G1/4	420 bar
FH062-AB2	3741297	Alu, anodized	G1/4	245 bar

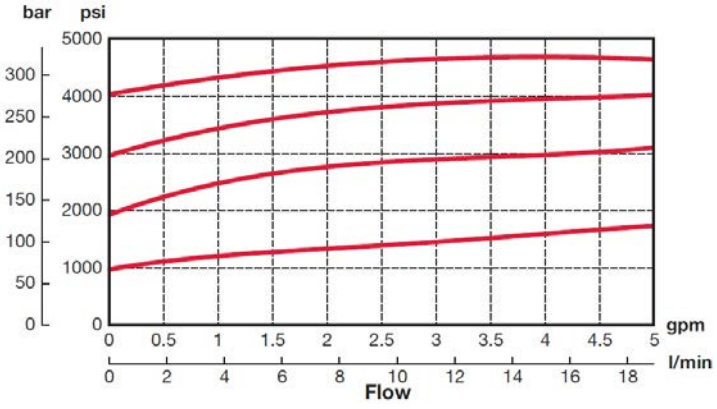
other line bodies on request

Seal kits

Code	Part No.
Seal kit-NBR	2610184
Seal kit-FKM	2610185

PERFORMANCE

Measured at 28 mm²/s and T oil = 38°C



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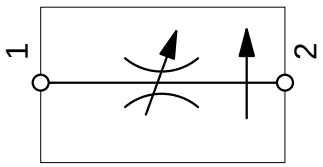
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

SYMBOL

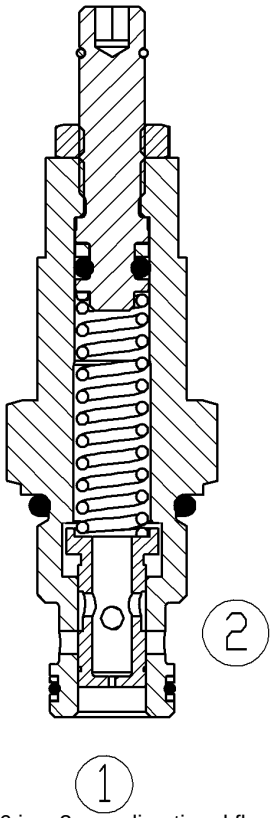


Flow Regulator
Spool type, direct acting
Cartridge-Minivalve – 350 bar
SR06-01

UNF

up to 15 l/min
up to 350 bar

FUNCTION



The SR06 is a 2 way directional flow control-valve, which keeps the nominal flow constant by means of a control function. The nominal flow is almost independent of the pressure and the viscosity. The valve is equipped with fixed orifice and integrated pressure compensator. The measuring orifice determines the nominal flow-adjustment range which is adjustable within a small range. If there is flow from port 1 to 2, a pressure differential is created at the measuring orifice. If the pressure compensator is in regulating position there is a balance of pressure differential at control piston surface on the one side and spring force on the other side. With rising flow (higher pressure differential) the cross-section of the regluating oricifice will be controlled that there is a balance of forces. Hereby a constant outlet flow will be reached.

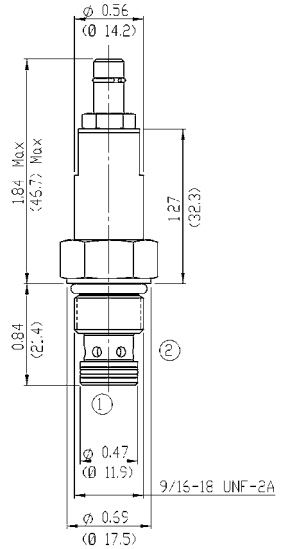
FEATURES

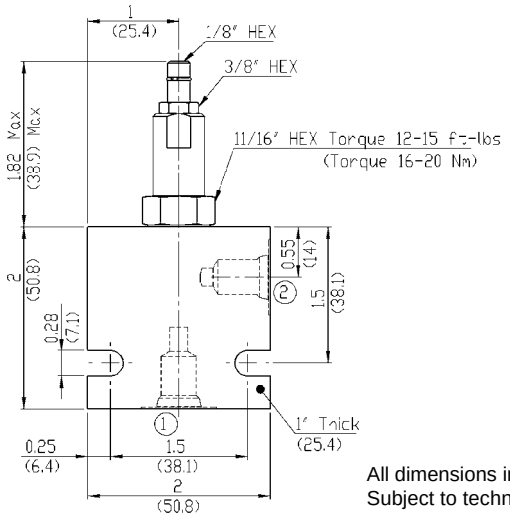
- All exposed surfaces corrosion-proof
- Pressure compensated flow control of consumers
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extend service life
- Superior stability throughout the entire flow range

SPECIFICATIONS

Operating pressure:	max. 350 bar at port 1 (pump) max. 210 bar at port 2 (consumer)
Nominal flow:	max. 15 l/min
Flow ranges:	0,25 up to 1,00 l/min 1,00 up to 3,80 l/min 3,80 up to 15,0 l/min
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Materials:	Valve body: steel with hardened work surfaces Piston: hardened and ground steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-2
Weight:	0,023 kg

DIMENSIONS

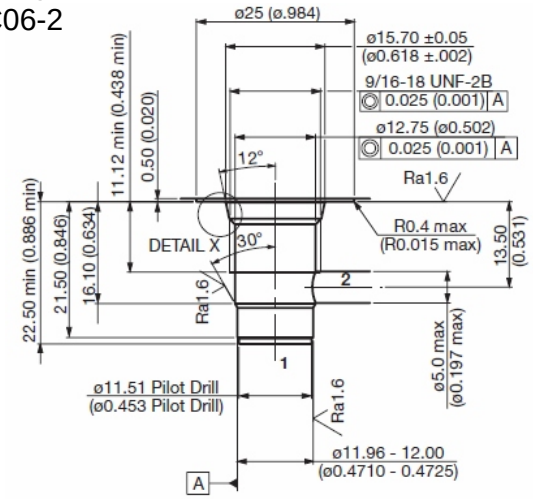


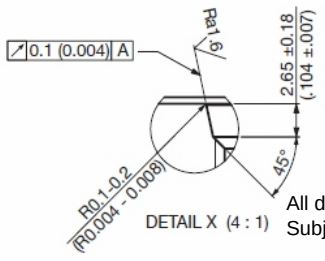


All dimensions in inch (mm)
Subject to technical modification

Cavity

FC06-2





All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582046
Countersink	2582047

MODEL CODE

SR06 – 01 – C – N – 0.3 V 0.1

Basic model
flow control valve, direct acting

Type
01 = Standard

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Nominal flow range
0.3 = 0.25 up to 1,00 l/min (0.3 gpm)
1.0 = 1.00 up to 3,80 l/min (1.0 gpm)
4.0 = 3.80 up to 15,0 l/min (4.0 gpm)

Adjustment option
V = adjustable by tool

Setting
none = 50% of maximal Nominal flow
0.1 = 0.23 l/min – optional pre-adjustment on request

Standard models

Name	Part No.
SR06-01-C-N-0.3V	2610213
SR06-01-C-N-1.0V	2610194
SR06-01-C-N-4.0V	2610214

Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH062-SB2	3740528	steel, zinc plated	G1/4	420 bar
FH062-AB2	3741297	Alu, anodized	G1/4	245 bar

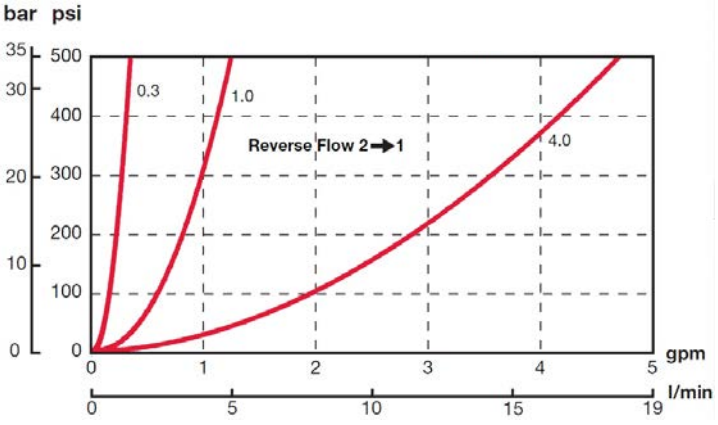
other line bodies on request

Seal kits

Code	Part No.
Seal kit-NBR	2610184
Seal kit-FKM	2610185

PERFORMANCE

Measured at 28 mm²/s and T oil = 38°C



Annotation
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At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

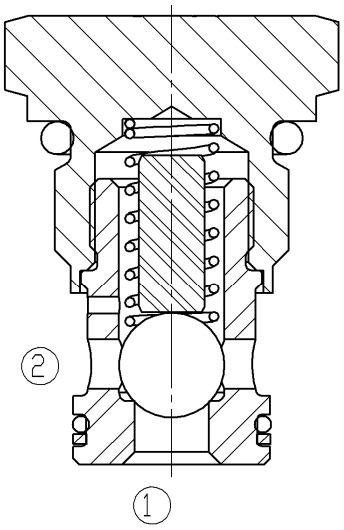
Check Valve
Ball type
Cartridge-Minivalve – 350 bar
RV06A-01

UNF

SYMBOL

up to 20 l/min
up to 350 bar

FUNCTION



The check valve RV06A is a direct acting, spring loaded ball valve.
In the valve the spring holds the ball in closed position and blocks therefore from port 2 to 1. The valve opens, if the pressure at port 1 is higher than the pressure at port 2 including the spring force.

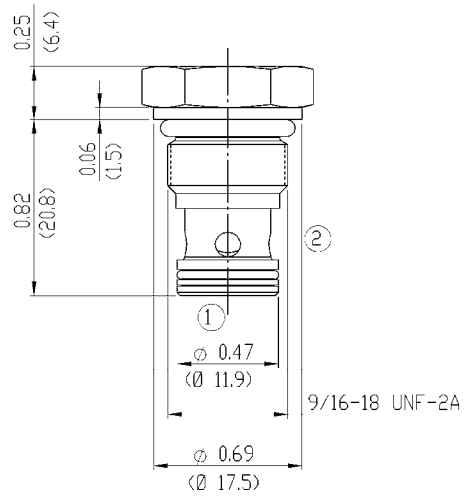
FEATURES

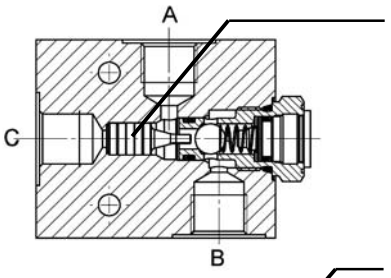
- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extend service life
- Superior stability throughout the entire flow range

SPECIFICATIONS

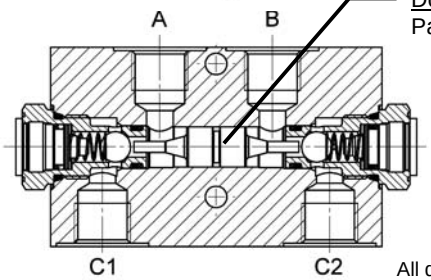
Operating pressure:	max. 350 bar
Nominal flow:	max. 20 l/min
Cracking pressures:	0,35 bar 2,10 bar
Leakage:	leakage-free, < max. 0,35 cm³/min at nominal pressure
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
Installation:	no orientation restrictions
Materials:	Valve body: steel with hardened work surfaces Ball: hardened steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-2
Weight:	0,045 kg

DIMENSIONS





Optional
Piston for pilot–to-open
Single side
Part No. 2610216

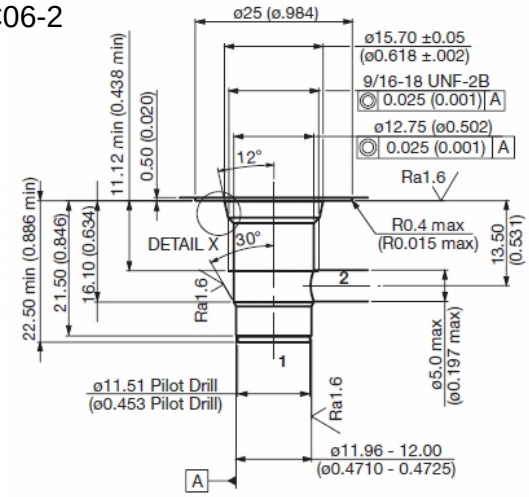


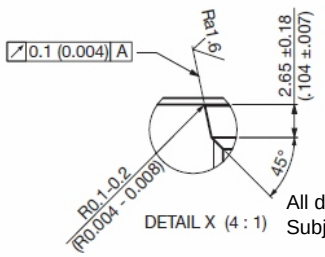
Double side
Part No. 2610217

All dimensions in inch (mm)
Subject to technical modification

Cavity

FC06-2





All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582046
Countersink	2582047

MODEL CODE

RV06A – 01 – C – N – 30

Basic model
Check valve

Type
01 = Standard

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Setting
5 = 0.35 bar (5 PSI)
15 = 1.0 bar (15 PSI)
30 = 2.1 bar (30 PSI)
70 = 4.8 bar (70 PSI)

Standard models

Name	Part No.
RV06A-01-C-N-05	2610212
RV06A-01-C-N-30	2610154

Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH062-SB2	3740528	steel, zinc plated	G1/4	420 bar
FH062-AB2	3741297	Alu, anodized	G1/4	245 bar

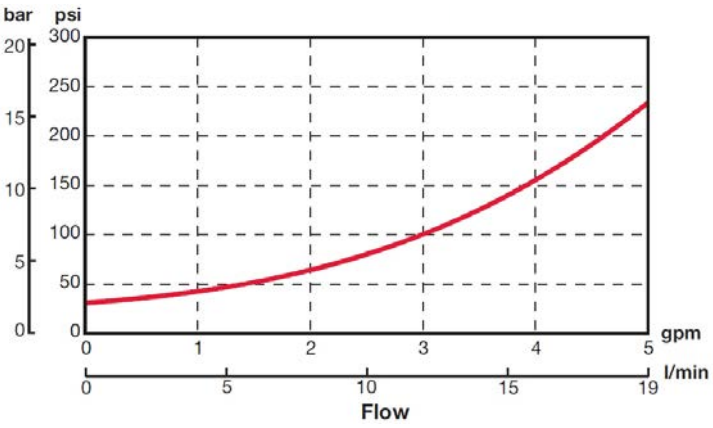
other line bodies on request

Seal kits

Code	Part No.
Seal kit-NBR	2610184
Seal kit-FKM	2610185

PERFORMANCE

Measured at 28 mm²/s and T oil = 38°C



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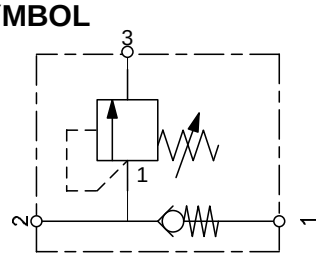
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

SYMBOL

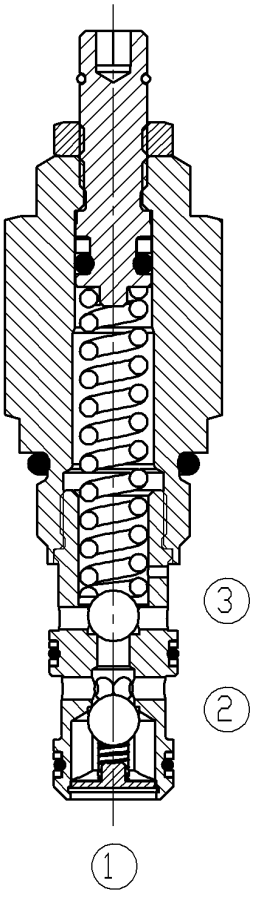


up to 15 l/min
up to 350 bar

Check Valve
Ball type
with pressure relief function
Cartridge-Minivalve – 350 bar
RV06B-01

UNF

FUNCTION



The check valve RV06B is a direct acting, spring loaded ball valve with integrated pressure relief valve.
If there is no flow the spring holds the ball in closed position and blocks therefore flow from port 1 to 2. The check valve opens, if the pressure at port 2 is higher than the pressure at port 1 including the spring force. If the pressures rises in the inlet pipe over the pre-adjusted pressure the relief valve opens to tank. Any pressure at port 3 is additive to the relief pressure setting.

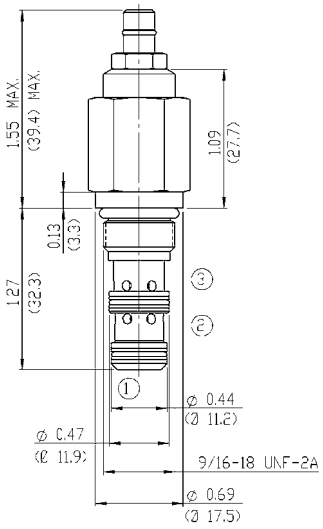
FEATURES

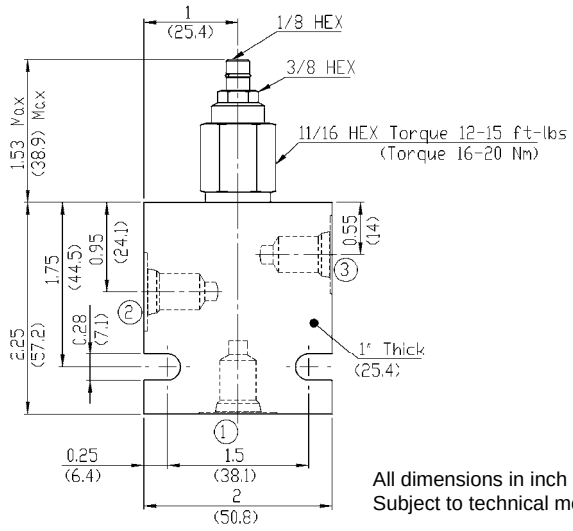
- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extend service life
- Combination of two functions in one valve
- Pressure ranges up to 350 bar
- adjustable under full pressure
- fast closing
- protecting the system and the pump before pressure peaks

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 15 l/min
Pressure ranges (DB):	0 up to 125 bar 0 up to 210 bar 0 up to 350 bar
Cracking pressure (Che ckfunction):	0,35 bar
Leakage:	leakage-free, < max. 0,35 cm³/min at 75% nominal pressure
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
Installation:	no orientation restrictions
Materials:	Valve body: steel with hardened work surfaces Ball: hardened steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-3
Weight:	0,027 kg

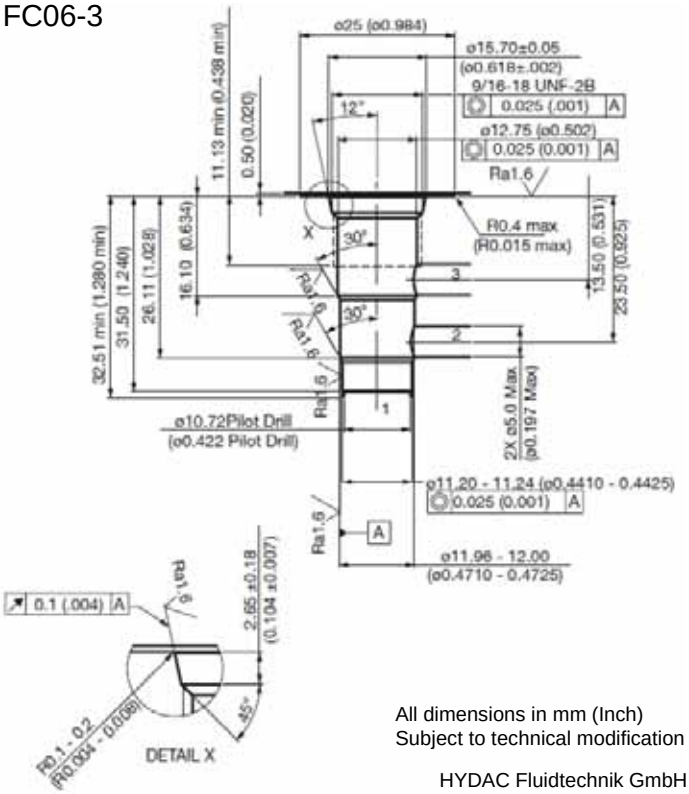
DIMENSIONS





All dimensions in inch (mm)
Subject to technical modification

Cavity
FC06-3



All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582050
Countersink	2582051

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

RV06B – 01 – C – N – 300 V 100

Basic model
Check valve, direct acting

Type
01 = Standard

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Pressure ranges
180 = 0 up to 125 bar (3000 PSI)
300 = 0 up to 210 bar (3000 PSI)
500 = 0 up to 350 bar (5000 PSI)

Adjustment option
V = adjustable by tool

Setting
none = 50% of max. Pressure
100 = 69 bar (1000 PSI) – factory preset pressure

Standard models

Name	Part No.
RV06B-01-C-N-300V	2610236
RV06B-01-C-N-500V	2610164

Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH063-SB2	3740562	steel, zinc plated	G1/4	420 bar
FH063-AB2	3741286	Alu, anodized	G1/4	245 bar

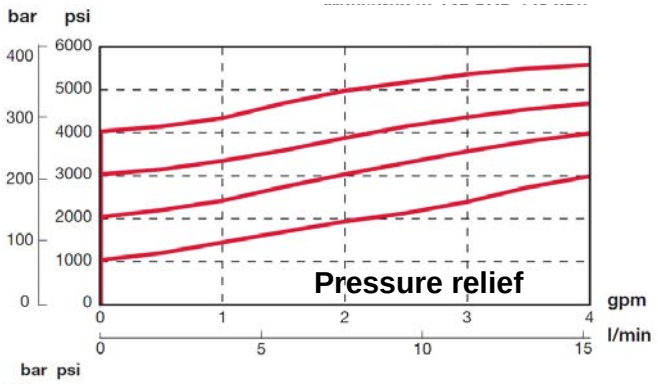
other line bodies on request

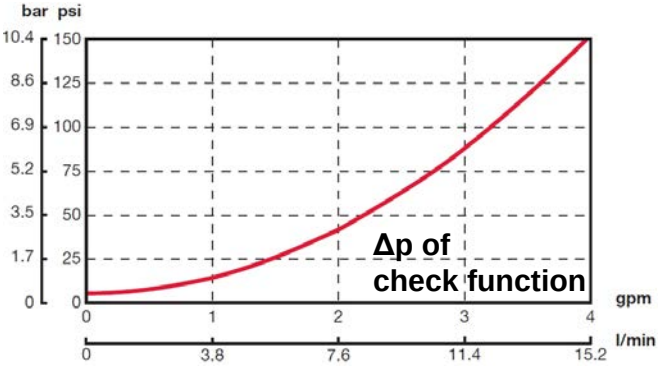
Seal kits

Code	Part No.
Seal kit-NBR	2610186
Seal kit-FKM	2610187

PERFORMANCE

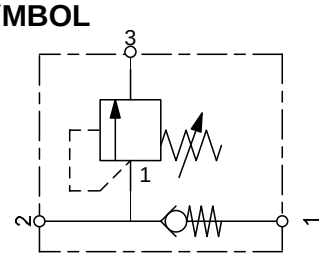
Measured at 28 mm²/s and T oil = 38°C





HYDAC INTERNATIONAL

SYMBOL

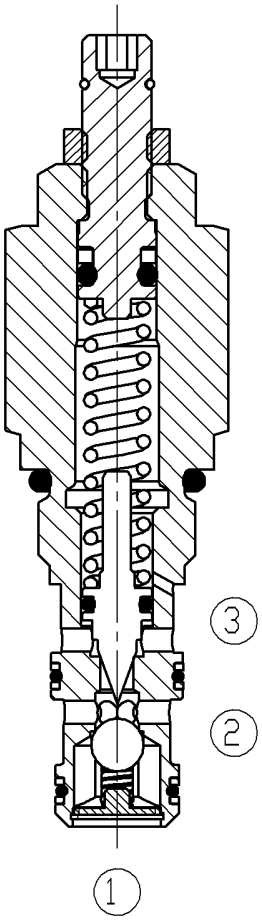


up to 20 l/min
up to 350 bar

Check Valve
Ball type
with pressure relief function
Cartridge-Minivalve – 350 bar
RV06C-01

UNF

FUNCTION



The check valve RV06C is a direct acting, spring loaded ball valve with integrated pressure relief valve.
If there is no flow the spring holds the ball in closed position and blocks therefore flow from port 1 to 2. The check valve opens, if the pressure at port 2 is higher than the pressure at port 1 including the spring force. If the pressures rises in the inlet pipe over the pre-adjusted pressure the relief valve opens to tank. Any pressure at port 3 is additive to the relief pressure setting.

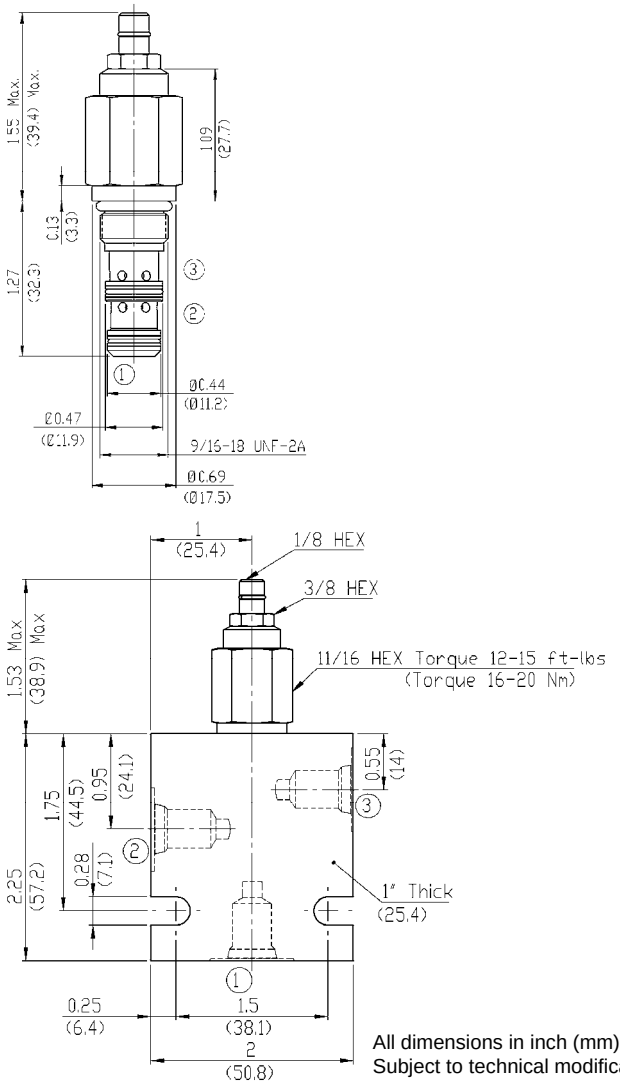
FEATURES

- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extend service life
- Combination of two functions in one valve
- Pressure ranges up to 350 bar
- adjustable under full pressure
- fast closing
- protecting the system and the pump before pressure peaks
- Pressure relief with damped piston making the valve less prone to vibrations

SPECIFICATIONS

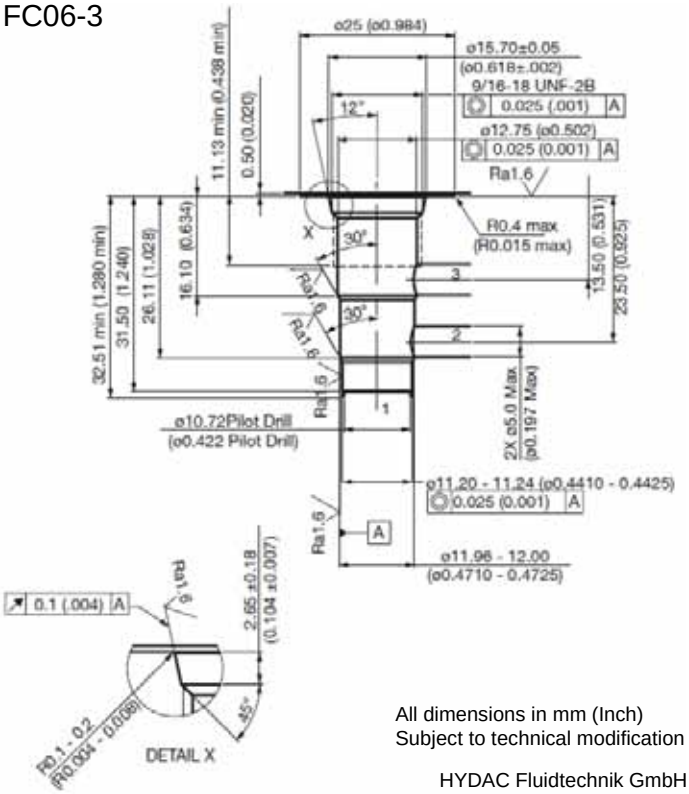
Operating pressure:	max. 350 bar
Nominal flow:	max. 20 l/min
Pressure ranges (DB):	0 up to 125 bar 0 up to 210 bar 35 up to 350 bar
Cracking pressure (check function):	0,35 bar
Leakage:	leakage-free, < max. 0,35 cm³/min at 75% nominal pressure
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Materials:	Valve body: steel with hardened work surfaces Piston: hardened and ground steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-3
Weight:	0,027 kg

DIMENSIONS



All dimensions in inch (mm)
Subject to technical modification

Cavity
FC06-3



All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582050
Countersink	2582051

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

RV06C – 01 – C – N – 180 V 100

Basic model
Check valve, direct acting

Type
01 = Standard

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Pressure range
180 = 0 up to 125 bar (1800 PSI)
300 = 0 up to 210 bar (3000 PSI)
500 = 35 up to 350 bar (5000 PSI)

Adjustment option
V = adjustable by tool

Setting
none = 50% of max. Pressure
100 = 69 bar (1000 PSI) – factory preset pressure

Standard models

Name	Part No.
RV06C-01-C-N-180V	2610323
RV06C-01-C-N-300V	2610325
RV06C-01-C-N-400V	2610343

Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH063-SB2	3740562	steel, zinc plated	G1/4	420 bar
FH063-AB2	3741286	Alu, anodized	G1/4	245 bar

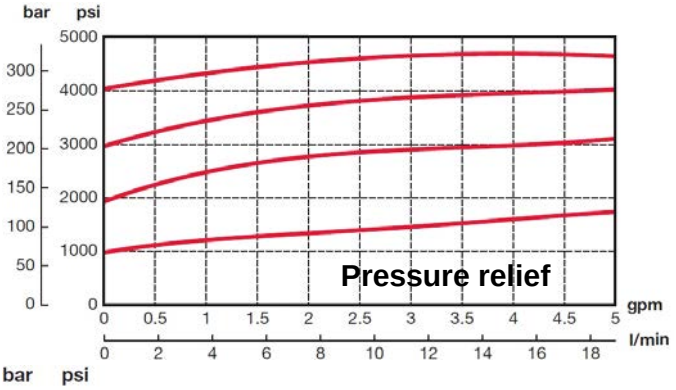
other line bodies on request

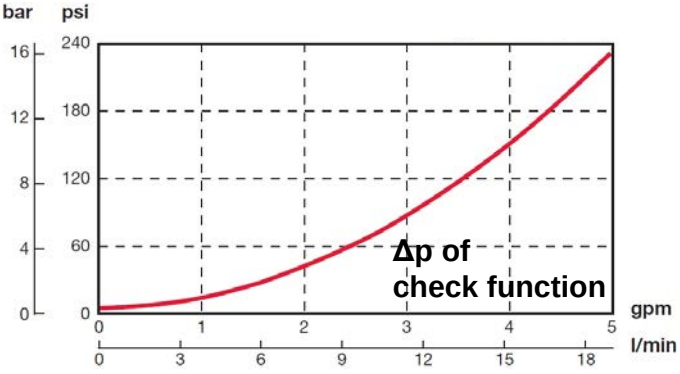
Seal kits

Code	Part No.
Seal kit-NBR	2610186
Seal kit-FKM	2610187

PERFORMANCE

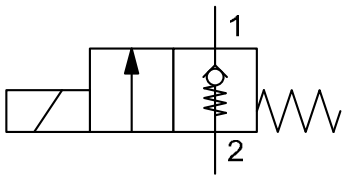
Measured at 28 mm²/s and T oil = 38°C





HYDAC INTERNATIONAL

SYMBOL

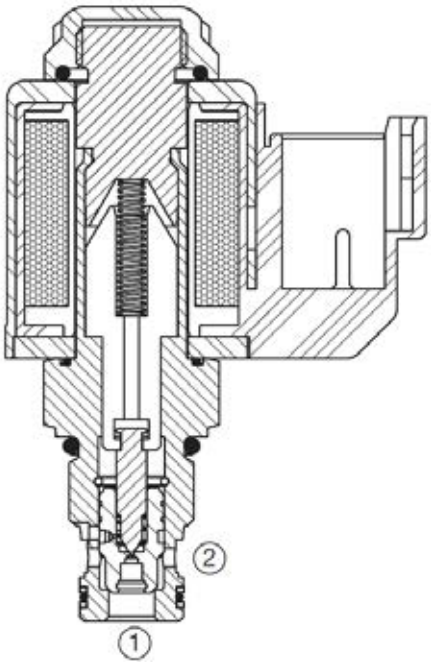


up to 20 l/min
up to 350 bar

2/2 Solenoid Directional Valve Poppet type, pilot operated, normally closed Cartridge-Minivalve – 350 bar WS06Z-01

UNF

FUNCTION



In de-energized mode the valve blocks flow from port 2 to 1.
In the opposite direction the valve piston opens at a pressure differential from approx. 1,8 bar (Check function).
If energized, there is flow from port 2 to 1. A backflow from port 1 to 2 is severely restricted.

FEATURES

- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Coil easy to exchange and pivotable

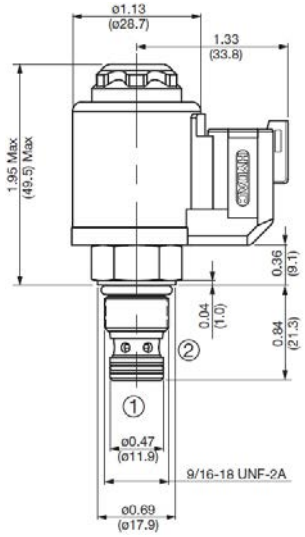
SPECIFICATIONS

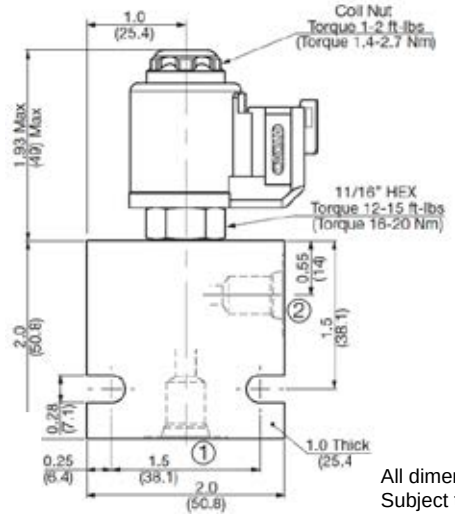
Operating pressure:	max. 350 bar
Nominal flow:	max. 20 l/min
Leakage:	leakage-free, < max. 0,35 cm³/min at nominal pressure
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Materials:	Valve body: steel Piston: hardened and ground steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-2
Weight:	Complete valve: 0,165 kg Coil only: 0,088 kg

Electrical data

Type of voltage:	DC coil, AC voltage is rectified by a rectifier built-in the plug
Nominal current at 20°C:	984 mA at 12 V DC 492 mA at 24 V DC
Voltage tolerance:	+/- 15% of Coil voltage
Coil duty rating:	100% continuous up to max. 115% of Coil voltage at 60°C ambient temperature
Switching time:	Energized: approx. 35 ms De-energized: approx. 50 ms

DIMENSIONS

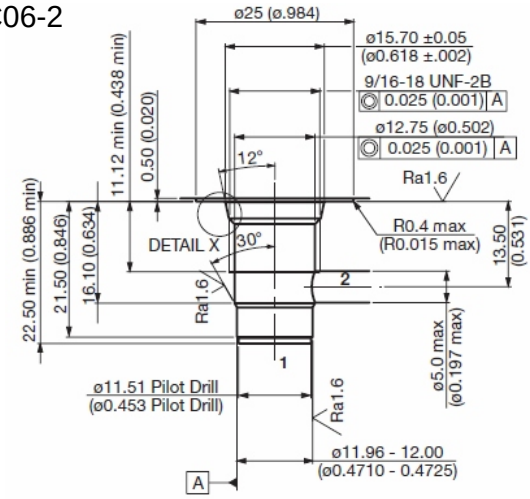


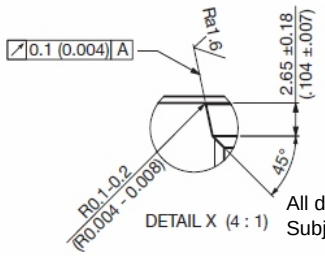


All dimensions in inch (mm)
Subject to technical modification

Cavity

FC06-2





All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582046
Countersink	2582047

MODEL CODE

WS06Z – 01M – C – N – 24 DN

Basic model
Directional poppet valve, pilot operated

Type
01 = Standard
01M = manual override
30 = with protection strainer around port 2

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Coil voltage
0 = without coil (with nut and Seals)
DC: 12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
AC: 115 = 105 Volt DC voltage
230 = 205 Volt DC voltage (at AC voltage plug with suppressor diode necessary Mat. 2600582)

Coil connector (Coil... 32-1329)
DC: DG = DIN Plug to EN175301-803 Form B
DL = 2 leadwires, 450mm long
DN = Deutsch Plug, axial (Type DT04-2P)

Standard models

Code	Part No.
WS06Z-01-C-N-0 without coil	2610237

(coil please choose from brochure D 5.155.0)
Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH062-SB2	3740528	steel, zinc plated	G1/4	420 bar
FH062-AB2	3741297	Alu, anodized	G1/4	245 bar

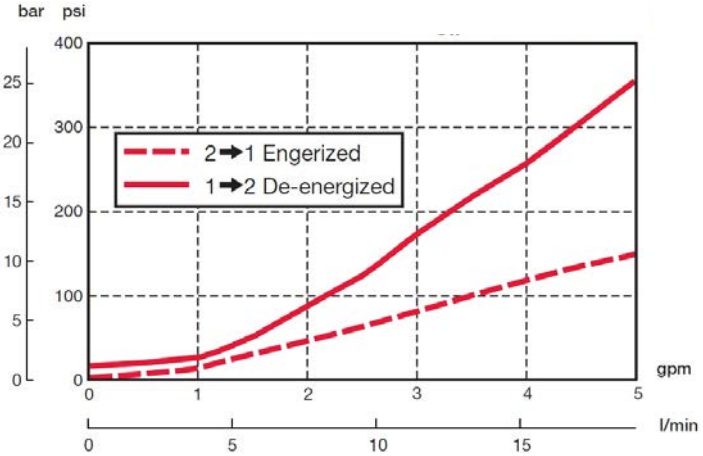
other line bodies on request

Seal kits

Code	Part No.
Seal kit-NBR	2610184
Seal kit-FKM	2610185

PERFORMANCE

Measured at 28 mm²/s and T oil = 38°C



Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

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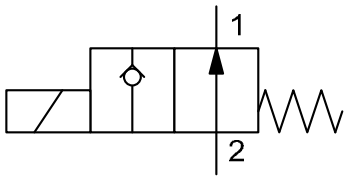
SYMBOL

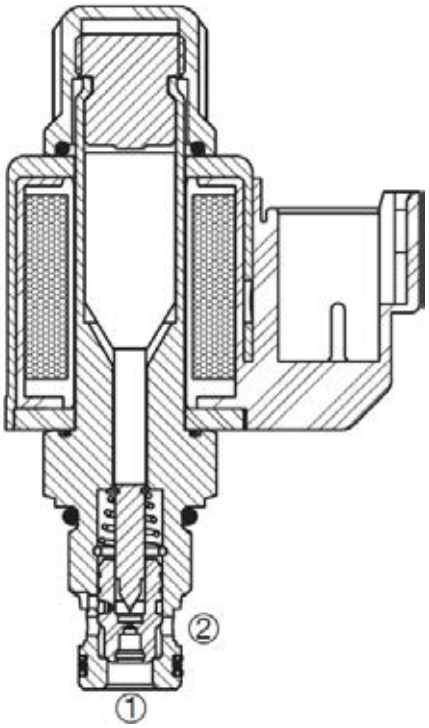


up to 20 l/min
up to 350 bar

2/2 Solenoid Directional Valve Poppet type, pilot operated, normally open Cartridge-Minivalve – 350 bar WS06Y-01

UNF

FUNCTION



In de-energized mode there is flow from port 2 to 1.
If energized, the valve blocks flow from port 2 to 1.
In the opposite direction it opens if the pressure force on den piston is higher than the magnet force (approx. 9 up to 20 bar).

FEATURES

- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Coil easy to exchange and pivotable

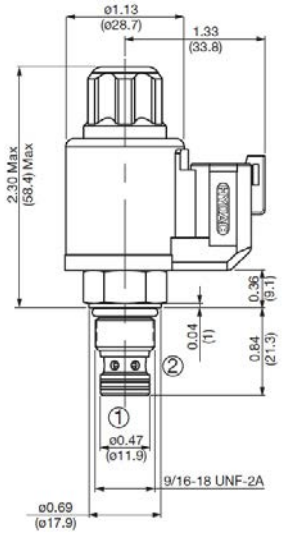
SPECIFICATIONS

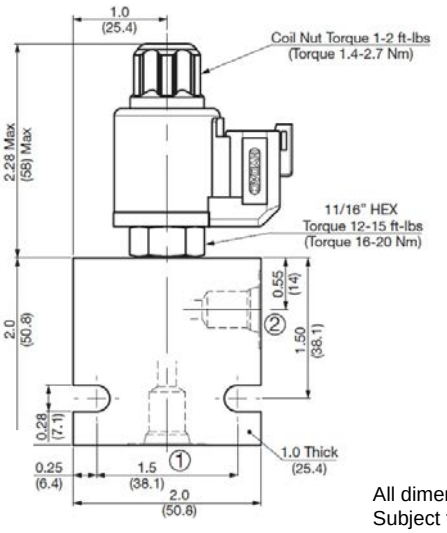
Operating pressure:	max. 350 bar
Nominal flow:	max. 20 l/min
Leakage:	leakage-free, < max. 0,35 cm³/min at nominal pressure
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Materials:	Valve body: steel Piston: hardened and ground steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-2
Weight:	Complete valve: 0,165 kg Coil only: 0,088 kg

Electrical data

Type of voltage:	DC coil, AC voltage is rectified by a rectifier built-in the plug
Nominal current at 20°C:	984 mA at 12 V DC 492 mA at 24 V DC
Voltage tolerance:	+/- 15% of Coil voltage
Coil duty rating:	100% continuous up to max. 115% of Coil voltage at 60°C ambient temperature
Switching time:	Energized: approx. 50 ms De-energized: approx. 35 ms

DIMENSIONS

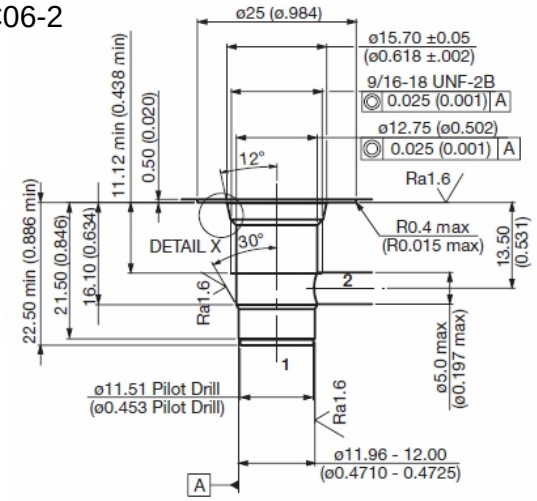


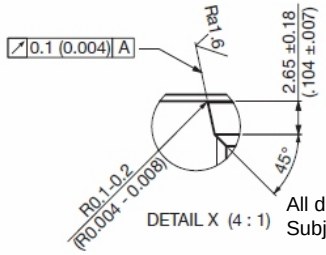


All dimensions in inch (mm)
Subject to technical modification

Cavity

FC06-2





All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582046
Countersink	2582047

MODEL CODE

WS06Y – 01M – C – N – 24 DN

Basic model
directionalpoppet valve, pilot operated

Type
01 = Standard
01M = manual override
30 = with protection strainer around port 2

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Coil voltage
0 = without coil (with nut and Seals)
DC: 12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
AC: 115 = 105 Volt DC voltage
230 = 205 Volt DC voltage (at AC voltage plug with suppressor diode necessary Mat. 2600582)

Coil connector (Coil... 32-1329)
DC: DG = DIN Plug to EN175301-803 Form B
DL = 2 leadwires, 450mm long
DN = Deutsch Plug, axial (Type DT04-2P)

Standard models

Code	Part No.
WS06Y-01-C-N-0 without coil	2610209

(coil please choose from brochure D 5.155.0)
Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH062-SB2	3740528	steel, zinc plated	G1/4	420 bar
FH062-AB2	3741297	Alu, anodized	G1/4	245 bar

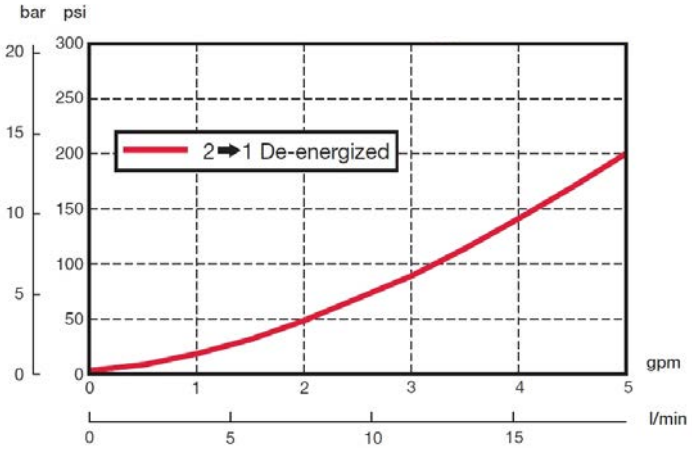
other line bodies on request

Seal kits

Code	Part No.
Seal kit-NBR	2610184
Seal kit-FKM	2610185

PERFORMANCE

Measured at 28 mm²/s and T oil = 38°C



Annotation
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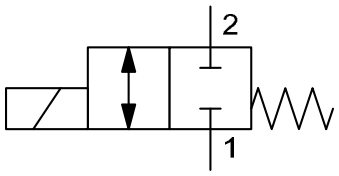
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

SYMBOL

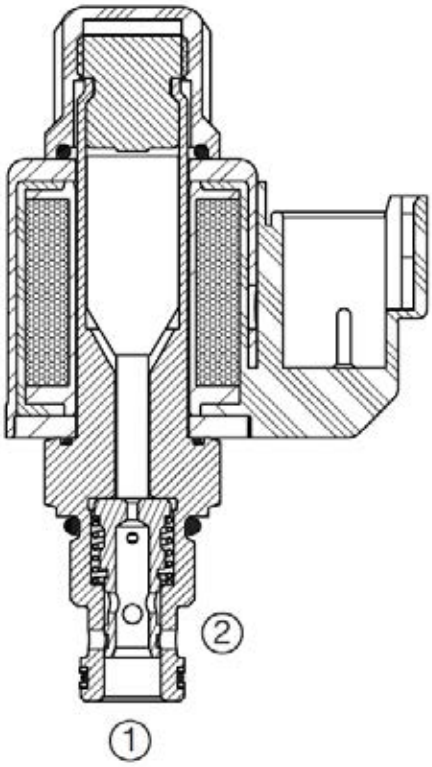


2/2 Solenoid Directional Valve Spool type, direct acting, Cartridge-Minivalve – 350 bar WK06W-01

UNF

up to 10 l/min
up to 350 bar

FUNCTION



In de-energized mode the valve is blocked in both directions.
If energized, the valve opens and allows the flow in both directions.

FEATURES

- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Coil easy to exchange and pivotable

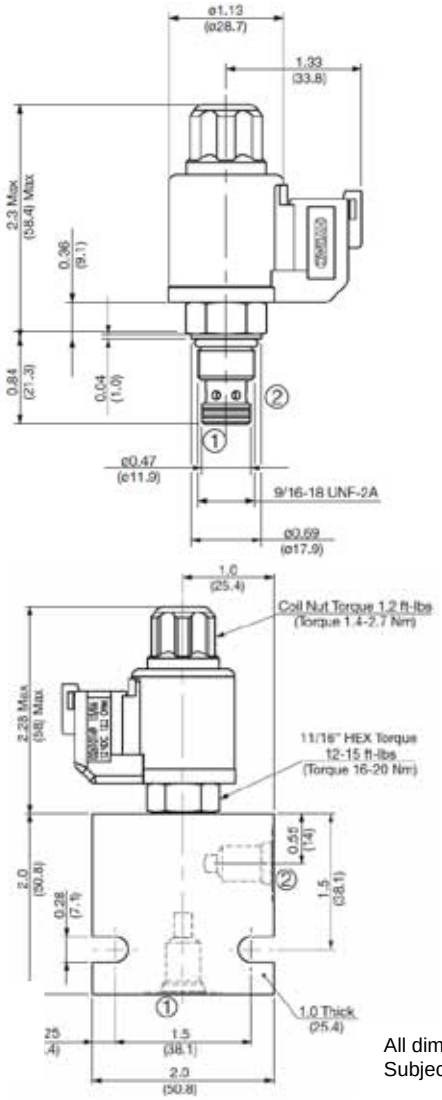
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 10 l/min
Leakage:	< max. 90 cm³/min at 207 bar and 28 mm²/s
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
MTTFd:	150 years
Installation:	no orientation restrictions
Materials:	Valve body: steel with hardened work surfaces Piston: hardened and ground steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-2
Weight:	Complete valve: 0,165 kg Coil only: 0,088 kg

Electrical data

Type of voltage:	DC coil, AC voltage is rectified by a rectifier built-in the plug
Nominal current at 20°C:	984 mA at 12 V DC 492 mA at 24 V DC
Voltage tolerance:	+/- 15% of Coil voltage
Coil duty rating:	100% continuous up to max. 115% of Coil voltage at 60°C ambient temperature

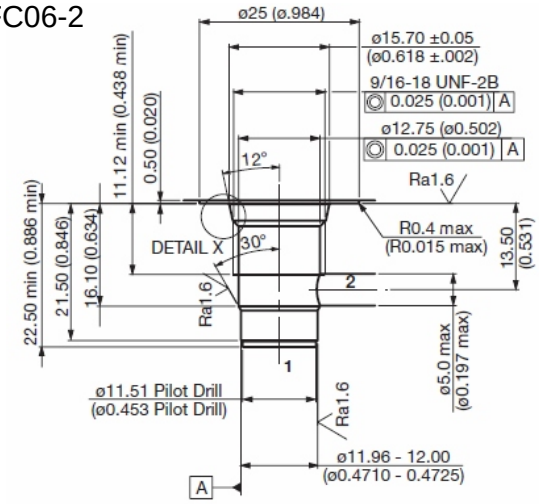
DIMENSIONS

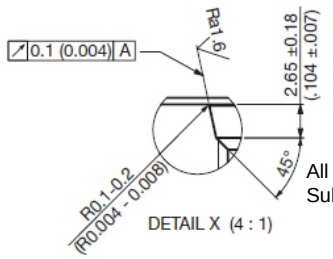


All dimensions in inch (mm)
Subject to technical modification

Cavity

FC06-2





All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582046
Countersink	2582047

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

WK06W – 01M – C – N – 24 DN

Basic model
Directional Spool type, direct acting

Type
01 = Standard
01M = manual override

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Coil voltage
0 = without coil (with nut and Seals)
DC: 12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
AC: 115 = 105 Volt DC voltage
230 = 205 Volt DC voltage (at AC voltage plug with suppressor diode necessary Mat. 2600582)

Coil connector (Coil... 32-1329)
DC: DG = DIN Plug to EN175301-803 Form B
DL = 2 leadwires, 450mm long
DN = Deutsch Plug, axial (Type DT04-2P)

Standard models

Code	Part No.
WK06W-01-C-N-0 without coil	2610182

(coil please choose from brochure D 5.155.0)
Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH062-SB2	3740528	steel, zinc plated	G1/4	420 bar
FH062-AB2	3741297	Alu, anodized	G1/4	245 bar

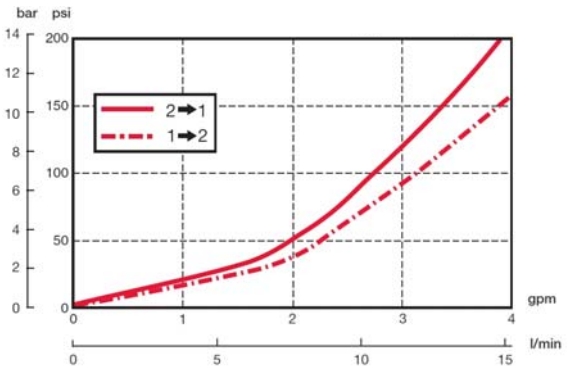
other line bodies on request

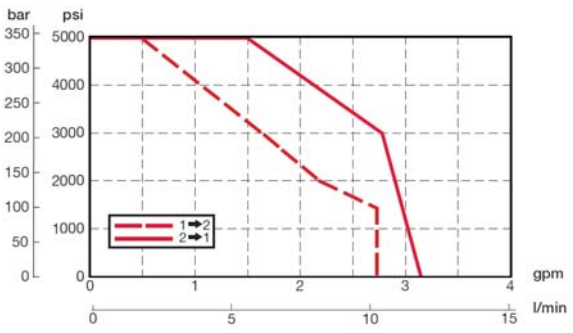
Seal kits

Code	Part No.
Seal kit-NBR	2610184
Seal kit-FKM	2610185

PERFORMANCE

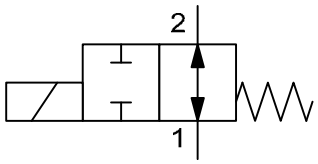
Measured at 28 mm²/s and T oil = 38°C





HYDAC INTERNATIONAL

SYMBOL

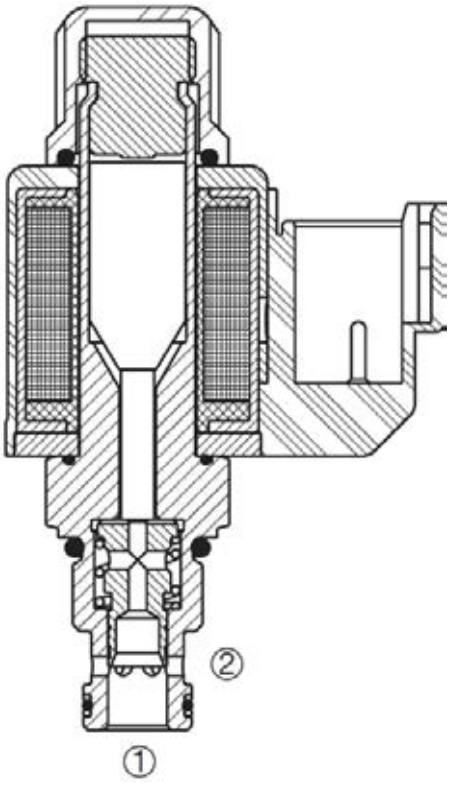


2/2 Solenoid Directional valve Spool type, direct acting, Cartridge-Minivalve – 350 bar WK06V-01

UNF

up to 15 l/min
up to 350 bar

FUNCTION



In de-energized mode the valve is open in both directions.
If energized, the valve closes and blocks the flow in both directions.

FEATURES

- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Coil easy to exchange and pivotable

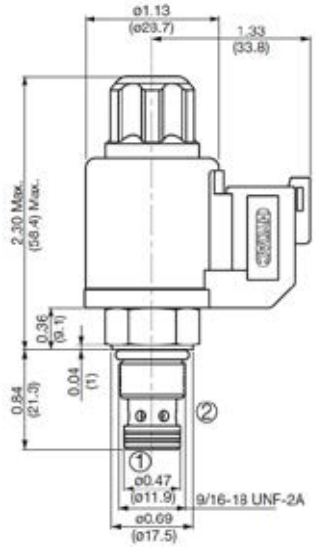
SPECIFICATIONS

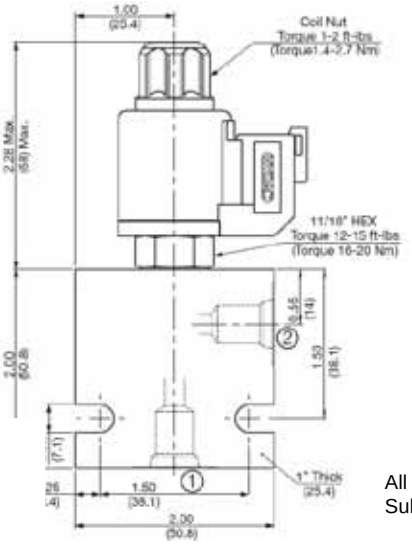
Operating pressure:	max. 350 bar
Nominal flow:	max. 15 l/min
Leakage:	< max. 90 cm³/min at 207 bar and 28 mm²/s
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
MTTFd:	150 years
Installation:	no orientation restrictions
Materials:	Valve body: steel with hardened work surfaces Piston: hardened and ground steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-2
Weight:	Complete valve: 0,170 kg Coil only: 0,088 kg

Electrical data

Type of voltage:	DC coil, AC voltage is rectified by a rectifier built-in the plug
Nominal current at 20°C:	984 mA at 12 V DC 492 mA at 24 V DC
Voltage tolerance:	+/- 15% of Coil voltage
Coil duty rating:	100% continuous up to max. 115% of Coil voltage at 60°C ambient temperature
Switching time:	Energized: approx. 50 ms De-energized: approx. 35 ms

DIMENSIONS

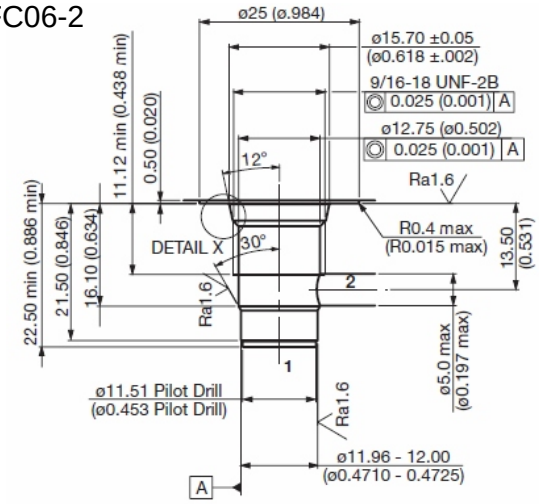


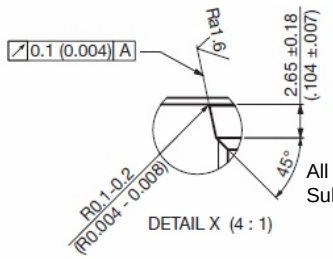


All dimensions in inch (mm)
Subject to technical modification

Cavity

FC06-2





All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582046
Countersink	2582047

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Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

WK06V – 01M – C – N – 24 DN

Basic model
Directional Spool type, direct acting

Type
01 = Standard
01M = manual override

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Coil voltage
0 = without coil (with nut and Seals)
DC: 12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
AC: 115 = 105 Volt DC voltage
230 = 205 Volt DC voltage (at AC voltage plug with suppressor diode necessary Mat. 2600582)

Coil connector (Coil... 32-1329)
DC: DG = DIN Plug to EN175301-803 Form B
DL = 2 leadwires, 450mm long
DN = Deutsch Plug, axial (Type DT04-2P)

Standard models

Code	Part No.
WK06V-01-C-N-0 without coil	2610222

(coil please choose from brochure D 5.155.0)
Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH062-SB2	3740528	steel, zinc plated	G1/4	420 bar
FH062-AB2	3741297	Alu, anodized	G1/4	245 bar

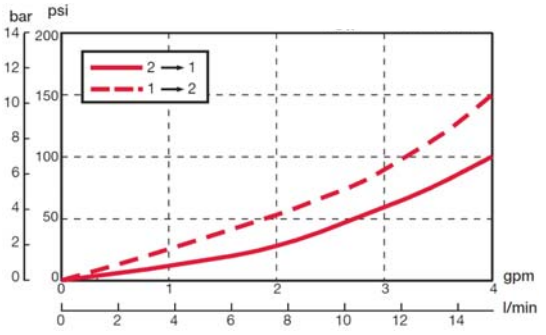
other line bodies on request

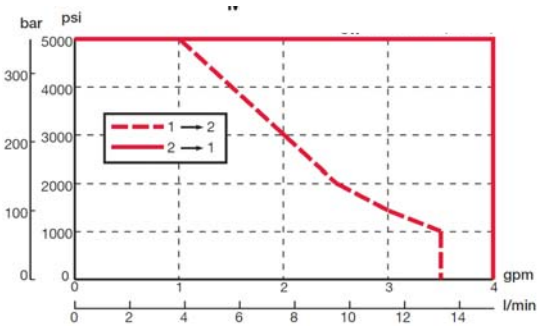
Seal kits

Code	Part No.
Seal kit-NBR	2610184
Seal kit-FKM	2610185

PERFORMANCE

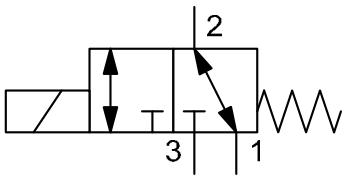
Measured at 28 mm²/s and T oil = 38°C





HYDAC INTERNATIONAL

SYMBOL

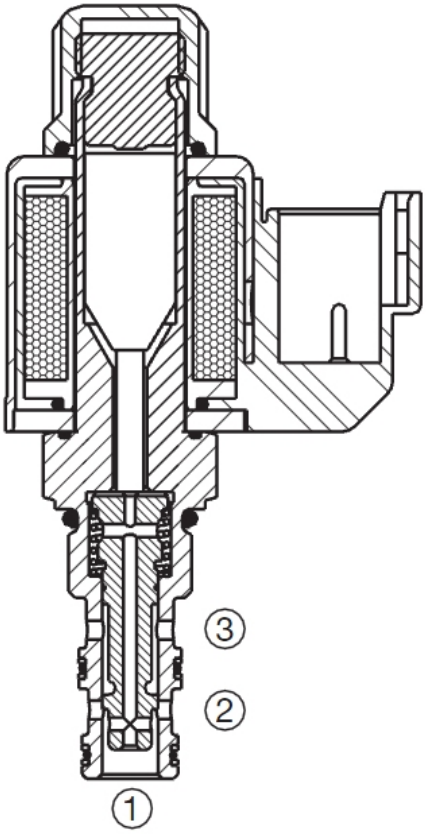


3/2 Solenoid Directional Valve Spool type, direct acting Cartridge-Minivalve – 350 bar WK06C-01

UNF

up to 10 l/min
up to 350 bar

FUNCTION



In de-energized mode there is free flow from port 1 to 2 and in the opposite direction. Port 3 is closed. If energized, the valve allows flow from port 2 to 3 and in the opposite direction. Port 1 is closed.

FEATURES

- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Coil easy to exchange and pivotable

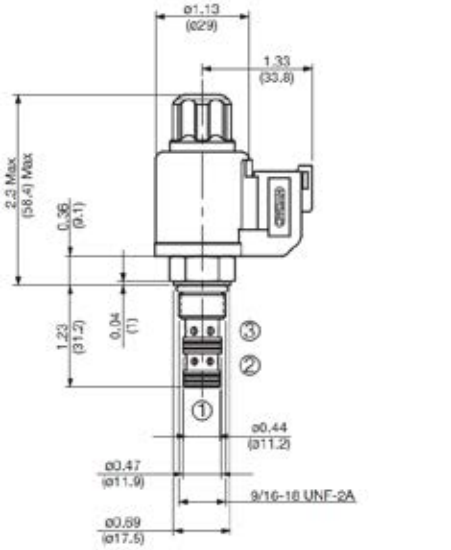
SPECIFICATIONS

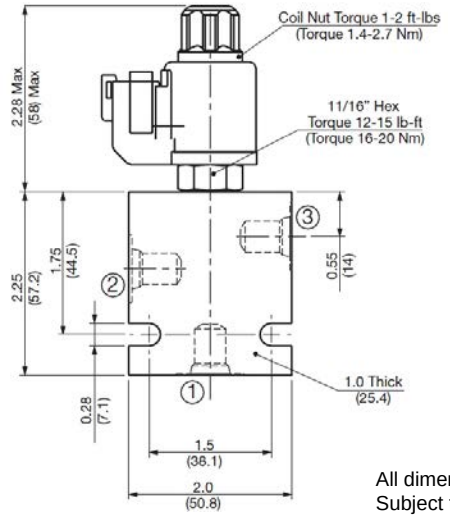
Operating pressure:	max. 350 bar
Nominal flow:	max. 10 l/min
Leakage:	< max. 90 cm³/min at 207 bar and 28 mm²/s
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Materials:	Valve body: steel with hardened work surfaces Piston: hardened and ground steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-3
Weight:	Complete valve: 0,175 kg Coil only: 0,088 kg

Electrical data

Type of voltage:	DC coil, AC voltage is rectified by a rectifier built-in the plug
Nominal current at 20°C:	984 mA at 12 V DC 492 mA at 24 V DC
Voltage tolerance:	+/- 15% of Coil voltage
Coil duty rating:	100% continuous up to max. 115% of Coil voltage at 60°C ambient temperature
Switching time:	Energized: approx. 30 - 60 ms De-energized: approx. 20 - 40 ms

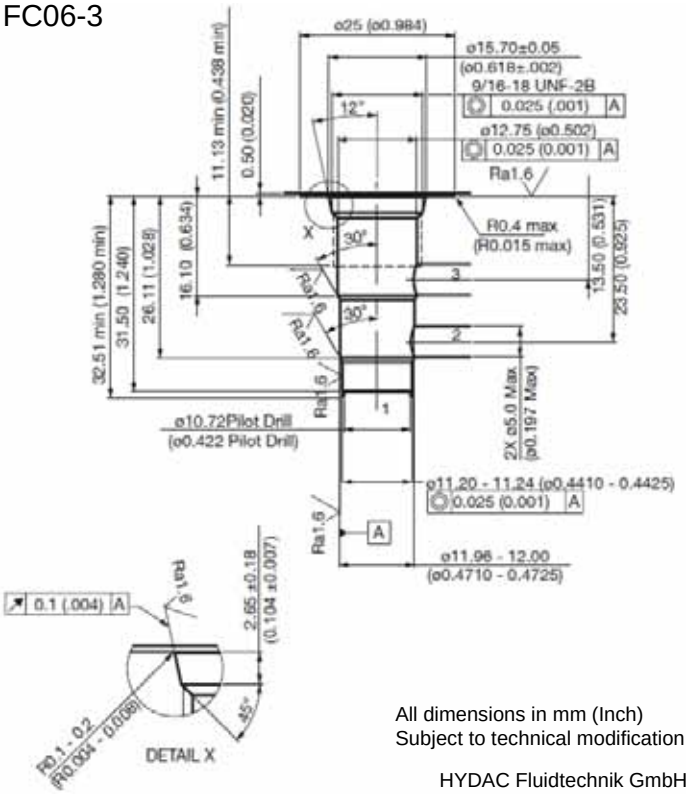
DIMENSIONS





All dimensions in inch (mm)
Subject to technical modification

Cavity
FC06-3



All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582050
Countersink	2582051

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

WK06C – 01M – C – N – 24 DN

Basic model
Directional Spool type, direct acting

Type
01 = Standard
01M = manual override

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Coil voltage
0 = without coil (with nut and Seals)
DC: 12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
AC: 115 = 105 Volt DC voltage
230 = 205 Volt DC voltage (at AC voltage plug with suppressor diode necessary Mat. 2600582)

Coil connector (Coil... 32-1329)
DC: DG = DIN Plug to EN175301-803 Form B
DL = 2 leadwires, 450mm long
DN = Deutsch Plug, axial (Type DT04-2P)

Standard models

Code	Part No.
WK06C-01-C-N-0 without coil	2610183

(coil please choose from brochure D 5.155.0)
Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH063-SB2	3740562	steel, zinc plated	G1/4	420 bar
FH063-AB2	3741286	Alu, anodized	G1/4	245 bar

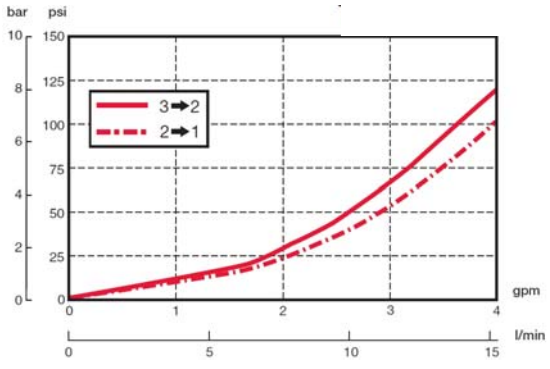
other line bodies on request

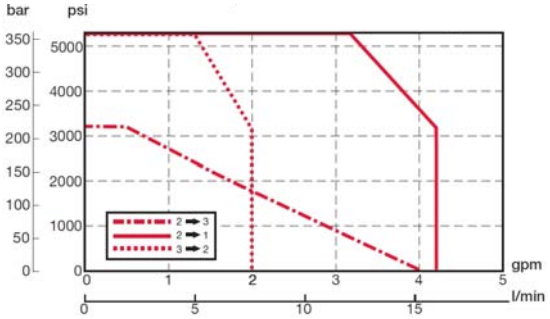
Seal kits

Code	Part No.
Seal kit-NBR	2610186
Seal kit-FKM	2610187

PERFORMANCE

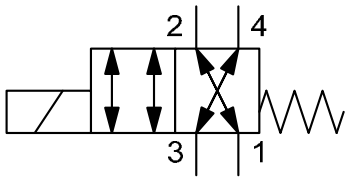
Measured at 28 mm²/s and T oil = 38°C





HYDAC INTERNATIONAL

SYMBOL

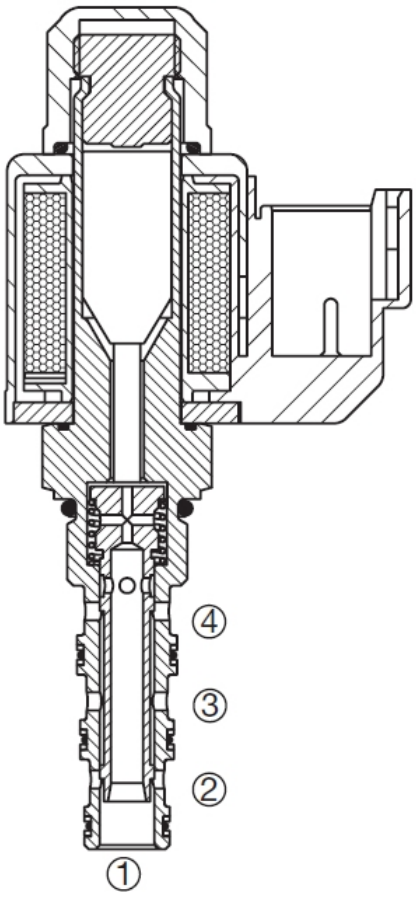


4/2 Solenoid Directional Valve Spool type, direct acting Cartridge-Minivalve – 350 bar WK06Y-01

UNF

up to 10 l/min
up to 350 bar

FUNCTION



In de-energized mode, the valve allows flow from port 1 to 2 and from 3 to 4 and also in the opposite direction. If energized, the valve allows flow from port 1 to 4 and from 3 to 2 and also in the opposite direction.

FEATURES

- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Coil easy to exchange and pivotable

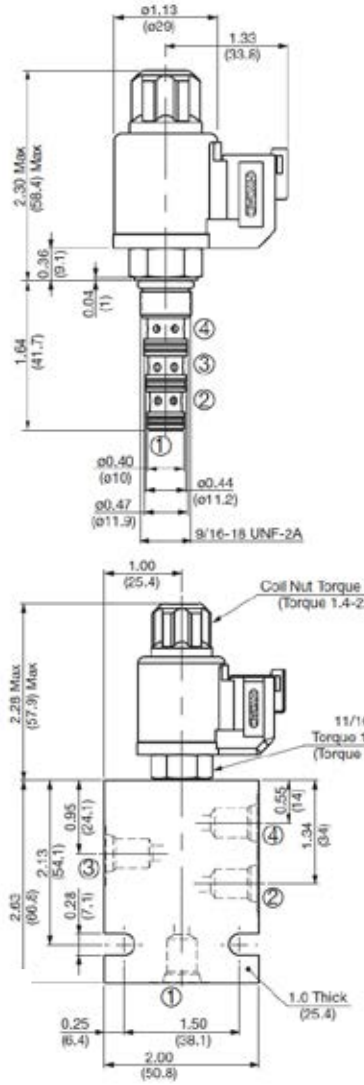
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 10 l/min
Leakage:	< max. 100 cm³/min at 207 bar and 28 mm²/s
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Materials:	Valve body: steel with hardened work surfaces Piston: hardened and ground steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-4
Weight:	Complete valve: 0,190 kg Coil only: 0,088 kg

Electrical data

Type of voltage:	DC coil, AC voltage is rectified by a rectifier built-in the plug
Nominal current at 20°C:	984 mA at 12 V DC 492 mA at 24 V DC
Voltage tolerance:	+/- 15% of Coil voltage
Coil duty rating:	100% continuous up to max. 115% of Coil voltage at 60°C ambient temperature
Switching time:	Energized: approx. 30 - 60 ms De-energized: approx. 20 - 40 ms

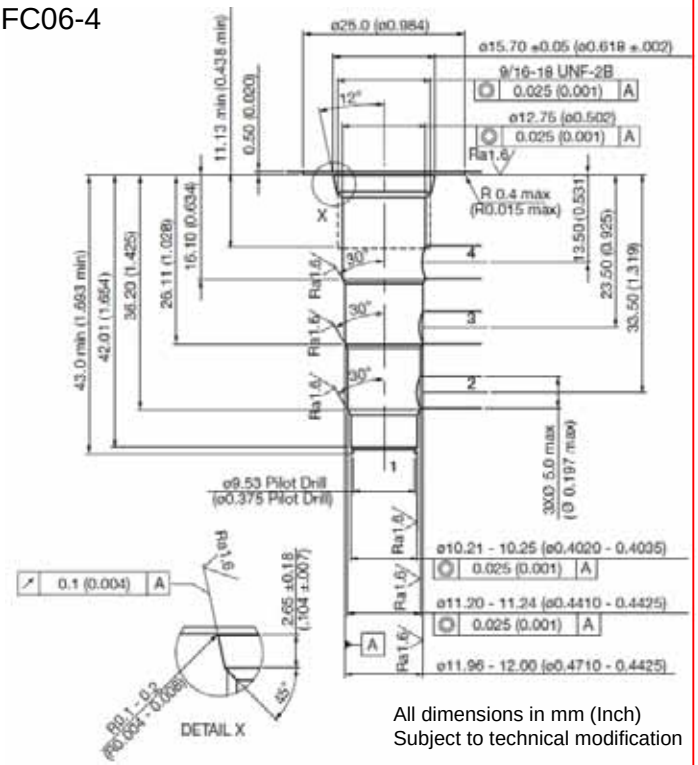
DIMENSIONS



All dimensions in inch (mm)
Subject to technical modification

Cavity

FC06-4



All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582057
Countersink	2582058

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

WK06Y – 01M – C – N – 24 DN

Basic model
Directional Spool type, direct acting

Type
01 = Standard
01M = manual override

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Coil voltage
0 = without coil (with nut and Seals)
DC: 12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
AC: 115 = 105 Volt DC voltage
230 = 205 Volt DC voltage (at AC voltage plug with suppressor diode necessary Mat. 2600582)

Coil connector (Coil... 32-1329)
DC: DG = DIN Plug to EN175301-803 Form B
DL = 2 leadwires, 450mm long
DN = Deutsch Plug, axial (Type DT04-2P)

Standard models

Code	Part No.
WK06Y-01-C-N-0 without coil	2610203

(coil please choose from brochure D 5.155.0)
Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH064-SB2	3740589	steel, zinc plated	G1/4	420 bar
FH064-AB2	3741315	Alu, anodized	G1/4	245 bar

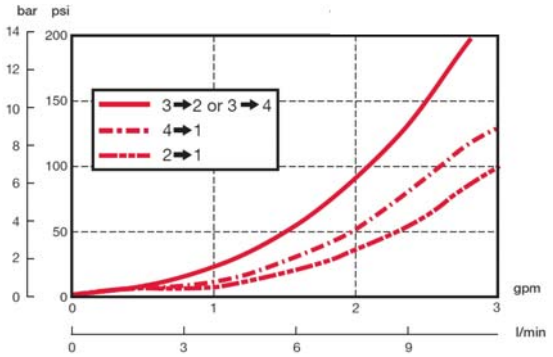
other line bodies on request

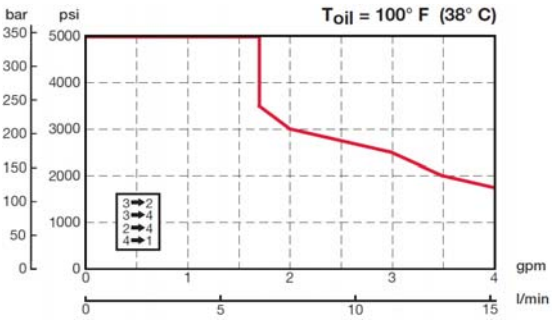
Seal kits

Code	Part No.
Seal kit-NBR	2610188
Seal kit-FKM	2610189

PERFORMANCE

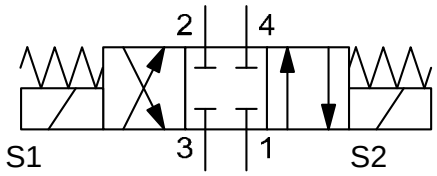
Measured at 28 mm²/s and T oil = 38°C





HYDAC INTERNATIONAL

SYMBOL

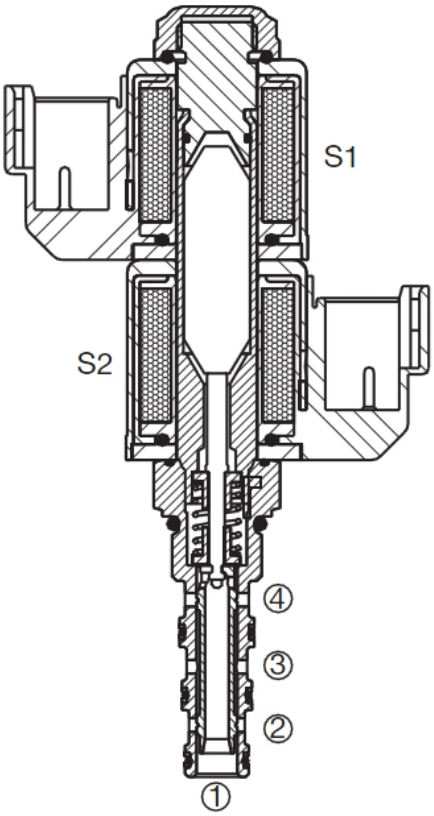


4/3 Solenoid Directional Valve Spool type, direct acting Cartridge-Minivalve – 350 bar WK06E-01

UNF

up to 11 l/min
up to 350 bar

FUNCTION



In de-energized mode all ports are blocked.
If the coil S1 is energized, there is free flow from port 3 to 4 and from 2 to 1.
If the coil S2 is energized, there is flow from port 3 to 2 and from 4 to 1.

FEATURES

- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Coils easy to exchange and pivotable

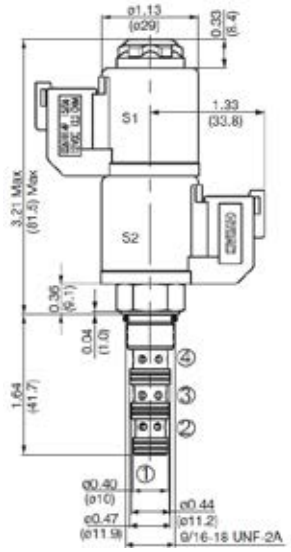
SPECIFICATIONS

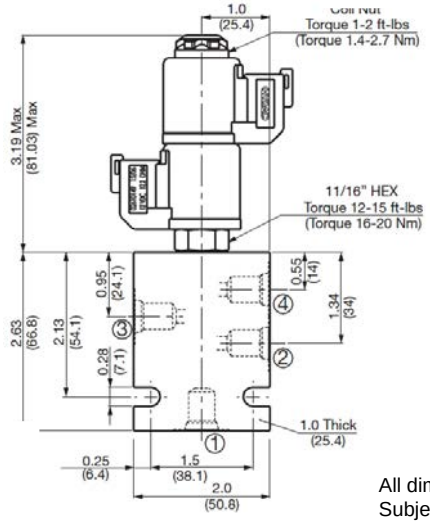
Operating pressure:	max. 350 bar max. 210 bar at Tank (port 1)
Nominal flow:	max. 11 l/min
Leakage:	< max. 100 cm³/min at 207 bar and 28 mm²/s
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Materials:	Valve body: steel with hardened work surfaces Piston: hardened and ground steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-4
Weight:	Complete valve: 0,374 kg Coil only: 0,088 kg (2x)

Electrical data

Type of voltage:	DC coil, AC voltage is rectified by a rectifier built-in the plug
Nominal current at 20°C:	984 mA at 12 V DC 492 mA at 24 V DC
Voltage tolerance:	+/- 15% of Coil voltage
Coil duty rating:	100% continuous up to max. 115% of Coil voltage at 60°C ambient temperature
Switching time:	Energized: approx. 30 - 60 ms De-energized: approx. 20 - 40 ms

DIMENSIONS

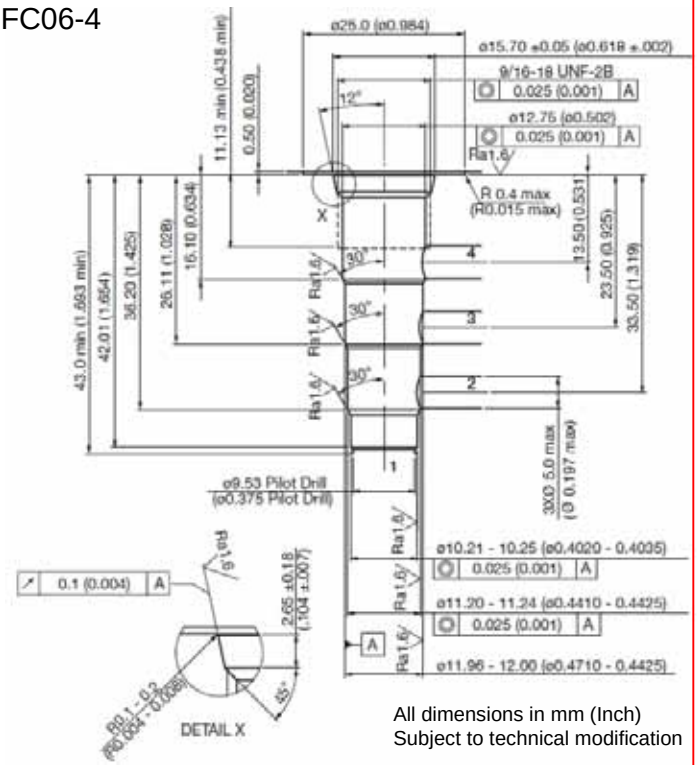




All dimensions in inch (mm)
Subject to technical modification

Cavity

FC06-4



All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582057
Countersink	2582058

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

WK06E – 01M – C – N – 24 DN

Basic model
Directional Spool type, direct acting

Type
01 = Standard
01M = manual override
01A = lockable manual override

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Coil voltage
0 = without coil (with nut and Seals)
DC: 12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
AC: 115 = 105 Volt DC voltage
230 = 205 Volt DC voltage (at AC voltage plug with suppressor diode necessary Mat. 2600582)

Coil connector (Coil... 32-1329)
DC: DG = DIN Plug to EN175301-803 Form B
DL = 2 leadwires, 450mm long
DN = Deutsch Plug, axial (Type DT04-2P)

Standard models

Code	Part No.
WK06E-01-C-N-0 without coil	2610190

(coils please choose from brochure D 5.155.0)
Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH064-SB2	3740589	steel, zinc plated	G1/4	420 bar
FH064-AB2	3741315	Alu, anodized	G1/4	245 bar

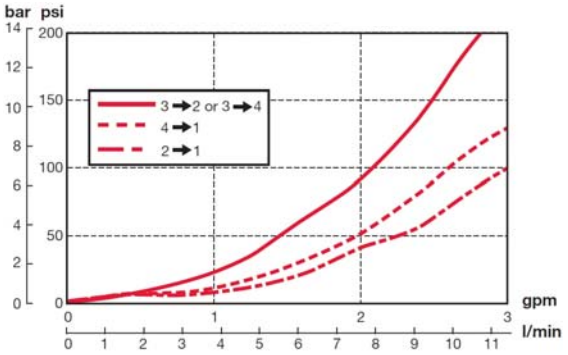
other line bodies on request

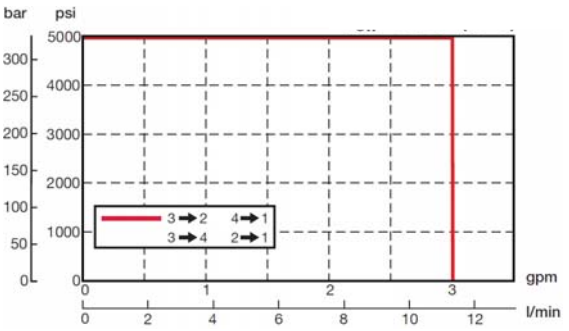
Seal kits

Code	Part No.
Seal kit-NBR	2610188
Seal kit-FKM	2610189

PERFORMANCE

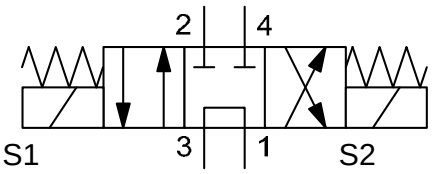
Measured at 28 mm²/s and T oil = 38°C





HYDAC INTERNATIONAL

SYMBOL

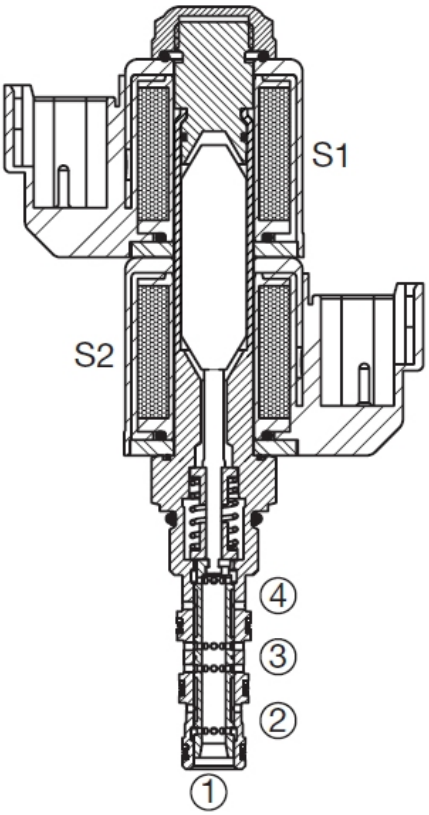


4/3 Solenoid Directional Valve Spool type, direct acting Cartridge-Minivalve – 350 bar WK06G-01

UNF

up to 7 l/min
up to 350 bar

FUNCTION



In de-energized mode the ports 2 and 4 are blocked – whereas there is flow from port 3 to 1 and in opposite direction.
If the coil S1 is energized, there is flow from port 3 to 2 and from 4 to 1 .
If the coil S2 is energized, there is flow from port 3 to 4 and from 2 to 1 .

FEATURES

- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Coils easy to exchange and pivotable

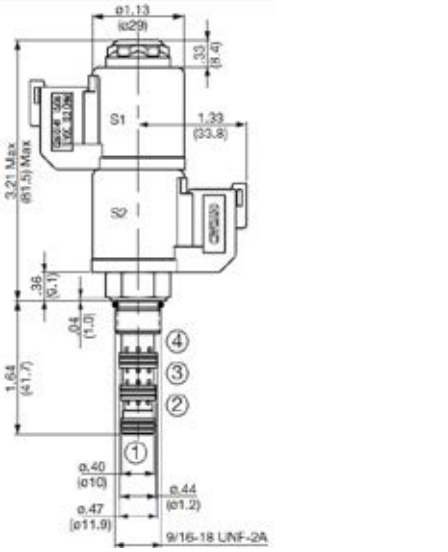
SPECIFICATIONS

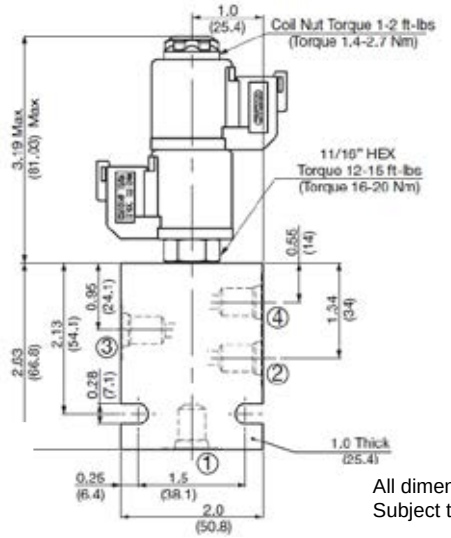
Operating pressure:	max. 350 bar max. 210 bar at Tank (port 1)
Nominal flow:	max. 7 l/min
Leakage:	< max. 100 cm³/min at 207 bar and 28 mm²/s
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Materials:	Valve body: steel with hardened work surfaces Piston: hardened and ground steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-4
Weight:	Complete valve: 0,374 kg Coil only: 0,088 kg (2x)

Electrical data

Type of voltage:	DC coil, AC voltage is rectified by a rectifier built-in the plug
Nominal current at 20°C:	984 mA at 12 V DC 492 mA at 24 V DC
Voltage tolerance:	+/- 15% of Coil voltage
Coil duty rating:	100% continuous up to max. 115% of Coil voltage at 60°C ambient temperature

DIMENSIONS

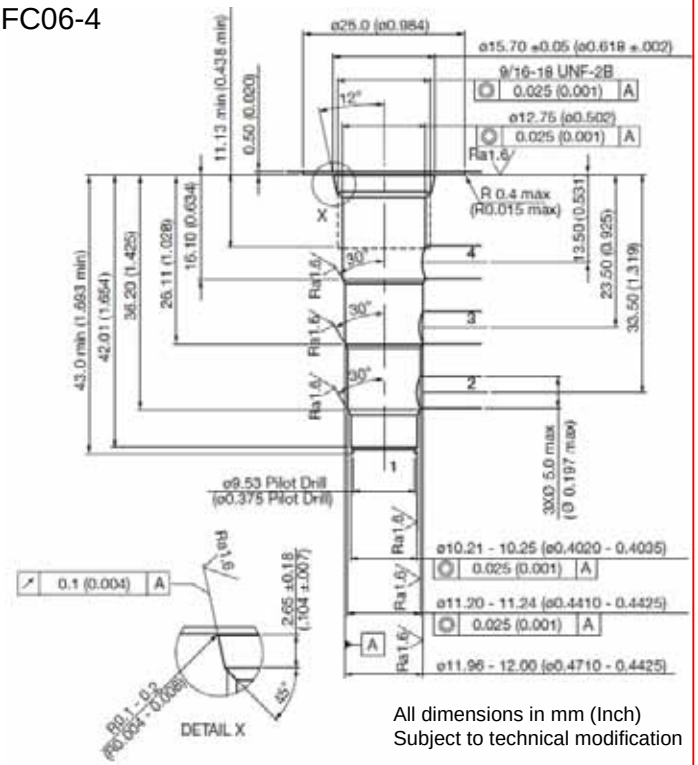




All dimensions in inch (mm)
Subject to technical modification

Cavity

FC06-4



All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582057
Countersink	2582058

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

WK06G – 01M – C – N – 24 DN

Basic model
Directional Spool type, direct acting

Type
01 = Standard
01M = manual override
01A = lockable manual override

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Coil voltage
0 = without coil (with nut and Seals)
DC: 12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
AC: 115 = 105 Volt DC voltage
230 = 205 Volt DC voltage (at AC voltage plug with suppressor diode necessary Mat. 2600582)

Coil connector (Coil... 32-1329)
DC: DG = DIN Plug to EN175301-803 Form B
DL = 2 leadwires, 450mm long
DN = Deutsch Plug, axial (Type DT04-2P)

Standard models

Code	Part No.
WK06G-01-C-N-0 without coil	2610192

(coils please choose from brochure D 5.155.0)
Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH064-SB2	3740589	steel, zinc plated	G1/4	420 bar
FH064-AB2	3741315	Alu, anodized	G1/4	245 bar

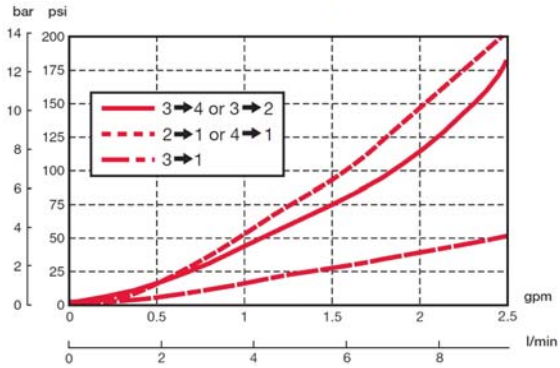
other line bodies on request

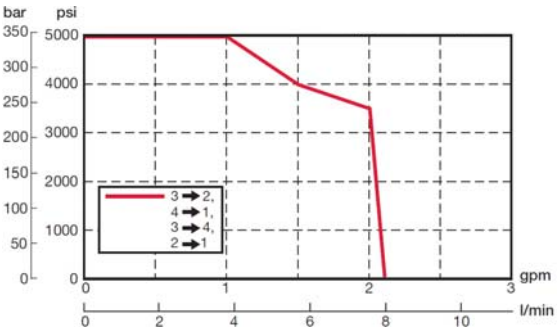
Seal kits

Code	Part No.
Seal kit-NBR	2610188
Seal kit-FKM	2610189

PERFORMANCE

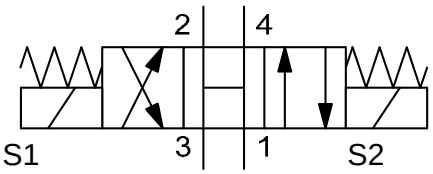
Measured at 28 mm²/s and T oil = 38°C





HYDAC INTERNATIONAL

SYMBOL

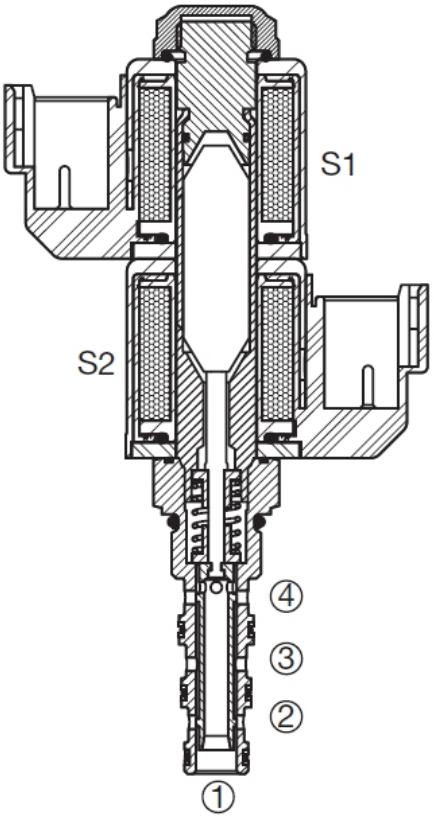


4/3 Solenoid Directional Valve Spool type, direct acting Cartridge-Minivalve – 350 bar WK06H-01

UNF

up to 9 l/min
up to 350 bar

FUNCTION



In de-energized mode all ports are connected.
If the coil S1 is energized, there is flow from port 3 to 4 and from 2 to 1 .
If the coil S2 is energized, there is flow from port 3 to 2 and from 4 to 1 .

FEATURES

- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Coils easy to exchange and pivotable

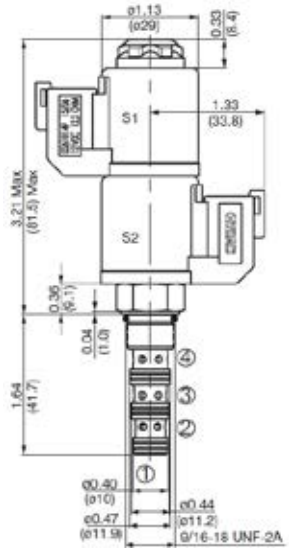
SPECIFICATIONS

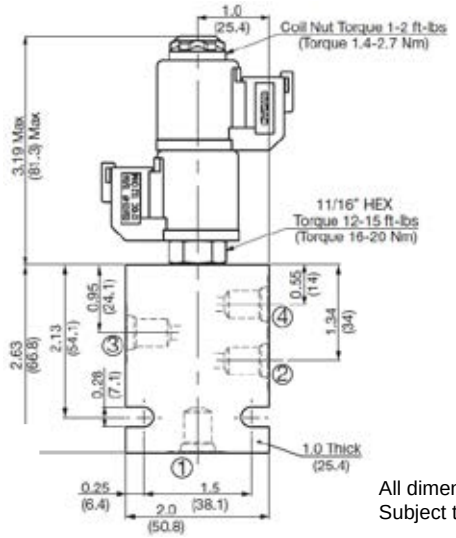
Operating pressure:	max. 350 bar max. 210 bar at Tank (port 1)
Nominal flow:	max. 9 l/min
Leakage:	< max. 100 cm³/min at 207 bar and 28 mm²/s
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Materials:	Valve body: steel with hardened work surfaces Piston: hardened and ground steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-4
Weight:	Complete valve: 0,374 kg Coil only: 0,088 kg (2x)

Electrical data

Type of voltage:	DC coil, AC voltage is rectified by a rectifier built-in the plug
Nominal current at 20°C:	984 mA at 12 V DC 492 mA at 24 V DC
Voltage tolerance:	+/- 15% of Coil voltage
Coil duty rating:	100% continuous up to max. 115% of Coil voltage at 60°C ambient temperature

DIMENSIONS

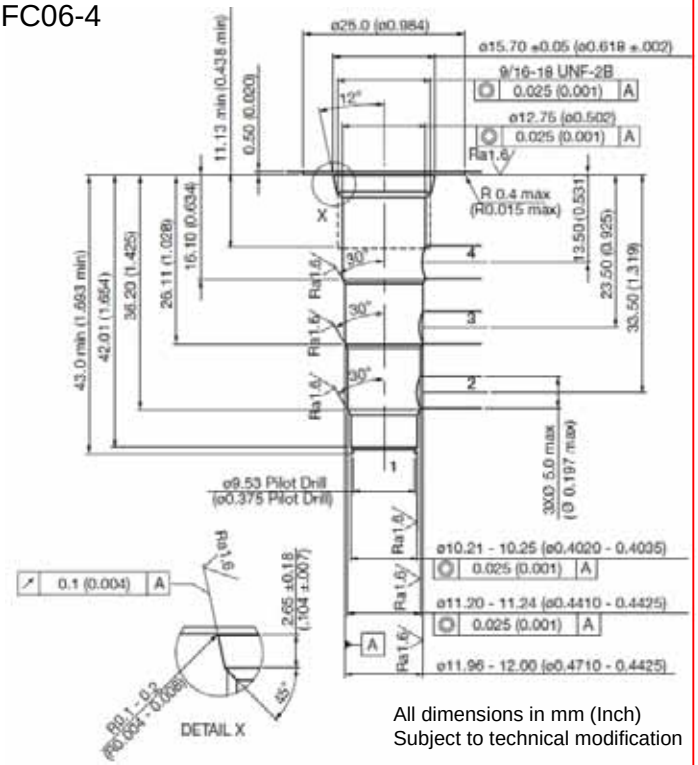




All dimensions in inch (mm)
Subject to technical modification

Cavity

FC06-4



All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582057
Countersink	2582058

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

WK06H – 01M – C – N – 24 DN

Basic model
Directional Spool type, direct acting

Type
01 = Standard
01M = manual override
01A = lockable manual override

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Coil voltage
0 = without coil (with nut and Seals)
DC: 12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
AC: 115 = 105 Volt DC voltage
230 = 205 Volt DC voltage (at AC voltage plug with suppressor diode necessary Mat. 2600582)

Coil connector (Coil... 32-1329)
DC: DG = DIN Plug to EN175301-803 Form B
DL = 2 leadwires, 450mm long
DN = Deutsch Plug, axial (Type DT04-2P)

Standard models

Code	Part No.
WK06H-01-C-N-0 without coil	2610193

(coils please choose from brochure D 5.155.0)
Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH064-SB2	3740589	steel, zinc plated	G1/4	420 bar
FH064-AB2	3741315	Alu, anodized	G1/4	245 bar

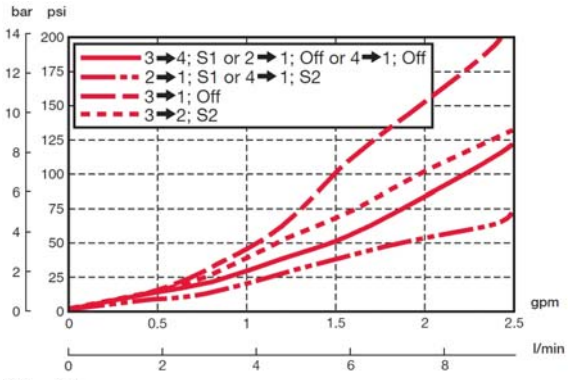
other line bodies on request

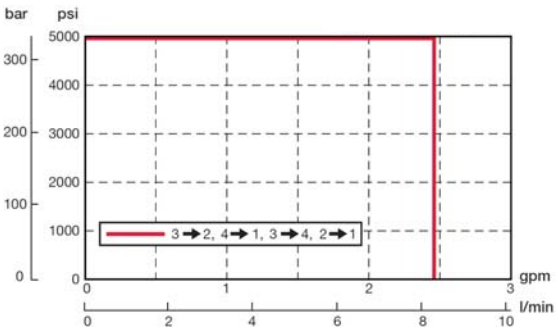
Seal kits

Code	Part No.
Seal kit-NBR	2610188
Seal kit-FKM	2610189

PERFORMANCE

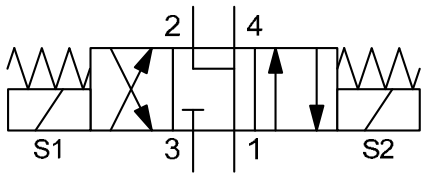
Measured at 28 mm²/s and T oil = 38°C





HYDAC INTERNATIONAL

SYMBOL

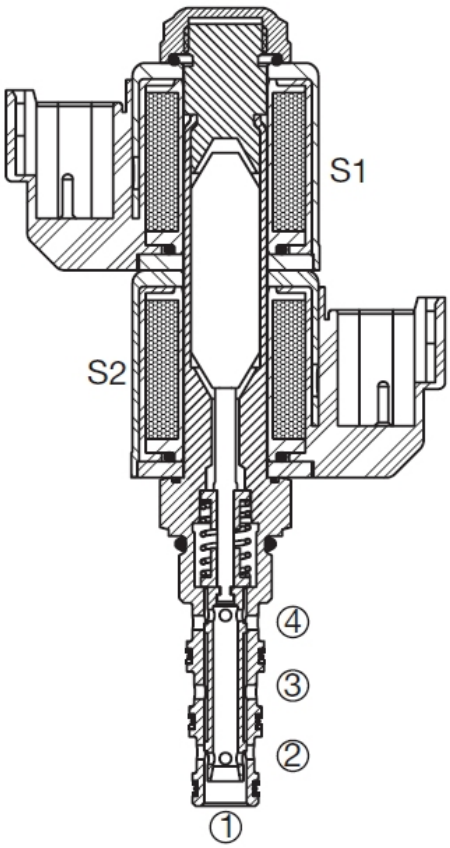


4/3 Solenoid Directional Valve Spool type, direct acting Cartridge-Minivalve – 350 bar WK06J-01

UNF

up to 11 l/min
up to 350 bar

FUNCTION



In de-energized mode the ports 2, 4 and 1 are connected, while port 3 is blocked.
If the coil S1 is energized, there is flow through the valve from port 3 to 4 and from 2 to 1.
If the coil S2 is energized, there is flow from port 3 to 2 and from 4 to 1.

FEATURES

- All exposed surfaces corrosion-proof
- All valve parts made of high-strength steel with hardened and ground components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Coils easy to exchange and pivotable

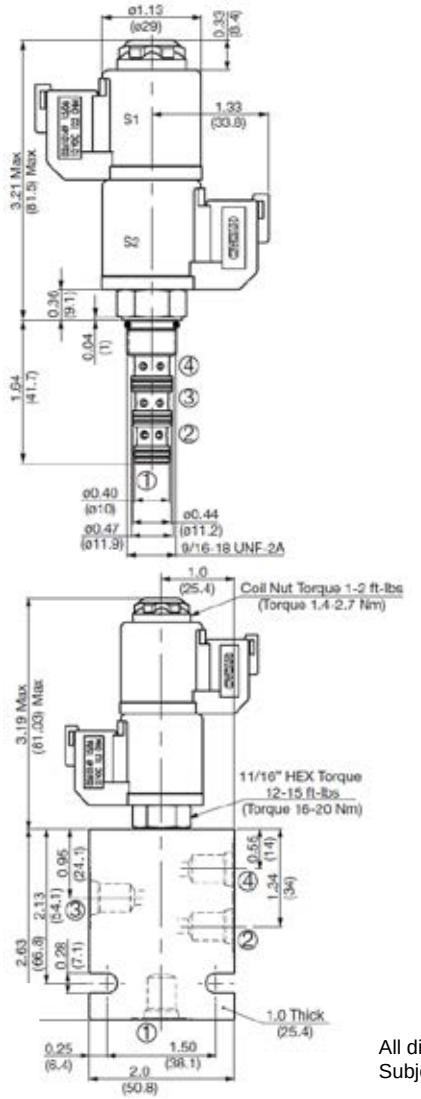
SPECIFICATIONS

Operating pressure:	max. 350 bar max. 210 bar at Tank (port 1)
Nominal flow:	max. 11 l/min
Leakage:	< max. 100 cm³/min at 250 bar and 34 mm²/s
Temperature range of operating fluid:	Min. – 30°C up to max. +100° C
Ambient temperature range:	Min. – 30°C up to max. + 60° C
Fluid:	Hydraulic fluid to DIN 51524 T1 + T2
Viscosity range:	min. 7,4 mm²/s up to max. 420 mm²/s
Filtration:	Class 21 / 19 /16 according to ISO 4406 or cleaner
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Materials:	Valve body: steel with hardened work surfaces Piston: hardened and ground steel Seals: NBR (Standard) FKM (optional, temperature range -20°C up to +120°C) Back-up rings: TPE-E
Cavity:	FC06-4
Weight:	Complete valve: 0,374 kg Coil only: 0,088 kg (2x)

Electrical data

Type of voltage:	DC coil, AC voltage is rectified by a rectifier built-in the plug
Nominal current at 20°C:	984 mA at 12 V DC 492 mA at 24 V DC
Voltage tolerance:	+/- 15% of Coil voltage
Coil duty rating:	100% continuous up to max. 115% of Coil voltage at 60°C ambient temperature

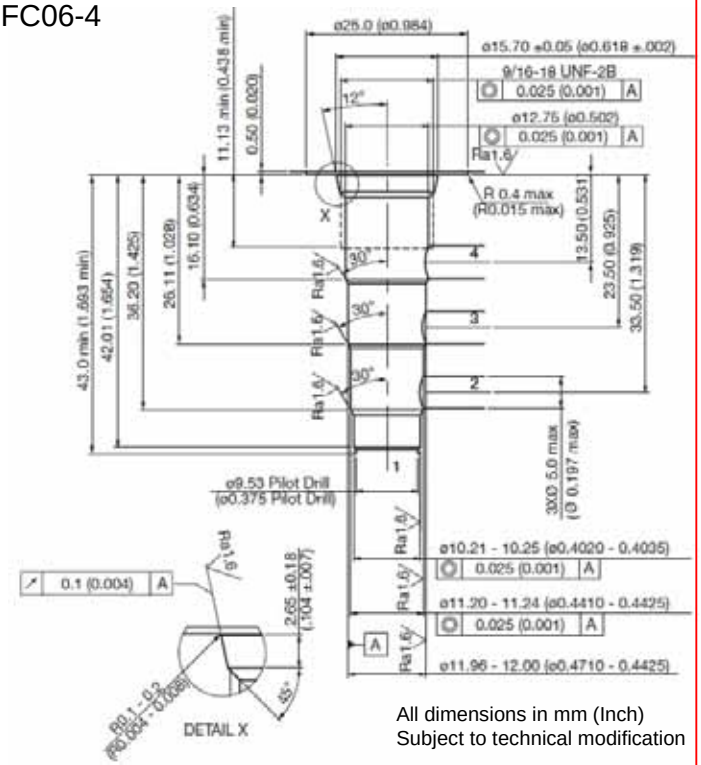
DIMENSIONS



All dimensions in inch (mm)
Subject to technical modification

Cavity

FC06-4



All dimensions in mm (Inch)
Subject to technical modification

Tools

Code	Part No.
Twist drill	2582057
Countersink	2582058

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

WK06J – 01M – C – N – 24 DN

Basic model
Directional Spool type, direct acting

Type
01 = Standard
01M = manual override
01A = lockable manual override

Body & ports
C = cartridge only
*versions in line bodies on request

Seals
N = NBR (Standard)
V = FKM (optional)

Coil voltage
0 = without coil (with nut and Seals)
DC: 12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
AC: 115 = 105 Volt DC voltage
230 = 205 Volt DC voltage (at AC voltage plug with suppressor diode necessary Mat. 2600582)

Coil connector (Coil... 32-1329)
DC: DG = DIN Plug to EN175301-803 Form B
DL = 2 leadwires, 450mm long
DN = Deutsch Plug, axial (Type DT04-2P)

Standard models

Code	Part No.
WK06J-01-C-N-0 without coil	2610191

(coils please choose from brochure D 5.155.0)
Other types on request

***Line bodies**

Code	Part No.	Material	Ports	Pressure
FH064-SB2	3740589	steel, zinc plated	G1/4	420 bar
FH064-AB2	3741315	Alu, anodized	G1/4	245 bar

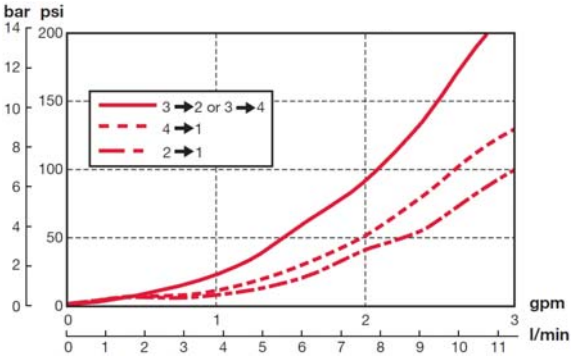
other line bodies on request

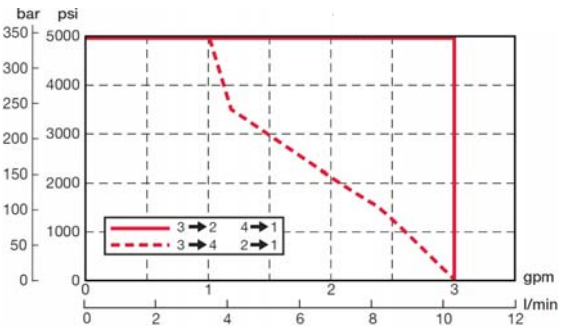
Seal kits

Code	Part No.
Seal kit-NBR	2610188
Seal kit-FKM	2610189

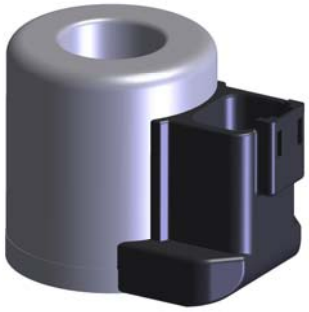
PERFORMANCE

Measured at 28 mm²/s and T oil = 38°C





HYDAC INTERNATIONAL



Coils for Minivalves

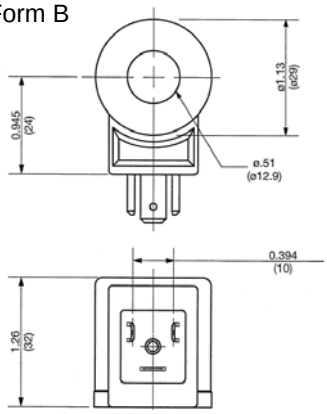
(for solenoid operated directional valves)

Type 32-1329

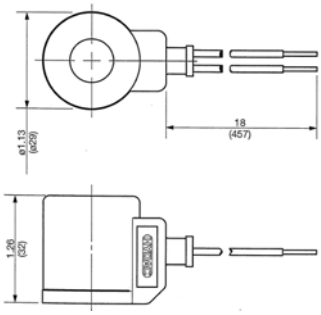
for following valves:

WS06Z
WK06W
WK06Y
WK06G
WK06J
WS06Y
WK06C
WK06E
WK06H

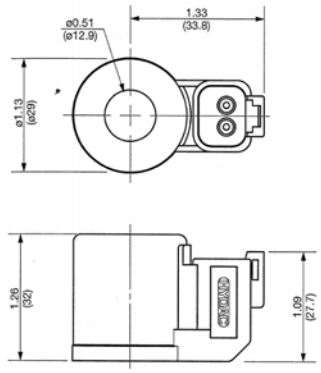
Connector type G
DIN Plug to EN175-301-803
Form B



Connector type L
2 leadwires, 450mm long



Connector type N
Deutsch Plug, 2-poles (Type DT04-2P)



FEATURES-

- **Maximal force at minimal space requirement,**
  by perfect wound coil - maximal copper : avoids damages of the insulation of the wires (breakdown by short-circuits)

- **Fully closed coil**
  internal coil sealing avoids humidity and short-circuits in the winding

- **Designed for 100% coil duty rating**
  at Imax and ambient temperatures from –20° up to +60°C

- **Small energy consumption**
  by optimal design of force – energy ratio

- **High mechanical resistance,**
  by zinc plated steel cover

- **High thermal stability,**
  to U.L. class N (180°C)

- **Standardized 3 different electrical connectors with IP ratings IP65, IP67 and IP6K9K**
  DIN/EN Plug (G) IP65 Form B, leadwires (L) IP65/IP67//IP6K9K,
  Deutsch Plug (N) IP65/IP67/IP6K9K
  others on request

- **Mounting direction optional,**
  by symmetrical coil design

- **Coil dimension = typification**
  Type 32-1329 = 32mm high (13 mm inside Ø, 29 mm outside Ø)

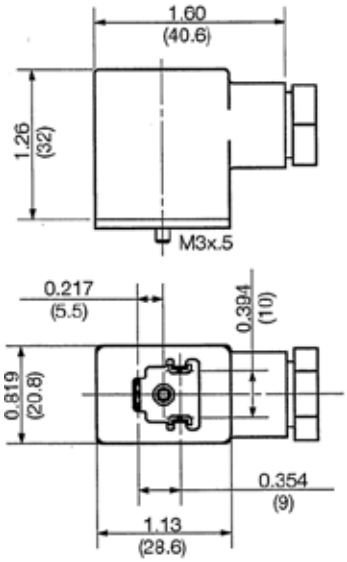
- **Class UL 583 permitted coils available on demand**

SPECIFICATIONS

Coil duty rating:	100% continuous up to max. 115% of Coil voltage at max. 60° C ambient temperature
Max. permitted temperature at coil:	160° C
Power intake:	12 W at Imax and 20° C coil temperature
Windings:	to U.L. class N (180°C)
Outer shell:	steel, zinc plated
Plug socket:	Polyamide, black

(All data are valid for a coil mounted on valve)

Description
In general the coil is produced as DC coil.



DIN plug according to EN 175-803
Form B for:
Connection to DC power
Part. No. 2600570

Connection to AC power
Part. No. 2600582
with integrated rectifier

MODEL CODE

Coil 12 DG01 – 32 -1329

Basic model

Coil voltage
12 V DC
24 V DC
105 V DC (Only Connector type DG)
205 V DC (Only Connector type DG) (at AC voltage
Plug with suppressor diode necessary Mat. 2600582)

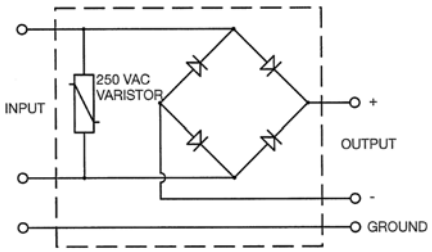
Type of voltage
D = DC voltage DC, directional valve

Coil connectors
G = Plug to EN175301-803 Form B, IP rating IP65
L = 2 leadwires, 0.75mm², 450mm (18“) long
IP rating IP65 /IP67/IP6K9K
N = Deutsch Plug, 2-poles, (DT04-2P) IP rating IP65/IP67/IP6K9K
Other coil connectors on request

Variation (depending on connector)
omission = Standard
01, 02... = e. g. suppressor diode, different cable lengths, etc...
others on request

Typification
32-1329 = main measures (Height, inner diameter, outer diameter)

The model code only serves for your information, available products see chart.



Codes and corresponding Part No's.							
Nominal voltage (Volt)	**Coil power (Watt)**	**Resis-tance (Ohm)**	**Nominal current (Amp.)**		**Part No's for connector** DIN **(G)**	leadwires **(L)**	Deutsch **(N)**
12 V DC	12	12,2	0,98		2610160	2610151	2610149
				with suppressor diode	2610268	2610267	2610210
24 V DC	12	48,7	0,49		2610161	2610162	3012599
				with suppressor diode	2610269	2610266	2610265
115 V AC*	12	980	0,11		2610156*	--	--
230 V AC*	12	3700	0,06		2610159*	--	--

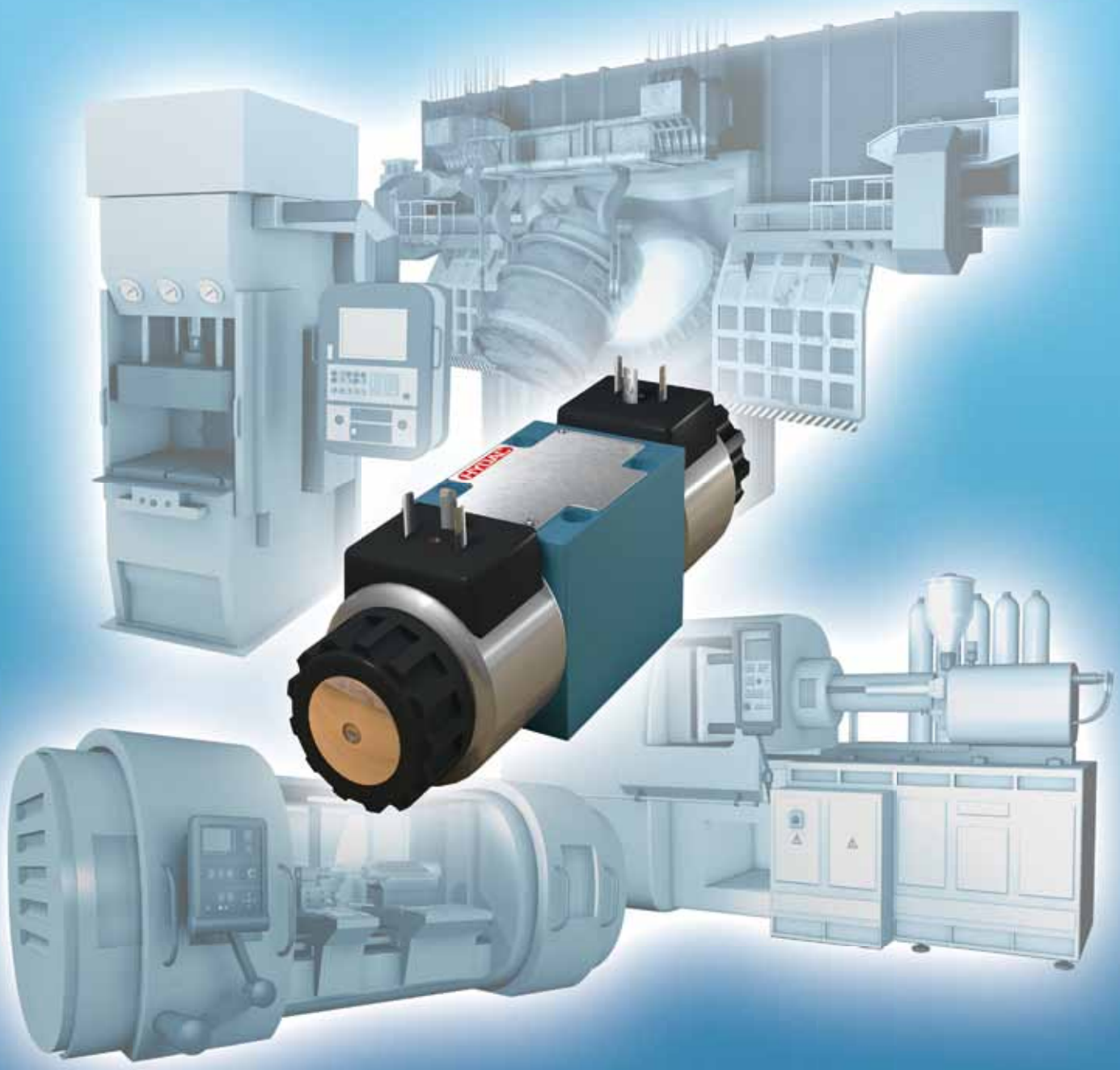
•If using AC voltage a plug (Part no. 2600582) with rectifier is necessary
Other connectors on request.

Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact
the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Juistus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel. 06897 / 509-01
Fax 06897 / 509 598
E-Mail: flutec@hydac.com

HYDAC INTERNATIONAL

HYDAC Fluidtechnik:
Industrial Valves



HYDAC INTERNATIONAL

Content

Directional spool valves, plate mounted

4WE 6 **4/2- and 4/3-Directional spool valves NW6**
D
D-OF
E
EA
G
GA
H
HA
J
JA
M
Q
QA

4WE 10 **4/2- and 4/3-Directional spool valves NW10**
D
D-OF
E
EA
G
GA
H
HA
J
JA
Q
QA

Directional valves, lever operated, plate mounted

4WMH 6 Directional valve lever operated NW6

4WMH 10 Directional valve lever operated NW10

Directional control valves, plate mounted

4WHE 10 4/3-Directional spool valve – main stage NW10

4WHE 16 4/3-Directional spool valve – main stage NW16

4WHE 25 4/3-Directional spool valve – main stage NW25

4WHE 32 4/3-Directional spool valve – main stage NW32

Directional control valves with electro-hydraulic pilot control

4WEHI 10 4/3-Directional spool valve – main stage/pilot NW10

4WEHI 16 4/3-Directional spool valve – main stage/pilot NW16

4WEHI 25 4/3-Directional spool valve – main stage/pilot NW25

4WEHI 32 4/3-Directional spool valve – main stage/pilot NW32

Content

Pressure, Flow, Check valves, sandwich plates

ZW-DB06 Pressure relief valve, pilot operated NW6

ZW-DM06 Pressure reducing valve NW6

ZW-DW06 Pressure Compensator NW6

ZW-SDR06 Non-return check valve NW6

ZW-2SR06 Flow control valve with check function NW6

ZW-RV06 Check valve NW6

ZW-RP06 Check valve, pilot-to-open NW6

ZW-DB10 Pressure relief valve, pilot operated NW10

ZW-DM10 Pressure reducing valve NW10

ZW-DW10 Pressure Compensator NW10

ZW-SDR10 Non-return check valve NW10

ZW-2SR10 Flow control valve with check function NW10

ZW-RV10 Check valve NW10

ZW-RP10 Check valve, pilot-to-open NW10

Pressure, Flow, Check valves, plate mounted

VP-DRP6 Pressure reducing valve NW6

VP-2SR6 Flow control valve NW6

VP-RP6 Check valve NW6

VP-DBP 10 Pressure relief valve, pilot operated NW10

VP-DRP 10 Pressure reducing valve, pilot operated NW10

VP-2SR 10 Flow control valve NW10

VP-RP 10 Pilot-to-open check valve NW10

HYDAC INTERNATIONAL

Content

Proportional pressure, flow, directional valves, plate mounted

VP-PDB6 Proportional pressure relief valve NW6

VP-PDRP6 Proportional pressure reducing valve, pilot operated NW6

VP-P2SRE6 Proportional flow control valve NW6

VP-P2SRR6 Proportional flow control valve with transducer NW6

VP-PDBP 10 Proportional pressure relief valve, pilot operated NW10

P4WE 6 4/3-Proportional directional spool valve NW6

P4WR 6 4/3-Proportional directional spool valve with WA NW6

P4WEE 6 4/3-Proportional directional spool valve with OBE NW6

P4WRE 6 4/3-Proportional directional valve with WA and OBE NW6

P4WE 10 4/3-Proportional directional spool valve NW10

P4WEE 10 4/3-Proportional directional spool valve with OBE NW10

P4WRE 10 4/3-Proportional directional valve with WA and OBE NW10

Electronics (for Proportional valves) (see pages Seite 1053 ff.)

PEK SRA Electronics for VP-P2SRR (1 Quadrant, controlled)

PEK WAR Electronics for P4WE (2 Quadrants, actuated)

PEM XD Dig. Electronics for VP-PDB (1 Quadrant, actuated)

PES XD-D Digital plug amplifier

2-port slip-in cartridge valves, NW 16 - 63

L-CEE.B6A Slip-in valve with pressure function, without damping

L-CEE.B6B Slip-in valve with directional function, without damping

L-CEE.B6C Slip-in valve with directional function, with damping

2-port slip-in cartridge covers

LD-CCE.D61D Cover 1D

LD-CCE.D61H Cover 1H

LD-CCE.D61RM Cover 1RM

LD-CCE.D61W Cover 4W

LD-CCE.D61WR Cover 2WR

LD-CCE.D61DR Cover 2DR

Accessories for industrial valves

Seal kits, plugs, plates, screws, pins, etc.

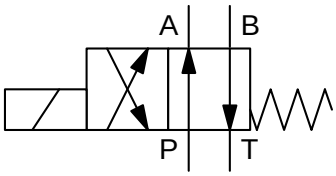
HYDAC INTERNATIONAL

4/2- directional spool valve

Solenoid-operated, direct acting

4 WE 6 D

SYMBOL



up to 80 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 6 D are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de- energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from its rest position to its final position. This opens the required flow paths according to the symbol. When the solenoid is de- energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

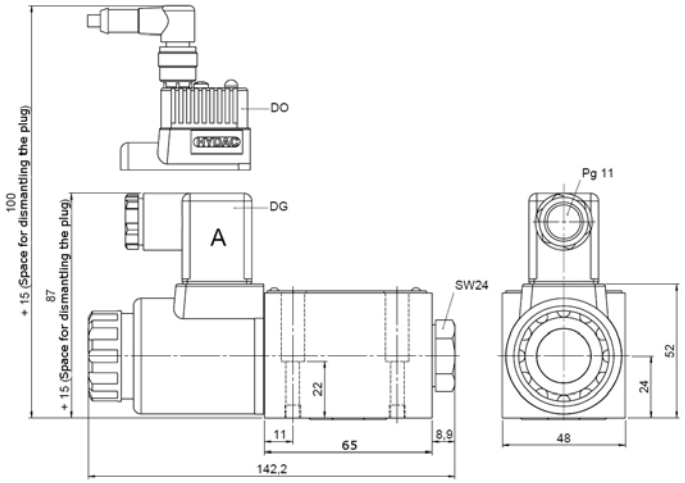
- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

-SPECIFICATIONS

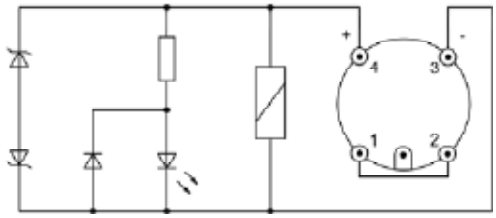
Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 80 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	1,5 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

E 5.213.0 /01.13

DIMENSIONS

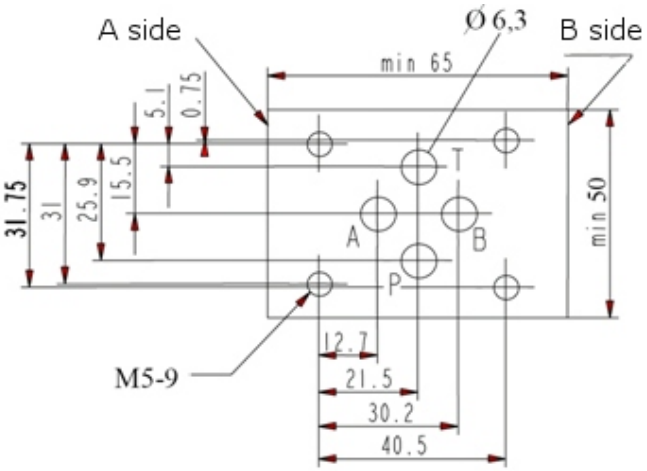


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401

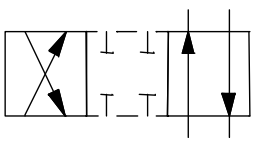


Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

MODEL CODE

4WE 6 D S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
6 = Nominal size 6

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803
DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

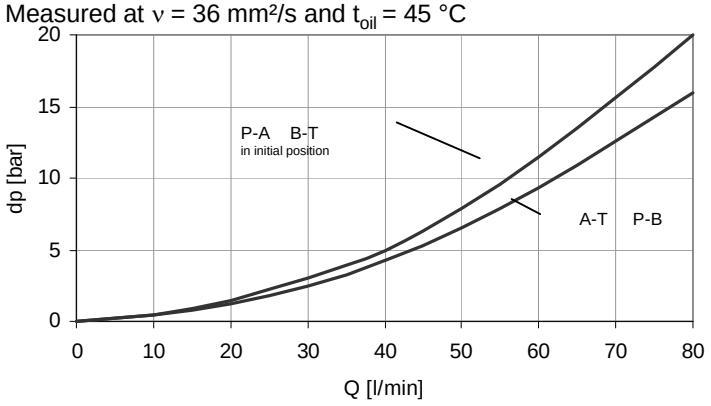
Standard models

Name	Part No.
4WE 6 D S01-12DG /V	6063112
4WE 6 D S01-24DG /V	6063118

other models on request

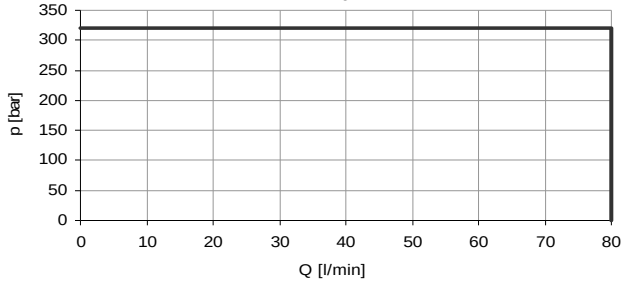
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

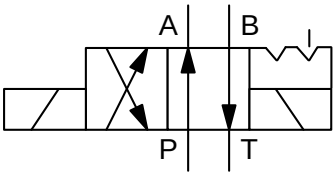
HYDAC INTERNATIONAL

4/2- directional- spool valve

Solenoid-operated, direct acting

4 WE 6 D-OF

SYMBOL



up to 80 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 6 D-OF are directional valves for oil-hydraulic systems, which serve to open and close flow paths. The 4WE 6 D-OF is a directional valve with two spool positions, two solenoids and one detent. It alternately locks the two spools in position. Therefore the solenoid needs not to be permanently energized.

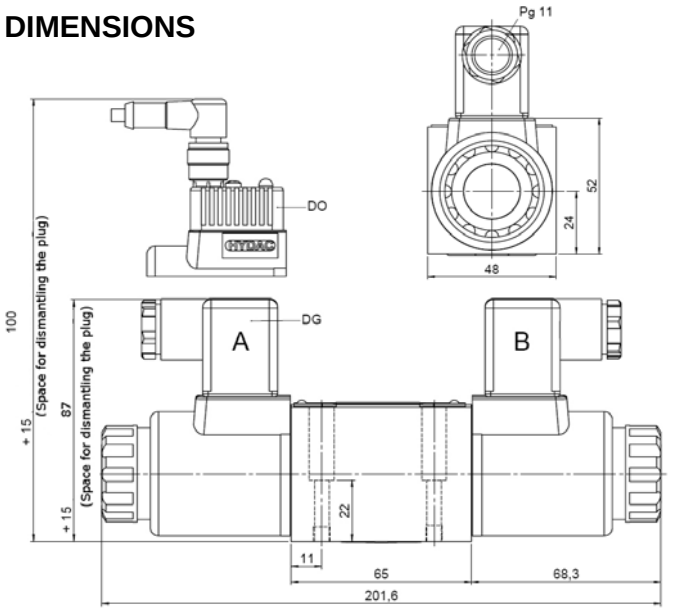
FEATURES

- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

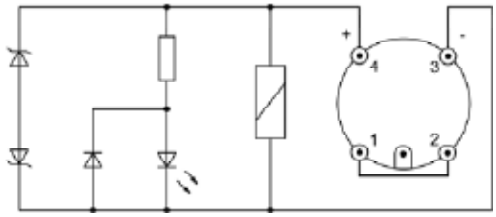
SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 80 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner class 20/18/15
Max. switching frequency:	15.000/h
MTTFd:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	2,0 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

DIMENSIONS

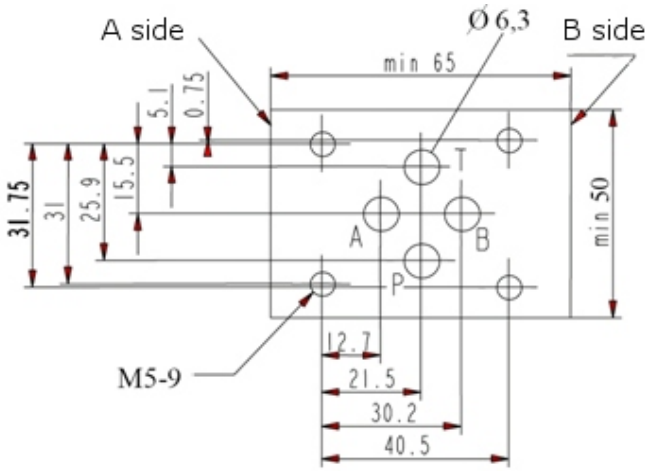


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401

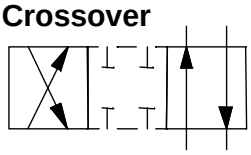


Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 6 D -OF S01 - 12DG /V

Name
4/2-directional spool valve

Nominal size
6 = Nominal size 6

Symbol
OF = with detent

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803 DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

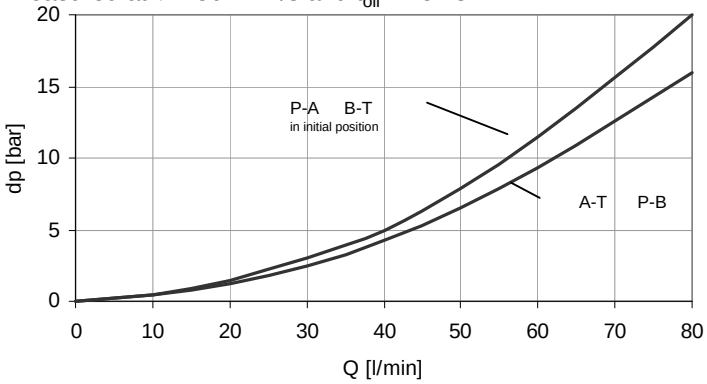
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

Standard models

Name	Part No.
4WE 6 D-OF S01–24DG /V with detent	6070560
other models on request	

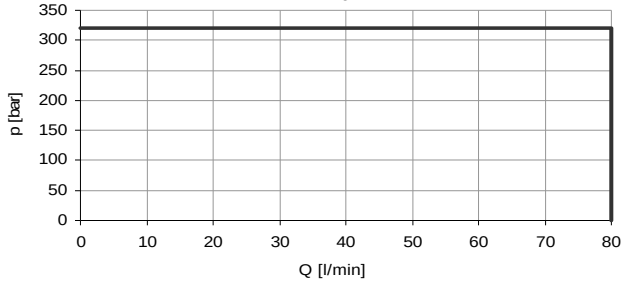
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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Subject to technical modifications.

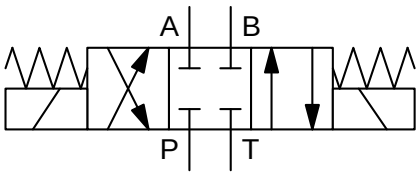
HYDAC INTERNATIONAL

4/3- directional- spool valve

Solenoid-operated, direct acting

4 WE 6 E

SYMBOL



up to 80 l/min
up to 320 bar

FUNCTION

HYDAC 4/3 directional spool valves in the series 4WE 6 E are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de-energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil-immersed solenoid. The solenoid pushes the control spool from its rest position to its final position. This opens the required flow paths according to the symbol. When the solenoid is de- energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

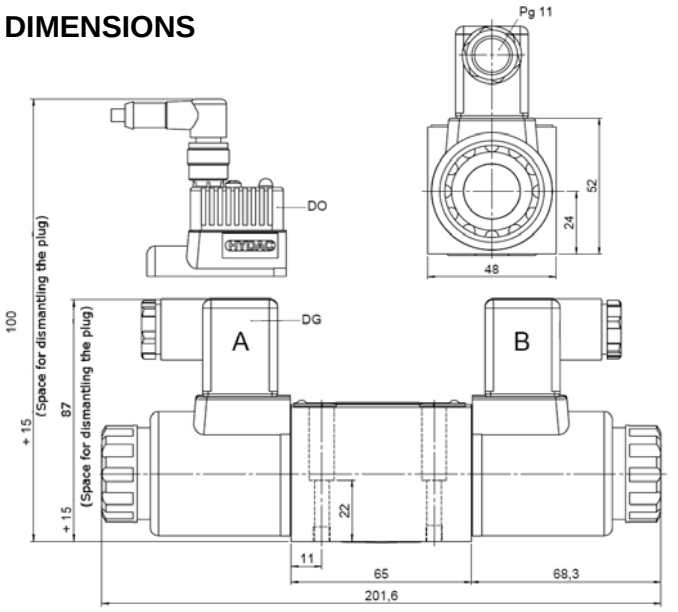
- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

SPECIFICATIONS

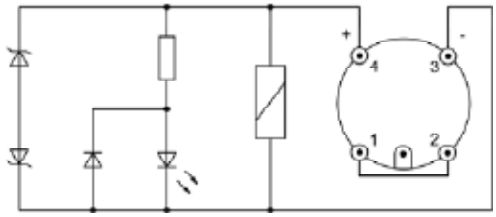
Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 80 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	2,0 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

E 5.212.0 /01.13

DIMENSIONS

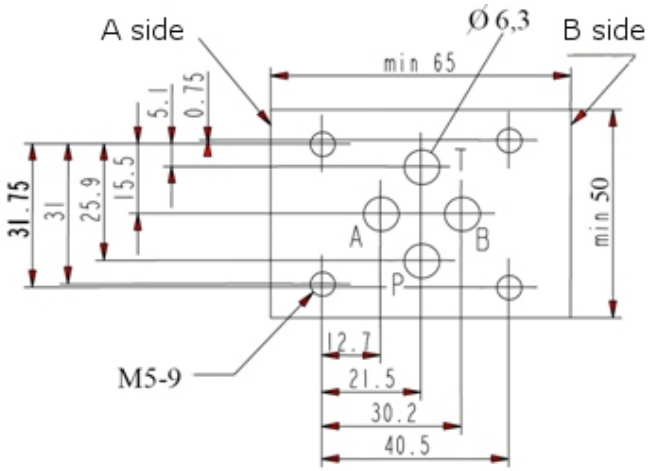


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401



Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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Subject to technical modifications.

MODEL CODE

4WE 6 E S01 - 12DG / V

Name
4/3-directional spool valve

Nominal size
6 = Nominal size 6

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803
DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

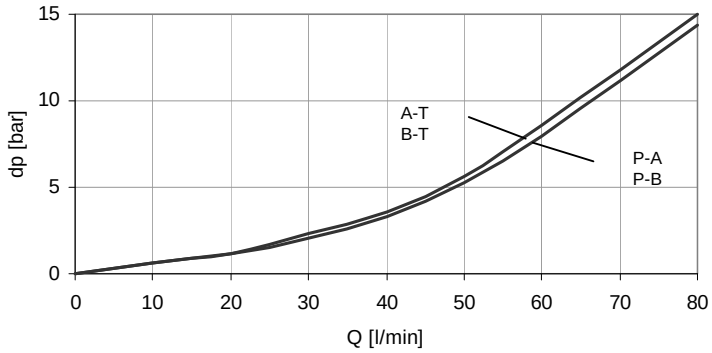
Standard models

Name	Part No.
4WE 6 E S01-12DG /V	6063114
4WE 6 E S01-24DG /V	6063120

other models on request

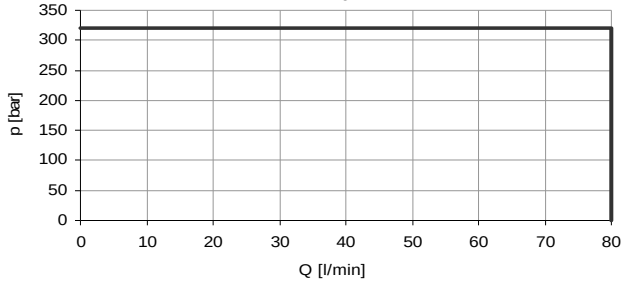
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

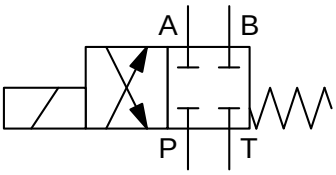
HYDAC INTERNATIONAL

4/2- directional spool valve

Solenoid-operated, direct acting

4 WE 6 EA

SYMBOL



up to 80 l/min
up to 320 bar

FEATURES

- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

FUNCTION

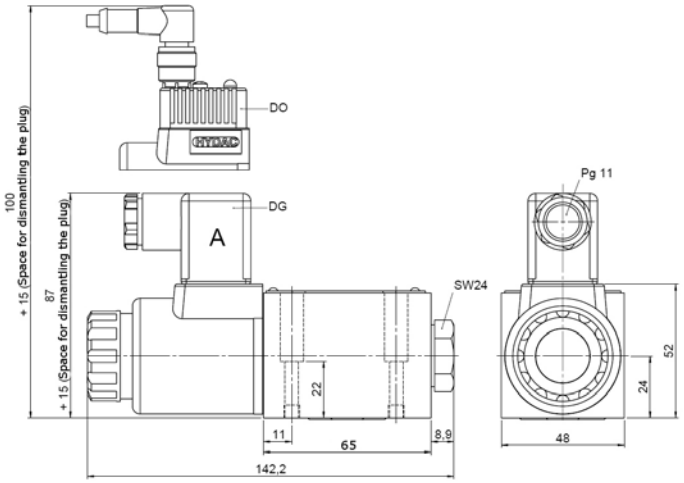
HYDAC 4/2 directional spool valves in the series 4WE 6 EA are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de- energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from its rest position to its final position. This opens the required flow paths according to the symbol. When the solenoid is de- energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

SPECIFICATIONS

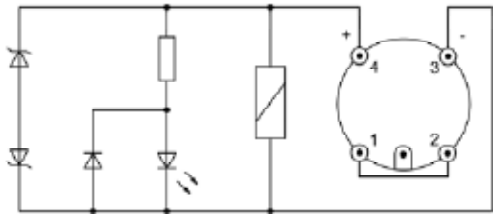
Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 80 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	1,5 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

E 5.214.0 /01.13

DIMENSIONS

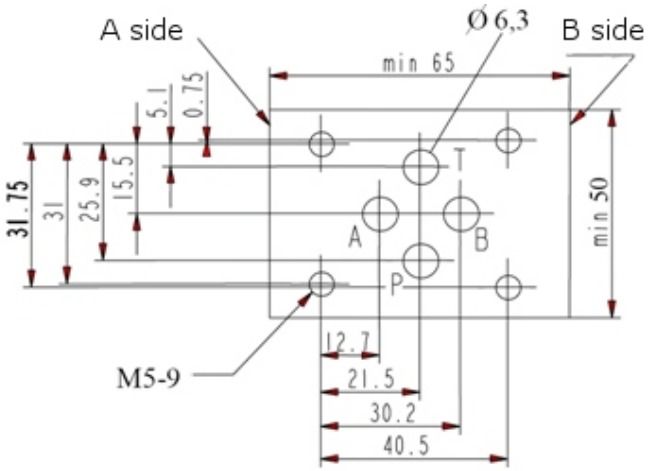


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401

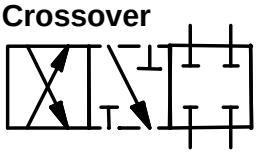


Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 6 EA S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
6 = Nominal size 6

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803
DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

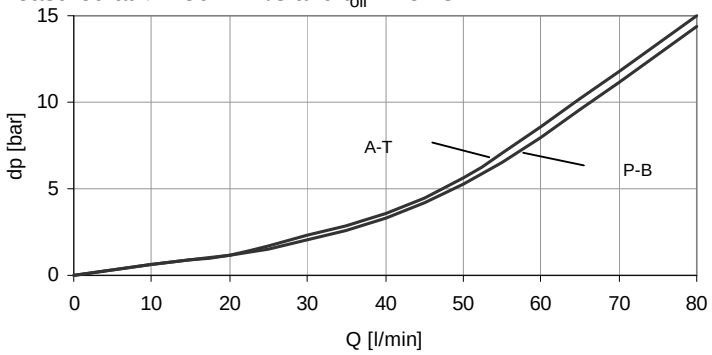
Standard models

Name	Part No.
4WE 6 EA S01-12DG /V	6063113
4WE 6 EA S01-24DG /V	6063119

other models on request

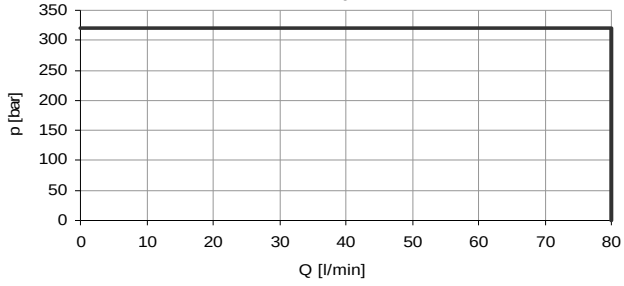
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

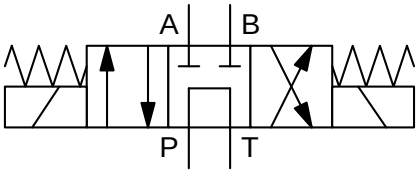
HYDAC INTERNATIONAL

4/3- directional- spool valve

Solenoid-operated, direct acting

4 WE 6 G

SYMBOL



up to 60 l/min
up to 320 bar

FUNCTION

HYDAC 4/3 directional spool valves in the series 4WE 6 G are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de-energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil-immersed solenoid. The solenoid pushes the control spool from its rest position to its final position. This opens the required flow paths according to the symbol. When the solenoid is de- energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 60 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	2,0 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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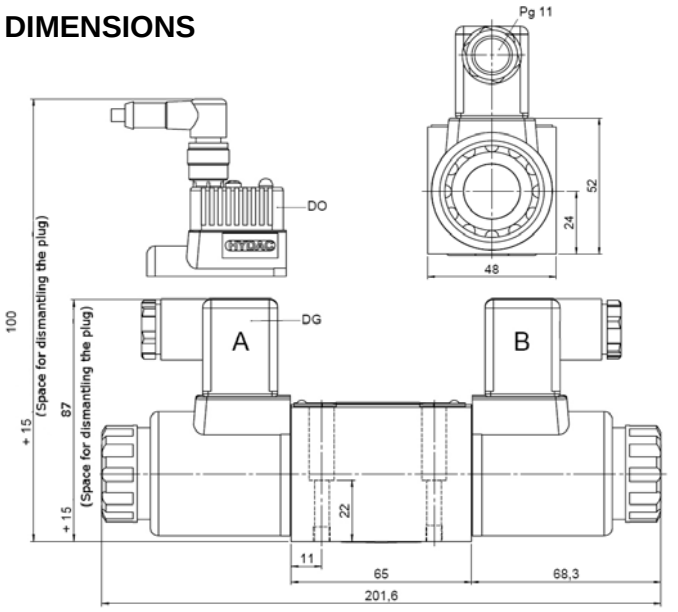
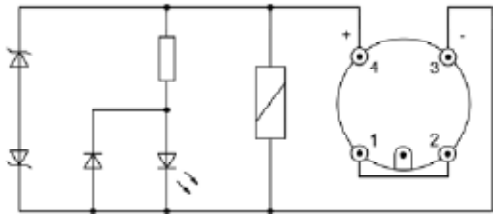
DIMENSIONS

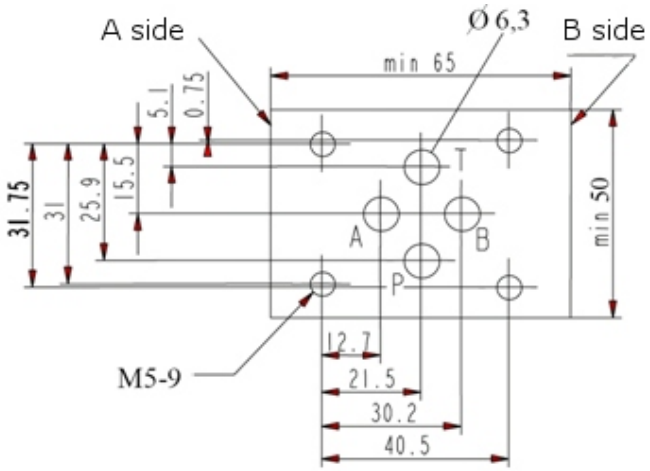


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401

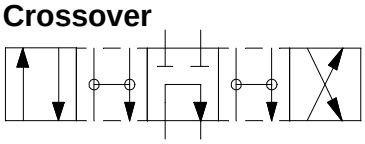


Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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MODEL CODE

4WE 6 G S01 - 12DG / V

Name
4/3-directional spool valve

Nominal size
6 = Nominal size 6

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803
DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

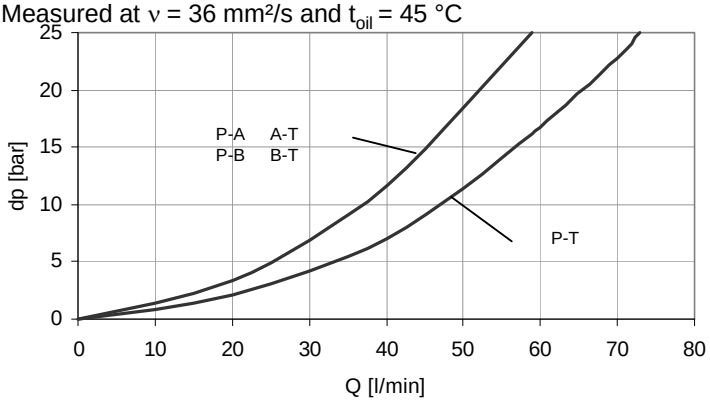
Standard models

Name	Part No.
4WE 6 G S01-12DG /V	6063115
4WE 6 G S01-24DG /V	6063143

other models on request

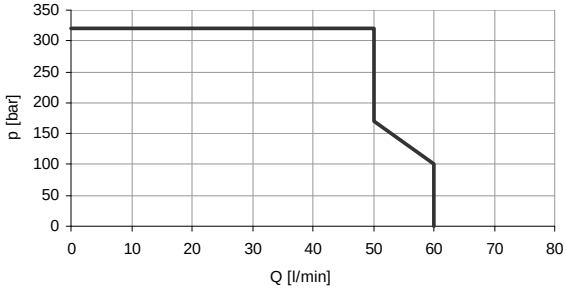
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

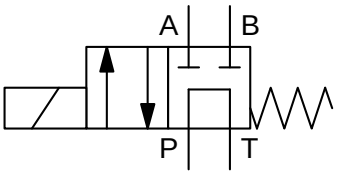
HYDAC INTERNATIONAL

4/2- directional spool valve

Solenoid-operated, direct acting

4 WE 6 GA

SYMBOL



up to 60 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 6 GA are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de- energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from its rest position to its final position. This opens the required flow paths according to the symbol. When the solenoid is de- energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 60 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	1,5 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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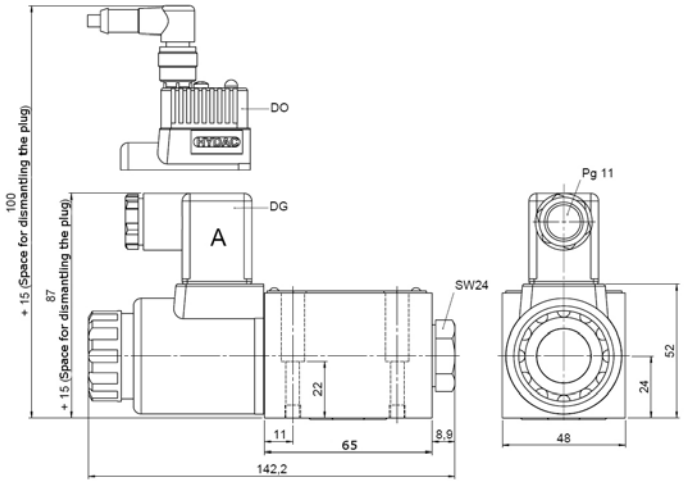
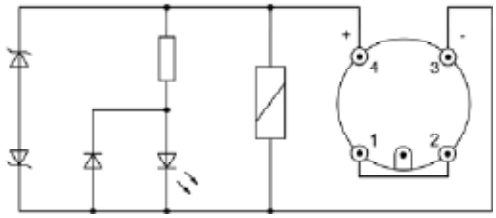
DIMENSIONS

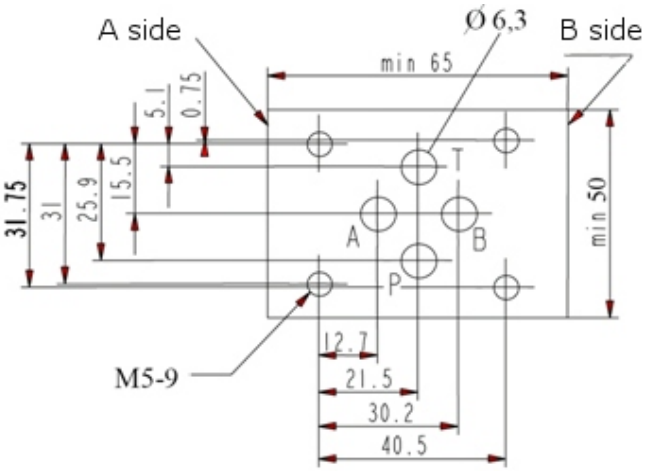


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401

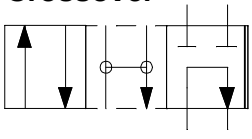


Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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Subject to technical modifications.

MODEL CODE

4WE 6 GA S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
6 = Nominal size 6

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803
DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

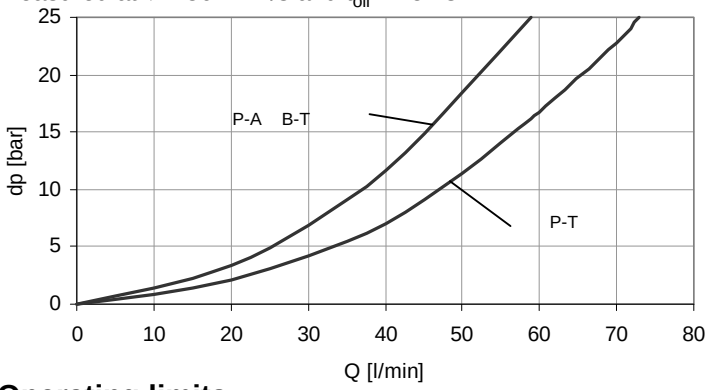
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

Standard models

Name	Part No.
4WE 6 GA S01-24DG /V	6080326
other models on request	

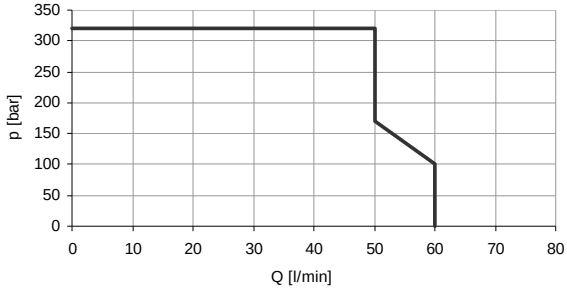
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

measured at ν = 36 mm²/s and t = 45°C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

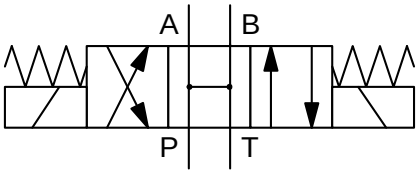
HYDAC INTERNATIONAL

4/3- directional- spool valve

Solenoid-operated, direct acting

4 WE 6 H

SYMBOL



up to 80 l/min
up to 320 bar

FUNCTION

HYDAC 4/3 directional spool valves in the series 4WE 6 H are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de-energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil-immersed solenoid. The solenoid pushes the control spool from its rest position to its final position. This opens the required flow paths according to the symbol. When the solenoid is de- energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 80 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	2,0 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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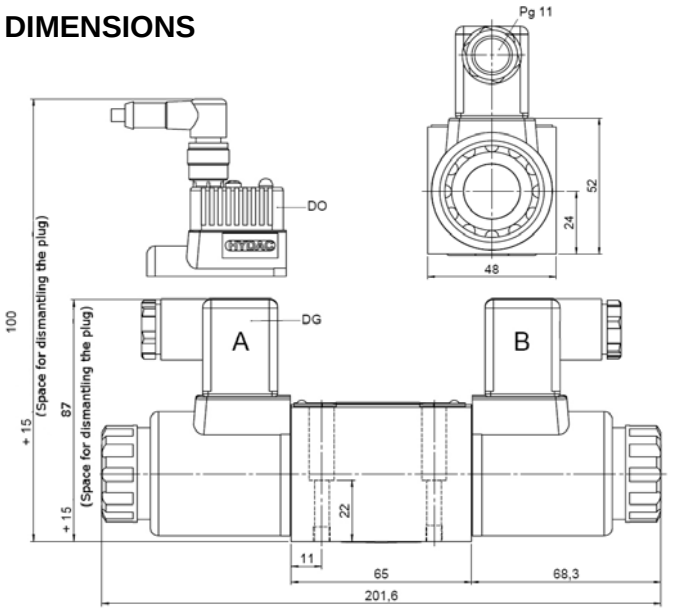
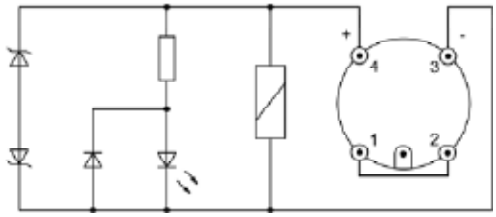
DIMENSIONS

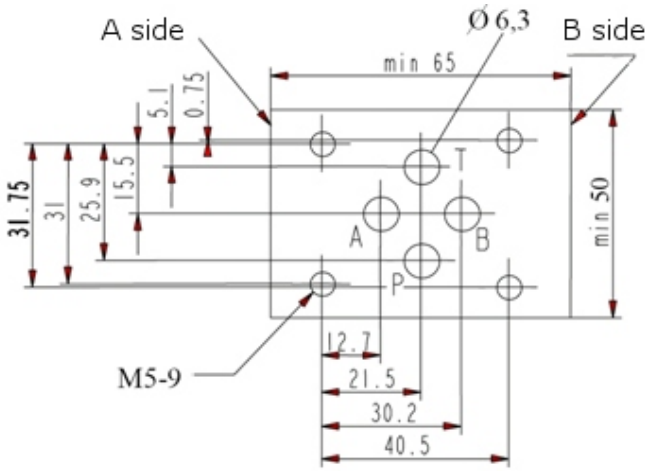


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401

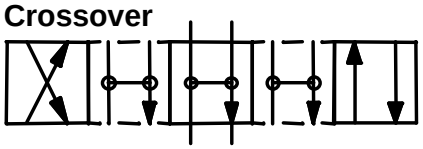


Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 6 H S01 - 12DG / V

Name
4/3-directional spool valve

Nominal size
6 = Nominal size 6

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803
DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

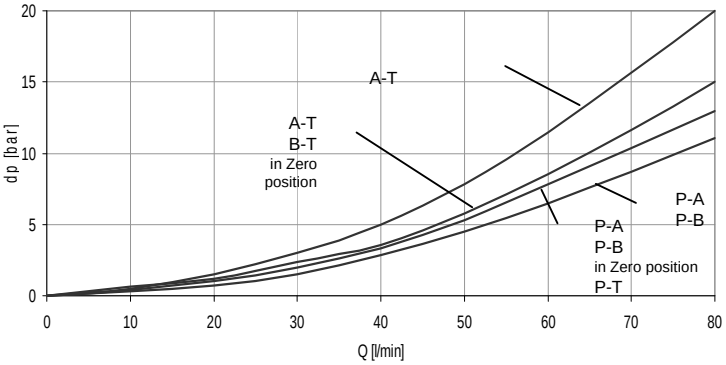
Standard models

Name	Part No.
4WE 6 H S01-12DG /V	6063116
4WE 6 H S01-24DG /V	6063145

other models on request

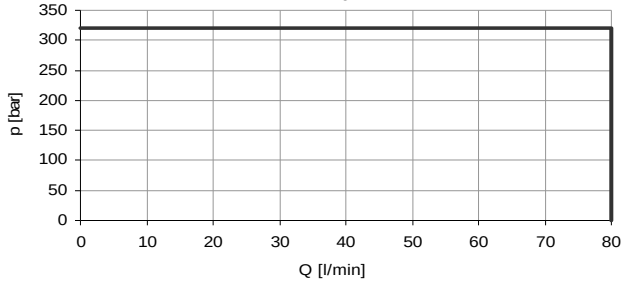
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
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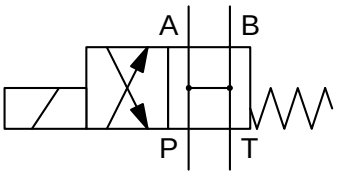
HYDAC INTERNATIONAL

4/2- directional spool valve

Solenoid-operated, direct acting

4 WE 6 HA

SYMBOL



up to 80 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 6 HA are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de- energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from its rest position to its final position. This opens the required flow paths according to the symbol. When the solenoid is de- energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 80 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	1,5 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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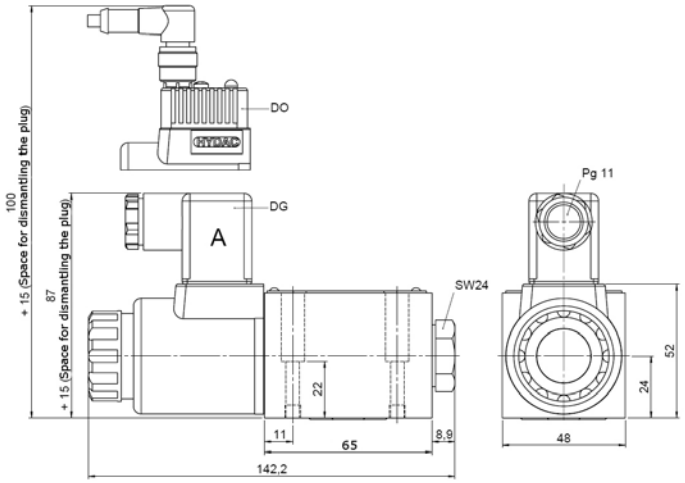
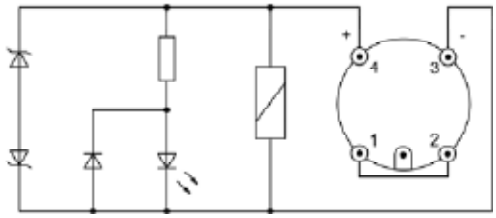
DIMENSIONS

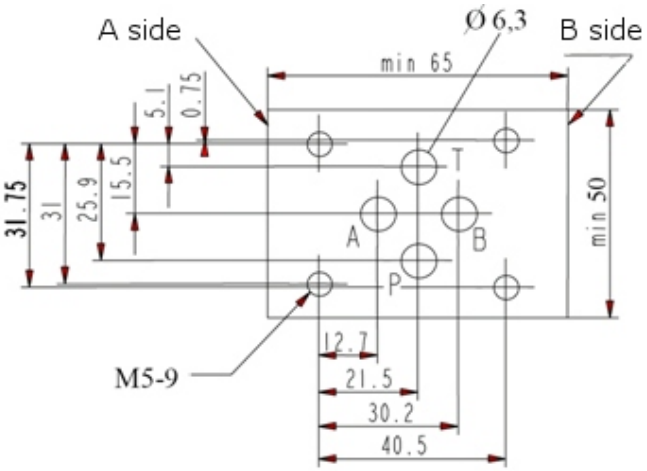


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401

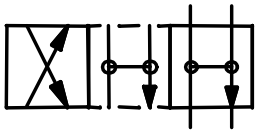


Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 6 HA S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
6 = Nominal size 6

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803
DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

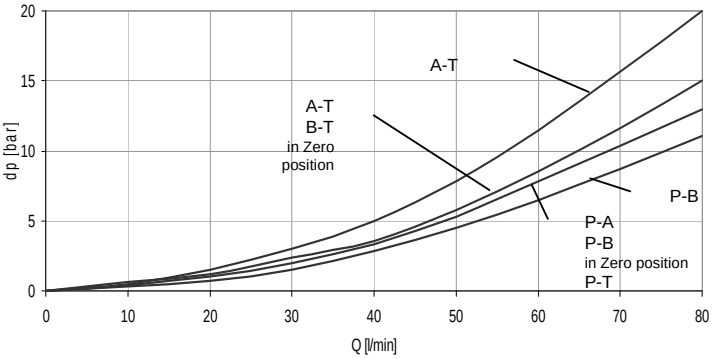
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

Standard models

Name	Part No.
4WE 6 HA S01-24DG /V	6074343
other models on request	

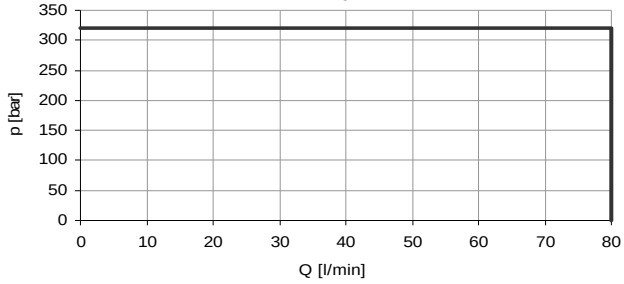
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

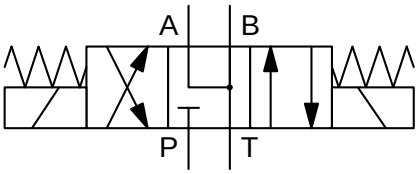
HYDAC INTERNATIONAL

4/3- directional- spool valve

Solenoid-operated, direct acting

4 WE 6 J

SYMBOL



up to 60 l/min
up to 320 bar

FUNCTION

HYDAC 4/3 directional spool valves in the series 4WE 6 J are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de-energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil-immersed solenoid. The solenoid pushes the control spool from its rest position to its final position. This opens the required flow paths according to the symbol. When the solenoid is de- energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 60 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	2,0 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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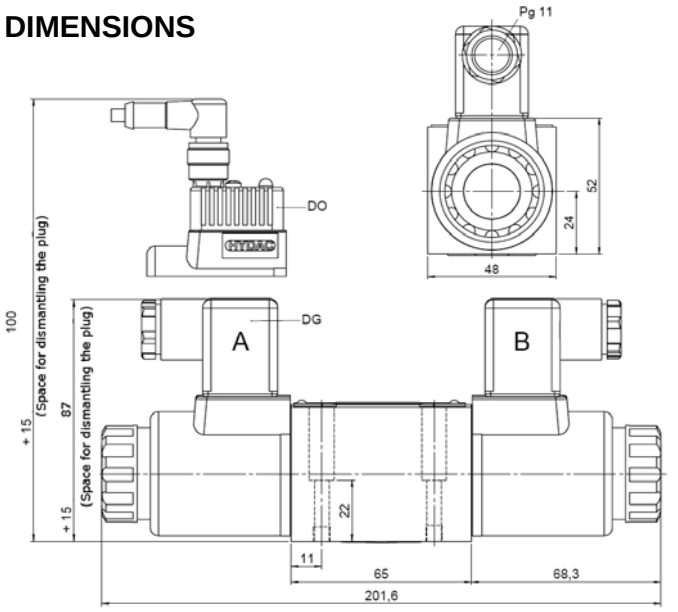
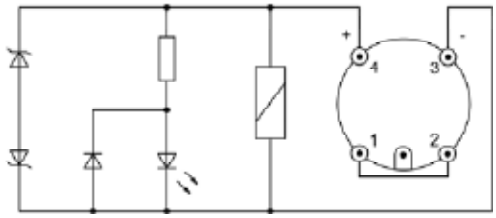
DIMENSIONS

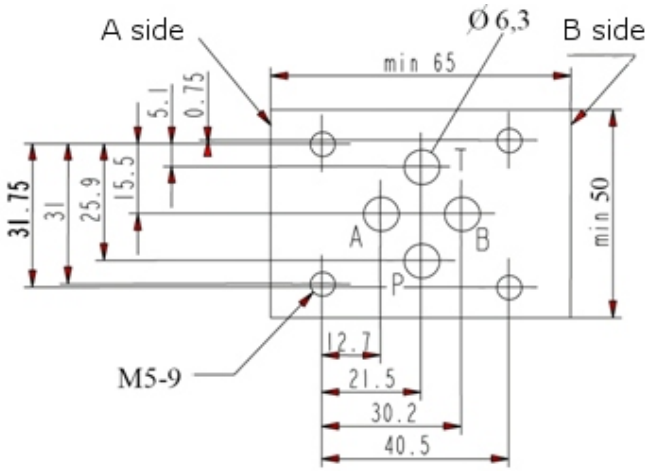


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401

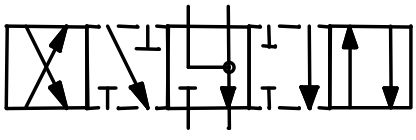


Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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MODEL CODE

4WE 6 J S01 - 12DG / V

Name
4/3-directional spool valve

Nominal size
6 = Nominal size 6

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803
DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

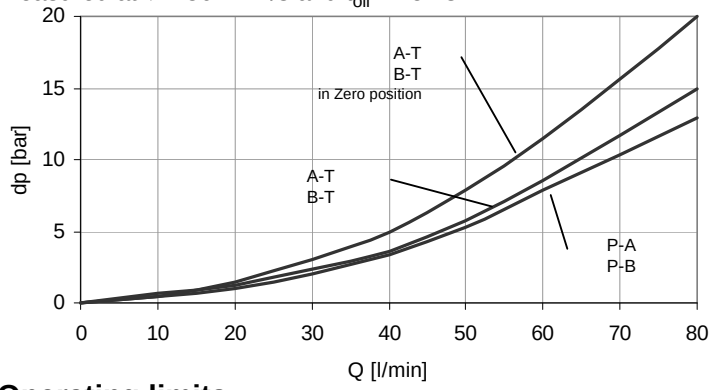
Standard models

Name	Part No.
4WE 6 J S01-12DG /V	6063117
4WE 6 J S01-24DG /V	6063148

other models on request

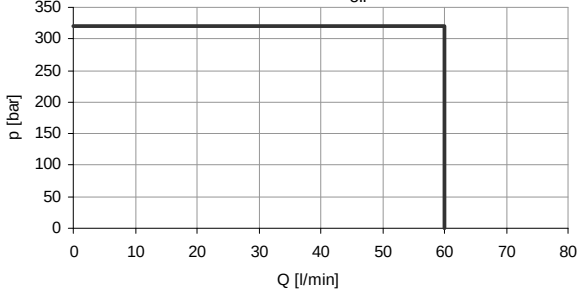
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

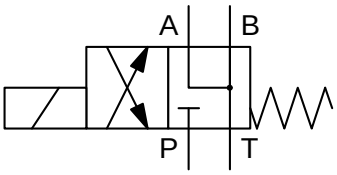
HYDAC INTERNATIONAL

4/2- directional spool valve

Solenoid-operated, direct acting

4 WE 6 JA

SYMBOL



up to 60 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 6 JA are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de- energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from its rest position to its final position. This opens the required flow paths according to the symbol. When the solenoid is de- energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 60 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	1,5 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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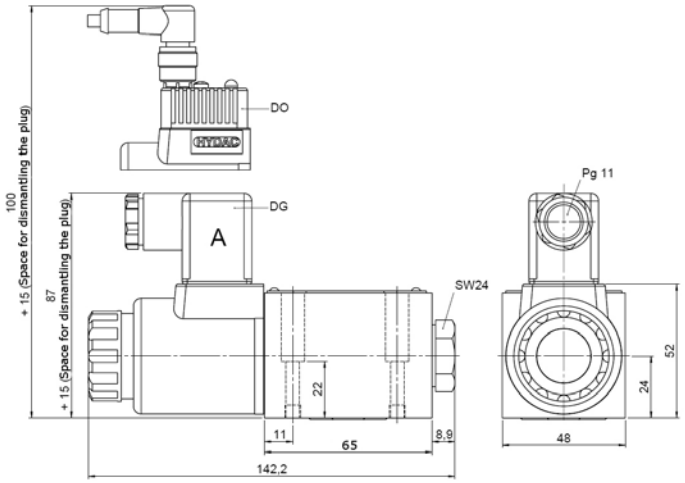
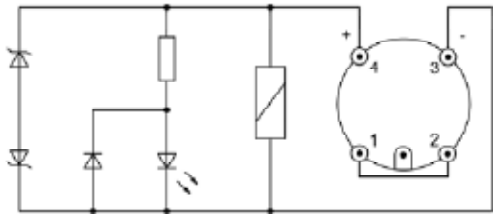
DIMENSIONS

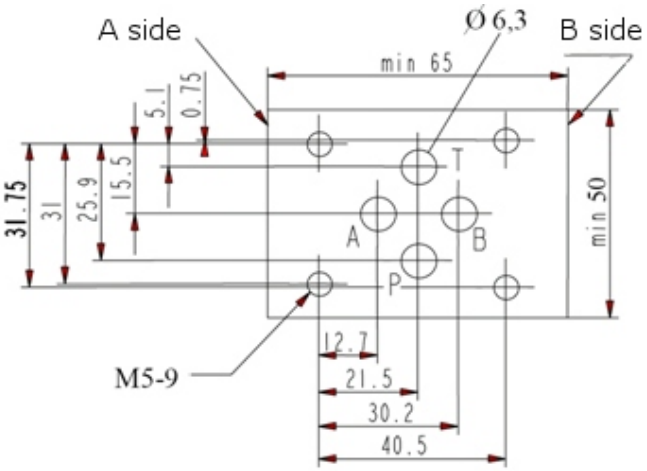


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401

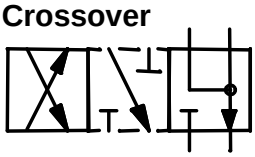


Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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Subject to technical modifications.

MODEL CODE

4WE 6 JA S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
6 = Nominal size 6

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803
DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

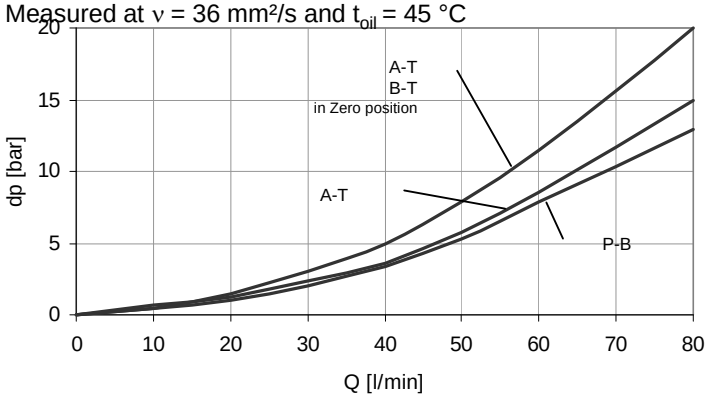
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

Standard models

Name	Part No.
4WE 6 JA S01-24DG /V	6086723
other models on request	

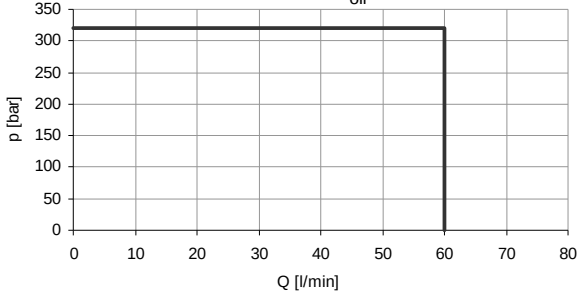
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

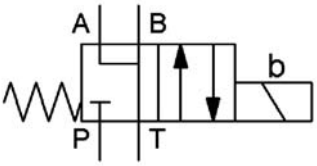
HYDAC INTERNATIONAL

4/2- directional spool valve

Solenoid-operated, direct acting

4 WE 6 JB

SYMBOL



up to 60 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 6 JB are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de- energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from its rest position to its final position. This opens the required flow paths according to the symbol. When the solenoid is de- energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 60 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	1,5 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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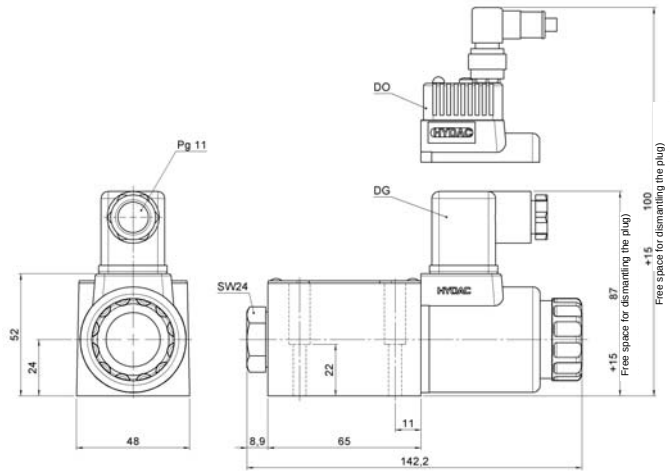
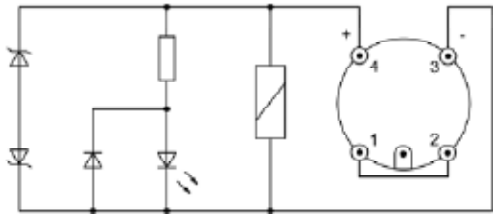
DIMENSIONS

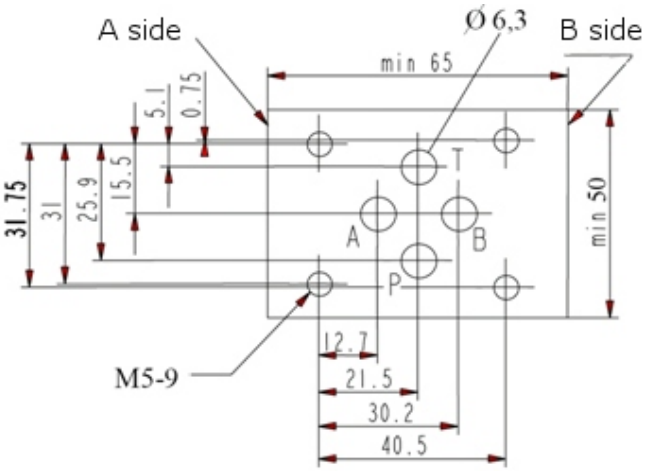


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401



Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

MODEL CODE

4WE 6 JB S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
6 = Nominal size 6

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803
DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

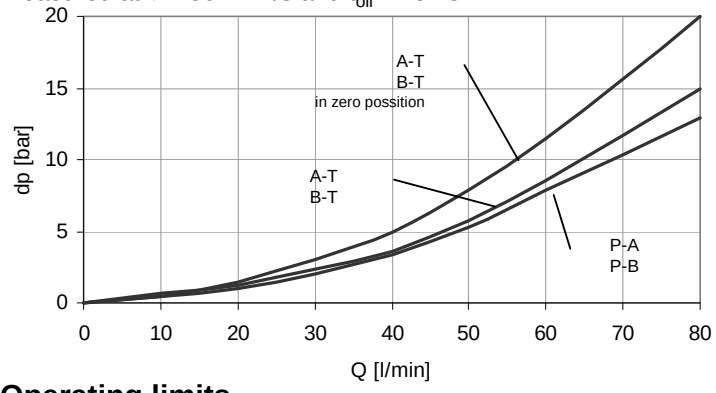
Standard models

Name	Part No.
4WE 6 JB S01-12DG /V	6069331
4 WE 6 JB S01-24DG /V	6083680

other models on request

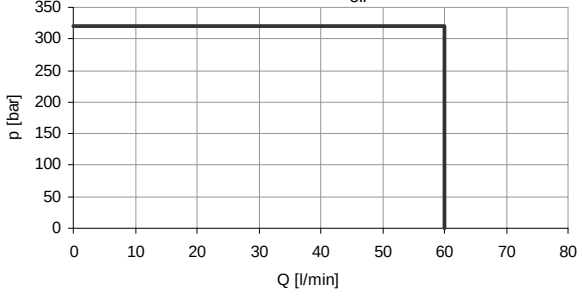
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
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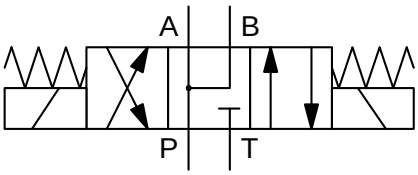
HYDAC INTERNATIONAL

4/2- directional spool valve

Solenoid-operated, direct acting

4 WE 6 M

SYMBOL



up to 80 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 6 M are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de- energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from its rest position to its final position. This opens the required flow paths according to the symbol. When the solenoid is de- energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 80 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	1,5 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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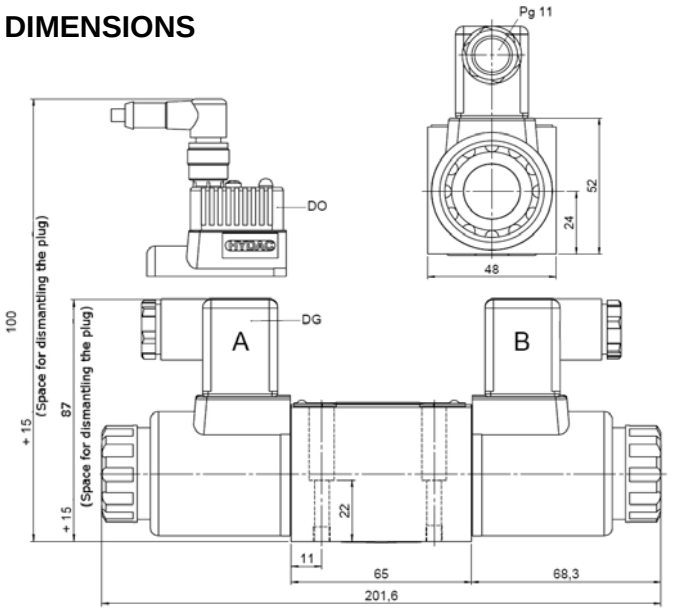
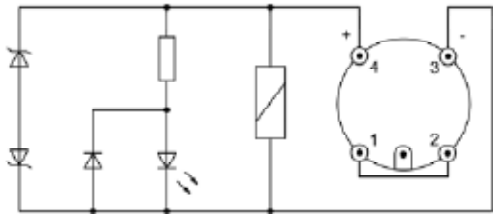
DIMENSIONS

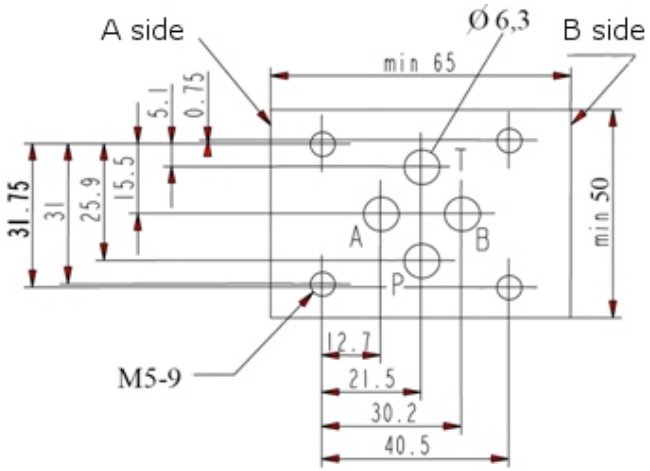


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401

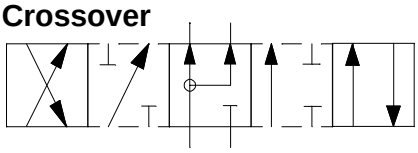


Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 6 M S01 - 24DG / V

Name
4/3-directional spool valve

Nominal size
6 = Nominal size 6

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803
DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

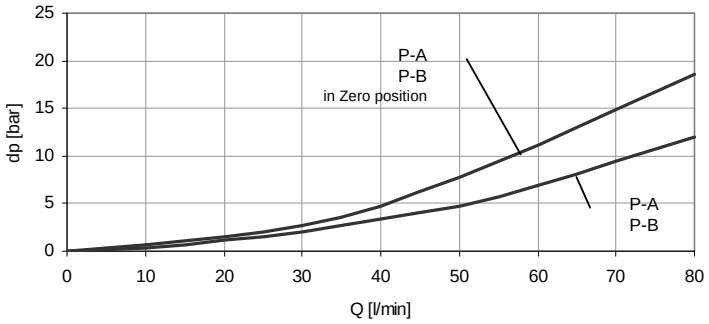
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

Standard models

Name	Part No.
4WE 6 M S01-24DG /V	6086724
other models on request	

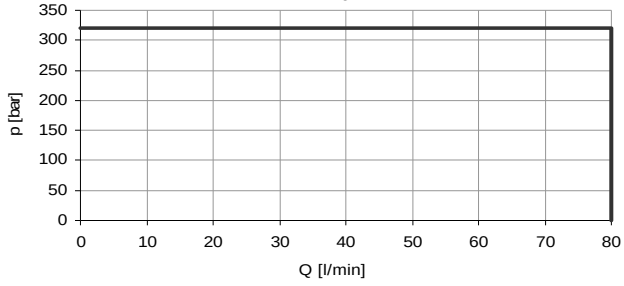
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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Subject to technical modifications.

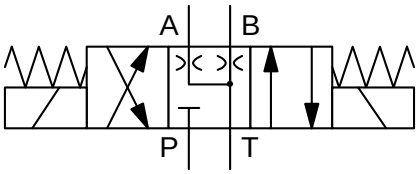
HYDAC INTERNATIONAL

4/3- directional- spool valve

Solenoid-operated, direct acting

4 WE 6 Q

SYMBOL



up to 60 l/min
up to 320 bar

FUNCTION

HYDAC 4/3 directional spool valves in the series 4WE 6 Q are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de-energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil-immersed solenoid. The solenoid pushes the control spool from its rest position to its final position. This opens the required flow paths according to the symbol. When the solenoid is de- energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 60 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	2,0 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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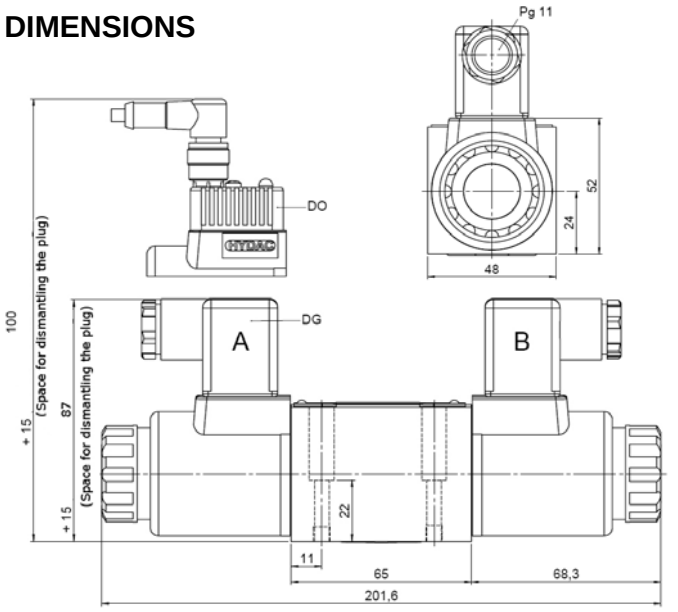
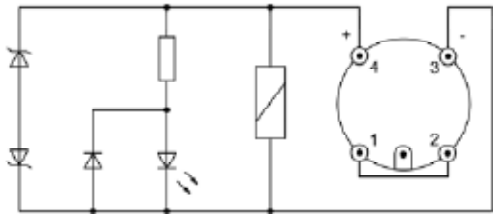
DIMENSIONS

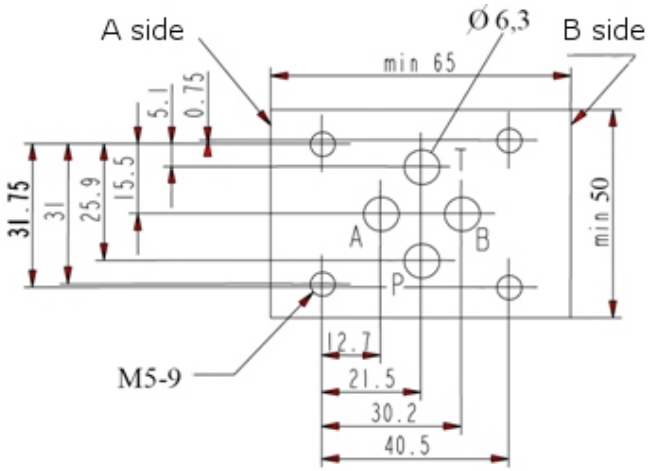


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401

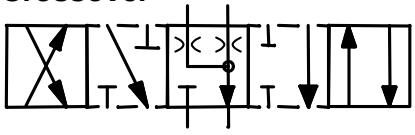


Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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Subject to technical modifications.

MODEL CODE

4WE 6 Q S01 - 12DG / V

Name
4/3-directional spool valve

Nominal size
6 = Nominal size 6

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803
DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

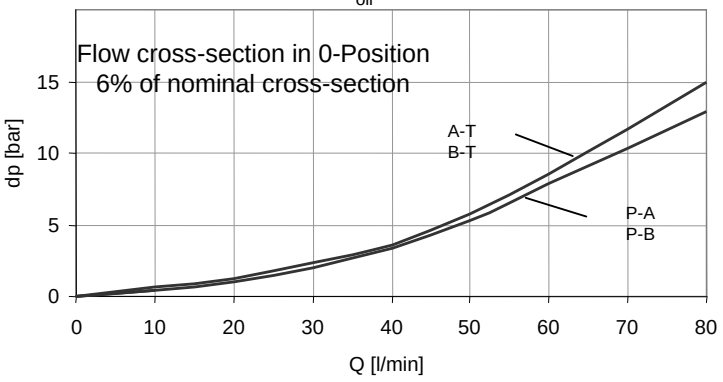
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

Standard models

Name	Part No.
4WE 6 Q S01-24DG /V	6086725
other models on request	

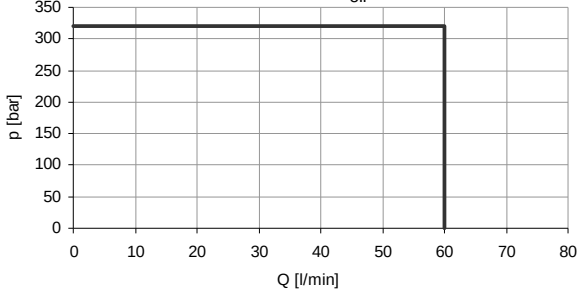
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

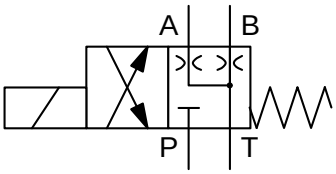
HYDAC INTERNATIONAL

4/2- directional spool valve

Solenoid-operated, direct acting

4 WE 6 QA

SYMBOL



up to 60 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 6 QA are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de- energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from its rest position to its final position. This opens the required flow paths according to the symbol. When the solenoid is de- energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 60 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	1,5 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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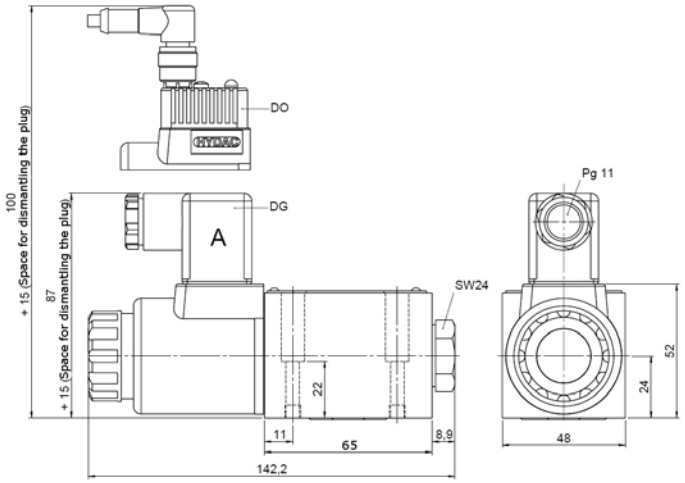
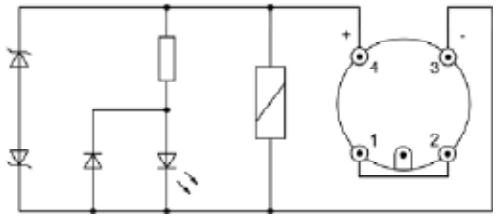
DIMENSIONS

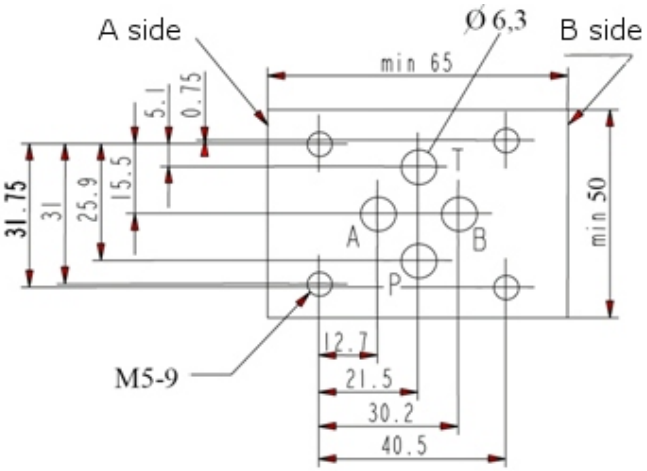


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401

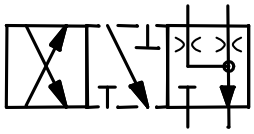


Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 6 QA S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
6 = Nominal size 6

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803
DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

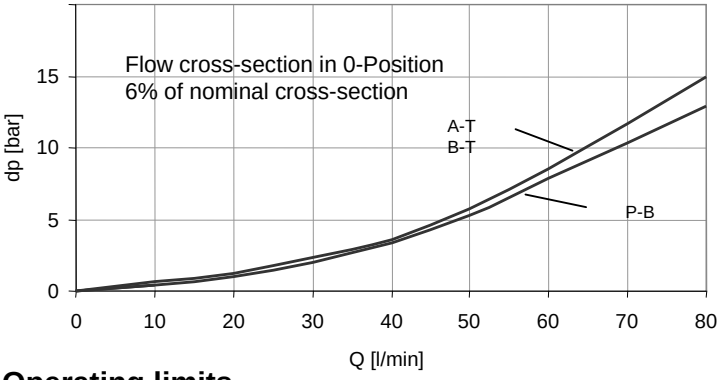
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

Standard models

Name	Part No.
4WE 6 QA S01-24DG /V	6086726
other models on request	

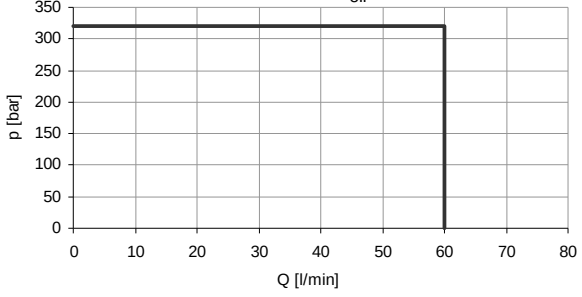
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

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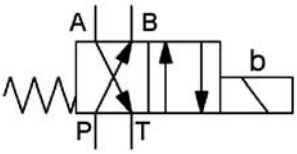
HYDAC INTERNATIONAL

4/2- directional spool valve

Solenoid-operated, direct acting

4 WE 6 Y

SYMBOL



up to 80 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 6 Y are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de- energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from its rest position to its final position. This opens the required flow paths according to the symbol. When the solenoid is de- energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

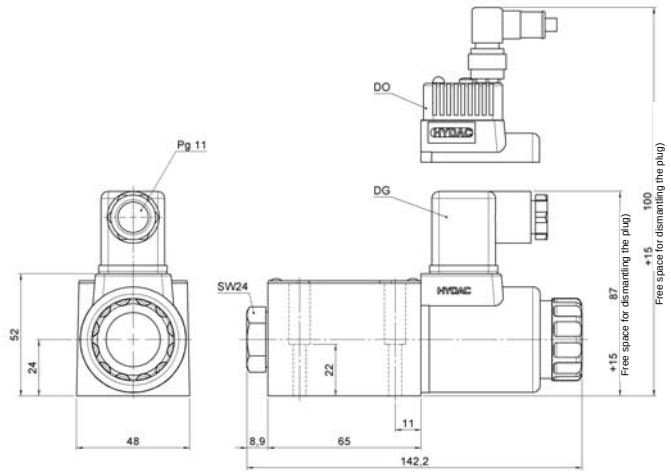
FEATURES

- Direct-acting, solenoid-operated valve NW 6
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

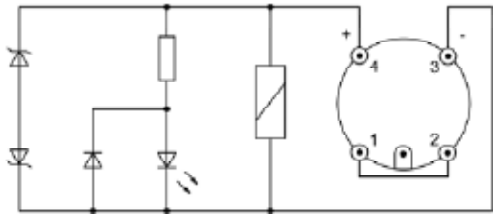
-SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 80 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	1,5 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V / 1,33A)
Switching time:	Switch-on time (coil): 20 ms up to 70 ms Switch-off time (spring): 10 ms up to 60 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

DIMENSIONS

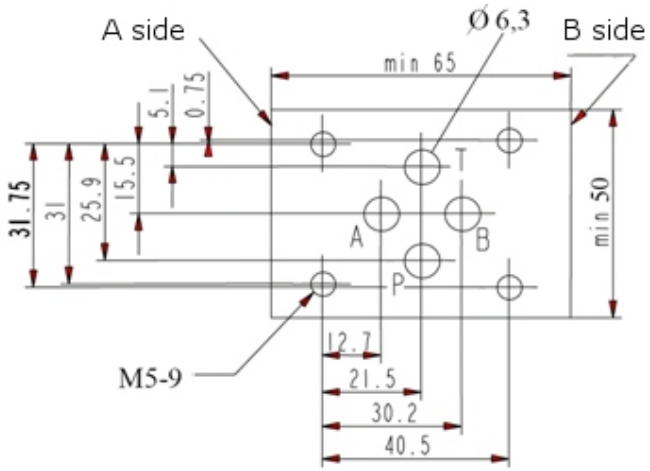


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A6 / ISO 4401



Mounting screws: M5 x 30 DIN 912-10.9

Torque: 6 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

MODEL CODE

4WE 6 Y S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
6 = Nominal size 6

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803
DO: M12x1 plug

Seal material
V = FKM (Standard)
N = NBR

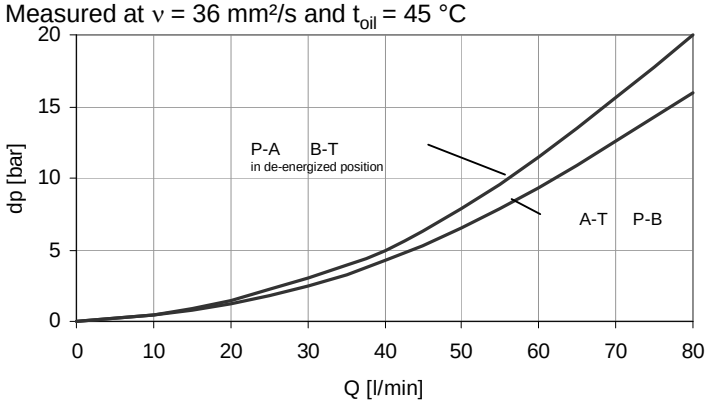
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	32 W
230 V – 50/60 Hz	205 V	33 W
by using a female connector with integrated rectifier		

Standard models

Name	Part No.
4WE 6 Y S01-24DG /V	6078157
other models on request	

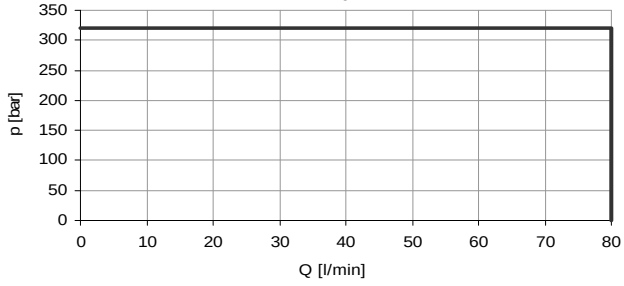
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
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NOTE
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For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

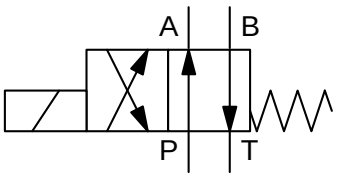
HYDAC INTERNATIONAL

4/2- directional- spool valve

Solenoid-operated, direct acting

4 WE 10 D

SYMBOL



up to 120 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 10 D are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de-energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from is rest position to is final position. This opens the required flow paths according to the symbol. When the solenoid is de-energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

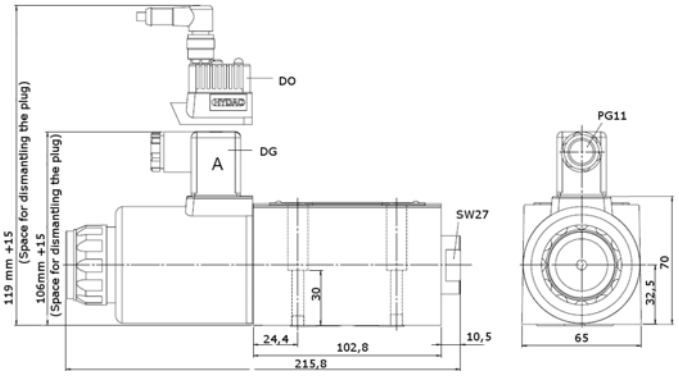
FEATURES

- Direct-acting, solenoid-operated valve NW 10
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

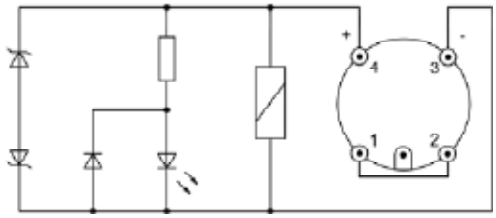
SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 120 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	4,3 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	42W (12V / 2,9A) or 48W (24V / 2,0A)
Switching time:	Switch-on time (coil): 80ms up to 120ms Switch-off time (spring): 70ms up to110ms Switch-on time (coil with rectifier): 90 ms up to 130 ms Switch-off time (spring):160ms up to 200ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

DIMENSIONS

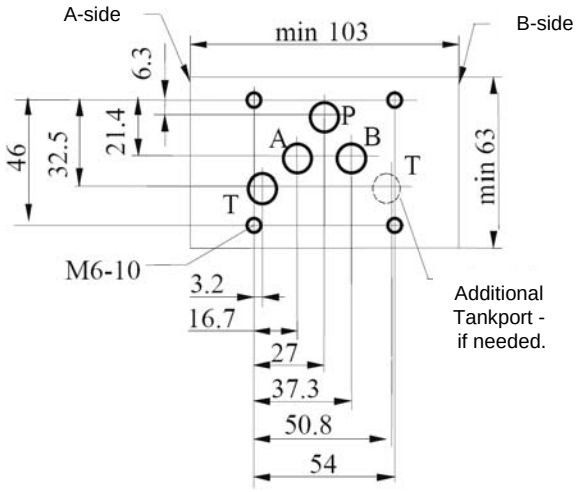


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A10 / ISO 4401 / ISO4401

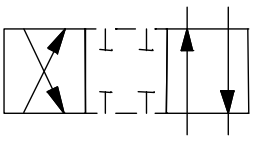


Mounting screws: M6 x 40 DIN 912-10.9

Torque: 10 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 10 D S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
10 = Nominal size 10

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803

Seal material
V = FKM (Standard)
N = NBR

Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	42 W
230 V – 50/60 Hz	205 V	42 W
by using a female connector with integrated rectifier		

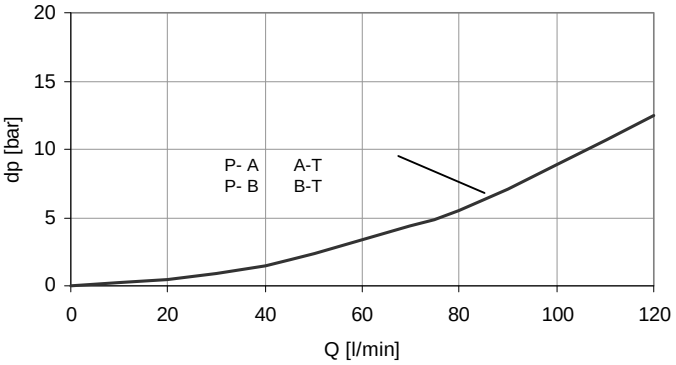
Standard models

Name	Part No.
4WE 10 D S01–12DG /V	6063149
4WE 10 D S01–24DG /V	6063155

other models on request

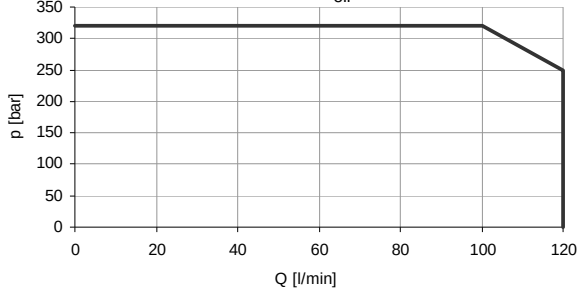
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

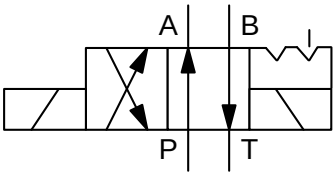
HYDAC INTERNATIONAL

4/2- directional- spool valve

Solenoid-operated, direct acting

4 WE 10 D-OF

SYMBOL



up to 120 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 10 D-OF are directional valves for oil- hydraulic systems, which serve to open and close flow paths. The 4WE 6 D-OF is a directional valve with two spool positions, two solenoids and one detent. It alternately locks the two spools in position. Therefore the solenoid needs not to be permanently energized.

FEATURES

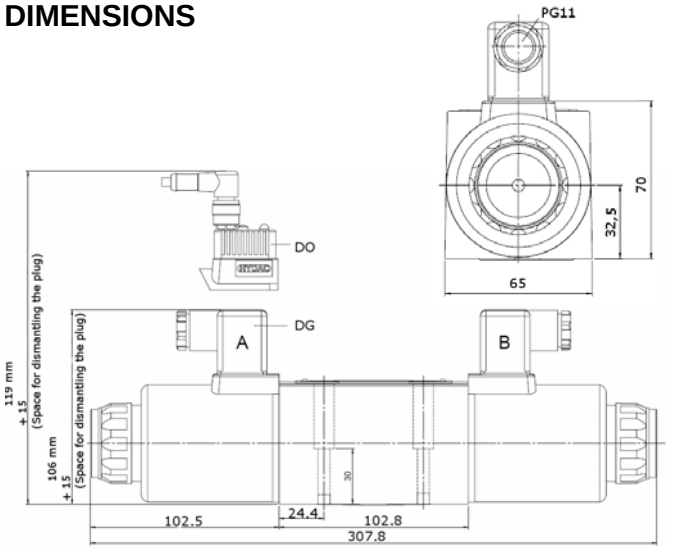
- Direct-acting, solenoid-operated valve NW 10
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A10, ISO 4401
- Manual override

SPECIFICATIONS

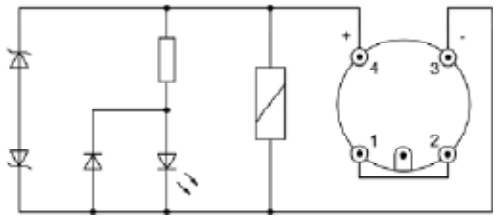
Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 120 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	5,8 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	42W (12V / 2,9A) or 48W (24V / 2,0A)
Switching time:	Switch-on time (coil): 80 ms up to 120 ms Switch-off time (spring): 70 ms up to 110 ms Switch-on time (coil with rectifier): 90 ms up to 130 ms Switch-off time (spring): 160 ms up to 200 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

E 5.243.0 /01.13

DIMENSIONS

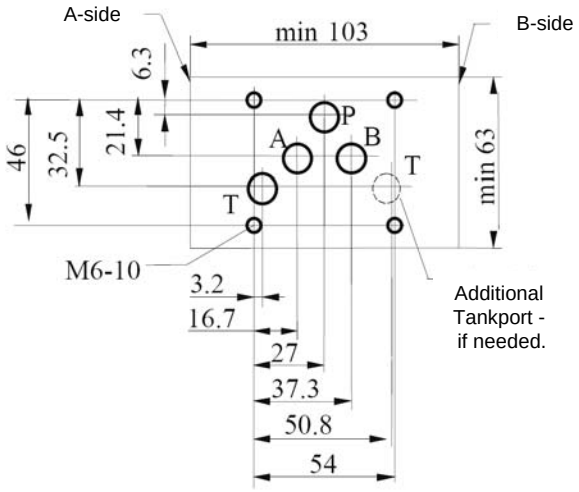


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A10 / ISO 4401 / ISO4401

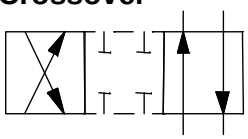


Mounting screws: M6 x 40 DIN 912-10.9

Torque: 10 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 10 D-OF S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
10 = Nominal size 10

Symbol
(-OF = Special type with detent)

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803

Seal material
V = FKM (Standard)
N = NBR

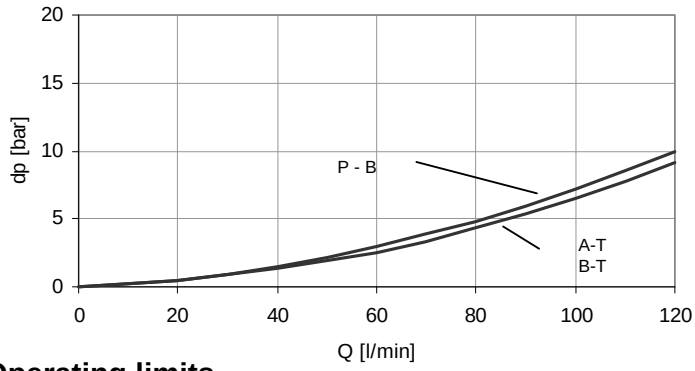
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	42 W
230 V – 50/60 Hz	205 V	42 W
by using a female connector with integrated rectifier		

Standard models

Name	Part No.
4WE 10 D-OF S01–24DG /V	6083734
other models on request	

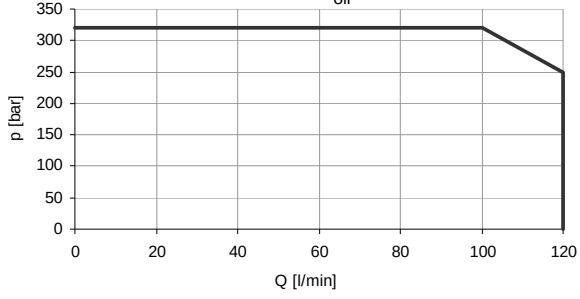
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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Subject to technical modifications.

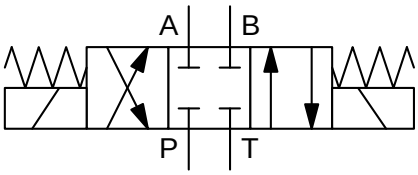
HYDAC INTERNATIONAL

4/3- directional- spool valve

Solenoid-operated, direct acting

4 WE 10 E

SYMBOL



up to 120 l/min
up to 320 bar

FEATURES

- Direct-acting, solenoid-operated valve NW 10
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A10, ISO 4401
- Manual override

FUNCTION

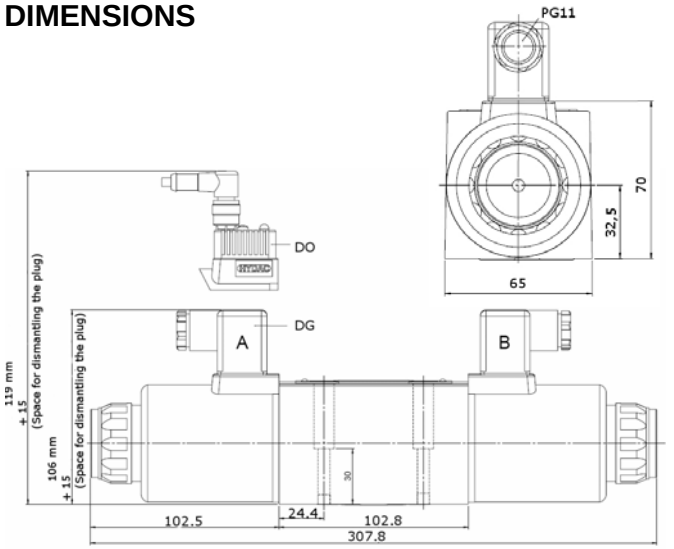
HYDAC 4/3 directional spool valves in the series 4WE 10 E are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de- energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil-immersed solenoid. The solenoid pushes the control spool from is rest position to is final position. This opens the required flow paths according to the symbol. When the solenoid is de-energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

SPECIFICATIONS

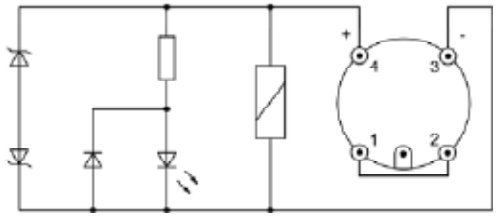
Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 120 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	5,8 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	42W (12V / 2,9A) or 48W (24V / 2,0A)
Switching time:	Switch-on time (coil): 80 ms up to 120 ms Switch-off time (spring): 70 ms up to 110 ms Switch-on time (coil with rectifier): 90 ms up to 130 ms Switch-off time (spring): 160ms up to 200ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

E 5.220.0 /01.13

DIMENSIONS

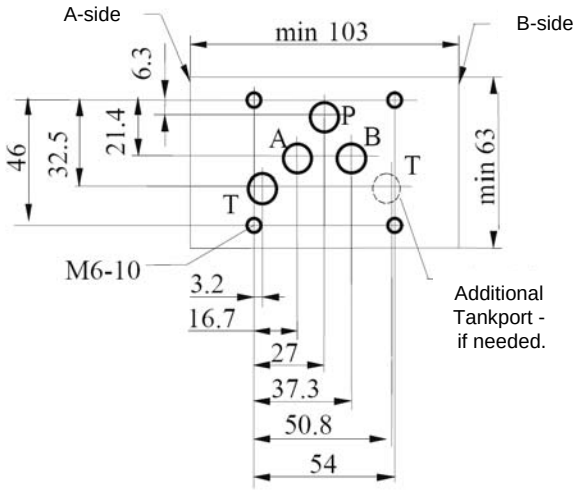


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A10 / ISO 4401 / ISO4401



Mounting screws: M6 x 40 DIN 912-10.9

Torque: 10 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover

MODEL CODE

4WE 10 E S01 - 12DG / V

Name
4/3-directional spool valve

Nominal size
10 = Nominal size 10

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803

Seal material
V = FKM (Standard)
N = NBR

Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	42 W
230 V – 50/60 Hz	205 V	42 W
by using a female connector with integrated rectifier		

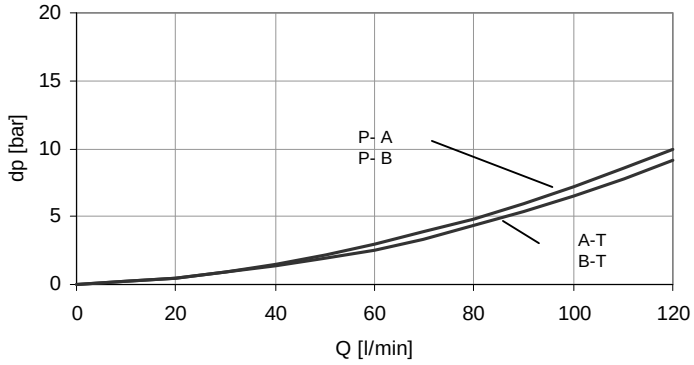
Standard models

Name	Part No.
4WE 10 E S01–12DG /V	6063151
4WE 10 E S01–24DG /V	6063157

other models on request

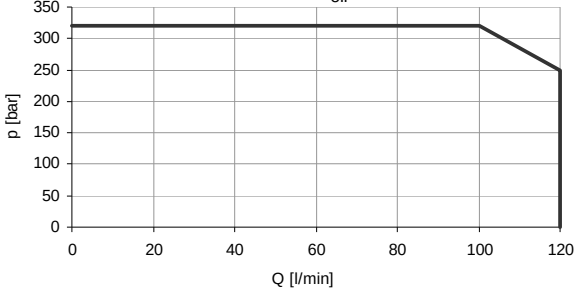
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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Subject to technical modifications.

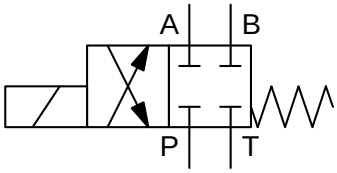
HYDAC INTERNATIONAL

4/2- directional- spool valve

Solenoid-operated, direct acting

4 WE 10 EA

SYMBOL



up to 120 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 10 EA are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de-energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from is rest position to is final position. This opens the required flow paths according to the symbol. When the solenoid is de-energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

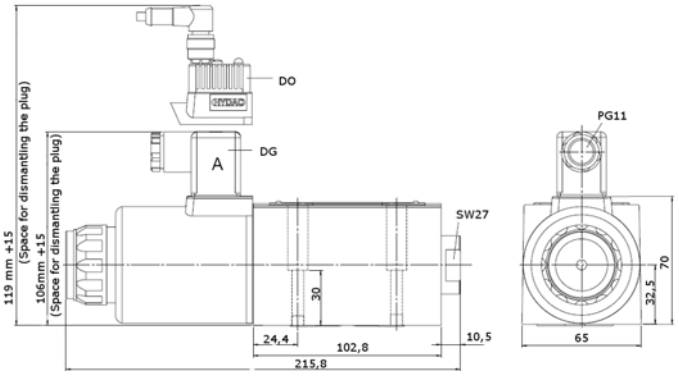
- Direct-acting, solenoid-operated valve NW 10
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

SPECIFICATIONS

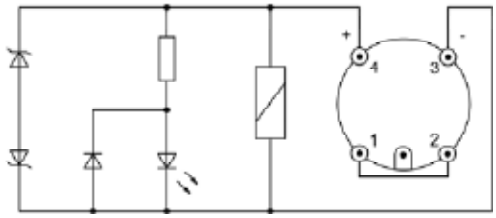
Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 120 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	4,3 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	42W (12V / 2,9A) or 48W (24V / 2,0A)
Switching time:	Switch-on time (coil): 80ms up to 120ms Switch-off time (spring): 70ms up to110ms Switch-on time (coil with rectifier): 90 ms up to 130 ms Switch-off time (spring):160ms up to 200ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

E 5.221.0 /01.13

DIMENSIONS

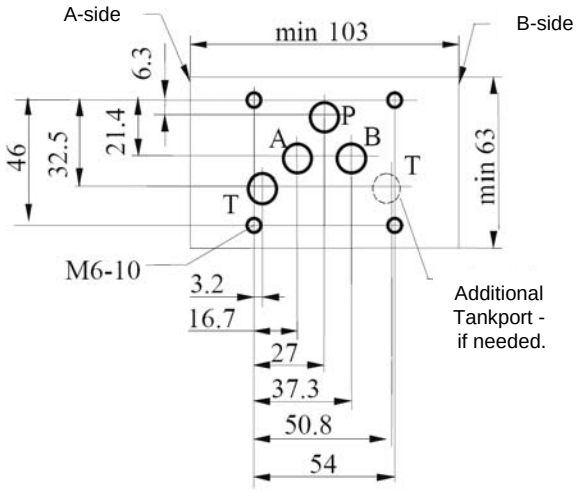


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A10 / ISO 4401 / ISO4401



Mounting screws: M6 x 40 DIN 912-10.9

Torque: 10 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover

MODEL CODE

4WE 10 EA S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
10 = Nominal size 10

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803

Seal material
V = FKM (Standard)
N = NBR

Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	42 W
230 V – 50/60 Hz	205 V	42 W
by using a female connector with integrated rectifier		

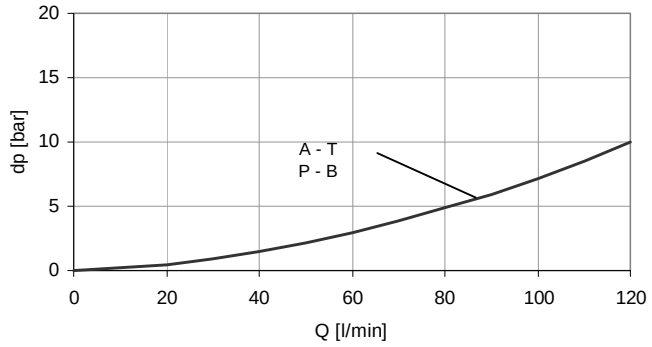
Standard models

Name	Part No.
4WE 10 EA S01–12DG /V	6063150
4WE 10 EA S01–24DG /V	6063156

other models on request

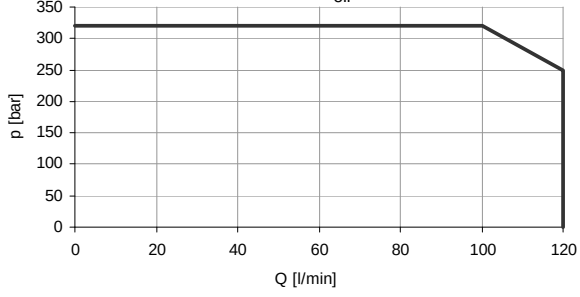
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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Subject to technical modifications.

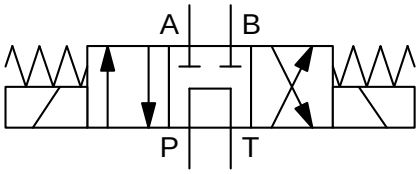
HYDAC INTERNATIONAL

4/3- directional- spool valve

Solenoid-operated, direct acting

4 WE 10 G

SYMBOL



up to 120 l/min
up to 320 bar

FEATURES

- Direct-acting, solenoid-operated valve NW 10
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A10, ISO 4401
- Manual override

FUNCTION

HYDAC 4/3 directional spool valves in the series 4WE 10 G are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de- energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil-immersed solenoid. The solenoid pushes the control spool from is rest position to is final position. This opens the required flow paths according to the symbol. When the solenoid is de-energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 120 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	5,8 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	42W (12V / 2,9A) or 48W (24V / 2,0A)
Switching time:	Switch-on time (coil): 80 ms up to 120 ms Switch-off time (spring): 70 ms up to 110 ms Switch-on time (coil with rectifier): 90 ms up to 130 ms Switch-off time (spring): 160 ms up to 200 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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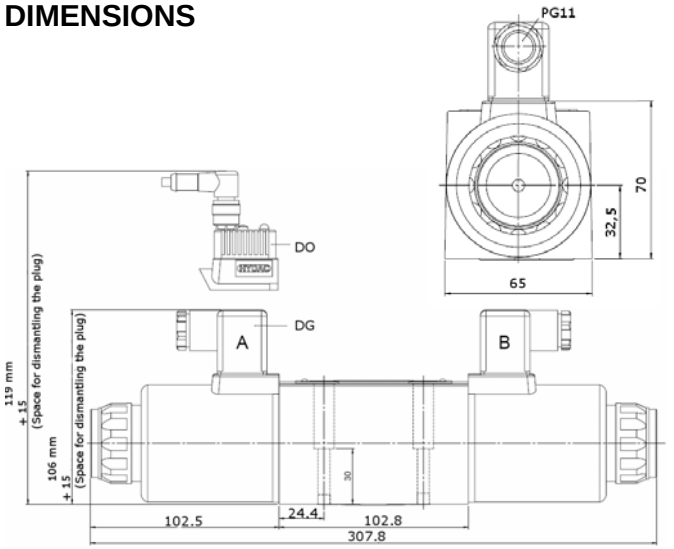
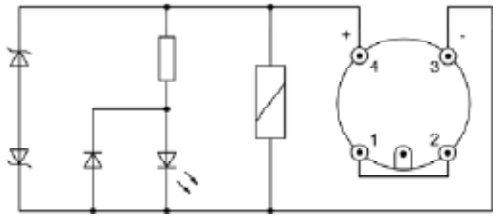
DIMENSIONS

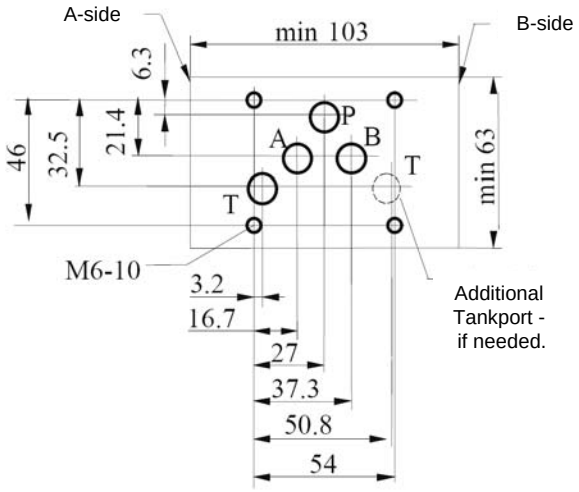


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A10 / ISO 4401 / ISO4401

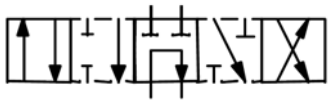


Mounting screws: M6 x 40 DIN 912-10.9

Torque: 10 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 10 G S01 - 12DG / V

Name
4/3-directional spool valve

Nominal size
10 = Nominal size 10

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803

Seal material
V = FKM (Standard)
N = NBR

Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	42 W
230 V – 50/60 Hz	205 V	42 W
by using a female connector with integrated rectifier		

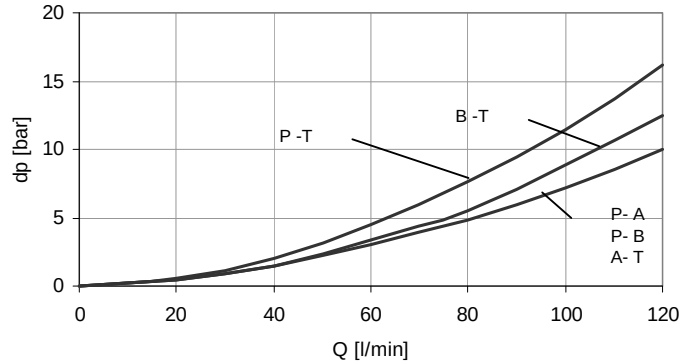
Standard models

Name	Part No.
4WE 10 G S01–12DG /V	6063152
4WE 10 G S01–24DG /V	6063158

other models on request

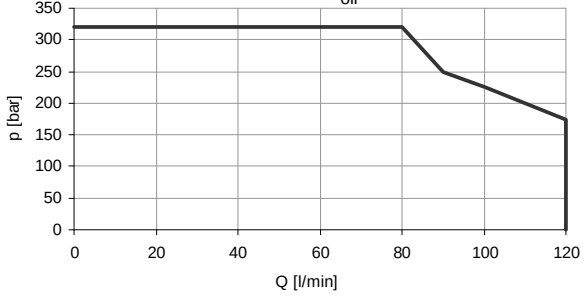
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

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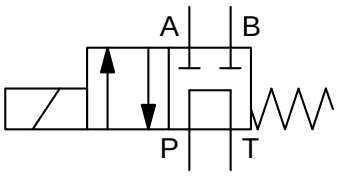
HYDAC INTERNATIONAL

4/2- directional- spool valve

Solenoid-operated, direct acting

4 WE 10 GA

SYMBOL



up to 120 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 10 GA are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de-energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from is rest position to is final position. This opens the required flow paths according to the symbol. When the solenoid is de-energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

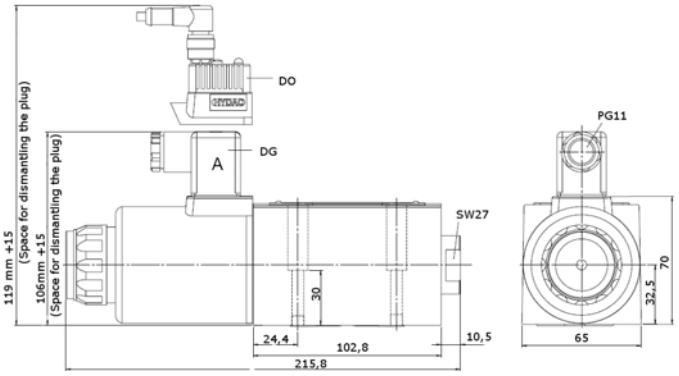
FEATURES

- Direct-acting, solenoid-operated valve NW 10
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

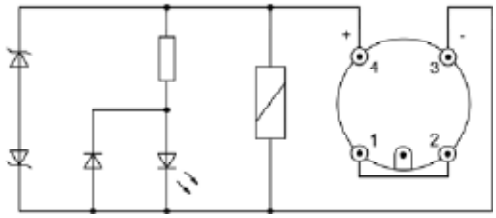
SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 120 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	4,3 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	42W (12V / 2,9A) or 48W (24V / 2,0A)
Switching time:	Switch-on time (coil): 80ms up to 120ms Switch-off time (spring): 70ms up to110ms Switch-on time (coil with rectifier): 90 ms up to 130 ms Switch-off time (spring):160ms up to 200 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

DIMENSIONS

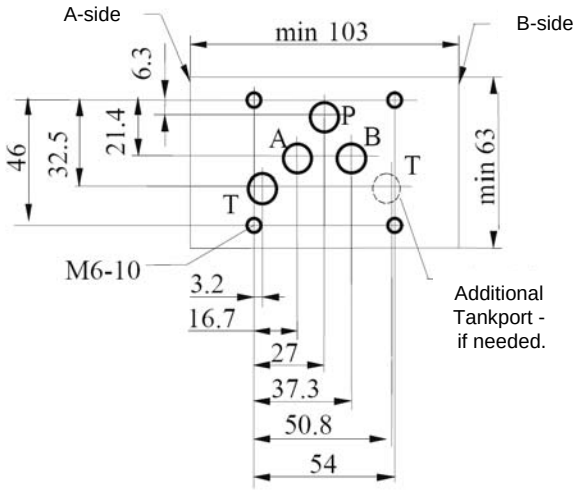


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A10 / ISO 4401 / ISO4401

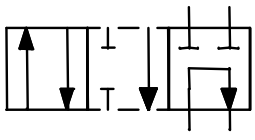


Mounting screws: M6 x 40 DIN 912-10.9

Torque: 10 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 10 GA S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
10 = Nominal size 10

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803

Seal material
V = FKM (Standard)
N = NBR

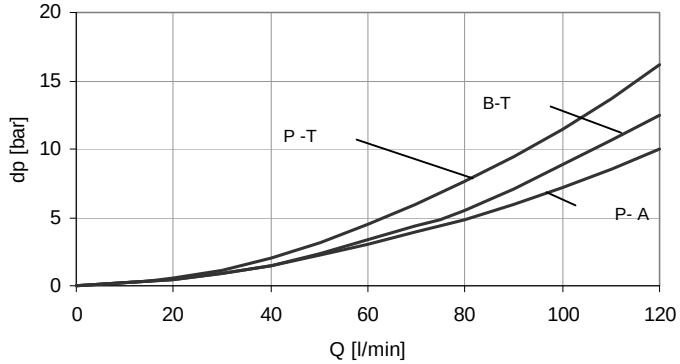
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	42 W
230 V – 50/60 Hz	205 V	42 W
by using a female connector with integrated rectifier		

Standard Models

Name	Part No.
4WE 10 GA S01–24DG /N	6082086
other models on request	

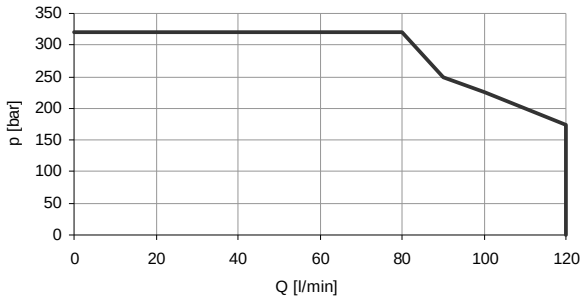
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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Subject to technical modifications.

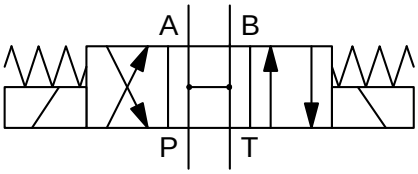
HYDAC INTERNATIONAL

4/3- directional- spool valve

Solenoid-operated, direct acting

4 WE 10 H

SYMBOL



up to 120 l/min
up to 320 bar

FEATURES

- Direct-acting, solenoid-operated valve NW 10
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A10, ISO 4401
- Manual override

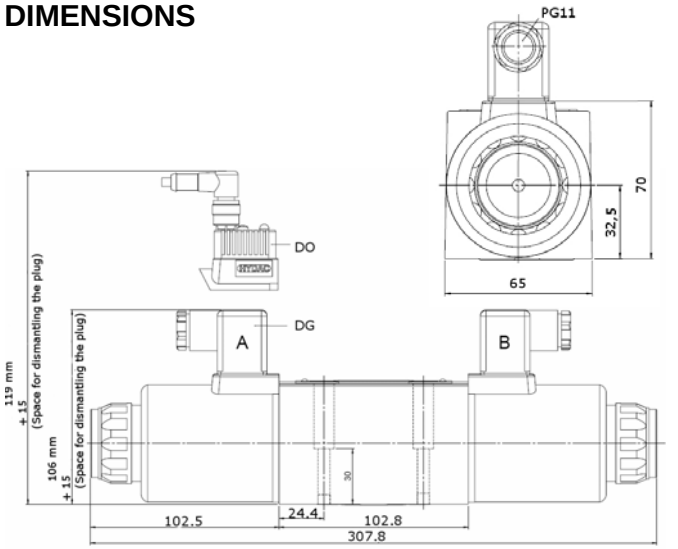
FUNCTION

HYDAC 4/3 directional spool valves in the series 4WE 10 H are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de- energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil-immersed solenoid. The solenoid pushes the control spool from is rest position to is final position. This opens the required flow paths according to the symbol. When the solenoid is de-energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

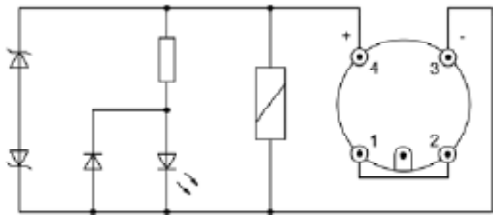
SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 120 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	5,8 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	42W (12V / 2,9A) or 48W (24V / 2,0A)
Switching time:	Switch-on time (coil): 80 ms up to 120 ms Switch-off time (spring): 70 ms up to 110 ms Switch-on time (coil with rectifier): 90 ms up to 130 ms Switch-off time (spring): 160 ms up to 200 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

DIMENSIONS

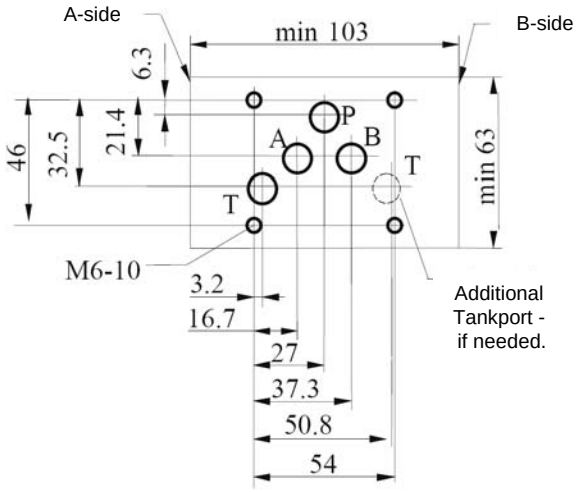


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A10 / ISO 4401 / ISO4401

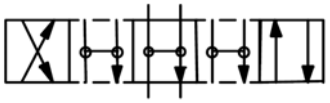


Mounting screws: M6 x 40 DIN 912-10.9

Torque: 10 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 10 H S01 - 12DG / V

Name
4/3-directional spool valve

Nominal size
10 = Nominal size 10

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803

Seal material
V = FKM (Standard)
N = NBR

Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	42 W
230 V – 50/60 Hz	205 V	42 W
by using a female connector with integrated rectifier		

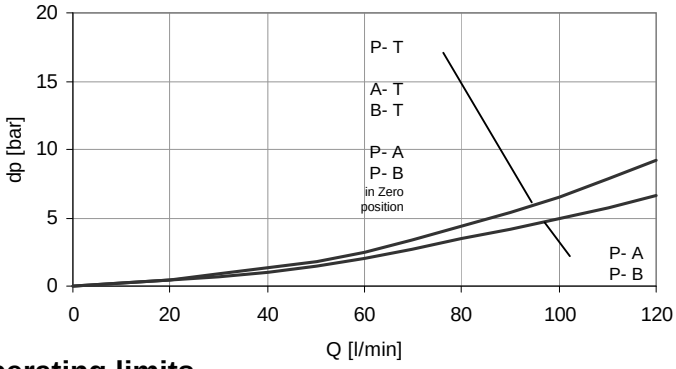
Standard models

Name	Part No.
4WE 10 H S01–12DG /V	6063153
4WE 10 H S01–24DG /V	6063161

other models on request

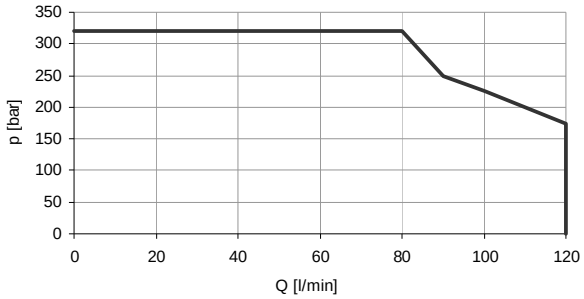
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
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NOTE
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Subject to technical modifications.

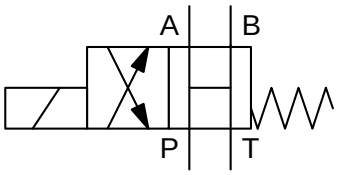
HYDAC INTERNATIONAL

4/2- directional- spool valve

Solenoid-operated, direct acting

4 WE 10 HA

SYMBOL



up to 120 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 10 HA are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de-energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from is rest position to is final position. This opens the required flow paths according to the symbol. When the solenoid is de-energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

- Direct-acting, solenoid-operated valve NW 10
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 120 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	4,3 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	42W (12V / 2,9A) or 48W (24V / 2,0A)
Switching time:	Switch-on time (coil): 80ms up to 120ms Switch-off time (spring): 70ms up to110ms Switch-on time (coil with rectifier): 90 ms up to 130 ms Switch-off time (spring):160ms up to 200 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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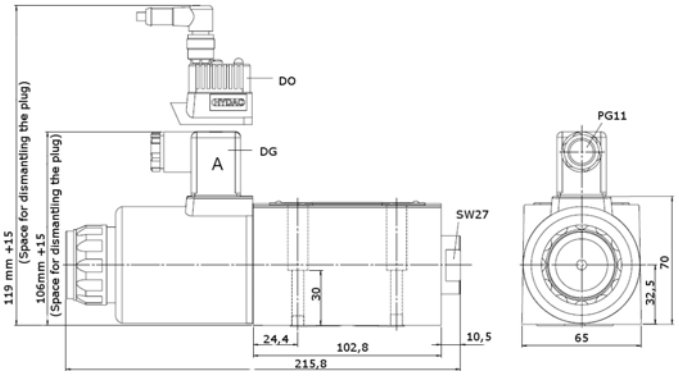
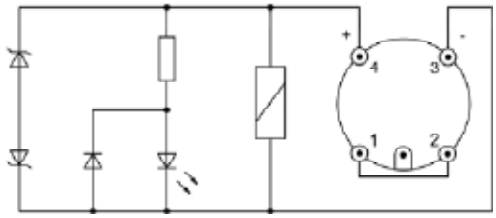
DIMENSIONS

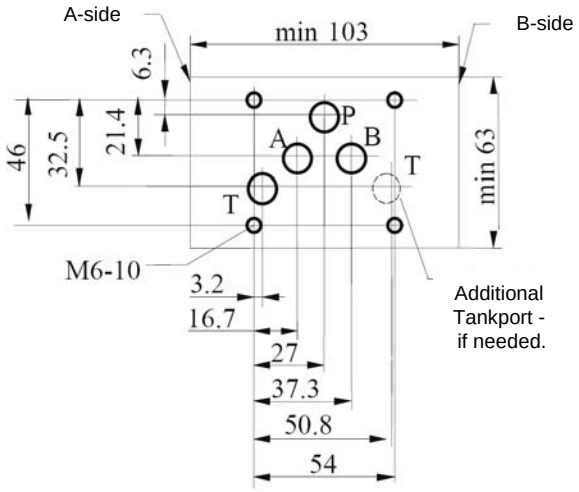


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A10 / ISO 4401 / ISO4401

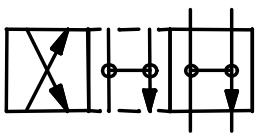


Mounting screws: M6 x 40 DIN 912-10.9

Torque: 10 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 10 HA S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
10 = Nominal size 10

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803

Seal material
V = FKM (Standard)
N = NBR

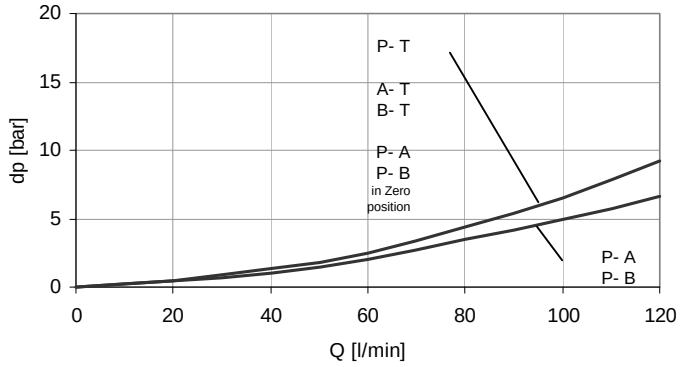
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	42 W
230 V – 50/60 Hz	205 V	42 W
by using a female connector with integrated rectifier		

Standard models

Name	Part No.
4WE 10 HA S01–24DG /V	6071730
other models on request	

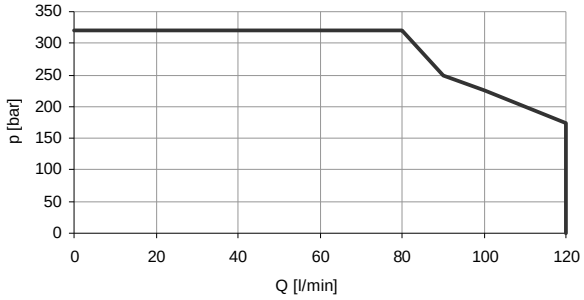
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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Subject to technical modifications.

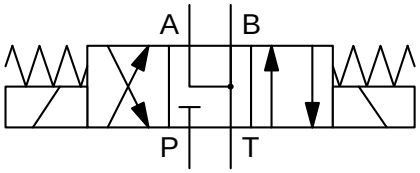
HYDAC INTERNATIONAL

4/3- directional- spool valve

Solenoid-operated, direct acting

4 WE 10 J

SYMBOL



up to 120 l/min
up to 320 bar

FEATURES

- Direct-acting, solenoid-operated valve NW 10
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A10, ISO 4401
- Manual override

FUNCTION

HYDAC 4/3 directional spool valves in the series 4WE 10 J are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de- energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil-immersed solenoid. The solenoid pushes the control spool from is rest position to is final position. This opens the required flow paths according to the symbol. When the solenoid is de-energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 120 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	5,8 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	42W (12V / 2,9A) or 48W (24V / 2,0A)
Switching time:	Switch-on time (coil): 80 ms up to 120 ms Switch-off time (spring): 70 ms up to 110 ms Switch-on time (coil with rectifier): 90 ms up to 130 ms Switch-off time (spring): 160 ms up to 200 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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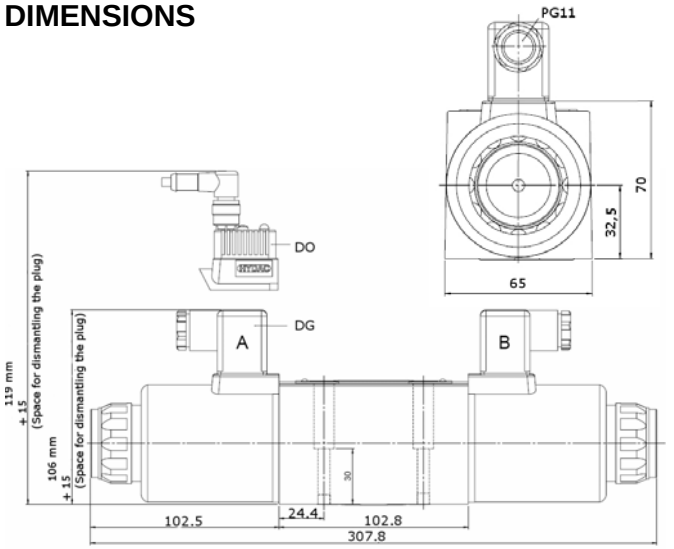
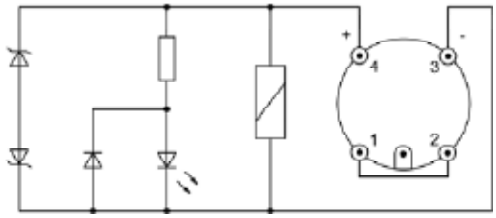
DIMENSIONS

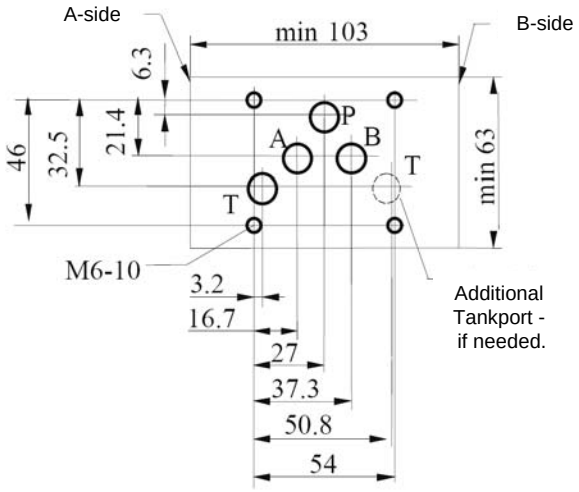


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A10 / ISO 4401 / ISO4401

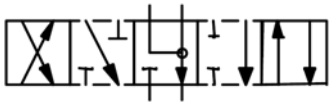


Mounting screws: M6 x 40 DIN 912-10.9

Torque: 10 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 10 J S01 - 12DG / V

Name
4/3-directional spool valve

Nominal size
10 = Nominal size 10

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803

Seal material
V = FKM (Standard)
N = NBR

Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	42 W
230 V – 50/60 Hz	205 V	42 W
by using a female connector with integrated rectifier		

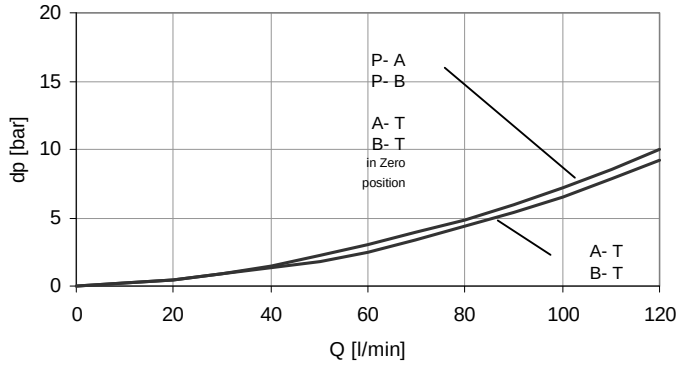
Standard models

Name	Part No.
4WE 10 J S01–12DG /V	6063154
4WE 10 J S01–24DG /V	6063163

other models on request

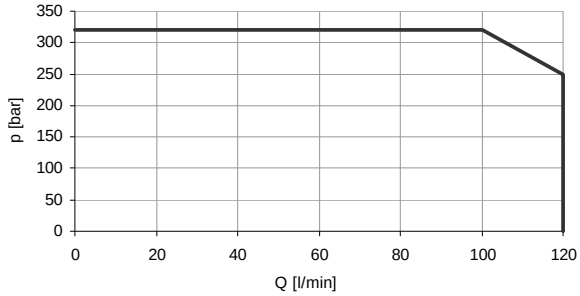
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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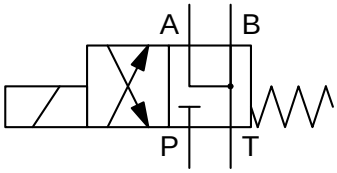
HYDAC INTERNATIONAL

4/2- directional- spool valve

Solenoid-operated, direct acting

4 WE 10 JA

SYMBOL



up to 120 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 10 JA are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de-energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from is rest position to is final position. This opens the required flow paths according to the symbol. When the solenoid is de-energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

FEATURES

- Direct-acting, solenoid-operated valve NW 10
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 120 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	4,3 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	42W (12V / 2,9A) or 48W (24V / 2,0A)
Switching time:	Switch-on time (coil): 80ms up to 120ms Switch-off time (spring): 70ms up to110ms Switch-on time (coil with rectifier): 90 ms up to 130 ms Switch-off time (spring):160ms up to 200 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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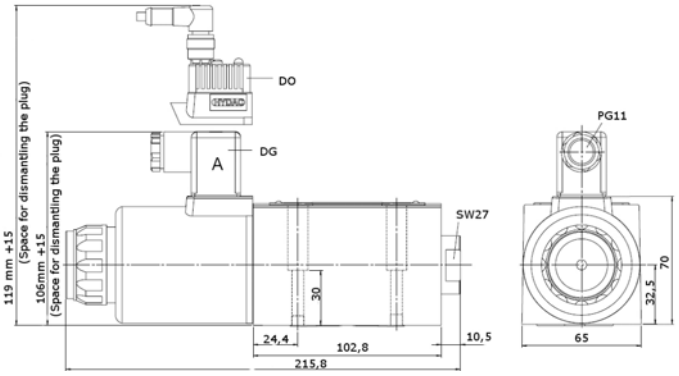
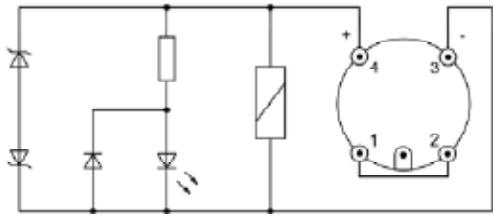
DIMENSIONS

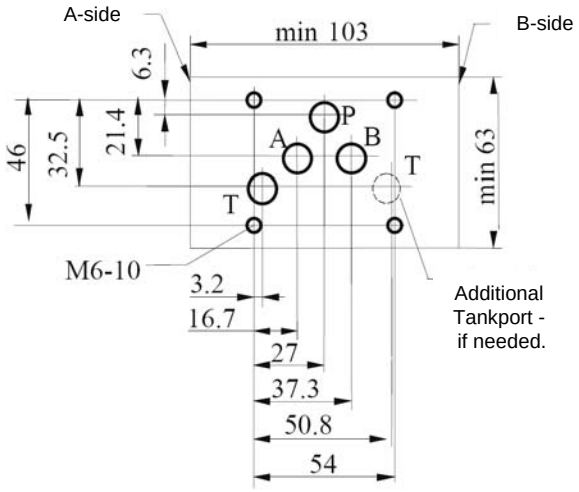


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A10 / ISO 4401 / ISO4401

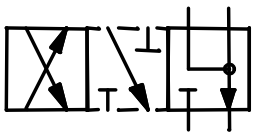


Mounting screws: M6 x 40 DIN 912-10.9

Torque: 10 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 10 JA S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
10 = Nominal size 10

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803

Seal material
V = FKM (Standard)
N = NBR

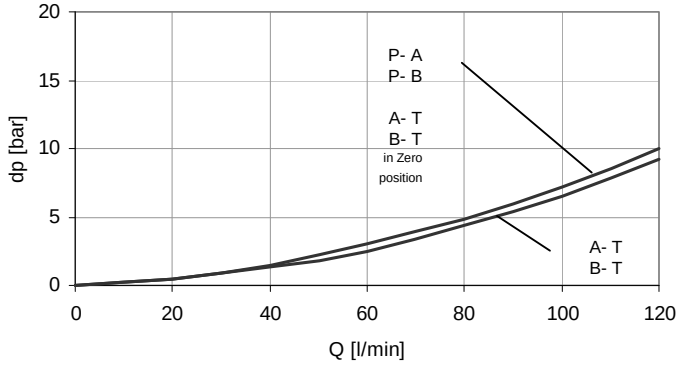
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	42 W
230 V – 50/60 Hz	205 V	42 W
by using a female connector with integrated rectifier		

Standard models

Name	Part No.
4WE 10 JA S01-24DG/V	6080115
other models on request	

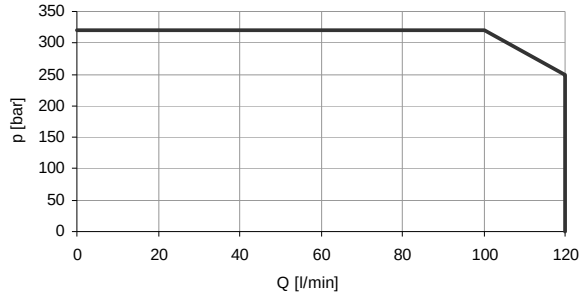
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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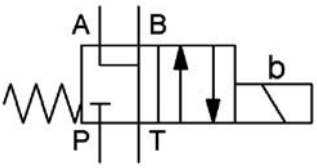
HYDAC INTERNATIONAL

4/2- directional- spool valve

Solenoid-operated, direct acting

4 WE 10 JB

SYMBOL



up to 120 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 10 JB are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de-energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from is rest position to is final position. This opens the required flow paths according to the symbol. When the solenoid is de-energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

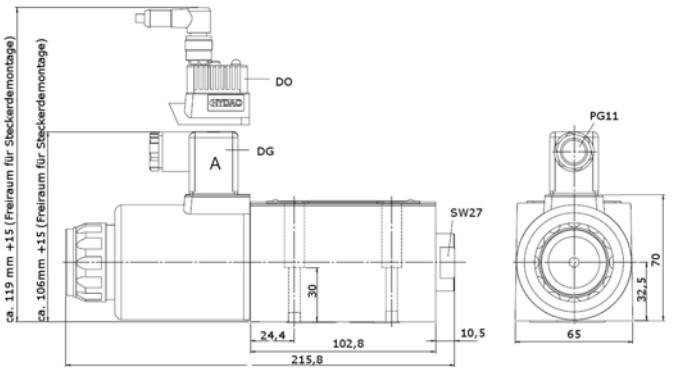
FEATURES

- Direct-acting, solenoid-operated valve NW 10
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

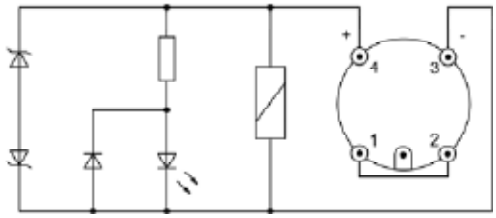
SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 120 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	4,3 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	42W (12V / 2,9A) or 48W (24V / 2,0A)
Switching time:	Switch-on time (coil): 80ms up to 120ms Switch-off time (spring): 70ms up to110ms Switch-on time (coil with rectifier): 90 ms up to 130 ms Switch-off time (spring):160ms up to 200 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

DIMENSIONS

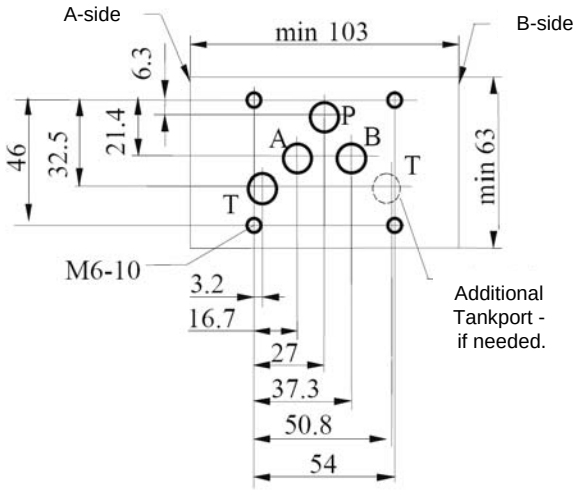


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A10 / ISO 4401 / ISO4401



Mounting screws: M6 x 40 DIN 912-10.9

Torque: 10 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

MODEL CODE

4WE 10 JB S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
10 = Nominal size 10

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803

Seal material
V = FKM (Standard)
N = NBR

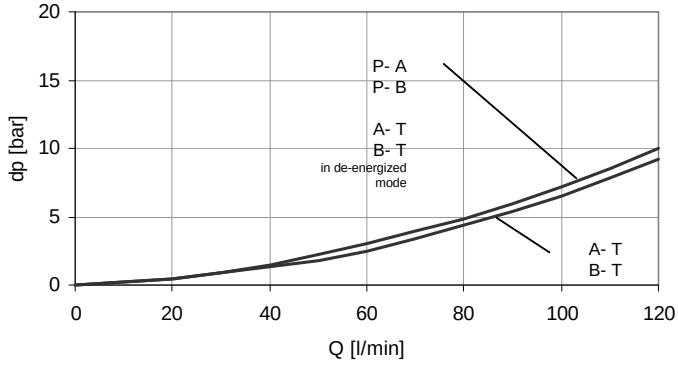
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	42 W
230 V – 50/60 Hz	205 V	42 W
by using a female connector with integrated rectifier		

Standard models

Name	Part No.
4WE 10 JB S01-24DG/V	6083490
other models on request	

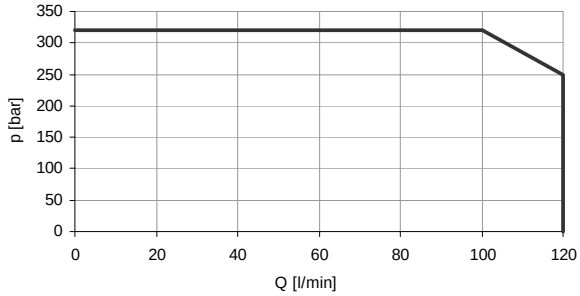
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
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NOTE
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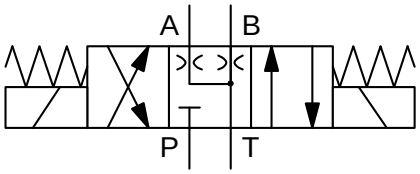
HYDAC INTERNATIONAL

4/3- directional- spool valve

Solenoid-operated, direct acting

4 WE 10 Q

SYMBOL



up to 120 l/min
up to 320 bar

FEATURES

- Direct-acting, solenoid-operated valve NW 10
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A10, ISO 4401
- Manual override

FUNCTION

HYDAC 4/3 directional spool valves in the series 4WE 10 Q are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de- energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil-immersed solenoid. The solenoid pushes the control spool from is rest position to is final position. This opens the required flow paths according to the symbol. When the solenoid is de-energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 120 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	5,8 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	42W (12V / 2,9A) or 48W (24V / 2,0A)
Switching time:	Switch-on time (coil): 80 ms up to 120 ms Switch-off time (spring): 70 ms up to 110 ms Switch-on time (coil with rectifier): 90 ms up to 130 ms Switch-off time (spring): 160 ms up to 200 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

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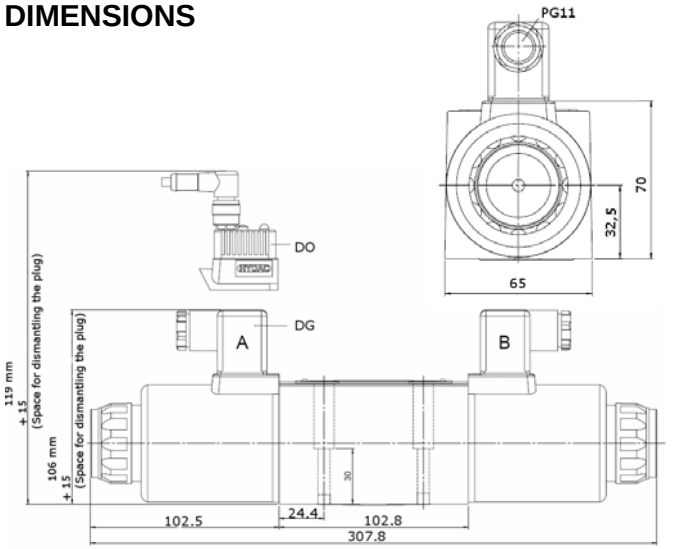
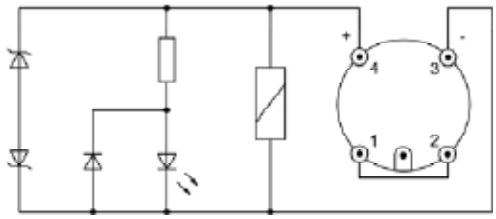
DIMENSIONS

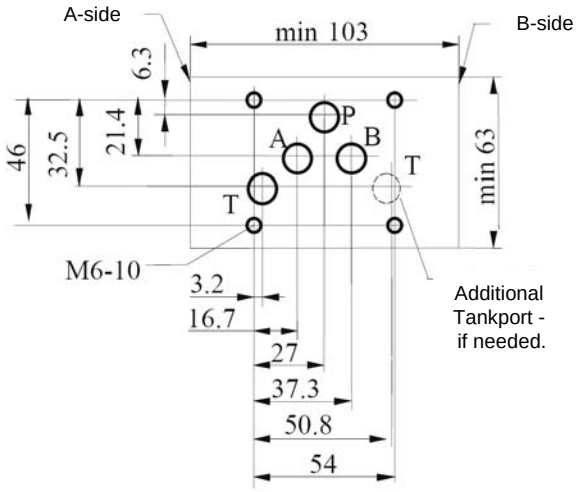


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A10 / ISO 4401 / ISO4401

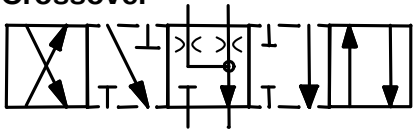


Mounting screws: M6 x 40 DIN 912-10.9

Torque: 10 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 10 Q S01 - 12DG / V

Name
4/3-directional spool valve

Nominal size
10 = Nominal size 10

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803

Seal material
V = FKM (Standard)
N = NBR

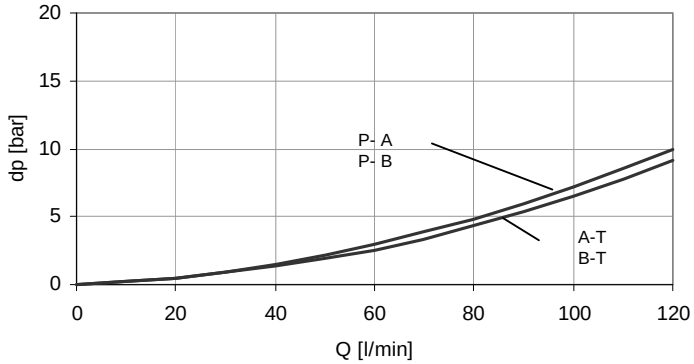
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	42 W
230 V – 50/60 Hz	205 V	42 W
by using a female connector with integrated rectifier		

Standard models

Name	Part No.
4WE 10 Q S01–24DG /V	6086727
other models on request	

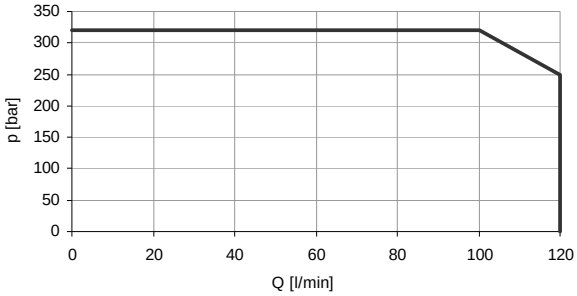
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

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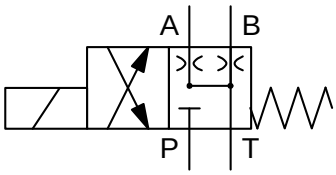
HYDAC INTERNATIONAL

4/2- directional- spool valve

Solenoid-operated, direct acting

4 WE 10 QA

SYMBOL



up to 120 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 10 QA are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de-energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from is rest position to is final position. This opens the required flow paths according to the symbol. When the solenoid is de-energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

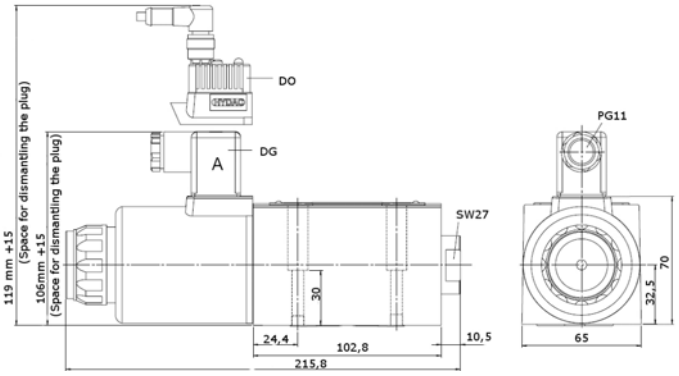
FEATURES

- Direct-acting, solenoid-operated valve NW 10
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

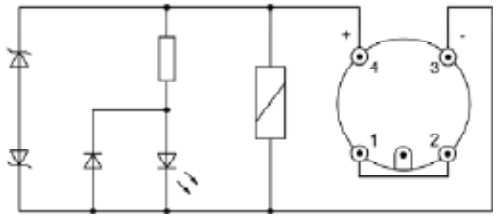
SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 120 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	4,3 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	42W (12V / 2,9A) or 48W (24V / 2,0A)
Switching time:	Switch-on time (coil): 80ms up to 120ms Switch-off time (spring): 70ms up to110ms Switch-on time (coil with rectifier): 90 ms up to 130 ms Switch-off time (spring):160ms up to 200 ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

DIMENSIONS

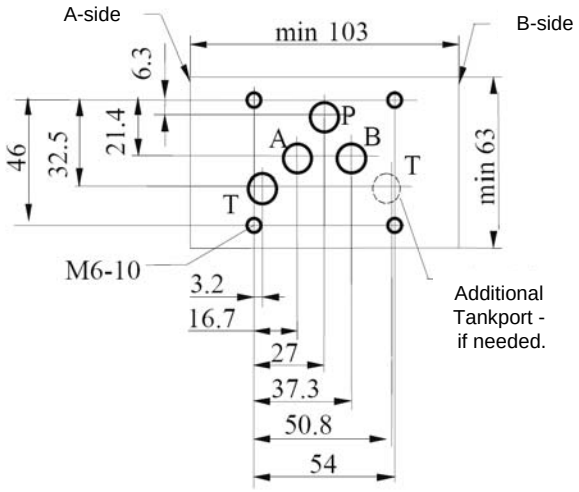


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A10 / ISO 4401 / ISO4401

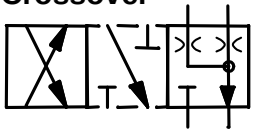


Mounting screws: M6 x 40 DIN 912-10.9

Torque: 10 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

Crossover



MODEL CODE

4WE 10 QA S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
10 = Nominal size 10

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803

Seal material
V = FKM (Standard)
N = NBR

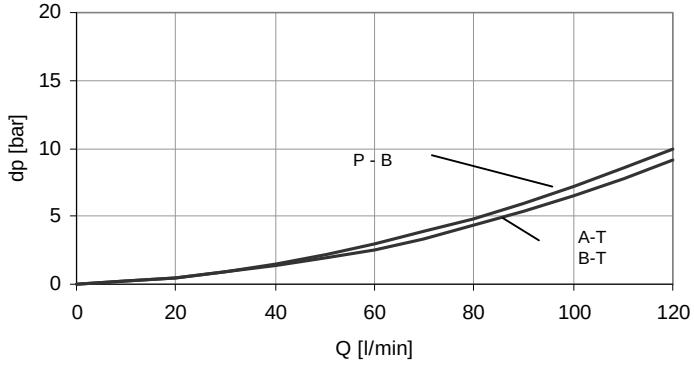
Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	42 W
230 V – 50/60 Hz	205 V	42 W
by using a female connector with integrated rectifier		

Standard models

Name	Part No.
4WE 10 QA S01–24DG /V	6086728
other models on request	

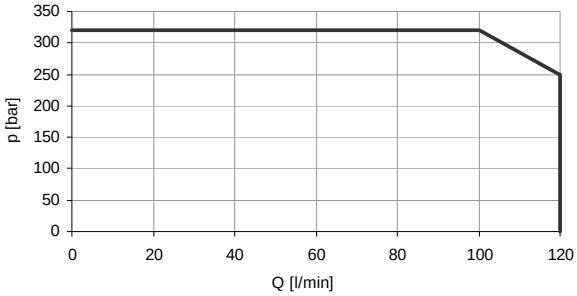
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

NOTE
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Subject to technical modifications.

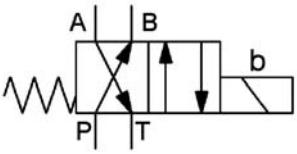
HYDAC INTERNATIONAL

4/2- directional- spool valve

Solenoid-operated, direct acting

4 WE 10 Y

SYMBOL



up to 120 l/min
up to 320 bar

FUNCTION

HYDAC 4/2 directional spool valves in the series 4WE 10 Y are directional valves for oil- hydraulic systems, which serve to open and close flow paths. In the de-energised mode the control spool is held in the rest position by the return spring. The actuation of the control spool occurs via an oil- immersed solenoid. The solenoid pushes the control spool from is rest position to is final position. This opens the required flow paths according to the symbol. When the solenoid is de-energised, the control spool is pushed back to the rest position by the return spring. A manual override permits the valve to be switched without energizing the solenoid.

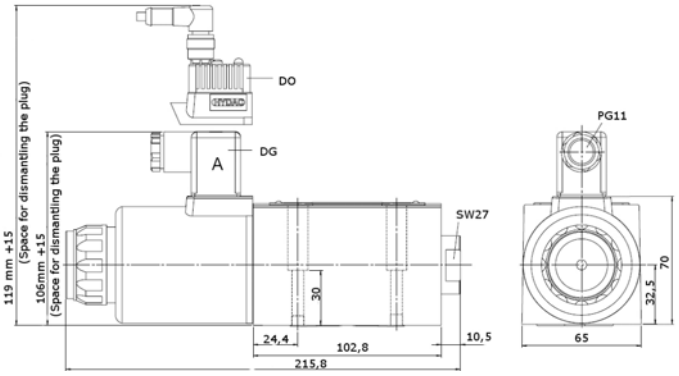
FEATURES

- Direct-acting, solenoid-operated valve NW 10
- Economical and reliable due to simple design
- Oil- immersed solenoid armature for long life and low noise operation
- Solenoid coils can be replaced with no possibility of oil leakage
- Interface to DIN 24340 Form A6, ISO 4401
- Manual override

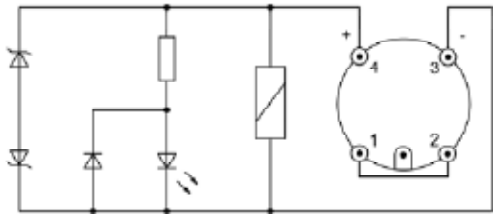
SPECIFICATIONS

Operating pressure:	port A,B,P: pmax= 320 bar port T: pmax= 210 bar
Nominal Flow:	max. 120 l/min
Media operating temp. range:	min. –20°C up to max. +80°C
Ambient temperature range:	min. –20°C up to max. +55°C
Fluids:	hydraulic oil to DIN 51524 part1 and 2
Viscosity range:	10 mm²/s up to 500 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Max. switching frequency:	15.000/h
$MTTF_d$:	150 years
Installation:	no orientation restrictions
Manual override:	up to approx. 50 bar tank pressure possible
Seal materials:	Standard FKM
Weight:	4,3 kg
Electrics	
Type of voltage:	DC voltage
Voltage tolerance:	±10%
Nominal power:	42W (12V / 2,9A) or 48W (24V / 2,0A)
Switching time:	Switch-on time (coil): 80ms up to 120ms Switch-off time (spring): 70ms up to110ms Switch-on time (coil with rectifier): 90 ms up to 130 ms Switch-off time (spring):160ms up to 200ms
Coil duty rating:	100%
Electrical connection:	plug to DIN 43650
IP rating:	IP 65 to EN 60529; DIN 40050 provided the connector is fitted correctly

DIMENSIONS

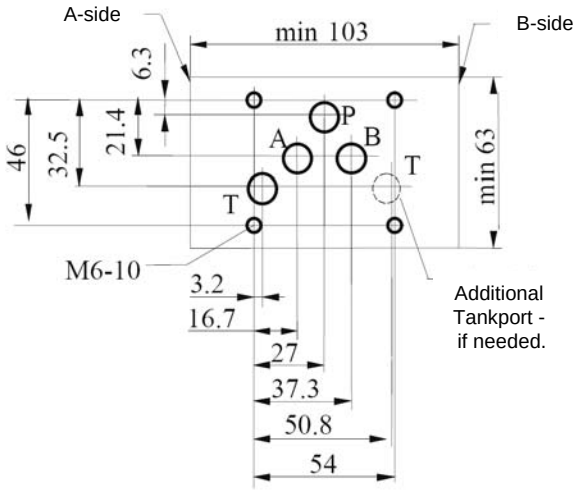


M12 coil
Electric
wiring



INTERFACE

to DIN 24340-A10 / ISO 4401 / ISO4401



Mounting screws: M6 x 40 DIN 912-10.9

Torque: 10 + 1 Nm

Female connector and mounting screws (4 pcs.) must be ordered separately.

MODEL CODE

4WE 10 Y S01 - 12DG / V

Name
4/2-directional spool valve

Nominal size
10 = Nominal size 10

Symbol

Series
Determined by manufacturer

Nominal voltage
12 = 12 Volt DC voltage
24 = 24 Volt DC voltage
96 and 205 Volt DC voltage on request (only type DG)
DG: DIN plug to EN 175301-803

Seal material
V = FKM (Standard)
N = NBR

Supply voltage +/- 10%	Nominal voltage of the DC-coil	Nominal power of the DC-coil
110 V – 50/60 Hz	96 V	42 W
230 V – 50/60 Hz	205 V	42 W
by using a female connector with integrated rectifier		

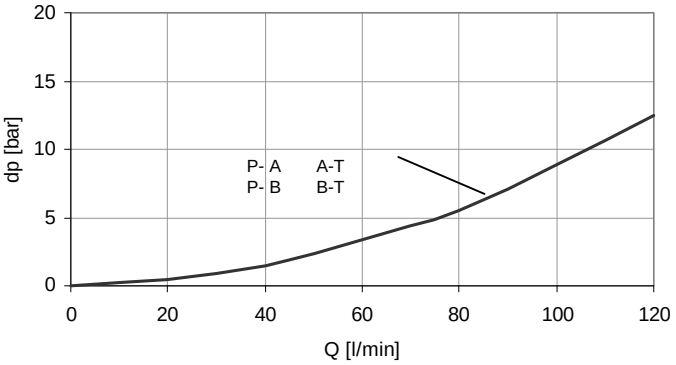
Standard models

Name	Part No.
4WE 10 Y S01–12DG /V	6063149
4WE 10 Y S01–24DG /V	6063155

other models on request

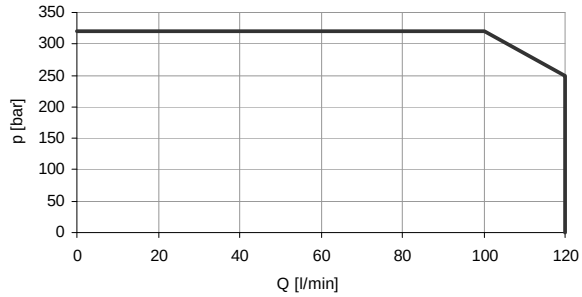
Pressure drop

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



Operating limits

Measured at ν = 36 mm²/s and t_{oil} = 45 °C



The operating limits were determined using coils at operating temperature and 10% under voltage. The operating limits given are for applications with two flow directions. For flow in only one direction, the operating limits can be lower.
For operation with G96/G205 coils max. permitted flow rate shown in the graph must be reduced by 10%. The switch-on times will increase.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

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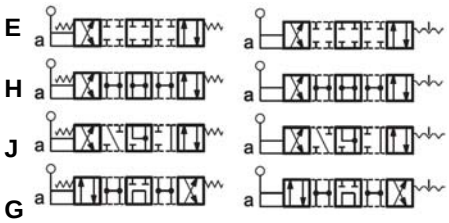
HYDAC INTERNATIONAL

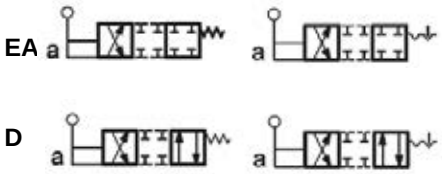
Directional valve lever operated
4/2 and 4/3
plate mounted
4WMH 6

SYMBOL
4/3 with spring / with detent



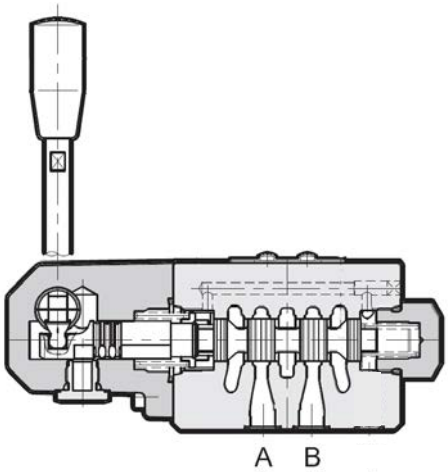
(more symbols see next page)

4/2 with spring / with detent:



up to 75 l/min
up to 350 bar

FUNCTION



FEATURES
- INTERFACE to ISO 4401-03, NW 6
- Types with different piston types
- Types with two or three positions, with retaining spring or mechanical detent
- Casted-iron valve body with high stability and low pressure drop
- Position of the lever could be adapted to different applications by turning through 180°
- hand lever position left = P-B-A-T, lever position right = P-A-B-T

SPECIFICATIONS

Operating pressure at P, A, B:	max. 350 bar
Operating pressure at T:	max. 210 bar
Nominal Flow:	max. 75 l/min
Operating fluid:	Hydraulic oil to DIN 51524 part 1 and 2
Temperature range of operating fluid:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO4406 or cleaner
Weight:	2,1kg

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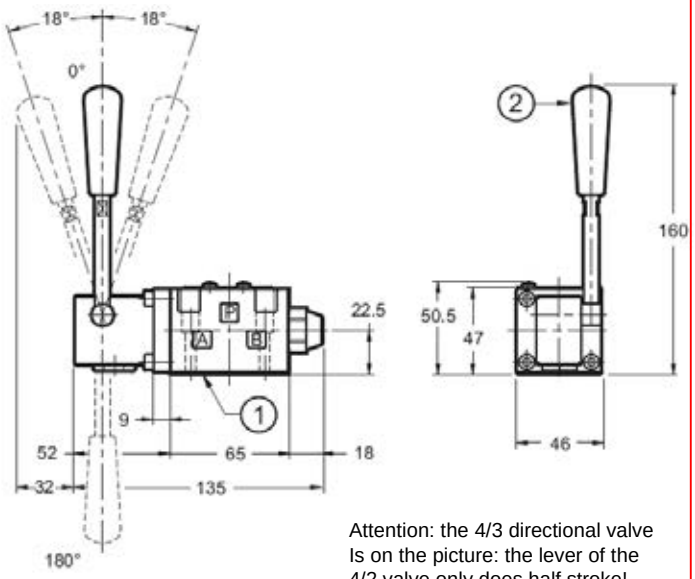
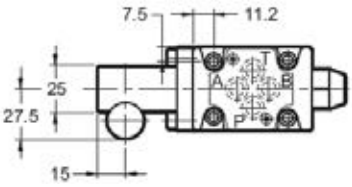
Standard Models

Standard Models	Part No.
4WMH 6 E 01/V	3659975
4WMH 6 J 01/V	3591057
4WMH 6 H 01/V	3661283
4WMH 6 E-F 01/V	3587851
4WMH 6 J-F 01/V	3587852

DIMENSIONS

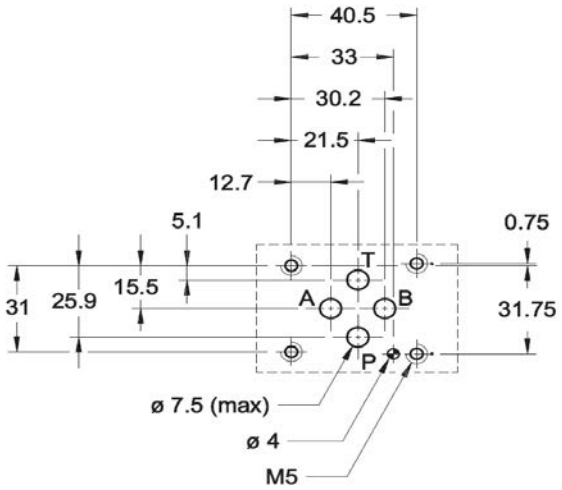




Attention: the 4/3 directional valve
Is on the picture: the lever of the
4/2 valve only does half stroke!
1) Fixing plate with O-rings:
4x O-Ring 9,25 x 1,78 FKM
90 Shore
2) Hand lever, 180° turnable

Fixing screws:
4 p.hexagon nut M5x30-12.9
Torque: up to 8 Nm + 0,5
All measures in mm.
Fixing elements are not in
the scope of supply.

Fixing plate to ISO 4401-03-02-0-05



HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
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MODEL CODE

4WMH 6 D –F 01 / V

Name and NW
Directional valve lever operated NW 6

Control function
D = Symbol

Type
Omission = spring detent
F = without spring, with detent

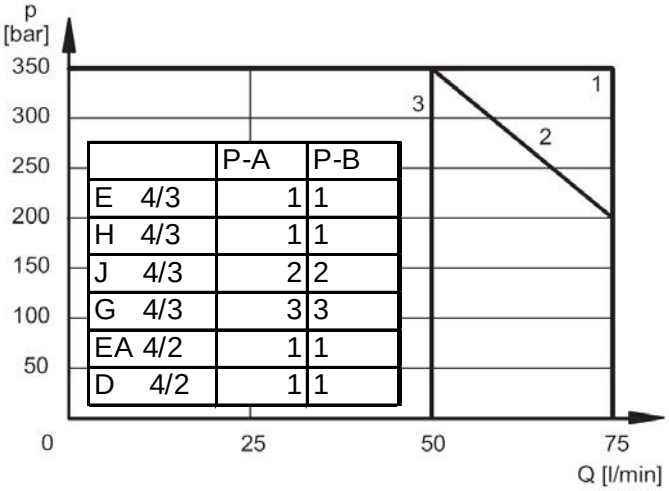
Series
01 = Standard

Seal material
V = FKM (Standard)
N = NBR

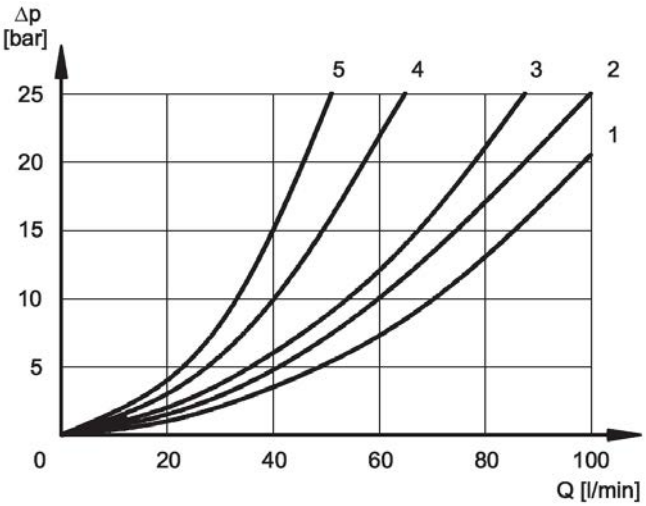
PERFORMANCE

Pressure drop Δp/Q
Measured at ν = 36 mm²/s and t_{oil} = 50 °C

	P→A	P→B	A→T	B→T
Symbole	DIAGRAMMKENNLINIEN			
E 4/3	2	2	3	3
H 4/3	1	1	3	3
J 4/3	3	3	1	1
G 4/3	5	5	5	5
EA 4/2	2	2	2	2
D 4/2	2	2	2	2



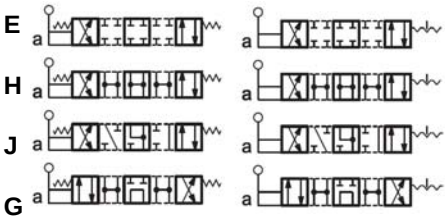
	P-A	P-B
E 4/3	1	1
H 4/3	1	1
J 4/3	2	2
G 4/3	3	3
EA 4/2	1	1
D 4/2	1	1



HYDAC INTERNATIONAL

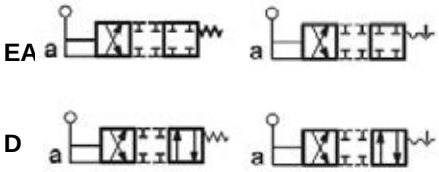
Directional valve lever operated
4/2 and 4/3
plate mounted
4WMH 10

SYMBOL
4/3 with spring / with detent



(more symbols see next page, with explanation)

4/2 with spring / with detent:



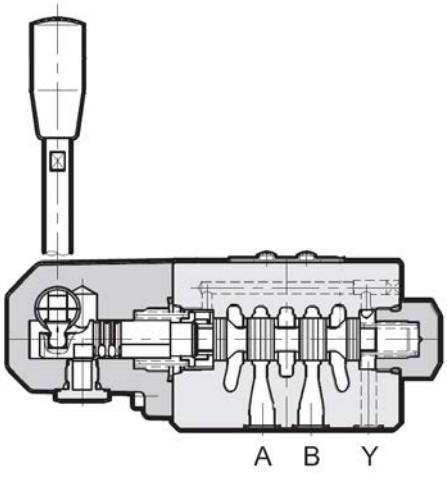
up to 150 l/min
up to 320 bar

FEATURES
- INTERFACE to ISO 4401-05, NW 10
- Types with different piston types
- Types with two or three positions, with retaining spring or mechanical detent
- Casted-iron valve body with high stability and low pressure drop
- external leakage line Y serial mounted (has to be used if the pressure in the backline T is higher than 25 bar)
- hand lever position left = P-B-A-T, lever position right = P-A-B-T

SPECIFICATIONS

Operating pressure at P, A, B:	max. 320 bar
Operating pressure at T:	max. 25 bar (operating pressure at T with external leakage line Y max. 320 bar)
Nominal Flow:	max. 150 l/min
Operating fluid:	Hydraulic oil to DIN 51524 part 1 and
2Temperature range of operating fluid:	- 20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO4406 or cleaner
Weight:	4,2 kg

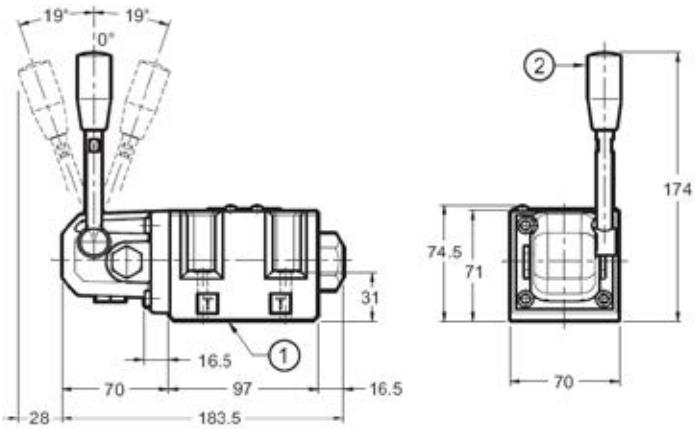
FUNCTION

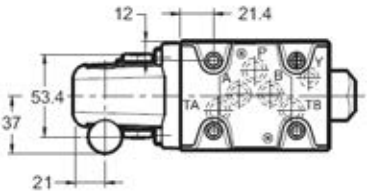


E 5.227.5.0 /01.13

Standard Models	Part No.
4WMH 10 E 01/V	nn
4WMH 10 J 01/V	3571988
4WMH 10 E-F 01/V	3613643

DIMENSIONS





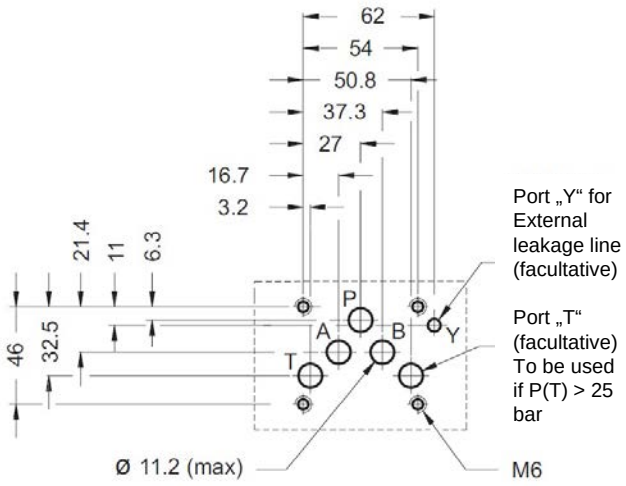
Attention: 4/3 directional valve is on the picture: the lever of the 4/2 valve only does half stroke!

1) Fixing plate with O-rings:
   5x O-Ring 12,42 x 1,78 FKM
   90 Shore
   1x O-Ring 9,25 x 1,78 FKM
   90 Shore
2) Hand lever

Fixing screws:4 p. hexagon nut M6x40-12.9
Torque: up to 14 Nm + 0,5

All measures in mm.
Fixing elements are not in the scope of supply.

Fixing plate to ISO 4401-05-02-0-05



NOTE
The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

4WMH 10 D –F 01 / V

Name and NW
Directional valve lever operated NW 6

Control function
D = Symbol

Type
Omission = spring detent
F = without spring, with detent

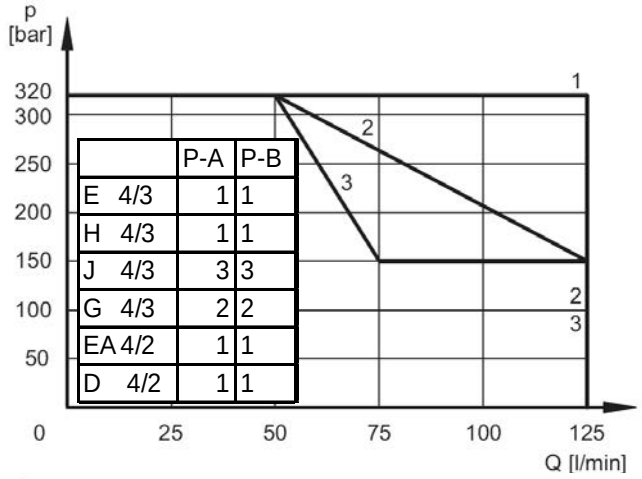
Series
01 = Standard

Seal material
V = FKM (Standard)
N = NBR

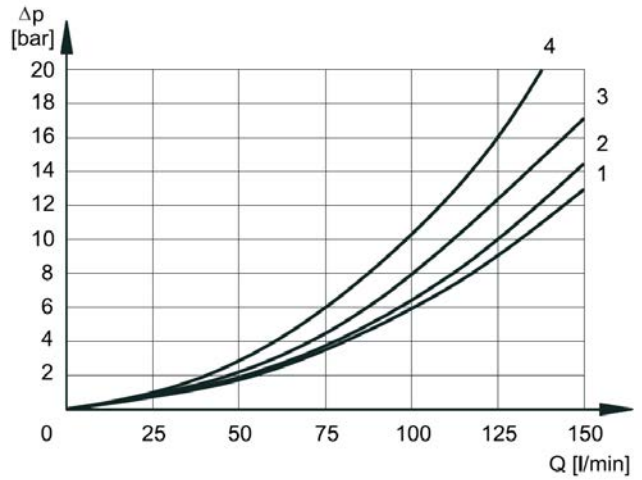
PERFORMANCE

Pressure drop Δp/Q
Measured at ν = 36 mm²/s and t_{oil} = 50 °C

	P→A	P→B	A→T	B→T
Symbole	DIAGRAMMKENNLINIEN			
E 4/3	2	2	1	1
H 4/3	3	3	1	1
J 4/3	3	3	2	2
G 4/3	1	1	2	2
EA 4/2	3	3	2	2
D 4/2	3	3	2	2



	P-A	P-B
E 4/3	1	1
H 4/3	1	1
J 4/3	3	3
G 4/3	2	2
EA 4/2	1	1
D 4/2	1	1

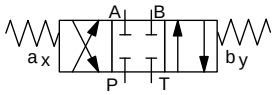


HYDAC INTERNATIONAL

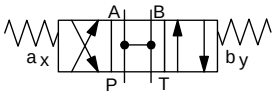
4/3-Directional control valve
Hydraulically operated
Optional with diversion plate, or pilot valve
4WH E 10

SYMBOL

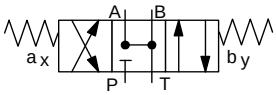
E



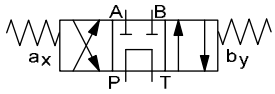
H



J

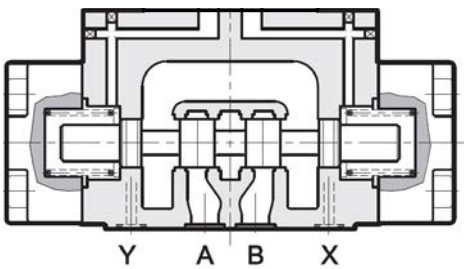


G



up to 150 l/min
up to 320 bar

FUNCTION



FEATURES

- Electro-hydraulically operated with pilot valve NW6 or hydraulically operated with diversion plate
- Flows up to 150l/min
- Internal or external ported pilot supply and drain line selectable by internal plug setting
- Attention: Pilot valve, diversion plate and fixing screws are not in the scope of delivery

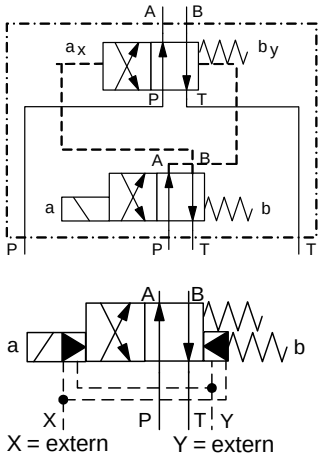
SPECIFICATIONS

Operating pressure:	max. 320 bar
Flow rate symbols E, H, J:	max. 150 l/min at 210 bar (120 l/min at 320 bar)
Symbol G:	max. 120 l/min at 210 bar (100 l/min at 320 bar) max. 150 l/min
Pilot pressure:	min. 5 up to max. 210 bar
Pressure on T line: (with internal drain)	max. 140 bar
Pressure on T line: (with external drain)	max. 250 bar
Fluids:	Hydraulic oil according to DIN 51524 part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temp. range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406
Weight:	6,6 kg without pilot valve and short-circuit subplate

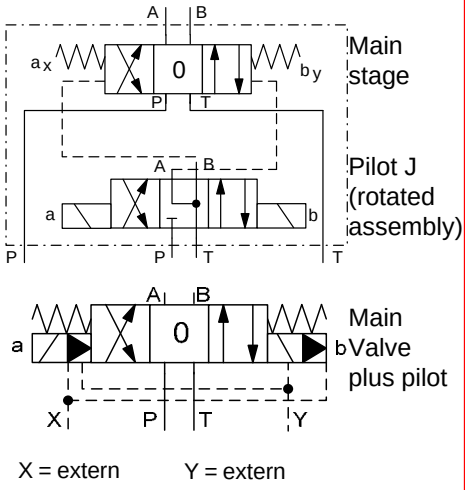
E 5.249.12.0 /01.13

Example for assembled pilot valve

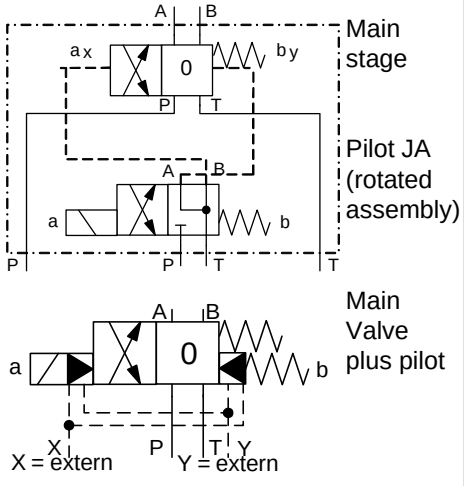
4/2 directional valve
with spring offset Type 4WEH 10, 16



4/3 directional valve
spring centered Type 4WEH 10, 16

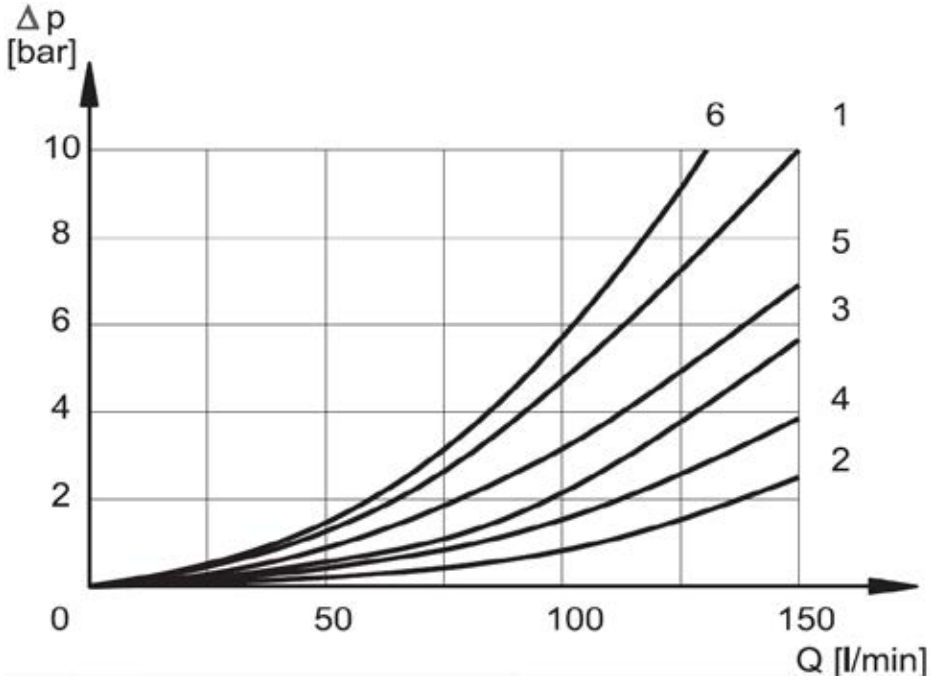


4/2 directional valve
with spring offset Type 4WEH 10, 16



PERFORMANCE

Measured at ν = 33 mm²/s and T_{oil} = 46° C



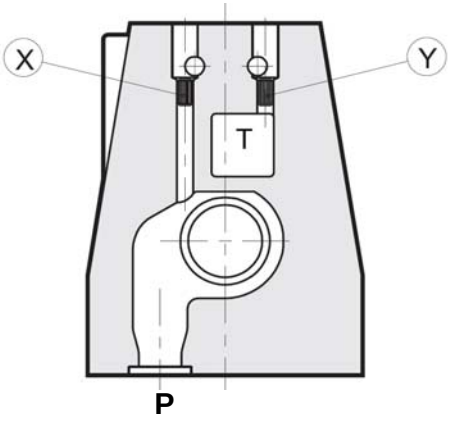
Curves

Symbol	Piston position	Ports				
		P -> A	P -> B	A -> T	B -> T	P -> T
E	not operated					
	operated	1	1	2	3	
H	not operated					*6
	operated	5	5	2	4	
J	not operated			1•	1○	
	operated	1	1	1	4	
G	not operated					6
	operated	6	6	3	5	
Q	not operated					
	operated	1	1	2	2	
EA	not operated					
	operated	-	1	2	-	
HA	not operated					*6
	operated	-	5	2	-	
JA	not operated			1•	1○	
	operated	-	1	1	-	
GA	not operated					6
	operated	6	-	-	5	
QA	not operated					
	operated	-	1	2	-	
D	not operated	1	-	-	3	
	operated	-	1	4	-	
D/OF	operated	1	1	4	3	
	* A-B blocked	•B blocked	○A blocked			

Valve type		Plug setting X	Plug setting Y
	Internal pilot supply and external drain	no plug	plug
I	Internal pilot supply and drain	no plug	no plug
	external pilot supply and drain	plug	plug
EI	external pilot supply and internal drain	plug	no plug

Sectional View

(plugs M5 x 6 placed)



Standard models	Part-no.
4 WHE 10 E S01/V	3492056
4 WHE 10 J S01/V	3492059
4 WHE 10 G S01/V	3492060
4 WHE 10 H S01/V	3492061
4 WHE 10 E S01/N	3492062
4 WHE 10 J S01/N	3492063
4 WHE 10 G S01/N	3492064
4 WHE 10 H S01/N	3492065

Other models on request

Diversion plates (see accessory equipment)

UP-6-PATB-S01/1/V	3581661
UP-6-PBTA-S01/1/V	3581663

MODEL CODE

4WH E 10 E S01 / V /U

Name
4/3 directional control valve

Pilot supply and drain
E = External Pilot supply and drain

Nominal size
10 = NW 10

Symbol for main stage
Available symbols: E, J, G, H (others on request)

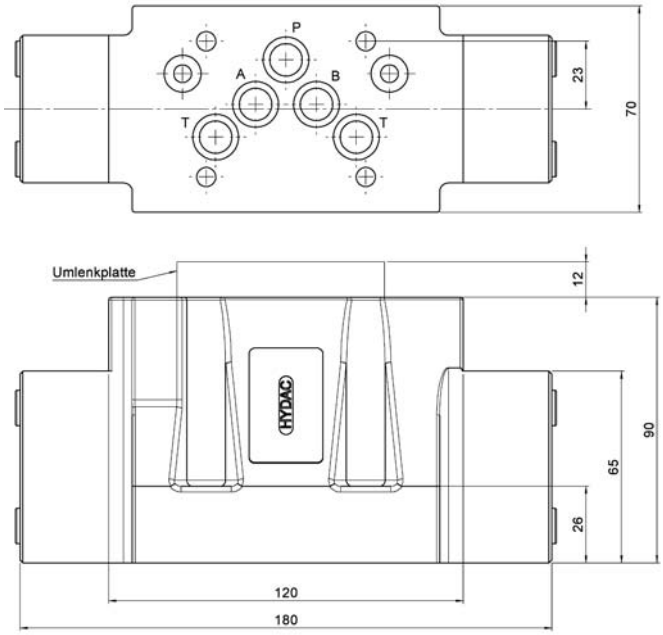
Type
S01 = Standard
S02 = ISO 4401 pattern (on request)

Seals
V = FKM (Standard)
N = NBR

Option
no option = without diversion plate (Standard)
U = with diversion plate PATB, fixing screws included

DIMENSIONS

(with diversion plate)



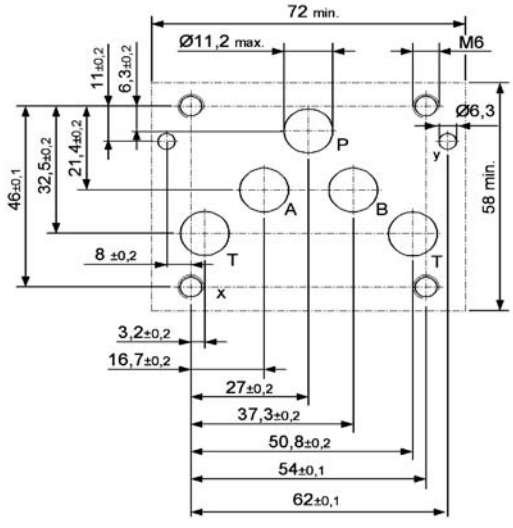
Fixing screws:
4 pcs. M6 x 50 DIN 912
Torque 14 + 1 Nm for 12.9
or 8 Nm for 8.8.

Hole pattern and seals:
5 pcs. O-Ring 12,42 x 1,78 - 90Sh
2 pcs. O-Ring 9,25 x 1,78 - 90Sh

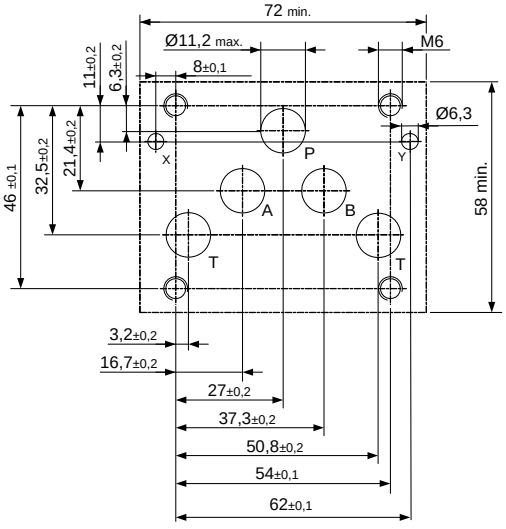
All dimensions in mm.

Plugs and fastening screws are not in the scope of supply.

Hole pattern CETOP 4.2-4 P05-320



Hole pattern according ISO 4401-05-04-0-05 (S02)



Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

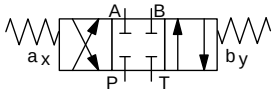
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

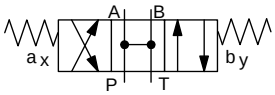
4/3-Directional control valve
Hydraulically operated
Optional with diversion plate, or pilot valve
4WH E 16

SYMBOL

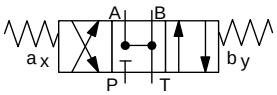
E



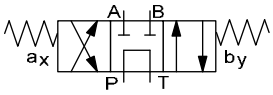
H



J

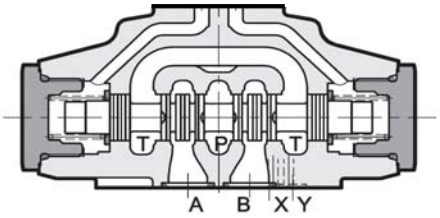


G



up to 320 bar
up to 300 l/min

FUNCTION



FEATURES

- Pattern according to DIN 24340, ISO 4401
- Hydraulically operated directional valve
- Electro-hydraulically operated by pilot valve NW6 or hydraulically operated with diversion plate
- Flows up to 300l/min
- Internal or external ported pilot supply and drain line selectable by internal plug setting
- Attention: Pilot valve, diversion plate and fixing screws are not in the scope of delivery

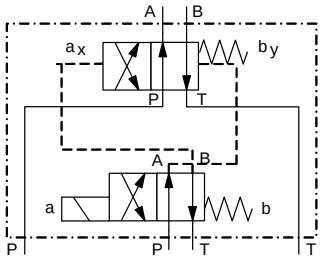
SPECIFICATIONS

Operating pressure:	max. 320 bar
Flow rate symbols E, H, J:	max. 300 l/min at 320 bar
Symbol G:	max. 150 l/min at 320 bar (300 l/min at 60 bar)
Pilot pressure:	min. 12 up to max. 280 bar
Pressure on T line: (with internal drain)	max. 140 bar
Pressure on T line: (with external drain)	max. 250 bar
Fluids:	Hydraulic oil according to DIN 51524 part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temp. range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406
Weight:	6,6 kg without pilot valve and diversion plate

E 5.225.0 /01.13

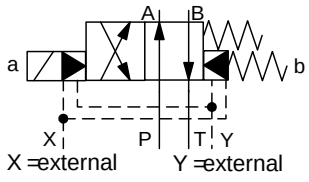
Example for assembled pilot valve

4/2 directional valve
with spring offset Type 4WEH 10, 16



Main stage

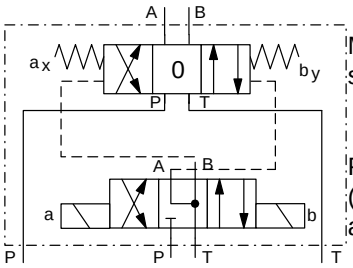
Pilot D (rotated assembly)



Main Valve plus pilot

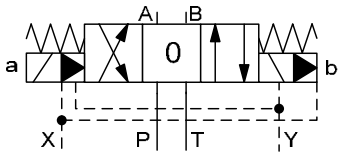
X =external Y =external

4/3 directional valve
spring centered Type 4WEH 10, 16



Main stage

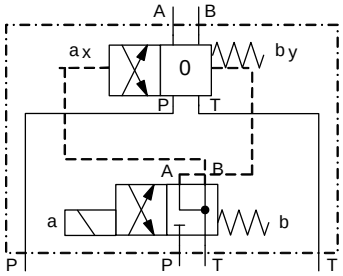
Pilot J (rotated assembly)



Main Valve plus pilot

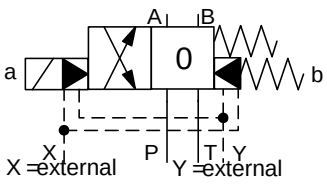
X =external Y =external

4/2 directional valve
with spring offset Type 4WEH 10, 16



Main stage

Pilot JA (rotated assembly)

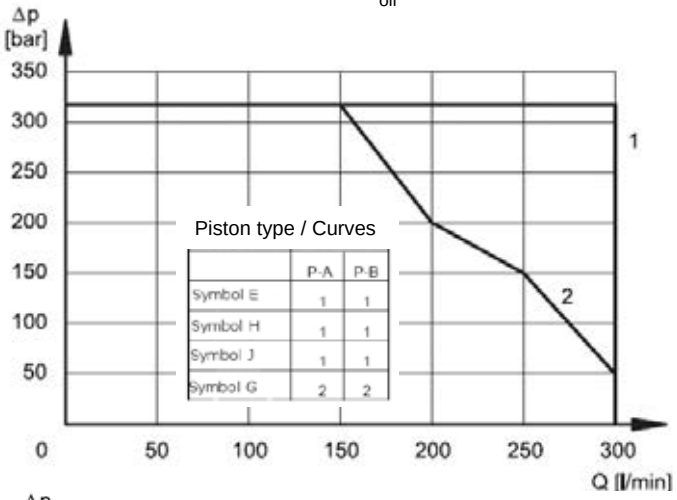


Main Valve plus pilot

X =external Y =external

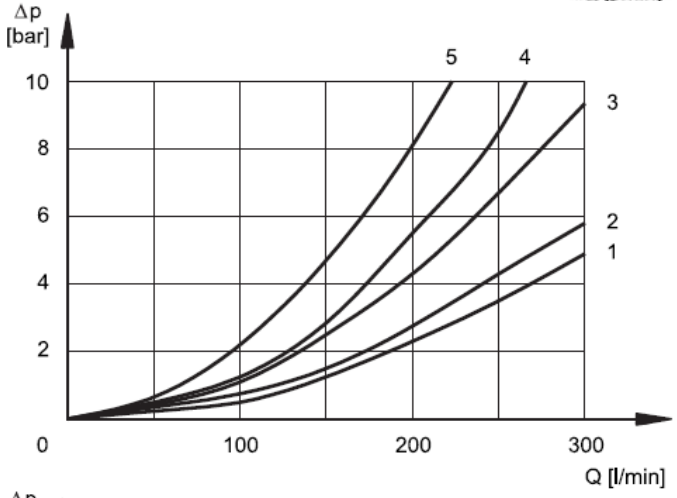
PERFORMANCE

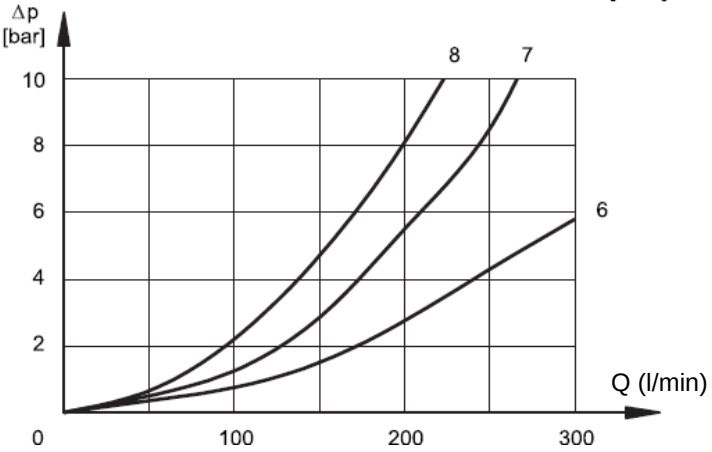
Measured at ν = 33 mm²/s and T_{oil} = 46° C



Piston type / Curves

	P-A	P-B
Symbol E	1	1
Symbol H	1	1
Symbol J	1	1
Symbol G	2	2



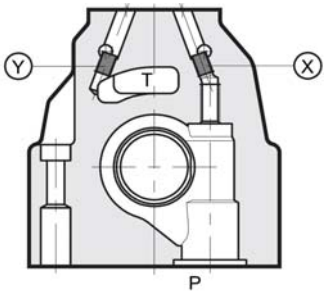


Piston	Loss - switched valve			
	P-A	P-B	A-T	B-T
	Curves			
E	1	1	3	4
H	1	1	4	4
J	1	1	4	4
G	2	2	4	5

Piston	Loss -valve in central position				
	P-A	P-B	A-T	B-T	P-T
	Curves				
H					6
J			7	7	
G					7

	Valve type	Plug setting X	Plug setting Y
	Internal pilot supply and external drain	no plug	plug
I	Internal pilot supply and drain	no plug	no plug
	external pilot supply and drain	plug	plug
EI	external pilot supply and internal drain	plug	no plug

Sectional View
(plugs M6 x 8 placed)



Standard models	Part-no.
4WH E 16 E S01 /V	6079049
4WH E 16 H S01 /V	3571991
4WH E 16 J S01 /V	6079050
4WH E 16 G S01 /V	6083975

Other models on request

Diversion plates (see accessory equipment)

UP-6-PATB-S01/1/V	3581661
UP-6-PBTA-S01/1/V	3581663

MODEL CODE

4WH E 16 E S01 / V /U

Name
4/3-directional control valve

Pilot supply and drain
E = Control fluid inlet and outlet external

Nominal size
16 = NW 16

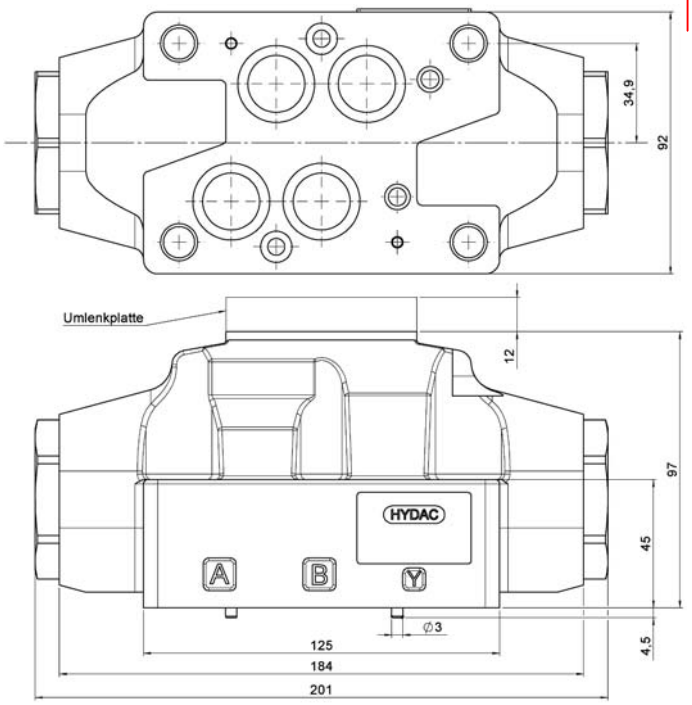
Symbol for main stage
Available symbols: E, J, G, H

Type
S01 = Standard

Seals
V = FKM (Standard)
N = NBR

Option
U = with diversion plate PATB and Mounting screws
Omission = without diversion plate (Standard)

DIMENSIONS (with diversion plate)



Mounting Screws: 4x M10 x 60 DIN 912
2x M6 x 50 DIN 912

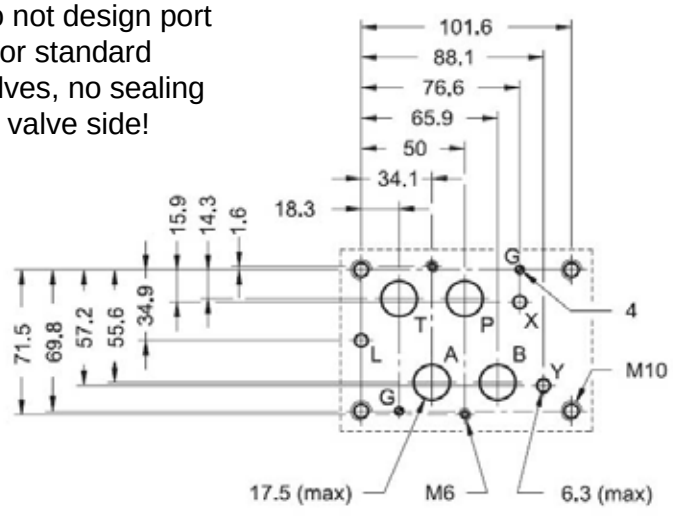
Torque: M10 x 60: 67 + 3 Nm for 12.9 or 40 Nm for 8.8
M6 x 50: 14 + 2 Nm for 12.9 or 8 Nm for 8.8

Seals: 4x 22,22 x 2,62 – 90 Sh
2x 10,82 x 1,78 – 90 Sh

All dimensions in mm.
Plugs and fastening screws are not in the scope of supply.

HOLE Pattern according to ISO 4401-07

Do not design port L for standard valves, no sealing on valve side!



Annotation
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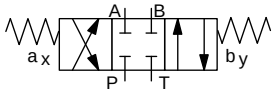
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

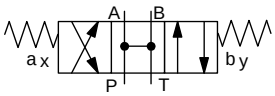
4/3-Directional control valve
Hydraulically operated
Optional with diversion plate, or pilot valve
4WH E 25

SYMBOL

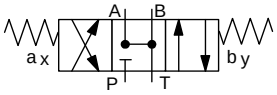
E



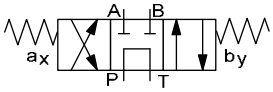
H



J

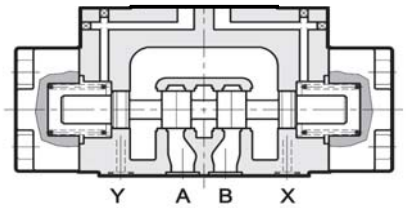


G



up to 320 bar
up to 600 l/min

FUNCTION



FEATURES

- Pattern according ISO 4401
- Hydraulically operated directional valve
- Electro-hydraulically operated with pilot valve NW6 or hydraulically operated with diversion plate
- Flow up to 600l/min
- Internal or external ported pilot supply and drain line selectable by internal plug setting
- Attention: Pilot valve, diversion plate and fixing screws are not in the scope of delivery

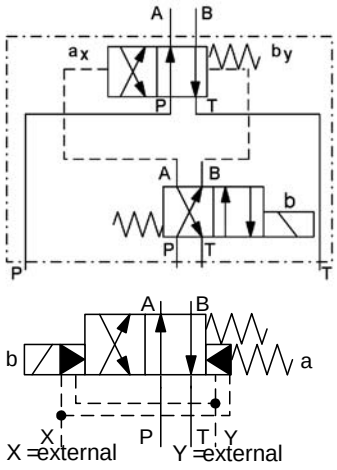
SPECIFICATIONS

Operating pressure:	max. 320 bar
Symbols E, H, J	max. 600 l/min at 210 bar (500 l/min at 320 bar)
Symbol G:	max. 500 l/min at 210 bar (450 l/min at 320 bar)
Pilot pressure:	min. 5 up to max. 210 bar
Pressure on T line: (with internal drain)	max. 140 bar
Pressure on T line: (with external drain)	max. 250 bar
Fluids:	Hydraulic oil according to DIN 51524 part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temp. range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406
Weight:	13,6 kg without pilot valve and short-circuit subplate

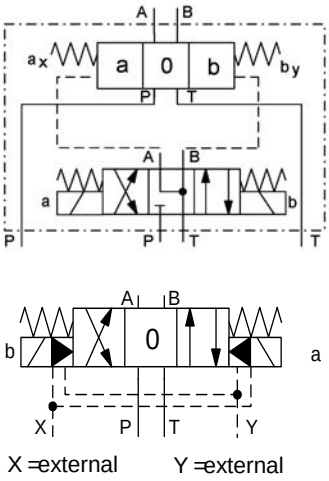
E 5.226.0 /01.13

Example for assembled pilot valve

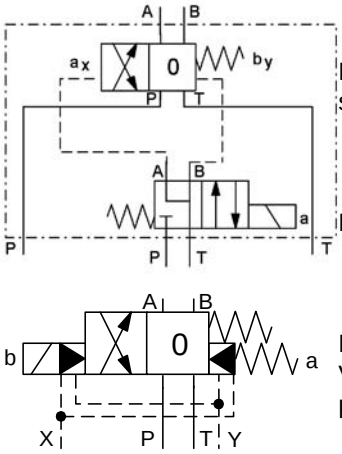
4/2 directional valve
with spring offset Type 4WEH 25, 32



4/3 directional valve
spring centered Type 4WEH 25 , 32

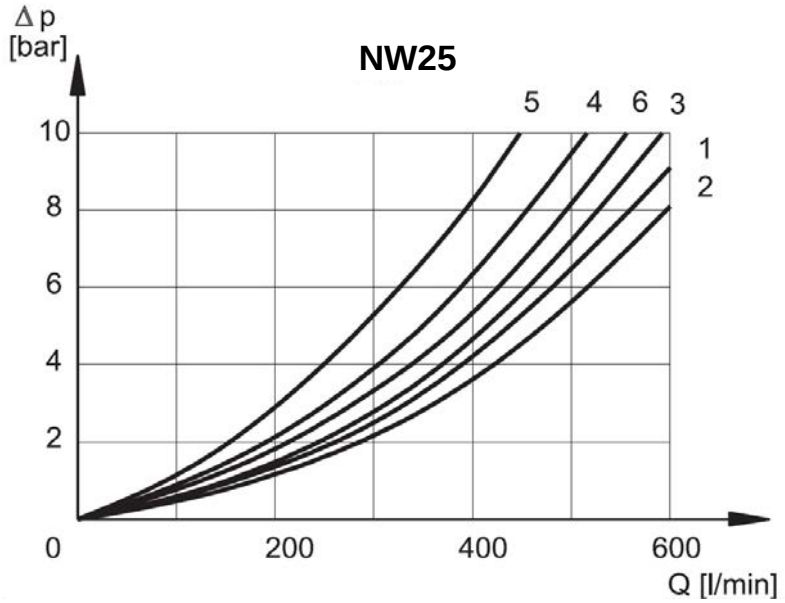


4/2 directional valve
with spring offset Type 4WEH 25, 32



PERFORMANCE

Measured at ν = 33 mm²/s and T_{oil} = 46° C

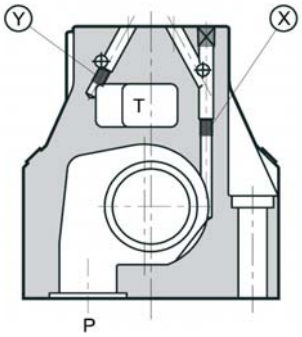


Piston	Piston position	* AB blocked	●B blocked		○A blocked	
		Connections				
		P -> A	P -> B	A -> T	B -> T	P -> T
		Diagram curves				
Symbol E	Actuated	1	1	2	3	
Symbol H	not actuated					6*
	Actuated	2	2	1	2	
Symbol J	not actuated			4●	4○	
	Actuated	1	1	1	2	
Symbol G	not actuated					5
	Actuated	6	6	3	4	

	Valve type	Plug setting X	Plug setting Y
	Internal pilot supply and external drain	no plug	plug
I	Internal pilot supply and drain	no plug	no plug
	external pilot supply and drain	plug	plug
EI	external pilot supply and internal drain	plug	no plug

Sectional view

(Plugs M6 x 8 placed)



Standard models	Part-no.
4WH E 25 E S01 /V	6079051
4WH E 25 H S01 /V	3641081
4WH E 25 J S01 /V	6079052
4WH E 25 G S01 /V	6041083

Other models on request

Diversion plates (see accessory equipment)

UP-6-PATB-S01/1/V	3581661
UP-6-PBTA-S01/1/V	3581663

MODEL CODE

4WH E 25 E S01 / V /U

Name
4/3-directional control valve

Pilot supply and drain
E = Control fluid inlet and outlet external

Nominal size
25 = NW 25

Symbol for main stage
Available Symbols: E, J, G, H

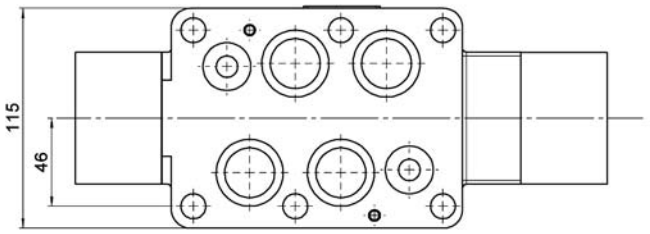
Type
S01 = Standard

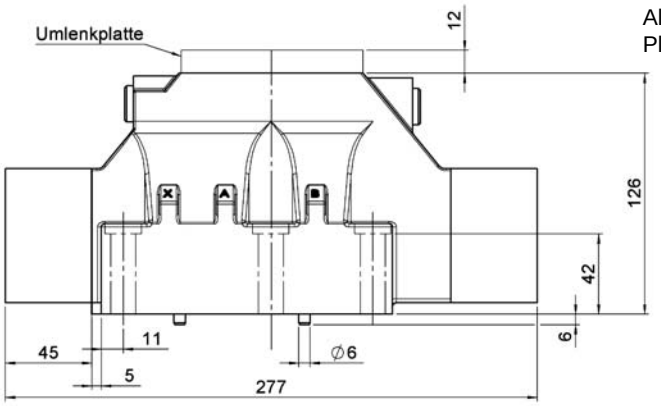
Seals
V = FKM (Standard)
N = NBR

Option
U = with diversion plate PATB and Mounting screws
Omission = without diversion plate (Standard)

DIMENSIONS

(with diversion plate)



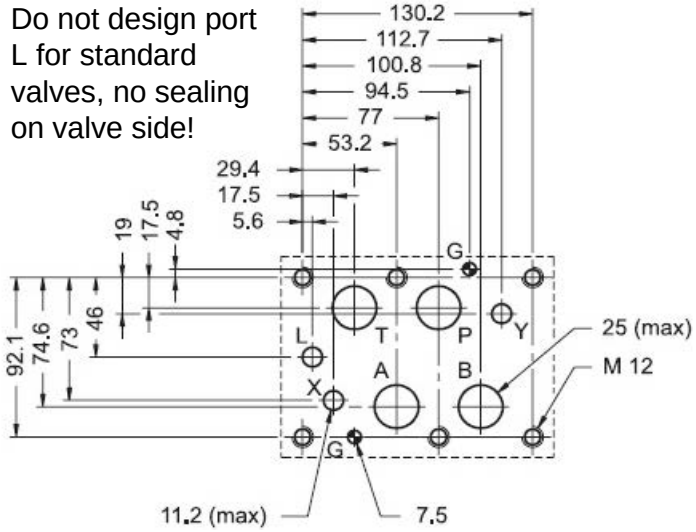


Mounting Screws:	6x M12 x 60 DIN 912
Torque:	115 + 5 Nm for 12.9 or 64 Nm for 8.8
Seals:	4x O-Ring 29,82 x 2,62 – 90 Sh 2x O-Ring 20,24 x 2,62 – 90 Sh

All dimensions in mm.
Plugs and fastening screws are not in the scope of supply.

Hole pattern according to ISO 4401-08

Do not design port L for standard valves, no sealing on valve side!



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HYDAC Fluidtechnik GmbH
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66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
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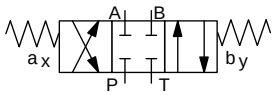
HYDAC INTERNATIONAL

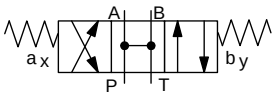
4/3-Directional control valve
Hydraulically operated
Optional with diversion plate, or pilot valve
4WH E 32

SYMBOL

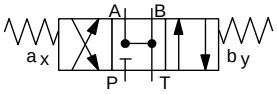
E



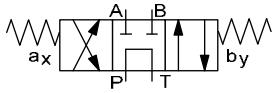
H



J

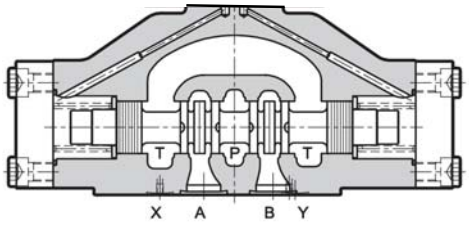


G



up to 350 bar
up to 1100 l/min

FUNCTION



FEATURES

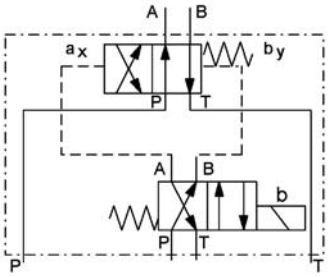
- Pattern according DIN 24340, ISO 4401
- Hydraulically operated directional valve
- Electro-hydraulically operated with pilot valve NW6 or hydraulically operated with diversion plate
- Flow up to 1100l/min
- Internal or external ported pilot supply and drain line selectable by internal plug setting
- Attention: Pilot valve, diversion plate and fixing screws are not in the scope of delivery

SPECIFICATIONS

Operating pressure:	max. 350 bar
Flow rate:	max. 1100 l/min
Control pressure:	min. 12 up to max. 280 bar
Pressure on T line: (with internal drain)	max. 140 bar
Pressure on T line: (with external drain)	max. 250 bar
Fluids:	Hydraulic oil according to DIN 51524 part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temp. range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406
Weight:	48 kg without pilot valve and short-circuit subplate

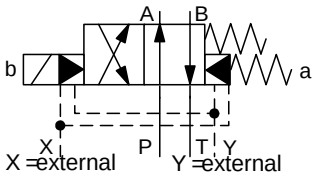
Example for assembled pilot valve

4/2 directional valve
with spring offset Type 4WEH 25, 32



Main stage

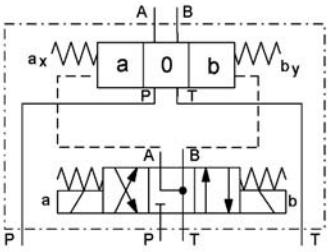
Pilot D



Main Valve plus Pilot

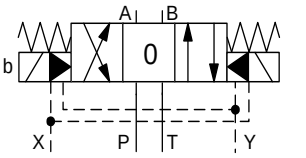
X =external Y =external

4/3 directional valve
spring centered Type 4WEH 25 , 32



Main stage

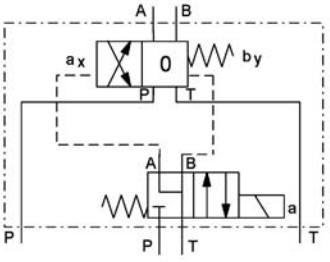
Pilot J



Main Valve plus Pilot

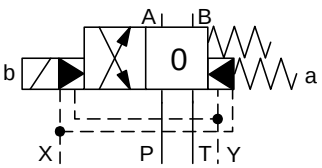
X =external Y =external

4/2 directional valve
with spring offset Type 4WEH 25, 32



Main stage

Pilot JA

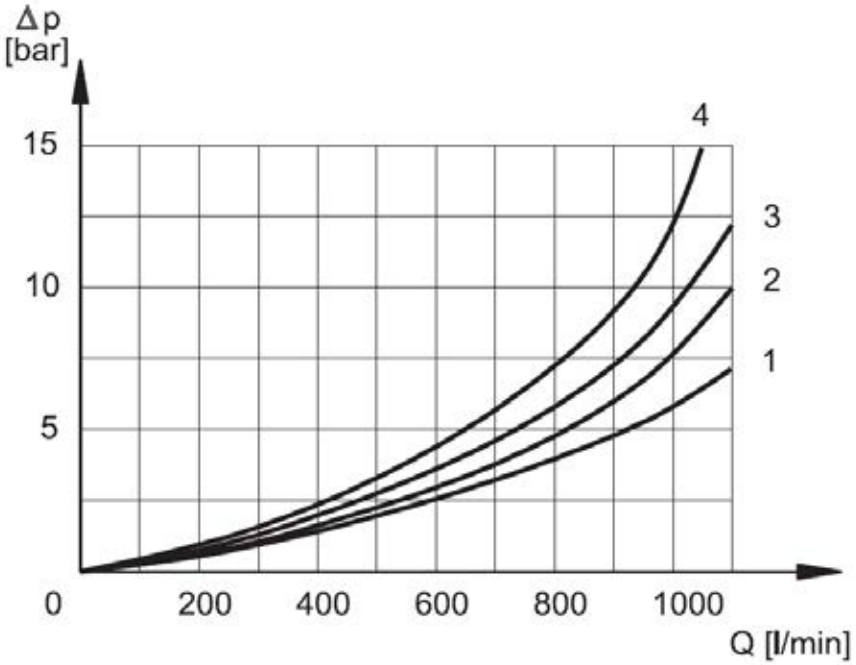


Main Valve plus Pilot

X =external Y =external

PERFORMANCE

Measured at ν = 33 mm²/s and T_{oil} = 46° C

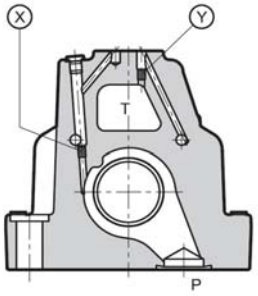


Piston	Loss - switched valve			
	P-A	P-B	A-T	B-T
	Curves			
E	1	1	1	1
H	2	2	2	2
J	1	1	4	4
G	2	2	2	2

Piston	Loss - Valve in central position				
	P-A	P-B	A-T	B-T	P-T
	Curves				
H					3
J			4	4	
G					4

Valve type		Plug setting X	Plug setting Y
	Internal pilot supply and external drain	no plug	plug
I	Internal pilot supply and drain	no plug	no plug
	external pilot supply and drain	plug	plug
EI	external pilot supply and internal drain	plug	no plug

Sectional view
(Plugs M 6 x 8 placed)



Standard models	Part-no.
4WH E 32 E S01 /V	6079053
4WH E 32 H S01 /V	3641337
4WH E 32 J S01 /V	6079054
4WH E 32 G S01 /V	3641340

Other models on request

Diversion plates (see accessory equipment)

UP-6-PATB-S01/1/V	3581661
UP-6-PBTA-S01/1/V	3581663

MODEL CODE

4WH E 32 E S01 / V /U

Name
4/3-directional control valve

Pilot supply and drain
E = Control fluid inlet and outlet external

Nominal size
32 = NW 32

Symbol for main stage
Available symbols: E, J, G, H

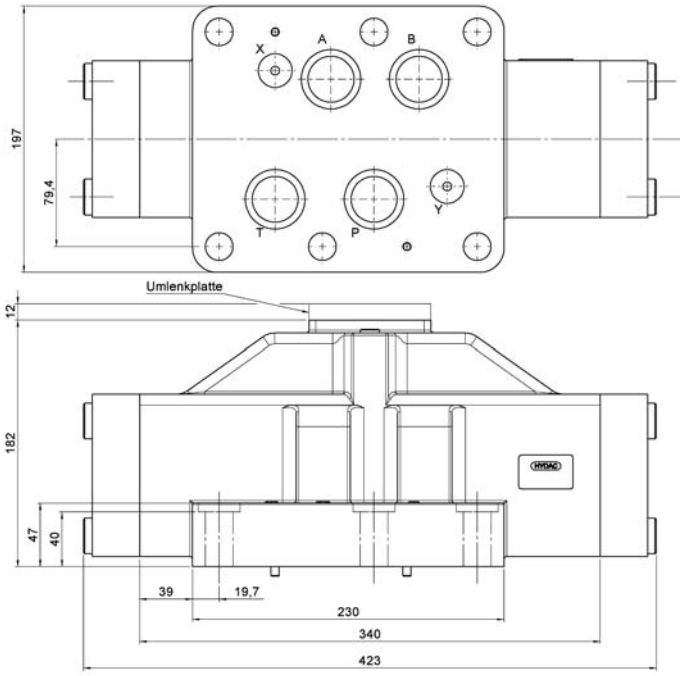
Type
S01 = Standard

Seals
V = FKM (Standard)
N = NBR

Option
U = with diversion plate PATB and Mounting screws
Omission = without diversion plate (Standard)

DIMENSIONS

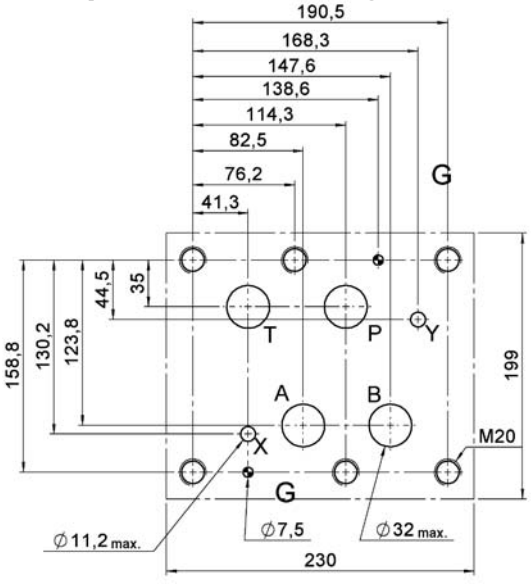
(with diversion plate)



Fixing screws:	6x M20 x 70 DIN 912
Torque:	560 + 20 Nm for 12.9 or 330 Nm for 8.8
Seals:	4x O-Ring 37,59 x 3,53 – 90 Sh 2x O-Ring 20.24 x 2,62 – 90 Sh

All dimensions in mm.
Plugs and fastening screws are not in the scope of supply.

Hole pattern according ISO 4401-10-09-0-05



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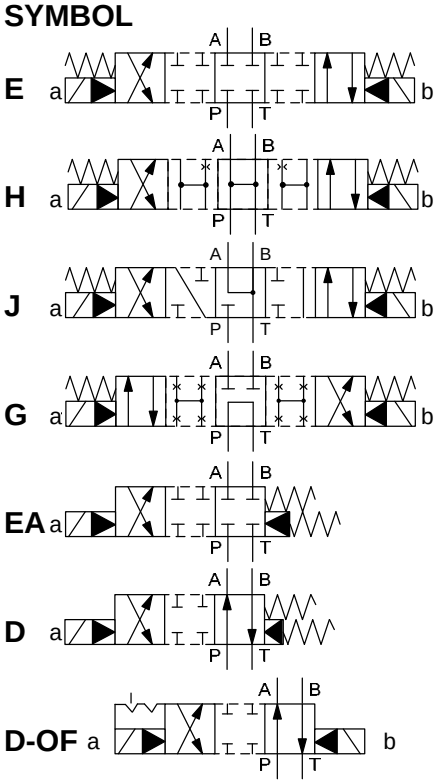
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

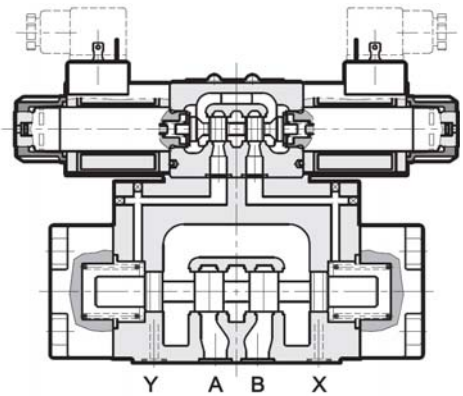
4/3-Directional control valve
electro-hydraulically operated
4WEH I 10 / 4WEH EI 10

SYMBOL



up to 150 l/min
up to 320 bar

FUNCTION



FEATURES

- Electro-hydraulically operated by pilot valve NW6
- Flows up to 150l/min
- Internal or external pilot supply and drain line selectable by internal plug setting

SPECIFICATIONS

Nominal pressure:	max. 320 bar
Flow-rate:	
Symbols E, H, J, EA, Q, D, D-OF	max. 150 l/min at 210 bar (120 l/min at 320 bar)
Symbol G:	max. 120 l/min at 210 bar (100 l/min at 320 bar)
Control pressure:	min. 5 up to max. 210 bar
Pressure in line T: (with internal drain)	max. 140 bar
Pressure in line T: (with external drain)	max. 210 bar
Fluids:	Hydraulic oil to DIN 51524 part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	ISO 4406 class 20/18/15 or better
Weight:	8,6 kg incl. pilot valve with 2 coils 8,1 kg incl. pilot vlave with 1 coil

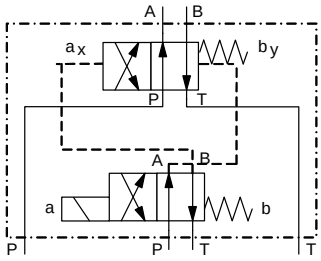
Electrics

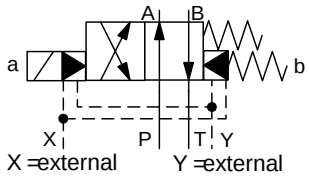
Type of voltage: DC	
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V /1,33A)
Switch-on time:	Main stage: 50 ms up to 60 ms
Switch-off time:	Main stage: 40 ms up to 50 ms (Control pressure 100bar)
Coil duty rating:	100%
Electrical connection:	plug according to DIN 43650
IP rating:	IP 65 nach EN 60529; DIN 40050 with correctly fitted connector

E 5.249.13.0 /01.13

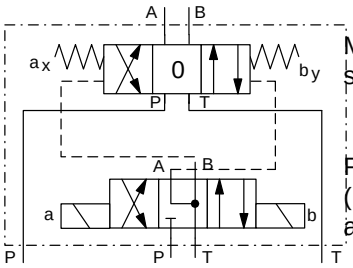
Example for the assembly with pilot valve (optional)

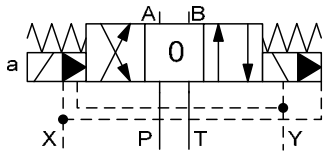
4/2 directional valve
with spring offset Type 4WEH 10, 16





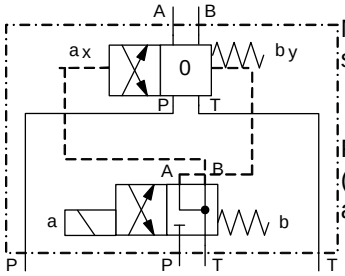
4/3 directional valve
spring centered Type 4WEH 10, 16

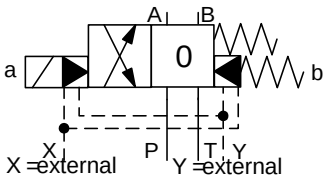




X =external Y =external

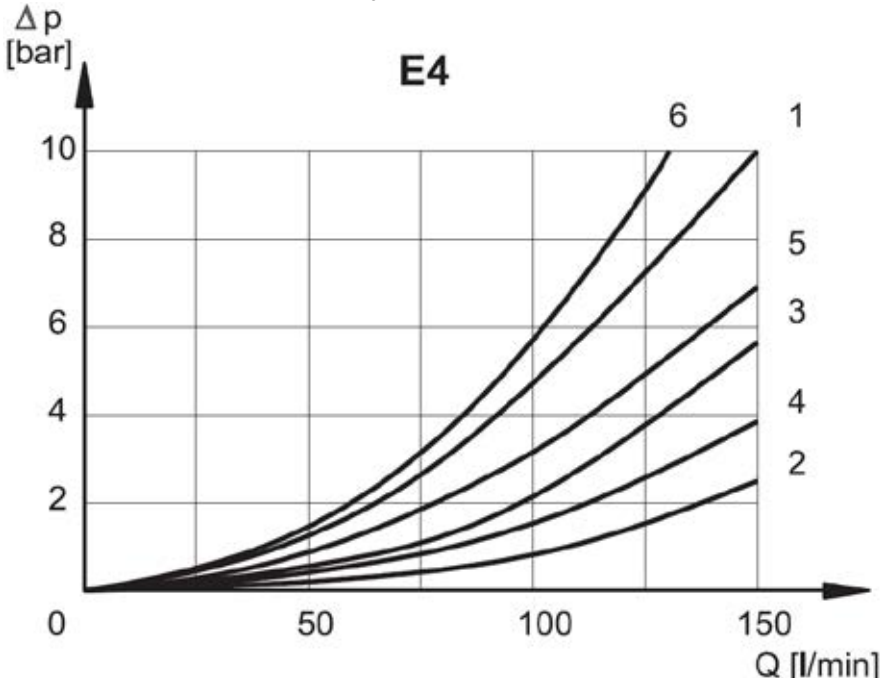
4/2 directional valve
with spring offset Type 4WEH 10, 16





PERFORMANCE

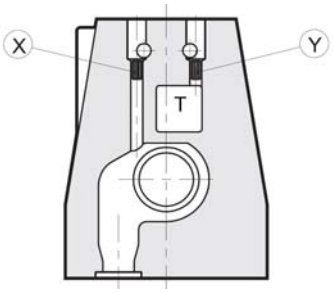
Measured at ν = 33 mm²/s and T_{oil} = 46° C



Symbol	Piston position	Ports				
		P -> A	P -> B	A -> T	B -> T	P -> T
E	not operated					
	operated	1	1	2	3	
H	not operated					*6
	operated	5	5	2	4	
J	not operated			1•	1○	
	operated	1	1	1	4	
G	not operated					6
	operated	6	6	3	5	
Q	not operated					
	operated	1	1	2	2	
EA	not operated					
	operated	-	1	2	-	
HA	not operated					*6
	operated	-	5	2	-	
JA	not operated			1•	1○	
	operated	-	1	1	-	
GA	not operated					6
	operated	6	-	-	5	
QA	not operated					
	operated	-	1	2	-	
D	not operated	1	-	-	3	
	operated	-	1	4	-	
D/OF	operated	1	1	4	3	
	* A-B blocked	•B blocked	○A blocked			

Valve type	Plug setting X	Plug setting Y
IE Internal pilot supply and external drain	no plug	plug
I Internal pilot supply and drain	no plug	no plug
E External pilot supply and drain	plug	plug
EI External pilot supply and internal drain	plug	no plug

Cross section for plug setting



(plug M5x6)

Models on request	Part no.
4WEH I 10 E S01-24DG/V	3604886
4WEH I 10 J S01-24DG/V	3604887
4WEH I 10 G S01-24DG/V	3604890
4WEH I 10 H S01-24DG/V	3604888
4WEH I 10 D S01-24DG/V	3604892
4WEH I 10 EA S01-24DG/V	3604893
4WEH I 10 D-OF S01-24DG/V	3604894

Other types on request

MODEL CODE

4WEH I 10 E S01 –24DG / V

Name
4/2- resp. 4/3-directional spool valve with pilot spool valve

Pilot supply and drain
I = internal pilot supply and drain
EI = external pilot supply, internal drain
E = external pilot supply and drain
IE = internal pilot supply, external drain

Nominal size
10 = NW 10

Symbol
Available Symbols: E, J, G, H, Q, D, EA, D-OF

Types
S01 = Standard
So2 = Hole pattern 4401 (on request)

Nominal voltage and plug
12 = 12 Volt DC
24 = 24 Volt DC
DG: DIN plug according to EN 175301-803
DO: M12x1 plug

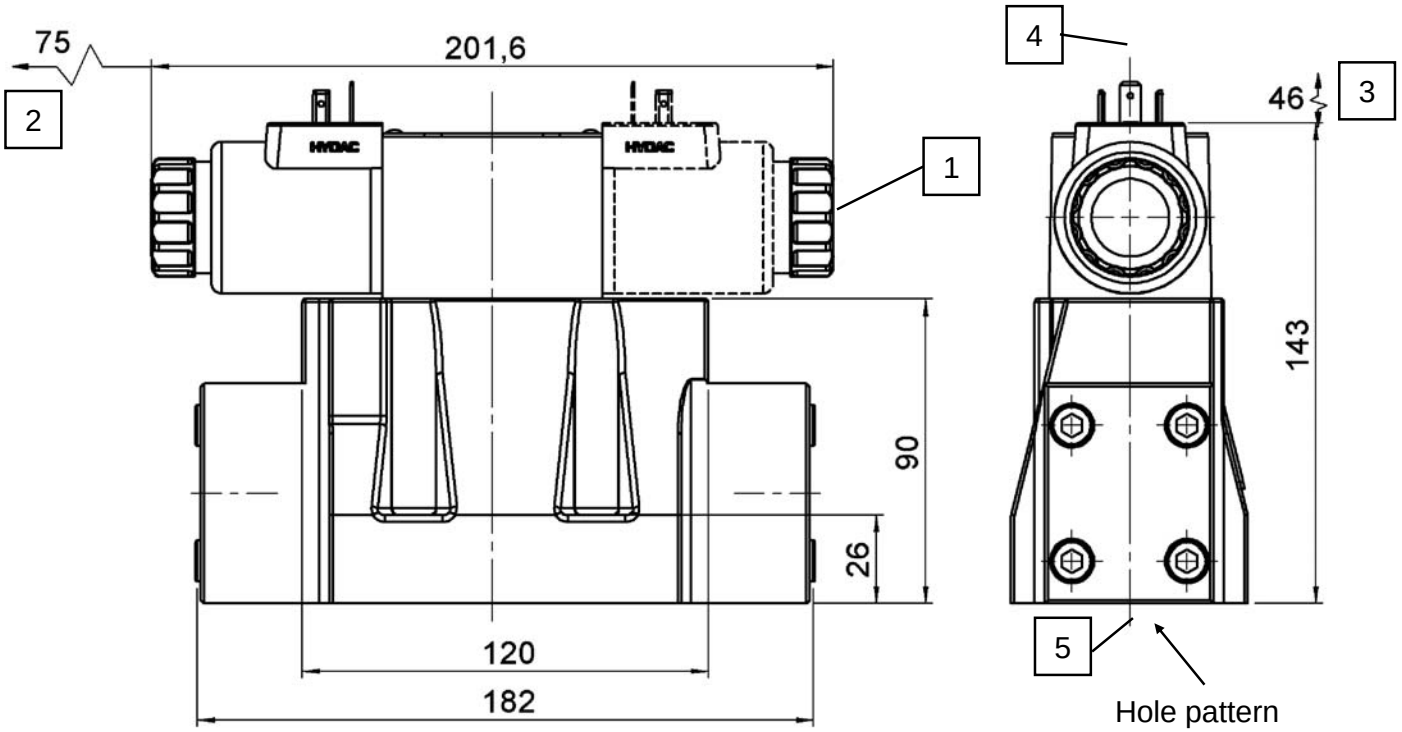
Seals
V = FKM (Standard)
N = NBR

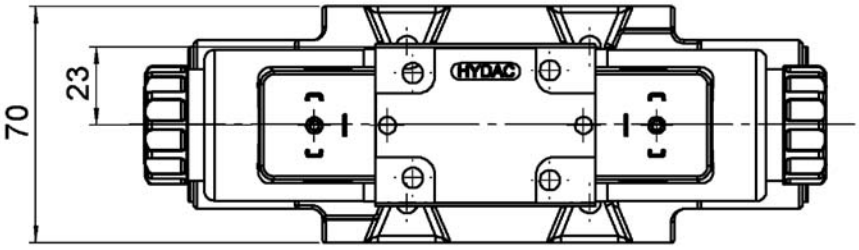
Electro-hydraulic pilot control

FUNCTION

HYDAC 4/2 und 4/3 directional valves for oil hydraulic systems are to open and close flow paths. In de-energized mode the main piston will be retained by a spring in the initial position. An under oil switching magnet pushes the pilot piston in its end position whereby the main piston – hydraulically operated – moves to his end position.
Hereby the chosen flow paths will be enabled according to the symbol of the valve. After switching-off the solenoid the pilot piston will be pushed back in its initial position by the spring. A manual override allow the switching of the pilot valve without erection of the solenoid.

DIMENSIONS





1) Manual override

2) Space for mounting the coil

3) Space for mounting the plugs

4) DIN plug (optional)

5) Mounting plate with O-rings

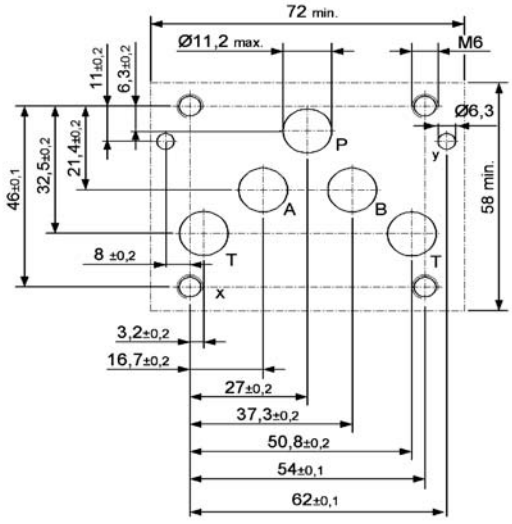
5x O-Ring 12,42 x 1,78 – 90 Sh

2x O-Ring 9,25 x 1,78 – 90 Sh

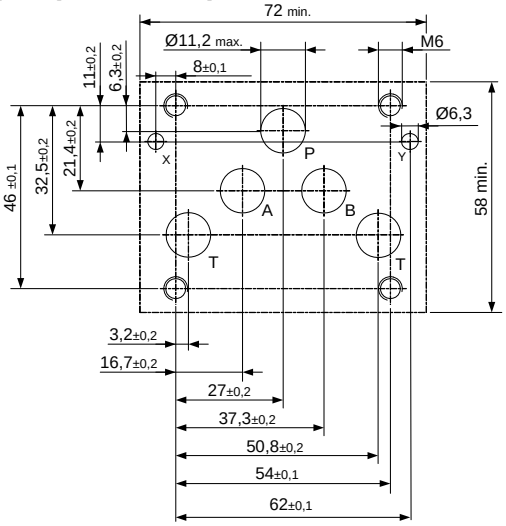
Fixing screws: 4x M6 x 35 DIN 912
Torque 14 +1 Nm for 12.9 or 8 Nm for 8.8

All dimensions in mm.
Fixing elements are not in the scope of supply .

Hole pattern to CETOP 4.2.4 P05-320 (So1)



Hole pattern to ISO 4401-05-04-0-05 (S02)



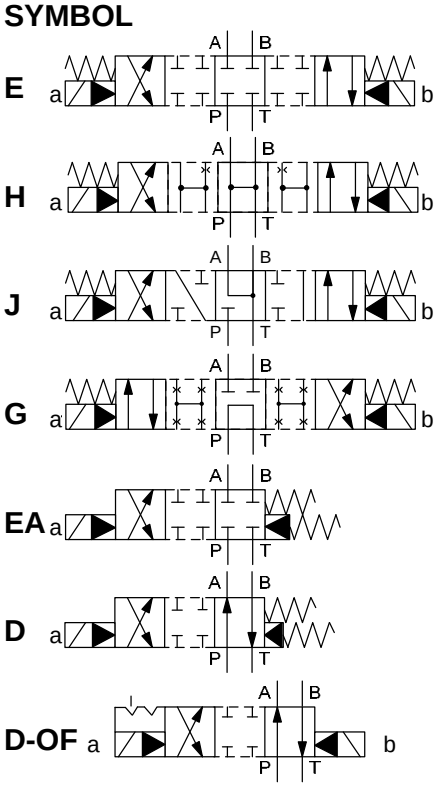
Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

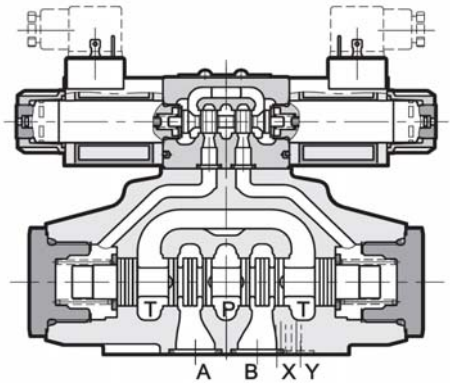
4/3-Directional control valve
electro-hydraulically operated
4WEH I 16 / 4WEH EI 16

SYMBOL



up to 300 l/min
up to 320 bar

FUNCTION



FEATURES

- Electro-hydraulically operated by pilot valve NW6
- Flows up to 300l/min
- Internal or external pilot supply and drain line selectable by internal plug setting

SPECIFICATIONS

Nominal pressure:	max. 320 bar
Flow-rate:	max. 300 l/min (P nach A, B, T)
Control pressure:	min. 12 up to max. 280 bar
Pressure in line T: (with internal drain)	max. 140 bar
Pressure in line T: (with external drain)	max. 210 bar
Fluids:	Hydraulic oil to DIN 51524 part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	ISO 4406 class 20/18/15 or better
Weight:	8,6 kg incl. pilot valve with 2 coils 8,1 kg with pilot valve with 1 coil

Electrics

Type of voltage:	DC
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V /1,33A)
Switch-on time:	Main stage: 45 ms up to 75 ms
Switch-off time:	Main stage: 30 ms up to 60 ms (Control pressure 100bar)
Coil duty rating:	100%
Electrical connection:	plug according to DIN 43650
IP rating:	IP 65 nach EN 60529; DIN 40050 with correctly fitted connector

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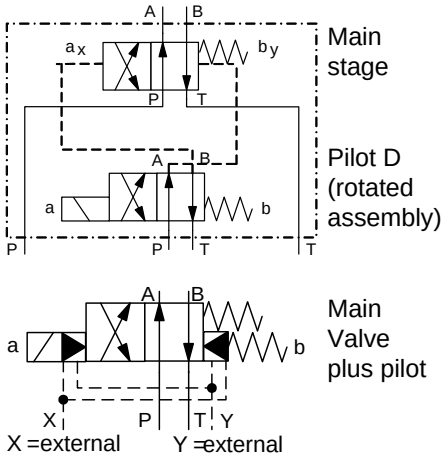
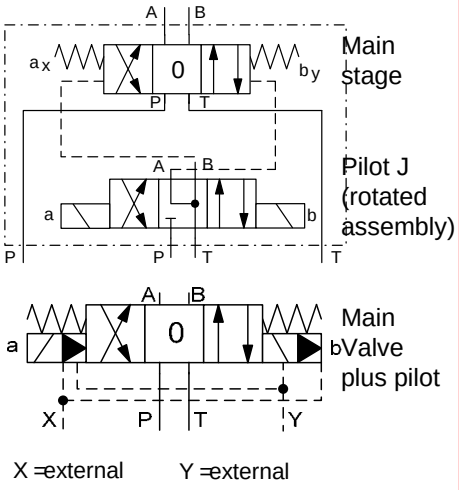
Example for the assembly with pilot valve (optional)

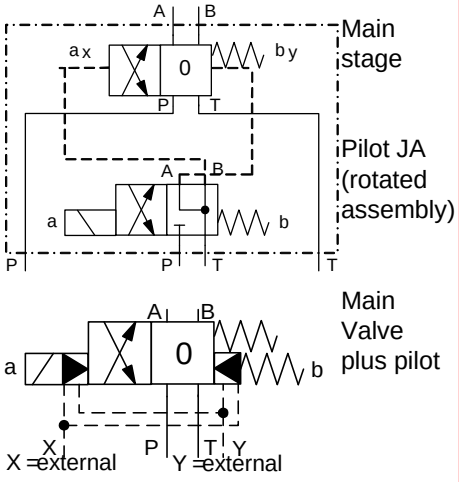
4/2 directional valve
with spring offset Type 4WEH 10, 16



4/3 directional valve
spring centered Type 4WEH 10, 16

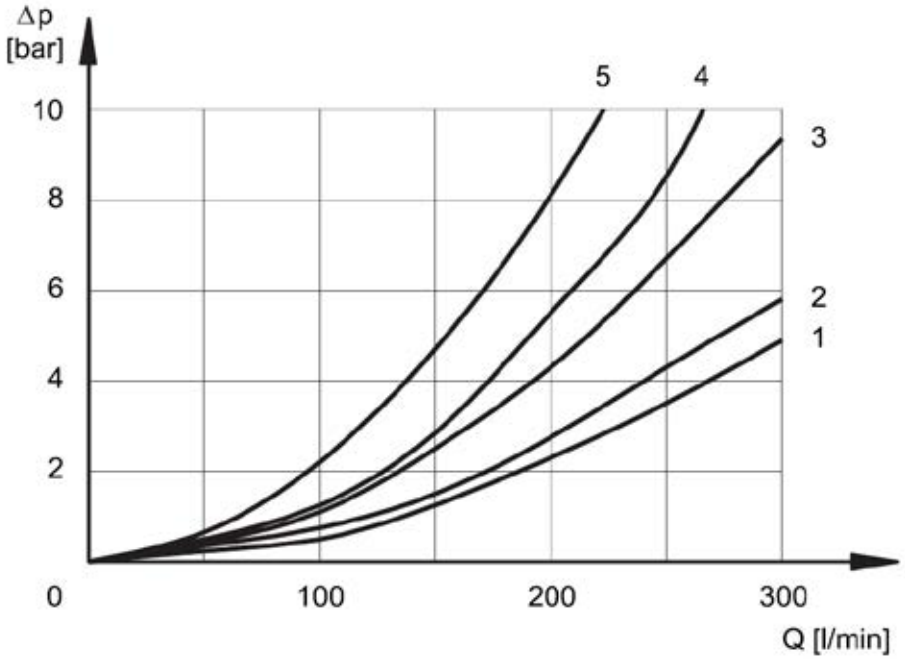


4/2 directional valve
with spring offset Type 4WEH 10, 16



PERFORMANCE

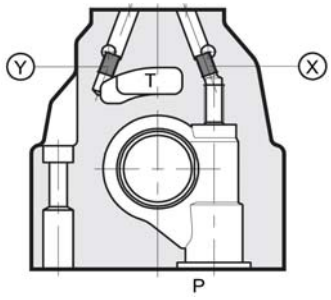
Measured at ν = 33 mm²/s and T_{oil} = 46° C



Symbol	piston position	Ports			
		P -> A	P -> B	A -> T	B -> T
E	not operated				
	operated	1	1	3	4
H	not operated				
	operated	1	1	4	4
J	not operated				
	operated	1	1	4	4
G	not operated				
	operated	2	2	4	5
Q	not operated				
	operated	1	1	3	4
EA	not operated				
	operated	-	1	3	-
HA	not operated				
	operated	-	1	4	-
JA	not operated				
	operated	-	1	4	-
GA	not operated				
	operated	2	-	-	5
D	not operated				
	operated	1	1	3	4
D/OF	operated	1	1	3	4

Valve type		Plug setting X	Plug setting Y
IE	Internal pilot supply and external drain	no plug	plug
I	Internal pilot supply and drain	no plug	no plug
E	External pilot supply and drain	plug	plug
EI	External pilot supply and internal drain	plug	no plug

Cross section for plug setting



(**X**: plug M6x8 for external controls

Y: plug M6x8 for external drain)

Standard models	Part no.
4WEH I 16 D S01 - 24DG/V	3640299
4WEH I 16 E S01 - 24DG/V	3640284
4WEH I 16 G S01 - 24DG/V	3640274
4WEH I 16 H S01 - 24DG/V	3640273
4WEH I 16 J S01 - 24DG/V	3640295

Other types on request

MODEL CODE

4WEH I 16 E S01 – 24DG / V

Name
4/2- resp. 4/3-directional spool valve with pilot spool valve

Pilot supply and drain
I = internal pilot supply and drain
EI = external pilot supply, internal drain
E = external pilot supply and drain
IE = internal pilot supply, external drain

Nominal size
16 = NW 16

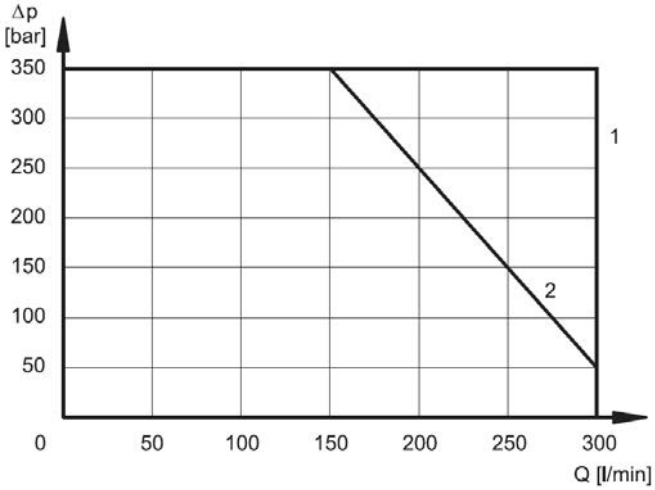
Symbol
Available Symbols: E, J, G, H, Q, QA, HA, GA, JA, D, EA, D-OF

Types
S01 = Standard

Nominal voltage and plug
12 = 12 Volt DC
24 = 24 Volt DC
DG: DIN plug according to EN 175301-803
DO: M12x1 plug

Seals
V = FKM (Standard)
N = NBR

Range

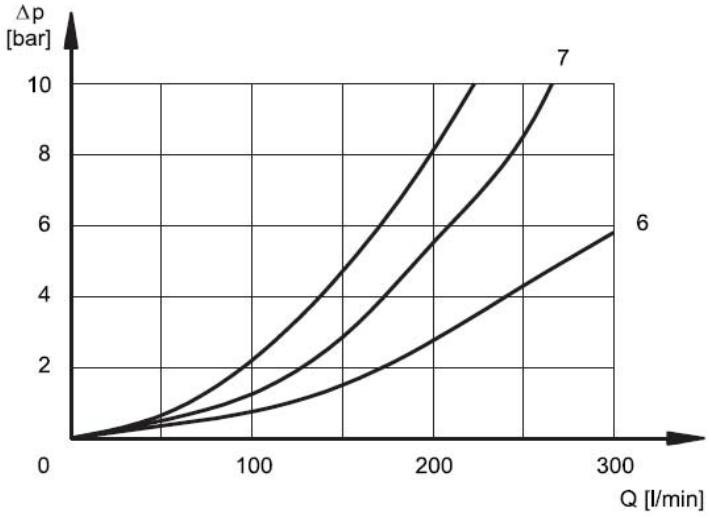


Symbol	PA	PB
E	1	1
H	1	1
J	1	1
G	2	2
Q	1	1
D	1	1

Electro-hydraulic pilot control

FUNCTION

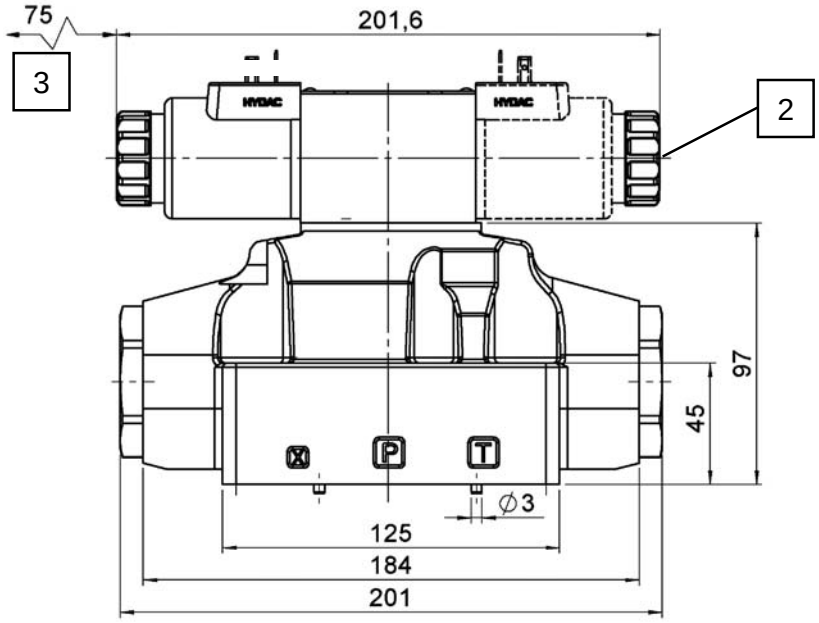
HYDAC 4/2 und 4/3 directional valves for oil hydraulic systems are to open and close flow paths. In de-energized mode the main piston will be retained by a spring in the initial position. An under oil switching magnet pushes the pilot piston in its end position whereby the main piston – hydraulically operated – moves to his end position.
Hereby the chosen flow paths will be enabled according to the symbol of the valve. After switching-off the solenoid the pilot piston will be pushed back in its initial position by the spring. A manual override allow the switching of the pilot valve without erection of the solenoid.

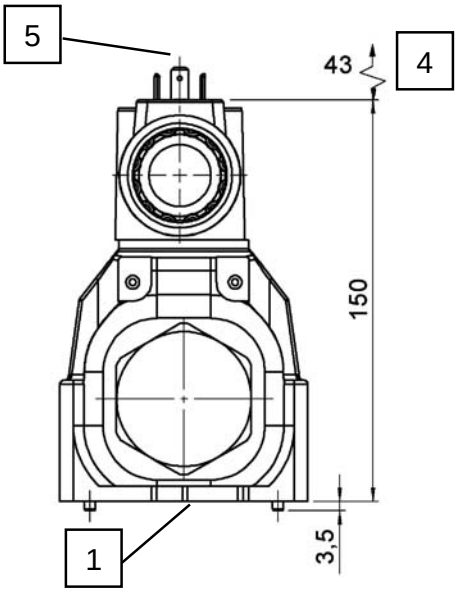


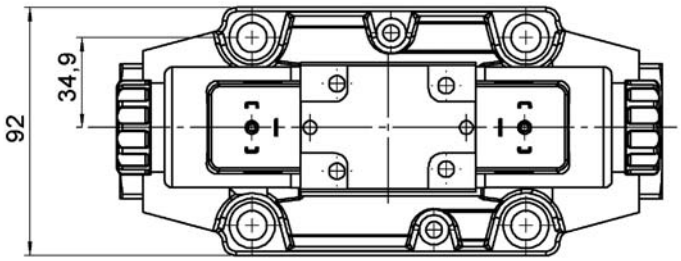
Flow loss of the valve in central position

	Direction of flow				
	P-A	P-B	A-T	B-T	P-T
	Curves				
H, HA, HB					6
J, JA, JB			7	7	
G, GA, GB					7

DIMENSIONS







1) Mounting plate with O-rings

2) Manual override

3) Space for mounting the coil

4) Space for mounting the plugs

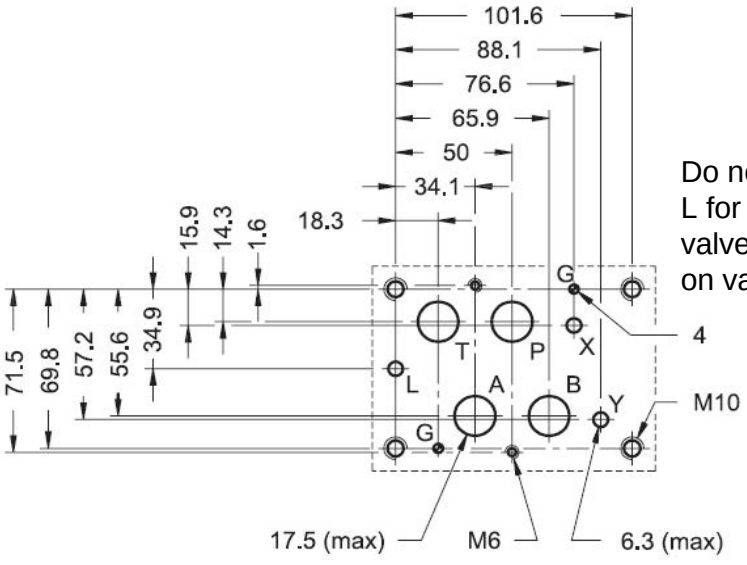
5) DIN plug (optional)

Fixing screws
4x M10 x 60 DIN 912
Torque 67 +5 Nm for 12.9 or 40 Nm for 8.8
2x M6 x 50 DIN 912
Torque 14 +1 Nm for 12.9 or 8 Nm for 8.8

O-rings hole pattern
4x O-Ring 22,22 x 2,62 – 90 Sh
2x O-Ring 10,82 x 1,78 – 90 Sh

All dimensions in mm.
Fixing elements are not in the scope of supply .

Hole pattern to ISO 4401-07-06-0-05



Do not design port L for standard valves, no sealing on valve side!

Annotation
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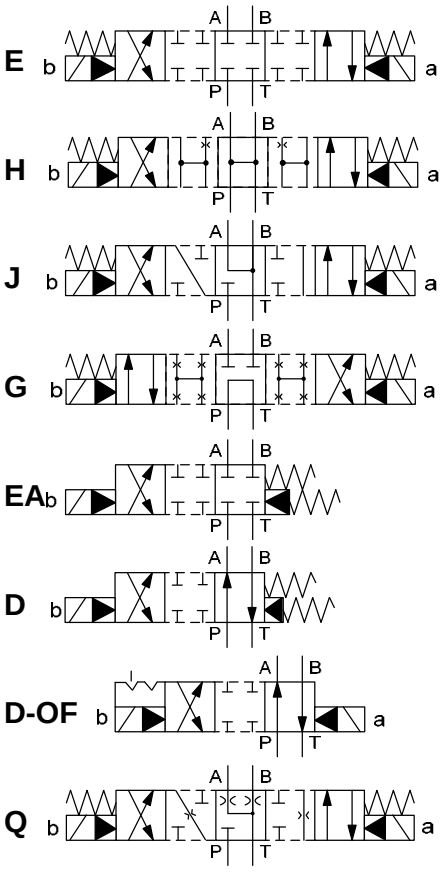
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

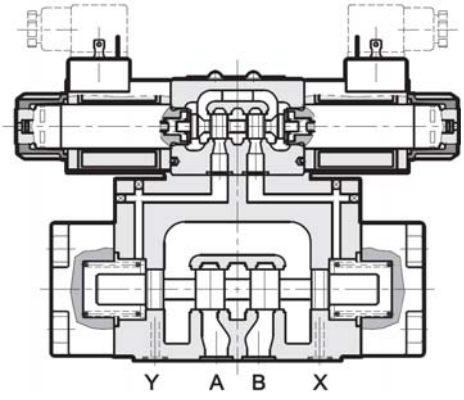
4/3-Directional control valve
electro-hydraulically operated
4WEH I 25 / 4WEH EI 25

SYMBOL



up to 600 l/min
up to 320 bar

FUNKTION



FEATURES

- Electro-hydraulically operated by pilot valve NW6
- Flows up to 600l/min
- Internal or external pilot supply and drain line selectable by internal plug setting

SPECIFICATIONS

Nominal pressure:	max. 320 bar
Flow-rate:	
Symbols E, H, J, EA, Q, D, D-OF	max. 600 l/min at 210 bar (500 l/min at 320 bar)
Symbol G:	max. 500 l/min at 210 bar (450 l/min at 320 bar)
Control pressure:	min. 5 up to max. 210 bar
Pressure in line T: (with internal drain)	max. 140 bar
Pressure in line T: (with external drain)	max. 210 bar
Fluids:	Hydraulic oil to DIN 51524 part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	ISO 4406 class 20/18/15 or better
Weight:	15,6 kg incl. pilot valve with 2 coils 15,1 kg incl. pilot valve with 1 coil

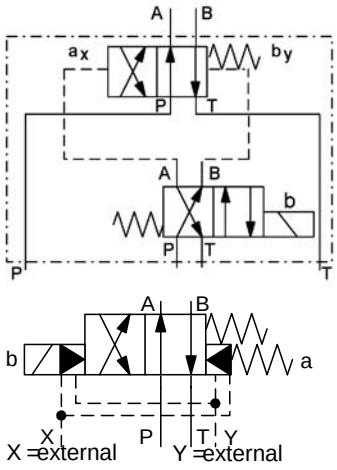
Electrics

Type of voltage: DC	
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V /1,33A)
Switch-on time:	Main stage: 40 ms up to 100 ms Main stage 40 ms up to 80 ms (Control pressure 100bar)
Coil duty rating:	100%
Electrical connection:	plug according to DIN 43650
IP rating:	IP 65 nach EN 60529; DIN 40050 with correctly fitted connector

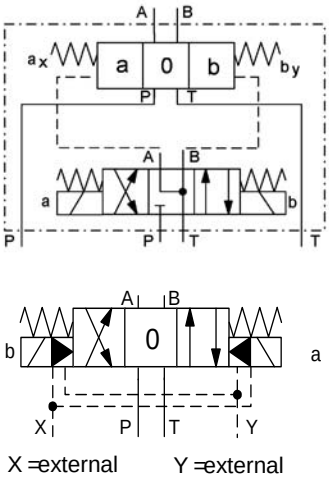
E 5.227.2.0 /01.13

Example for the assembly with pilot valve (optional)

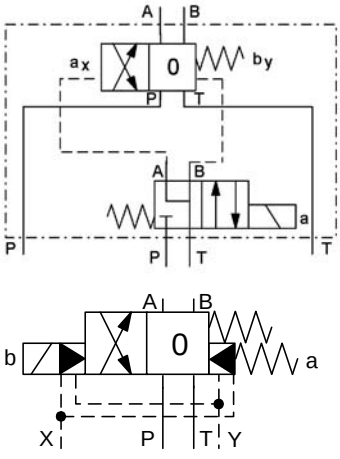
4/2 directional valve
with spring offset Type 4WEH 25, 32



4/3 directional valve
spring centered Type 4WEH 25 , 32

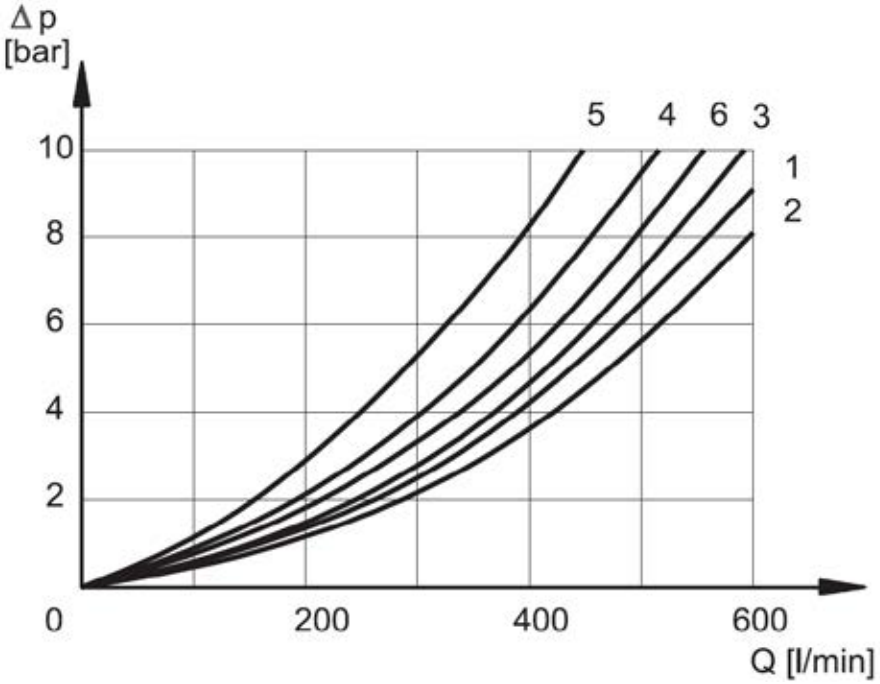


4/2 directional valve
with spring offset Type 4WEH 25, 32



PERFORMANCE

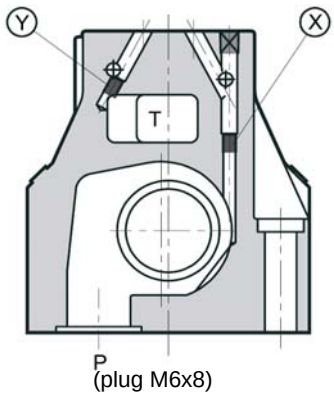
Measured at ν = 33 mm²/s and T_{oil} = 46° C



Diagrams						
Symbol	piston position			Ports		
		P -> A	P -> B	A -> T	B -> T	P -> T
E	not operated					
	operated	1	1	2	3	
H	not operated					*6
	operated	2	2	1	2	
J	not operated			4•	4○	
	operated	1	1	1	4	
G	not operated					5
	operated	6	6	3	4	
Q	not operated					
	operated	1	1	2	3	
EA	not operated					
	operated	-	1	2	-	
D/OF	operated	1	1	4	3	
	* A-B blocked	•B blocked	○A blocked			

Valve type	Plug setting X	Plug setting Y
IE Internal pilot supply and external drain	no plug	plug
I Internal pilot supply and drain	no plug	no plug
E External pilot supply and drain	plug	plug
EI External pilot supply and internal drain	plug	no plug

Cross section for plug setting



Standard models	Part no.
4WEH I 25 D S01-24DG/V	3640249
4WEH I 25 E S01-24DG/V	3640233
4WEH I 25 G S01-24DG/V	3640248
4WEH I 25 H S01-24DG/V	3640247
4WEH I 25 J S01-24DG/V	3640234

Other types on request

MODEL CODE

4WEH I 25 E S01 –24DG / V

Name
4/2- resp. 4/3-directional spool valve with pilot spool valve

Pilot supply and drain
I = internal pilot supply and drain
EI = external pilot supply, internal drain
E = external pilot supply and drain
IE = internal pilot supply, external drain

Nominal size
25 = NW 25

Symbol
Available Symbols:E, J, G, H, Q, D, EA, D-OF

Types
S01 = Standard

Nominal voltage and plug
12 = 12 Volt DC
24 = 24 Volt DC
DG: DIN plug according to EN 175301-803
DO: M12x1 plug

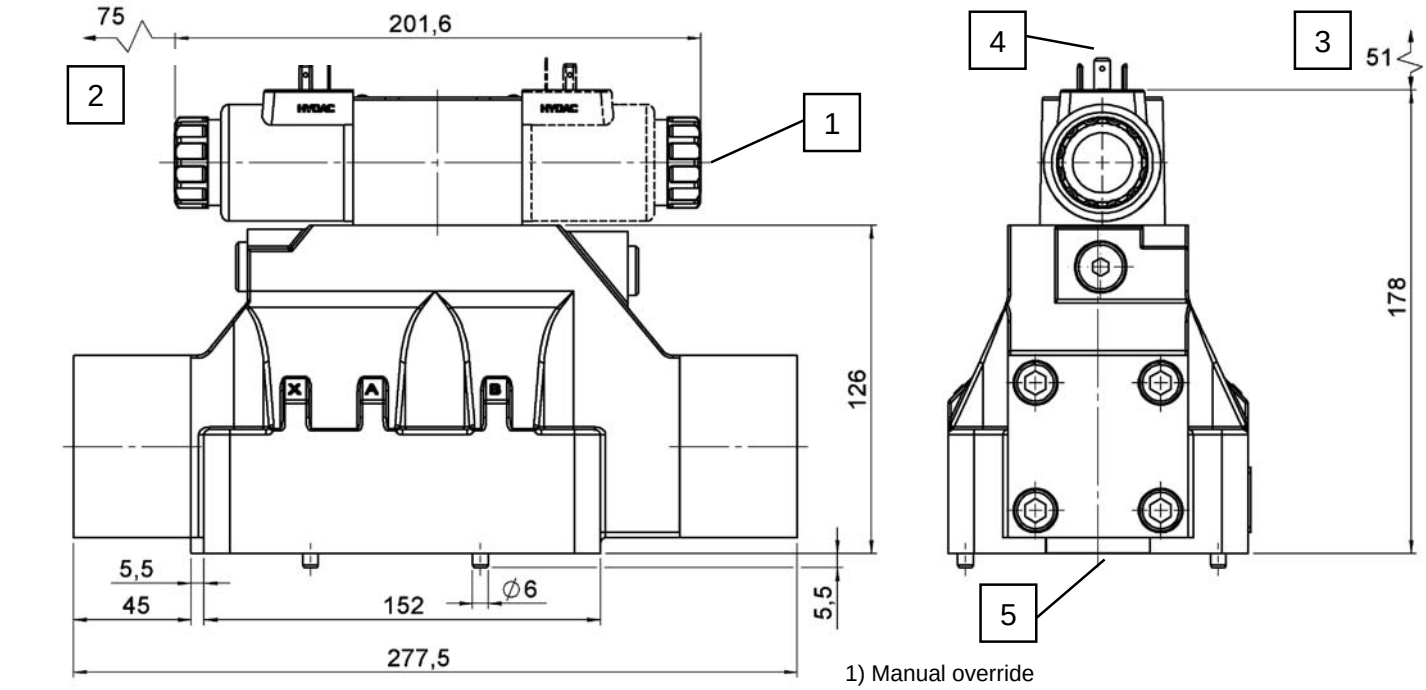
Seals
V = FKM (Standard)
N = NBR

Electro-hydraulic pilot control

FUNCTION

HYDAC 4/2 und 4/3 directional valves for oil hydraulic systems are to open and close flow paths. In de-energized mode the main piston will be retained by a spring in the initial position. An under oil switching magnet pushes the pilot piston in its end position whereby the main piston – hydraulically operated – moves to his end position.
Hereby the chosen flow paths will be enabled according to the symbol of the valve. After switching-off the solenoid the pilot piston will be pushed back in its initial position by the spring. A manual override allow the switching of the pilot valve without erection of the solenoid.

DIMENSIONS

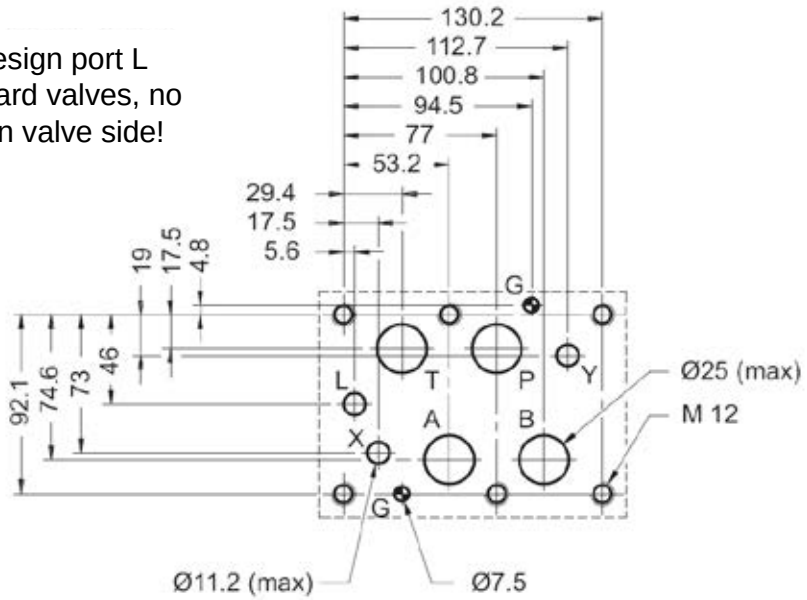


1) Manual override
2) Space for mounting the coil
3) Space for mounting the plugs
4) DIN plug (optional)
5) Mounting plate with O-rings
5x O-Ring 29,82 x 2,62 – 90 Sh
2x O-Ring 20,24 x 2,62 – 90 Sh
Fixing screws
6x M12 x 60 DIN 912
Torque 115 +1 Nm for 10.9 or 64 Nm for 8.8

All dimensions in mm.
Fixing elements are not in the scope of supply.

Hole pattern to ISO4401-08-07-0-05 (CETOP 4.2-4-08-320)

Do not design port L for standard valves, no sealing on valve side!



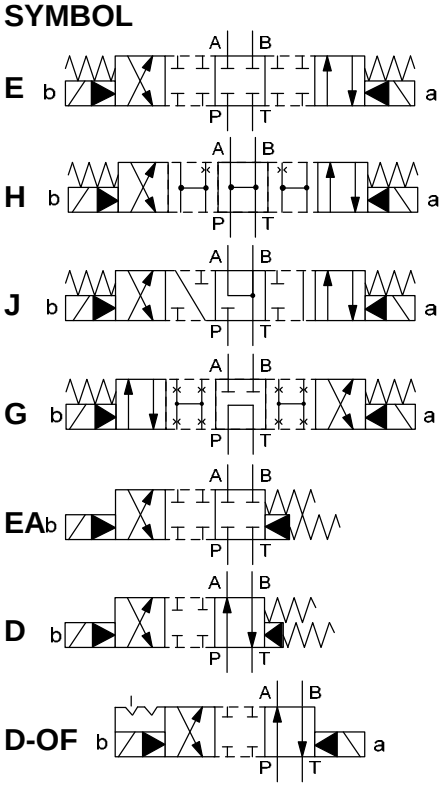
Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

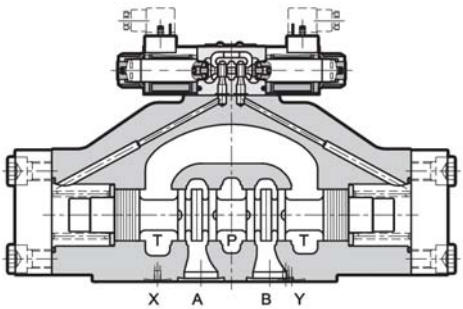
4/3-Directional control valve
electro-hydraulically operated
4WEH I 32 / 4WEH EI 32

SYMBOL



up to 1100 l/min
up to 320 bar

FUNKTION



FEATURES

- Electro-hydraulically operated by pilot valve NW6
- Flows up to 1100 l/min
- Internal or external pilot supply and drain line selectable by internal plug setting

SPECIFICATIONS

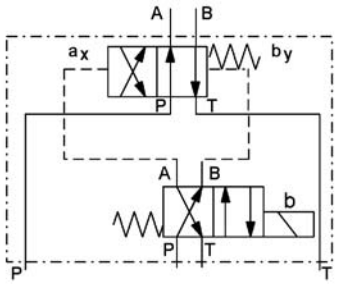
Nominal pressure:	max. 320 bar
SYMBOL E, H, J, EA, HA, JA	max. 1100 l/min at 100 bar
D, D-OF	(700 l/min at 350 bar)
Symbol G, GA:	max. 900 l/min at 100 bar
	(600 l/min at 350 bar)
Control pressure:	min. 12 up to max. 280 bar
Pressure in line T:	max. 140 bar
(with internal drain)	
Pressure in line T:	max. 210 bar
(with external drain)	
Fluids:	Hydraulic oil to DIN 51524 part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	ISO 4406 class 20/18/15
	or better
Weight:	50 kg incl. pilot valve with 2 coils
	49,5 kg incl. pilot valve with 1 coil

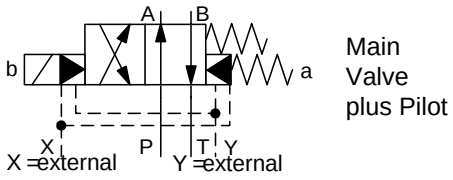
Electrics

Type of voltage: DC	
Voltage tolerance:	±10%
Nominal power:	30W (12V / 2,5A) resp. 32W (24V /1,33A)
Switch-on time:	Main stage: 50 ms up to 60 ms
(Control pressure 100bar)	Main stage: 40 ms up to 50 ms
Coil duty rating:	100%
Electrical connection:	plug according to DIN 43650
IP rating:	IP 65 nach EN 60529; DIN 40050
	with correctly fitted connector

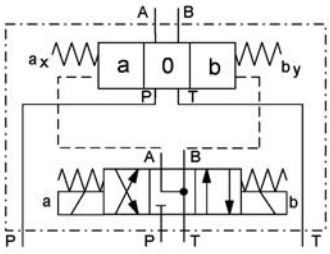
Example for the assembly with pilot valve (optional)

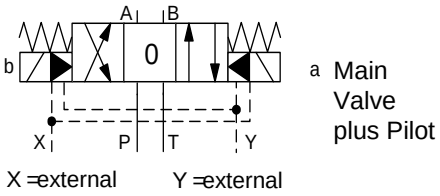
4/2 directional valve
with spring offset Type 4WEH 25, 32



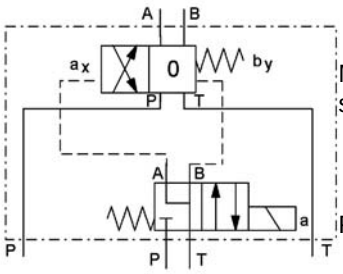


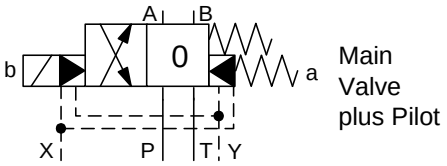
4/3 directional valve
spring centered Type 4WEH 25 , 32





4/2 directional valve
with spring offset Type 4WEH 25, 32

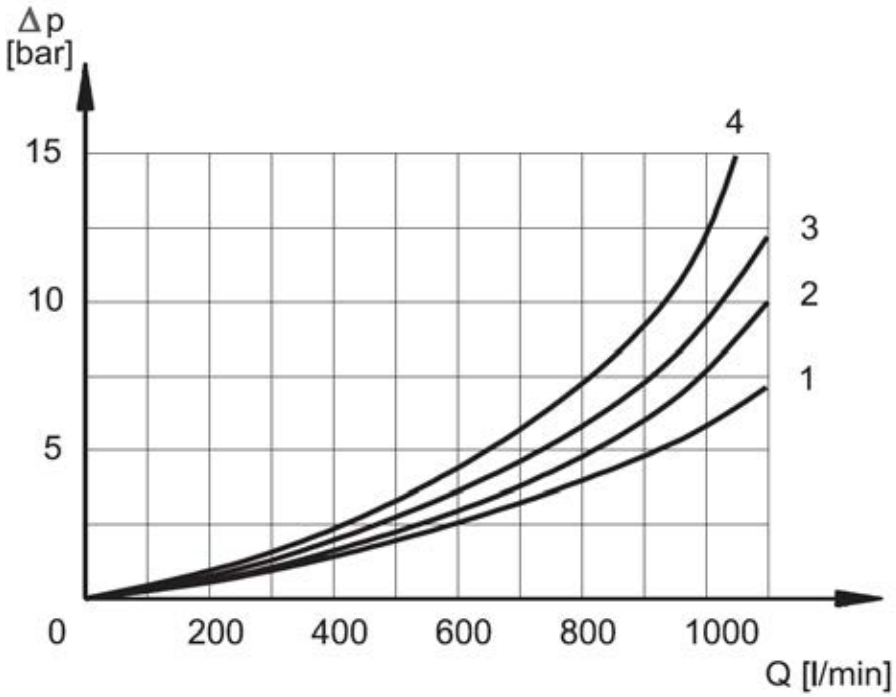




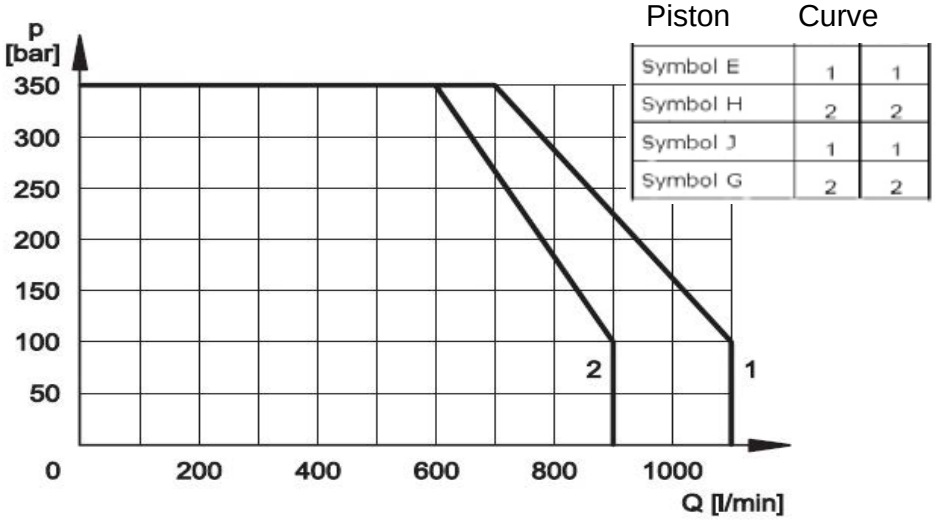
X =external Y =external

PERFORMANCE

Measured at ν = 33 mm²/s and T_{oil} = 46° C



Diagrams					
Symbol	piston position			Ports	
		P -> A	P -> B	A -> T	B -> T
E	not operated				
	operated	1	1	1	1
H	not operated				
	operated	2	2	2	2
J	not operated				
	operated	1	1	4	4
G	not operated				
	operated	2	2	2	2
EA	not operated				
	operated	-	1	1	-
HA	not operated				
	operated	-	2	2	-
JA	not operated				
	operated	-	1	4	-
GA	not operated				
	operated	2	-	-	2
D	not operated				
	operated	1	1	1	1
D/OF	operated	1	1	1	1



Piston	Curve	
Symbol E	1	1
Symbol H	2	2
Symbol J	1	1
Symbol G	2	2

Standard models	Part no.
4WEH I 32 D S01-24DG/V	3640199
4WEH I 32 E S01-24DG/V	3640183
4WEH I 32 G S01-24DG/V	3640188
4WEH I 32 H S01-24DG/V	3640187
4WEH I 32 J S01-24DG/V	3640186

Other types on request

MODEL CODE

4WEH I 32 E S01 –24DG / V

Name
4/2- resp. 4/3-directional spool valve with pilot spool valve

Pilot supply and drain
I = internal pilot supply and drain
EI = external pilot supply, internal drain
E = external pilot supply and drain
IE = internal pilot supply, external drain

Nominal size
32 = NW 32

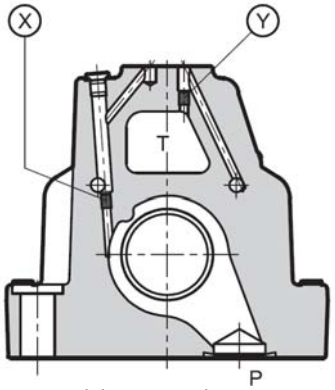
Symbol
Available Symbols:E, J, G, H, HA, GA, JA, D, EA, D-OF

Types
S01 = Standard

Nominal voltage and plug
12 = 12 Volt DC
24 = 24 Volt DC
DG: DIN plug according to EN 175301-803
DO: M12x1 plug

Seals
V = FKM (Standard)
N = NBR

Cross section for plug setting



(plug M6 x 8)

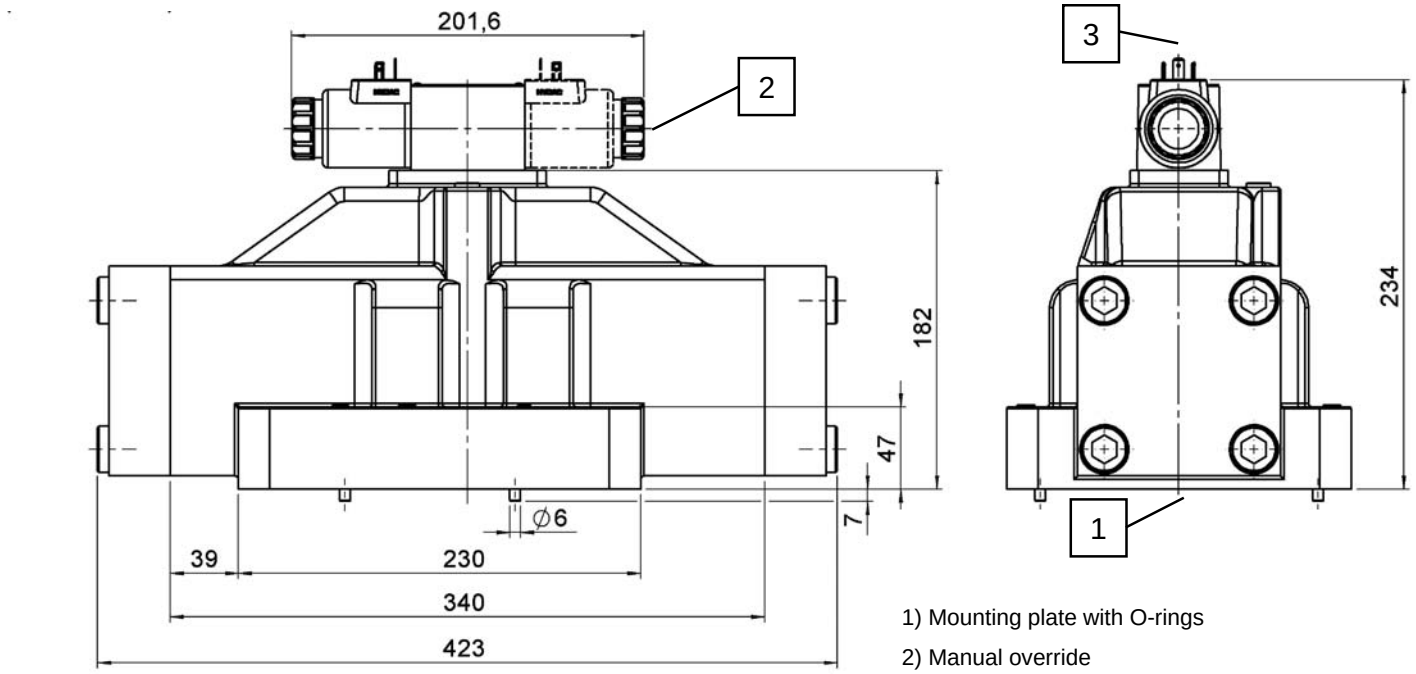
Valve type	Plug setting X	Plug setting Y
IE Internal pilot supply and external drain	no plug	plug
I Internal pilot supply and drain	no plug	no plug
E External pilot supply and drain	plug	plug
EI External pilot supply and internal drain	plug	no plug

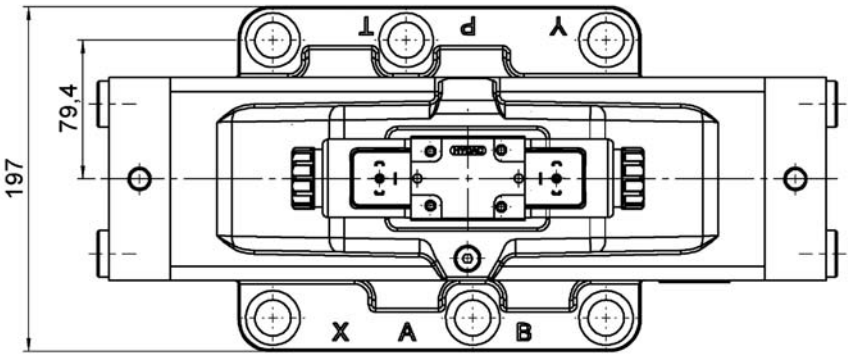
Electro-hydraulic pilot control

FUNCTION

HYDAC 4/2 und 4/3 directional valves for oil hydraulic systems are to open and close flow paths. In de-energized mode the main piston will be retained by a spring in the initial position. An under oil switching magnet pushes the pilot piston in its end position whereby the main piston – hydraulically operated – moves to his end position.
Hereby the chosen flow paths will be enabled according to the symbol of the valve. After switching-off the solenoid the pilot piston will be pushed back in its initial position by the spring. A manual override allow the switching of the pilot valve without erection of the solenoid.

DIMENSIONS





1) Mounting plate with O-rings

2) Manual override

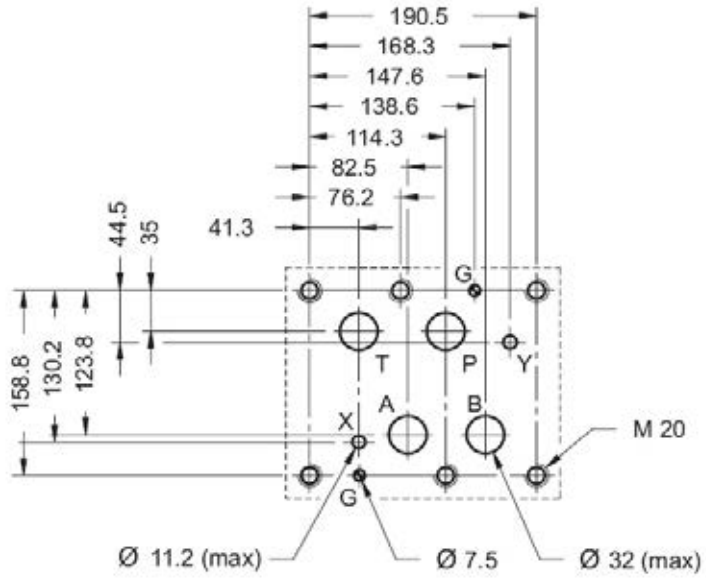
3) DIN plug (optional)

Fixing screws
6x M20 x 70 DIN 912
Torque 560 +10 Nm for 10.9 or 330 Nm for 8.8

O-rings Hole pattern
4x O-Ring 37,59 x 3,53 – 90 Sh
2x O-Ring 20,24 x 2,62 – 90 Sh

All dimensions in mm.
Fixing elements are not in the scope of supply.

Hole pattern to ISO 4401-10-08-0-05



Annotation
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Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

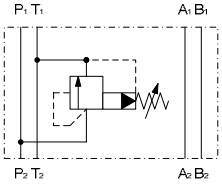
HYDAC INTERNATIONAL

Pressure Relief Valve pilot operated
Sandwich plate type
ZW-DB06

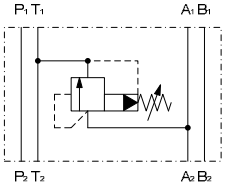
Pmax = 350 bar
Qmax = 75 l/min

SYMBOL

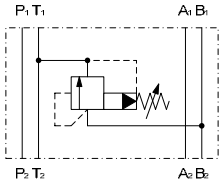
ZW-DB06 PT



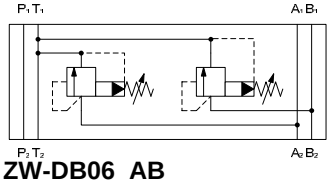
ZW-DB06 AT



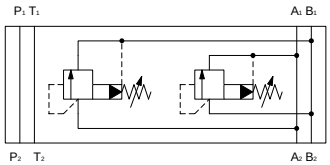
ZW-DB06 BT



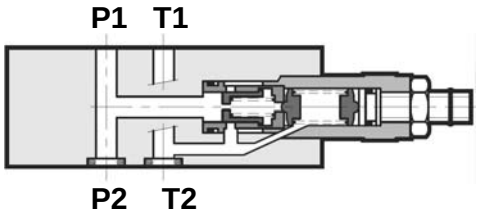
ZW-DB06 ABT



ZW-DB06 AB



Function



FEATURES

- Hole pattern according to DIN 24340 Form A6, ISO 4401-03, nominal size 06
- Pressure relief valve sandwich plate type with single side relief function and drain to tank
- easy to assemble under body mounted spool valves according to DIN 24340 Form A6, ISO 4401 (use longer screws)
- type according to ISO 7790
- adjustable by tool

Types

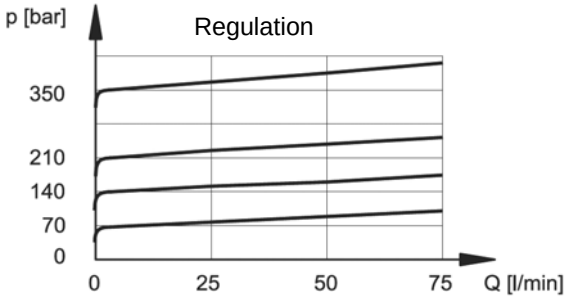
- type PT: Pressure relief in P, Drain T
- type AT: Pressure relief in A, Drain T
- type BT: Pressure relief in B, Drain T
- type ABT: Pressure relief in A-B (double), Drain T
- type AB: Pressure relief in B, Drain and relief in A, Drain in B

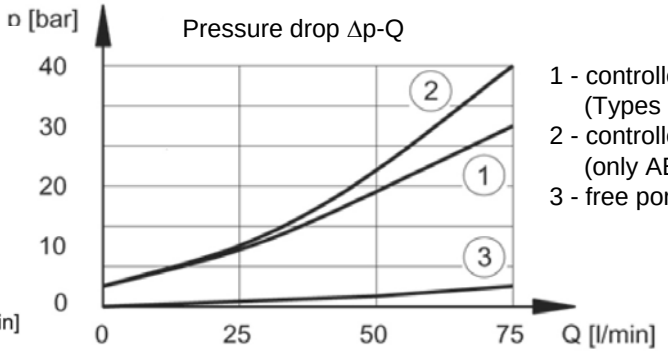
SPECIFICATIONS

Operating pressure:	max. 350 bar
Adjusting pressure ranges:	up to 70, 140, 210, 350 bar
Nominal flow:	max. 75 l/min
Fluids:	hydraulic oil according to DIN 51524 Part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 to ISO 4406 or cleaner
Weight:	1,4 kg incl. valve (AB, ABT = 2,1 kg)

PERFORMANCE

measured at ν = 32mm²/s and T_{oil} = 50° C





1 - controlled ports (Types PT, AT, BT)
2 - controlled ports (only AB, ABT)
3 - free ports

(Index 1 = valve side / Index 2 = sub plate side)

E 5.169.4 /01.13

Standard models	Part No.
ZW-DB06-01-PT 350V-V	6074657
ZW-DB06-01-AT 350V-V	6074661
ZW-DB06-01-BT 350V-V	6074664
ZW-DB06-01-AB 350V-V	6074667
ZW-DB06-01-ABT 350V-V	6074670

Other types on request

MODEL CODE

ZW-DB06 – 01 - PT – 140V – V

Name and nominal size
Pilot operated pressure relief valve
Sandwich plate type NW6

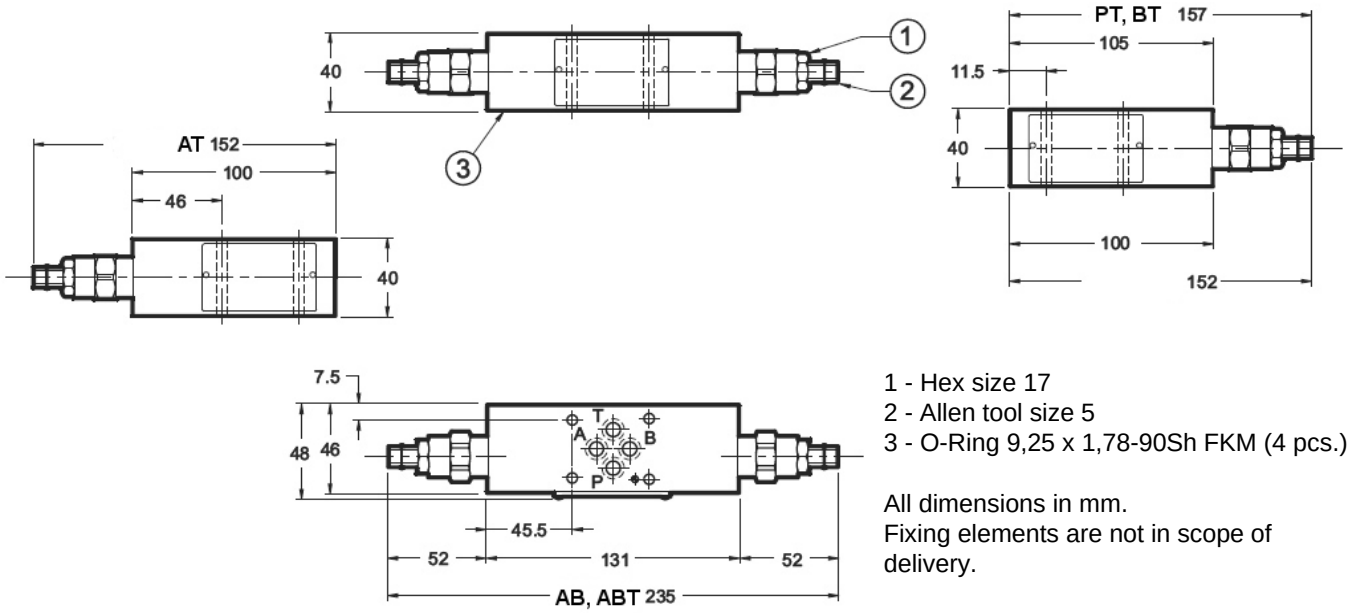
Series
01 = Standard, phosphated

Types
- type PT: Pressure relief in P, Drain T
- type AT: Pressure relief in A, Drain T
- type BT: Pressure relief in B, Drain T
- type ABT: Pressure relief in A-B (double), Drain T
- type AB: Pressure relief in A-B (double), Drain B/A

Pressure ranges
70 = 70 bar
140 = 140 bar
210 = 210 bar
350 = 350 bar

Seals
V = FKM (Standard)
N = NBR

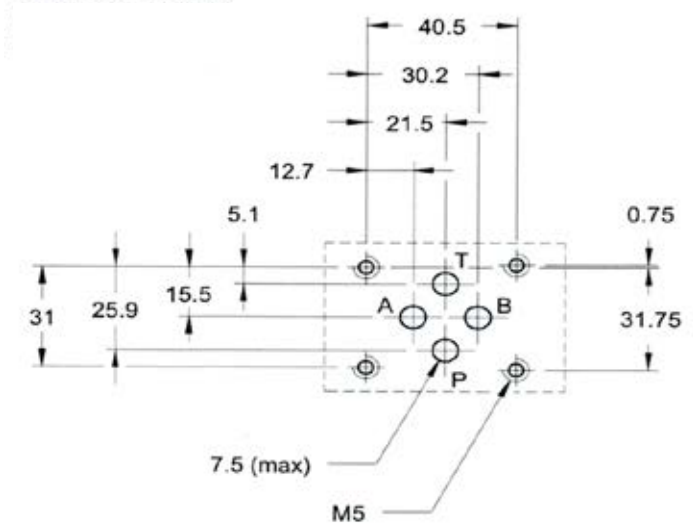
Dimensions



1 - Hex size 17
2 - Allen tool size 5
3 - O-Ring 9,25 x 1,78-90Sh FKM (4 pcs.)

All dimensions in mm.
Fixing elements are not in scope of delivery.

Mounting plate according to ISO 4401-03



Annotation
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Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
D - 66280 Sulzbach / Saar
Tel. 06897 / 509 -01
Fax 06897 / 509 -598
Email flutec@hydac.com

HYDAC INTERNATIONAL

Pressure Reducing Valve direct acting

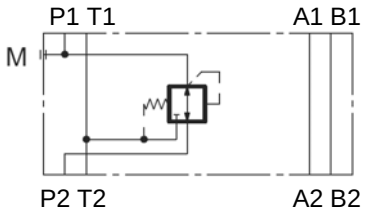
Sandwich plate type

ZW-DM06

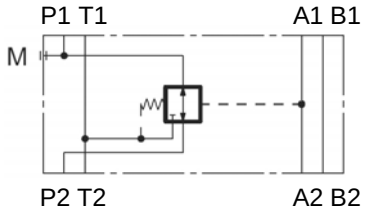
Pmax = 350 bar
Qmax = 50 l/min

SYMBOL

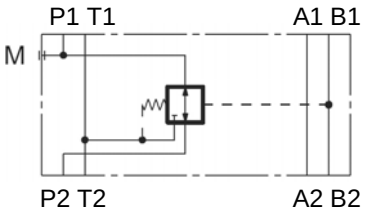
ZW-DM06 PT



ZW-DM06 PA

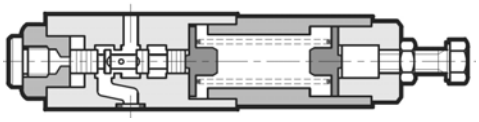


ZW-DM06 PB



Function

P1



P2

FEATURES

- Hole pattern according to DIN 24340 Form A6, ISO 4401-03, nominal size 06
- Pressure reducing valve sandwich plate type, normally open, with pressure reducing function to the consumer
- easy to assemble under body mounted spool valves according to DIN 24340 Form A6, ISO 4401 (use longer screws)
- type according to ISO 7790
- adjustable by tool

Types

- type PT: Pressure regulation in line P
- type PA: Pressure regulation in line A (Highest pressure in line B)
- type PB: Pressure regulation in line B (Highest pressure in line A)

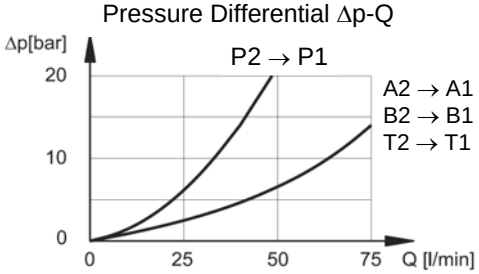
SPECIFICATIONS

Operating pressure:	max. 350 bar
Pressure ranges:	3 – 35 bar, 10 – 70 bar 30 – 140 bar, 60 – 280 bar
Nominal flow:	max. 50 l/min (in controlled lines) max. 75 l/min (in free lines)
Fluids:	hydraulic oil according to DIN 51524 Part 1 / 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 to ISO 4406 or cleaner
Weight:	1,4 kg incl. valve

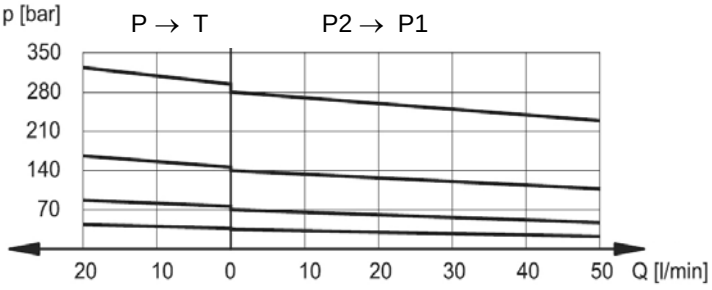
PERFORMANCE

measured at ν = 32mm²/s and T_{oil} = 50° C

Pressure Differential Δp-Q



Pressure drop Δp-Q



(Index 1 = valve side / Index 2 = sub plate side)

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Standard models	Part No.
ZW-DM06-01-PT 280V- V	6074683
ZW-DM06-01-PA 280V- V	6074686
ZW-DM06-01-PB 280V- V	6074689

Other types on request

MODEL CODE

ZW-DM06 – 01 – PT – 280V - V

Name and nominal size
Pressure reducing valve
Sandwich plate type NW6

Series
01 = Standard, phosphated

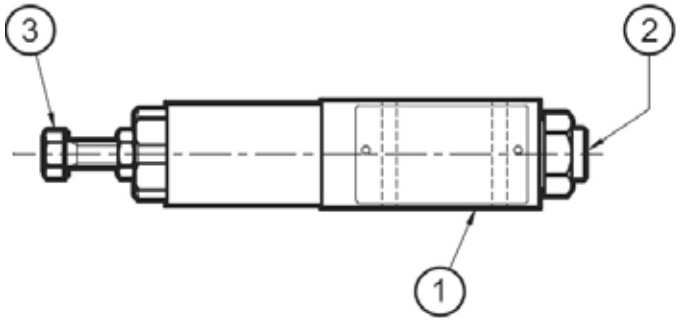
Types
PT = Pressure regulation in line P
PA = Pressure regulation in line A
PB = Pressure regulation in line B

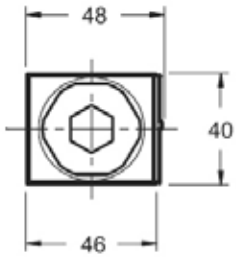
Pressure ranges
35 = 35 bar
70 = 70 bar
140 = 140 bar
280 = 280 bar

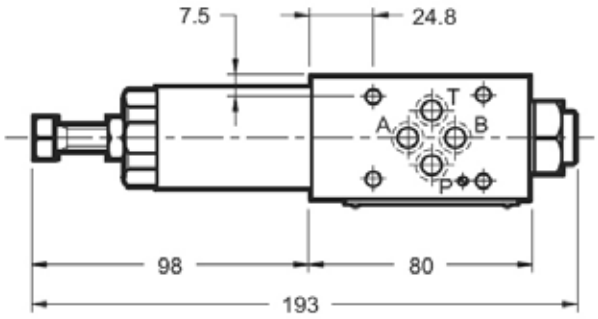
Adjustment option
V = adjustable by tool

Seals
V = FKM (Standard)
N = NBR

Dimensions



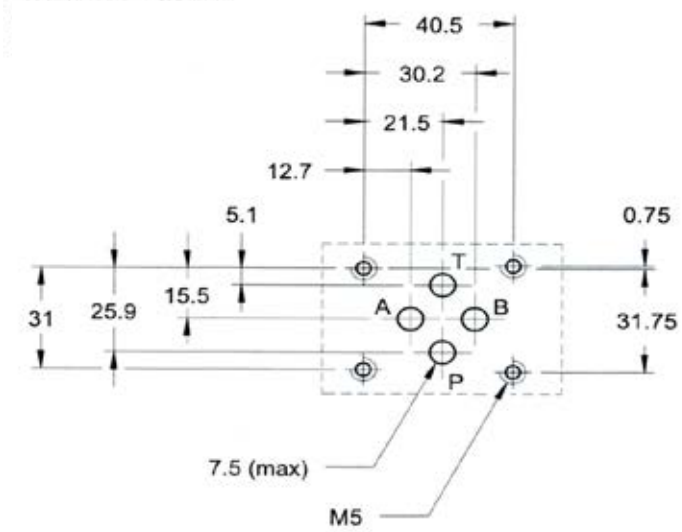




1 - O-Ring 9,25 x 1,78-90Sh FKM (4 pcs.)
2 - Port for pressure gauge 1/4“ BSP
3 - Fixing screw, hex size 17

All dimensions in mm.
Fixing elements are not in scope of delivery.

Mounting plate according to ISO 4401-03



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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
D - 66280 Sulzbach / Saar
Tel. 06897 / 509 -01
Fax 06897 / 509 -598
Email flutec@hydac.com

HYDAC INTERNATIONAL

Pressure Compensator direct acting

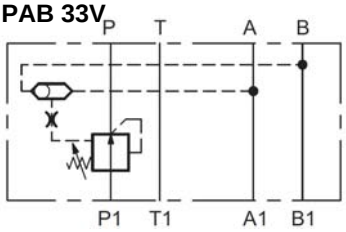
Sandwich plate type

ZW-DW06

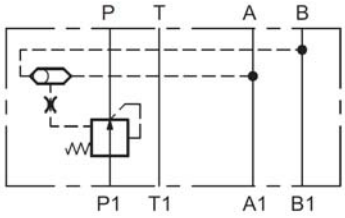
up to 350 bar
up to 40 l/min

SYMBOL

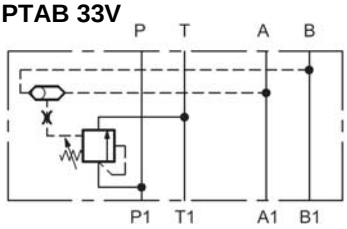
PAB 33V



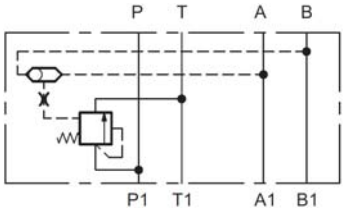
PAB 4 und 8



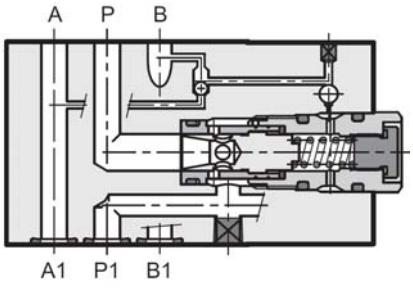
PTAB 33V



PTAB 4 und 8



FUNCTION



FEATURES

- Hole pattern according to DIN 24340 Form A6, ISO 4401-03, NW 06
- 2-way upstream pressure compensator or 3-way pressure compensator sandwich plate type
- keeping the pressure differential between port P and ports A and B constant
- combination in general with proportional directional valves to achieve a flow regulation independent of pressure changes
- a built-in change-over valve controls the choice of the control pressure in line A and B
- three versions available: Δp = 4 bar, Δp = 8 bar and adjustable Δp = 7-33 bar
- easy to assemble under body mounted spool valves according to DIN 4401

Types

- Type PAB:	2- way, adjustable
	2- way, fixed
- Type PTAB:	3- way, adjustable
	3- way, fixed

SPECIFICATIONS

Operating pressure:	max. 350 bar
Pressure differential:	Δp = 4 bar, Δp = 8 bar (fixed)
	Δp = 7-33 bar adjustable
Flow rate:	max. 40 l/min
Hydraulic fluids:	Hydraulic oil according to DIN 51524 Part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 to ISO 4406 or cleaner
Weight:	1,5 kg incl. valves

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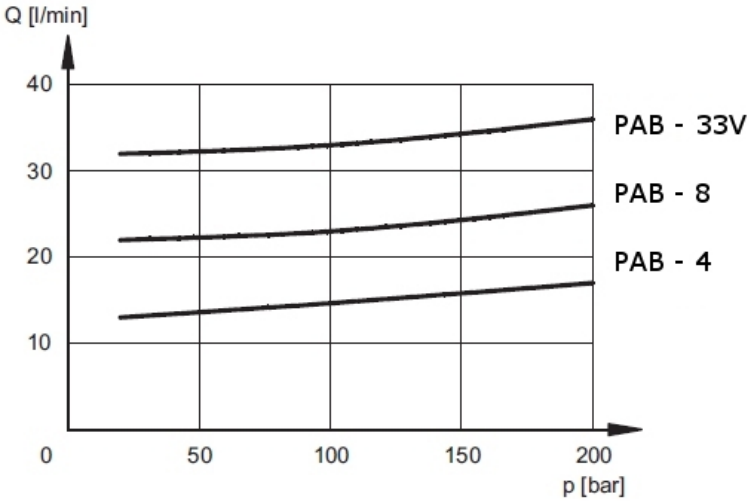
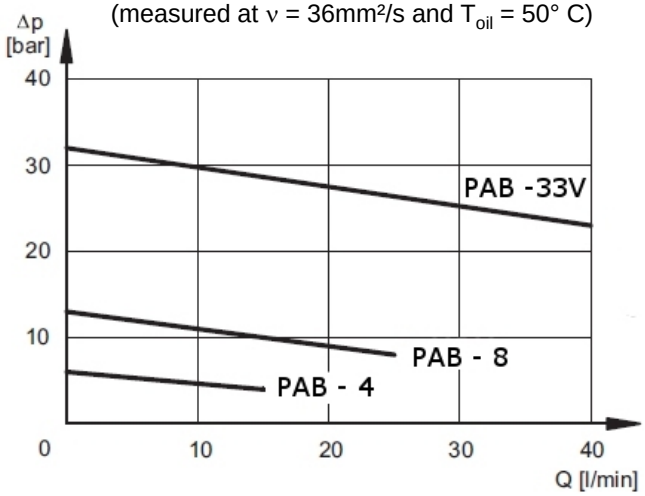
PERFORMANCE

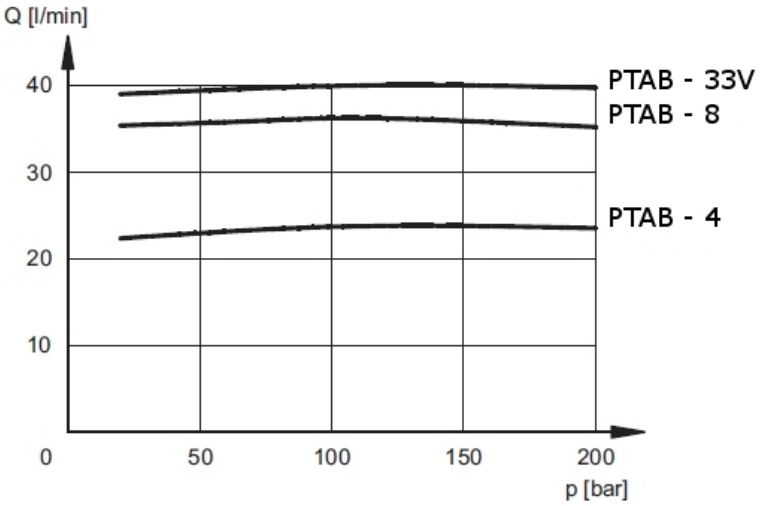
2-way Pressure compensator upstream



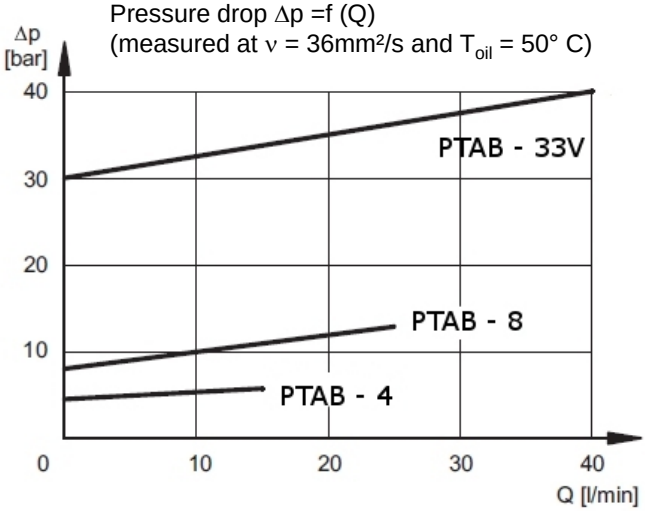
Pressure drop Δp =f (Q)
(measured at ν = 36mm²/s and T_{oil} = 50° C)



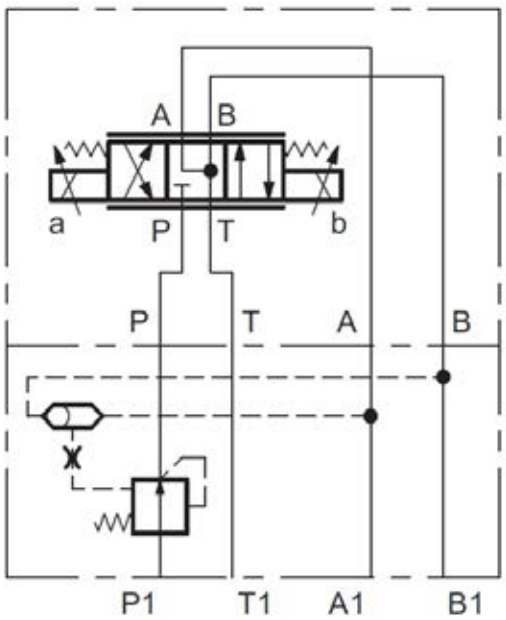
3-way Pressure compensator



Pressure drop Δp =f (Q)
(measured at ν = 36mm²/s and T_{oil} = 50° C)



Application example with proportional directional valve (flow control)



Standard Models **Mat.-Nr.**
Types on request

MODEL CODE

ZW-DW06 – 01 – PAB – 4 - V

Name
Pressure Compensator
sandwich plate type NG6

Model range
01 = Standard

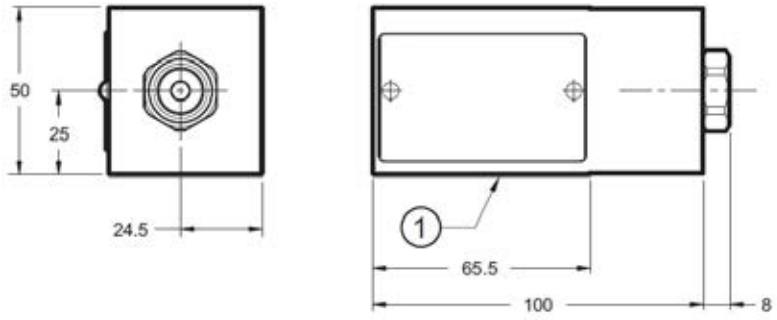
Types
PAB = 2-way upstream-Pressure Compensator
PTAB = 3-Wege Pressure Compensator

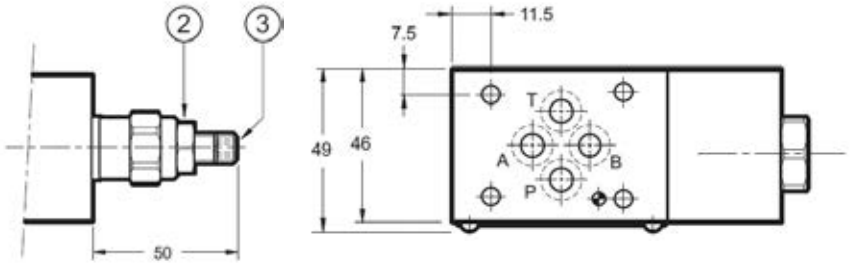
Pressure differential
4 = 4 bar
8 = 8 bar
33V = 7 - 33 bar adjustable

Seal material
V = FPM (Standard)
N = NBR

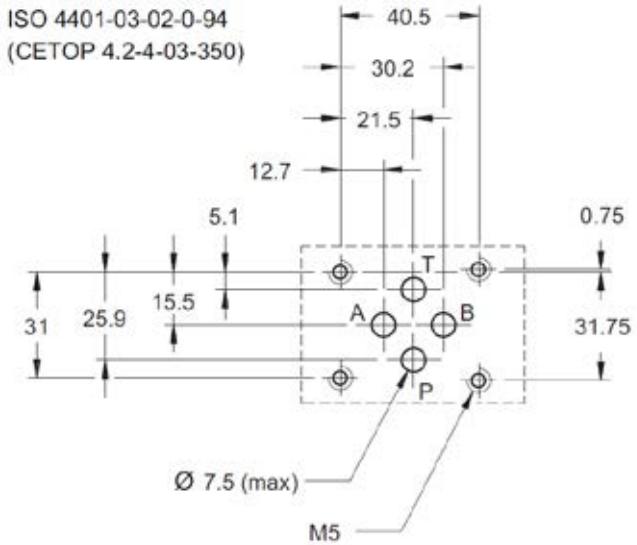
DIMENSIONS

1) Mounting plate with O-ring
4x 9.25 x 1.78 90 Shore
2) Fixing nut: SW 17
3) Hex: SW 5
By turning clockwise pressure raise





Mounting plate according to ISO 4401-03



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Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

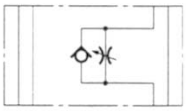
HYDAC INTERNATIONAL

Needle Valve
with reverse flow check
Sandwich plate type
ZW-SDR06

Pmax = 350 bar
Qmax = 50 l/min

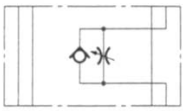
SYMBOL

ZW-SDR06 AA
P1 T1 A1 B1



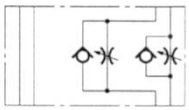
P2 T2 A2 B2

ZW-SDR06 AB
P1 T1 A1 B1



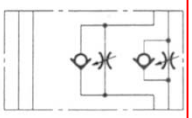
P2 T2 A2 B2

ZW-SDR06 AAB
P1 T1 A1 B1



P2 T2 A2 B2

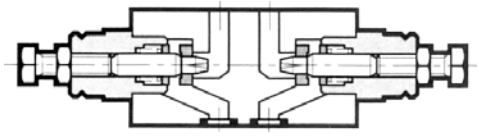
ZW-SDR06 ZAB
P1 T1 A1 B1



P2 T2 A2 B2

FUNCTION

A1 B1



A2 B2

FEATURES

- Hole pattern according to DIN 24340 Form A6, ISO 4401-03, nominal size 06
- adjustable needle valves with reverse flow check sandwich plate type for throttled flow in one direction and full flow in the opposite direction
- easy to assemble under body mounted spool valves according to DIN 24340 Form A6, ISO 4401 (use longer screws)
- type according to ISO 7790
- adjustable by tool

Types

- type AA: Drain in line A
- type AB: Drain in line B
- type AAB: Drain in line A, B
- type ZAB: Inlet in line A, B

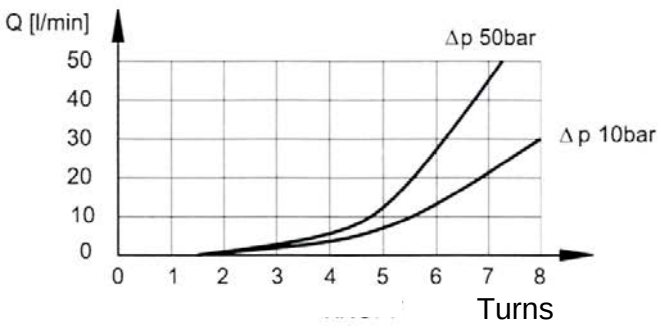
SPECIFICATIONS

Operating pressure:	max. 350 bar
Cracking pressure:	0,5 bar
Nominal flow:	max. 50 l/min (in controlled lines) max. 75 l/min (in free lines)
Fluids:	hydraulic oil according to DIN 51524 Part 1 / 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 to ISO 4406 or cleaner
Weight:	1,3 kg incl. valves

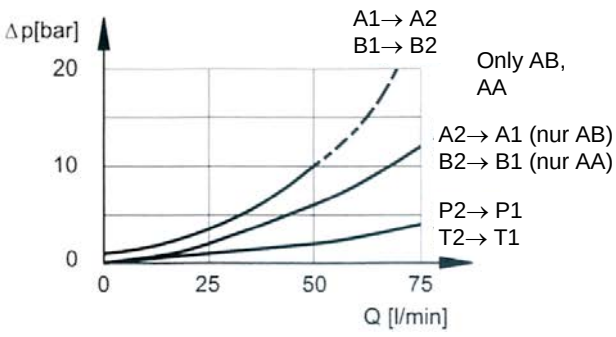
PERFORMANCE

measured at ν = 32mm²/s and T_{oil} = 50° C

Throttle curve



Pressure drop Δp-Q



(Index 1 = valve side / Index 2 = sub plate side)

Standard models	Part No.
ZW-SDR06-01-AA-V	6074186
ZW-SDR06-01-AB-V	6074187
ZW-SDR06-01-AAB-V	6074188
ZW-SDR06-01-ZAB-V	6074189

Other types on request

MODEL CODE

ZW-SDR06 – 01-AA – V

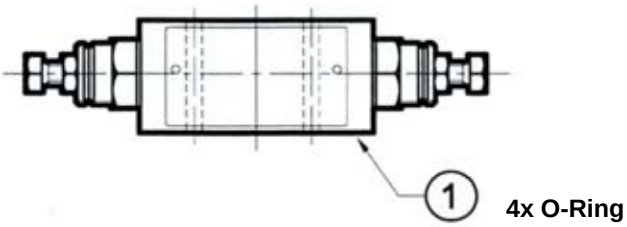
Name and nominal size
Flow valve non return
Sandwich plate type NW6

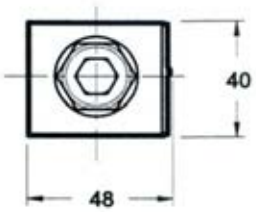
Series
01 = Standard, phosphated

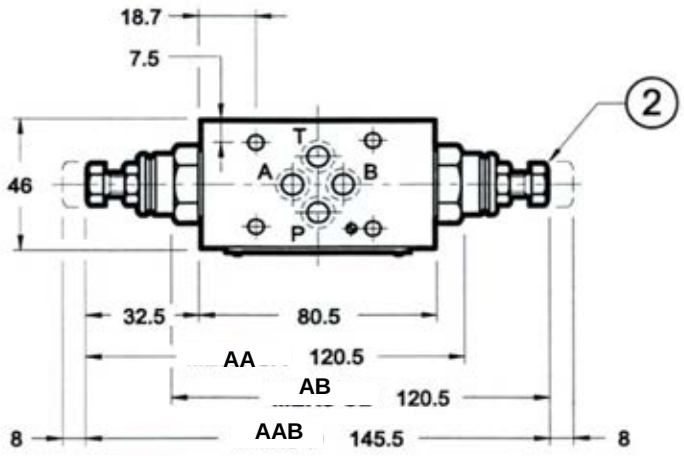
Types
AA = drain control in line A
AB = drain control in line B
AAB = drain control in line A and B
ZAB = inlet control in line A and B

Seals
V = FKM (Standard)
N = NBR

Dimensions



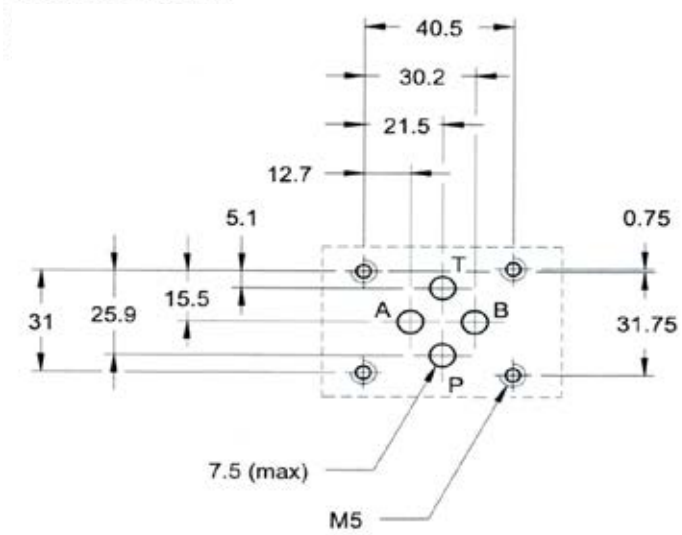




1 - O-Ring 9,25 x 1,78-90Sh FKM(4 pcs.)
2 - Adjustment screw with fixing nut, hex diameter 13.
By turning counter clockwise the nominal flow is increasing.

All dimensions in mm.
Fixing elements are not in scope of delivery.

Mounting plate according to ISO 4401-03



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D - 66280 Sulzbach / Saar
Tel. 06897 / 509 -01
Fax 06897 / 509 -598
Email flutec@hydac.com

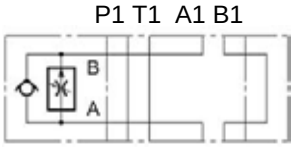
HYDAC INTERNATIONAL

Flow Regulator pressure-compensated, with reverse flow check

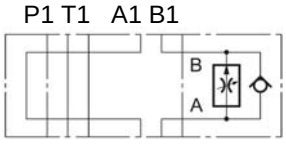
Sandwich plate type ZW-2SR06

up to 250 bar
up to 30 l/min

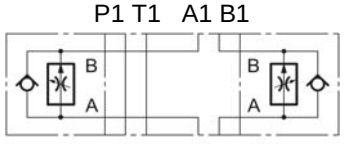
SYMBOL
ZW-2SR06 AA



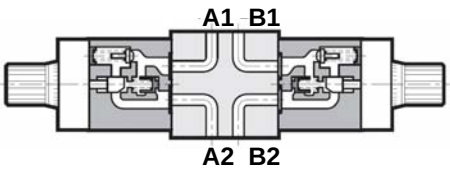
ZW-2SR06 AB



ZW-2SR06 AAB



Function



FEATURES

- Hole pattern to DIN 24340 Form A6, ISO 4401-03, nominal size 06
- Flow regulator with reverse flow check sandwich plate type for flow control in one direction, free backflow in opposite direction
- easy to assemble under body mounted spool valves to DIN 24340 Form A6, ISO 4401 (use longer screws)
- type to ISO 7790
- adjustable per turning knob

Types

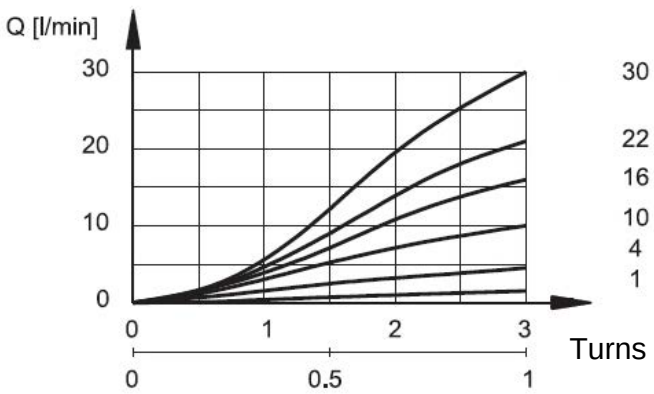
- type AA: flow control in line A
- type AB: flow control in line B
- type AAB: flow control in line A and B

SPECIFICATIONS

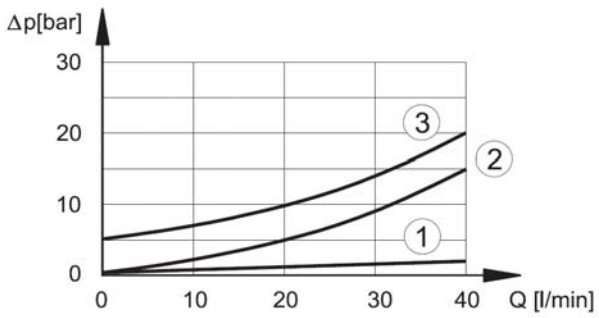
Nominal pressure:	max. 250 bar
Adjustable flow rates:	max. 1 / 4 / 10 / 16 / 22 / 30 l/min
Nominal flow:	max. 40 l/min (in controled lines) max. 65 l/min (in free lines)
Fluids:	Hydraulic fluid to DIN 51524 part1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 to ISO 4406 or cleaner
Weight:	3 kg incl. valve (AAB 4,1 kg)

PERFORMANCE

measured at ν = 32mm²/s and T_{oil} = 50° C



Pressure drop dP / Q
1 - Pressure drop free lines
2 - Pressure drop through check valve
3 - optional



(Index 1 = device side) (Index 2 = plate side)

E 5.249.9 /01.13

Standard models	Part-No.
ZW-2SR06-01- AA -01- V	3535596
ZW-2SR06-01- AA -04- V	3535600
ZW-2SR06-01- AA -10- V	3535603
ZW-2SR06-01- AA -16- V	3535636
ZW-2SR06-01- AA -22- V	3535638
ZW-2SR06-01- AA -30- V	3535641
ZW-2SR06-01- AB -01- V	3535648
ZW-2SR06-01- AB -04- V	3535650
ZW-2SR06-01- AB -10- V	3535651
ZW-2SR06-01- AB -16- V	3535653
ZW-2SR06-01- AB -22- V	3535654
ZW-2SR06-01- AB -30- V	3535657
ZW-2SR06-01- AAB -01- V	3535659
ZW-2SR06-01- AAB -04- V	3535660
ZW-2SR06-01- AAB -10- V	3535661
ZW-2SR06-01- AAB -16- V	3535663
ZW-2SR06-01- AAB -22- V	3535664
ZW-2SR06-01- AAB -30- V	3535668

other types on request

MODEL CODE

ZW-2SR06 – 01 – AA – 01 - V

Name and nominal size
Flow control valve
Sandwich plate type NW6

Series
01 = Standard, phosphated

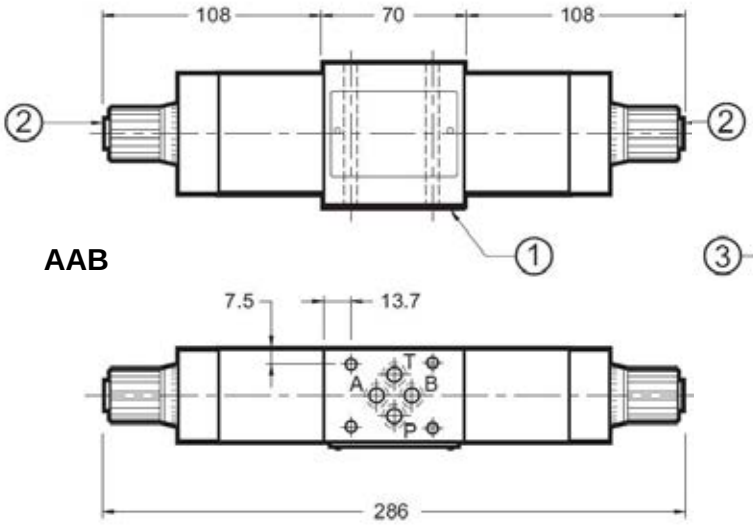
Types
AA = flow control in line A
AB = flow control in line B
AAB = flow control in line A and B

Flow ranges
01 = 1 l/min
04 = 4 l/min
10 = 10 l/min
16 = 16 l/min
22 = 22 l/min
30 = 30 l/min

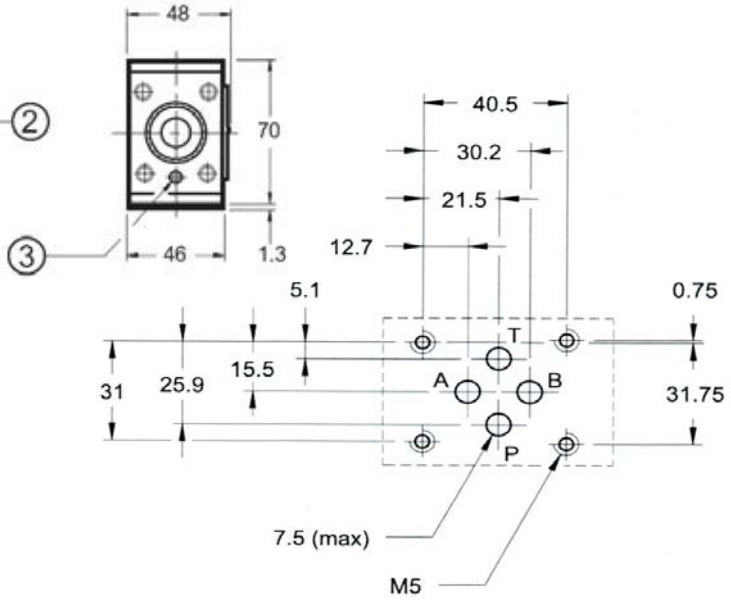
Seal material
V = FKM (Standard)
N = NBR

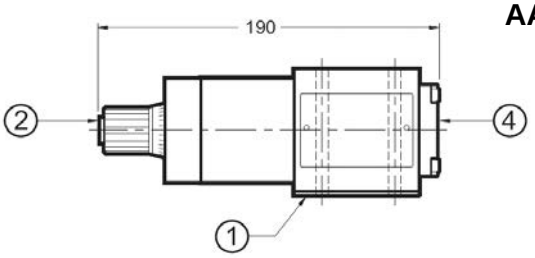
DIMENSIONS

AAB



Mounting plate to ISO 4401-03



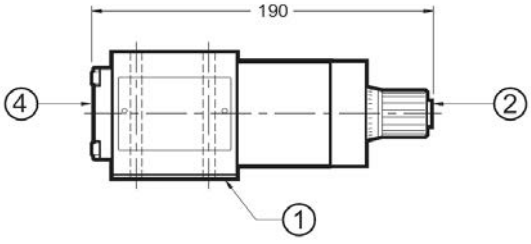


AA

1 - O-Ring plate with O-Rings:
8.73 x 1.78 FKM (Mat. 613691)
2 - Short circuit plate
3 - optional
4 - Cover

All dimensions in mm.
Fastening elements are not in the scope of supply.

AB



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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
D - 66280 Sulzbach / Saar
Tel. 06897 / 509 -01
Fax 06897 / 509 -598
Email flutec@hydac.com

HYDAC INTERNATIONAL

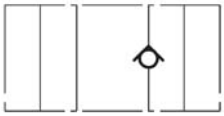
Check Valve
Sandwich plate type
ZW-RV06

Up to 350 bar
Up to 50 l/min

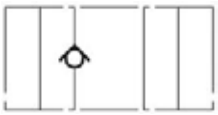
SYMBOL

ZW-RV06 P

ZW-RV06 A



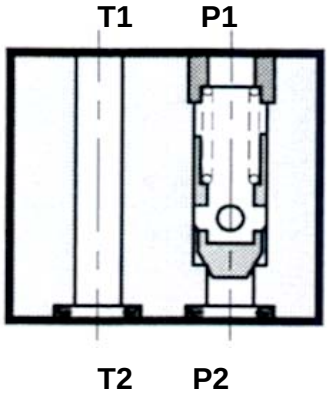
ZW-RV06 T



ZW-RV06 B

ZW-RV06 PT

Function



FEATURES

- Hole pattern according to DIN 24340 Form A6, ISO 4401-03, nominal size 06
- Check valve sandwich plate type witch check function in one direction, full flow in opposite direction
- according to DIN 24340 Form A6, ISO 4401 (use longer screws)
- type according to ISO 7790
- adjustable by tool

Types.

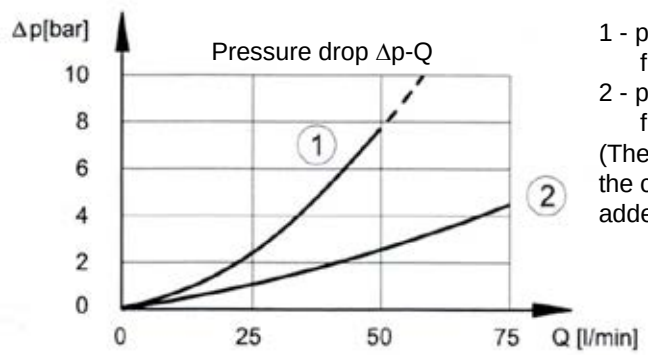
- type A: check valve in line A
- type B: check valve in line B
- type P: check valve in line P
- type T: check valve in line T
- type PT: check valve in line P and T

SPECIFICATIONS

Operating pressure:	max. 350 bar
Cracking pressure:	0,5 bar, on request 3,5 bar and 5,2 bar
Nominal flow:	max. 50 l/min (in controlled lines) max. 75 l/min (in free lines)
Fluids:	hydraulic oil according to DIN 51524 Part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 to ISO 4406 or cleaner
Weight:	1,0 kg

PERFORMANCE

measured at ν = 36mm²/s and T_{oil} = 50° C



1 - pressure drop free check line
2 - pressure drop free line
(The cracking pressure of the check valve has to be added to curve 1)

(Index 1 = valve side / Index 2 = sub plate side)

E 5.198.0 /01.13

Standard models	Part No.
ZW-RV06-01-A-0,5-V	6074180
ZW-RV06-01-B-0,5-V	6074181
ZW-RV06-01-P-0,5-V	6074182
ZW-RV06-01-T-0,5-V	6074183
ZW-RV06-01-PT-0,5-V	6074184

Other types on request

MODEL CODE

ZW-RV06 – 01- A 0,5 – V

Name and nominal size
Check valve sandwich plate type

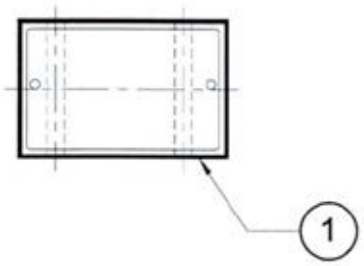
Series
01 = Standard, phosphated

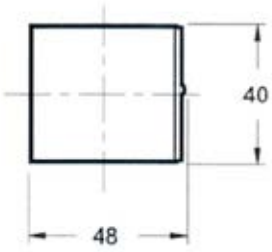
Types
A = check valve in line A
B = check valve in line B
P = check valve in line P
T = check valve in line T
PT = check valve in line P and T

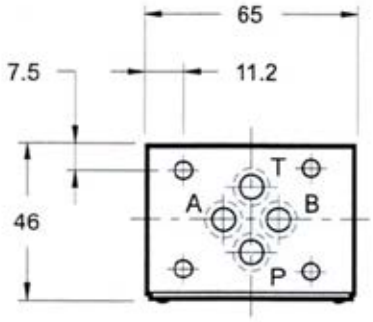
Cracking pressure
0,5 = 0,5 bar
on request: 3,5 = 3,5 bar
5,1 = 5,1 bar

Seals
V = FKM (Standard)
N = NBR

Dimensions



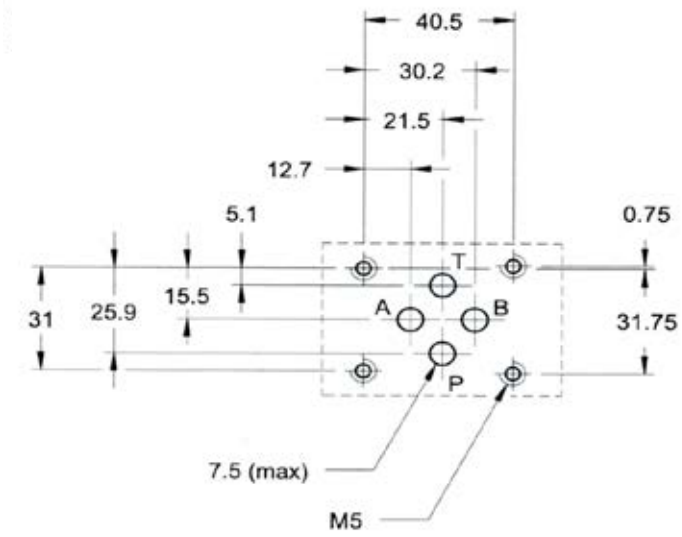




1- O-Ring 9,25 x 1,78-90Sh FKM (4 pcs.)

All dimensions in mm.
Fixing elements are not in scope of delivery.

Mounting plate according to ISO 4401-03



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Justus-von-Liebig-Str. 5
D - 66280 Sulzbach / Saar
Tel. 06897 / 509 -01
Fax 06897 / 509 -598
Email flutec@hydac.com

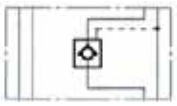
HYDAC INTERNATIONAL

Check Valve
pilot to open
Sandwich plate type
ZW-RP06

up to 350 bar
up to 75 l/min

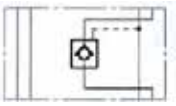
SYMBOL

ZW-RP06 AA
P1 T1 A1 B1



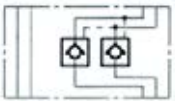
P2 T2 A2 B2

ZW-RP06 AB
P1 T1 A1 B1



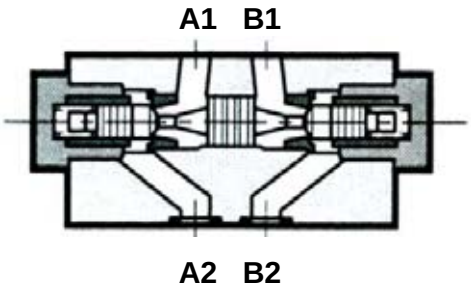
P2 T2 A2 B2

ZW-RP06 AAB
P1 T1 A1 B1



P2 T2 A2 B2

FUNCTION



FEATURES

- Hole pattern according to DIN 24340 Form A6, ISO 4401-03, nominal size 06
- Pilot to open check valve sandwich plate type with check function in one direction, full flow in opposite direction – after unblocking also in the other direction
- easy to assemble under body mounted spool valves according to DIN 24340 Form A6, ISO 4401 (use longer screws)
- type according to ISO 7790
- adjustable by tool

Types

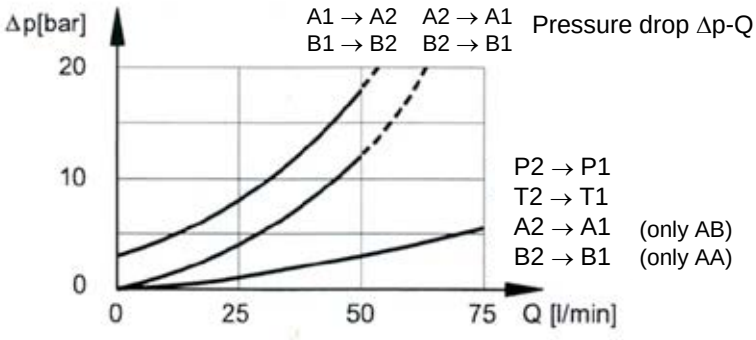
- type AA: Check in line A
- type AB: Check in line B
- type AAB: Check in line A and B

SPECIFICATIONS

Operating pressure:	max. 350 bar
Opening pressure:	3 bar
Pilot ratio:	3,4 : 1
Nominal flow:	max. 50 l/min (in controlled lines) max. 75 l/min (in free lines)
Fluids:	hydraulic oil according to DIN 51524 Part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 to ISO 4406 or cleaner
Weight:	1,3 kg incl. Valves

PERFORMANCE

measured at ν = 36mm²/s and T_{oil} = 50° C



(Index 1 = valve side / Index 2 = sub plate side)

E 5.199.0 /01.13

Standard models	Part No.
ZW-RP06-01-AA-V	6074190
ZW-RP06-01-AB-V	6074191
ZW-RP06-01-AAB-V	6074192

Other types on request

MODEL CODE

ZW-RP06 – 01- AA – V

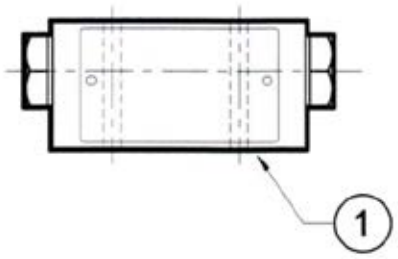
Name and nominal size
Pilot to open check valve
Sandwich plate type NW6

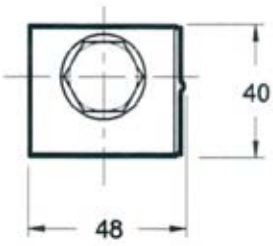
Series
01 = Standard, phosphated

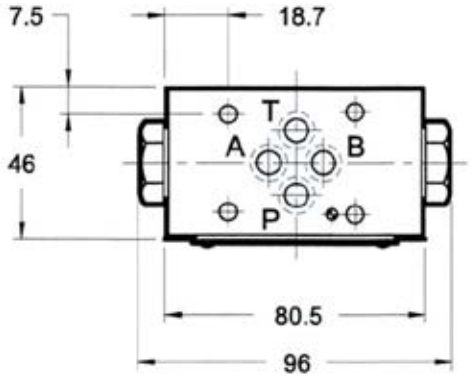
Types
AA = Blocking in line A
AB = Blocking in line B
AAB = Blocking in both lines

Seals
V = FKM (Standard)
N = NBR

Dimensions



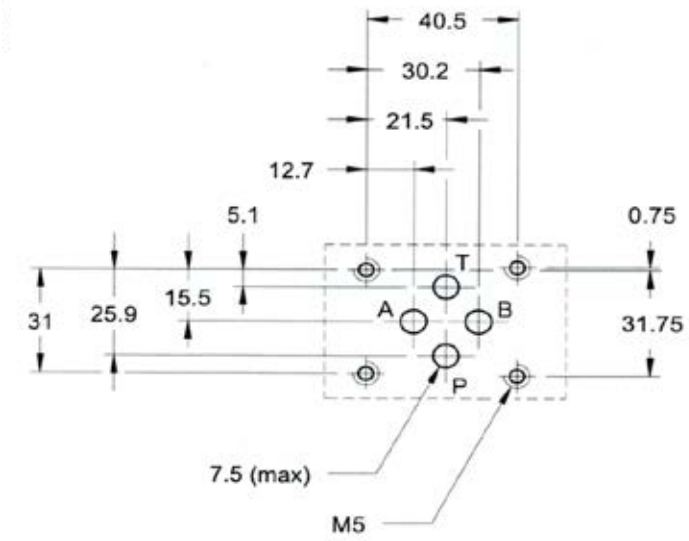




1 - O-Ring 9,25 x 1,78-90Sh FKM (4 pcs.)

All dimensions in mm.
Fixing elements are not in scope of delivery.

Mounting plate according to ISO 4401-03



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HYDAC INTERNATIONAL

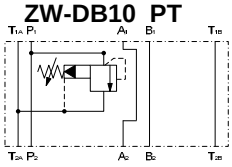
Pressure Relief Valve pilot operated

Sandwich plate type ZW-DB10

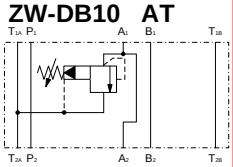
up to 350 bar
up to 100 l/min

SYMBOL

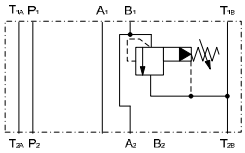
ZW-DB10 PT



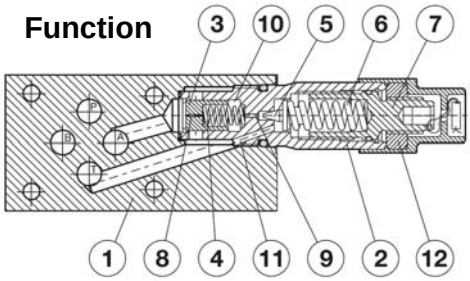
ZW-DB10 AT



ZW-DB10 BT



Function



1 – Housing
2 - Cartridge valve
3 - Main valve
4 - Spring main piston
5 – Pilot
6 - Spring for pilot
7 - Adjust spindle
8 - Bore hole
9 - Seat pilot
10 - Main piston
11 - Spring detent
12 - Counter nut

FEATURES

- Hole pattern to DIN 24340, ISO 4401-05, nominal size 10
- Pressure relief valve sandwich plate type with single sided relief function and output to the tank
- easy to assemble under body mounted spool valves to DIN 24340, ISO 4401 (use longer screws)
- adjustable by tool

types

- type PT: Pressure relief in P, Drain T
- type AT: Pressure relief in A, Drain T
- type BT: Pressure relief in B, Drain T

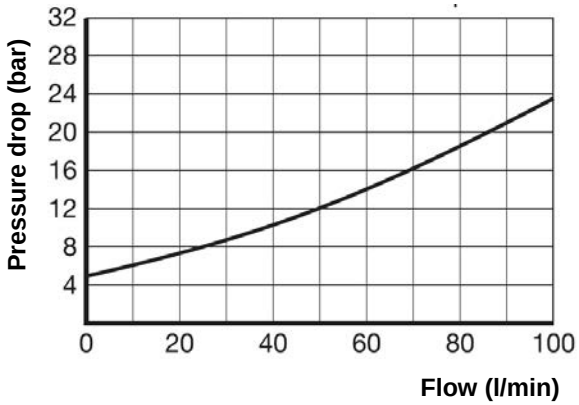
SPECIFICATIONS

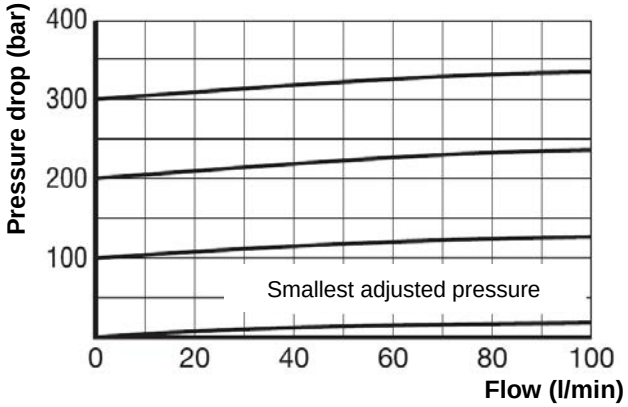
Nominal pressure:	max. 350 bar
Pressure ranges:	up to 315 bar
Nominal flow:	max. 100 l/min
Fluids:	Hydraulic fluid to DIN 51524 part 1 and 2
Media operating temp. range:	-20°C up to max. +70°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	15 – 380 mm²/s is recommended
Filtration:	Class 20/18/15 to ISO 4406 or cleaner
	ISO 4410 Class 20/18/15 to ISO 4406
Weight:	2,6 kg incl. valve

PERFORMANCE

measured at ν = 36mm²/s and T_{oil} = 50° C

Pressure drop Δp-Q





(Index 1 = device side / Index 2= plate side)

Standard models	Part No.
ZW-DB10-01-PT 315V- V	6078915
ZW-DB10-01-AT 315V- V	6078916
ZW-DB10-01-BT 315V- V	6078917

other types on request

MODEL CODE

ZW-DB10 – 01 - PT – 315V -V

Name and nominal size
Pilot operated pressure relief valve
Sandwich plate type

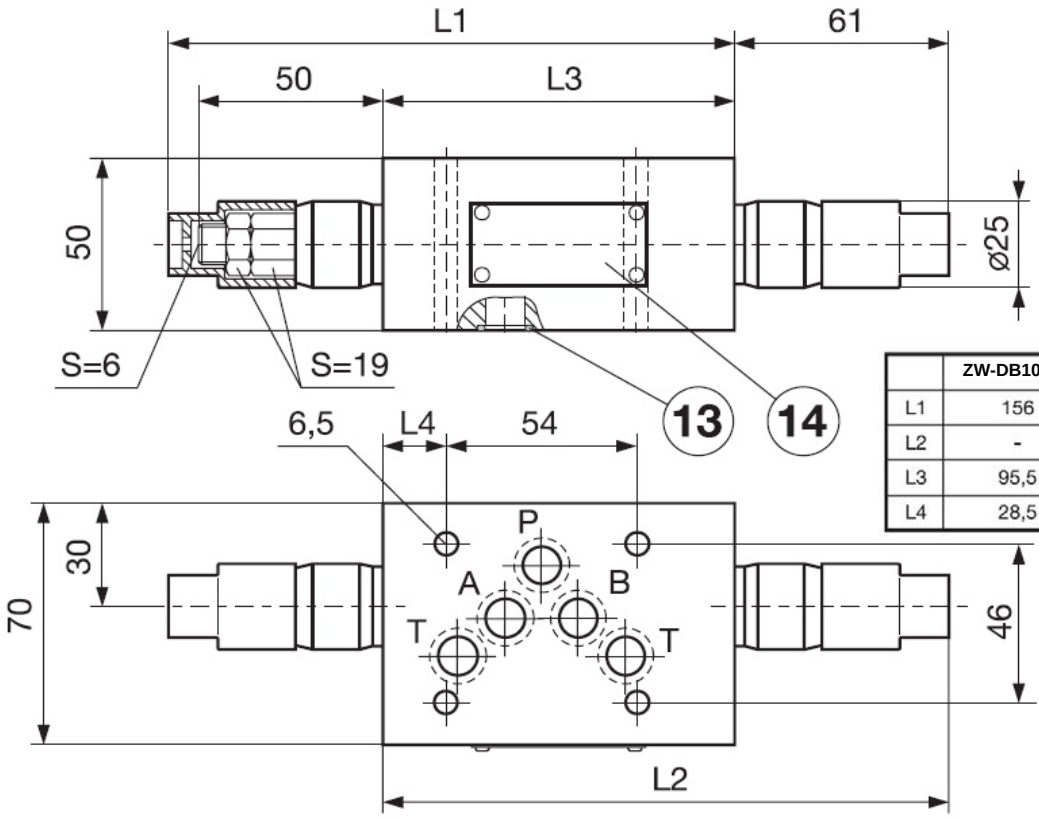
Series
01 = Standard, phosphated

Type
- type PT: Pressure relief in P, output T
- type AT: Pressure relief in A, output T
- type BT: Pressure relief in B, output T

Pressure ranges
315 = 315 bar

Seal material
V = FKM (Standard)
N = NBR

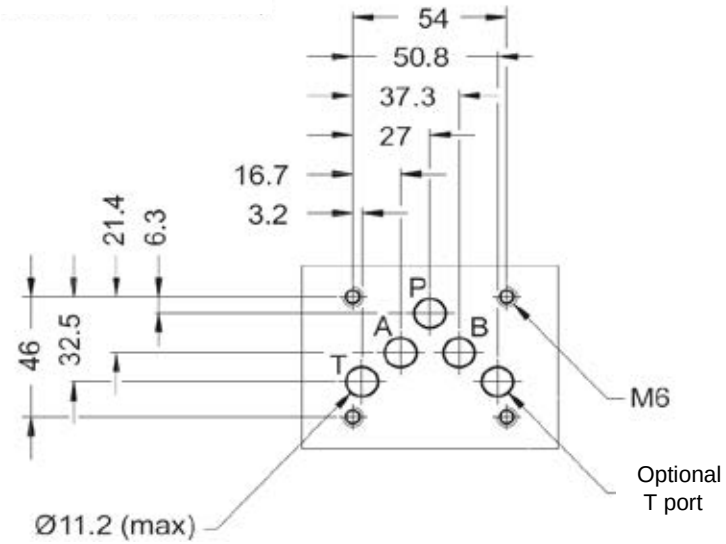
Dimensions



13 - O- Ring 12 x 2 FKM
14 - Type plate

	ZW-DB10 PT	ZW-DB10 AT	ZW-DB10 BT
L1	156	161	-
L2	-	-	161
L3	95,5	100,5	100,5
L4	28,5	28,5	18

Mounting plate to ISO 4401-05-04-0-94



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D - 66280 Sulzbach / Saar
Tel. 06897 / 509 -01
Fax 06897 / 509 -598
Email flutec@hydac.com

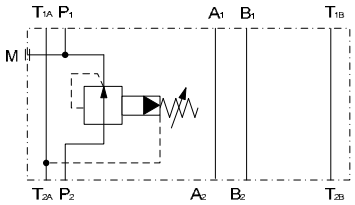
HYDAC INTERNATIONAL

Pressure Reducing Valve pilot operated
Sandwich plate type
ZW-DM10

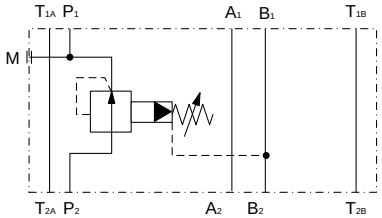
up to 320 bar
up to 100 l/min

SYMBOL

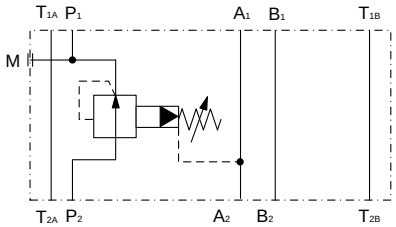
ZW-DM10 PT



ZW-DM10 PA

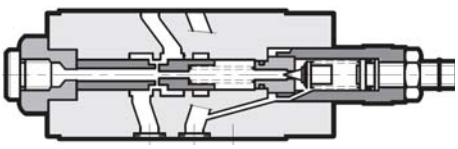


ZW-DM10 PB



Function

P1 T 1



P2 T2

FEATURES

- Hole pattern to DIN 24340 Form A10, ISO 4401-05, nominal size 10
- pressure reducing valve sandwich plate type, normal open, with pressure reducing function to the consumer
- easy to assemble under body mounted spool valves to DIN 24340 Form A10, to ISO 4401-05 (use longer screws)
- adjustable by tool

Types

- type PT: Pressure reducing in line P
- type PA: Pressure reducing in line A (Highest pressure in line B)
- type PB: Pressure reducing in line B (Highest pressure in line A)

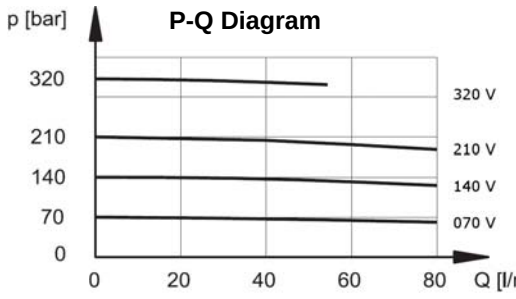
SPECIFICATIONS

Nominal pressure:	max. 320 bar
Pressure ranges:	5 – 70 bar, 8 – 140 bar, 10 – 210 bar, 15 – 320 bar
Nominal flow:	max. 80 l/min (in controlled lines) max. 100 l/min (in free lines)
Fluids:	Hydraulic fluid to DIN 51524 part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 to ISO 4406 or cleaner
Weight:	2,7 kg incl. valve

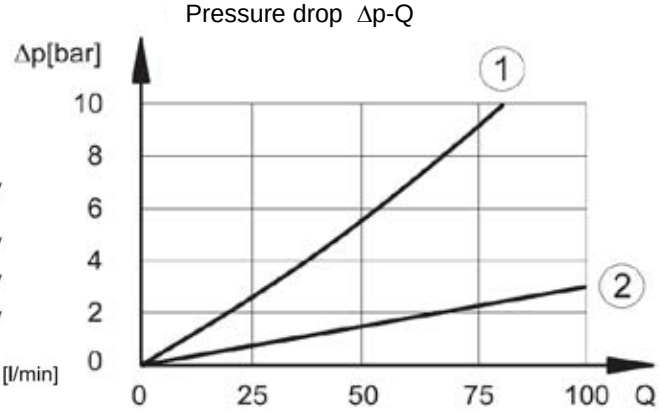
PERFORMANCE

measured at ν = 32mm²/s and T_{oil} = 50° C

P-Q Diagram



Pressure drop Δp-Q



1 – curve P2 → P1
2 – curve for free lines, e.g. A → A1

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Standard models	Part No.
ZW-DM10-01-PA 70V- V	3504888
ZW-DM10-01-PA 140V- V	3504889
ZW-DM10-01-PA 210V- V	3504890
ZW-DM10-01-PA 320V- V	3504891
ZW-DM10-01-PB 70V- V	3504892
ZW-DM10-01-PB 140 V- V	3504893
ZW-DM10-01-PB 210V- V	3504894
ZW-DM10-01-PB 320V- V	3504896
ZW-DM10-01-PT 70V- V	3504864
ZW-DM10-01-PT 140V- V	3504885
ZW-DM10-01-PT 210V- V	3504886
ZW-DM10-01-PT 320V- V	3504887

other types on request

MODEL CODE

ZW-DM10 – 01 – PT – 070 V - V

Name and nominal size
Pressure reducing valve
Sandwich plate type

Series
01 = Standard, phosphated

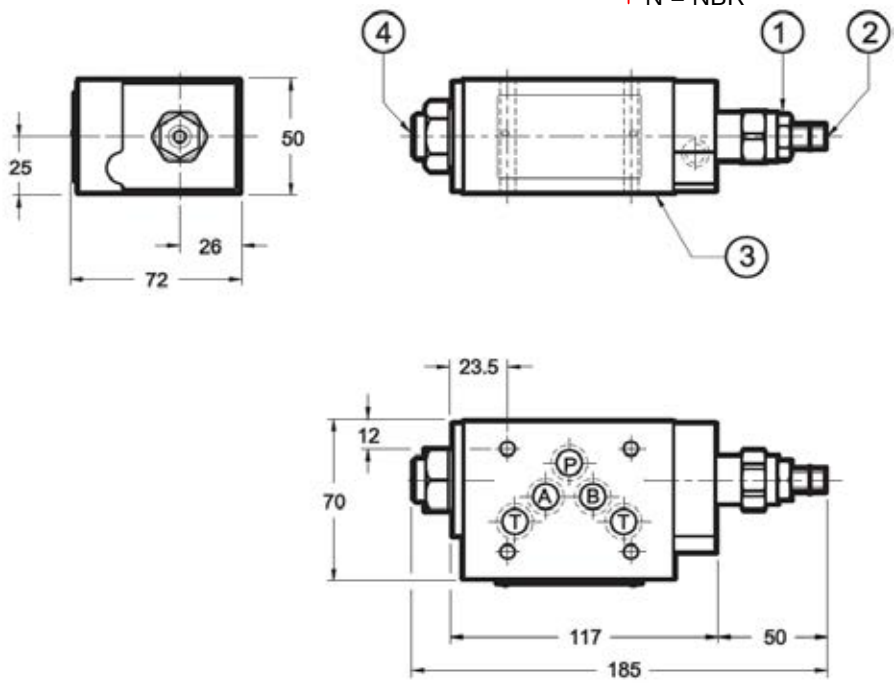
Type
PT = Pressure reducing in line P
PA = Pressure reducing in line A
PB = Pressure reducing in line B

Pressure ranges
70 = 5 - 70 bar
140 = 8 - 140 bar
210 = 10 - 210 bar
320 = 15 - 320 bar

Adjustment option
V = adjustable by tool

Seal material
V = FKM (Standard)
N = NBR

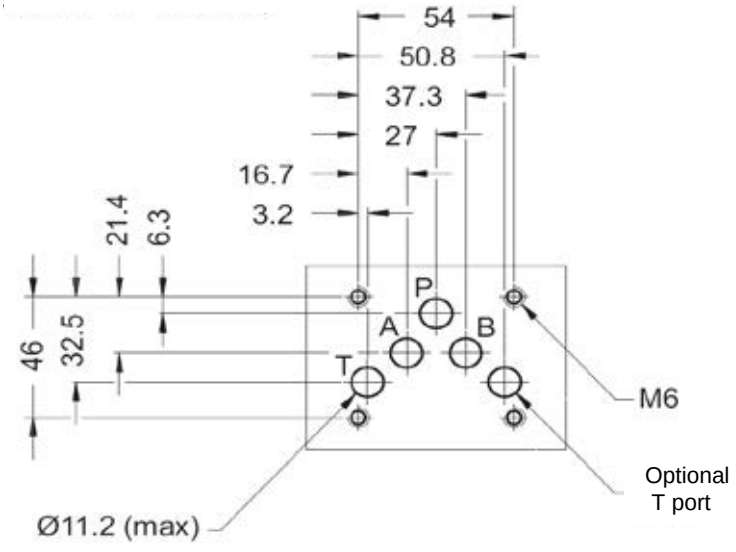
Dimensions



1 - Fastening nut hex size 17
2 - Allen tool size 5
By Turning clockwise the flow is rising.
3 - Mounting plate with seal ring:
12.42 x 1.78 FKM
4 - Pressure gauge connection 1/4" BSP.

All dimensions in mm.
Fastening elements are not in the scope of supply.

Mounting plate to ISO 4401-05-04-0-94



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Subject to technical modifications.

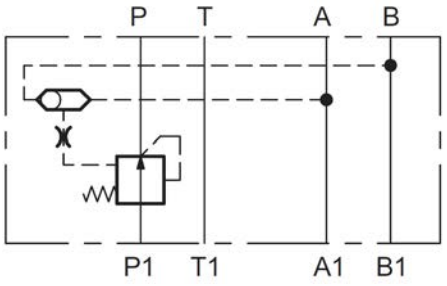
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
D - 66280 Sulzbach / Saar
Tel. 06897 / 509 -01
Fax 06897 / 509 -598
Email flutec@hydac.com

HYDAC INTERNATIONAL

Pressure Compensator direct acting
Sandwich plate type
ZW-DW10

up to 320 bar
up to 100 l/min

SYMBOL



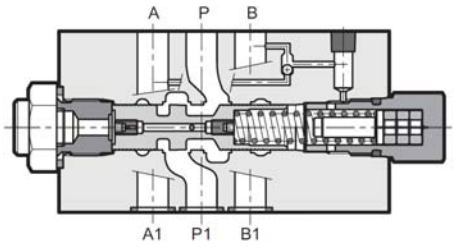
FEATURES

- Hole pattern according to DIN 24340 Form A10, ISO 4401-05, NW 10
- 2-way upstream pressure compensator sandwich plate type
- keeping the pressure differential between port P and ports A and B constant
- combination in general with proportional directional valve to achieve a flow regulation independent of pressure changes
- a built-in change-over valve controls the choice of the control pressure in line A and B
- two versions available: Δp = 4 bar, Δp = 8 bar
- easy to assemble under body mounted spool valves to DIN 24340, to ISO 4401 (use longer screws)

Types

- Type PAB:	2- way

Function

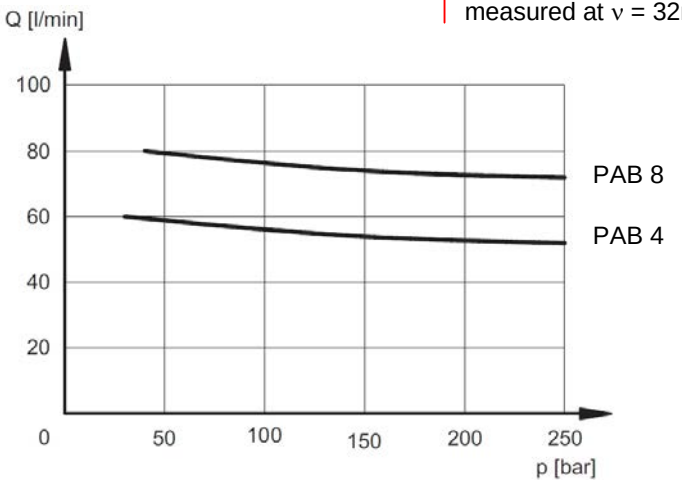


SPECIFICATIONS

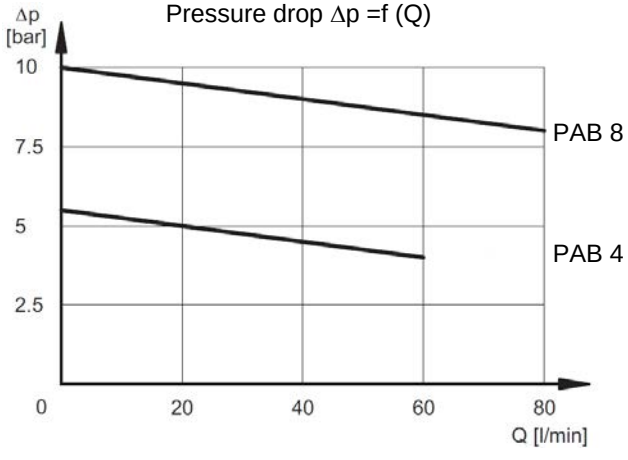
Operating pressure:	max. 320 bar
Pressure differential:	Δp = 4 bar, Δp = 8 bar (fixed)
Flow rate:	max. 100 l/min
Hydraulic fluids:	Hydraulic oil according to DIN 51524 Part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 to ISO 4406 or cleaner
Weight:	2,7 kg incl. valves

PERFORMANCE

measured at ν = 32mm²/s and T_{oil} = 50° C



Pressure drop Δp =f (Q)



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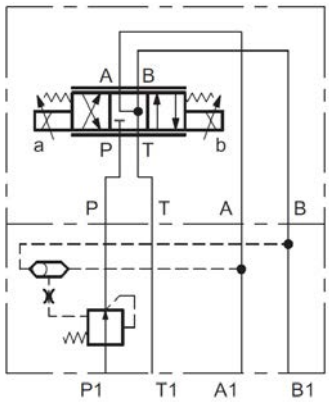
Standard Models

Mat.-Nr.

Types on request

Application example with proportional directional valve (flow control)



MODEL CODE

ZW-DW10 – 01 – PAB – 4 - V

Name
Pressure Compensator
sandwich plate type NG6

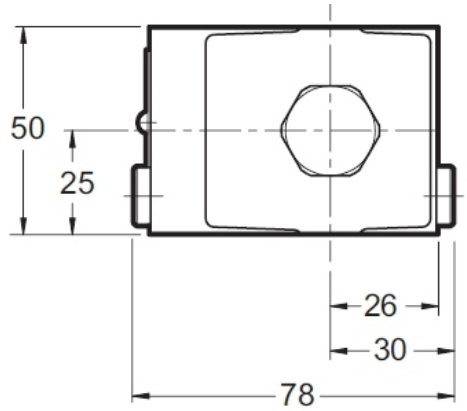
Model range
01 = Standard

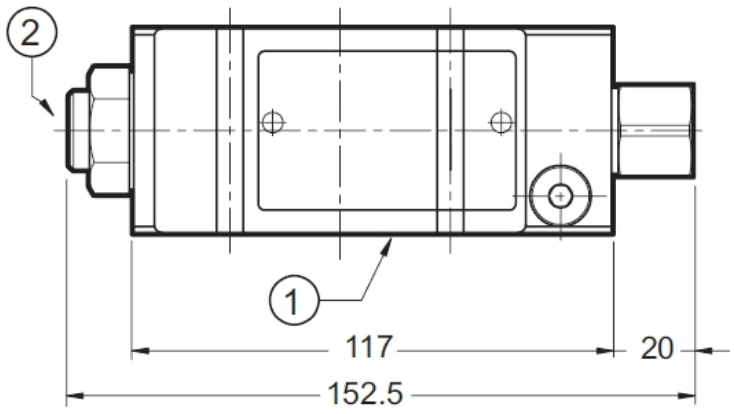
Types
PAB = 2-way upstream-Pressure Compensator

Pressure differential
4 = 4 bar fixed
8 = 8 bar “

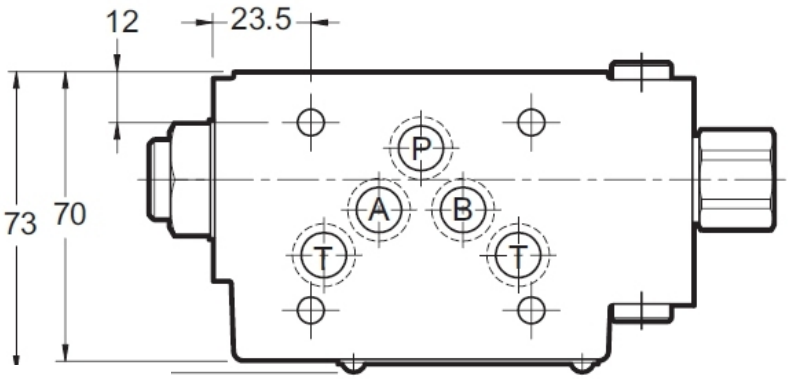
Seal material
V = FPM (Standard)
N = NBR

DIMENSIONS

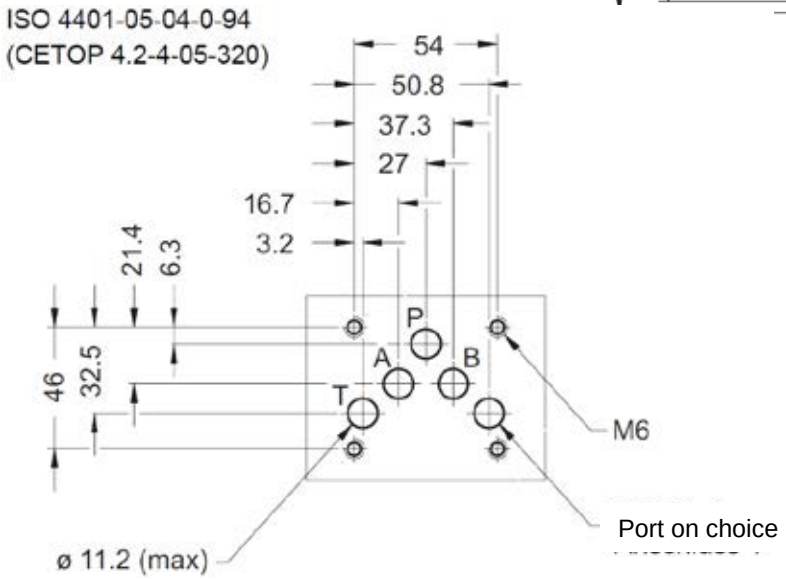




1 - Mounting plate with O-ring
5x 12,42 x 1.78 90 Shore
2 - Gauge connection 1/4”BSP



Mounting plate according to ISO 4401-05



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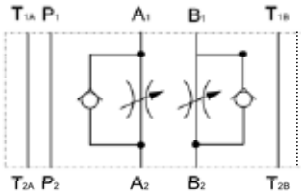
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

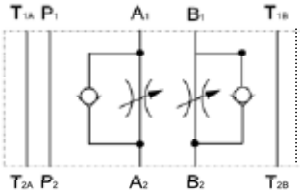
Needle Valve
with reverse flow check
Sandwich plate type
ZW-SDR10

up to 350 bar
up to 100 l/min

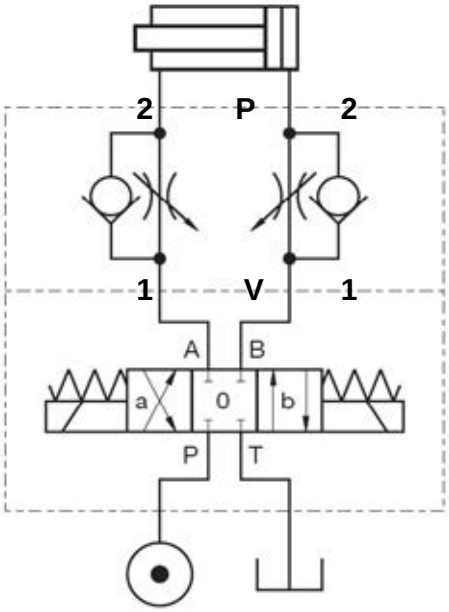
SYMBOL
ZW-SDR10 AAB



ZW-SDR10 ZAB



Function



FEATURES
- Hole pattern to DIN 24340, ISO 4401, nominal size 10
- Adjustable needle valve with reverse flow check as sandwich plate housing to throttle in one direction and free backflow in the opposite direction
- easy to assemble under body mounted spool valves to DIN 24340, ISO 4401 (use longer screws)
- type to ISO 7790
- adjustable by tool

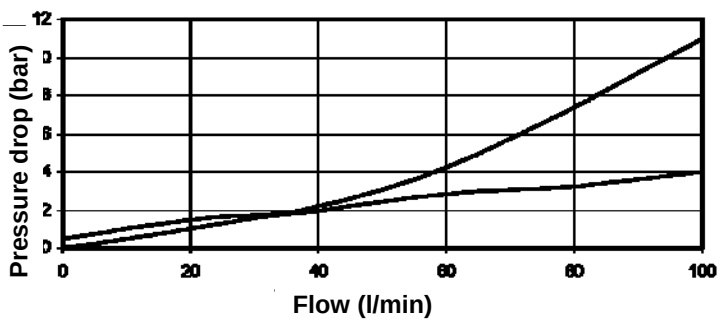
Types
- type AAB / ZAB:
  The sandwich plate valve can be changed from downstream throttle to upstream throttle by turning through 180° (s. dimensions).

SPECIFICATIONS

Nominal pressure:	max. 350 bar
Cracking pressure:	0,4 bar
Nominal flow:	max. 100 l/min
Fluids:	Hydraulic fluid to DIN 51524 part 1 and 2
Media operating temp. range:	-20°C up to max. +70°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	15 – 380 mm²/s is recommended
Filtration:	Class 20/18/15 to ISO 4406 or cleaner
Weight:	3,3 kg incl. valve

PERFORMANCE
measured at ν = 32mm²/s and T_{oil} = 50° C

Pressure drop Δp-Q



2 → 1 (P->V) throttle fully opened

1 → 2 (V->P) through check valve

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Standard models	Part No.
ZW-SDR10-01-AAB-V	6078911
ZW-SDR10-01-ZAB-V	6078909

other types on request

MODEL CODE

ZW - SDR10–01-AAB – V

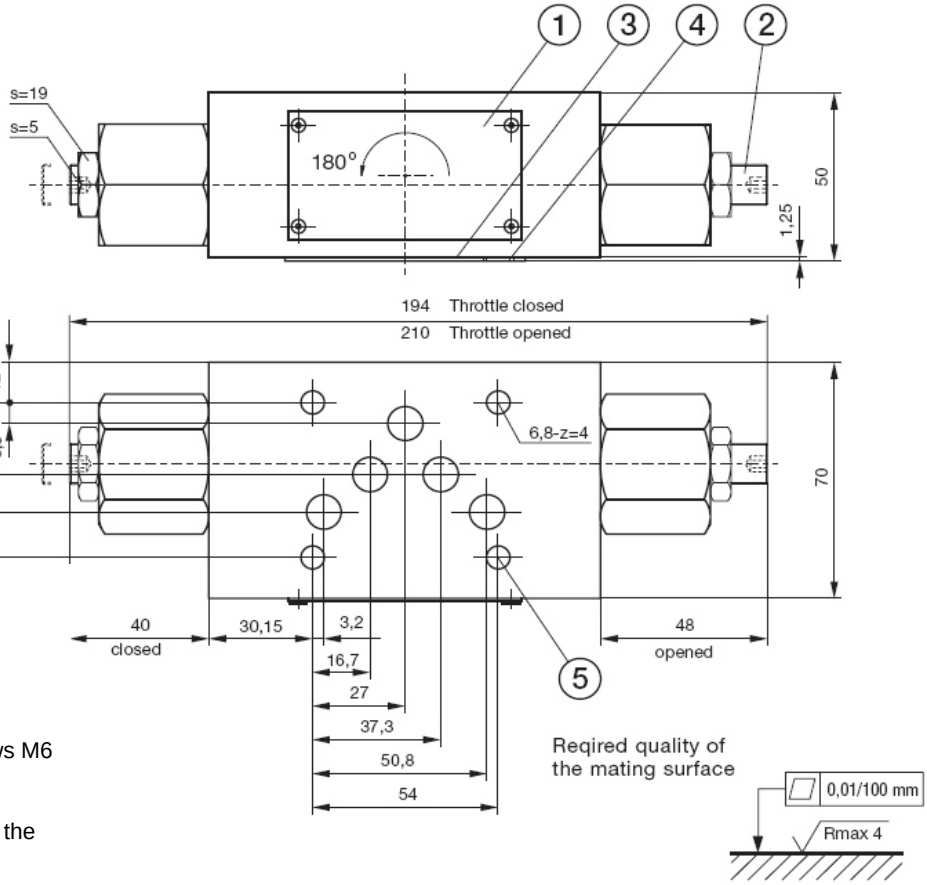
Name and nominal size
Flow control valve non return valve
Sandwich plate type NW 10

Series
01 = Standard, phosphated

Types
AAB = 2 Flow control valve non return valve in A and B, downstream throttle
ZAB = 2 Flow control valve non return valve in A and B, upstream throttle

Seal material
V = FKM (Standard)
N = NBR

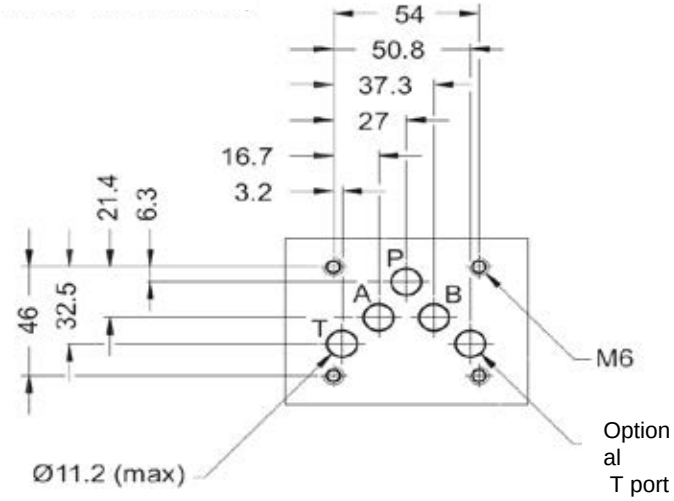
Dimensions



1 - Type plate
2 - Throttle screw (Turning clockwise reduces the Flow rate)
3 - O-Ring plate
4 - O-Ring 12,42 x 1,78 FKM
5 - Bore holes for fixing screws M6

All dimensions in mm.
Fastening elements are not in the scope of supply.

Mounting plate to ISO 4401-05-04-0-94



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Justus-von-Liebig-Str. 5
D - 66280 Sulzbach / Saar
Tel. 06897 / 509 -01
Fax 06897 / 509 -598
Email flutec@hydac.com

HYDAC INTERNATIONAL

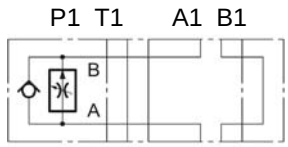
Flow Regulator pressure-compensated, with reverse flow check

Sandwich plate type ZW-2SR10

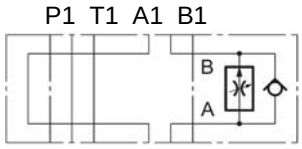
up to 250 bar
up to 30 l/min

SYMBOL

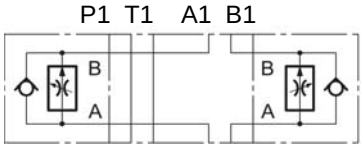
ZW-2SR10 AA



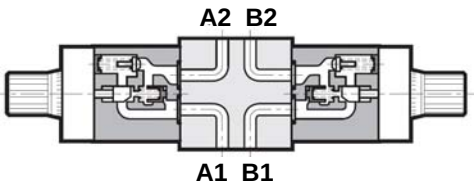
ZW-2SR10 AB



ZW-2SR10 AAB



Function



FEATURES

- Hole pattern to DIN 24340 Form A10, ISO 4401-05, nominal size 10
- Adjustable flow regulator pressure-compensated sandwich plate type for the flow control in one direction and free backflow in the opposite direction
- easy to assemble under body mounted spool valves to DIN 24340 Form A10, to ISO 4401-05 (use longer screws)
- adjustable by turning knob

TYPES

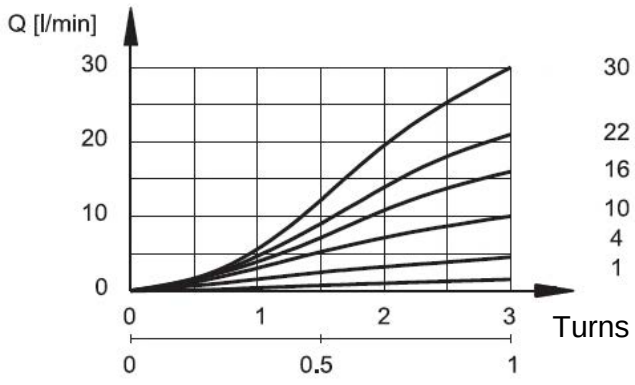
- type AA: Flow control function from A2 to A1
- type AB: Flow control function from B2 to B1
- type AAB: Flow control function from A2 to A1 and B2 to B1

SPECIFICATIONS

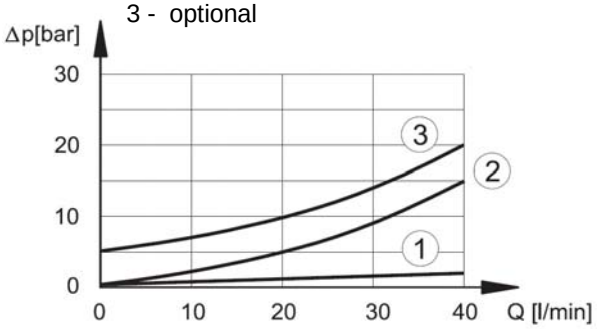
Nominal pressure:	max. 250 bar
Nominal flow:	max. 100 l/min in free lines max. 1 /4 /10 /16 /22 /30 l/min in controlled lines max. 40 l/min in opposite direction
Fluids:	Hydraulic fluid to DIN 51524 part 1 and 2
Media operating temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 to ISO 4406 or cleaner
Weight:	4,3 kg incl. valve (AAB = 5,6 kg)

PERFORMANCE

measured at ν = 32mm²/s and T_{oil} = 50° C



Pressure drop dP / Q
1 - Pressure drop free lines
2 - Pressure drop through check valve
3 - optional



(Index 1 = device side) (Index 2 = plate side)

Standard models

Standard models	Part No.
ZW-2SR10-01- AA -01- V	3535364
ZW-2SR10-01- AA -04- V	3535377
ZW-2SR10-01- AA -10- V	3535380
ZW-2SR10-01- AA -16- V	3535383
ZW-2SR10-01- AA -22- V	3535405
ZW-2SR10-01- AA -30- V	3535406
ZW-2SR10-01- AAB -01- V	3535421
ZW-2SR10-01- AAB -04- V	3535422
ZW-2SR10-01- AAB -10- V	3535424
ZW-2SR10-01- AAB -16- V	3535445
ZW-2SR10-01- AAB -22- V	3535446
ZW-2SR10-01- AAB -30- V	3535447
ZW-2SR10-01- AB -01- V	3535407
ZW-2SR10-01- AB -04- V	3535408
ZW-2SR10-01- AB -10- V	3535412
ZW-2SR10-01- AB -16- V	3535413
ZW-2SR10-01- AB -22- V	3535414
ZW-2SR10-01- AB -30- V	3535416

other types on request

MODEL CODE

ZW -2SR10 –01 - AB -10 - V

Name and nominal size
Flow control valve
Sandwich plate type

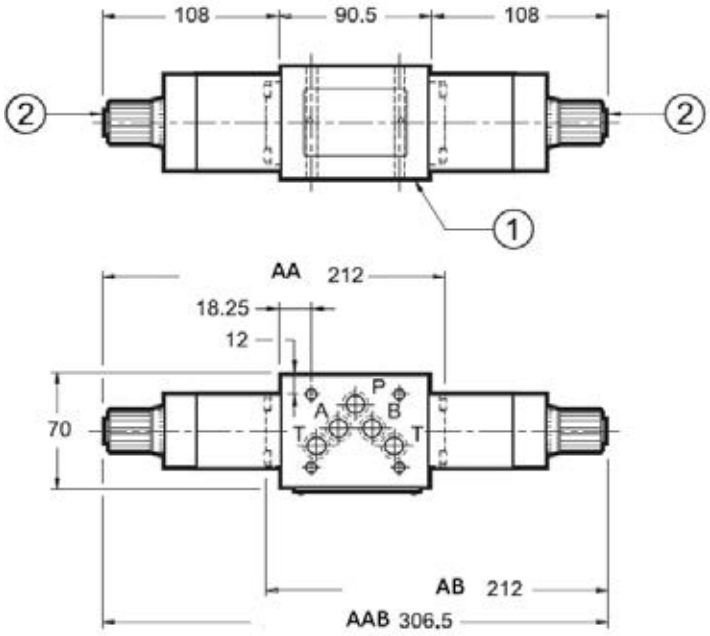
Type
01 = Standard, phosphated

Function
AA: Flow control function from A2 to A1
AB: Flow control function from B2 to B1
AAB: Flow control function from A2 to A1 and B2 to B1

Flow ranges
01 = 1 l/min
04 = 4 l/min
10 = 10 l/min
16 = 16 l/min
22 = 22 l/min
30 = 30 l/min

Seal material
V = FKM (Standard)
N = NBR

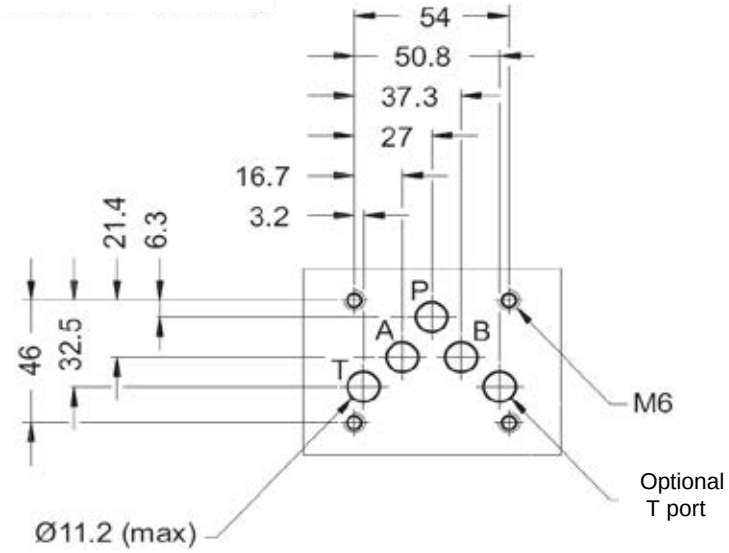
Dimensions



1 - Mounting plate with seal ring: 12.42 x 1.78 FKM
2 -Regulating knob. Turn left for rising the flow
3 - optional
4 - Side short circuit plate

All dimensions in mm.
Fastening elements are not in the scope of supply.

Mounting plate to ISO 4401-05-04-0-94



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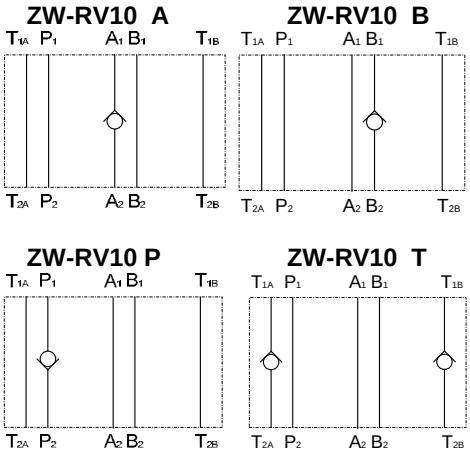
D - 66280 Sulzbach / Saar
Tel. 06897 / 509 -01
Fax 06897 / 509 -598
Email flutec@hydac.com

HYDAC INTERNATIONAL

Check valve
Sandwich plate type
ZW-RV10

up to 350 bar
up to 100 l/min

SYMBOL



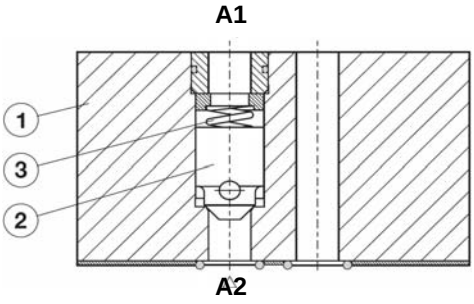
FEATURES
- Hole pattern to DIN 24340, ISO 4401, nominal size 10
- Check valve sandwich plate type with check function in one direction, free backflow in the opposite direction
- easy to assemble under body mounted spool valves to DIN 24340, to ISO 4401 (use longer screws)
- type to ISO ISO 7790

Types
- type A: Check valve in line A
- type B: Check valve in line B
- type P: Check valve in line P
- type T: Check valve in line T

SPECIFICATIONS

Nominal pressure:	max. 350 bar
Cracking pressure:	0,4 bar
Nominal flow:	max. 100 l/min
Fluids:	Hydraulic fluid to DIN 51524 part 1 and 2
Media operating temp. range:	-20°C up to max. +70°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	15 – 380 mm²/s is recommended
Filtration:	Class 20/18/15 to ISO 4406 or cleaner ISO 4410 Class 20/18/15 to ISO 4406
Weight:	2,77 kg

Function

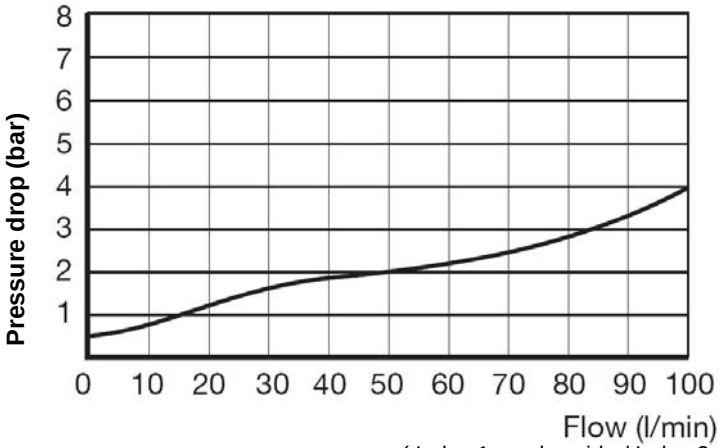


1 - Housing
2 - RV insert
3 - Spring

PERFORMANCE

Pressure drop Δp-Q

measured at ν = 32mm²/s and T_{oil} = 50° C



(Index 1 = valve side / Index 2= sub plate side)

E 5.199.1 /01.13

Standard models	Part No.
ZW-RV10-01-A-0,4-V	6078903
ZW-RV10-01-B-0,4-V	6078904
ZW-RV10-01-P-0,4-V	6078905
ZW-RV10-01-T-0,4-V	6078906

other types on request

MODEL CODE

ZW-RV10 – 01 - A 0,4 - V

Name and nominal size
check valve
Sandwich plate type NW6

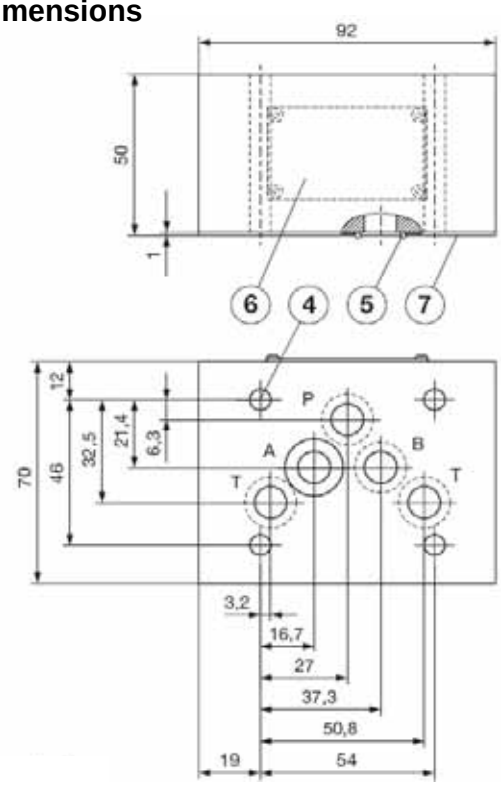
Series
01 = Standard, phosphated

Type
A = check valve in line A
B = check valve in line B
P = check valve in line P
T = check valve in line T

Cracking pressure
0,4 = 0,4 bar

Seal material
V = FKM (Standard)
N = NBR

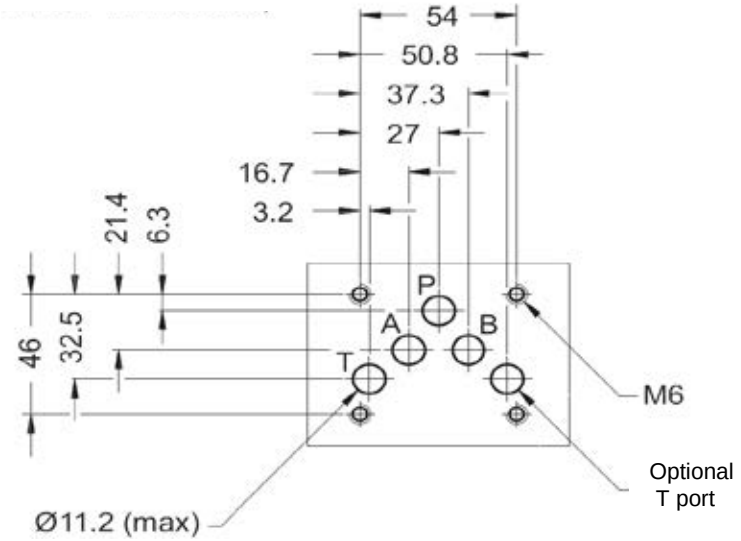
Dimensions



4 - Bore holes for fixing screws M6
5 - O-Ring 12,42 x 1,78 FKM
6 - Type plate
7 - O-Ring plate

All dimensions in mm.
Fastening elements are not in the scope of supply.

Mounting plate to ISO 4401-05-04-0-94



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Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
D - 66280 Sulzbach / Saar
Tel. 06897 / 509 -01
Fax 06897 / 509 -598
Email flutec@hydac.com

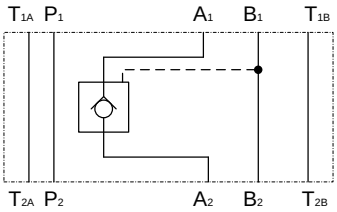
HYDAC INTERNATIONAL

Check Valve
pilot to open
Sandwich plate type
ZW-RP10

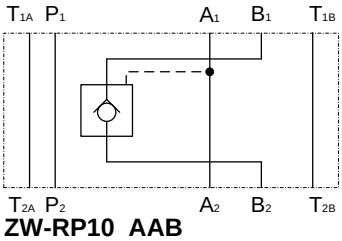
up to 350 bar
up to 100 l/min

SYMBOL

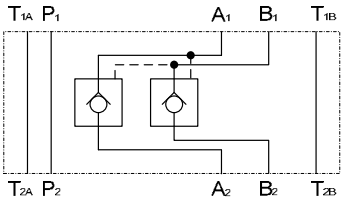
ZW-RP10 AA



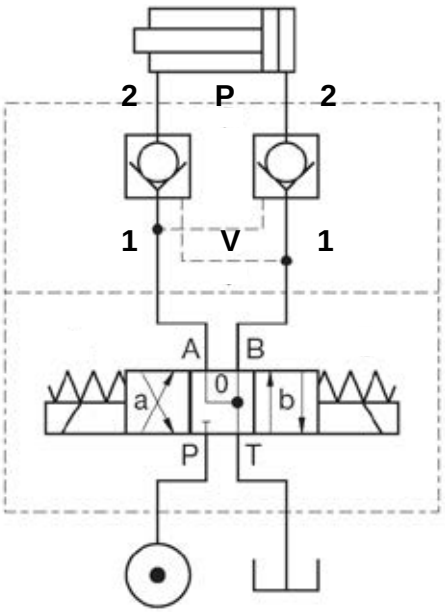
ZW-RP10 AB



ZW-RP10 AAB



Function



FEATURES

- Hole pattern to DIN 24340, ISO 4401, nominal size 10
- Pilot top open check valve sandwich plate type with check function in one direction, free backflow in the opposite direction – to open also in the opposite direction
- easy to assemble under body mounted spool valves to DIN 24340, to ISO 4401 (use longer screws)
- adjustable by tool

Types

- type AA: check in line A
- type AB: check in line B
- type AAB: check in line A and B

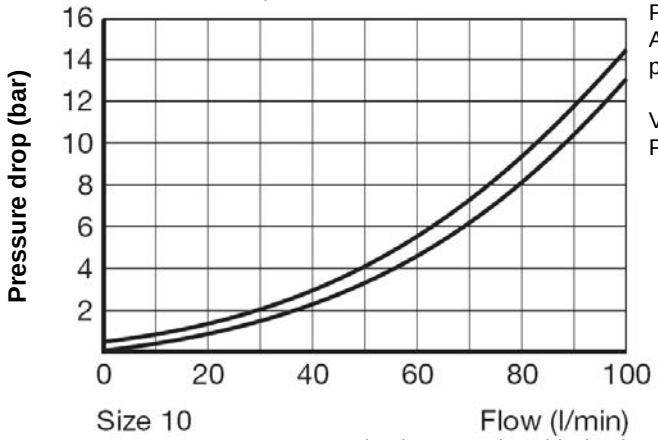
SPECIFICATIONS

Nominal pressure:	max. 350 bar
Ratio:	3,6 : 1
Cracking pressure:	0,5 bar
Nominal flow:	max. 100 l/min
Fluids:	Hydraulic fluid to DIN 51524 part 1 and 2
Media operating temp. range:	-20°C up to max. +70°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	15 – 380 mm²/s is recommended
Filtration:	Class 20/18/15 to ISO 4406 or cleaner ISO 4410 Class 20/18/15 to ISO 4406
Weight:	3,5 kg incl. valve

PERFORMANCE

measured at ν = 32mm²/s and T_{oil} = 50° C

Pressure drop Δp-Q



P → V (1-2)
Against spring pressure

V → P (2-1)
Pilot open

(Index 1 = valve side / Index 2= sub plate side)

E 5.199.2 /01.13

Standard models	Part No.
ZW-RP10-01-AA-V	6078912
ZW-RP10-01-AB-V	6078913
ZW-RP10-01-AAB-V	6078914

other types on request

MODEL CODE

ZW-RP10 – 01- AA - V

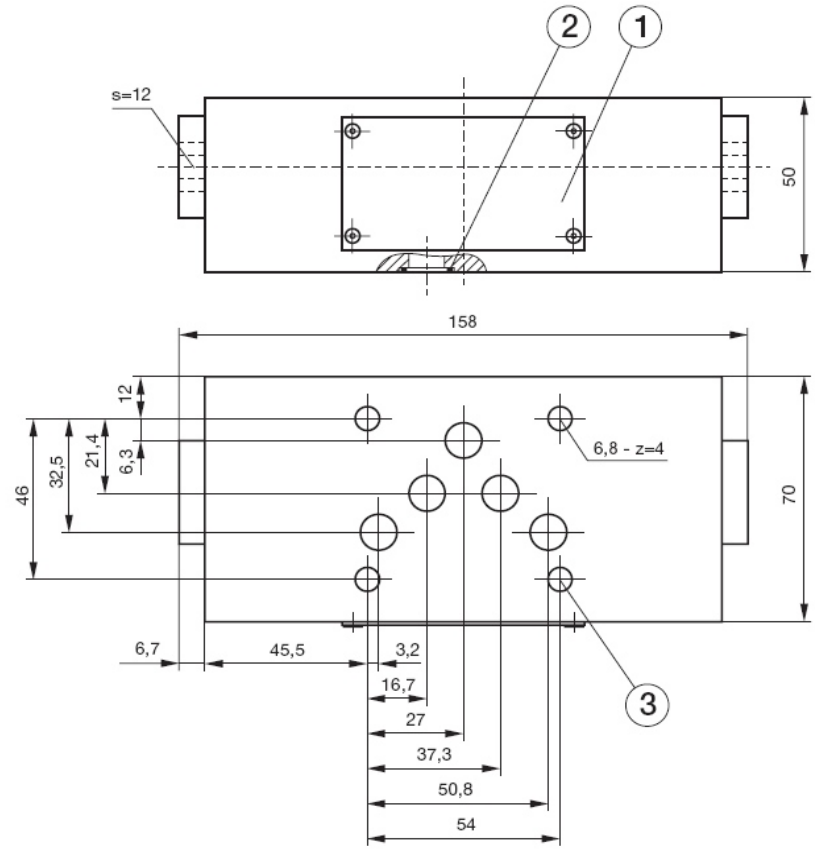
Name and nominal size
Pilot to open check valve
Sandwich plate type NW10

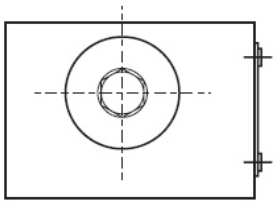
Series
01 = Standard, phosphated

Type
AA = check in line A
AB = check in line B
AAB = check in both lines

Seal material
V = FKM (Standard)
N = NBR

Dimensions

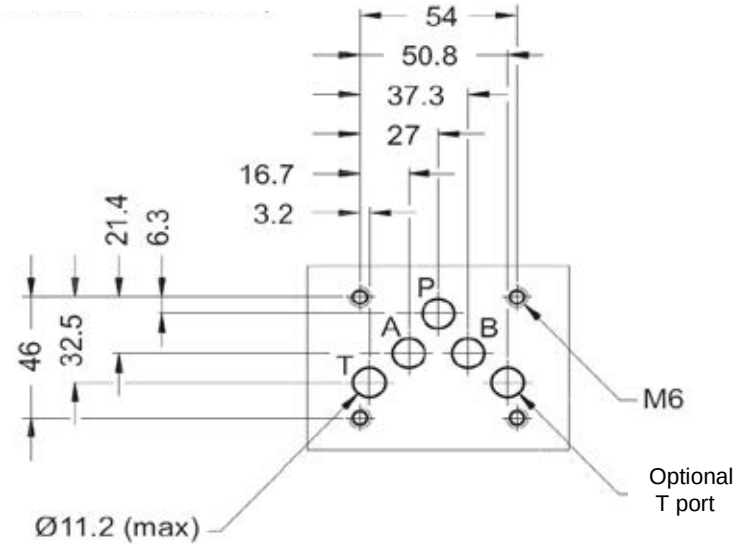




1 - Type plate
2 - O-Ring 12,42 x 1,78 FKM
3 - Bore holes for fixing screws M6

All dimensions in mm.
Fastening elements are not in the scope of supply.

Mounting plate to ISO 4401-05-04-0-94



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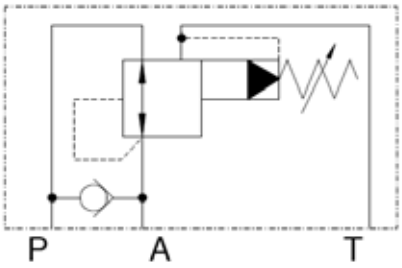
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
D - 66280 Sulzbach / Saar
Tel. 06897 / 509 -01
Fax 06897 / 509 -598
Email flutec@hydac.com

HYDAC INTERNATIONAL

Pressure Reducing Valve pilot operated
Subplate to ISO 24340
VP-DRP6

SYMBOL



up to 350 bar
up to 60 l/min

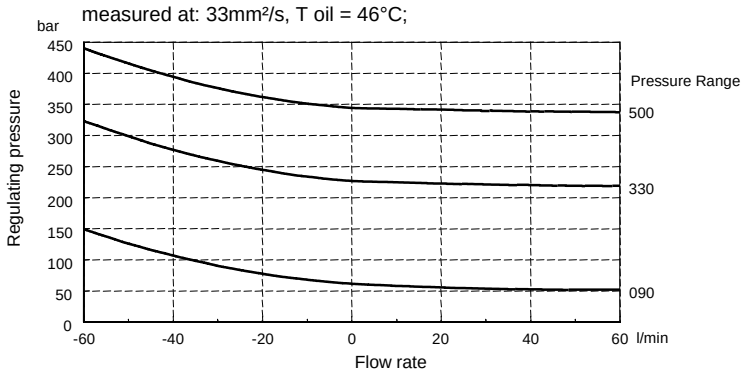
FEATURES
- Hole pattern to ISO 24340, Nominal size 6
- Pilot operated pressure reducing valve
- Full backflow in the opposite direction by built-in check valve (cracking pressure 0,5 bar)

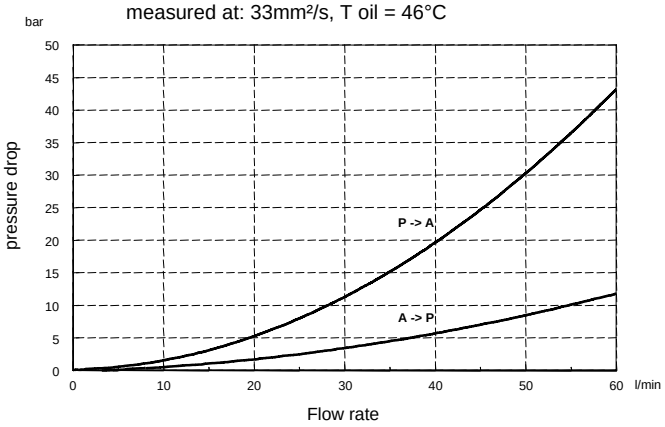
SPECIFICATIONS

Operating pressure:	max. 350 bar
Flow rate:	max. 60 l/min
Leakage (internal):	< 0,5 l/min
Fluids:	Hydraulic oil to DIN 51524 part 1 and 2
Temp. range of the operating fluid:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	7,4 – 400 mm²/s is recommended
Filtration:	Class 21/19/16 according to ISO4406
Installation:	no orientation restrictions
Hole pattern:	ISO 24340 Form A6
Weight:	1,2 kg

PERFORMANCE
measured at ν= 36 mm²/s and T_{oil} = 50° C

Pressure Drop Δp /Q





E 5.249.15 /01.13

Models on request	Part No.
VP-DRP6 090VR S01/N	3497267
VP-DRP6 330VR S01/N	3497268
VP-DRP6 500VR S01/N	3497269

MODEL CODE

VP-DRP6 090 VR S01/V

Name and size
Pressure reducing valve pilot operated NW 6

Pressure ranges
090 = up to 60 bar
330 = up to 230 bar
500 = up to 350 bar

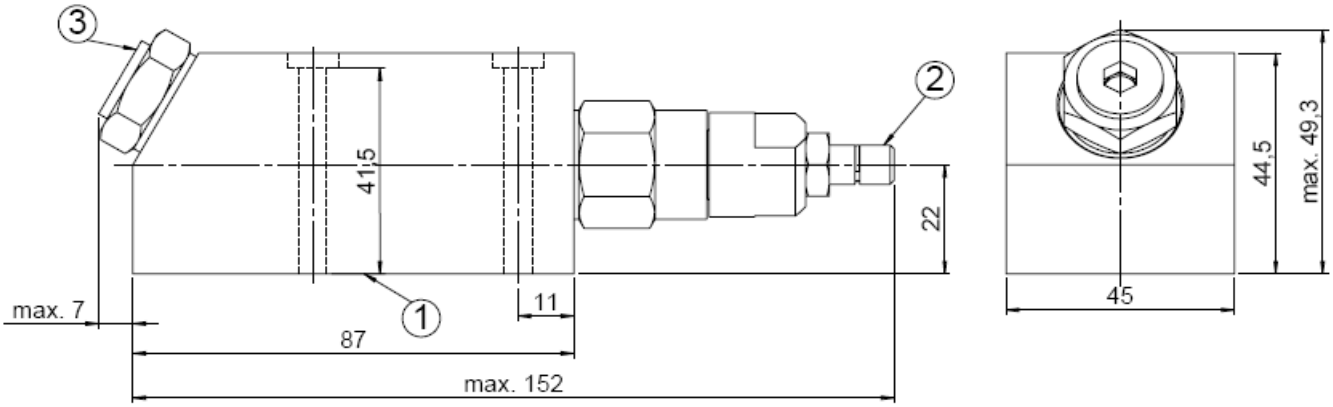
Adjustment
V = adjustable by tool

Check valve
R (cracking pressure 0,5 bar)

Type
S01 = Standard

Seals
V = FKM (Standard)
N = NBR

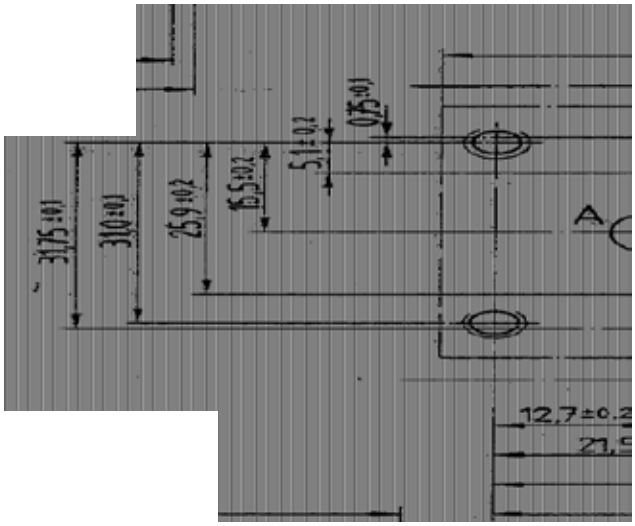
DIMENSIONS



1) Mounting plate with O-rings: 4x O-Ring 9,25 x 1,78 FKM
2) Pressure reducing valve adjustable by tool
3) Check valve

Fastening screws: 4x Allen key M5 x 50 10.9
Torque: 5 Nm + 0,5 Nm
All dimensions in mm. Fastening elements are not in the scope of delivery.

Mounting plate to ISO 24340 Form A6



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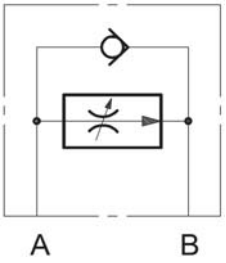
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

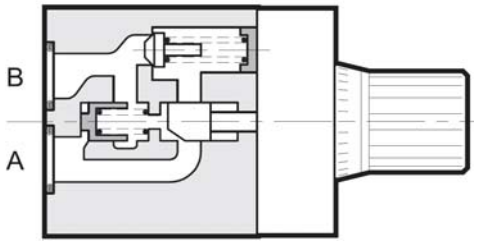
Flow Regulator pressure-compensated
Subplate to ISO6263
VP-2SR6

SYMBOL



Up to 250 bar
Up to 30 l/min

FUNCTION



FEATURES

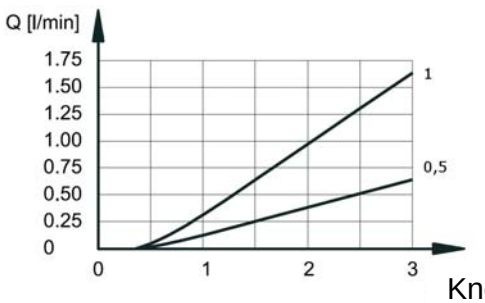
- Hole pattern to ISO 6263-03, Nominal size 6
- Adjustable flow control valve subplate mounting for flow control in one direction and full backflow in the opposite direction
- Independent from pressure by integrated pressure compensator
- Adjustable by turning knob

SPECIFICATIONS

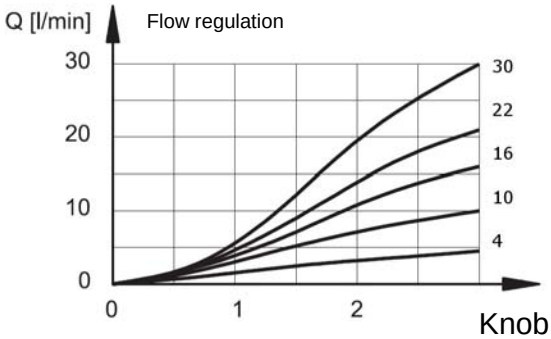
Operating pressure:	max. 250 bar
Minimal pressure difference:	max. 10 bar between A and B
Flow rate:	max. 0,5 /1 /4 /10 /16 /22 /30 l/min max. 40 l/min by the check valve (cracking pressure 0,5 bar)
Minimal adjustable Flow rate:	0,025 l/min
Operating fluid:	hydraulic oil to DIN 51524 part 1 and 2
Operating fluid temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	7,4 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406
Weight:	1,3 kg

PERFORMANCE

measured at ν= 36 mm²/s and T_{oil} = 50° C

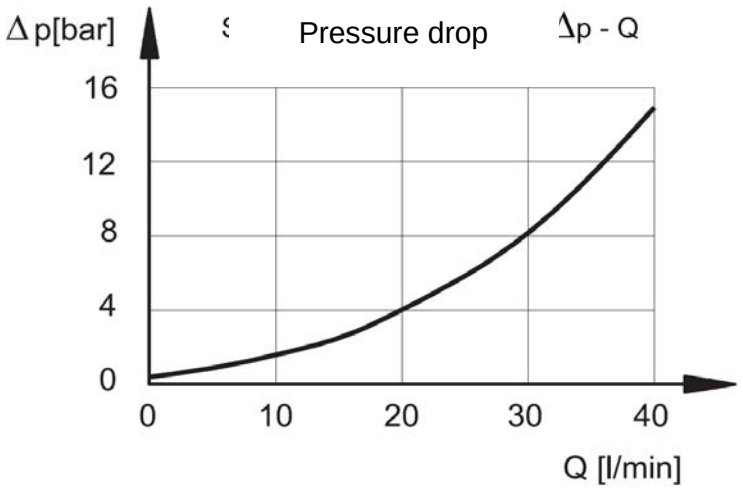


Knob turns



Knob turns

B -> A



E 5.249.9.0 /01.13

Standard models	Part No.
VP-2SR6 D05SR S01/V	3541093
VP-2SR6 D1SR S01/V	3541094
VP-2SR6 D4SR S01/V	3541166
VP-2SR6 D10SR S01/V	3541169
VP-2SR6 D16SR S01/V	3541172
VP-2SR6 D22SR S01/V	3541173
VP-2SR6 D30SR S01/V	3541175

Other models on request

MODEL CODE

VP-2SR6 D 05 S R S01 / V

Name and size
2-way flow control valve nominal size 6

Curve
D = degressive

Flow rate code
05 = 0,5 l/min
1 = 1 l/min
4 = 4 l/min
10 = 10 l/min
16 = 16 l/min
22 = 22 l/min
30 = 30 l/min

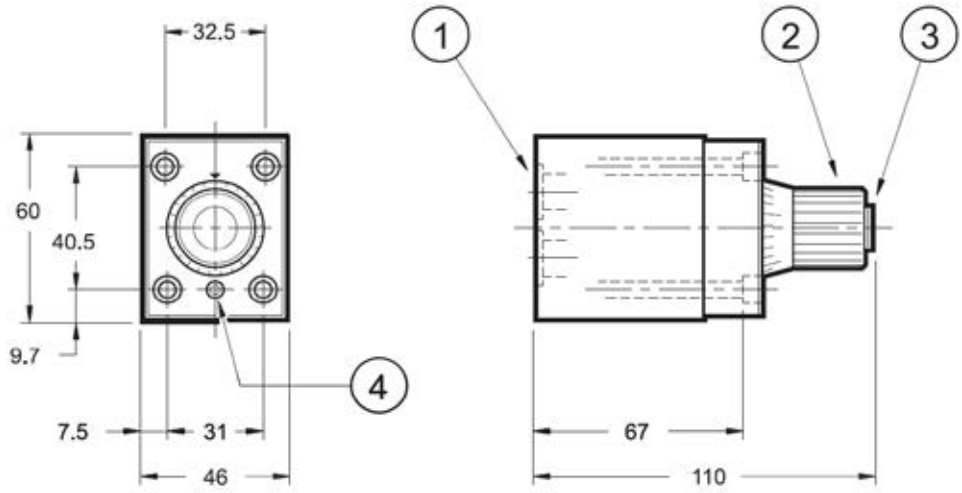
Turning knob with scale

Check valve
R (cracking pressure 0,5 bar)

Type
S01 = Standard

Seal material
V = FKM (Standard)
N = NBR

DIMENSIONS

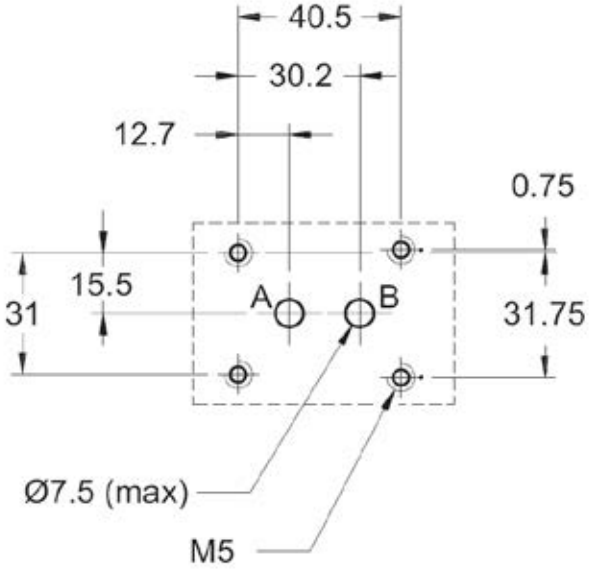


1) Mounting plate with O-rings:
2x 14 x 2 FKM
2) Turning knob (3 turns) by
turning clockwise the flow is rising
3) Regulation steps of the turning knob
4) Fastening screw of the
turning knob

Fastening screws:
4x Allen key M5x75 10.9
Torque: 5 Nm + 0,5 Nm

All dimensions in mm.
Fastening elements are not in the scope of delivery.

Mounting plate to ISO 6263-03-03-*-97



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HYDAC Fluidtechnik GmbH
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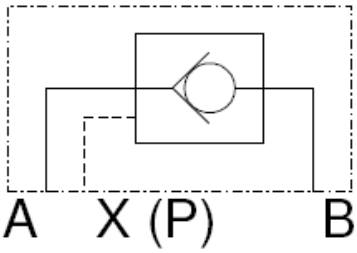
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

Check Valve
Hydraulically pilot to open
Subplate to ISO 24340
VP-RP6

SYMBOL



up to 350 bar
up to 60 l/min

FEATURES

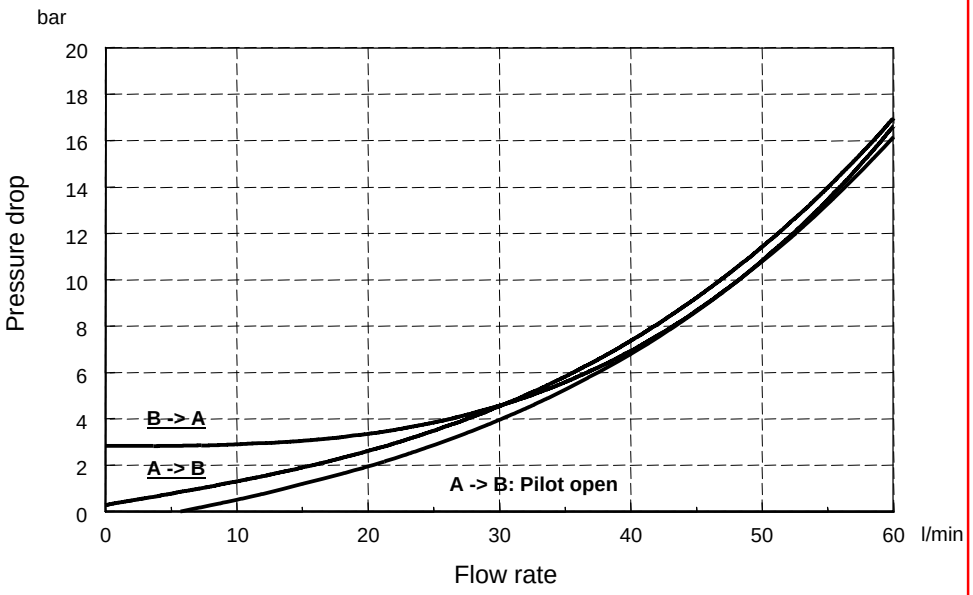
- Hole pattern to DIN 24340, Nominal size 6
- Pilot to open check valve

SPECIFICATIONS

Operating pressure:	max. 350 bar
Flow rate:	max. 60 l/min
Leakage (internal):	0,1 cc/min
Pilot ratio:	3,1 : 1
Cracking pressure:	1 bar
Fluids:	Hydraulic oil to DIN 51524 part 1 and 2
Temp. range of the operating fluid:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	7,4– 400 mm²/s is recommended
Filtration:	Class 21/19/16 according to ISO4406
Installation:	no orientation restrictions
Hole pattern:	ISO24340 Form A6
Weight:	1,0 kg

PERFORMANCE

measured at ν= 33 mm²/s and T_{oil} = 46° C



E 5.249.16 /01.13

Models on request
VP-RP6 15 S01/N

Part No.
3497270

MODEL CODE

VP-RP6 15 S01 /V

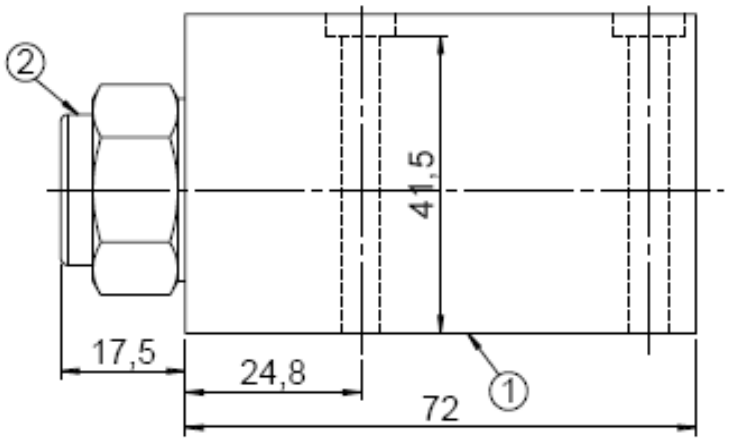
Name and size
Check valve pilot to open NW 6

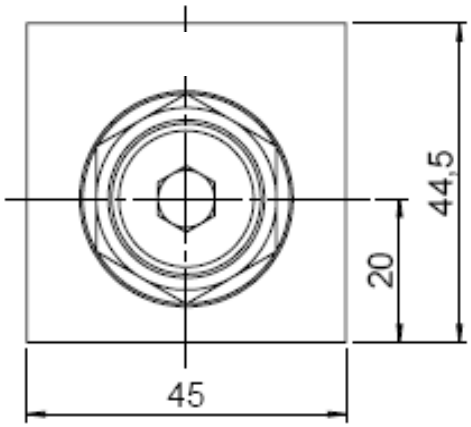
Cracking pressure
15 = 1 bar

Type
S01 = Standard

Seals
V = FKM (Standard)
N = NBR

DIMENSIONS



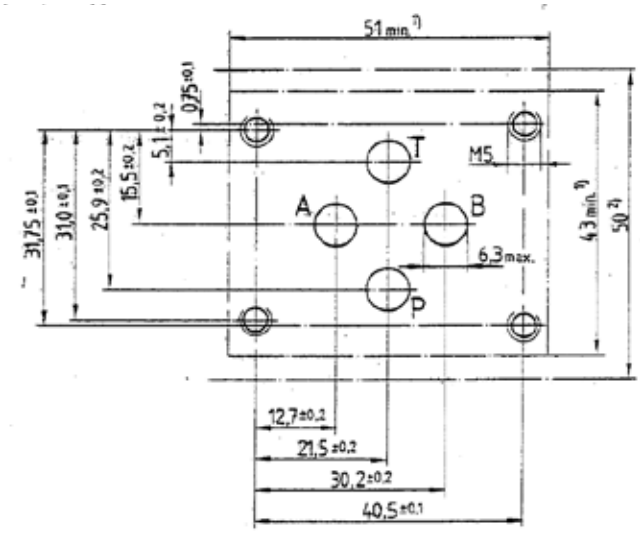


1) Mounting plate with O-rings:
4x O-Ring 9,25 x 1,78 FKM
2) Check valve pilot to open

Fastening screws: 4x Allen key M5 x 50 10.9
Torque: 5 Nm + 0,5 Nm

All dimensions in mm.
Fastening elements are not in the scope of delivery.

Mounting plate to ISO 24340 Form A6



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Tel.: 06897 / 509 -0
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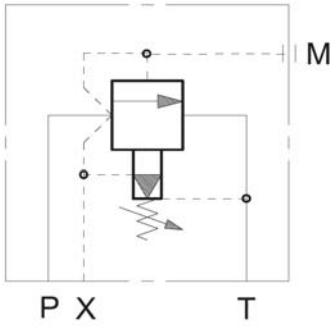
Email: flutec@hydac.com

HYDAC INTERNATIONAL

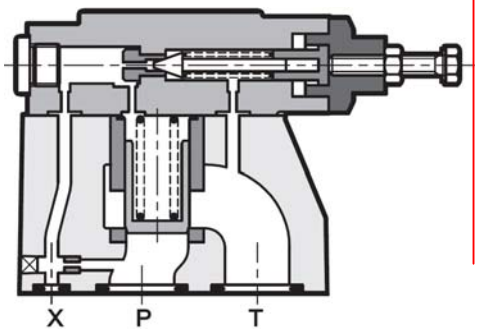
Pressure Relief Valve pilot operated
Subplate to ISO 6264
VP-DBP10

SYMBOL



up to 350 bar
up to 400 l/min

FUNCTION



FEATURES

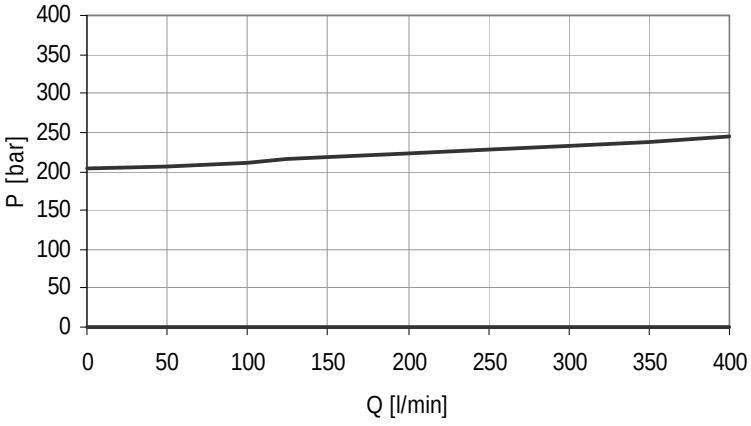
- Hole pattern to ISO 6264-08, Nominal size 10
- pilot operated pressure relief valve
- low flow loss by maximum size bore holes
- Remote control over port X possible

SPECIFICATIONS

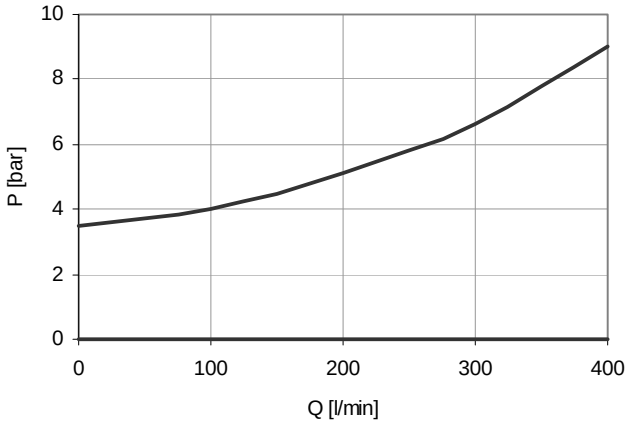
Operating pressure:	max. 350 bar
Flow rate:	max. 400 l/min
Operating fluid:	hydraulic oil to DIN 51524 part 1 and 2
Operating fluid temperature range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	7,4 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406
Installation:	no orientation restriction
Hole pattern:	ISO 6264-08
Weight:	4,3 kg

PERFORMANCE

measured at ν= 36 mm²/s and T_{oil} = 50° C



Pressure differential Δp/Q



E 5.249.7.0 /01.13

Standard models	Part No.
VP-DBP10 070V S01/V	3541089
VP-DBP10 210V S01/V	3541090
VP-DBP10 350V S01/V	3541091

Other models on request

MODEL CODE

VP-DBP10 070V S01 /V

Name and size
Pressure relief valve pilot operated NW 10

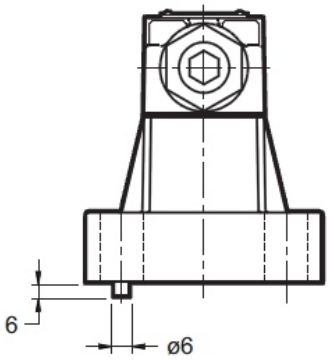
Pressure ranges
070 = up to 70 bar
210 = up to 210 bar
350 = up to 350 bar

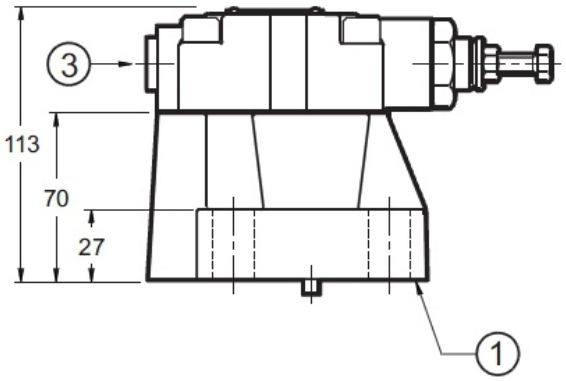
Adjustability
V = adjustable with tool

Type
S01 = Standard

Seal material
V = FKM (Standard)
N = NBR

DIMENSIONS

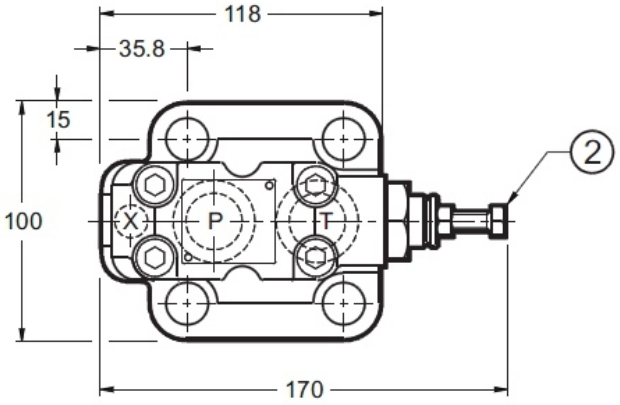




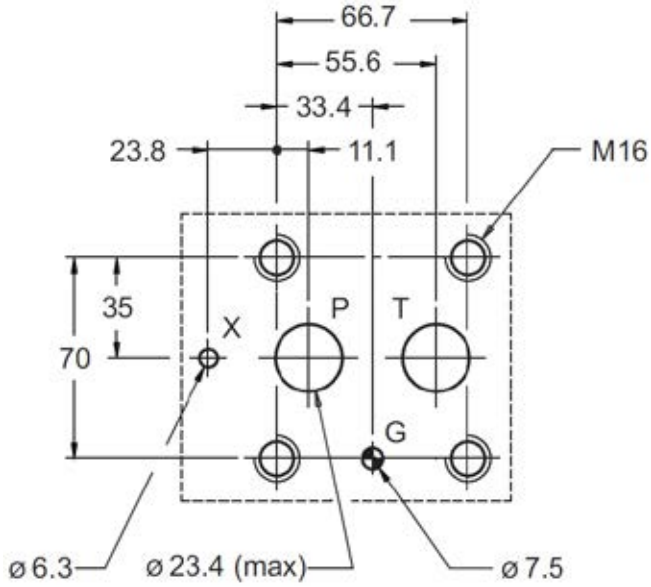
1) Mounting plate with O-rings:
   2x O-Ring 29,82 x 2.62 90 Shore FKM
   1x O-Ring 9,13 x 2.62 90 Shore FKM
2) Allen screw: size 13
   by turning clockwise the pressure is rising
3) Port for measuring gauge Y 3/8" BSP

Fastening screws: 4x Allen key M12x40 10.9
Torque: 70 Nm + 5 Nm

All dimensions in mm.
Fastening elements are not in scope of delivery.



Mounting plate to ISO 6264-06-09-*-97



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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

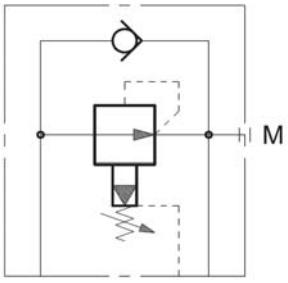
HYDAC INTERNATIONAL

Pressure Reducing Valve pilot operated

Subplate to ISO 5781

VP-DRP10

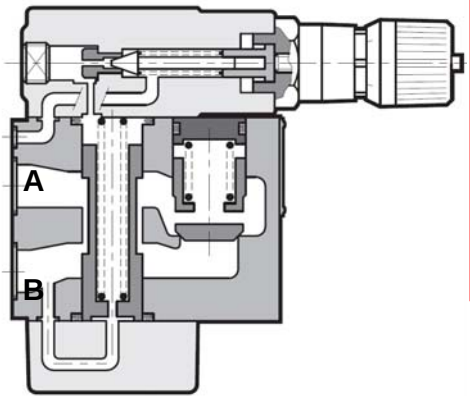
SYMBOL



A Y B

up to 250 bar
up to 110 l/min

FUNCTION



FEATURES

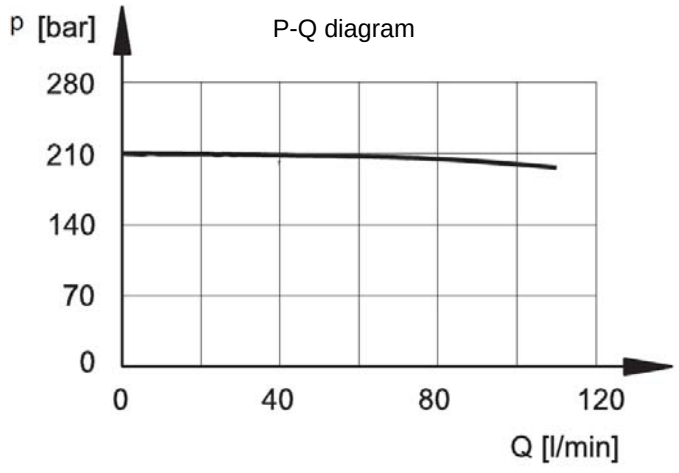
- Hole pattern to ISO 5781-08, Nominal size 10
- pilot operated pressure reducing valve
- low flow loss by maximum size bore holes
- free flow in opposite direction by built-in check valve (cracking pressure 0,5 bar)

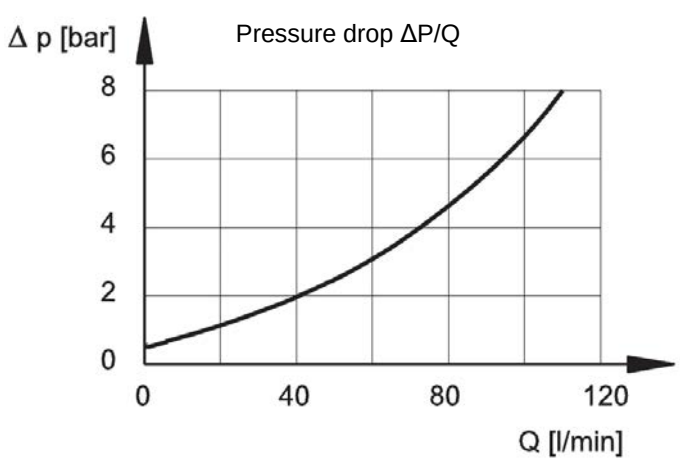
SPECIFICATIONS

Operating pressure:	max. 250 bar
Flow rate:	max. 110 l/min
Leakage:	< 0,8 l/min
Operating fluid:	hydraulic oil to DIN 51524 part 1 and 2
Operating fluid temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	7,4 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406
Installation:	no orientation restriction
Hole pattern:	to ISO 5781-08
Weight:	6,1 kg

PERFORMANCE

measured at ν= 36 mm²/s and T_{oil} = 50° C





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Standard models	Part No.
VP-DRP10 210VR S01/V	3541092

Other models on request

MODEL CODE

VP-DRP10 210 V R S01 /V

Name and size
Pressure reducing valve pilot operated NW 10

Pressure ranges
210 = 5 up to 210 bar

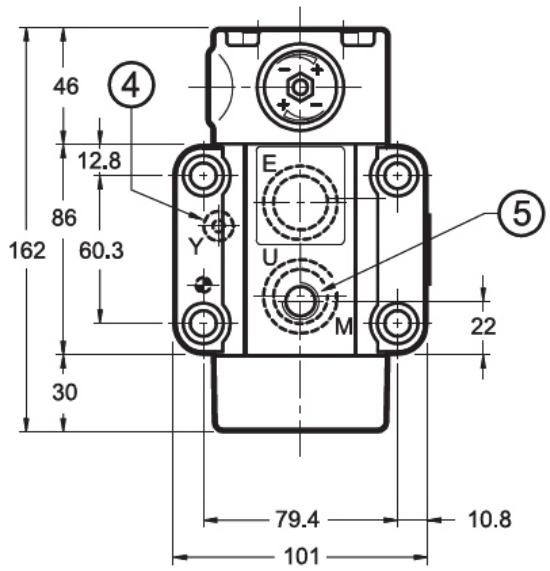
Adjustability
V = adjustable by turning knob

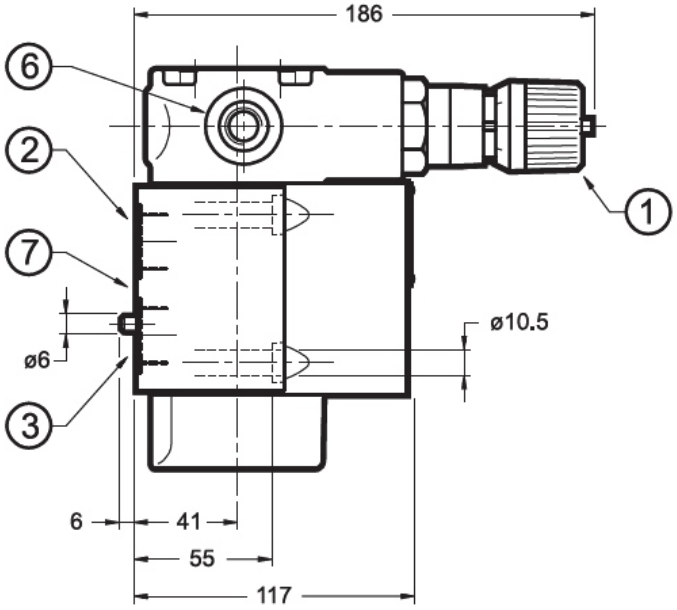
Check valve
R (cracking pressure 0,5 bar)

Type
S01 = Standard

Seal material
V = FKM (Standard)
N = NBR

DIMENSIONS



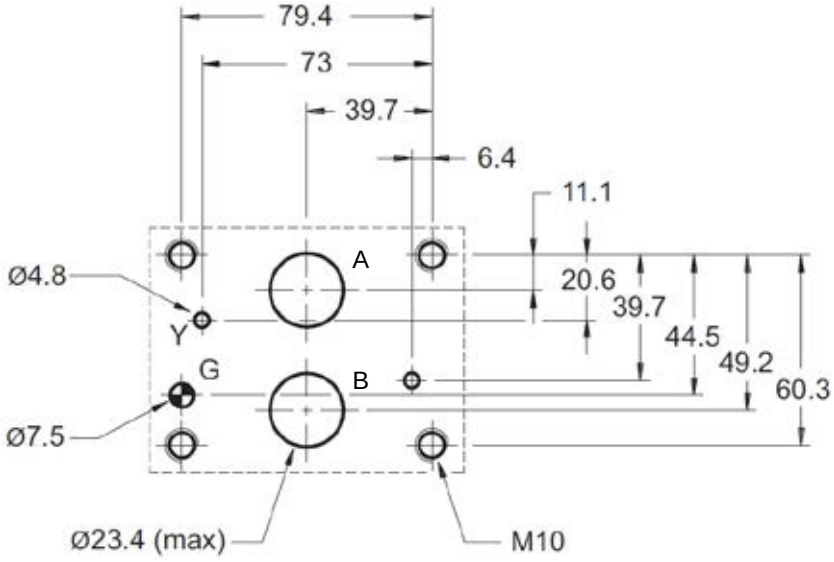


1) SICBLOC turning knob (push and turn at same time)
2) Inlet port
3) Outlet port
4) Leakage port
5) Port for measuring gauge 1/4" NPT)
6) Leakoil secondary port for line 1/4" BSP

7) Mounting plate with O-rings:
2x O-Ring 25,07 x 2,62 90 Shore FKM
2x O-Ring 5,28 x 1,78 FKM

Fastening screws: 4x Allen key M10x70 10.9
Torque: 40 Nm + 4 Nm
All dimensions in mm.
Fastening elements are not in scope of delivery.

Mounting plate to ISO 5781-06-07-*-00



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66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

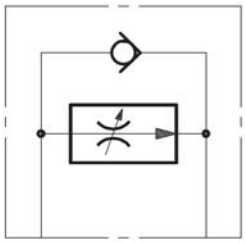
HYDAC INTERNATIONAL

Flow Regulator pressure-compensated

Subplate to ISO6263

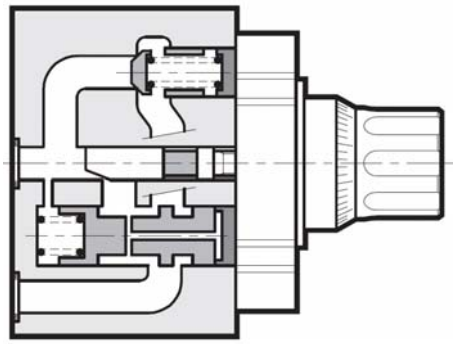
VP-2SR10

SYMBOL



Up to 320 bar
Up to 70 l/min

FUNCTION



FEATURES

- Hole pattern to ISO 6263-06, Nominal size 10
- Adjustable flow control valve subplate mounting for flow control in one direction and full backflow in the opposite direction
- Independent from pressure by integrated pressure compensator
- Adjustable by turning knob

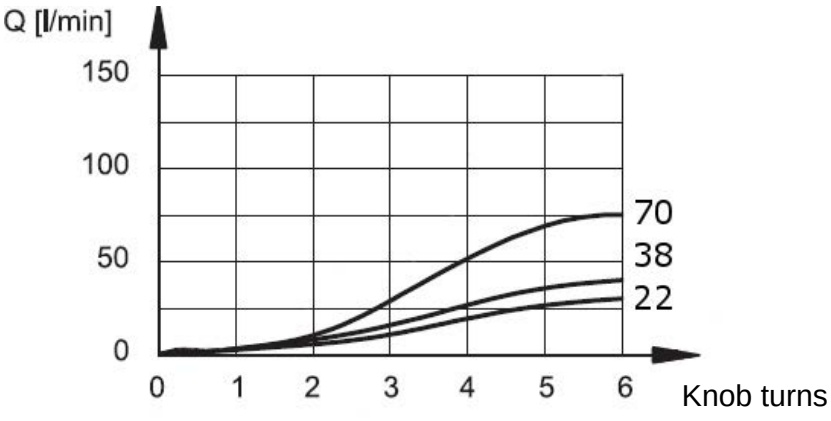
SPECIFICATIONS

Operating pressure:	max. 320 bar
Minimal pressure difference:	max. 10 bar between A and B
Flow rate:	max. /22 /38 / 70 l/min
Minimal adjustable Flow rate:	0,05 l/min
Operating fluid:	hydraulic oil to DIN 51524 part 1 and 2
Operating fluid temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 or cleaner
Weight:	3,6 kg
Cracking pressure of check:	0,5 bar

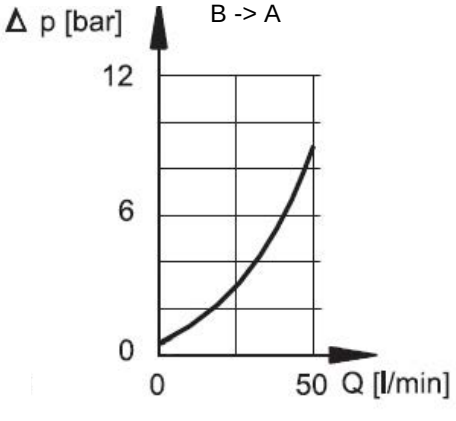
PERFORMANCE

measured at ν= 36 mm²/s and T_{oil} = 50° C

Flow control (measured at 36 mm²/s and 50°C)



Pressure drop B -> A



E 5.249.9.0 /01.13

Standard models	Part No.
VP-2SR10 D22SR S01/V	3541177
VP-2SR10 D38SR S01/V	3541179
VP-2SR10 D70SR S01/V	3541182

Other models on request

MODEL CODE

VP-2SR10 D 22 S R S01 / V

Name and size
2-way flow control valve nominal size 10

Curve
D = degressive

Flow rate code
22 = 22 l/min
30 = 30 l/min
70 = 70 l/min

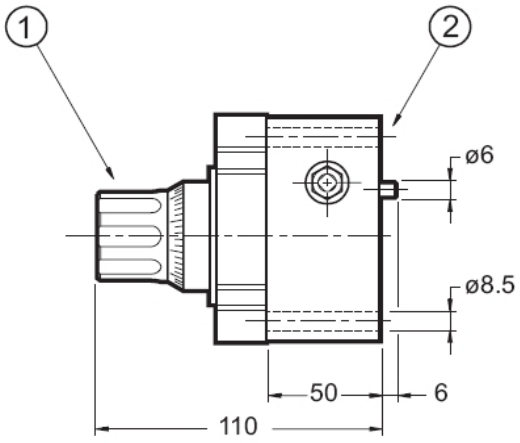
Turning knob with scale

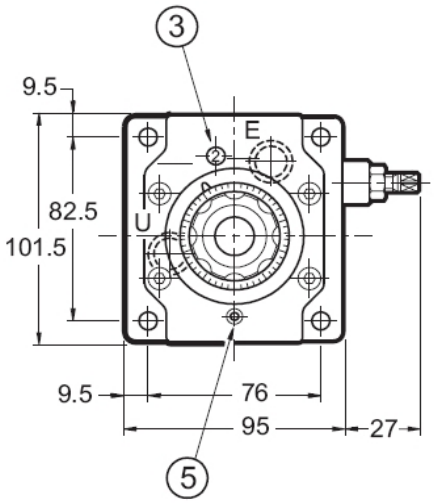
Check valve
R (cracking pressure 0,5 bar)

Type
S01 = Standard

Seal material
V = FKM (Standard)
N = NBR

DIMENSIONS



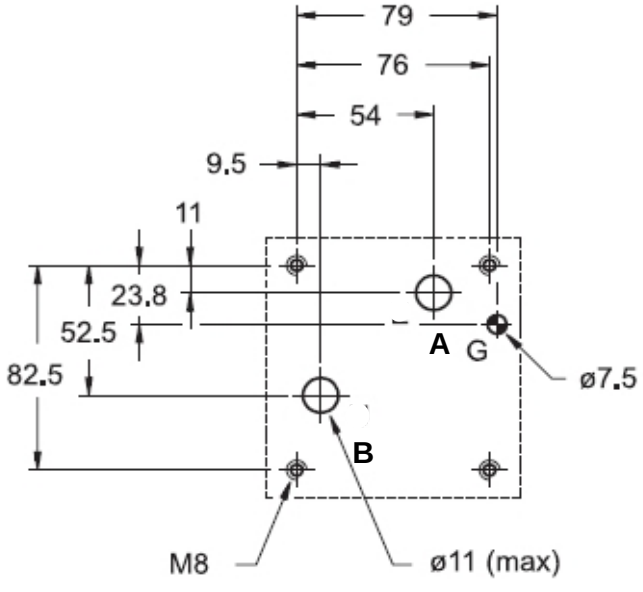


Turning knob (6 turns) by turning clockwise the flow is rising
Mounting plate with O-rings:
2x 15,06 x 2,62 FKM
Display
Fastening screw of the turning knob

stening screws:
allen key M8x60 10.9
rque: 20 Nm + 2 Nm

All dimensions in mm.
Fastening elements are not in the scope of delivery.

Mounting plate to ISO 6263-06-05-*-97



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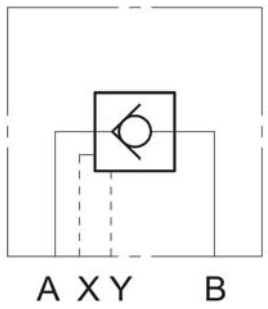
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

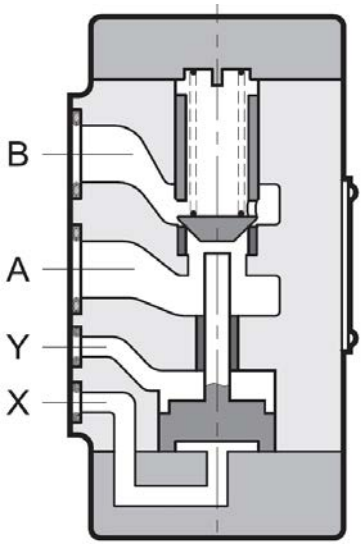
Check Valve
Hydraulically pilot to open
Subplate to ISO 5781
VP-RP10

SYMBOL



up to 320 bar
up to 100 l/min

FUNCTION



FEATURES

- Hole pattern to ISO 5781-08, Nominal size 10
- pilot to open check valve
- low flow loss by maximum size bore holes

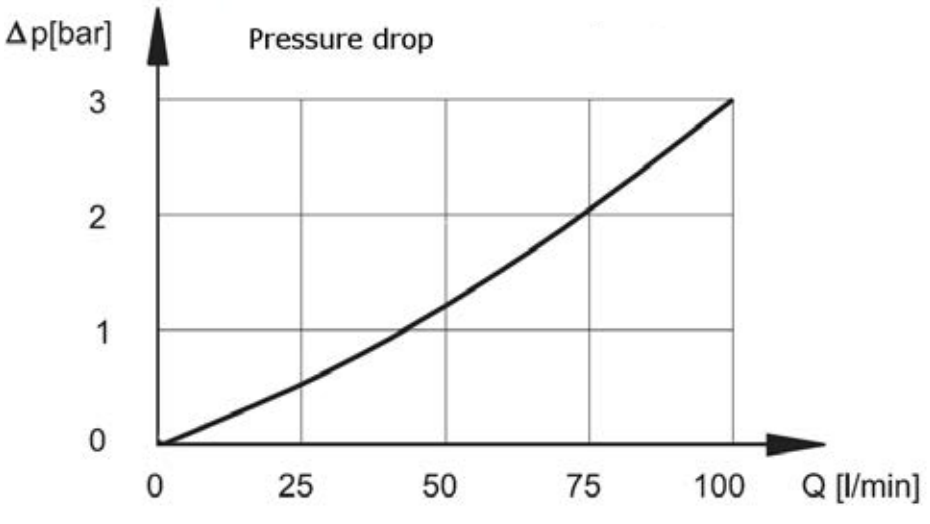
SPECIFICATIONS

Operating pressure:	max. 320 bar
Flow rate:	max. 100 l/min
Pilot ration:	3,4 : 1
Operating fluid:	hydraulic oil to DIN 51524 part 1 and 2
Operating fluid temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	7,4 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406
Installation:	no orientation restriction
Hole pattern:	according to ISO5781-08
Weight:	3,7 kg

PERFORMANCE

measured at ν= 36 mm²/s and T_{oil} = 50° C

The data in the diagram are valid for the flow from B→A and A→B with an open valve.
For the flow from ports A→B, with a closed valve please add the cracking pressure to the data in the diagram.



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Standard models	Part No.
VP-RP10 35 S01/V	3541184
VP-RP10 50 S01/V	3541188

Other models on request

MODEL CODE

VP-RP10 35 S01 /V

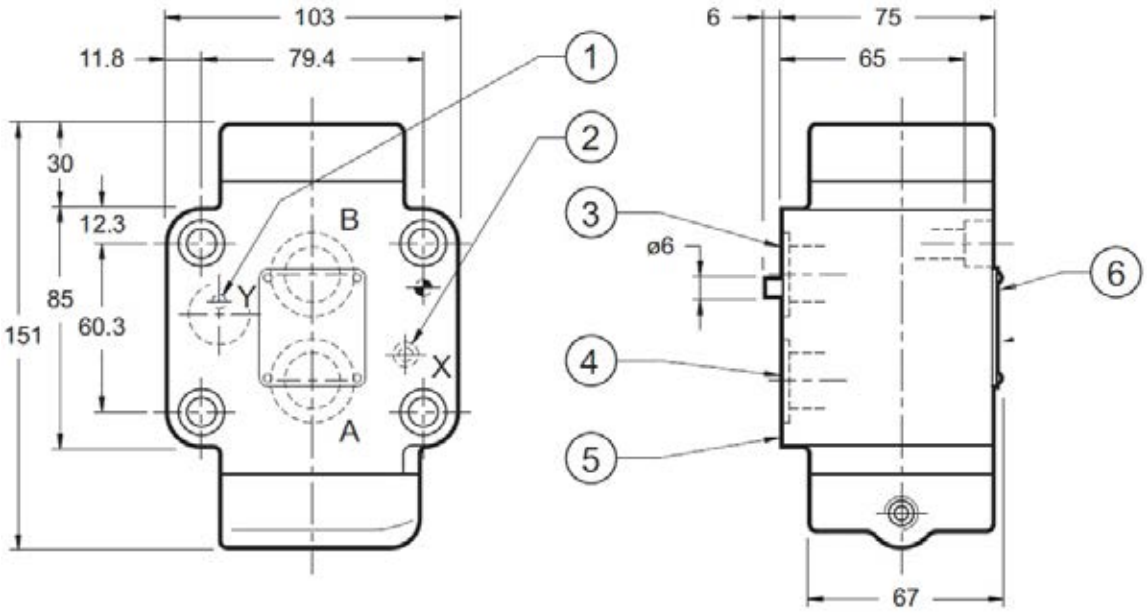
Name and size
Check valve pilot to open NW 10

Cracking pressure
35 = 3,5 bar
50 = 5,0 bar

Type
S01 = Standard

Seal material
V = FKM (Standard)
N = NBR

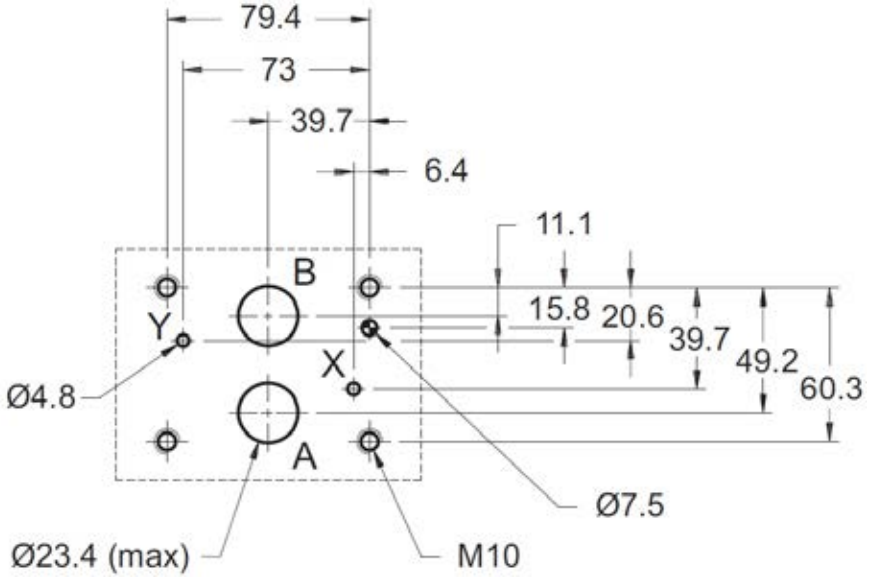
DIMENSIONS



1) External leakage line Y
2) Control port X
3) Outlet port B
4) Inlet port A
5) Mounting plate with O-rings, 2x O-Ring 17,13 x 2,62 FKM
   2x O-Ring 5,28 x 1,78 FKM
6) Type plate

Fastening screws: 4x Allen key M10x70 10.9, Torque: 40 Nm + 4 Nm
All dimensions in mm. Fastening elements are not in the scope of delivery.

Mounting plate to ISO 5781-08-07-*-00



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Tel.: 06897 / 509 -0
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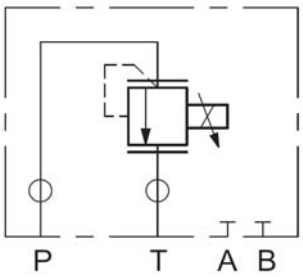
HYDAC INTERNATIONAL

Proportional Pressure Relief Valve direct acting

Subplate to ISO 4401

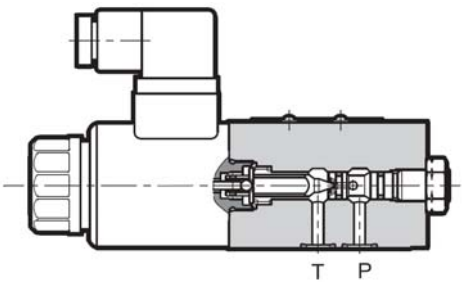
VP-PDB6

SYMBOL



up to 350 bar
up to 5 l/min

FUNCTION



FEATURES

- Hole pattern to ISO 4401-03, Nominal size 6
- Proportional pressure relief valve
- Pressures at port T are added to the adjusted value
- Electronic control by PEM-XD see brochure 5.249.2.0

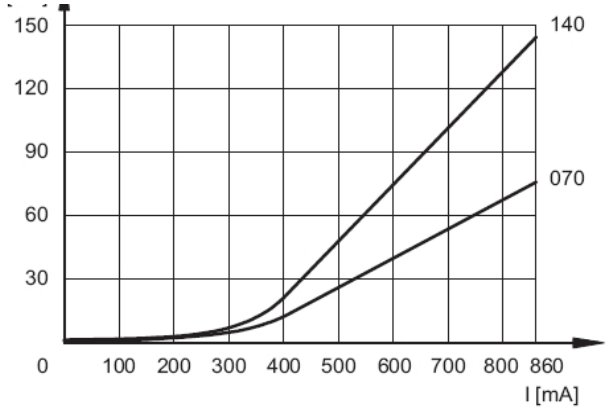
SPECIFICATIONS

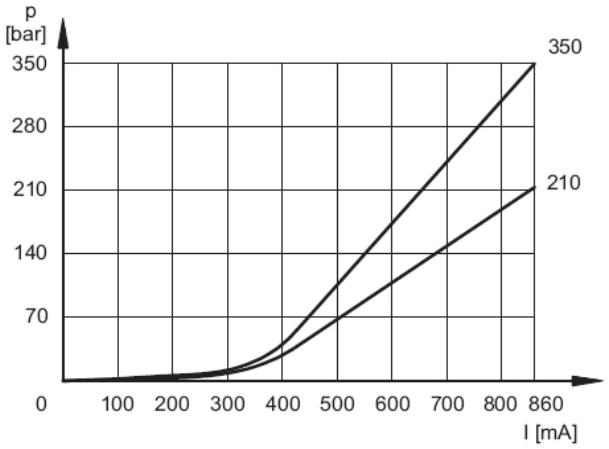
Operating pressure:	max. 350 bar an port P max. 2 bar an port T
Flow rate:	max. 5 l/min
Hysteresis	< 5 %
Repeatability:	< +/- 1,5 %
Operating fluid:	hydraulic oil to DIN 51524 part 1 and 2
Operating fluid temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-10°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 class 18/16/13
Switching time:	On: 80 ms Off: 40 ms
Type of voltage:	DC voltage
Nominal current:	0,86 A at 24V DC
Resistance at 20°C:	17,6 Ohm at 24V
Coil duty rating:	100% (Continuous)
Electro magnetic suitability: (EMC)	Emissions to EN 50081-1 suitability to EN 50082-2 to Norm 89/336 CEE
IP rating:	IP65 (if plug is mounted correctly)
Installation:	no orientation restrictions
Note:	Bleed system and valve before setting in motion
Hole pattern:	according to ISO4401-03-02-0-94
Weight:	1,4 kg

E 5.249.5.0 /01.13

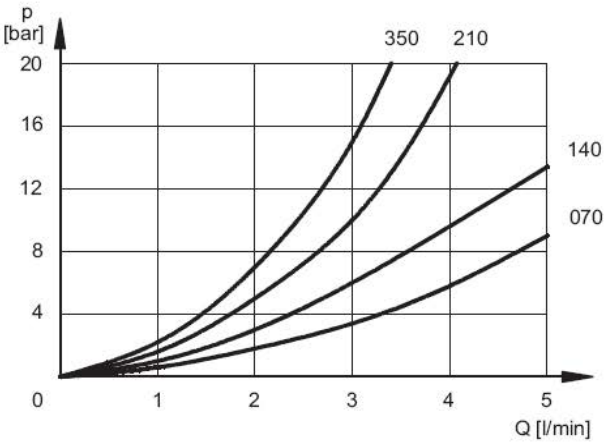
PERFORMANCE
measured at ν= 36 mm²/s and T_{oil} = 50° C

Pressure reducing diagram p=f (I)

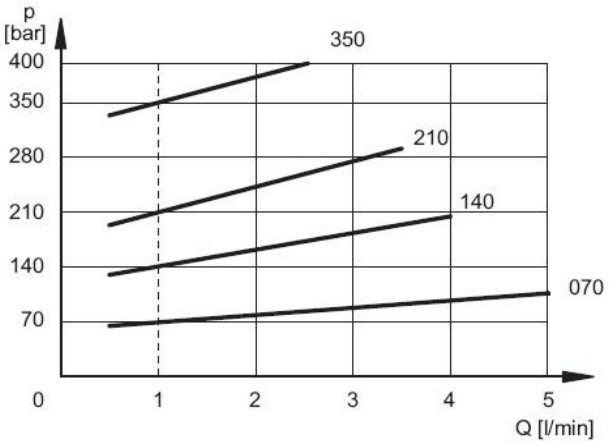




Minimal regulated pressure pmin=f (Q)



Pressure changes pmax = f (Q)



Standard models	Part No.
VP-PDB6 070 D01-24PG/V	3541046
VP-PDB6 140 D01-24PG/V	3541047
VP-PDB6 210 D01-24PG/V	3541048
VP-PDB6 350 D01-24PG/V	3541050

Other models on request

MODEL CODE

VP-PDB6 070 D01- 24PG /V

Name and size
Proportional pressure relief valve NW 6

Pressure ranges
070 = 0,7 – 70 bar
140 = 1,1 – 140 bar
210 = 1,8 – 210 bar
350 = 2,8 – 350 bar

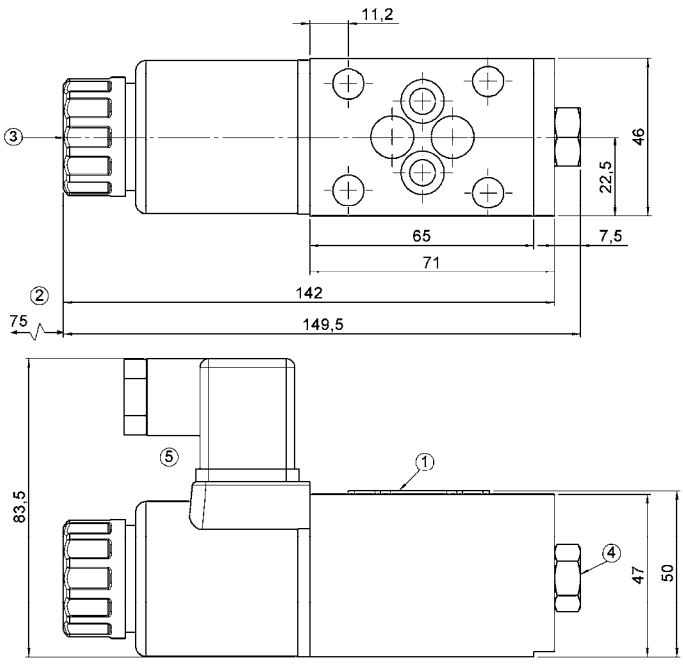
Type
D01 = Standard

Nominal voltage
24 = DC voltage 24 Volt

Plug type
PG = DIN plug to EN155301-803

Seal material
V = FkM (Standard)
N = NBR

DIMENSIONS

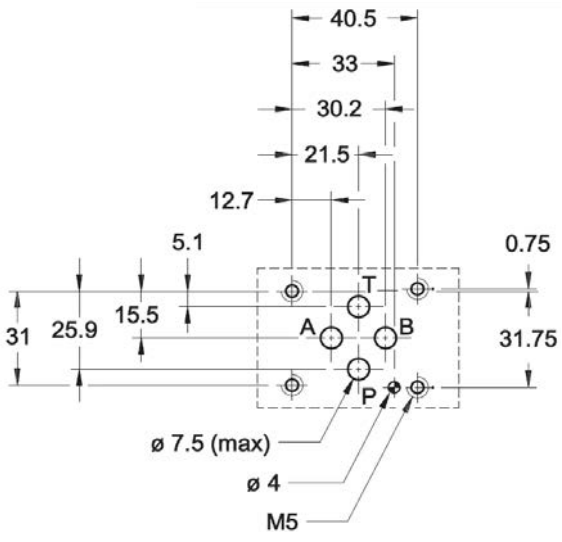


1) Mounting plate with O-rings: 4x 9,25 x 1,78 FkM
2) Free space for mounting the coil
3) Bleeding (key 2)
4) Sealed by the producer
5) DIN plug to EN175301-803 (in scope of delivery)
6) Free space for mounting the plugs

Fastening screws: 4x Allen key M5x30 10.9
Torque: 5 Nm + 0,5 Nm

All dimensions in mm.
Fastening elements are not in the scope of delivery.

Mounting plate to ISO 4401-03-02-0-05



Annotation
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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

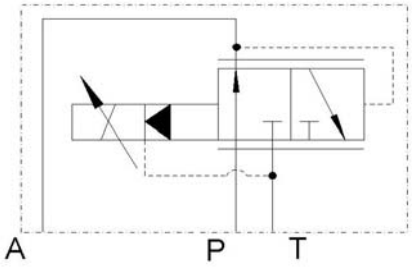
HYDAC INTERNATIONAL

Proportional Pressure Reducing Valve pilot operated

Subplate to ISO 24340

VP-PDRP6

SYMBOL



up to 350 bar
up to 60 l/min

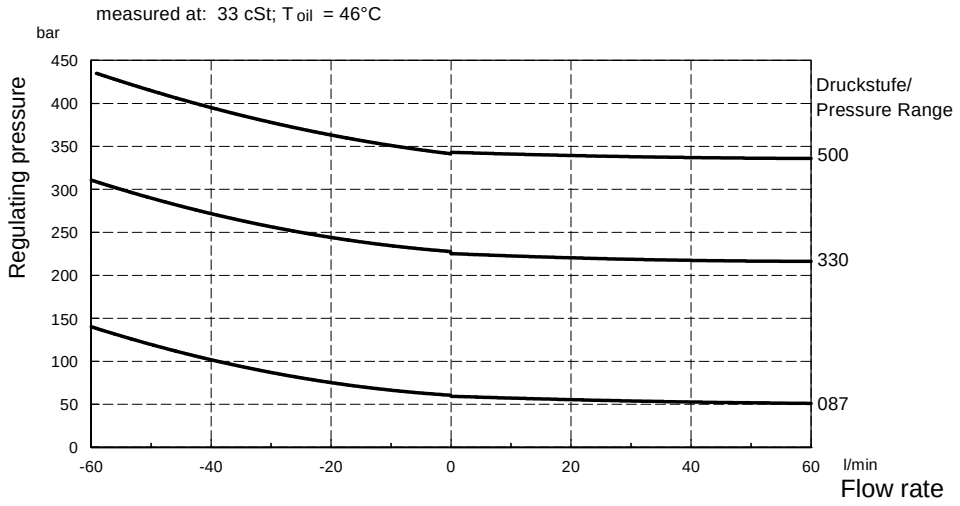
FEATURES

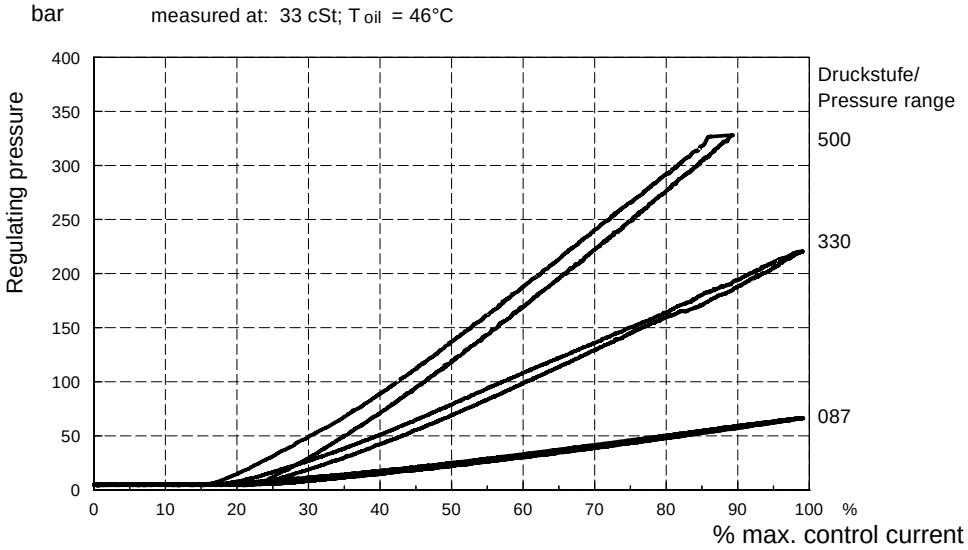
- Hole pattern to ISO 24340, Nominal size 6
- Proportional pressure reducing valve
- Pressures at port T are added to the adjusted value
- Electronic control by PEM-XD see brochure 5.249.2.0

SPECIFICATIONS

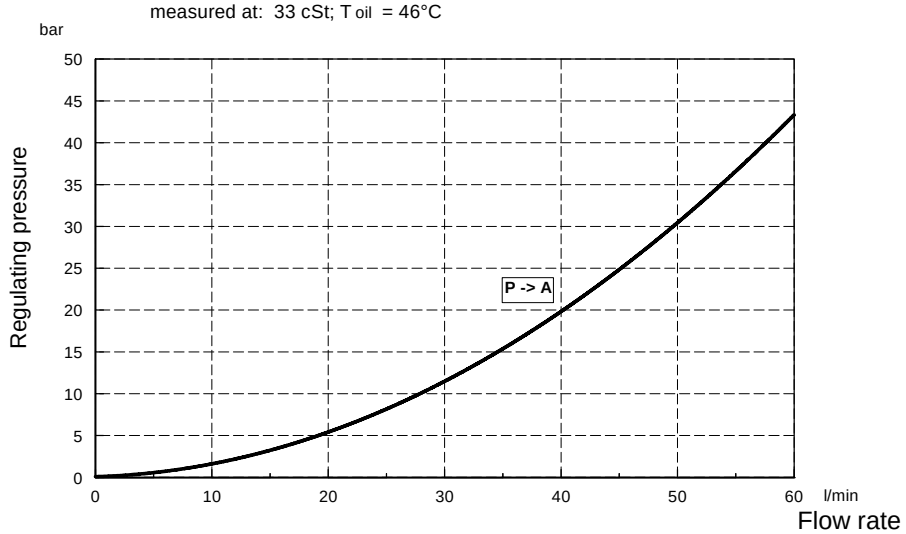
Operating pressure:	max. 350 bar
Flow rate:	max. 60 l/min
Hysteresis	< 2-4 %
Repeatability:	+/- 1,5 %
Fluids:	Hydraulic oil to DIN 51524 part 1 and 2
Temp. range of the operating fluid:	-20°C up to max. +80°C
Ambient temperature range:	-20°C up to max. +50°C
Viscosity range:	7,4 – 400 mm²/s is recommended
Filtration:	Class 21/19/16 according to ISO4406 ISO 4406 class 18/16/13 up to 19/17/14
Switching time:	On: 60 ms Off: 40 ms
Voltage:	DC
Nominal current:	2,1 A at 12V DC 1,05 A at 24V DC
Resistance at 20°C:	2,2 Ohm at 12V 8,8 Ohm at 24V
Switch-on time:	100% (Continuous)
Dither frequency:	160 – 250 Hz
IP rating:	IP65 (if plug is mounted correctly)
Installation:	no orientation restrictions
Annotation:	bleed system and valve before setting in motion
Hole pattern:	ISO24340 Form A6
Weight:	1,25 kg

PERFORMANCE





Pressure Drop Δp /Q



Models on request	Part No.
VP-PDRP6 087 D01-24PG/N	3497252
VP-PDRP6 330 D01-24PG/N	3497254
VP-PDRP6 500 D01-24PG/N	3497266

MODEL CODE

VP-PDRP6 087 D01- 24PG/V

Name and size
Proportional Pressure reducing valve NW 6

Pressure ranges
087 = up to 60 bar
330 = up to 230 bar
500 = up to 350 bar

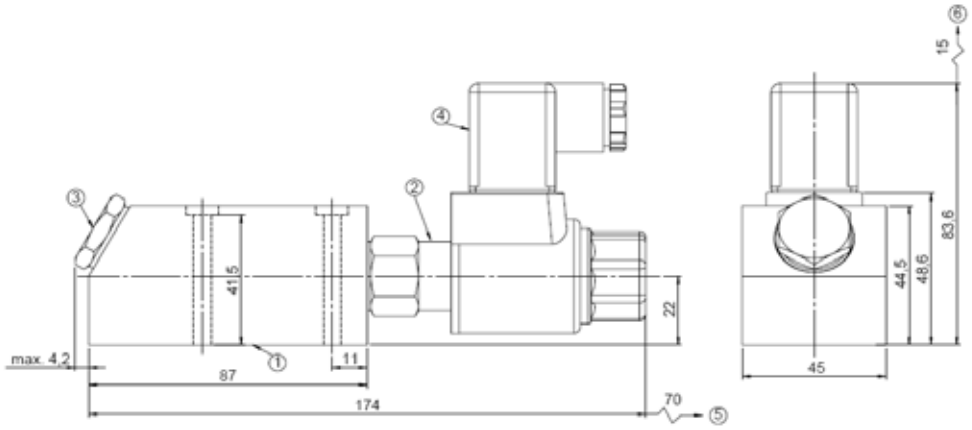
Type
D01 = Standard

Nominal voltage
24 = DC 24 Volt
12 = DC 12 Volt

Plug
PG = DIN plug according to EN155301-803

Seals
V = FkM (Standard)
N = NBR

DIMENSIONS

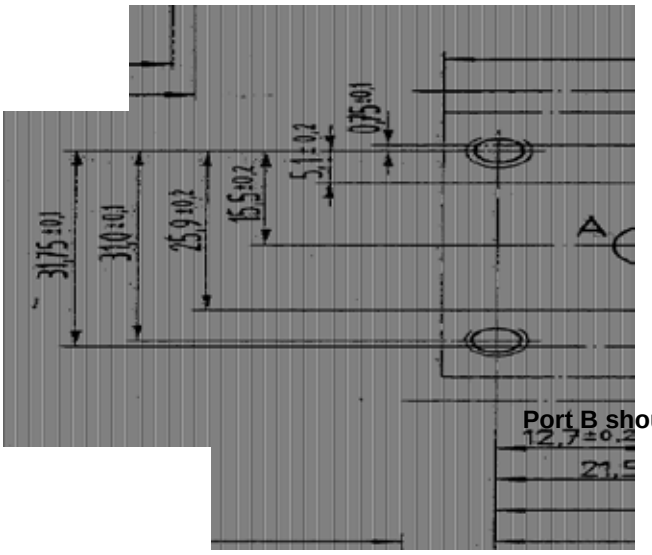


1) Mounting plate with O-rings:
4x O-Ring 9,25 x 1,78 FkM
2) Proportional pressure reducing valve with coil
3) Blanking plug
4) DIN plug to EN175301-803
5) Free space for mounting the coil
6) Free space for mounting the plug

Fastening screws:
4x Allen key M5 x 50 10.9
Torque: 5 Nm + 0,5 Nm

All dimensions in mm.
Fastening elements are not in the scope of delivery.

Mounting plate to ISO 24340 Form A6



Port B should be closed!

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66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

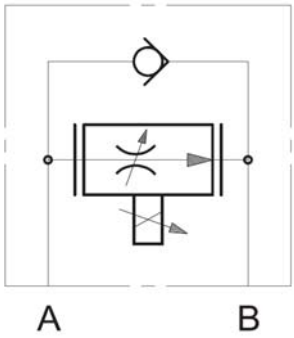
HYDAC INTERNATIONAL

Proportional Flow Regulator pressure compensated, direct acting, with reverse flow check

Subplate to ISO6263

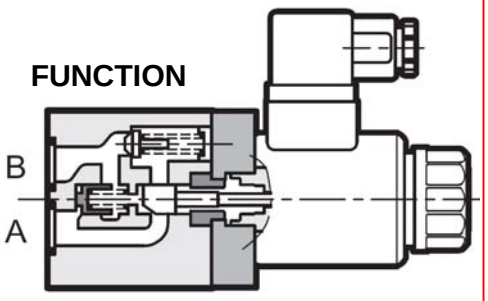
VP- P2SRE 6

SYMBOL



up to 25 l/min
up to 250 bar

FUNCTION



The VP-P2SRE 6 is a direct acting 2-way flow control valve.
Flows from port A to B are controlled independently of the pressure. In the opposite direction there is free flow trough the check valve. The controlled flow rate is proportional to the electrical input signal at the coil. Analogue to his size the coil creates a force which pushes the piston against the spring. Hereby opening diameters are opened which determine the size of the flow independent from the pressure differential
A built-in pressure compensator enables the regulation independent from pressure changes from port A to B.
For the electronical control there are electronic controls available (see separate brochures).

FEATURES

- High flow by optimized casted housing
- Small hysteresis by superfinish of moving parts
- Long life by magnet switching under oil
- Minimal wear by hardened and ground valve piston
- Simple exchangeability by international standardized hole pattern to ISO 6263
- Electronic control by PEM-XD see brochure 5.249.2.0

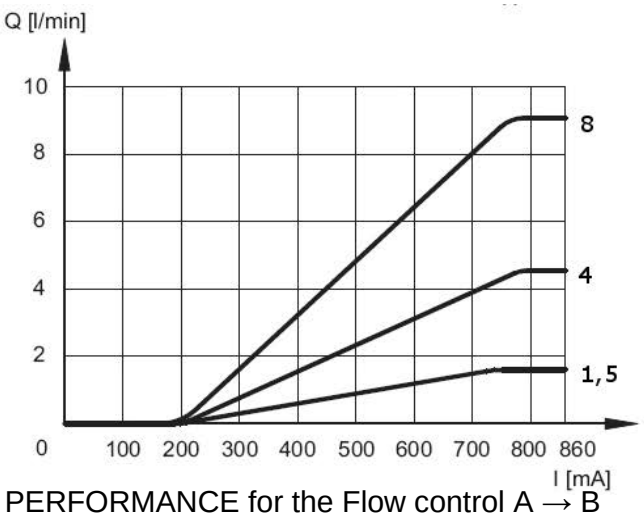
SPECIFICATIONS

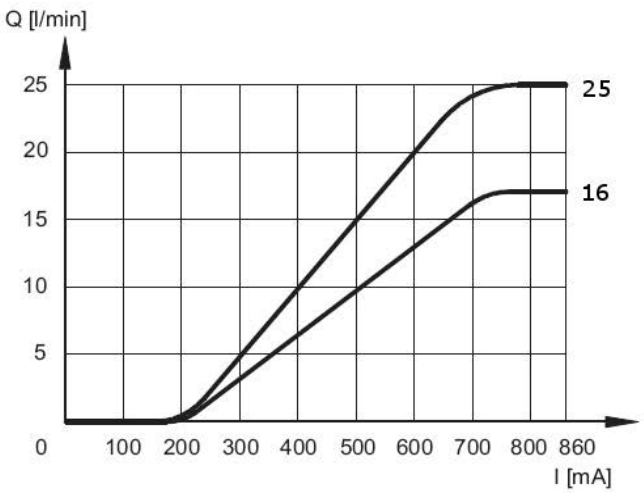
Operating pressure:	Ports A,B max. 250 bar
Flow rate:	max. 1,5 / 4 / 8 / 16 / 25 l/min max. 40 l/min in the opposite direction
Hysteresis:	(in % of Qmax): < 6 %
Repeatability:	(in % of Qmax) < +/- 2,5 %
Switching time:	(0-100%) 60 ms (25-75%) 50 ms
Switching time:	(100-0%) 80 ms (75-25%) 70 ms
Operating fluid temp. range:	-20°C up to +80°C
Ambient temperature range:	-20°C up to +50°C
Operating fluid:	hydraulic oil to DIN 51524 part 1 a.2
Viscosity range:	10 - 400mm^2/s is recommended
Filtration:	class 18/16/13 (17/15/12) to ISO4406 Flows <0,5l/min)
Type of voltage:	DC voltage
Nominal current:	0,86 A at 24V DC
Resistance at 20°C:	17,6 Ohm at 24V DC
Coil duty rating:	100% (Continuous)
Electro magnetic suitability:	(EMC)Emissions to EN 50081-1 suitability to EN 50082-2 to Norm 2004/108/CE
IP rating:	IP65 (if plug is mounted correctly)
Installation:	no orientation restrictions
Note:	Bleed system and valve before setting in motion
Hole pattern:	According to ISO6263-03-03-0-97
Weight:	1,5 kg

E 5.249.1.0 /01.13

PERFORMANCE
measured at ν= 36 mm²/s and T_{oil} = 50° C

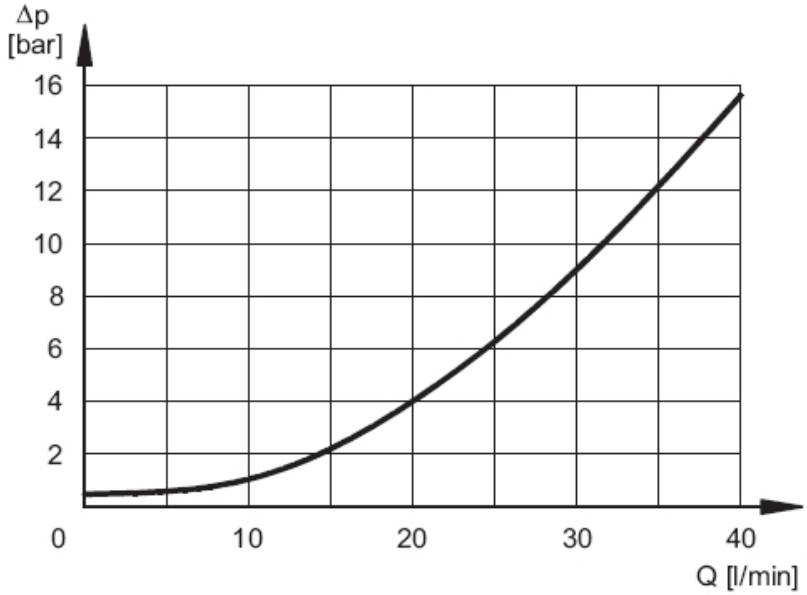
Flow control Q = f (I)





PERFORMANCE for the Flow control A → B
1-4-8-16-25 l/min

Pressure differential Δp /Q
Pressure differential with free flow B → A through the check valve.



Standard models	Part No.
VP-P2SRE 6 L01R D01-24PG/V	3541010
VP-P2SRE 6 L04R D01-24PG/V	3541013
VP-P2SRE 6 L08R D01-24PG/V	3541014
VP-P2SRE 6 L16R D01-24PG/V	3541026
VP-P2SRE 6 L25R D01-24PG/V	3541029

Other models on request

MODEL CODE

VP-P2SRE6 L 16 R D01 - 24PG /V

Name an size
Proportional Flow control valve size 6

Curve
L = linear

Flow rate
01 =1,5 l/min
04 = 4 l/min
08 = 8 l/min (at Δp=10 bar A-B)
16 = 16 l/min
25 = 25 l/min

Check valve

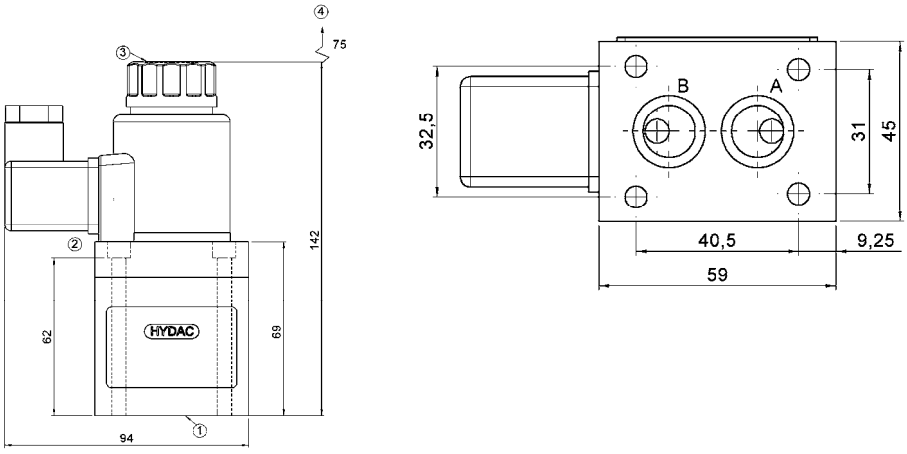
Type
D01 = Standard type with manual override

Nominal voltage
24= 24 V DC

Coil connector
PG= DIN plug to EN175301-803

Seal material
V= FPM (Standard)
N= NBR (optional)

DIMENSIONS



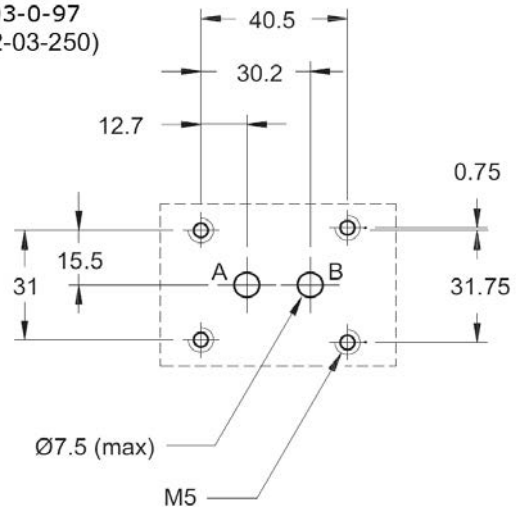
1) Mounting plate with O-rings: 2x O-Ring 14 x 2 FkM
2) DIN plug to EN175301-803 (Z4 plug Mat. 394287)
3) Manual override
4) Free space for mounting the coil
5) Free space for mounting the DIN plugs

Fastening screws:
4x Allen key M5 x 70 10.9
Torque: 5 Nm + 0,5 Nm

All dimensions in mm.
Fastening elements are not in the scope of delivery.

Hole pattern

ISO 6263-03-03-0-97
(CETOP 4.5.2-2-03-250)



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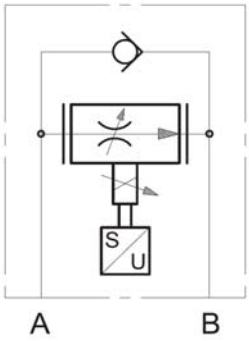
HYDAC INTERNATIONAL

Proportional Flow Regulator pressure compensated, direct acting, with transducer

Subplate to ISO6263

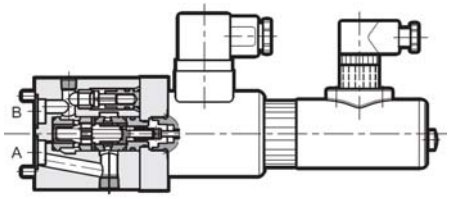
VP- P2SRR 6

SYMBOL



up to 16 l/min
up to 250 bar

FUNCTION



The P2SRR6 is a direct acting 2-way flow control valve.
Flows from port A to B are controlled independently of the pressure. In the opposite direction there is free flow trough the check valve. The controlled flow rate is proportional to the electrical input signal at the coil.
Analogue to his size the coil creates a force which pushes the piston against the spring. Hereby opening diameters are opened which determine the size of the flow independent from the pressure differential
A built-in pressure compensator enables the regulation independent from pressure changes from port A to B.
For the electronical control there are electronic controls available (see separate brochures).

FEATURES

- High flow by optimized casted housing
- Small hysteresis by superfinish of moving parts
- Long life by magnet switching under oil
- Minimal wear by hardened and ground valve piston
- Simple exchangeability by international standardized hole pattern ISO 6263
- Electronic control by PEK-SRA see brochure 5.249.4.0

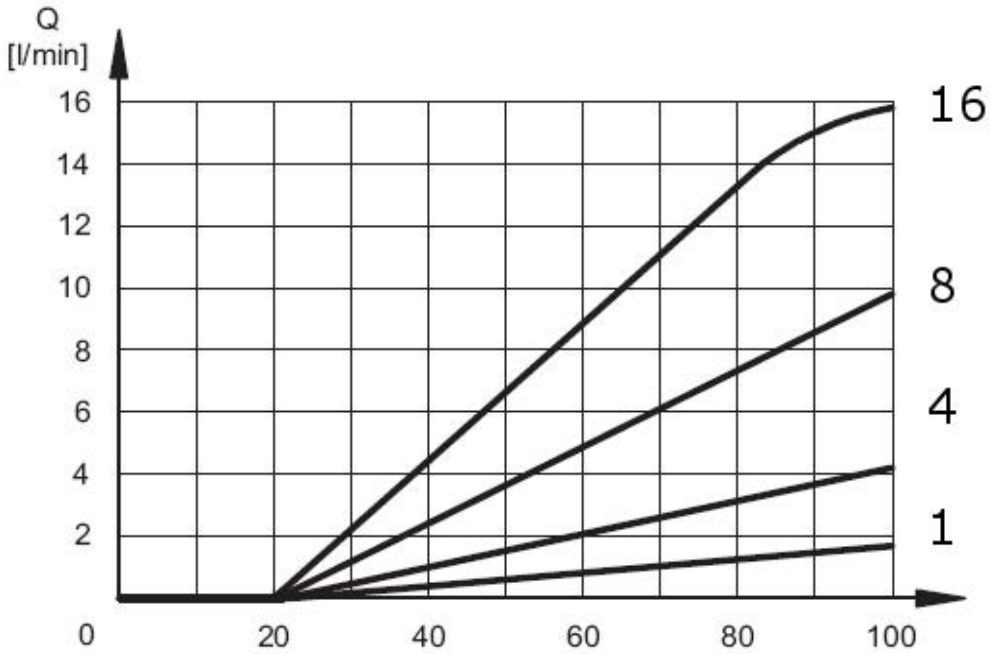
SPECIFICATIONS

Operating pressure:	Ports A, B max. 250 bar
Flow rate:	max. 1,5 / 4 / 8 / 16 / l/min
	max. 40 l/min in the opposite direction
Hysteresis:	(in % of Qmax): < 2,5 %
Repeatability:	(in % of Qmax) < +/- 1,0 %
Switching time:	ON (0-100 %) 180 ms (25-100 %) 150 ms
Switching time:	OFF (100-0 %) 150 ms (100-25 %) 120 ms
Temp. range of the operating fluid:	-20°C up to +80°C
Ambient temperature range:	-10°C up to +50°C
Operating fluid:	hydraulic oil to DIN 51524 part 1 a. 2
Viscosity range:	7,4 -10 – 400 mm^2/s is recommended
Filtration:	Class 18/16/13 (17/15/12) to ISO4406
	for flow rates <0,5l/min)
Type of voltage:	DC voltage
Nominal current:	0,86 A at 24V DC
Resistance at 20°C:	17,6 Ohm at 24V DC
Coil duty rating:	100% (Continuous)
Electro magnetic suitability: (EMC)	Emissions to EN 50081-1
	suitability to EN 50082-2
	to Norm 89/336 CEE
IP rating:	IP65 (if plug is mounted correctly)
Installation:	no orientation restrictions
Note:	Bleed system and valve before setting in motion
Hole pattern:	ISO 6263-03-03-0-97
Weight:	2,2 kg

E 5.249.3.0 /01.13

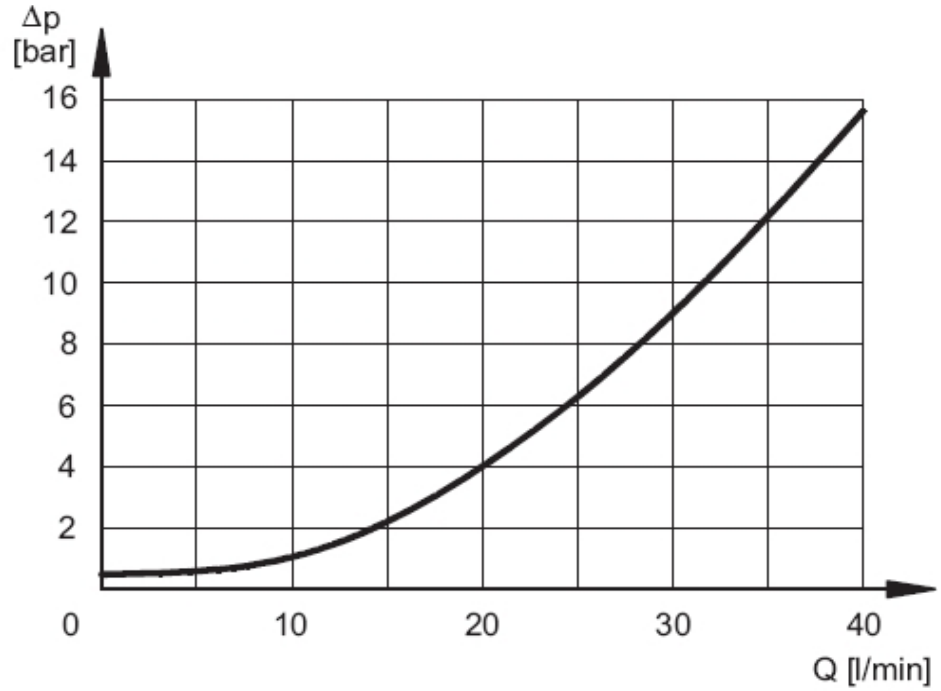
PERFORMANCE
measured at ν= 36 mm²/s and T_{oil} = 50° C

Flow control Q = f (I)



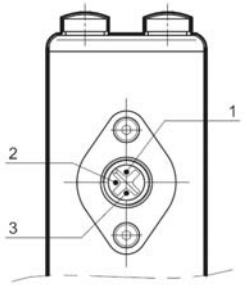
Setpoint signal

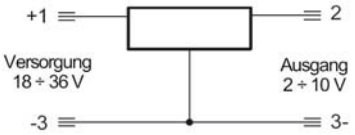
Pressure differential Δp /Q



transducer – electrical connection

Pin 1	Supply 18 ÷ 36 V	Pin 8c
Pin 2	Output 2 ÷ 10 V	Pin 24a
Pin 3	0 V	Pin 22c





Standard models	Part No.
VP-P2SRR 6 L01R D01-24PG/V	3541032
VP-P2SRR 6 L04R D01-24PG/V	3541033
VP-P2SRR 6 L08R D01-24PG/V	3541034
VP-P2SRR 6 L16R D01-24PG/V	3541045

Other models on request

MODEL CODE

VP-P2SRR6 L 16 R D01- 24PG /V

Name and size
Proportional flow control valve, size 6

Curve
L = linear

Flow rate
01 =1,5 l/min
04 = 4 l/min (at Δp=10 bar A-B)
08 = 8 l/min
16 = 16 l/min

Check valve

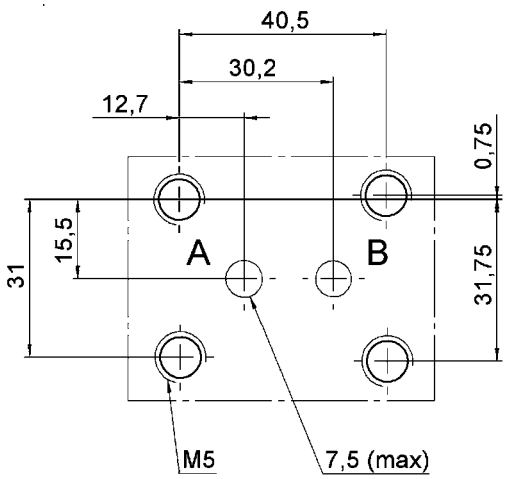
Type
D01 = Standard type with manual override

Nominal voltage
24= 24 V DC

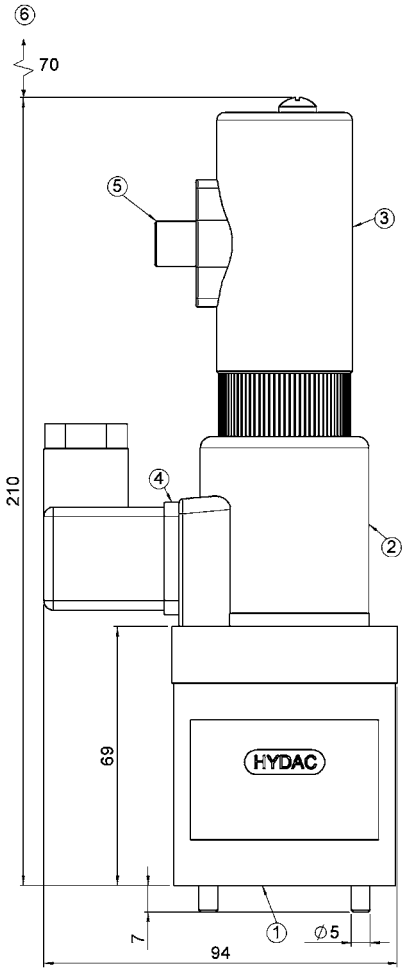
Coil connector
PG= DIN plug to EN175301-803

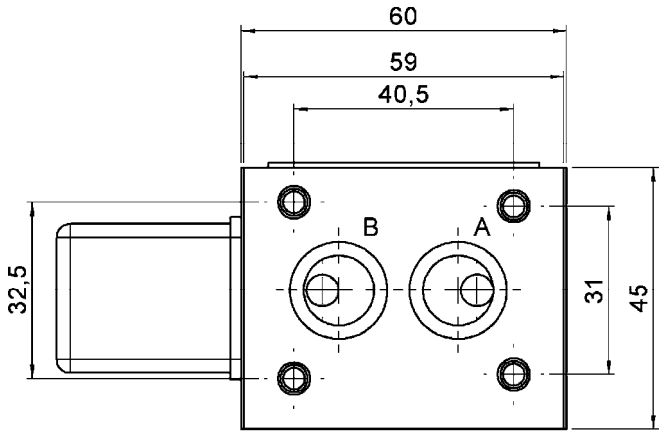
Seal material
V= FPM (Standard)
N= NBR (optional)

Hole pattern to nach ISO6263-03-0-97



DIMENSIONS





1) Mounting plate with seals:
2x O-Ring 14 x 2 FkM
2) Proportional coil
3) Transducer
4) DIN plug to EN175301-803
for Prop. coil
5) DIN plug 4 Pin M12 - IP67
PG7 for Transducer
6) Free space f. mounting the
Transducer
7) Free space for mounting
the DIN plug
Fastening screws: (incl.)
Allen key 4x M5 x 65 10.9
Torque: 5 Nm + 0,5 Nm

All dimensions in mm.
Fastening elements are not in the scope of delivery.

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Email: flutec@hydac.com

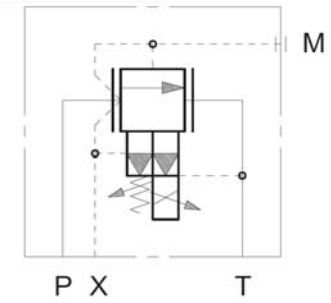
HYDAC INTERNATIONAL

Proportional Pressure Relief Valve pilot operated

Subplate to ISO6264

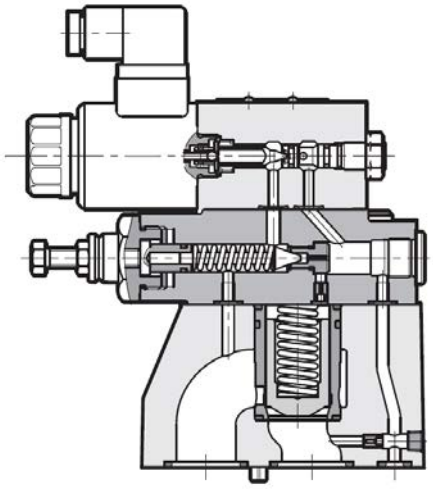
VP-PDBP10

SYMBOL



up to 350 bar
up to 200 l/min

FUNCTION



FEATURES

- Hole pattern to ISO 6264-06, Nominal size 10
- Pilot operated pressure relief valve with Proportional coil
- Electronic control by PEM-XD see brochure 5.249.2.0

SPECIFICATIONS

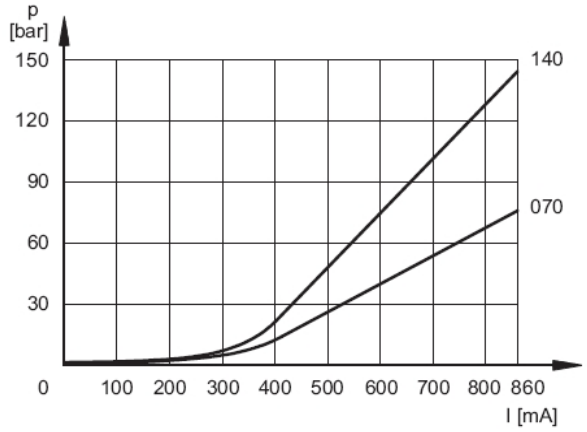
Operating pressure:	max. 350 bar
Flow rate:	max. 200 l/min
Hysteresis	< 5 %
Repeatability:	< +/- 1,5 %
Operating fluid:	hydraulic oil to DIN 51524 part 1 and 2
Operating fluid temp. range:	-20°C up to max. +80°C
Ambient temperature range:	-10°C up to max. +50°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 20/18/15 according to ISO 4406 class 18/16/13
Switching time:	On: 120 ms Off: 90 ms
Type of voltage:	DC voltage
Nominal current:	0,86 A at 24V DC (12 V on request)
Resistance at 20°C:	17,6 Ohm at 24V DC (12V on request)
Coil duty rating:	100% (Continuous)
Electro magnetic suitability: (EMC)	Emissions to EN 50081-1 suitability to EN 50082-2 to Norm 89/336 CEE
IP rating:	IP65 (if plug is mounted correctly)
Installation:	see installation hints below
Note:	Bleed system and valve before setting in motion
Hole pattern:	according to ISO 6264-06
Weight:	5,0 kg

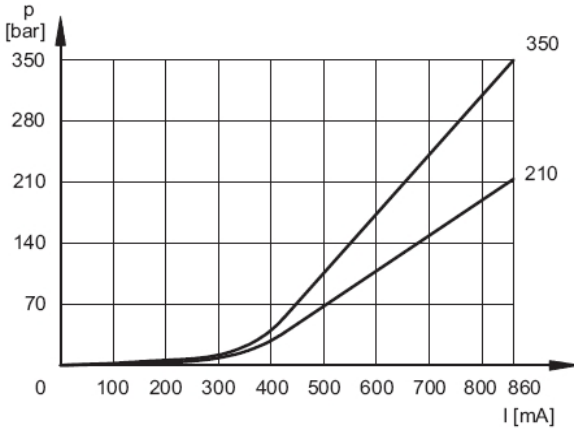
Installation:
We recommend to install the valve horizontally or vertically with coil at the lower end. If installed vertically upwards please consider changes of minimal regulated pressure! Pay attention that no air is in the system. In some applications the coil-support has to be bleed by the screw at the support. Line T has to be connected directly to tank. Every counter-pressure on line T has to be added to the regulated pressure. Maximal permitted counter-pressure at T: 2 bar.
The fixation of the valve will be done by screws or tension rods on a plane surface which surface finish is equal or higher than the valves finish. If the surface finish is not as specified above, leakages may occur.

E 5.249.6.0 /01.13

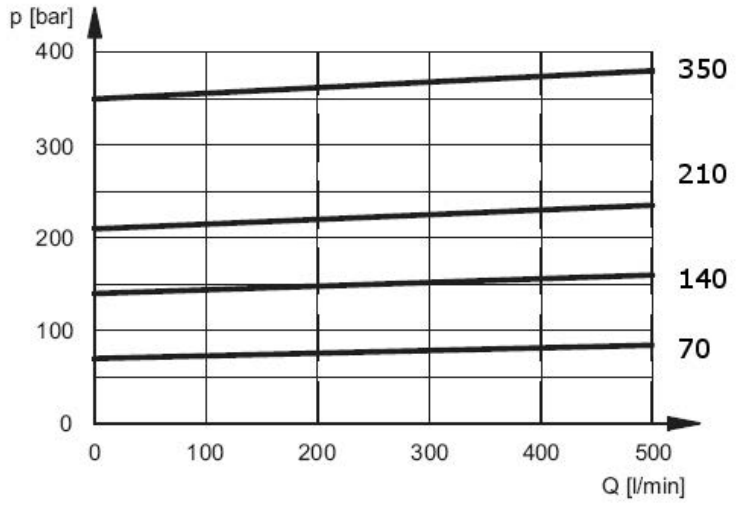
PERFORMANCE
measured at ν= 36 mm²/s and T_{oil} = 50° C

Pressure reducing diagram p=f (I)

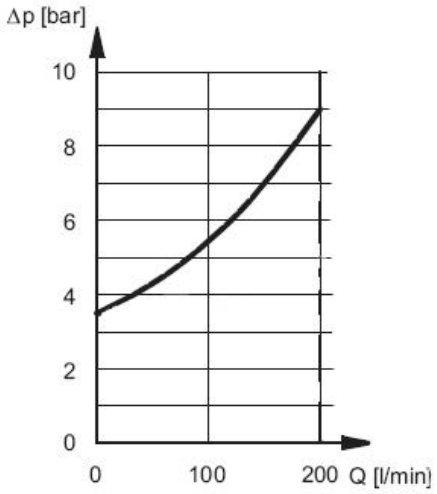




Minimal regulated pressure pmin=f (Q)



Pressure changes pmax = f (Q)



Standard models	Part No.
VP-PDBP10 070 D01-24PG/V	3541051
VP-PDBP10 140 D01-24PG/V	3541085
VP-PDBP10 210 D01-24PG/V	3541086
VP-PDBP10 350 D01-24PG/V	3541088

Other models on request

MODEL CODE

VP-PDBP10 070 D01 – 24PG /V

Name and size
Proportional pressure relief valve NW 10

Pressure ranges
070 = up to 70 bar
140 = up to 140 bar
210 = up to 210 bar
350 = up to 350 bar

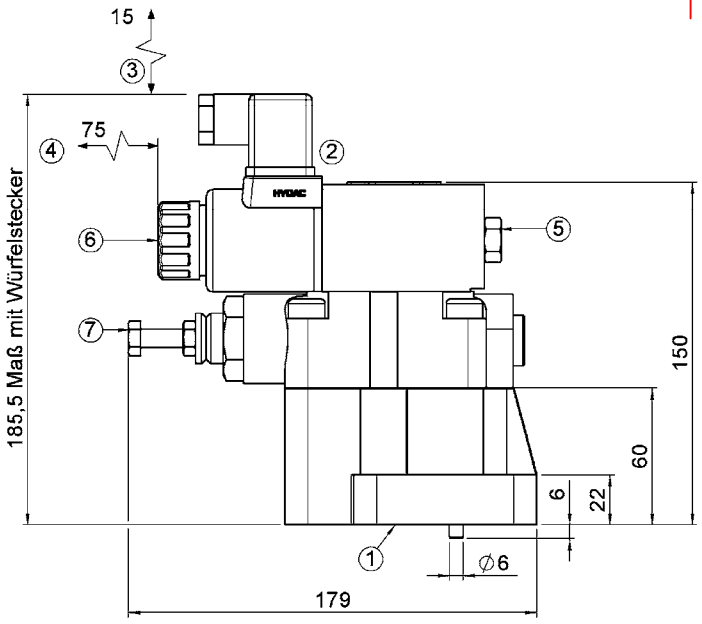
Type
D01 = Standard

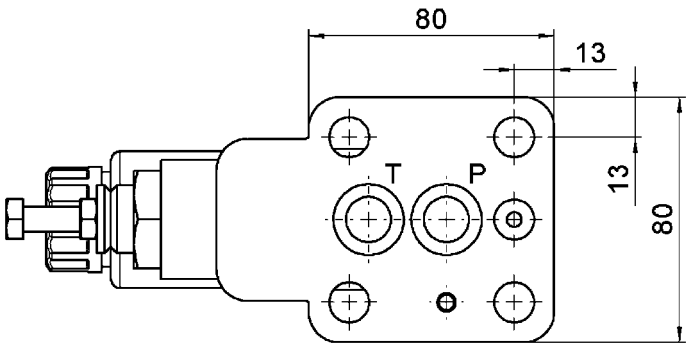
Nominal voltage
24 = DC voltage 24 Volt
Other voltages on request

Plug type
PG = DIN plug to EN155301-803

Seal material
V = FkM (Standard)
N = NBR

DIMENSIONS



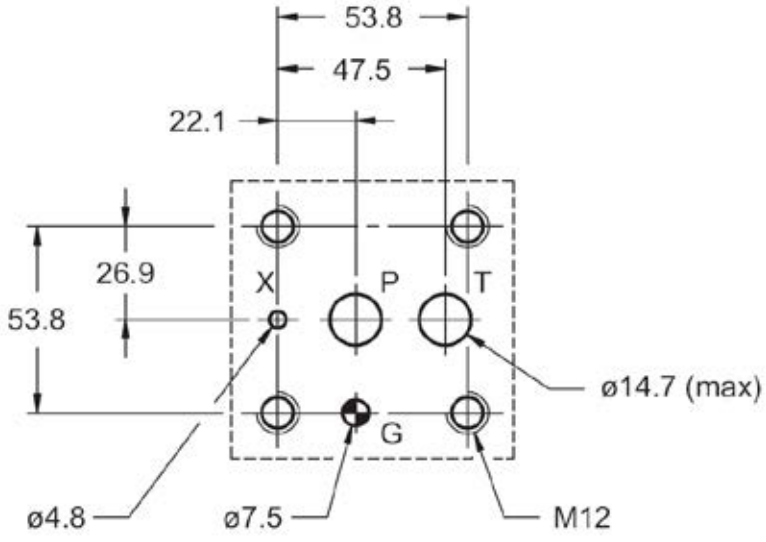


1) Mounting plate with O-rings:
   2x O-Ring 17,86 x 2,62 FkM
   1x O-Ring 9,19 x 2,62 FkM
2) DIN plug to EN175301-803 (in scope of delivery)
3) Free space for mounting the plugs
4) Free space for mounting the coil
5) Adjustment sealed
6) Bleeding screw
7) Pressure relief valve

Fastening screws: 4x Allen key M12x40 10.9
Torque: 70 Nm + 5 Nm

All dimensions in mm.
Fastening elements are not in scope of delivery.

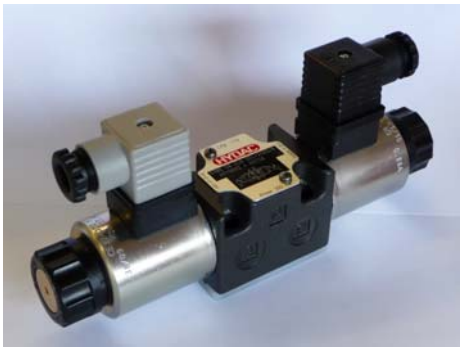
Mounting plate to ISO 6264-06-09-01-97



Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

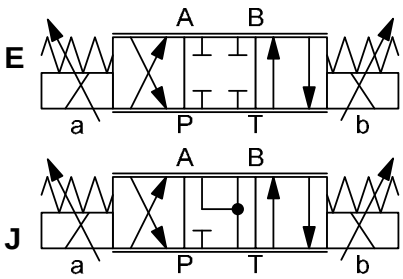


4/3- Proportional Solenoid Valve direct acting

Subplate to ISO4401

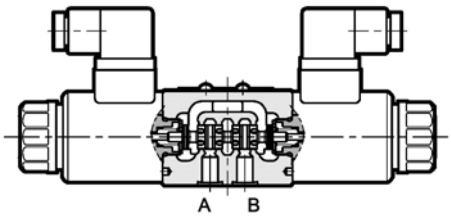
P4WE 06

SYMBOL



up to 40 l/min
up to 350 bar

FUNCTION



The P4WE 06 is a direct acting solenoid valve, which combines the directional control with the velocity control of the consumer. The controlled nominal flow is proportional to the electrical input signal at the coil.
Analogue to his size the coil creates a force and moves the piston against the spring. Herewith the corresponding cross section diameters are opened which determines the flow rate in dependence of the pressure differential.
For the electrical control of the valve there are electronic modules available (see brochure 5.249.2.0 PEM-XD).

FEATURES

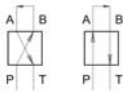
- High flow rate due to optimized casted housing
- Small hysteresis by super finish of moving parts
- Long life cycle times by armature switching under oil
- Minimal wear by hardened and ground valve piston
- Simple exchangeability by international standardized hole pattern to ISO 4401
- Electronic control by PEM-XD see brochure 5.249.2.0

SPECIFICATIONS

Operating pressure:	ports P,A,B max. 350 bar port T max. 140 bar
Nominal flow:	max. 40 l/min
Hysteresis:	(in % of Qmax): < 6%
Repeat accuracy:	(in % of Qmax) < +/- 1,5%
Switch-on time:	(0-100%)50 ms
Switch-off time:	(100-0%)40 ms
Media operating temp.range:	-20°C up to +80°C
Ambient temperature range:	-20°C up to +50°C
Hydraulic fluid:	Hydraulic fluid to DIN 51524 part 1 a. 2
Viscosity range:	10 mm^2/s up to 420 mm^2/s
Filtration:	Class 18/16/13 up to 19/17/14 according to ISO4406
Supply voltage:	DC voltage
Nominal current:	1,88 A at 12V DC 0,86 A at 24V DC
Resistance at 20°C:	3,66 Ohm at 12V DC 17,6 Ohm at 24V DC
Coil duty rating:	100% (continuous)
IP rating:	IP65
Installation:	no orientation restrictions
Hint:	Vent system and valve before setting in motion
Hole pattern:	ISO4401-03-02-0-05 CETOP 4.2-4-03-350
Weight:	2 kg

E 5.228.0 /01.13

PERFORMANCE measured at ν= 33 mm²/s and T_{oil} = 46° C
(The related Δp is measured between lines P and T of the valve)



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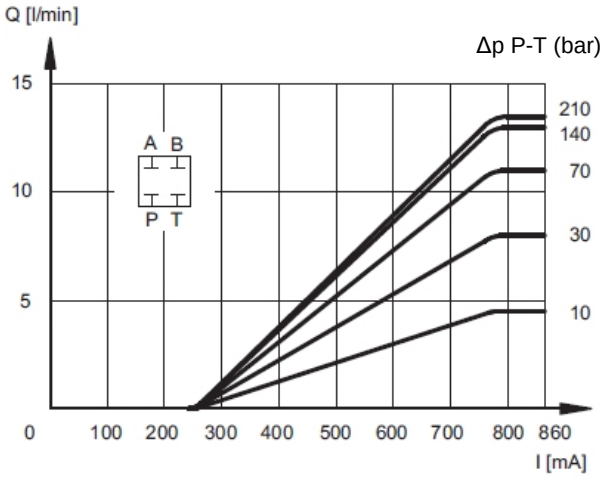
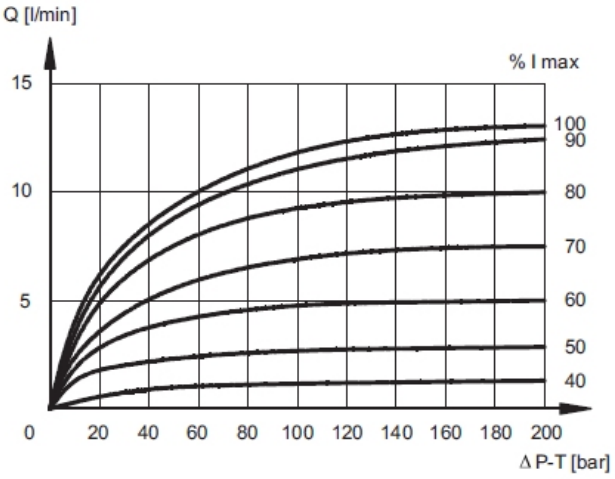
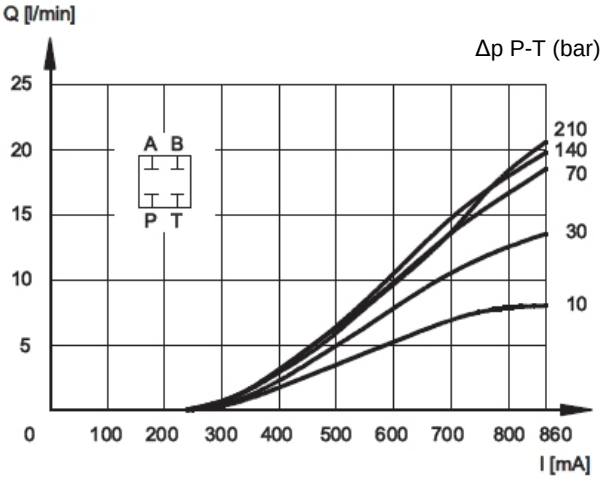
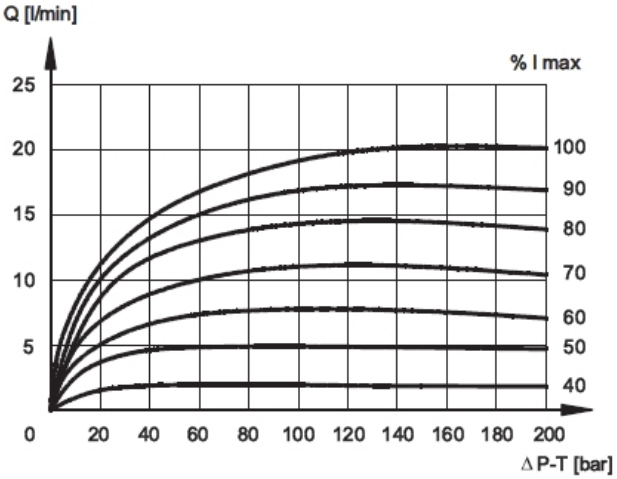




E08





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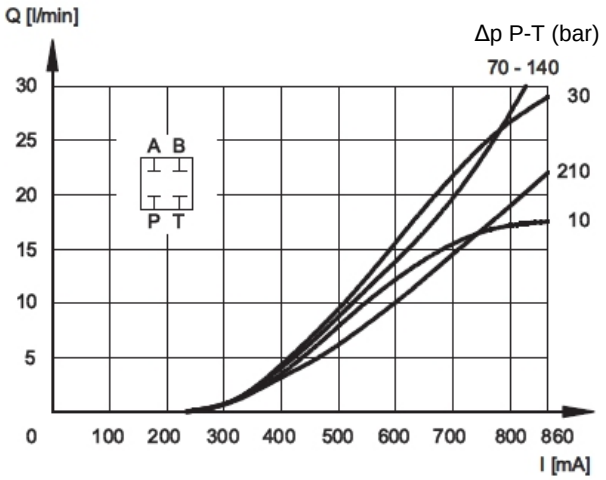

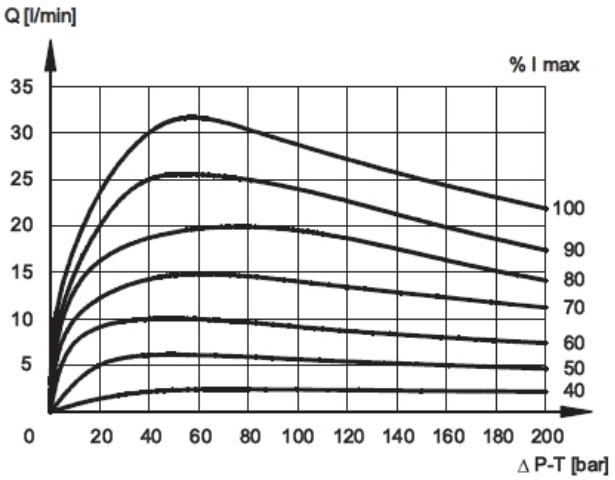

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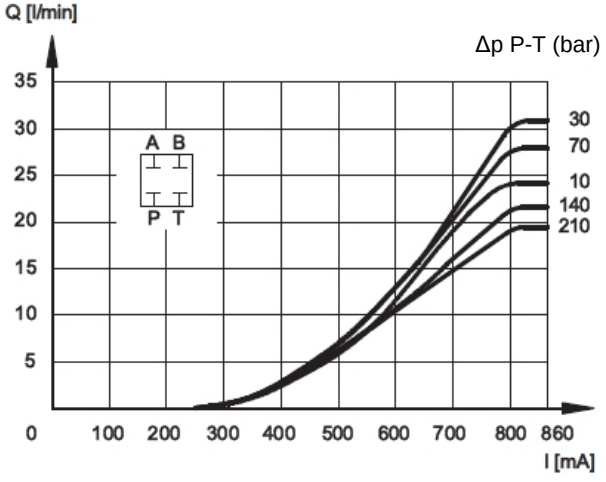
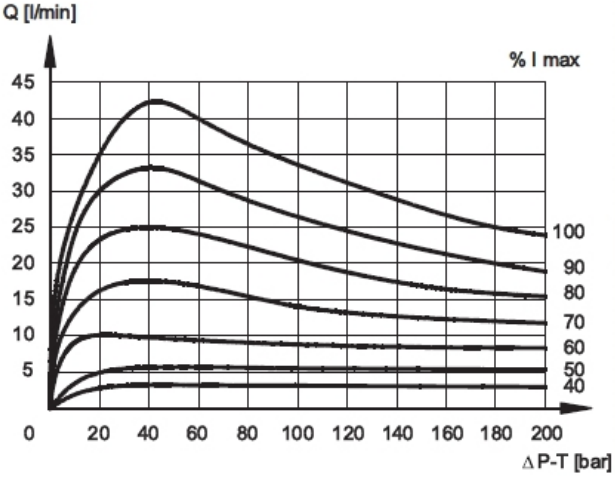
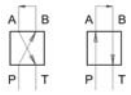
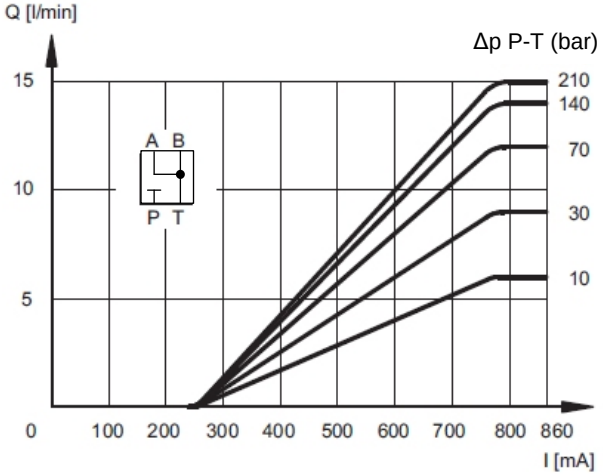


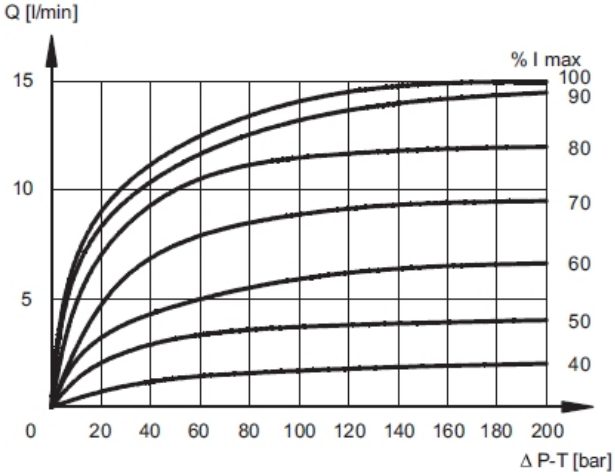


PERFORMANCE measured at ν= 33 mm²/s and T_{oil} = 46° C
(The related Δp is measured between lines P and T of the valve)



J04





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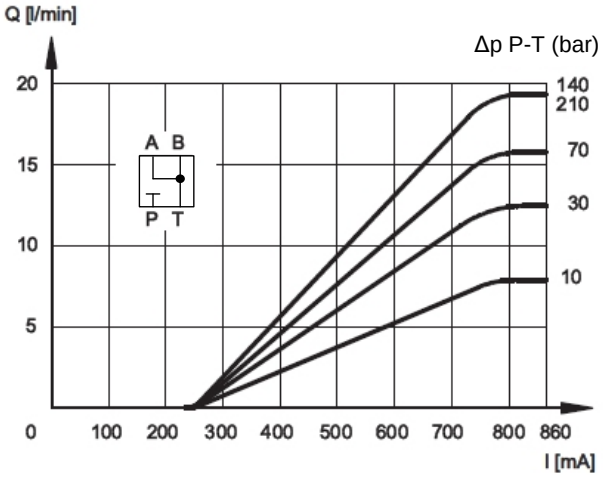

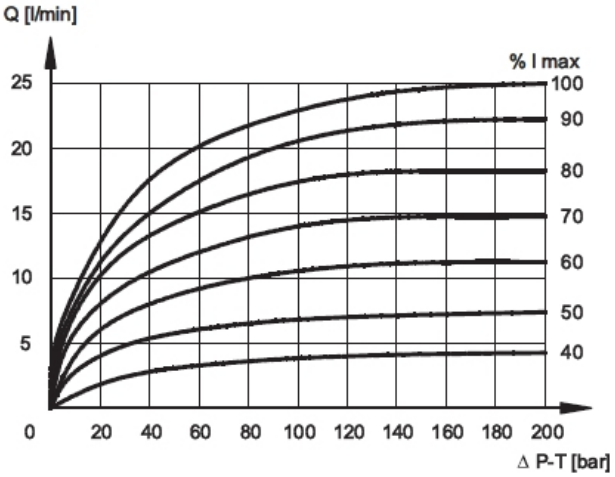

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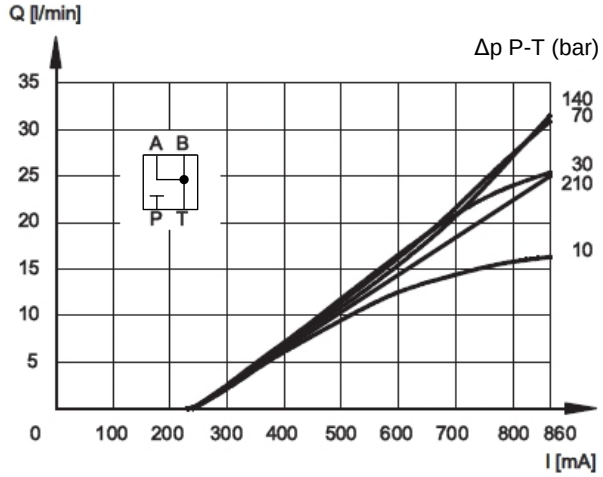

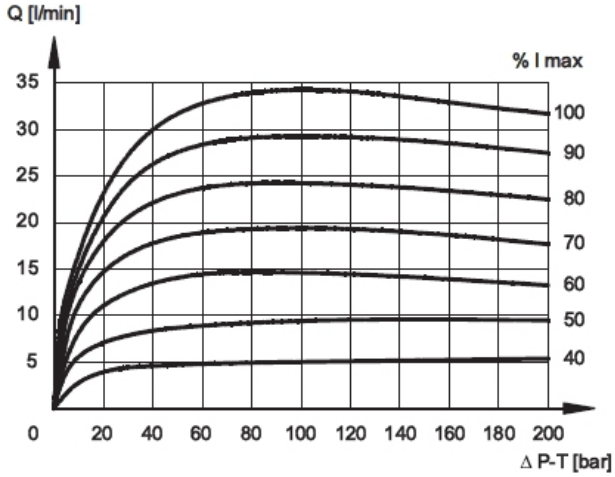

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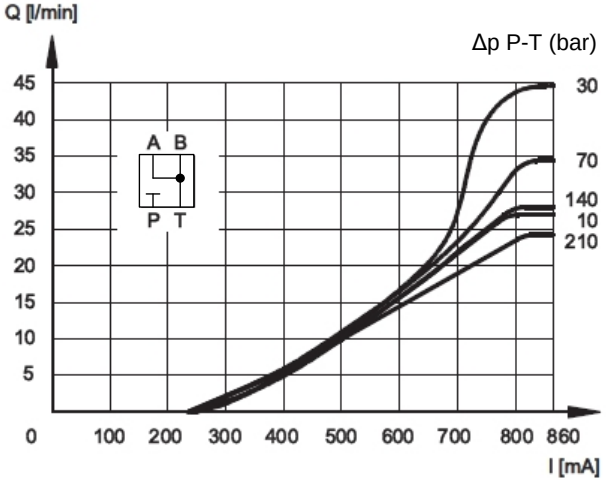
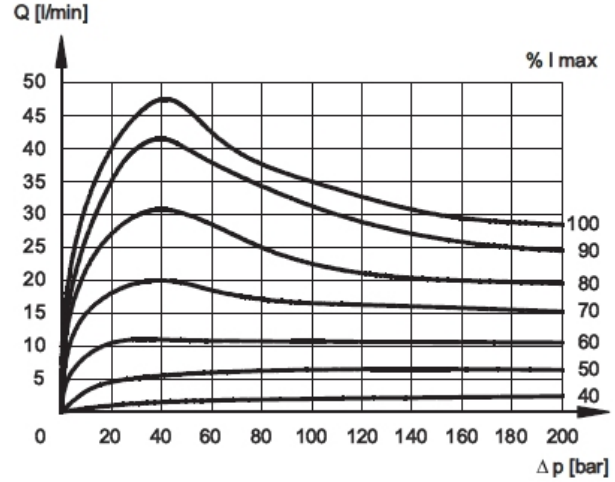
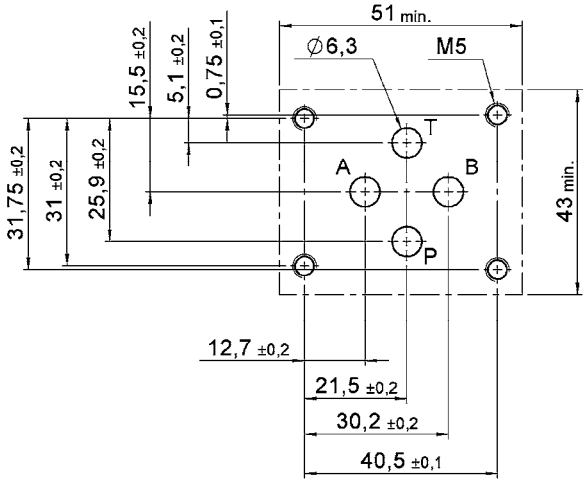




Standard models	Part No.
P4WE 06 E04 D01-24PG/V	6078942
P4WE 06 E08 D01-24PG/V	6078944
P4WE 06 E16 D01-24PG/V	6078946
P4WE 06 E26 D01-24PG/V	6078948
P4WE 06 J04 D01-24PG/V	6078950
P4WE 06 J08 D01-24PG/V	6078952
P4WE 06 J16 D01-24PG/V	6078954
P4WE 06 J26 D01-24PG/V	6078956

Other types on request

Hole pattern to ISO 4401-03-02-0-05



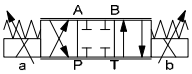
MODEL CODE

P4WE 06 E16 D01 - 24PG /V

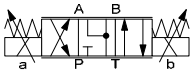
Name
Proportional solenoid valve

Nominal size
6

Symbol
E



J



Nominal flow
04= 4 l/min
08= 8 l/min
16= 16 l/min
26= 26 l/min
At Δp=10 bar P-T

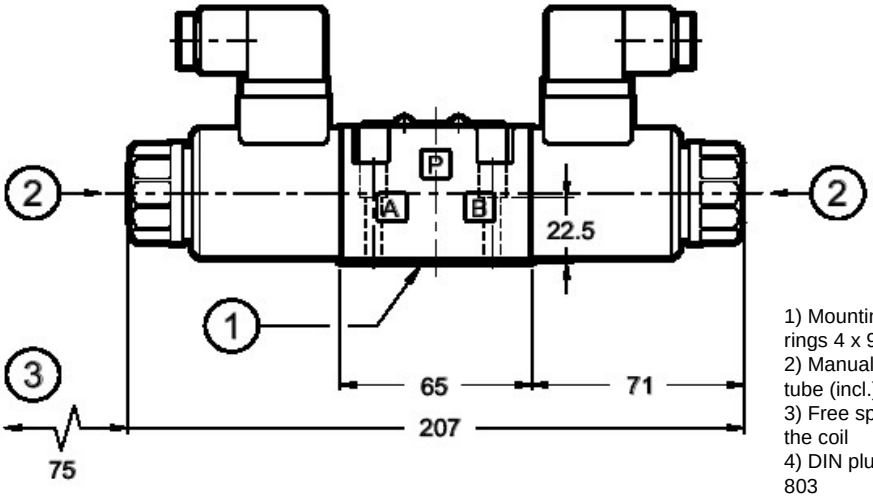
Type
D01= Standard type with manual override

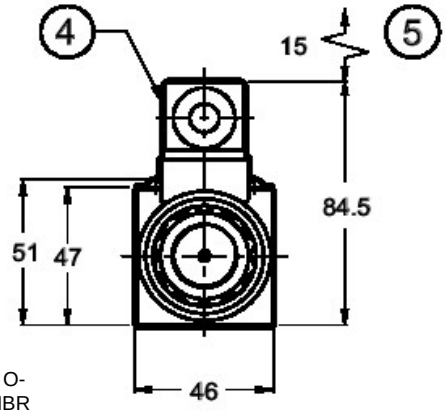
Nominal voltage
12= 12 V DC
24= 24 V DC

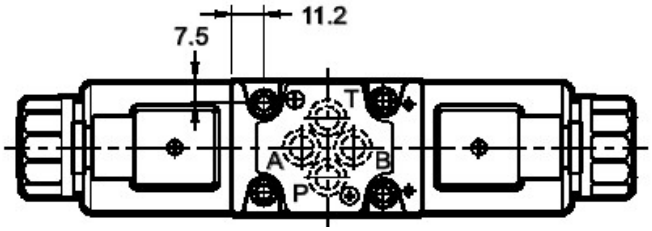
Coil connector
PG= DIN plug to EN175301-803

Seal material
V= FPM (Standard)
N= NBR (optional)

DIMENSIONS







1) Mounting plate with O-rings 4 x 9.25 x 1.78 NBR
2) Manual override built-in tube (incl.)
3) Free space for mounting the coil
4) DIN plug to EN175301-803
5) Free space for mounting the plug
Fastening screws:
4x M5 x 30 10.9
Torque: 5 Nm +0,5 Nm
All dimensions in mm.
Fastening elements are not in the scope of delivery.

Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

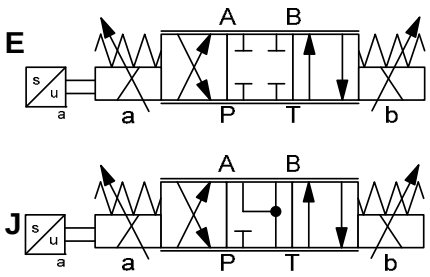
HYDAC INTERNATIONAL

4/3- Proportional Solenoid Valve direct acting, with position transducer

Subplate to ISO4401

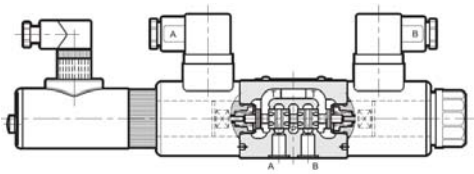
P4WR 06

SYMBOL



Up to 40 l/min
Up to 350 bar

FUNCTION



The P4WR 06 is a direct acting solenoid valve which combines the directional control with the velocity control of the consumer.
The controlled nominal flow is proportional to the electrical input signal at the coil.
Analogue to his size the coil creates a force and moves the piston against the spring. Herewith the corresponding cross section diameters are opened which determines the flow rate in dependence of the pressure differential.
For the electrical control of the valve there are electronic modules available (see brochure 5.249.0 PEK-WAR).

FEATURES

- High flow rate due to optimized casted housing
- Small hysteresis by super finish of moving parts
- Long life cycle times by armature switching under oil
- Minimal wear by hardened and ground valve piston
- Simple exchangeability by international standardized hole pattern to ISO 4401
- Electronic control by PEK-WAR see brochure 5.249.0
- Integrated position transducer

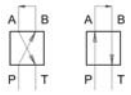
SPECIFICATIONS

Operating pressure:	ports P,A,B max. 350 bar port T max. 210 bar
Nominal flow:	max. 40 l/min
Hysteresis:	(in % of Qmax) < 1,5 %
Repeat accuracy:	(in % of Qmax) < +/- 1,0 %
Switch-on time:	(0-100%) 30 ms
Switch-off time:	(100-0%) 25 ms
Media operating temp.range:	-20°C up to +80°C
Ambient temperature range:	-20°C up to +50°C
Hydraulic fluid:	Hydraulic fluid to DIN 51524 part 1/ 2
Viscosity range:	10 mm^2/s up to 400 mm^2/s
Filtration:	Class 18/16/13 up to 19/17/14 according to ISO4406
Supply voltage:	DC voltage
Nominal current:	1,88 A at 12V DC
Resistance at 20°C:	3,66 Ohm at 12V DC
Coil duty rating:	100% (continuous)
Electromagnetic compatibility: (EMC)	Emissions to EN 50081-1 compatibility to EN 50082-2 to Norm 89/336 CEE
IP rating:	IP65
Installation:	no orientation restrictions
Hint:	Vent system and valve before setting in motion
Hole pattern:	ISO4401-03-02-0-05
Weight:	2,3 kg

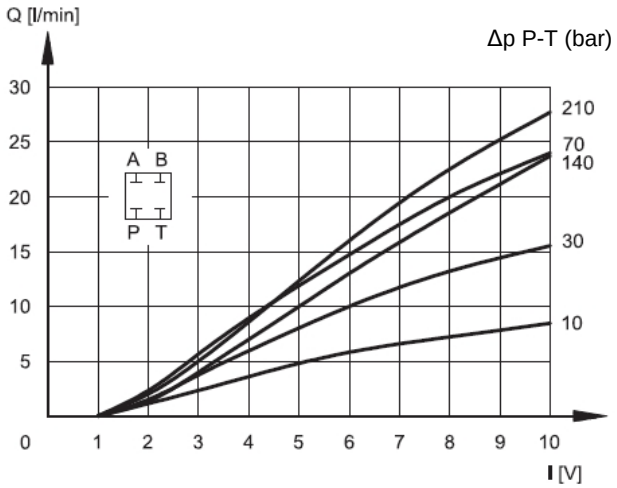
E 5.245.0 /01.13

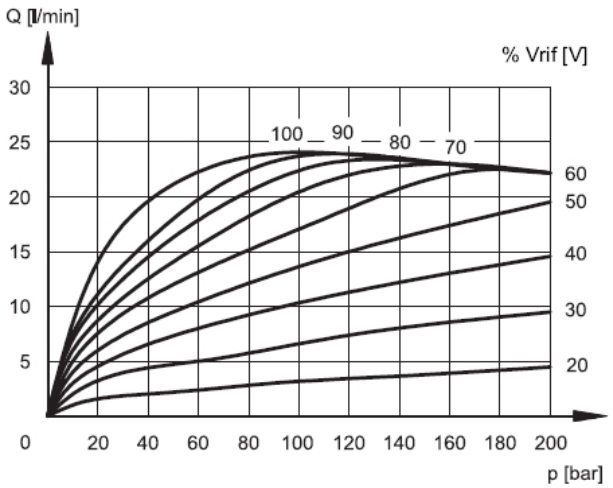
PERFORMANCE

measured at ν= 33 mm²/s and T_{oil} = 46° C (The related Δp is measured between lines P and T of the valve)



E08





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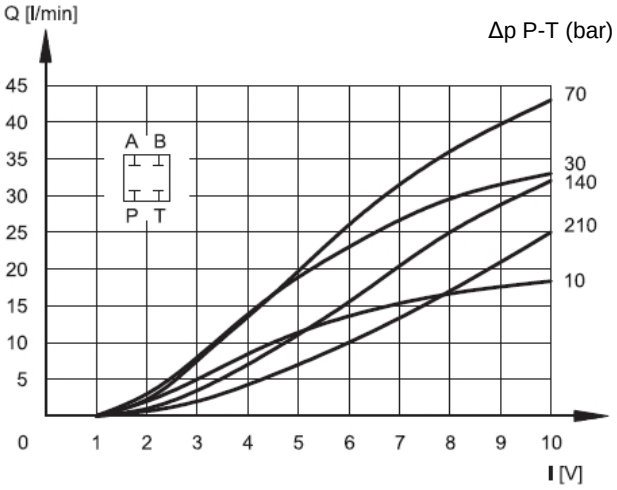

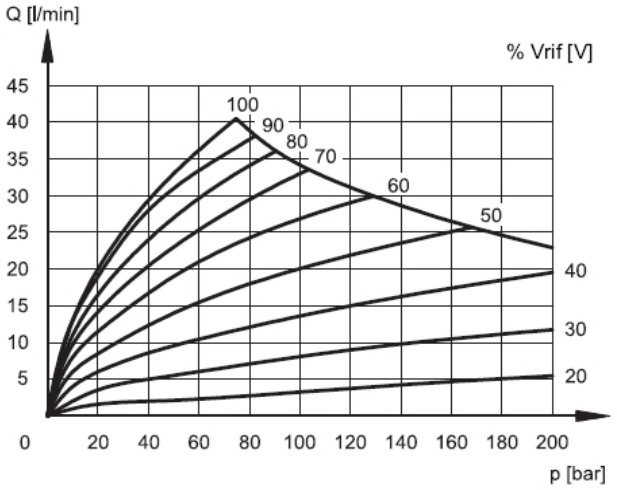

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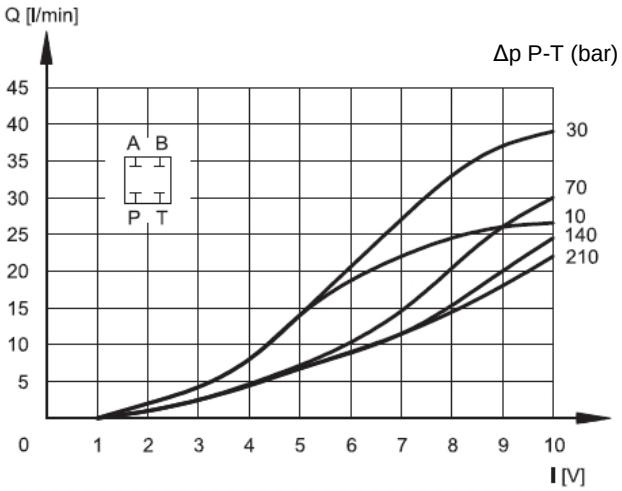
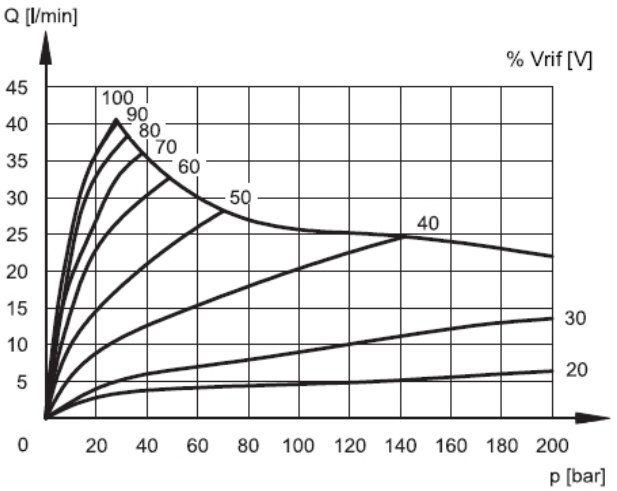
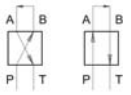




PERFORMANCE

measured at ν= 33 mm²/s and T_{oil} = 460° C (The related Δp is measured between lines P and T of the valve)



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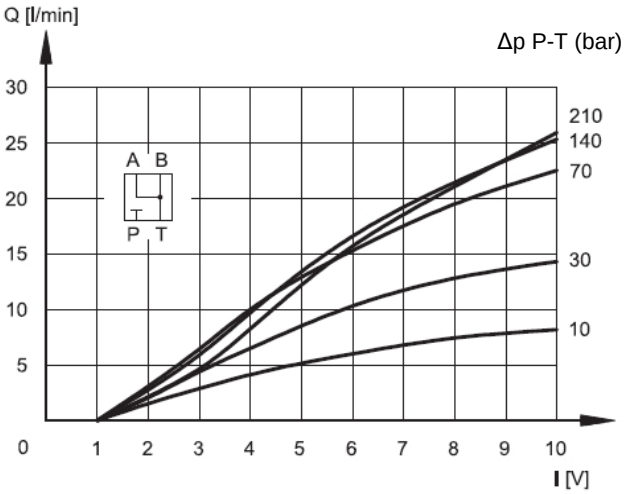

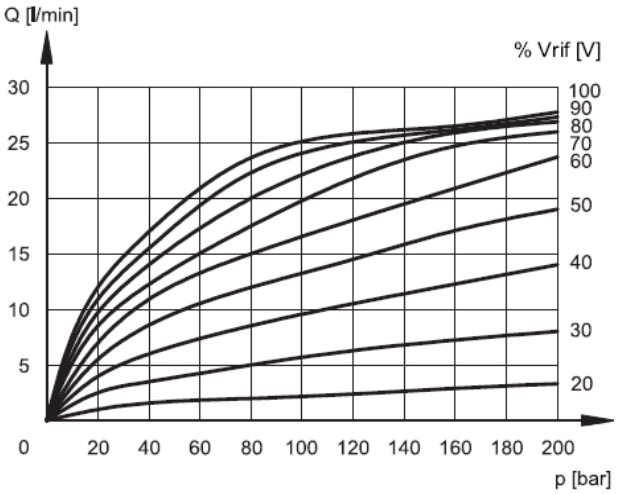

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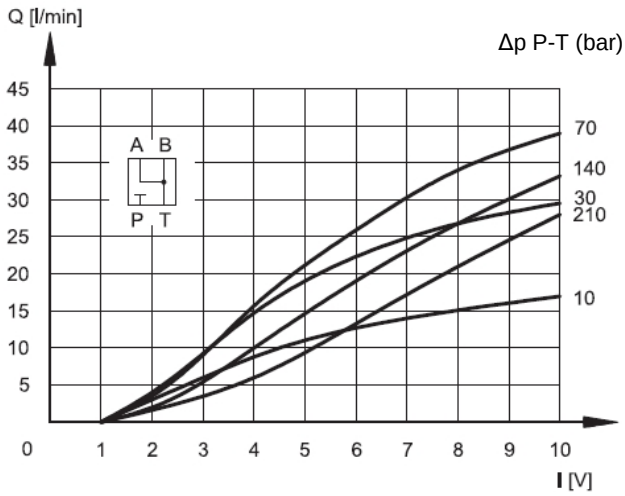

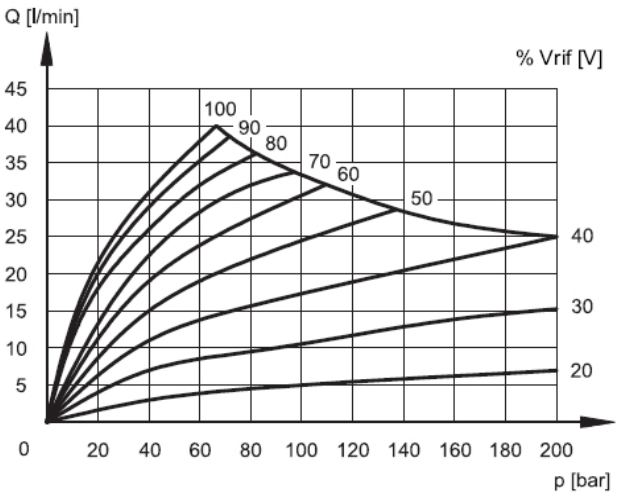

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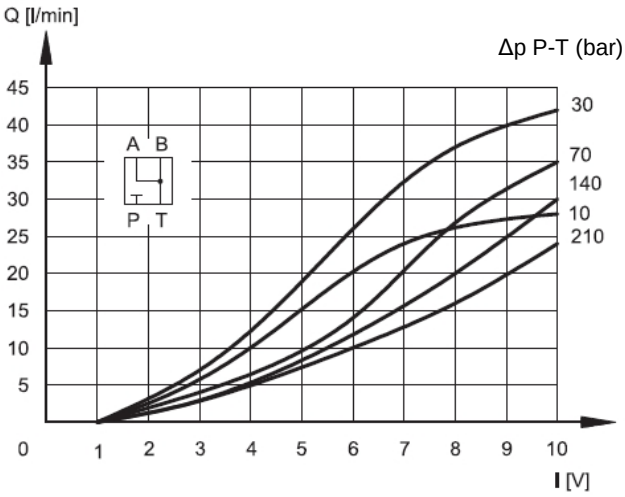
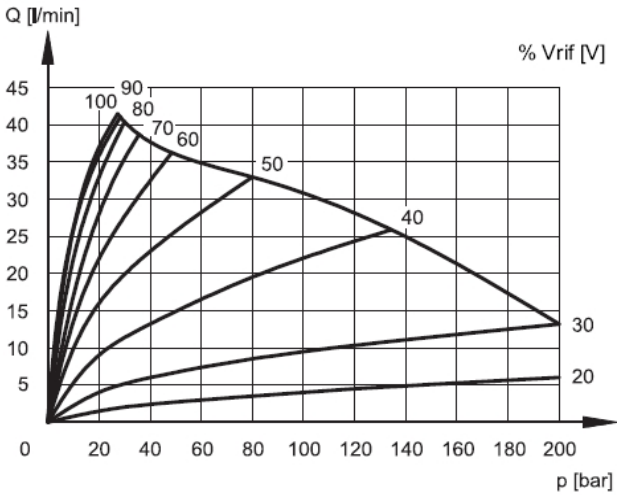
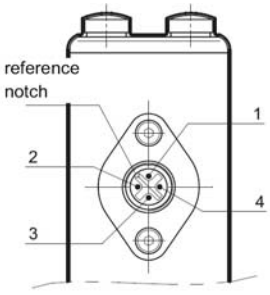
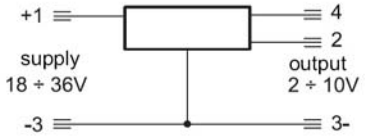




position transducer – electrical connection

Pin 1	supply 18 ÷ 36 V	Pin 8c	
Pin 2	output 2 ÷ 10 V	Pin 24a	
Pin 3	0 V	Pin 22c	
Pin 4	NC	NC	

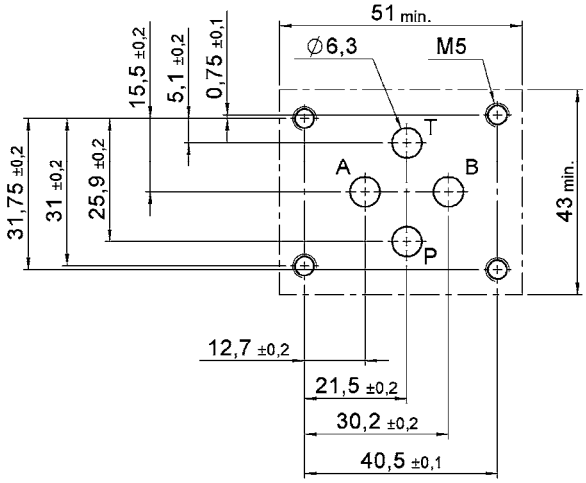




Standard models	Part No.
P4WR 06 E08 D01-12PG/V	3539255
P4WR 06 E16 D01-12PG/V	3539261
P4WR 06 E26 D01-12PG/V	3539264
P4WR 06 J08 D01-12PG/V	3539276
P4WR 06 J16 D01-12PG/V	3539280
P4WR 06 J26 D01-12PG/V	3539281

Other types on request

Hole pattern to ISO 4401-03-02-0-05



MODEL CODE

P4WR 06 E 16 D01- 12PG /V

Name
Proportional solenoid valve
Subplate mounting

Nominal size
6

Symbol
E
J

Nominal flow
08= 8 l/min
16= 16 l/min
26= 26 l/min
At Δp=10 bar P-T

Type
D01 = Standard type with manual override

Nominal voltage
12= 12 V DC

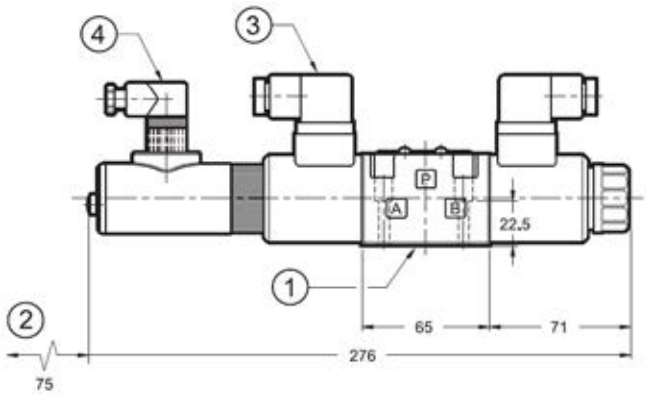
Coil connector
PG= DIN plug to EN175301-803

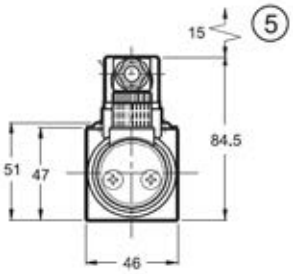
Seal material
V= FPM (Standard)
N= NBR (optional)

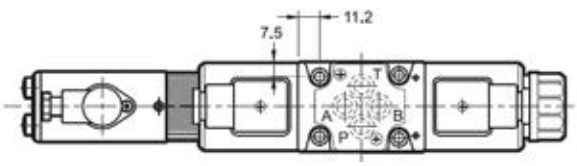
DIMENSIONS

1) Mounting plate with O-rings:
4 x O-Ring 9.25 x 1.78 NBR
2) Position transducer and free space for mounting the coil
3) DIN plug to EN175301-803
4) Electrical plug 4-poles M12S/10 for position transducer (incl.)
5) Free space for mounting the DIN plug

Fastening screws:
4x Allen screw M5 x 30 10.9, Torque: 5 Nm + 0,5 Nm
All dimensions in mm.
Fastening elements are not in the scope of delivery.







Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

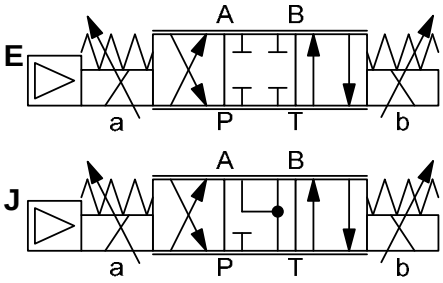
HYDAC INTERNATIONAL

4/3-Proportional Solenoid Valve direct acting, with integrated Electronics

Subplate to ISO4401

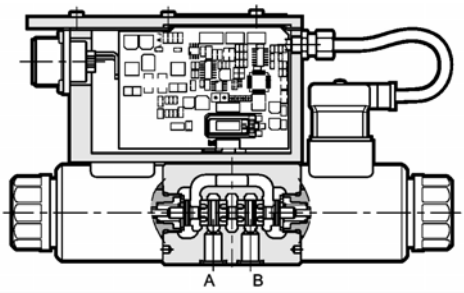
P4WEE 06

SYMBOL



up to 40 l/min
up to 350 bar

FUNCTION



The P4WEE 06 is a direct acting solenoid valve which combines the directional control with the velocity control of the consumer.
The controlled nominal flow is proportional to the electrical input signal at the coil. Analogue to his size the coil creates a force and moves the piston against the spring. Herewith the corresponding cross section diameters are opened which determines the flow rate in dependence of the pressure differential.

The integrated digital electronics permits a better performance of the valve and function by
- shortened response times
- reduced hysteresis
- better repeat accuracy
- integration CAN-Open (option)

FEATURES

- High flow rate due to optimized casted housing
- Small hysteresis by super finish of moving parts
- Long life cycle times by armature switching under oil
- Simple exchangeability by international standardized hole pattern ISO 4401
- Integrated digital amplifier

SPECIFICATIONS

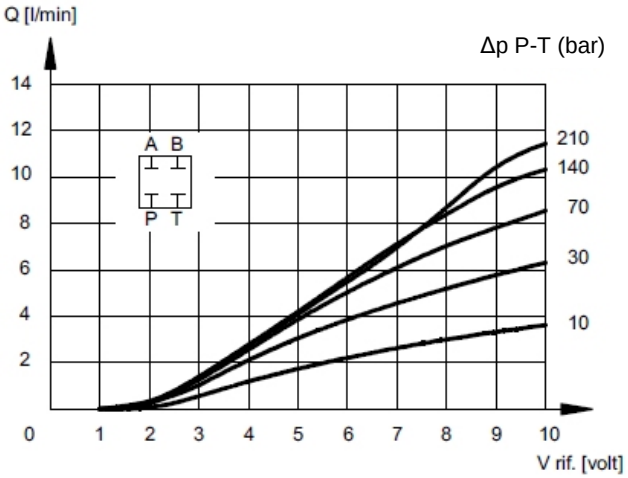
Operating pressure:	ports P, A, B: max. 350 bar port T: max. 140 bar
Nominal flow:	max. 40 l/min
Hysteresis (in % of Qmax):	< 3%
Repeat accuracy:	(in % of Qmax) < +/- 1,0%
Switch-on time (0-100%):	50 ms
Switch-off time (100-0%):	60 ms
Media operating temp.range:	-20°C up to +80°C
Ambient temperature range:	-20°C up to +50°C
Hydraulic fluid:	Hydraulic fluid to DIN 51524 part 1 and 2
Viscosity range:	10 mm^2/s up to 400 mm^2/s
Filtration:	ISO4406 class 18/16/13 according to ISO4406
Installation:	no orientation restrictions
Hint:	Vent system and valve before setting in motion
Hole pattern:	ISO4401-03-02-0-05 CETOP 4.2-4-03-350
Weight:	2,4 kg

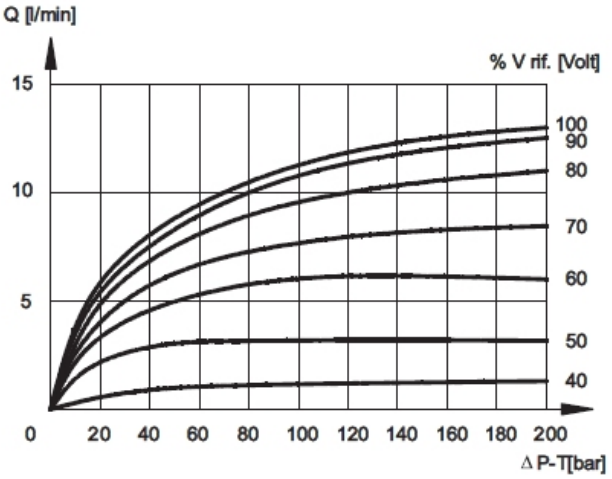
E 5.230.0 /01.13

PERFORMANCE

measured at ν= 33 mm²/s and T_{oil} = 46° C (The related Δp is measured between lines P and T of the valve)

E04





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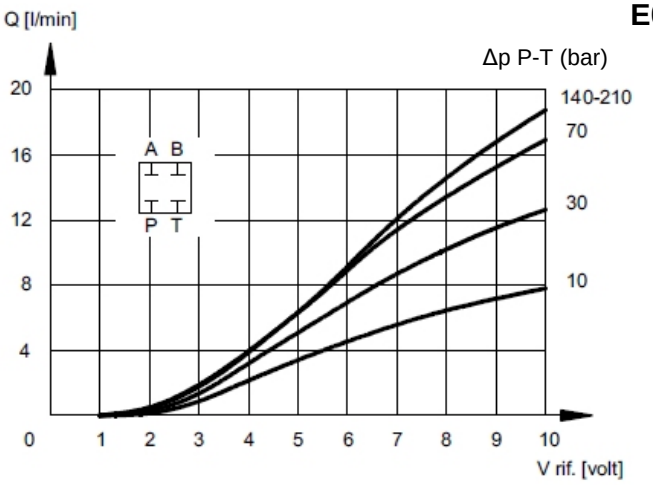

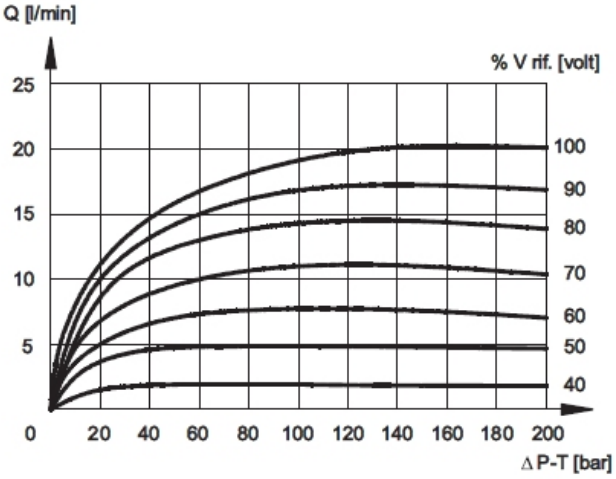

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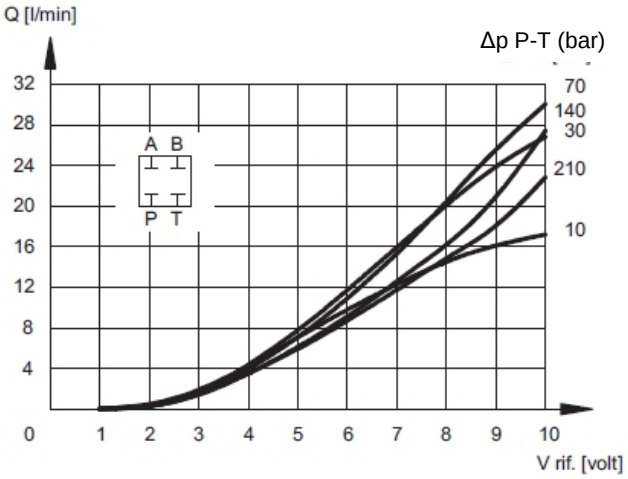

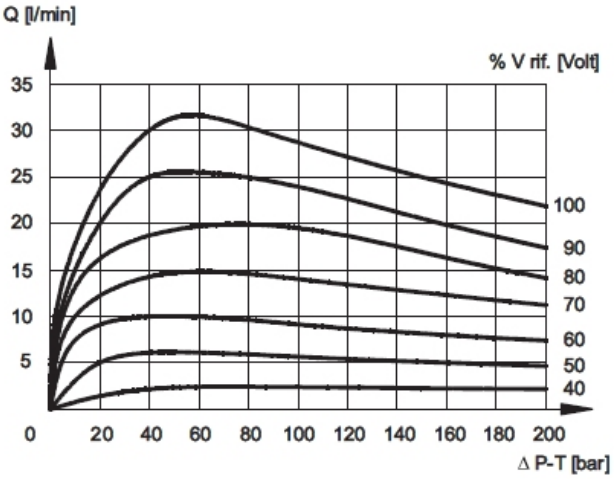

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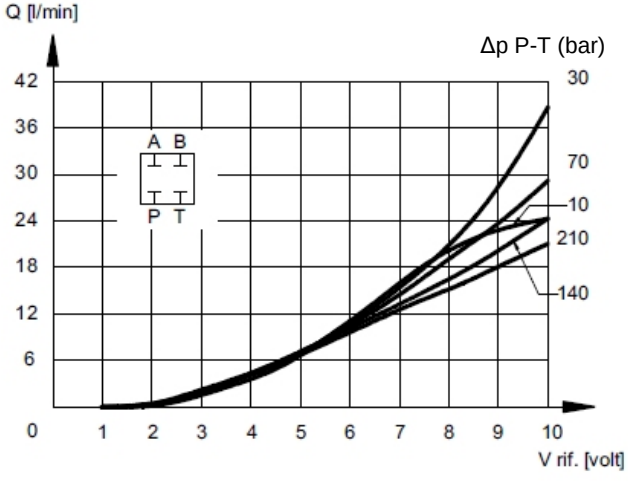
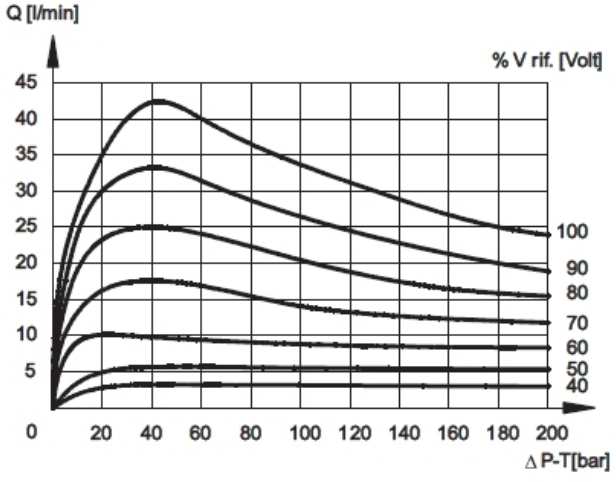
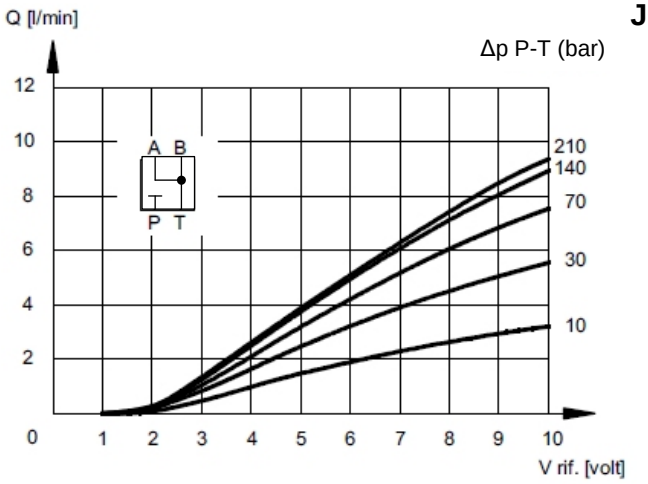


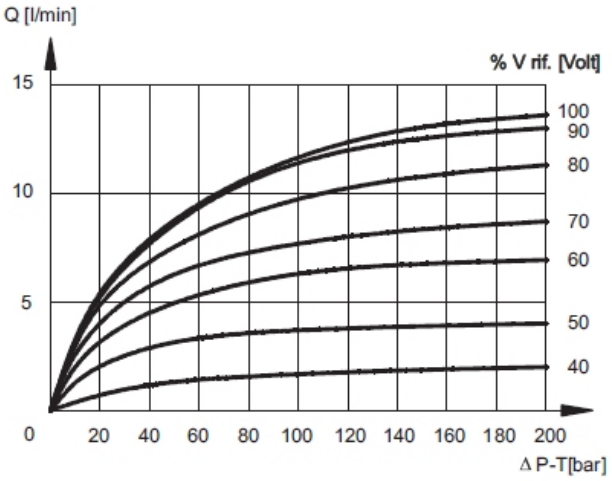


PERFORMANCE

measured at ν= 33 mm²/s and T_{oil} = 46° C (The related Δp is measured between lines P and T of the valve)

J04





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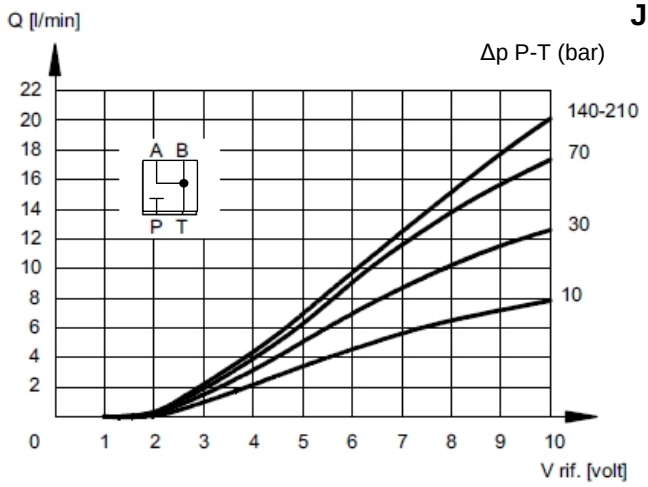

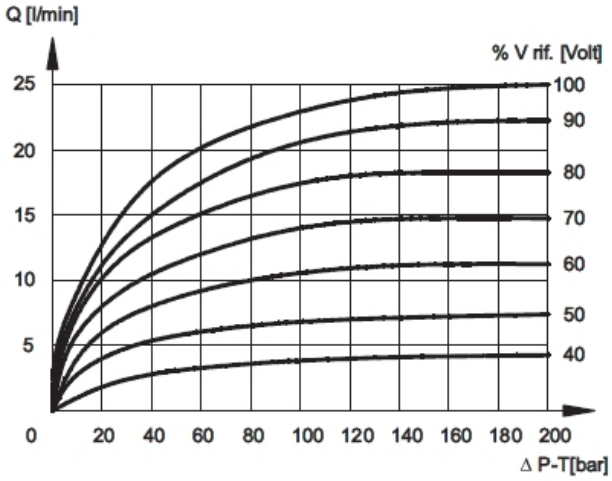

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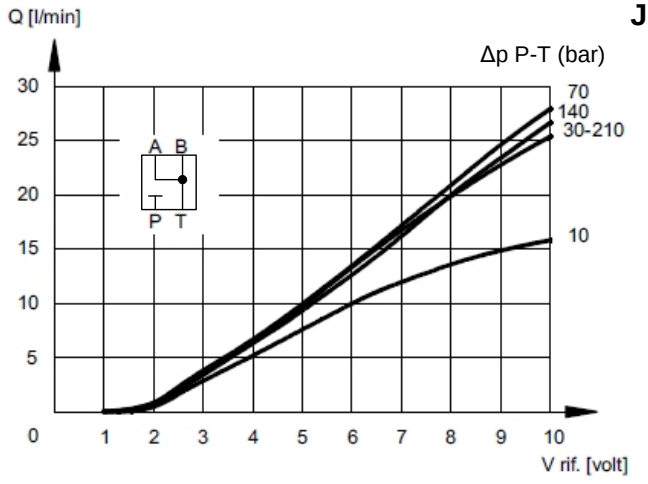

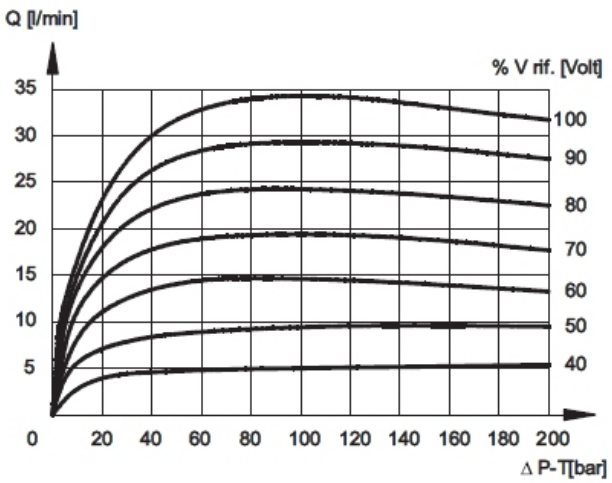

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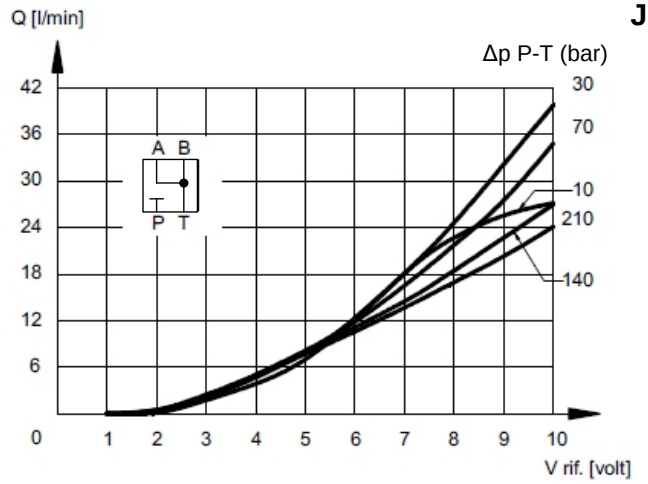
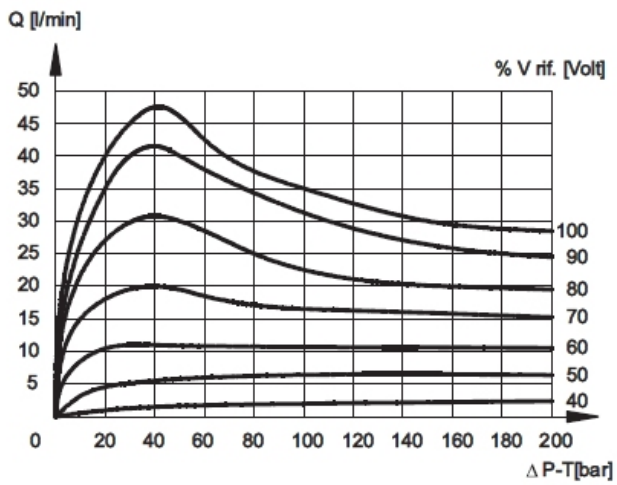
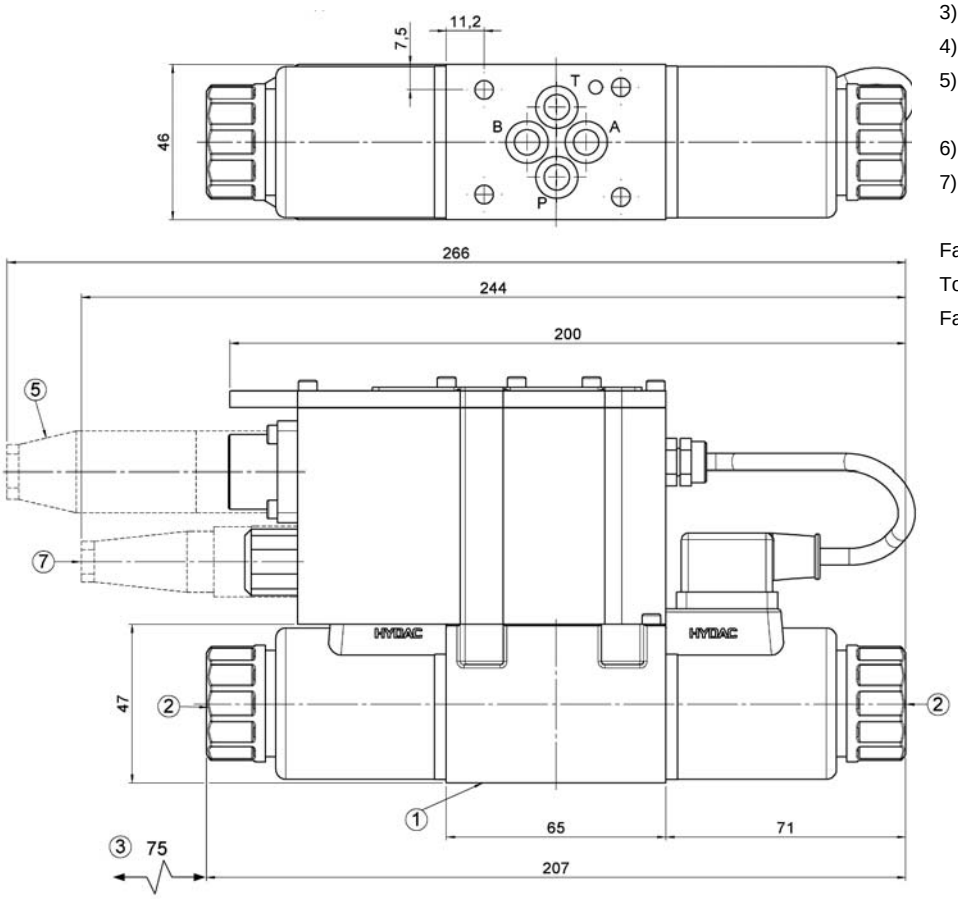




DIMENSIONS

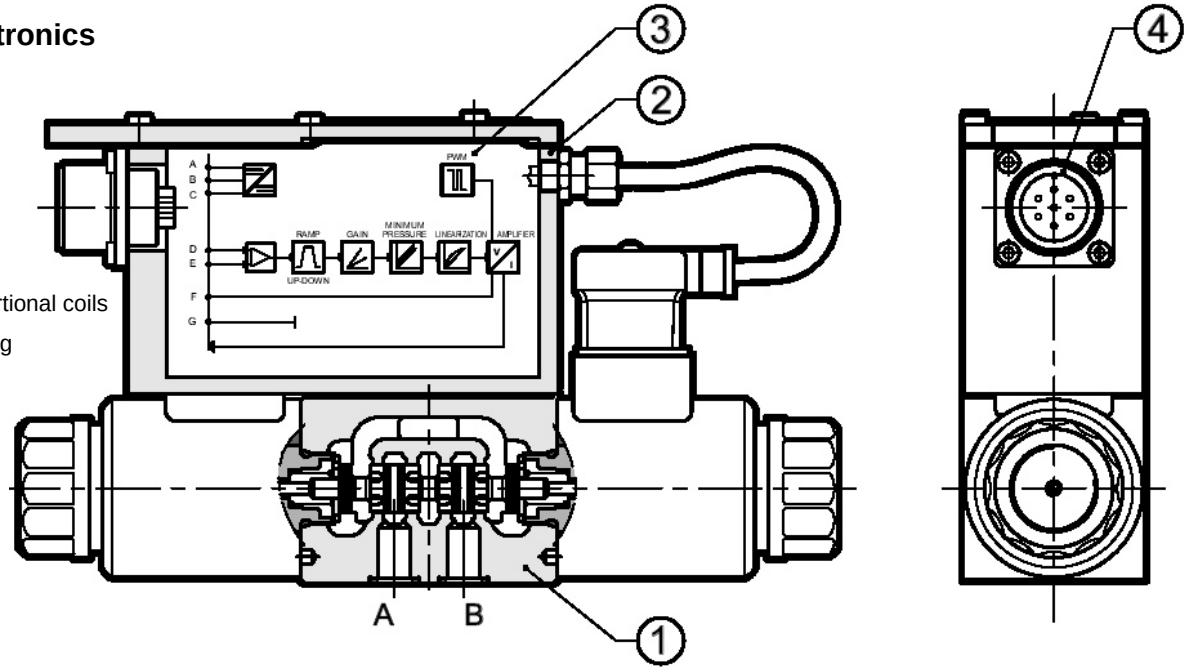


1) Mounting plate with O-rings 4 x 9.25 x 1.78 NBR
2) Manual override
3) Free space for mounting the coil
4) Main plug
5) Plug 7 pin DIN 43563 – IP65 PG11 EX7/L/10
   (not included in delivery Mat. 6080324)
6) Plug for CAN bus (optinal)
7) Plug 5 Pin M12 - IP65 PG7 EC5S/M12L/10
   (only for CAN bus)

Fastening screws: 4x M5 x 30 10.9
Torque 5 Nm +0,5 Nm. All dimensions in mm.
Fastening elements are not in the scope of delivery.

Onboard Electronics

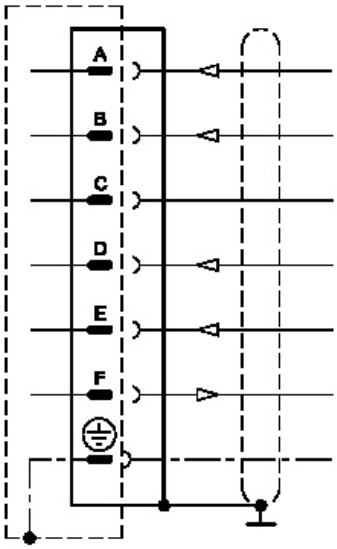
Parameter setting
only with CAN bus
Option and CAN PC
USB Connection!



1) Valve with proportional coils
2) Electronic housing
3) Digital amplifier
4) Main connector

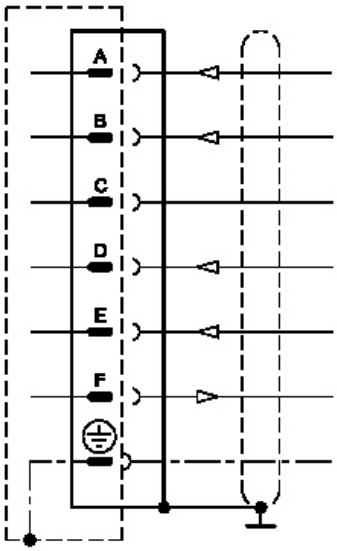
Power input:	50 W
Nominal voltage:	24 VDC (19-35VDC, ripple max.3Vpp)
Current draw:	1,88 A max.
Coil duty rating:	100% (continuous)
Input signal E0:	Setpoint-voltage signal +/-10VDC (Impedance Ri >50 kOhm)
Input signal E1:	Setpoint-current signal 4-20mA (Impedance Ri =316Ohm)
Alert signals:	Overload and overheating of Electronics
Communication:	Field Bus Interface CAN-Bus ISO 11898
Electronics port:	7-pin MIL-C-5015-G (DIN43563)
CAN-Bus-port:	M12-IEC 60947-5-2 (Option on request)
EMC EN50081-1:	Corresponding 89/336 CEE Standard
EMC EN50082-2:	Corresponding 89/336 CEE Standard
IP rating:	IP65 (CEI EN 60529 Standard)

Input signal E0 voltage signal



Pin	Werte	Function	Details
A	24 VDC	Supply voltage	from 19 to 35 VDC (ripple max. 3Vpp)
B	0 V	Supply (0)	0 V
C	----	Not connected	--
D	± 10 V	Input signal (analogue)	Impedance Ri > 50 KOhm (see detail 1)
E	0 V	Differential ground (analogue)	--
F	± 10 V	Analogue output	+/- 100% Imax (see detail 2)
PE	GND	Protective earth conductor	--

Input signal E1 current signal



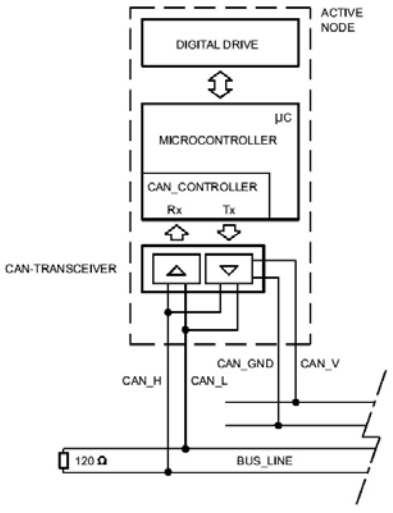
Pin	Werte	Function	Details
A	24 VDC	Supply voltage	from 19 to 32 VDC (ripple max. 3Vpp)
B	0 V	Supply (0)	0 V
C	----	Not connected	--
D	4 ÷ 20 mA	Input signal (analogue)	Impedance Ri = 316 Ohm
E	0 V	Differential ground (analogue)	--
F	± 10 V	Analogue output	+/- 100% Imax (see detail 2)
PE	GND	Protective earth conductor	--

Detail 1: The input signal is a differentia signal (only E0-Version). For solenoid valves with two coils, with positive reference signal at Pin D, the flow is from P - A and B - T. At reference signal Zero it is in neutral position. For solenoid valves with one coil, with positive reference signal at Pin D, the flow is from P - B and A - T. The piston stroke is proportional to UD - UE. If there is only one input signal, Pin B (0V power supply) and Pin E (0V Reference signal) have to be connected together at protective earth.
Detail 2: setting the test point Pin F in relation to Pin B (0V)
Detail 3: foresee a fuse at Pin A (24 VDC) for the protection of the electronics: 5A/50V fast acting.

CAN Bus Interface (Option /C)
will be needed to parameterize
the Onboard
Electronics

<u>CAN PC/USB Interface</u>
<u>- content</u>:
Parameterize-software
and PC connection cable
between CAN Bus and PC:

On request
(not in the standard scope of delivery
only in connection with OBE
and PC interface)



CAN connector connection scheme

Pin	Values	Function
1	CAN_SHLD	Monitor
2	CAN +24VDC	BUS + 24 VDC (max 30 mA)
3	CAN 0 DC	BUS 0 VDC
4	CAN_H	BUS line (high signal)
5	CAN_L	BUS line (low signal)

Standard models	Part No.
P4WEE 06 E04 D01-24PG E0/V	6078965
P4WEE 06 E08 D01-24PG E0/V	6078966
P4WEE 06 E16 D01-24PG E0/V	6078967
P4WEE 06 E26 D01-24PG E0/V	6078968
P4WEE 06 J04 D01-24PG E0/V	6078969
P4WEE 06 J08 D01-24PG E0/V	6078970
P4WEE 06 J16 D01-24PG E0/V	6078971
P4WEE 06 J26 D01-24PG E0/V	6078972
P4WEE 06 E04 D01-24PG E1/V	6078977
P4WEE 06 E08 D01-24PG E1/V	6078978
P4WEE 06 E16 D01-24PG E1/V	6078979
P4WEE 06 E26 D01-24PG E1/V	6078980
P4WEE 6 J04 D01-24PG E1/V	6078981
P4WEE 6 J08 D01-24PG E1/V	6078982
P4WEE 6 J16 D01-24PG E1/V	6078983
P4WEE 6 J26 D01-24PG E1/V	6078984

Other types on request

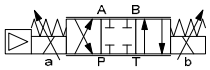
MODEL CODE

P4WEE 06 E 26 D01-24PG E0 /V/C

Name
Proportional solenoid valve with integrated Electronics

Nominal size
6

Symbol
E



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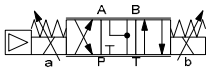


Nominal flow
04= 4 l/min
08= 8 l/min
16=16 l/min
26=26 l/min
(At Δp=10 bar P-T)

Type
D01 = standard type with manual override

Nominal voltage
24 = 24 V DC

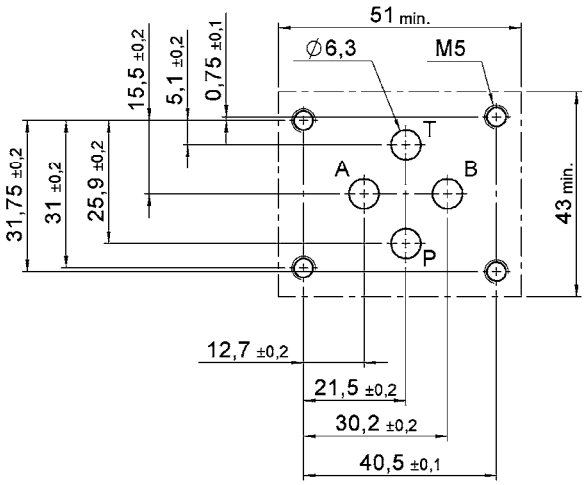
Coil connector
PG= DIN plug to EN175301-803 (for coil)

Input signal
E0= +/-10 V
E1= 4-20 mA

Seal material
V= FPM (Standard)
N= NBR (optional)

Option
C = CAN-Bus (on request)

Hole pattern to ISO 4401-03-02-0-05



Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

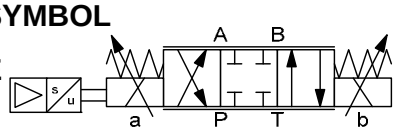
4/3-Proportional Solenoid Valve direct acting, with integrated Electronics and transducer

Subplate to ISO4401

P4WRE 06

SYMBOL

E



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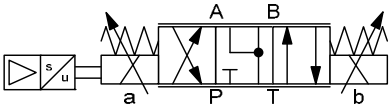

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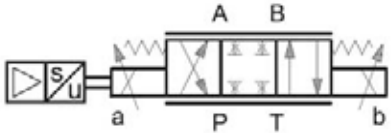
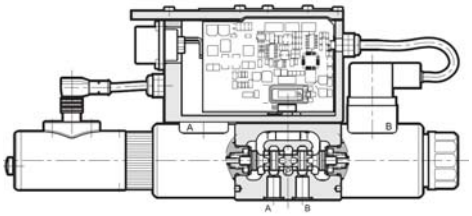


Up to 80 l/min
Up to 350 bar

FUNCTION



The P4WRE 06 is a direct acting solenoid valve which combines the directional control with the velocity control of the consumer.
The controlled nominal flow is proportional to the electrical input signal at the coil.
Analogue to his size the coil creates a force and moves the piston against the spring. Herewith the corresponding cross section diameters are opened which determines the flow rate in dependence of the pressure differential.
The integrated digital electronics permits a better performance of the valve and function by
- shortened response times
- reduced hysteresis
- better repeat accuracy

FEATURES

- High flow rate due to optimized casted housing
- Small hysteresis by super finish of moving parts
- Long life cycle times by armature switching under oil
- Minimal wear by hardened and ground valve piston
- Simple exchangeability by international standardized hole pattern to ISO 4401
- Integrated digital amplifier and position transducer

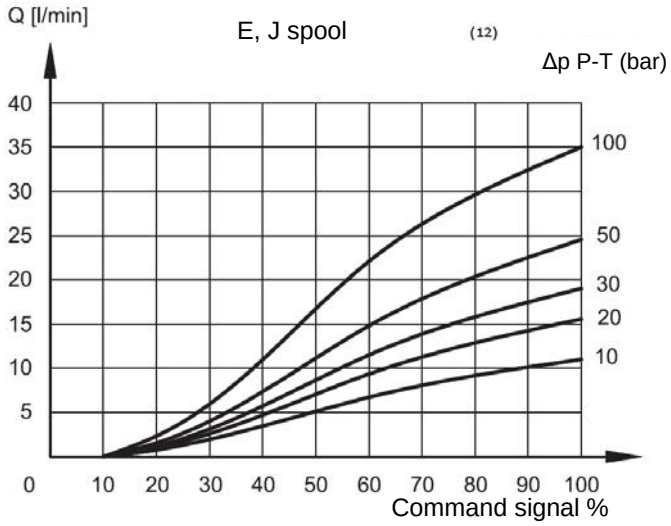
SPECIFICATIONS

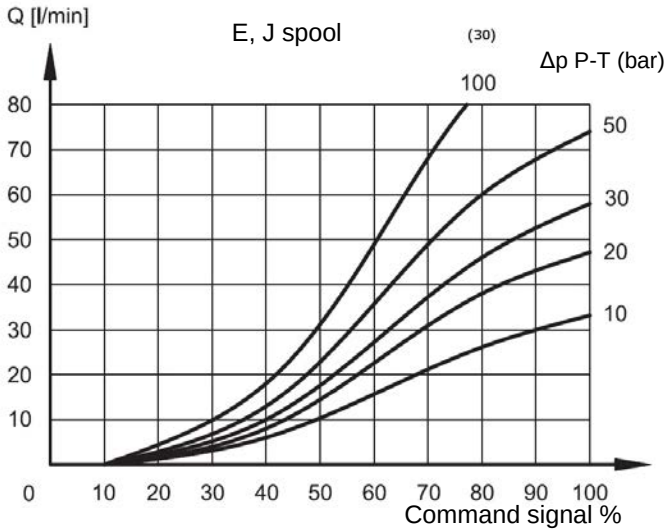
Operating pressure:	ports P,A,B max. 350 bar port T max. 210 bar
Nominal flow:	max. 80 l/min
Hysteresis:	(in % of Qmax) < 0,2 %
Repeat accuracy: (in % of Qmax)	< +/- 0,2 %
Media operating temp.range:	-20°C up to +80°C
Ambient temperature range:	-20°C up to +50°C
Hydraulic fluid:	Hydraulic fluid to DIN 51524 part 1 / 2
Viscosity range:	10 mm^2/s up to 400 mm^2/s
Filtration:	Class 18/16/13 up to 19/17/14 according to ISO4406
Coil duty rating:	100% (continuous)
Supply voltage:	DC
Nominal current:	0,86 A at 24V DC
Resistance at 20°C:	17,6 Ohm at 24V DC
Electromagnetic compatibility: (EMC)	Emissions to EN 50081-1 compatibility to EN 50082-2 to Norm 89/336 CEE
IP rating:	IP65
Installation:	no orientation restrictions
Hint:	Vent system and valve before setting in motion
Hole pattern:	ISO4401-03-02-0-05
Weight:	2,7 kg

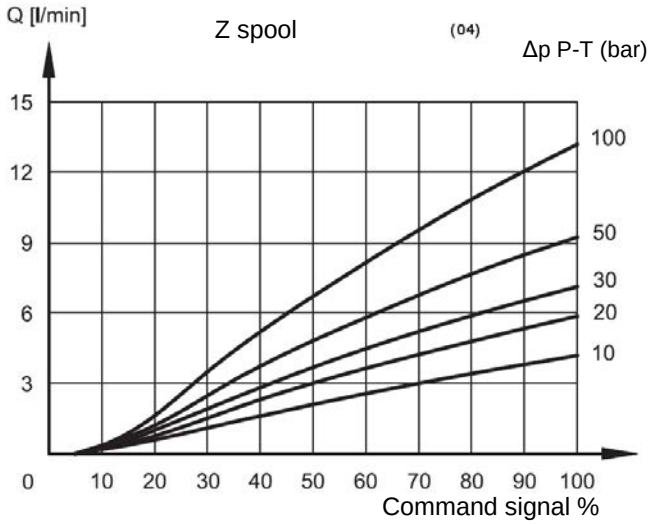
E 5.231.2.0 /01.13

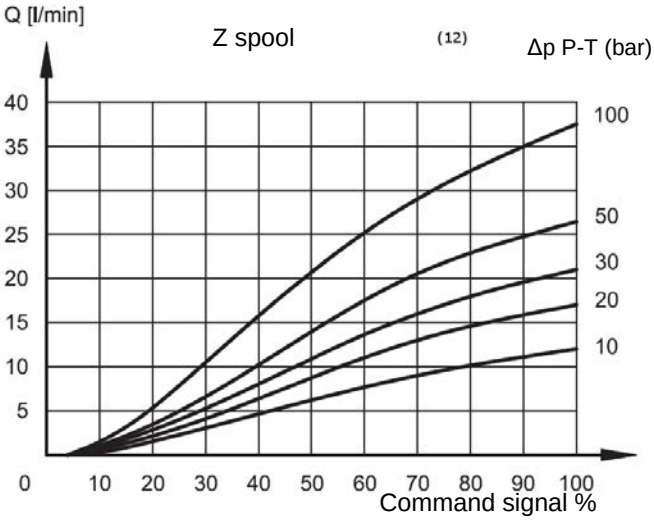
PERFORMANCE

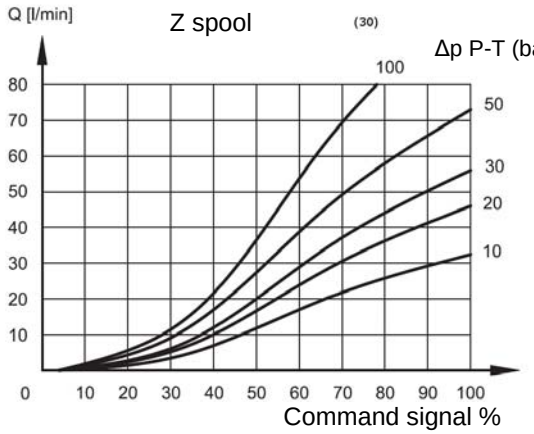
measured at ν= 33 mm²/s and T_{oil} = 46° C (The related Δp is measured between lines P and T of the valve)

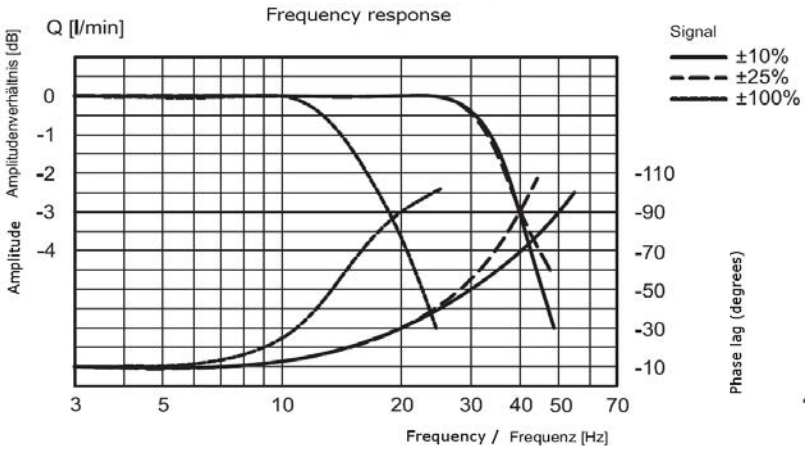


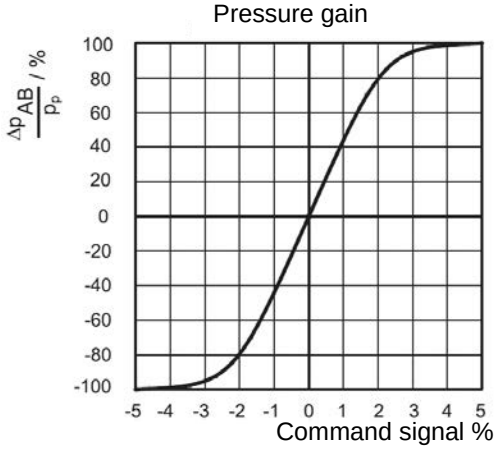


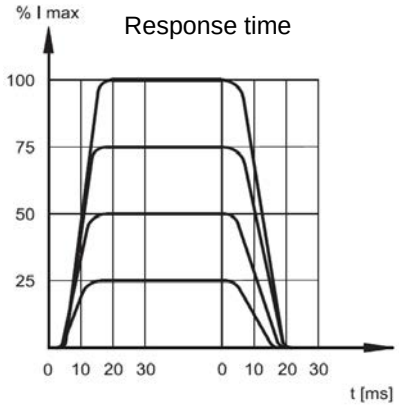






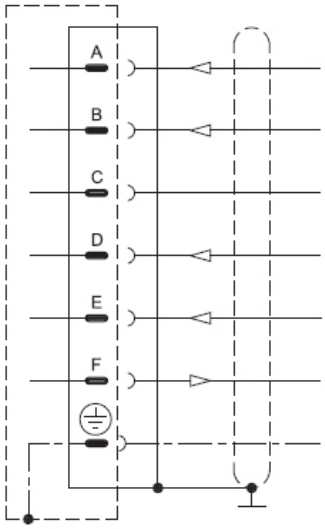






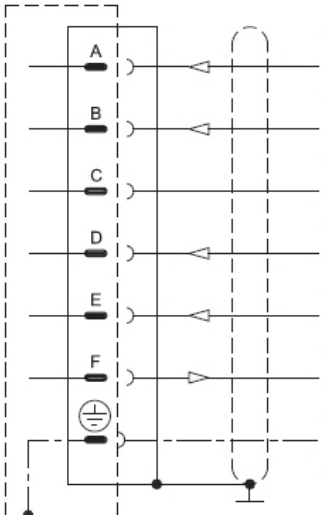
Curve taken at 50% flow and (ΔP 10 bar P->T)

Input signal E0 voltage signal



Pin	Value	Function	Details
A	24 V DC	Voltage	19 35 V CC (ripple max 3 Vpp) see note 1
B	0 V	Sypply (Zero)	0 V
C	24 V DC	Release	see Note 2
D	± 10 V	Differential input	Impedanz R_i > 50 kΩ see note 3
E	0 V	Differential Input	---
F	6 - 10V o 2 - 6 -10V	Monitor Feedback or. Comm.Lin	Signal WA see note 4
PE	GND	Protective earth conductor	---

Input signal E1 current signal



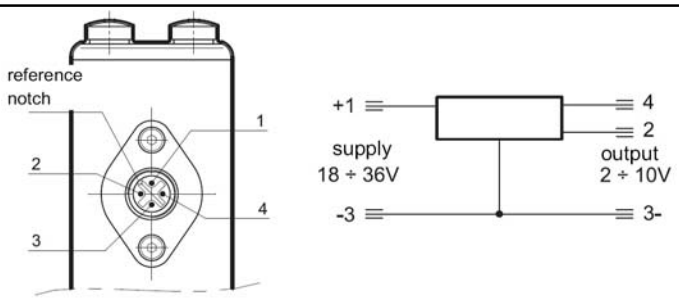
Pin	Value	Function	Details
A	24 V DC	Voltage	19 bis 35 V CC (ripple max 3 Vpp) see Note 1
B	0 V	Supply (Zero)	0 V
C	24 V DC	Release	see Note 2
D	4 ÷ 20 mA	Signal input	Impedanz R_i > 500 kΩ
E	0 V	Zero point reference	---
F	6 - 10V o 2 - 6 -10V	Monitor Feedback or Comm. Lin	Signal WA see Note 4
PE	GND	Protective earth Conductor	---

NOTE 1: preview on the Pin A (24 VDC) an external fuse for protecting electronics. Fuse characteristics: 5A/50V type fast.
NOTE 2: preview 24V DC on the PIN C to activate the card power stage.
NOTE 3: The input signal is differential type on E0 version only. For double solenoid valves, with positive reference signal connected to pin D, the valve opening is P - A and B - T. With zero reference signal the valve is in central position. For “SA” single solenoid valves, with positive reference to pin D, the valve opening is P-B and A-T. The spool stroke is proportional to UD - UE. If only one input signal (single-end) is available, the pin B (0V power supply) and the pin E (0V reference signal) must be connected through a jumper and both connected to GND, electric panel side.
NOTE 4: This value changes, as shown in the table below. When MONITOR function is enabled and the card is enabled, read the test point pin F in relation to pin B (0V). When detect a failure or error of the sensor LVDT, the drive bring the valve back in central position and locks it. In this condition the pin F, referring to the pin B, indicates 0V DC output. To reset the fault, the card must be disabled and re-enable. When the card is disabled, the pin F referred to the pin B shows 2.7V DC output: this value is given by the voltage of the LIN bus communication and not by the MONITOR value.

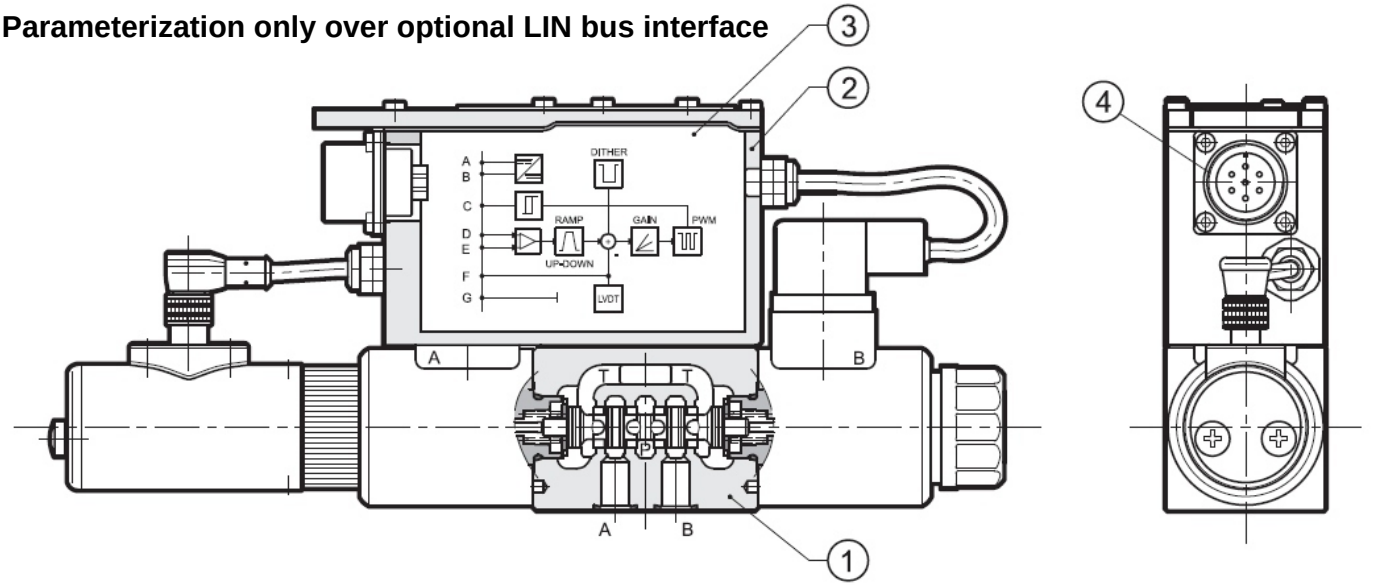
ELECTRONICS

Position encoder – Electrical connection

Pin 1	supply 18 ÷ 36 V	Pin 8c	
Pin 2	Output ÷ 10 V	Pin 24a	
Pin 3	0 V	Pin 22c	
Pin 4	NC	NC	



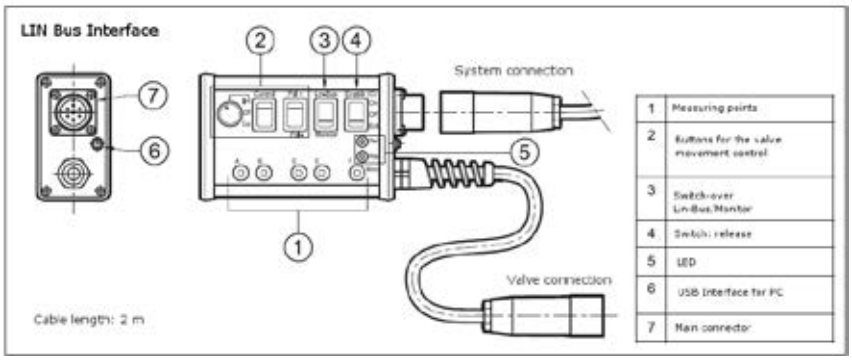
Parameterization only over optional LIN bus interface



1	Valve with proportional coils	3	Digital amplifier
2	Housing for Electronics	4	Main connector

Power input:	70 W
Current draw:	2,6 A max.
Nominal voltage:	24 VDC (19-35VDC, ripple max.3Vpp)
Coil duty rating:	100% (continuous)
Input signal E0:	voltage signal +/-10VDC (Impedance Ri >50 kOhm)
Input signal E1:	current signal 4-20mA (Impedance Ri =500 Ohm)
Alert signals:	Overload and overheating of Electronics, LVDT sensor failure, cable break, power failure <4mA
Communication:	LIN Bus Interface (optional on request)
Electronics port:	7-pin MIL-C-5015-G (DIN43563)
EMC EN61000-6-4:	Corresponding 2004/108 CE Standard
EMC EN61000-6-4:	Corresponding 2004/108 CE Standard
IP rating:	IP65 (CEI EN 60529 Standard)

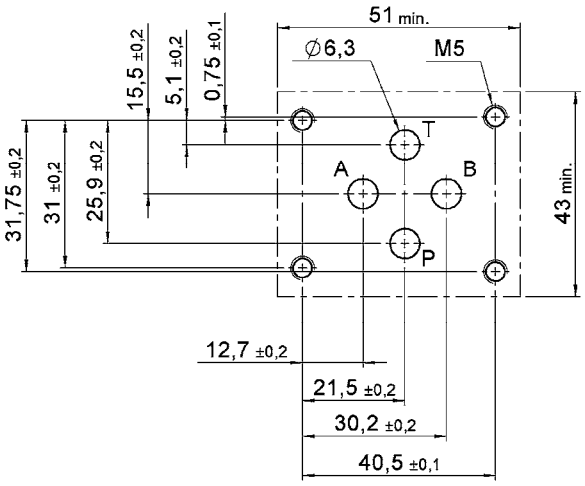
Attention: to parameterize the OBE a LIN bus interface is necessary
(not in the standard scope of delivery)
Price on request



Standard models	Part No.
P4WRE 06 E12 D01-24PG E0/V	3565232
P4WRE 06 E30 D01-24PG E0/V	3565233
P4WRE 06 J12 D01-24PG E0/V	3565246
P4WRE 06 J30 D01-24PG E0/V	3565247

Other types on request

Hole pattern to ISO 4401-03-02-05



MODEL CODE

P4WRE 06 E 12 D01- 24PG E0 /V

Name
Proportional solenoid valve
subplate with integr. Electronics

Nominal size
6

Symbol
E, J, Z

Nominal flow
4 = 4 l/min (only Z symbol)
12 = 12 l/min (At Δp=10 bar P-T)
30 = 30 l/min

Type
D01 = Standard type with manual override

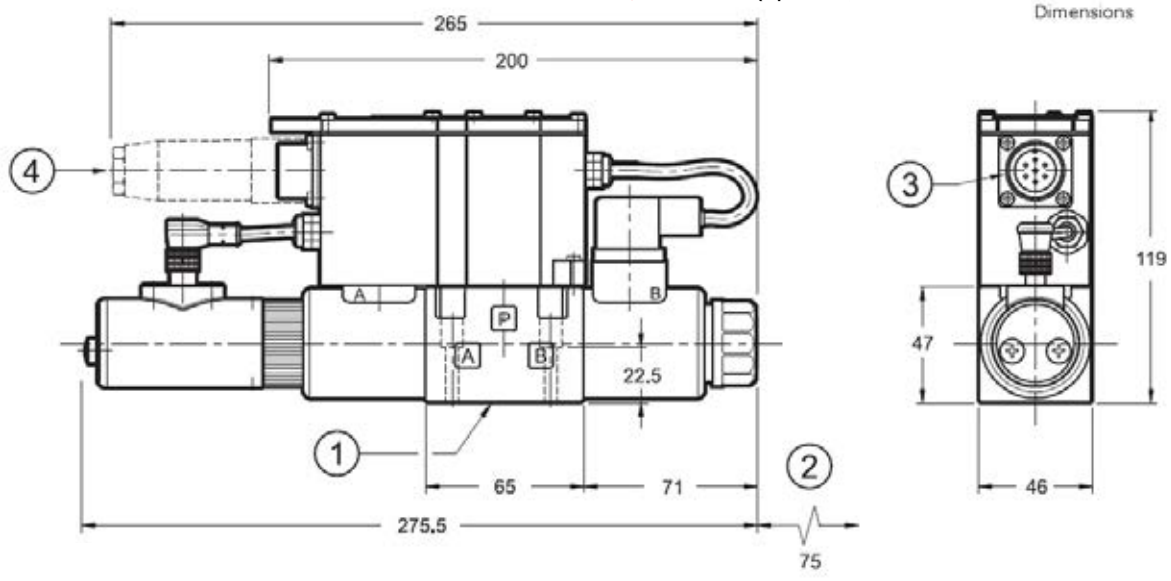
Nominal voltage
12= 12 V DC

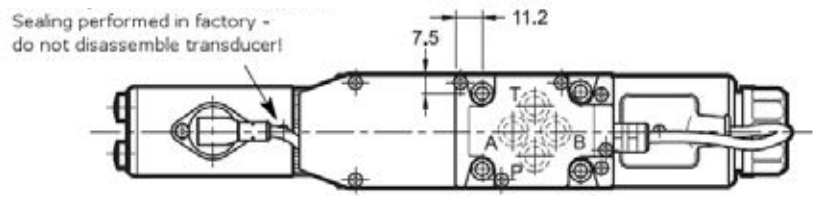
Coil connector
PG= DIN plug to EN175301-803 (for coil)

Input signal
E0= +/-10 V
E1= 4-20 mA

Seal material
V= FPM (Standard)
N= NBR (optional)

DIMENSIONS





1) Mounting plate with O-rings 4x 9.25 x 1.78 NBR 90 Shore
2) Free space for mounting the coil
4) Main plug
2) Plug 7 pin DIN 43563 – IP65 PG11 EX7/L/10
(not included in delivery Mat. 6080324)
Fastening screws: 4x M5 x 30 10.9, Torque 5 Nm +o,5 Nm
All dimensions in mm. Fastening elements are not in the scope of delivery.

Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

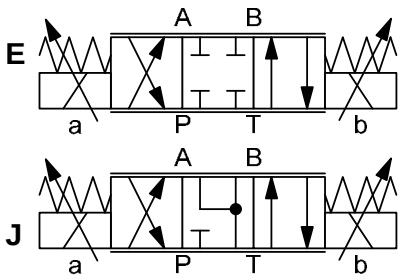
HYDAC INTERNATIONAL

4/3-Proportional Solenoid Valve direct acting

Subplate to ISO4401

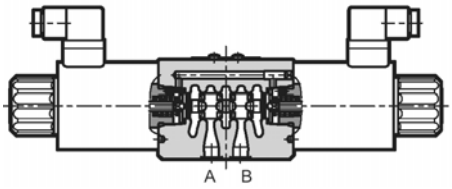
P4WE 10

SYMBOL



up to 90 l/min
up to 320 bar

FUNCTION



The P4WE 10 is a direct acting solenoid valve which combines the directional control with the velocity control of the consumer.
The controlled nominal flow is proportional to the electrical input signal at the coil.
Analogue to his size the coil creates a force and moves the piston against the spring. Herewith the corresponding cross section diameters are opened which determines the flow rate in dependence of the pressure differential.
For the electrical control of the valve there are electronic modules available (see brochure 5.249.2.0 PEM-XD).

FEATURES

- High flow rate due to optimized casted housing
- Small hysteresis by super finish of moving parts
- Long life cycle times by armature switching under oil
- Minimal wear by hardened and ground valve piston
- Simple exchangeability by international standardized hole pattern to ISO 4401
- Electronic control by PEM-XD see brochure 5.249.2.0

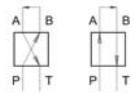
SPECIFICATIONS

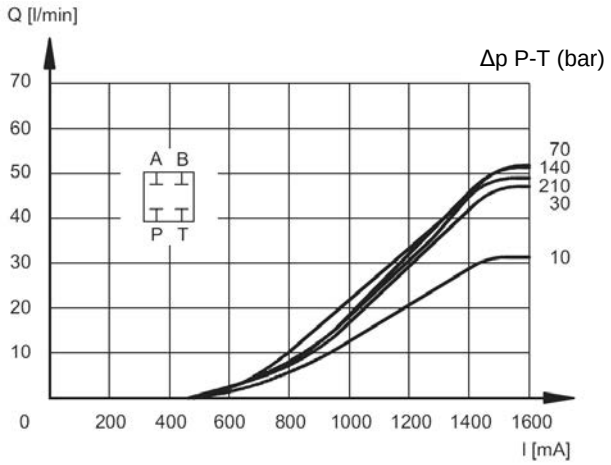
Operating pressure:	ports P,A,B max. 320 bar port T max. 210 bar
Nominal flow:	max. 90 l/min
Hysteresis:	(in % of Qmax): < 6 %
Repeat accuracy:	(in % of Qmax) < +/- 1,5 %
Switch-on time:	(0-100%) 50 ms
Switch-off time:	(100-0%) 70 ms
Media operating temp.range:	-20°C up to +80°C
Ambient temperature range:	-20°C up to +50°C
Hydraulic fluid:	Hydraulic fluid to DIN 51524 part 1 / 2
Viscosity range:	10 mm^2/s up to 400 mm^2/s
Filtration:	Class 18/16/13 up to 19/17/14 according to ISO4406
Supply voltage:	DC voltage
Nominal current:	2,60 A at 12V DC 1,60 A at 24V DC
Resistance at 20°C:	3,40 Ohm at 12V DC 8,65 Ohm at 24V DC
Coil duty rating:	100% (continuous)
Electromagnetic compatibility: (EMC)	Emissions to EN 50081-1 compatibility to EN 50082-2 to Norm 89/336 CEE
IP rating:	IP65
Installation:	no orientation restrictions
Hint:	Vent system and valve before setting in motion
Hole pattern:	ISO4401-05-04-0-05
Weight:	5,9 kg

E 5.229.0 /01.13

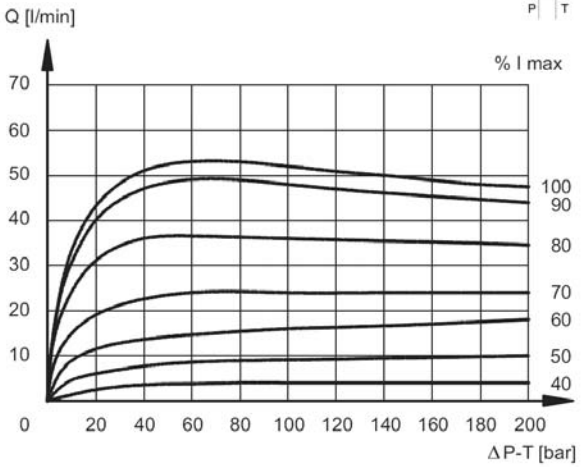
PERFORMANCE

measured at ν= 33 mm²/s and T_{oil} = 46° C (The related Δp is measured between lines P and T of the valve)

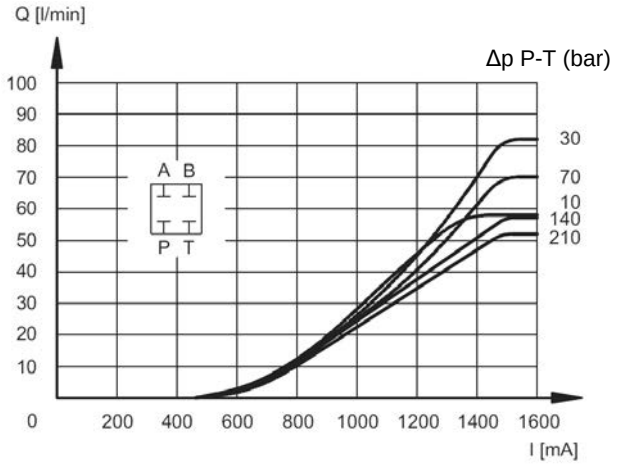


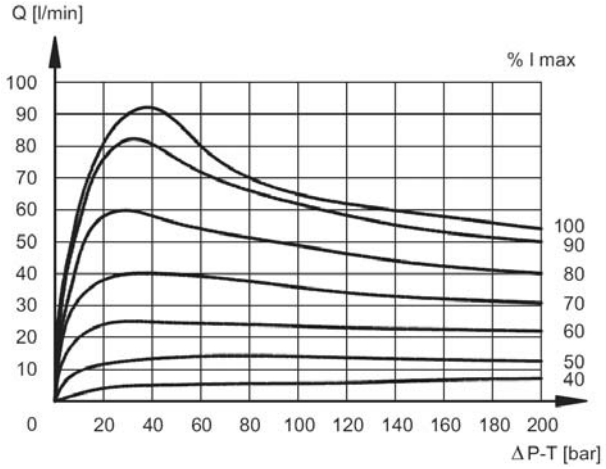


E30

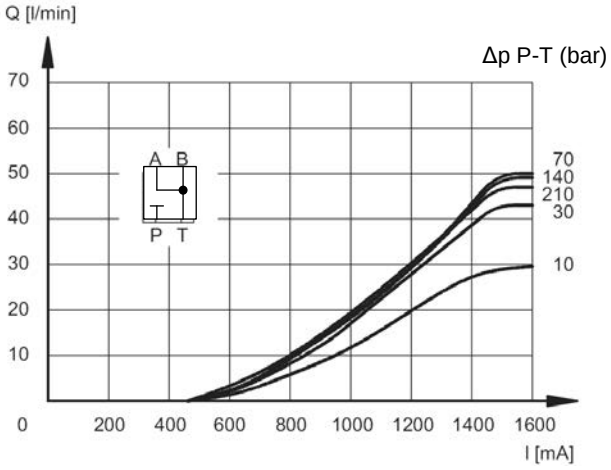


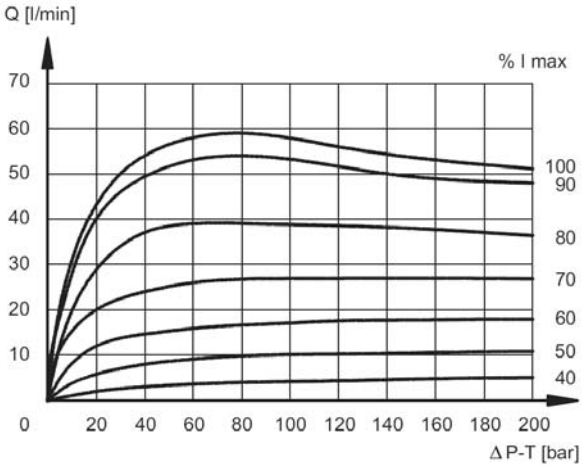
E60



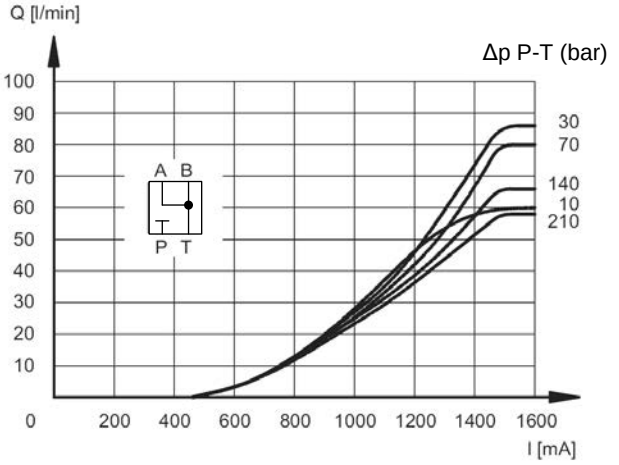


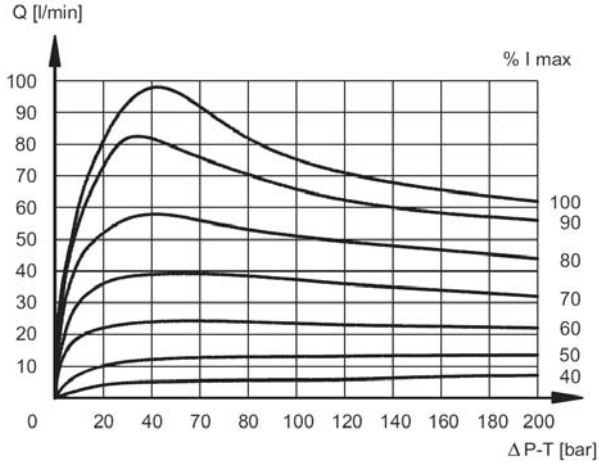
J30





J60





Standard models	Part No.
P4WE 10 E30 D01-24PG/V	6078958
P4WE 10 E60 D01-24PG/V	6078960
P4WE 10 J30 D01-24PG/V	6078962
P4WE 10 J60 D01-24PG/V	6078964

Other types on request

MODEL CODE

P4WE10 E 30 D01- 24PG /V

Name
Proportional solenoid valve
Subplate mounting

Nominal size
10

Symbol
E
J

Nominal flow
30 = 30 l/min
60 = 60 l/min (At Δp=10 bar P-T)

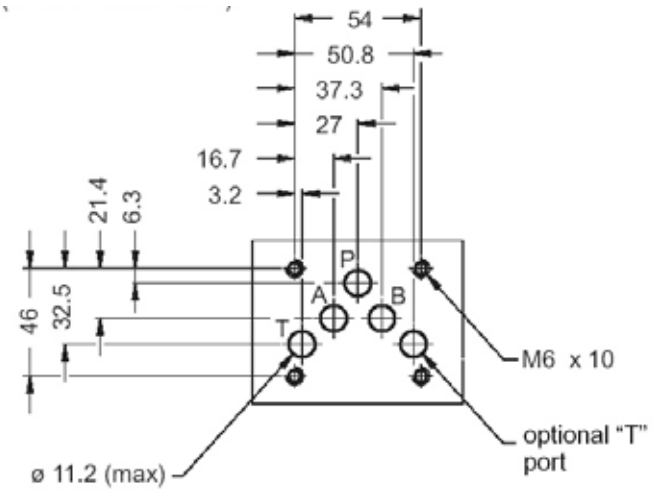
Type
D01 = standard type with manual override

Nominal voltage
12= 12 V DC
24= 24 V DC

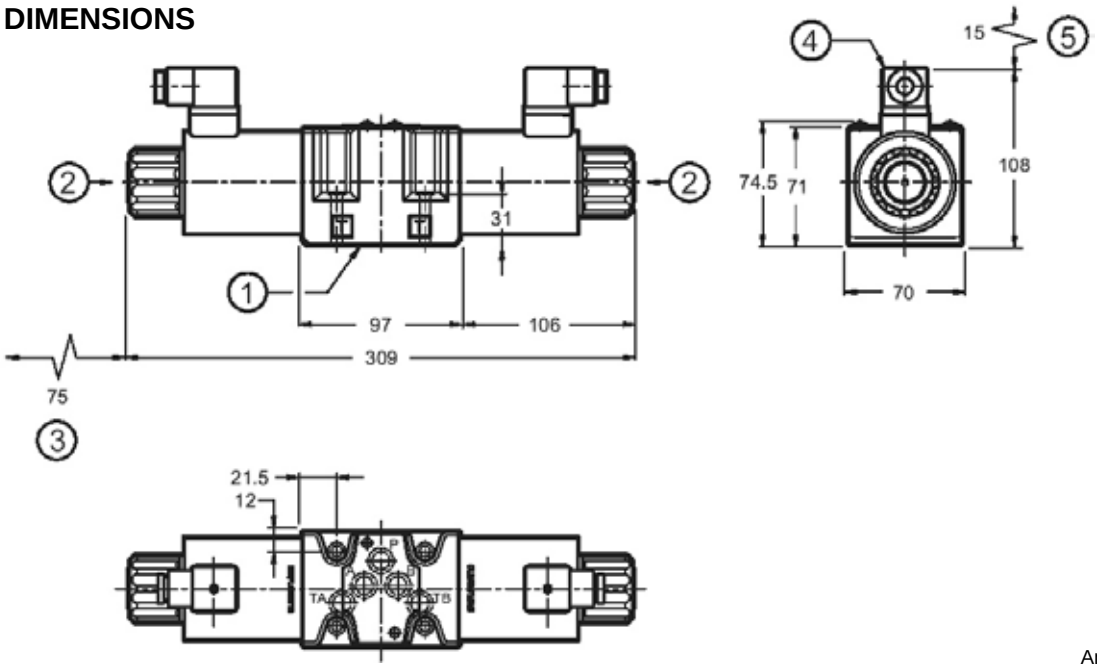
Coil connector
PG= DIN plug to EN175301-803

Seal material
V= FPM (Standard)
N= NBR (optional)

Hole pattern to ISO4401 05-04-0-05



DIMENSIONS



1) Mounting plate with O-rings 4x 12,42 x 1,78

2) Manual override

3) Free space for mounting the coil

4) DIN plug to EN175301-803

5) Free space for mounting the plug

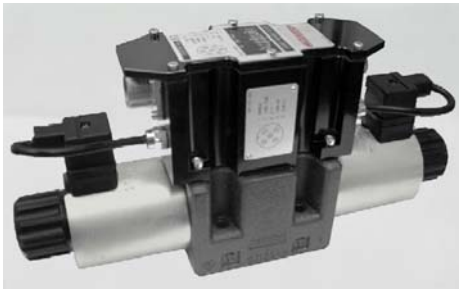
Fastening screws: 4x M6 x 40 10.9, Torque 8 Nm +0,5 Nm

All dimensions in mm. Fastening elements are not in the scope of delivery.

Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

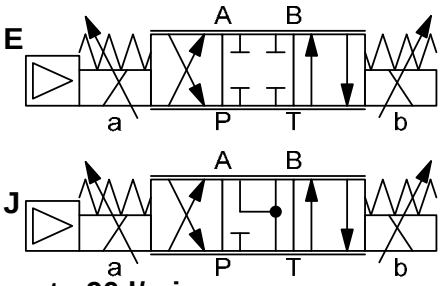


4/3-Proportional Solenoid Valve direct acting, with integrated Electronics

Subplate to ISO4401

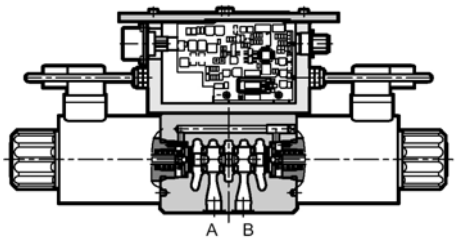
P4WEE 10

SYMBOL



up to 90 l/min
up to 320 bar

FUNCTION



The P4WEE10 is a direct acting solenoid valve which combines the directional control with the velocity control of the consumer.
The controlled nominal flow is proportional to the electrical input signal at the coil.
Analogue to his size the coil creates a force and moves the piston against the spring. Herewith the corresponding cross section diameters are opened which determines the flow rate in dependence of the pressure differential.

The integrated digital electronics permits a better performance of the valve and function by
- shortened response times
- reduced hysteresis
- better repeat accuracy
- integration CAN-Open as an option

FEATURES

- High flow rate due to optimized casted housing
- Small hysteresis by super finish of moving parts
- Long life cycle times by armature switching under oil
- Minimal wear by hardened and ground valve piston
- Simple exchangeability by international standardized hole pattern to ISO 4401
- Integrated digital amplifier

SPECIFICATIONS

Operating pressure:	ports P,A,B max. 320 bar port T max. 140 bar
Nominal flow:	max. 90 l/min
Hysteresis:	(in % of Qmax): < 3,0 %
Repeat accuracy: (in % of Qmax)	< +/- 1,0 %
Switch-on time:	(0-100%) 50 ms
Switch-off time:	(100-0%) 60 ms
Media operating temp.range:	-20°C up to +80°C
Ambient temperature range:	-20°C up to +50°C
Hydraulic fluid:	Hydraulic fluid to DIN 51524 part 1 / 2
Viscosity range:	10 mm^2/s up to 400 mm^2/s
Filtration:	Class 18/16/13 up to 19/17/14 according to ISO4406
Coil duty rating:	100% (continuous)
Electromagnetic compatibility: (EMC)	Emissions to EN 50081-1 compatibility to EN 50082-2 to Norm 89/336 CEE
IP rating:	IP65
Installation:	no orientation restrictions
Hint:	Vent system and valve before setting in motion
Hole pattern:	ISO4401-05-04-0-05
Weight:	6,6 kg

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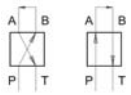
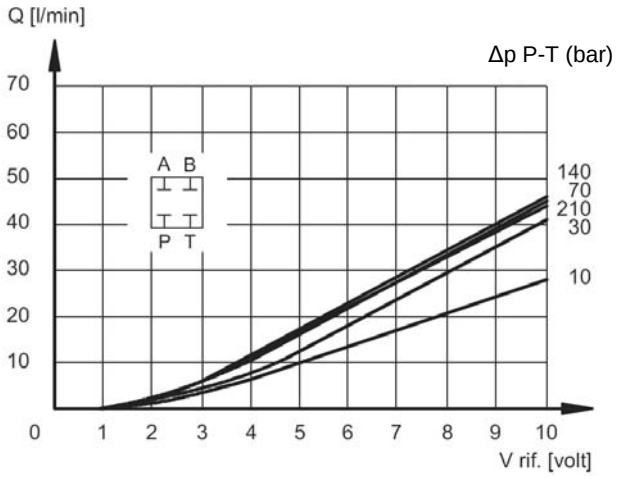
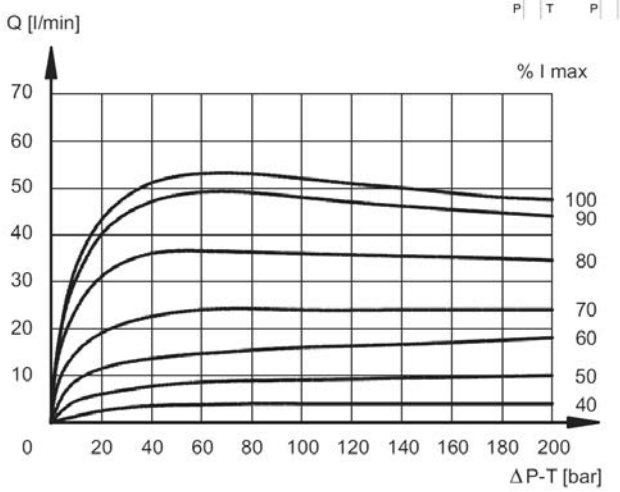
PERFORMANCE

measured at ν= 33 mm²/s and T_{oil} = 46° C (The related Δp is measured between lines P and T of the valve)

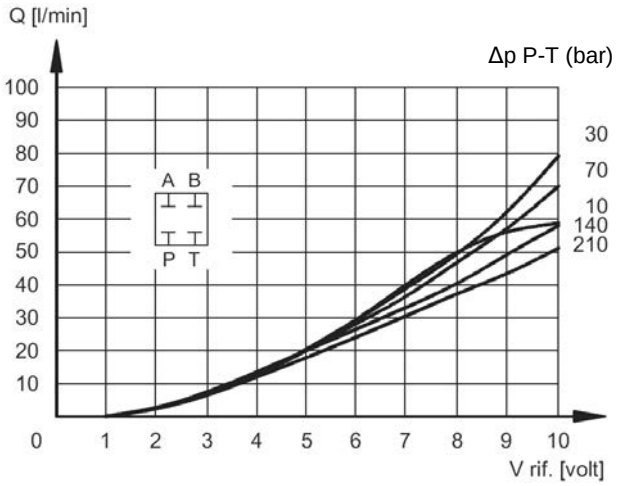


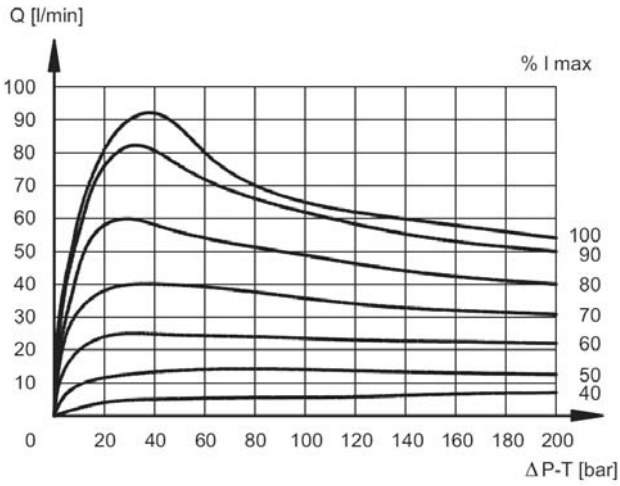
E30



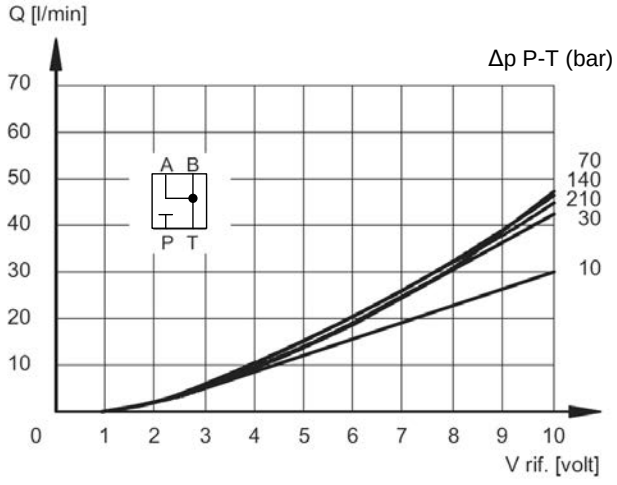


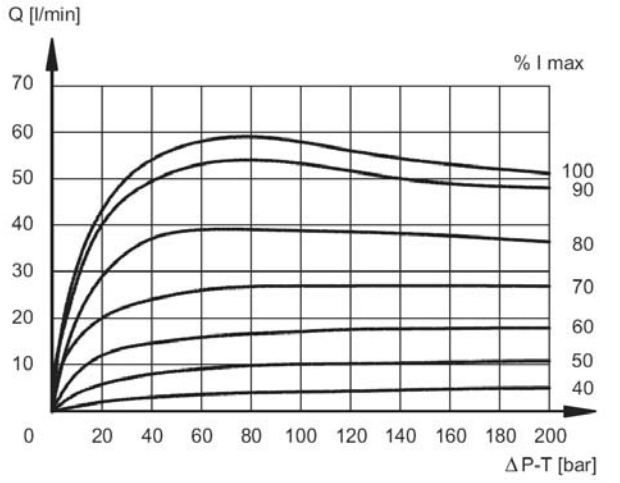
E60





J30





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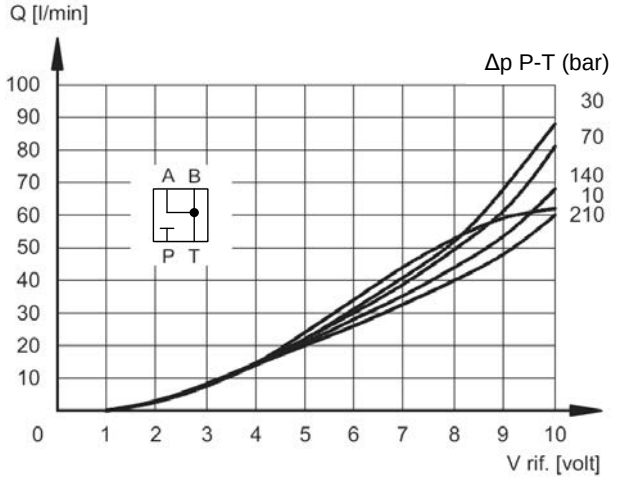
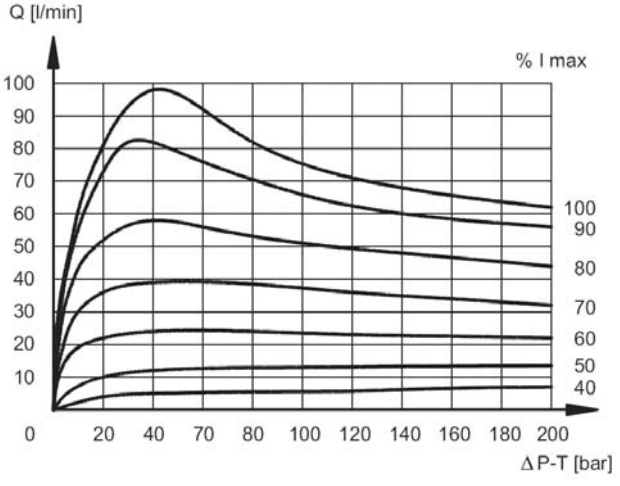
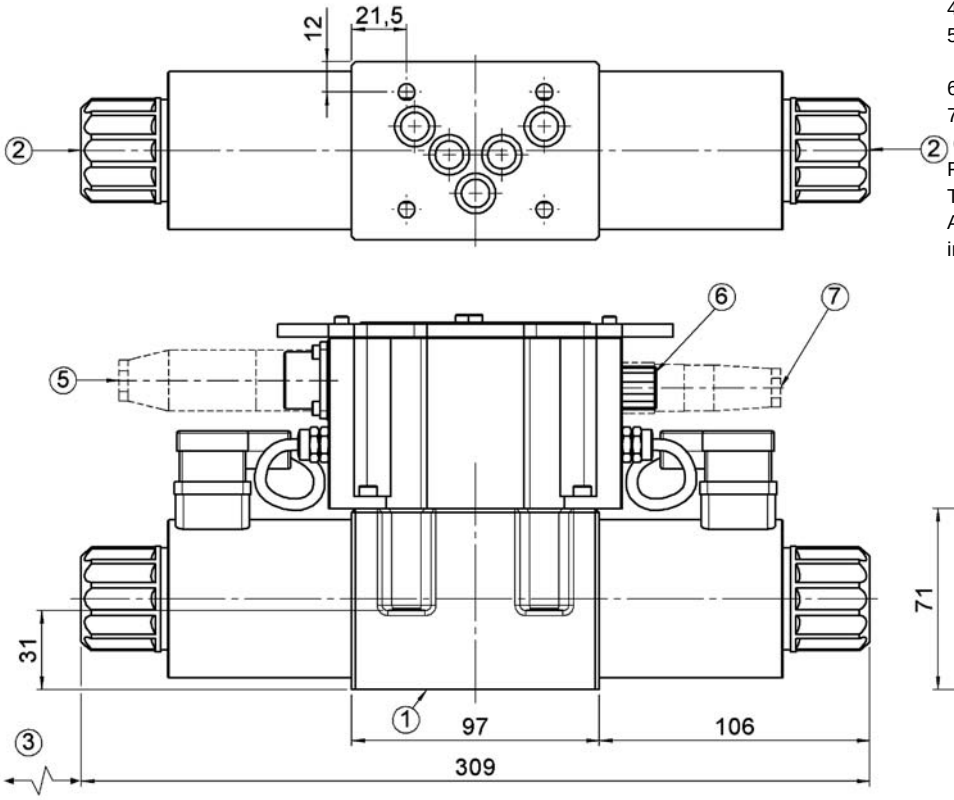




DIMENSIONS

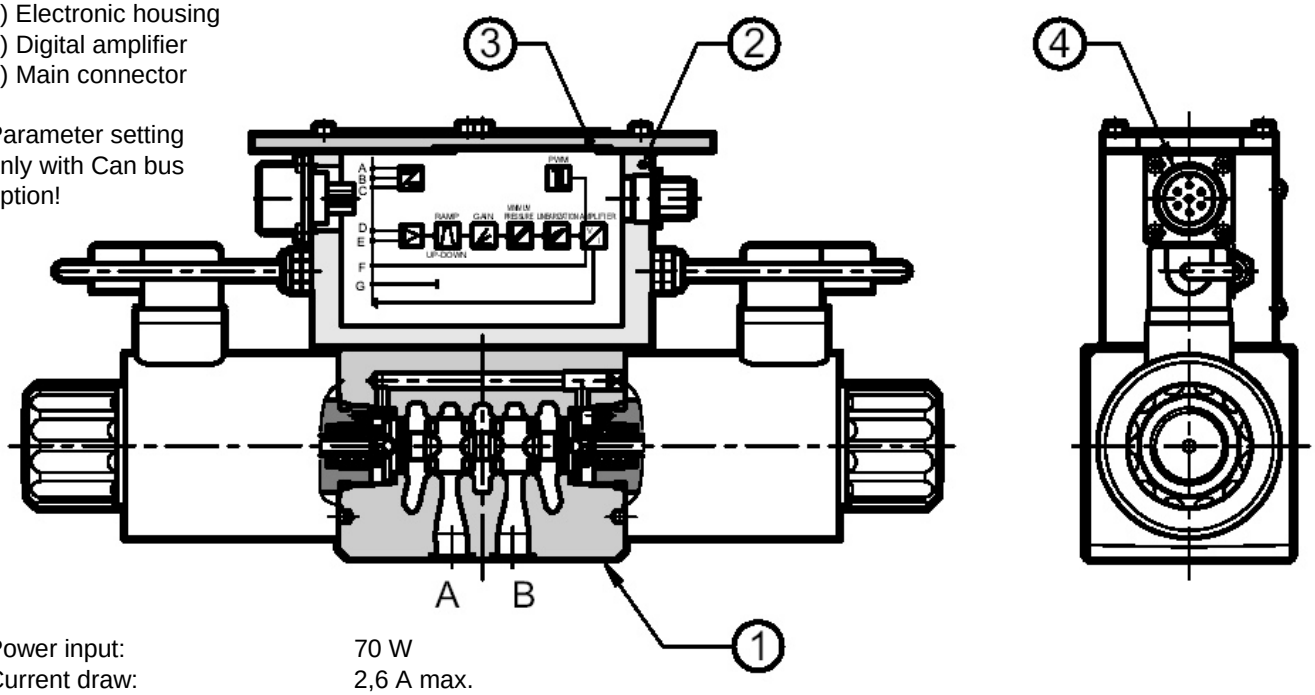
1) Mounting plate with O-rings 4p 12,42 x 1,78
2) Manual override
3) Free space for mounting the coil
4) Main plug
5) Plug 7 pin DIN 43563 – IP65 PG11 EX7/L/10
(not included in delivery Mat. 6080324)
6) CAN-Bus (option)
7) Plug 5 Pin M12 - IP65 PG7 EC5S/M12L/10
(only for CAN bus)
Fastening screws: 4x M6 x 40 10.9
Torque 8 Nm +0,5 Nm.
All dimensions in mm. Fastening elements are not in the scope of delivery.



Onboard Electronics

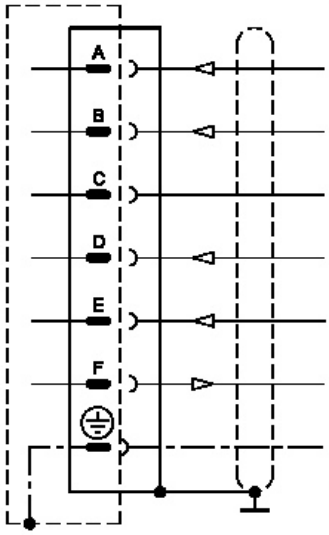
1) Valve with proportional coils
2) Electronic housing
3) Digital amplifier
4) Main connector

Parameter setting only with Can bus option!



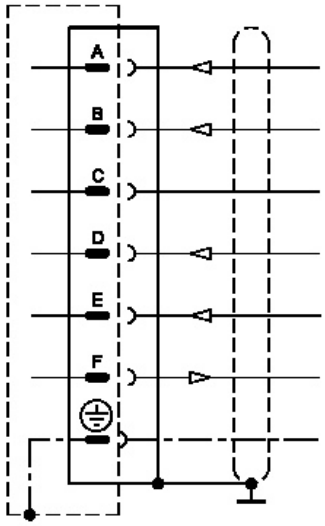
Power input:	70 W
Current draw:	2,6 A max.
Nominal voltage:	24 VDC (19-35VDC, ripple max.3Vpp)
Coil duty rating:	100% (continuous)
Input signal E0:	voltage signal +/-10VDC (Impedance Ri >50 kOhm)
Input signal E1:	current signal 4-20mA (Impedance Ri =500 Ohm)
Alert signals:	Overload and overheating of Electronics
Communication:	Field Bus Interface CAN-Bus ISO 11898
Electronics port:	7-pin MIL-C-5015-G (DIN43563)
CAN-Bus-port:	M12-IEC 60947-5-2 (Option on request)
EMC EN50081-1:	Corresponding 89/336 CEE Standard
EMC EN50082-2:	Corresponding 89/336 CEE Standard
IP rating:	IP65 (CEI EN 60529 Standard)

Input signal E0 voltage signal



Pin	Values	Function	NOTES
A	24 VDC	Voltage	from 19 to 35 VDC (ripple max 3 Vpp)
B	0 V	Power supply (zero)	0 V
C	----	Not used	----
D	± 10 V	Input rated command	Impedence R_i > 50 kΩ
E	0 V	Input rated command	----
F	± 10 V	Coil current	± 100% I_{MAX}
PE	GND	Protective ground	----

Input signal E1 current signal

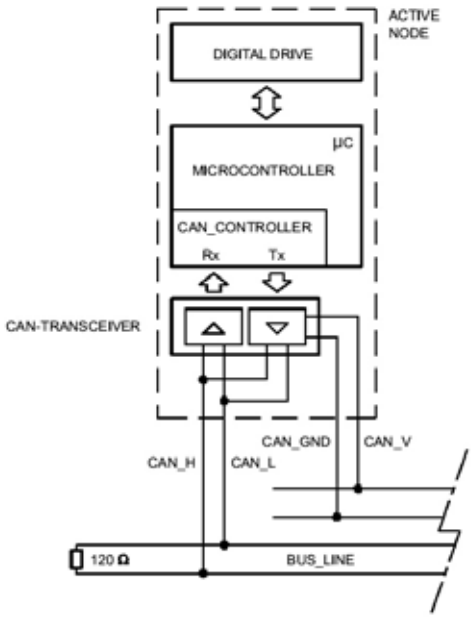


Pin	Values	Function	NOTES
A	24 VDC	Voltage	from 19 to 35 VDC (ripple max 3 Vpp)
B	0 V	Power supply (zero)	0 V
C	----	Not used	----
D	4 ÷ 20 mA	Input signal	Impedence R_i = 500 Ω
E	0 V	Zero reference	----
F	± 10 V	Coil current	± 100% I_{MAX}
PE	GND	Protective ground	----

CAN Bus Interface (Option /C)
will be needed to parameterize
the Onboard
Electronics

CAN PC/USB Interface
- content:
Parameterize-software
and PC connection cable
between CAN Bus and PC:

On request
(not in the standard scope of delivery
only in connection with OBE
and PC interface)



CAN connector connection scheme

Pin	Values	Function
1	CAN_SHLD	Monitor
2	CAN +24VDC	BUS + 24 VDC (max 30 mA)
3	CAN 0 DC	BUS 0 VDC
4	CAN_H	BUS line (high signal)
5	CAN_L	BUS line (low signal)

Standard models	Part No.
P4WEE 10 E30 D01-24PG E0/V	6078973
P4WEE 10 E60 D01-24PG E0/V	6078974
P4WEE 10 J30 D01-24PG E0/V	6078975
P4WEE 10 J60 D01-24PG E0/V	6078976
P4WEE 10 E30 D01-24PG E1/V	6078985
P4WEE 10 E60 D01-24PG E1/V	6078986
P4WEE 10 J30 D01-24PG E1/V	6078987
P4WEE 10 J60 D01-24PG E1/V	6078988

Other types on request

MODEL CODE

P4WEE10 E 30 D01- 24PG E0 /V /C

Name
Proportional solenoid valve, subplate with integr. Electronics

Nominal size
10

Symbol
E, J

Nominal flow
30 = 30 l/min
60 = 60 l/min (At Δp=10 bar P-T)

Type
D01 = Standard type with manual override

Nominal voltage
12= 12 V DC
24= 24 V DC

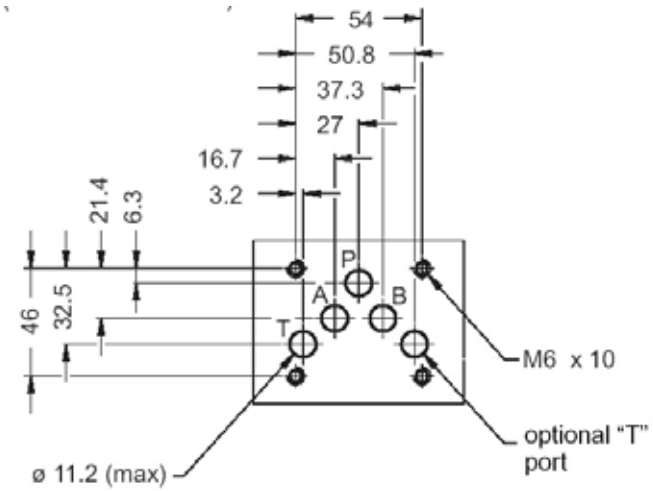
Coil connector
PG= DIN plug to EN175301-803 (for coil)

Input signal
E0= +/-10 V
E1= 4-20 mA

Seal material
V= FPM (Standard)
N= NBR (optional)

Option
C = CAN-Bus (on request)

Hole pattern to ISO4401 05-04-0-05



Annotation
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At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

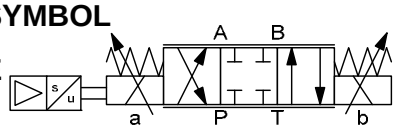
4/3-Proportional Solenoid Valve direct acting, with integrated Electronics and transducer

Subplate to ISO4401

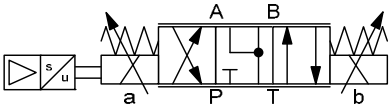
P4WRE 10

SYMBOL

E



J



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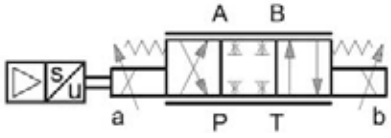
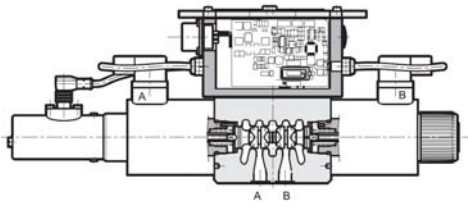


Up to 180 l/min
Up to 320 bar

FUNCTION



The P4WRE10 is a direct acting solenoid valve which combines the directional control with the velocity control of the consumer.
The controlled nominal flow is proportional to the electrical input signal at the coil.
Analogue to his size the coil creates a force and moves the piston against the spring. Herewith the corresponding cross section diameters are opened which determines the flow rate in dependence of the pressure differential.
The integrated digital electronics permits a better performance of the valve and function by
- shortened response times
- reduced hysteresis
- better repeat accuracy

FEATURES

- High flow rate due to optimized casted housing
- Small hysteresis by super finish of moving parts
- Long life cycle times by armature switching under oil
- Minimal wear by hardened and ground valve piston
- Simple exchangeability by international standardized hole pattern to ISO 4401
- Integrated digital amplifier and position transducer

SPECIFICATIONS

Operating pressure:	ports P,A,B max. 320 bar port T max. 210 bar
Maximal flow:	180 l/min (ΔP 10 bar P->T)
Nominal flow:	50 l/min 75 l/min 70/35 = 70 l/min (P-A) 35 l/min (P-B)
Hysteresis:	(in % of Qmax) < 0,2 %
Repeat accuracy: (in % of Qmax)	< +/- 0,1 %
Media operating temp.range:	-20°C up to +80°C
Ambient temperature range:	-20°C up to +50°C
Hydraulic fluid:	Hydraulic fluid to DIN 51524 part 1 / 2
Viscosity range:	10 mm^2/s up to 400mm^2/s
Filtration:	Class 18/16/13 up to 19/17/14 according to ISO4406
Coil duty rating:	100% (continuous)
Supply voltage:	DC
Nominal current:	0,86 A bei 24V DC
Resistance at 20°C:	17,6 Ohm bei 24V DC
Electromagnetic compatibility: (EMC)	Emissions to EN 50081-1 compatibility to EN 50082-2 to Norm 89/336 CEE
IP rating:	IP65
Installation:	no orientation restrictions
Hint:	Vent system and valve before setting in motion
Hole pattern:	ISO4401-05-04-0-05
Weight:	7,1 kg

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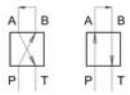
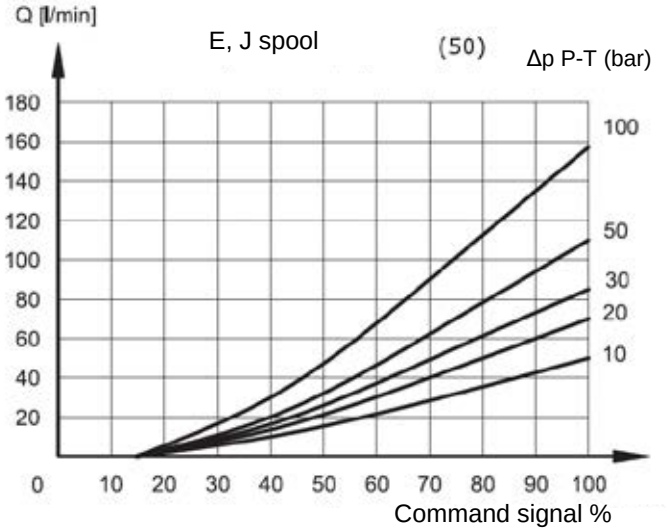
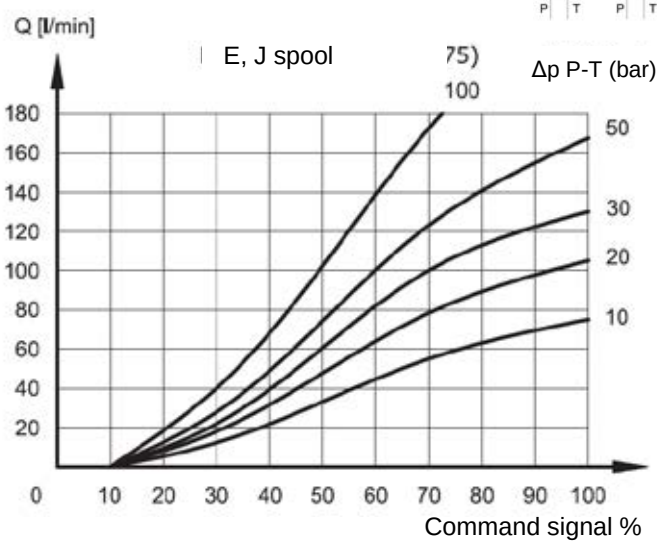
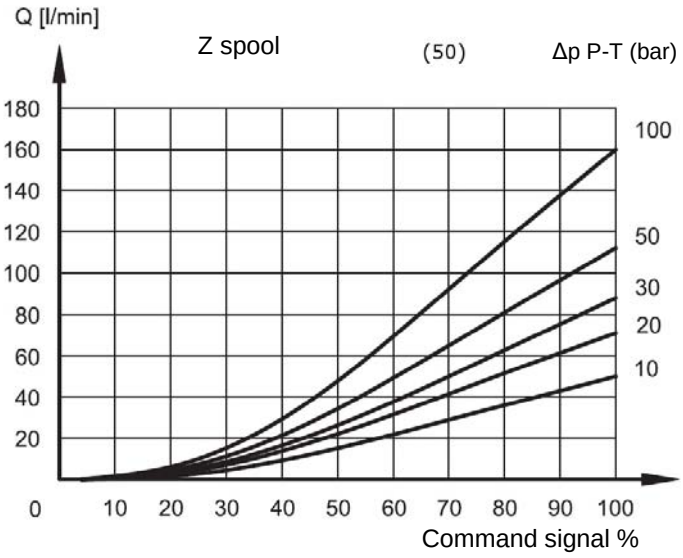
PERFORMANCE

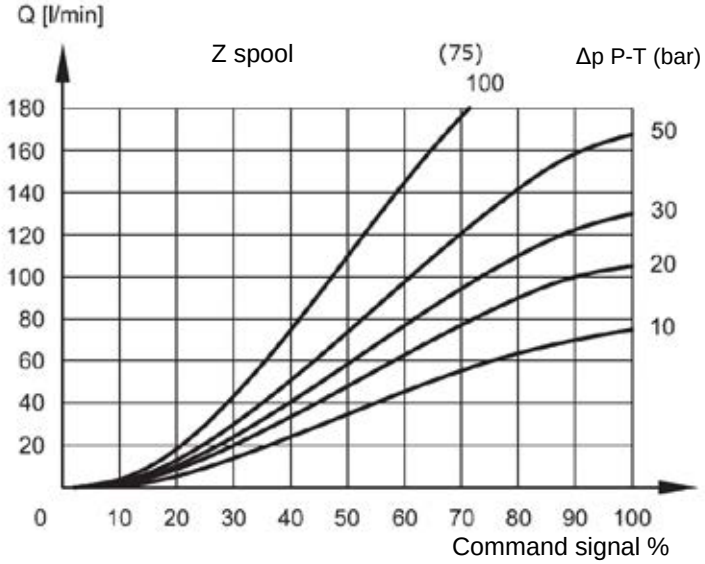
measured at ν= 33 mm²/s and T_{oil} = 46° C (The related Δp is measured between lines P and T of the valve)



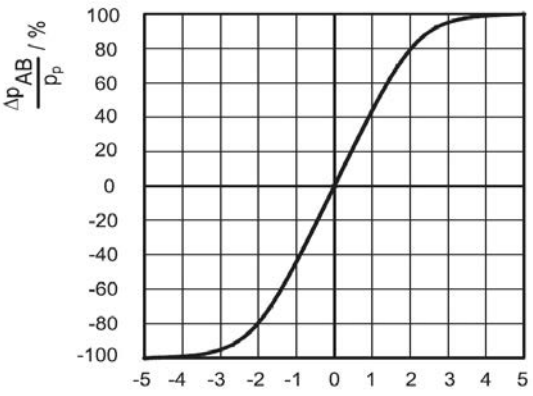




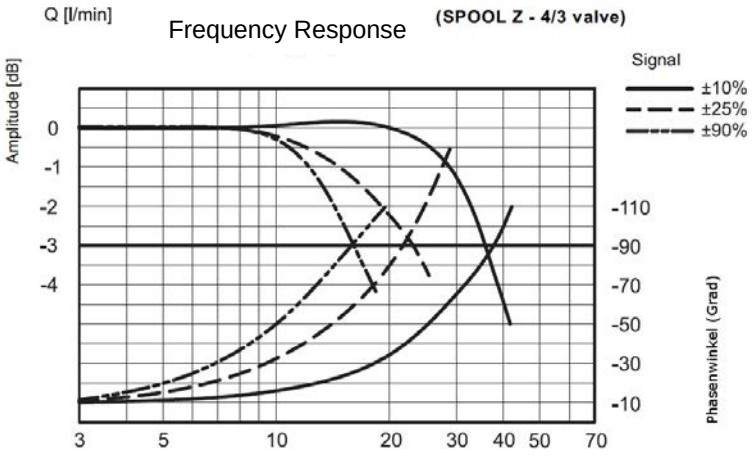




Pressure gain

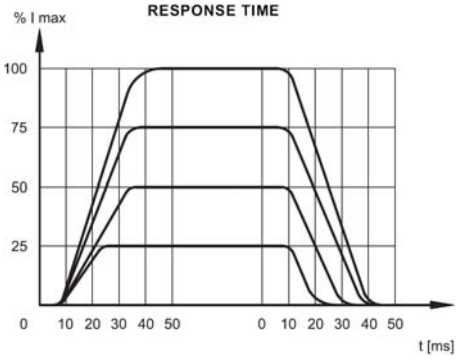


Frequency Response (SPOOL Z - 4/3 valve)

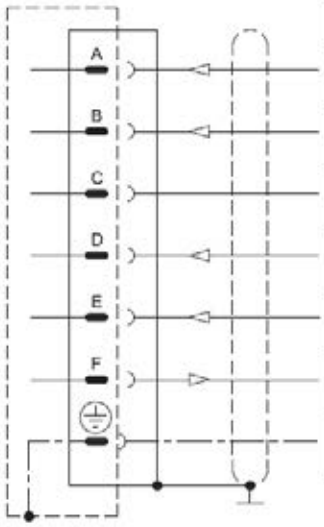


Curve taken at 50% flow and ΔP 10 bar P->T

RESPONSE TIME

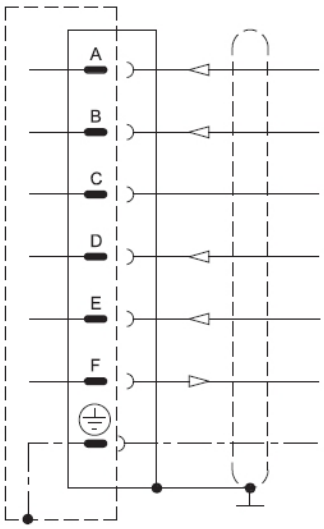


Input signal E0 voltage signal



Pin	Values	Function	NOTES
A	24 V DC	Voltage	from 19 to 35 V DC (ripple max 3 Vpp) (see **NOTE 1**)
B	0 V	Power supply (zero)	0 V
C	24 V DC	Valve Enable	**NOTE 2**
D	± 10 V	Input signal analogue	Impedence R_i > 50 kΩ (see **NOTE 3**)
E	0 V	Ground analogue	---
F	6 - 10V o 2 - 6 -10V	Monitor feedback or Lin comm	see **NOTE 4**
PE	GND	Protective ground	---

Input signal E1 current signal



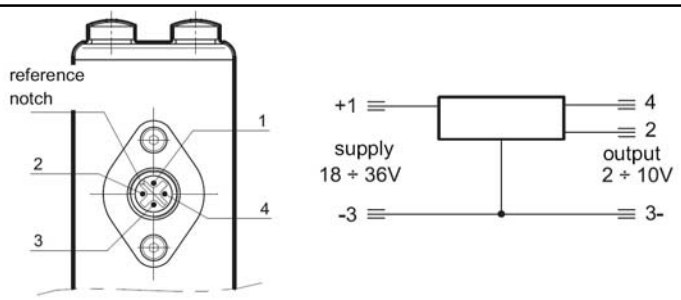
Pin	Values	Function	NOTES
A	24 V DC	Voltage	from 19 to 35 V DC (ripple max 3 Vpp) (see **NOTE 1**)
B	0 V	Power supply (zero)	0 V
C	24 V DC	Valve Enable	**NOTE2**
D	4 ÷ 20 mA	Input signal	Impedence R_i > 500 kΩ
E	0 V	Zero reference	---
F	6 - 10V o 2 - 6 -10V	Monitor point or Lin comm	see **NOTE 4**
PE	GND	Protective ground	---

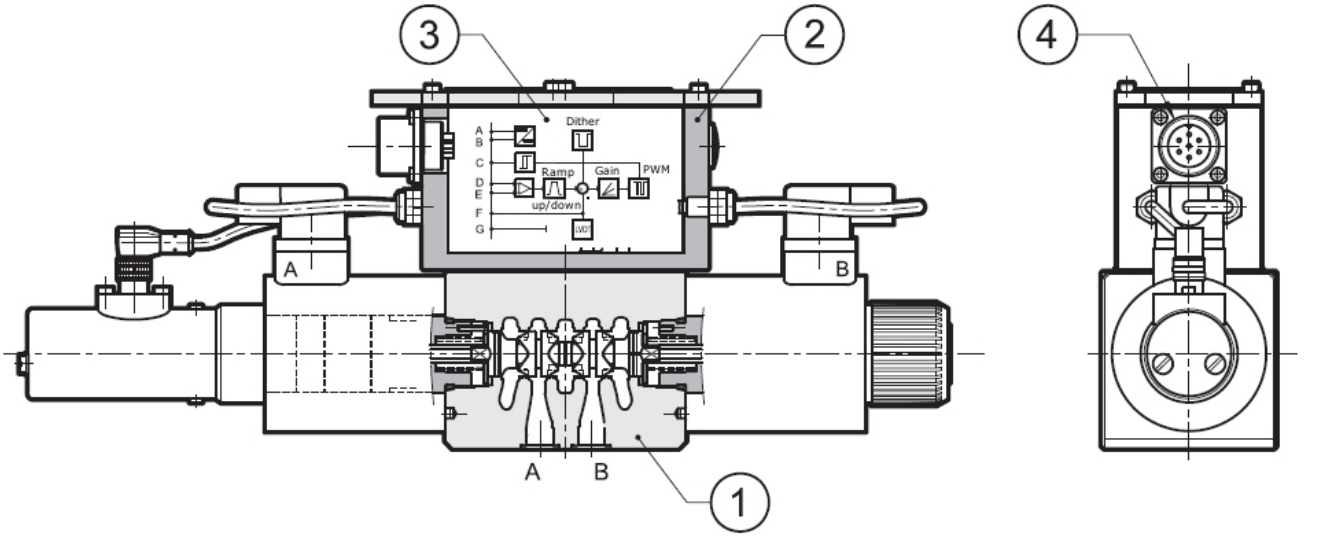
NOTE 1: preview on the Pin A (24 VDC) an external fuse for protecting electronics. Fuse characteristics: 5A/50V type fast.
NOTE 2: preview 24V DC on the PIN C to activate the card power stage.
NOTE 3: The input signal is differential type on E0 version only. For double solenoid valves, with positive reference signal connected to pin D, the valve opening is P - A and B - T. With zero reference signal the valve is in central position. For “SA” single solenoid valves, with positive reference to pin D, the valve opening is P-B and A-T. The spool stroke is proportional to UD - UE. If only one input signal (single-end) is available, the pin B (0V power supply) and the pin E (0V reference signal) must be connected through a jumper and both connected to GND, electric panel side.
NOTE 4: This value changes, as shown in the table below. When MONITOR function is enabled and the card is enabled, read the test point pin F in relation to pin B (0V). When detect a failure or error of the sensor LVDT, the drive bring the valve back in central position and locks it. In this condition the pin F, referring to the pin B, indicates 0V DC output. To reset the fault, the card must be disabled and re-enable. When the card is disabled, the pin F referred to the pin B shows 2.7V DC output: this value is given by the voltage of the LIN bus communication and not by the MONITOR value.

ELECTRONICS

Position Transducer – Electrical connection

Pin 1	Supply 18 ÷ 36 V	Pin 8c
Pin 2	Outlet 0 ÷ 10 V	Pin 24a
Pin 3	0 V	Pin 22c
Pin 4	NC	NC

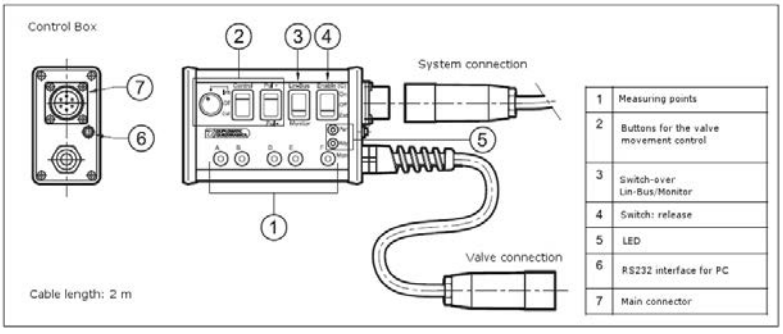




1	Valve with proportional coils	3	Digital card
2	Housing for Electronics	4	Main connector

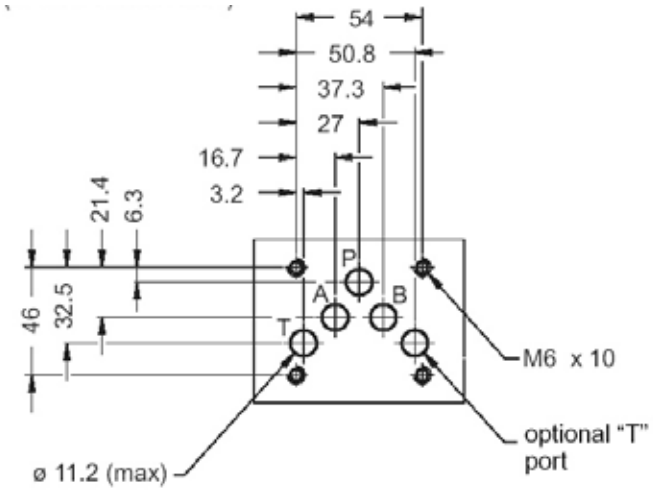
Power input:	70 W
Current draw:	2,6 A max.
Nominal voltage:	24 VDC (19-35VDC, ripple max.3Vpp)
Coil duty rating:	100% (continuous)
Input signal E0:	voltage signal +/-10VDC (Impedance Ri >50 kOhm)
Input signal E1:	current signal 4-20mA (Impedance Ri =500 Ohm)
Alert signals:	Overload and overheating of Electronics, LVDT sensor failure, cable break, power failure <4mA
Communication:	LIN Bus Interface (optional on request)
Electronics port:	7-pin MIL-C-5015-G (DIN43563)
EMC EN61000-6-4:	Corresponding 2004/108 CE Standard
EMC EN61000-6-4:	Corresponding 2004/108 CE Standard
IP rating:	IP65 (CEI EN 60529 Standard)

Attention: to parameterize the OBE a control box is necessary (not in the standard scope of delivery)
Price on request



Standard models **Part No.**
on request

Hole pattern to ISO4401 05-04-0-05



MODEL CODE

P4WRE 10 E 50 D01- 24PG E0 /V

Name
Proportional solenoid valve
subplate with integr. Electronics

Nominal size
10

Symbol
E, J, Z

Nominal flow
50= 50 l/min
75 = 75 l/min
70/35 = 70 l/min (P-A), 35 l/min (P-B)
} at Δp= 10 bar P-T

Type
D01 = Standard type with manual override

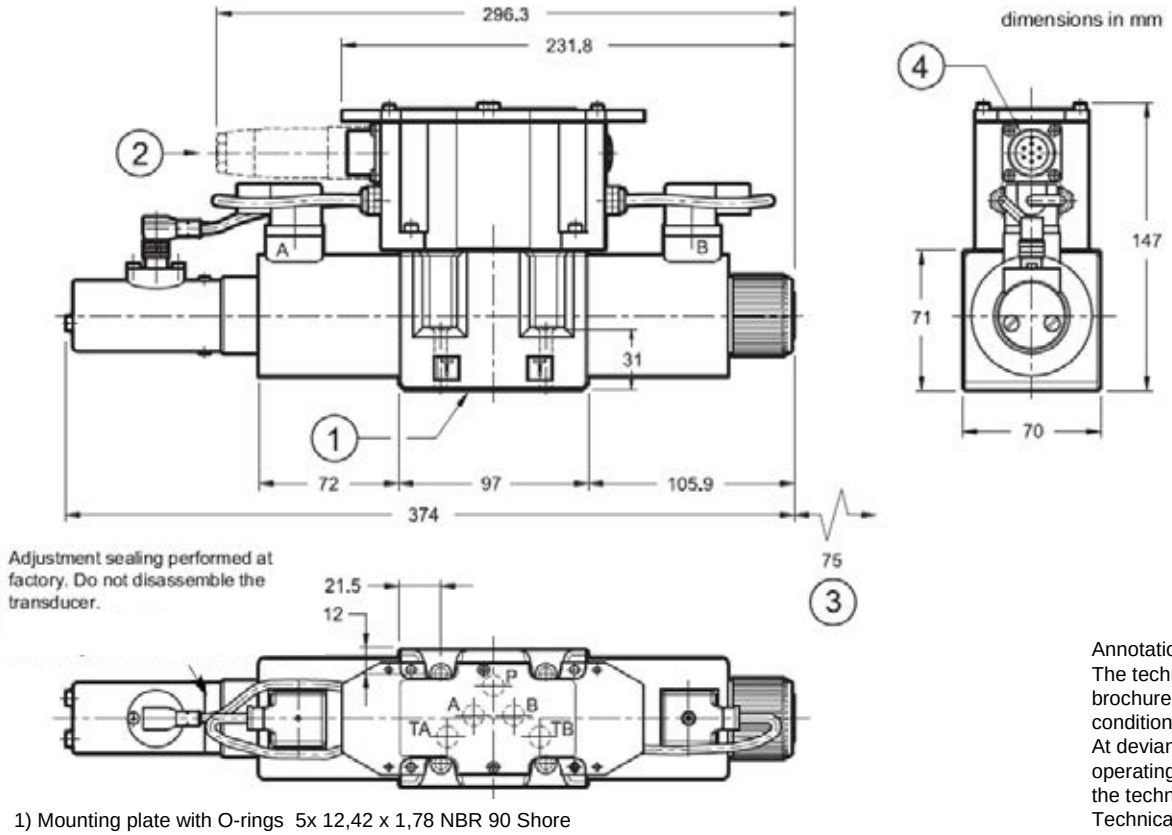
Nominal voltage
24= 24 V DC

Coil Connector
PG= DIN plug to EN175301-803 (for coil)

Input signal
E0= +/-10 V
E1= 4-20 mA

Seal material
V= FPM (Standard)
N= NBR (optional)

DIMENSIONS



1) Mounting plate with O-rings 5x 12,42 x 1,78 NBR 90 Shore
2) Plug 7 pin DIN 43563 – IP65 PG11 EX7/L/10
(not included in delivery Mat. 6080324)
3) Free space for mounting the coil
4) Main plug
Fastening screws: 4x M6 x 40 10.9, Torque 8 Nm +0,5 Nm or quality 12.9 14 Nm
All dimensions in mm. Fastening elements are not in the scope of delivery.

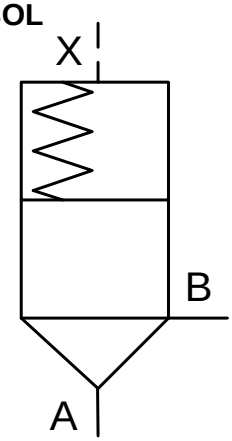
Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

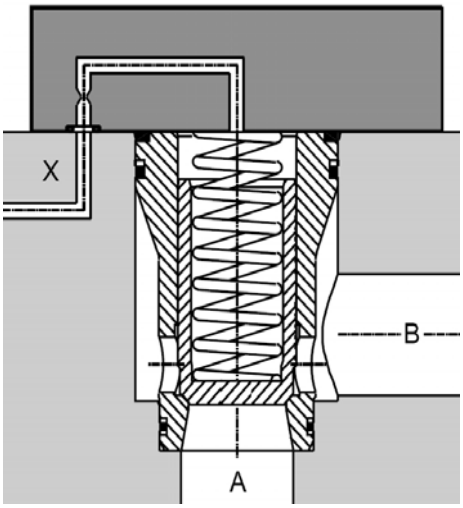
HYDAC INTERNATIONAL

2-port slip-in cartridge valve pressure function, poppet type Cone A (1:1) Type L-CEE Sizes 16 up to 63

SYMBOL



Q max = 6.000 l/min
P max = 350 bar



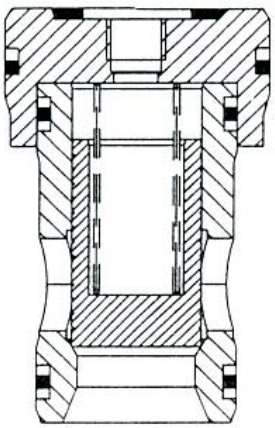
FEATURES:
- 2-port slip-in cartridge valves according to ISO 7368 with two operational ports A and B.
- valve cone without damping nose
- hydraulic control by pilot pressure applied to port X

FUNCTION:
The main flow from the port A to B is hydraulically operated by a controlling pressure at port X. The cartridge valve is normally closed leakagefree A <-> B. It consists of a poppet with sleeve, cone and closing spring. The closing spring is located in the valve cone and affects the minimum operating pressure. Furthermore it is holding the valve in the unloaded position closed. The resulting force of the pilot pressure on face A_X and the forces on ports A and B (p_A x A_A, p_B x A_B) affect the opening of the valve.

SPECIFICATIONS:

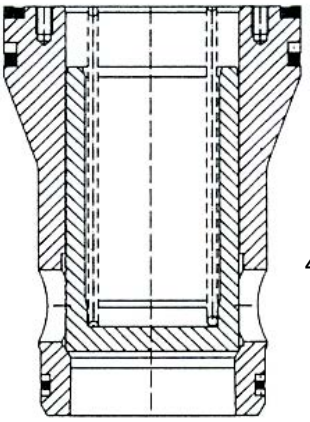
Operating pressure:	max. 350 bar
Nominal flow:	max. 6000 l/min
Media operating temperature range:	min. -20°C up to max. +80°C
Ambient temperature range:	min. -20°C up to max. +60°C
Mode of Construction:	2- way poppet valve
Fluids:	Hydraulic oils according DIN 51524 part 1 and 2
Filtration:	Class 21/19/16 according to ISO 4406
Viscosity:	2,8 up to 380 mm²/s
Sealing:	KM + PU (NBR, FKM on request)
Installation position:	optional
Manner of Mounting:	Manifold cartridge mounting
Cavity:	according to ISO 7368
Ratio:	1 : 1
Flow direction:	A-->B

E 5.232.0 /01.13



Sizes
16 - 32

Sleeve + sleeve cap + cone



Sizes
40 - 63

Cone + sleeve

MODEL CODE

L - C E E 16 B 6 A

Basic model
L-CEE = 2-port slip-in cartridge valve standard

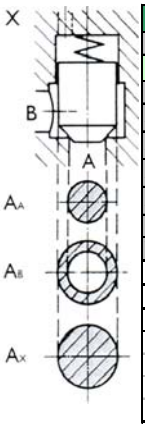
Size
available sizes = NG 16, 25, 32, 40, 50, 63

Series
To be assigned by manufacturer

Model
Cavity to ISO 7368

Cone type
A = step cone 1:1

Basic versions

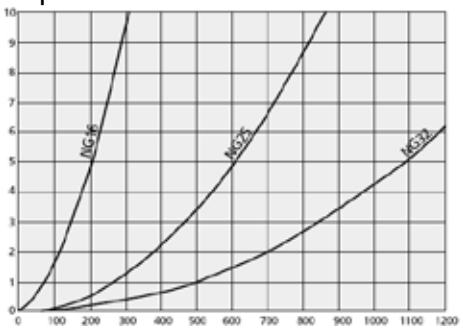


Cone A without sealing at cone						
Part No.	6061190	6061146	6061205	6061210	6061215	6061221
	NW16	*NW25*	*NW32*	*NW40*	*NW50*	*NW63*
stroke mm	5,9	10,6	14,1	15,3	20,4	24,0
A_A mm²	201,0	380,0	707,0	1257,0	2376,0	3848,0
A_A (Ref)	1,0	1,0	1,0	1,0	1,0	1,0
A_B	/	/	/	/	/	/
A_X	1,0	1,0	1,0	1,0	1,0	1,0
Control volume (A_X) cm³	1,19	4,03	9,97	19,23	48,47	92,35
Weight (kg)	0,20	0,40	0,90	1,80	3,20	6,90
Optional springs	not in the standard scope of delivery (for versions without sealing at cone only!*)					
	NW16	NW25	NW32	NW40	NW50	NW63
Part No. 0,2 bar	6061191	6061229	6061233	6061237	6061241	6061245
Part No. 0,6 bar	6061204	6061230	6061234	6061238	6061242	6061247
Part No. 1,2 bar	6061227	6061231	6061235	6061239	6061243	6061248
Part No. 2,4 bar	6061228	6061232	6061236	6061240	6061244	6061249

PERFORMANCE

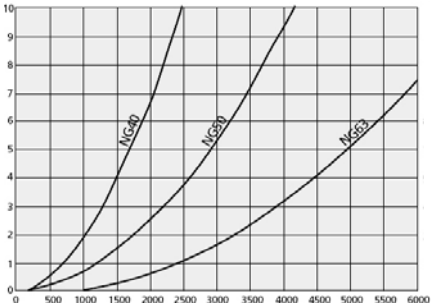
Measured at 35 mm²/s, T-Oil 50°C

Δp bar



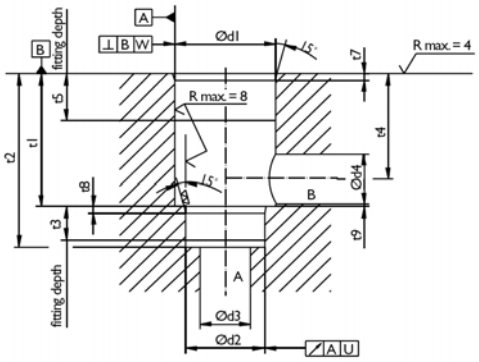
Flow l/min

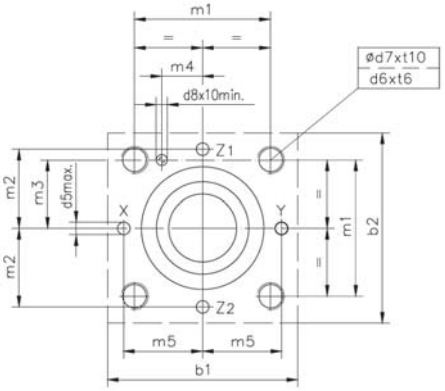
Δp bar



Flow l/min

DIMENSIONS





Dimensions [mm]	NG16	NG25	NG32	NG40	NG50	NG63
b1	65	85	102	125	140	180
b2	65	85	102	125	140	180
d1 H7	32	45	60	75	90	120
d2 H7	25	34	45	55	68	90
d3	16	25	32	40	50	63
d3 max	17	25	32	43	54	66
d4	16	25	32	40	50	63
d4 max	25	32	40	50	63	80
d5 max	4	6	8	10	10	12
d6	M8	M12	M16	M20	M20	M30
d7 H13	6	6	6	6	8	8
m1 ±0.2	46	58	70	85	100	125
m2 ±0.2	25	33	41	50	58	75
m3 ±0.2	23	29	35	42.5	50	62.5
m4 ±0.2	10.5	16	17	23	30	38
m5 ±0.2	25	33	41	50	58	75
t1 +0.1	43	58	70	87	100	130
t2 +0.1	56	72	85	105	122	155
t3	11	12	13	15	17	20
t4	34	44	52	64	72	95
t4 at d4 max	29.5	40.5	48	59	65.5	86.5
t5	20	30	30	30	35	35
t6	20	25	35	45	45	65
t7	2	2.5	2.5	3	4	4
t8	2	2.5	2.5	3	4	4
t9 cont. dim. min.	0.5	1.0	1.5	2.5	2.5	3
t10 min.	10	10	10	10	10	10
U	0.03	0.03	0.03	0.05	0.05	0.05
W	0.05	0.05	0.1	0.1	0.1	0.2

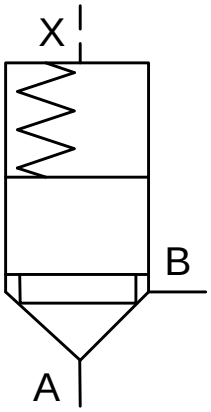
Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

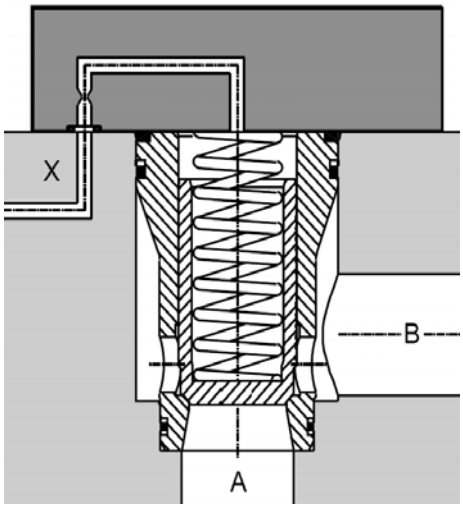
HYDAC INTERNATIONAL

2-port slip-in cartridge valve directional function, poppet type Cone B (1: 1,6)
Type L-CEE
Sizes 16 up to 63

SYMBOL



Q max = 3.600 l/min
P max = 350 bar



FEATURES:

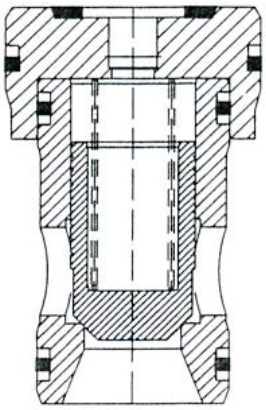
- 2-port slip-in cartridge valves according to ISO 7368 with two operational ports A and B.
- valve cone without damping nose
- hydraulic control by pilot pressure applied to port X
- optional with sealing between cone and sleeve = leakagefree B <-> X (see MODEL CODE, detail “X”)

FUNCTION:

The main flow through the ports A and B is hydraulically operated by a controlling pressure at port X. The cartridge valve is normally closed leakagefree A <-> B. It consists of a poppet with sleeve, cone and closing spring. The closing spring is located in the valve cone and affects the minimum operating pressure. Furthermore it is holding the valve in the unloaded position closed.
The resulting force of the pilot pressure on face A_X and the forces on ports A and B (p_A x A_A, p_B x A_B) affect the opening of the valve.

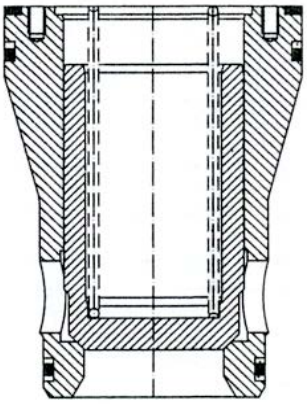
SPECIFICATIONS:

Operating pressure:	max. 350 bar
Nominal flow:	max. 3600 l/min
Media operating temperature range:	min. -20°C up to max. +80°C
Ambient temperature range:	min. -20°C up to max. +60°C
Mode of Construction:	2- way poppet valve
Fluids:	Hydraulic oils according DIN 1524 part 1 and 2
Filtration:	Class 21/19/16 according to ISO 4406
Viscosity:	2,8 up to 380 mm²/s
Sealing:	FKM + PU (NBR, FKM on request)
Installation position:	optional
Manner of Mounting:	Manifold cartridge mounting
Cavity:	ccording to ISO 7368
Ratio:	1 : 1,6
Flow direction:	A<-->B



Sizes
16 - 32

Sleeve + sleeve cap + cone



Sizes
40 - 63

Cone + sleeve

MODEL CODE

L - C E E 16 B 6 B X

Basic model
L-CEE = 2-port slip-in cartridge valve standard

Size
available sizes = NG 16, 25, 32, 40, 50, 63

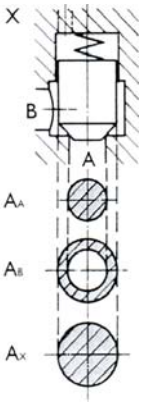
Series
To be assigned by manufacturer

Model
Cavity to ISO 7368

Cone type
B = step cone 1:1,6

Sealing element at the cone
omission = without sealing between cone and sleeve
X = with sealing between cone and sleeve
(Attention: different springs necessary, call factory!)

Basic versions



Cone B without sealing at cone						
Part No.	6061143	6061148	6061207	6061212	6061218	6061224
Cone B with sealing at cone						
Part No.	6061144	6061150	6061208	6061213	6061219	6061225
	NW16	*NW25*	*NW32*	*NW40*	*NW50*	*NW63*
stroke mm	6,0	12,0	14,0	15,0	20,0	24,0
A_A mm²	123,0	227,0	452,0	804,0	1590,0	2642,0
A_A (Ref)	1,0	1,0	1,0	1,0	1,0	1,0
A_B	0,6	0,6	0,6	0,6	0,6	0,6
A_X	1,6	1,6	1,6	1,6	1,6	1,6
Control volume (A_X) cm³	1,18	4,40	10,13	19,30	50,90	101,50
Weight (kg)	0,20	0,40	0,90	1,80	3,20	6,90

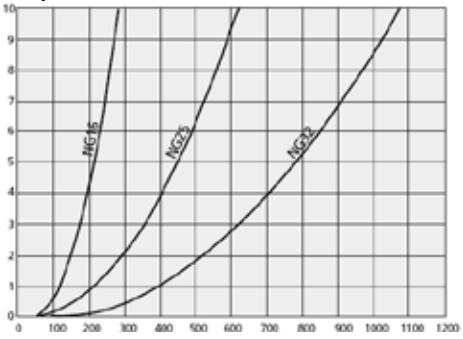
Optional springs	not in the standard scope of delivery (for versions without sealing at cone only!*)					
	NW16	NW25	NW32	NW40	NW50	NW63
Part No. 0,3 bar	6061191	6061229	6061233	6061237	6061241	6061245
Part No. 1 bar	6061204	6061230	6061234	6061238	6061242	6061247
Part No. 2 bar	6061227	6061231	6061235	6061239	6061243	6061248
Part No. 4 bar	6061228	6061232	6061236	6061240	6061244	6061249

(*versions with sealing at cone: call factory!)

PERFORMANCE

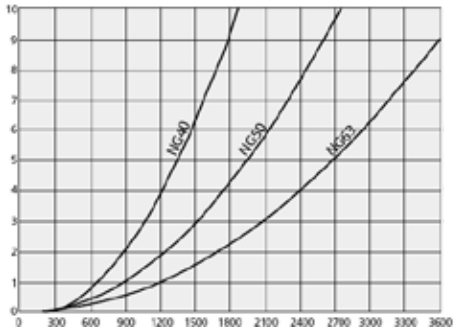
Measured at 35 mm²/s, T-Oil 50°C

Δp bar



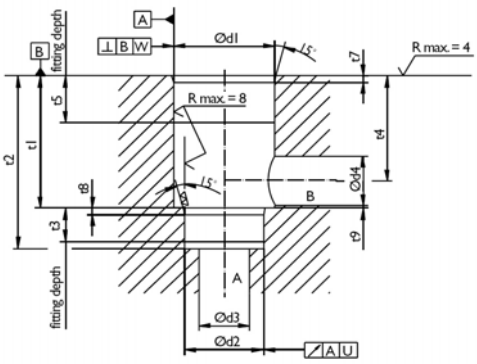
Flow l/min

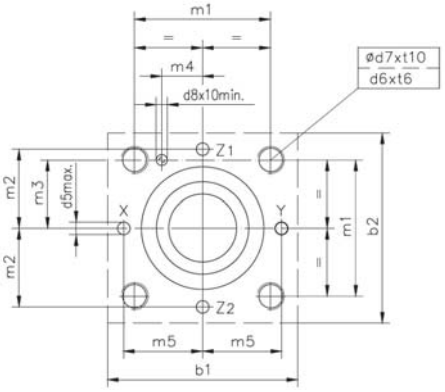
Δp bar



Flow l/min

DIMENSIONS





Dimensions [mm]	NG16	NG25	NG32	NG40	NG50	NG63
b1	65	85	102	125	140	180
b2	65	85	102	125	140	180
d1 H7	32	45	60	75	90	120
d2 H7	25	34	45	55	68	90
d3	16	25	32	40	50	63
d3 max	17	25	32	43	54	66
d4	16	25	32	40	50	63
d4 max	25	32	40	50	63	80
d5 max	4	6	8	10	10	12
d6	M8	M12	M16	M20	M20	M30
d7 H13	6	6	6	6	8	8
m1 ±0.2	46	58	70	85	100	125
m2 ±0.2	25	33	41	50	58	75
m3 ±0.2	23	29	35	42.5	50	62.5
m4 ±0.2	10.5	16	17	23	30	38
m5 ±0.2	25	33	41	50	58	75
t1 +0.1	43	58	70	87	100	130
t2 +0.1	56	72	85	105	122	155
t3	11	12	13	15	17	20
t4	34	44	52	64	72	95
t4 at d4 max	29.5	40.5	48	59	65.5	86.5
t5	20	30	30	30	35	35
t6	20	25	35	45	45	65
t7	2	2.5	2.5	3	4	4
t8	2	2.5	2.5	3	4	4
t9 cont. dim. min.	0.5	1.0	1.5	2.5	2.5	3
t10 min.	10	10	10	10	10	10
U	0.03	0.03	0.03	0.05	0.05	0.05
W	0.05	0.05	0.1	0.1	0.1	0.2

Annotation
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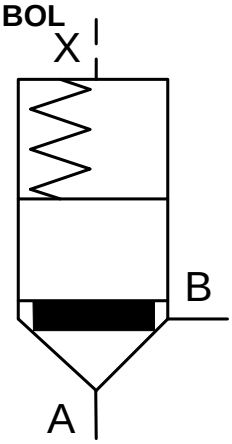
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

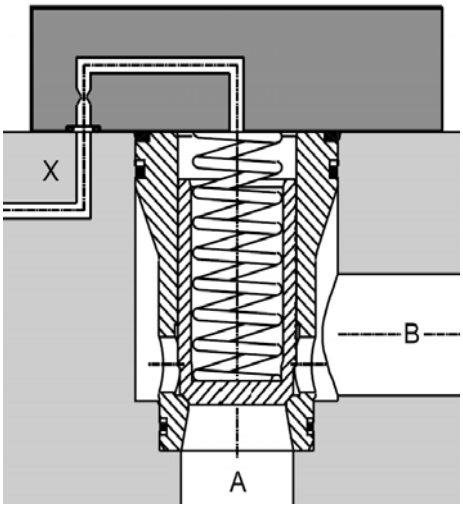
HYDAC INTERNATIONAL

2-port slip-in cartridge valve directional function, poppet type Cone C (1:1,6) with damping Type L-CEE Sizes 16 up to 63

SYMBOL



Q max = 2.700 l/min
p max = 350 bar



FEATURES:

- 2-port slip-in cartridge valve according to ISO 7368 with two operational ports A and B.
- valve cone with damping nose to avoid pressure surge
- hydraulic control by pilot pressure applied to port X

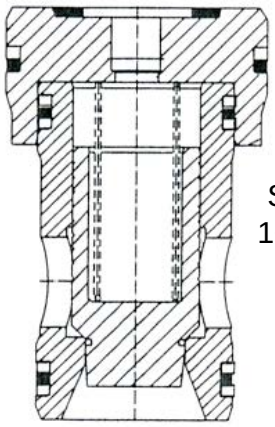
FUNCTION:

The main flow through the ports A and B is hydraulically operated by a controlling pressure at port X. The cartridge valve is normally closed leakagefree A <-> B. It consists of a poppet with sleeve, a cone with damping nose and a closing spring. The closing spring is located in the valve cone and affects the minimum operating pressure. Furthermore it is holding the valve in the unloaded position closed.
The resulting force of the pilot pressure on face A_x and the forces on ports A and B (p_A x A_A, p_B x A_B) affect the opening of the valve.

SPECIFICATIONS:

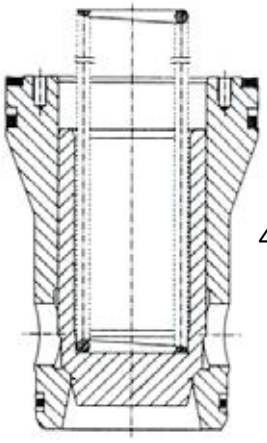
Operating pressure:	max. 350 bar
Nominal flow:	max. 2700 l/min
Media operating temperature range:	min. -20°C up to max. +80°C
Ambient temperature range:	min. -20°C up to max. +60°C
Mode of Construction:	2- way poppet valve
Fluids:	Hydraulic oils according DIN 51524 part 1 and 2
Filtration:	Class 21/19/16 according to ISO 4406
Viscosity:	2,8 up to 380 mm²/s
Sealing:	FKM + PU (NBR,FKM on request)
Installation position:	optional
Manner of Mounting:	Manifold cartridge mounting
Cavity:	according to ISO 7368
Ratio:	1 : 1,6
Flow direction:	A<-->B

E 5.234.0 /01.13



Sizes
16 - 32

Sleeve + sleeve cap + cone



Sizes
40 - 63

Cone + sleeve

MODEL CODE

L - C E E 16 B 6 C

Basic model
L-CEE = 2-port slip-in cartridge valve standard

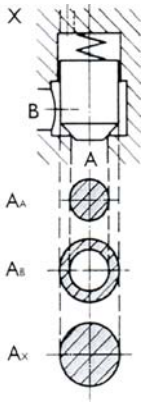
Size
available sizes = NG 16, 25, 32, 40, 50, 63

Series
To be assigned by manufacturer

Model
Cavity to ISO 7368

Cone type
C = step cone 1:1,16 with damping

Basic versions



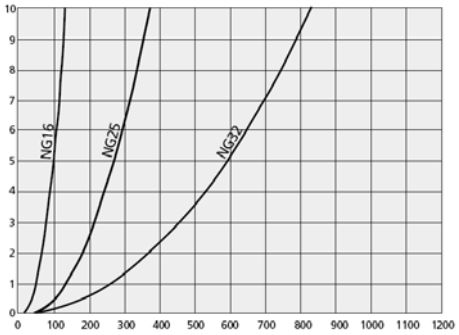
Cone C without sealing at cone						
Part No.	6061145	6061202	6061209	6061214	6061220	6061226
	NW16	*NW25*	*NW32*	*NW40*	*NW50*	*NW63*
Stroke mm	6,0	12,0	14,0	15,0	20,0	24,0
A_A mm²	123,0	227,0	452,0	804,0	1590,0	2642,0
A_A (Ref)	1,0	1,0	1,0	1,0	1,0	1,0
A_B	0,6	0,6	0,6	0,6	0,6	0,6
A_X	1,6	1,6	1,6	1,6	1,6	1,6
Control volume (A_X) cm³	1,18	4,40	10,13	19,30	50,90	101,50
Weight (kg)	0,20	0,40	0,90	1,80	3,20	6,90

Optional springs	not in the standard scope of delivery					
	NW16	NW25	NW32	NW40	NW50	NW63
Part No. 0,3 bar	6061191	6061229	6061233	6061237	6061241	6061245
Part No. 1 bar	6061204	6061230	6061234	6061238	6061242	6061247
Part No. 2 bar	6061227	6061231	6061235	6061239	6061243	6061248
Part No. 4 bar	6061228	6061232	6061236	6061240	6061244	6061249

PERFORMANCE

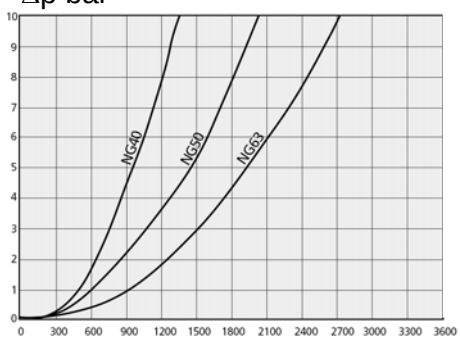
Measured at 35 mm²/s, T-Oil 50°C

Δp bar



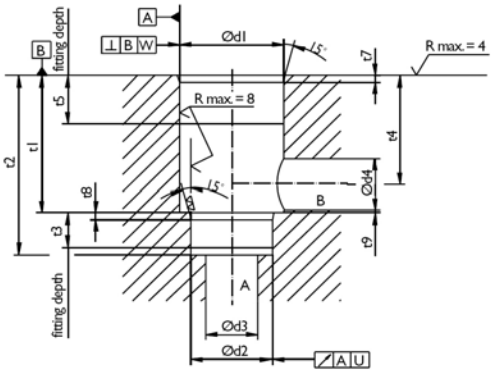
Flow l/min

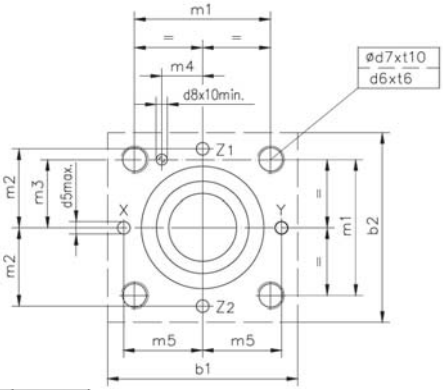
Δp bar



Flow l/min

DIMENSIONS





Dimensions [mm]	NG16	NG25	NG32	NG40	NG50	NG63
b1	65	85	102	125	140	180
b2	65	85	102	125	140	180
d1 H7	32	45	60	75	90	120
d2 H7	25	34	45	55	68	90
d3	16	25	32	40	50	63
d3 max	17	25	32	43	54	66
d4	16	25	32	40	50	63
d4 max	25	32	40	50	63	80
d5 max	4	6	8	10	10	12
d6	M8	M12	M16	M20	M20	M30
d7 H13	6	6	6	6	8	8
m1 ±0.2	46	58	70	85	100	125
m2 ±0.2	25	33	41	50	58	75
m3 ±0.2	23	29	35	42.5	50	62.5
m4 ±0.2	10.5	16	17	23	30	38
m5 ±0.2	25	33	41	50	58	75
t1 +0.1	43	58	70	87	100	130
t2 +0.1	56	72	85	105	122	155
t3	11	12	13	15	17	20
t4	34	44	52	64	72	95
t4 at d4 max	29.5	40.5	48	59	65.5	86.5
t5	20	30	30	30	35	35
t6	20	25	35	45	45	65
t7	2	2.5	2.5	3	4	4
t8	2	2.5	2.5	3	4	4
t9 cont. dim. min.	0.5	1.0	1.5	2.5	2.5	3
t10 min.	10	10	10	10	10	10
U	0.03	0.03	0.03	0.05	0.05	0.05
W	0.05	0.05	0.1	0.1	0.1	0.2

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66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
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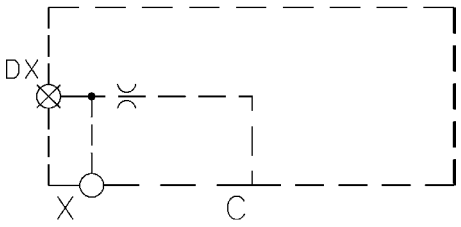
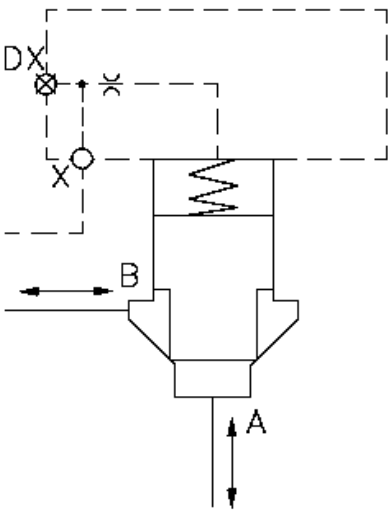
HYDAC INTERNATIONAL

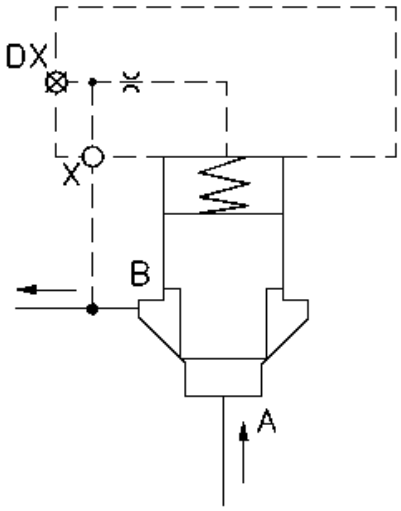
2/2 slip-in cartridge cover
Function 1D
Series LD-CCE
Size16 up to 63

SYMBOL

P max = 350 bar







FEATURES:

- 2/2 slip-in cartridge covers with remote control port according to ISO 7368
- with possibility to built-in a nozzle at port X

Directional FUNCTION:

By using a 1D-cover in combination with a 2/2 slip-in cartridge the port X will be connected to tank at pressure discharge - so that a directional function is realized with flow from A -> B or B -> A.
If the control port X of the cover will be charged with the highest system pressure or with the highest pressure of A or B, the flow from A to B and inverse is blocked.

Check FUNCTION:

By using a 1D-cover in combination with a 2/2 slip-in cartridge valve a check function can also be realized, by connecting the control port X with port B. Then the direction of the flow is blocked A ->B (B ->A).

The 2/2 slip-in cartridge cover 1D can be combined with the cones B and C.

SPECIFICATIONS:

Operating pressure:	max. 350 bar
Temp. range of operating fluid:	min. -20°C up to max. +80°C
Ambient temperature range:	min. -20°C up to max. +60°C
Operating fluid:	hydraulic fluid according to DIN 51524 part 1 and 2
Filtration:	Class 20/18/15 according to ISO 4406 (C)
Viscosity range:	2,8 up to 380 mm²/s
Seals:	FKM + PU (NBR / FKM on request)

E 5.235.0 /01.13

Standard models

Type	Part No.
LD-CCE 16 D 6 1D	6071627
LD-CCE 25 D 6 1D	6071628
LD-CCE 32 D 6 1D	6071658
LD-CCE 40 D 6 1D	6071659
LD-CCE 50 D 6 1D	6071660
LD-CCE 63 D 6 1D	6071671

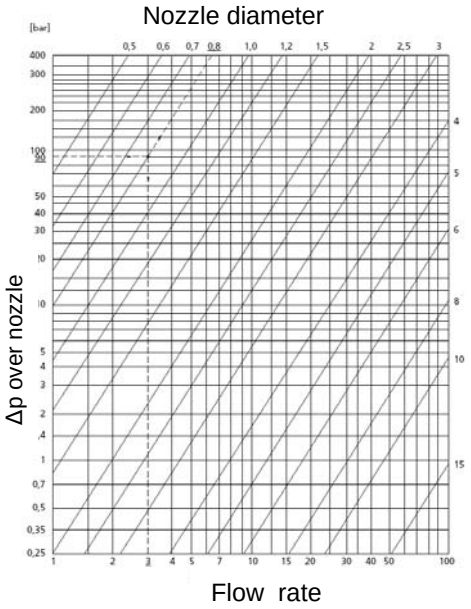
Nozzles

Ports	NG16	NG25	NG32
X	M5	M6	M6

	NG40	NG50	NG63
X	M8	M8	M10

Nozzle 0,8	Part No.
Nozzle covers M5x0,8	6071916
Nozzle covers M6x0,8	6071917
Nozzle covers M8x0,8	6071918
Nozzle covers M10x0,8	6071919
Nozzle 1,5	**Part No.**
Nozzle covers M5x1,5	6071920
Nozzle covers M6x1,5	6071921
Nozzle covers M8x1,5	6071922
Nozzle covers M10x1,5	6071923

Nozzle choice



MODEL CODE

LD -C C E 16 D 6 1D

Name
LD-CCE= 2/2 slip-in cartridge covers, Standard

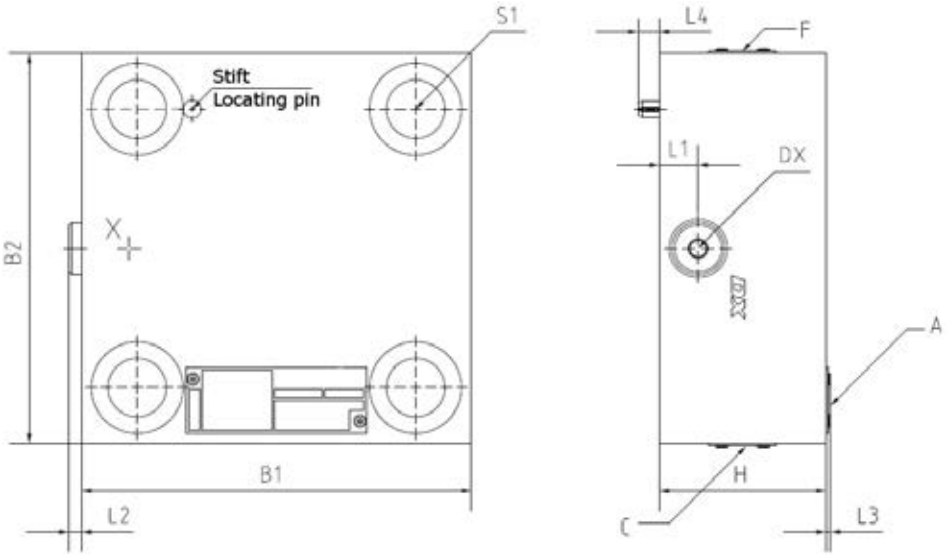
Nominal size
Size16, 25, 32, 40, 50, 63

Series
named by manufacturer

Type
Threads and control ports according to ISO 7368

Cover code
1D = functional symbol

DIMENSIONS



Size	16	25	32	40	50	63
B1 [mm]	65	85	102	125	140	180
B2 [mm]	65	85	102	125	140	180
H [mm]	35	35	45	60	60	80
L1 [mm]	17	12	21	20	14	27
L2 [mm]	3,5	3,5	4,5	4,5	4,5	4,5
L3 [mm]	1,6	1,6	1,6	1,6	1,6	1,6
L4 [mm]	5	5,5	6	6	7,5	8
Nameplate on the side	A	C	F	C	A	A
Plug DX **	G 1/8"	G 1/8"	G 1/4"	G 1/4"	G 1/4"	G3/8"
Tightening torque [Nm]	12	12	27	27	27	56
Socket width across flats	5	5	6	6	6	8
S1* DIN EN ISO 4762 - 12.9	M8x35	M12x40	M16x50	M20x70	M20x70	M30x90
Tightening torque [Nm]	30	100	300	550	550	1800
Weight [kg]	1,1	1,7	3,1	6,3	8,2	17

*not part of the delivery, **may also be used as test port

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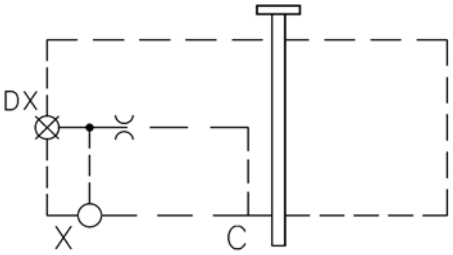
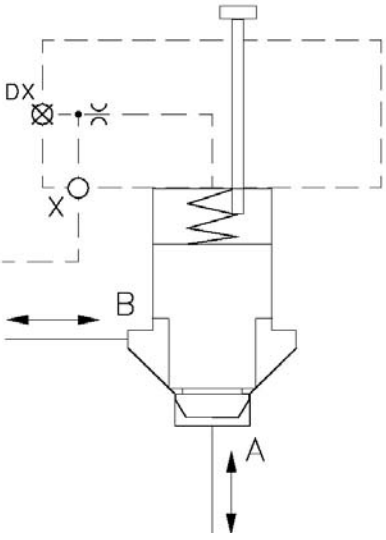
HYDAC INTERNATIONAL

2/2 slip-in cartridge cover
Function 1H
Series LD-CCE
Size16 up to 63

SYMBOL

P max = 350 bar





FEATURES:
- 2/2 slip-in cartridge covers with remote control port according to ISO 7368
- with possibility to built-in a nozzle at port X
- with adjustable stroke limitation (needle function)

Needle FUNCTION:
By using a 1H-cover in combination with a 2/2 slip-in cartridge the port X will be connected to tank at pressure discharge - so that a directional function is realized with flow from A -> B or B -> A.
If the control port X of the cover will be charged with the highest system pressure or with the highest pressure of A or B, the flow from A to B and inverse is blocked. By the adjustable stroke limitation the flow in both directions will be throttled. An adjustment of the stroke under pressure is limited. The 2/2 slip-in cartridge may also be closed by the stroke limitation.

The 2/2 slip-in cartridge covers 1H can be combined with A, B and C-cone, but not in conjunction with cone with sealing between cone and sleeve.

SPECIFICATIONS:

Operating pressure:	max. 350 bar
Temp. range of operating fluid:	min. -20°C up to max. +80°C
Ambient temperature range:	min. -20°C up to max. +60°C
Operating fluid:	hydraulic fluid according to DIN 51524 part 1 and 2
Filtration:	Class 20/18/15 according to ISO 4406 (C)
Viscosity range:	2,8 up to 380 mm²/s
Seals:	KM + PU (NBR / FKM on request)

E 5.236.0 /01.13

Standard models

Type	Part No.
LD-CCE 16 D 6 1H 2	6071672
LD-CCE 25 D 6 1H 2	6071674
LD-CCE 32 D 6 1H 2	6071675
LD-CCE 40 D 6 1H 2	6071676
LD-CCE 50 D 6 1H 2	6071677
LD-CCE 63 D 6 1H 2	6071678

Nozzles

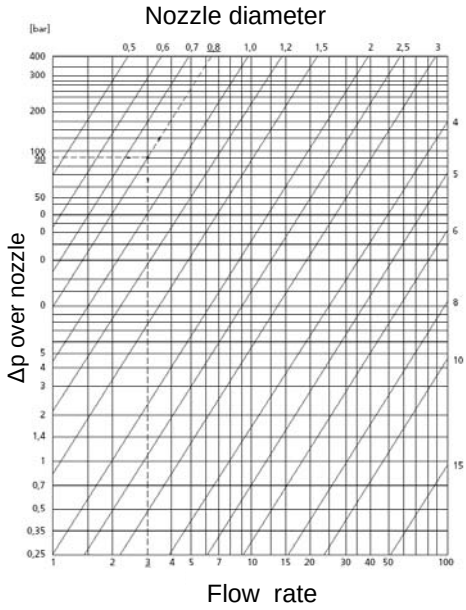
Ports	NG16	NG25	NG32
X	M5	M6	M6

	NG40	NG50	NG63
X	M8	M8	M10

Nozzle 0,8	Part No.
Nozzle covers M5x0,8	6071916
Nozzle covers M6x0,8	6071917
Nozzle covers M8x0,8	6071918
Nozzle covers M10x0,8	6071919

Nozzle 1,5	Part No.
Nozzle covers M5x1,5	6071920
Nozzle covers M6x1,5	6071921
Nozzle covers M8x1,5	6071922
Nozzle covers M10x1,5	6071923

Nozzle choice



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Tel.: 06897 / 509 -0
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MODEL CODE

LD -C C E 16 D 6 1H 2

Name
LD-CCE= 2/2 slip-in cartridge covers, Standard

Nominal size
Size 16, 25, 32, 40, 50, 63

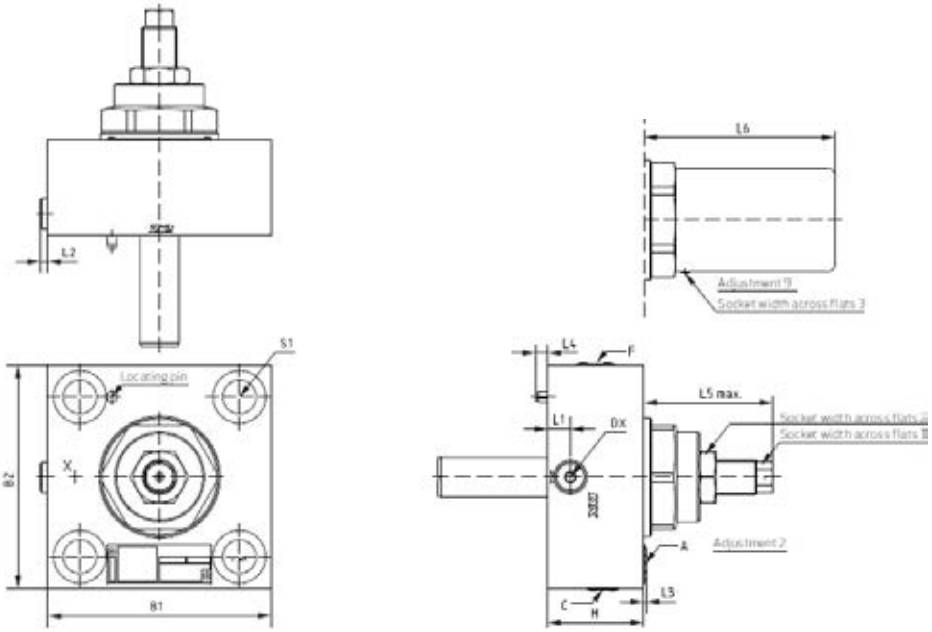
Series
named by manufacturer

Type
Threads and control ports according to ISO 7368

Cover code
1H = functional symbol

Adjustment
2 = Allen screw with counter nut (Standard)
9 = Allen screw with counter nut and protection cap, lead-sealable (on request)

DIMENSIONS



Size	16	25	32	40	50	63
B1 [mm]	65	85	102	125	140	160
B2 [mm]	65	85	102	125	140	180
H [mm]	35	35	45	60	60	80
L1 [mm]	17	12	21	20	14	27
L2 [mm]	3,5	3,5	4,5	4,5	4,5	4,5
L3 [mm]	1,6	1,6	1,6	1,6	1,6	1,6
L4 [mm]	5	5,5	6	6	7,5	8
L5 max [mm]	50,5	50,5	62	62	81	117
L6 [mm]	83,5	83,5	80	80	120	131
approx. L7 [mm]	94	94	90,5	90,5	129	140
Nameplate on the side	C	C	F	C	A	A
Plug DX**	G 1/8"	G 1/8"	G 1/4"	G 1/4"	G 1/4"	G 3/8"
Tightening torque [mm]	12	12	27	27	27	56
Socket width across flats	5	5	6	6	6	8
Socket width across flats 1	8	8	10	10	17	19
Socket width across flats 2	19	19	24	24	32	46
Tightening torque Socket width across flats 2 [Nm]	65	65	85	85	110	150
Socket width across flats 3 (Allen screw)	2	2	2	2	2	2
Tightening torque Socket width across flats 3 [Nm]	5	5	5	5	5	5
S1* DIN EN ISO 4762 - 12.9	M8x35	M12x40	M16x50	M20x70	M20x70	M30x90
Tightening torque [Nm]	30	100	300	550	550	1800
Weight [kg]	1,4	2,7	4	7,3	10,3	19,2

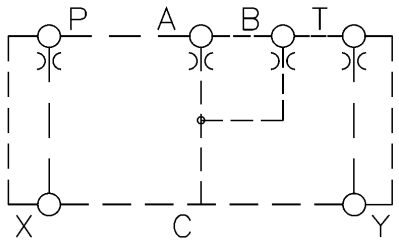
*not part of the delivery, **may also be used as test port

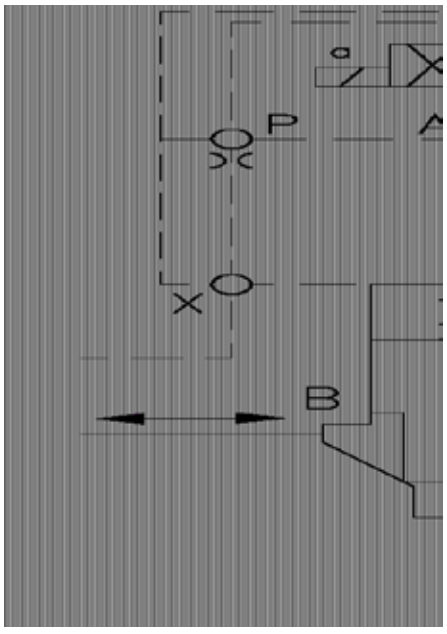
HYDAC INTERNATIONAL

2/2 slip-in cartridge cover
Function RM
Series LD-CCE
Size16 up to 63

SYMBOL

P max = 350 bar





FEATURES:

- 2/2 slip-in cartridge covers with remote control port according to ISO 7368
- with possibility to built-in a nozzle at port P, A, B, T
- with port sheme size 6 and size 10

Pilot operated directional FUNCTION:

By using a RM-cover in combination with a 2/2 slip-in cartridge and a body mounted spool valve a directional function will be realized if port B is plugged and the coil is energized - with flow from A -> B or B -> A. This will be realized by pressure discharge of the springchamber of the 2/2 slip-in cartridges.
If the control port X of the cover will be charged with the highest system pressure or with the highest pressure of A or B, the flow from A to B and inverse is blocked if port B is plugged and the coil is de-energized. If port A is plugged and the coil is energized there will be exactly the inverse function of the a.m. at energized and d-energized coil.

The 2/2 slip-in cartridge covers RM can be combined with cone B and C. Up to size 50 the 2/2 slip-in cartridge covers can be combined with 4/2-body mounted spool valves size 6. For 2/2 slip-in cartridge covers size 63 there may only be used 4/2 body mounted spool valves size 10.

SPECIFICATIONS:

Operating pressure:	max. 350 bar
Temp. range of operating fluid:	min. -20°C up to max. +80°C
Ambient temperature range:	min. -20°C up to max. +60°C
Operating fluid:	hydraulic fluid according to DIN 51524 part 1 and 2
Filtration:	Class 20/18/15 according to ISO 4406 (C)
Viscosity range:	2,8 up to 380 mm²/s
Seals:	FKM + PU (NBR / FKM on request)

E 5.237.0 /01.13

Standard models

Type	Part No.
LD-CCE 16 D 6 RM	6071679
LD-CCE 25 D 6 RM	6071681
LD-CCE 32 D 6 RM	6071682
LD-CCE 40 D 6 RM	6071683
LD-CCE 50 D 6 RM	6071684
LD-CCE 63 D 6 RM	6071685

Nozzles

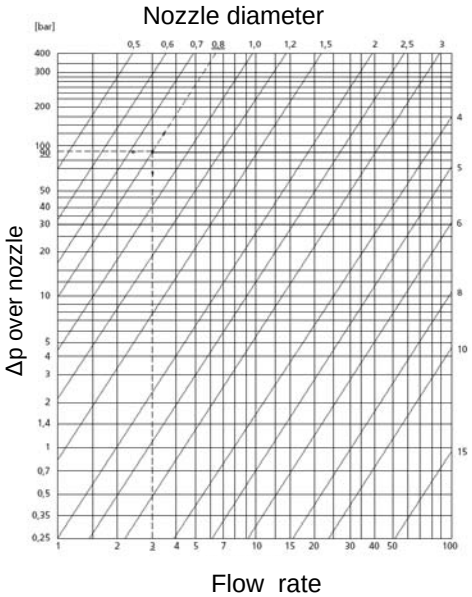
Ports	**NG16**	**NG25**	**NG32**
P, A, B, T	M6	M6	M6

	NG40	**NG50**	**NG63**
P, A, B, T	M6	M6	M10

Nozzle 0,8	**Part No.**
Nozzle covers M5x0,8	6071916
Nozzle covers M6x0,8	6071917
Nozzle covers M8x0,8	6071918
Nozzle covers M10x0,8	6071919

Nozzle 1,5	**Part No.**
Nozzle covers M5x1,5	6071920
Nozzle covers M6x1,5	6071921
Nozzle covers M8x1,5	6071922
Nozzle covers M10x1,5	6071923

Nozzle choice



Annotation
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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

LD -C C E 16 D 6 RM

Name
LD-CCE= 2/2 slip-in cartridge covers, Standard

Nominal size
Size16, 25, 32, 40, 50, 63

Series
named by manufacturer

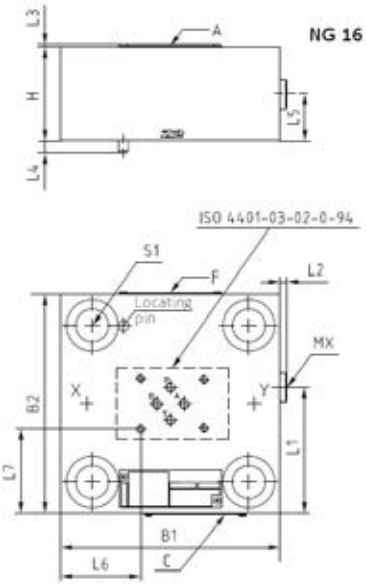
Type
Threads and control ports according to ISO 7368

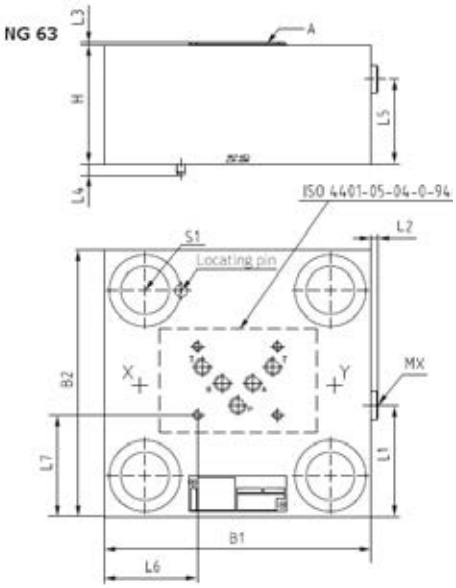
Cover code
RM = functional symbol

DIMENSIONS

(additional measuring port at sizes > 32)

(Size 63 nozzle possible in both T ports)





Size	16	25	32	40	50	63
B1 [mm]	80	85	102	125	140	180
B2 [mm]	65	85	102	125	140	180
H [mm]	35	40	45	60	60	80
L1 [mm]	-	-	61,3	73	80,4	74,9
L2 [mm]	-	-	3,5	4,5	4,5	4,5
L3 [mm]	1,6	1,6	1,6	1,6	1,6	1,6
L4 [mm]	5	5,5	6	6	7,5	8
L5 [mm]	-	-	27	30	30	57
L6 [mm]	7	22,25	30,75	43,5	51	63
L7 [mm]	16,25	26,25	34,75	46,25	53,75	68,6
Nameplate on the side	C	C	F	C	A	A
Plug MX	-	-	G 1/8*	G 1/4*	G 1/4*	G 1/4*
Tightening torque [Nm]	-	-	12	27	27	27
Socket width across flats	-	-	5	6	6	6
S1* DIN EN ISO 4762 - 12.9	M8x35	M12x40	M16x50	M20x70	M20x70	M30x90
Tightening torque [Nm]	30	100	300	550	550	1800
Weight [kg]	1,3	2	3	6,2	8	17

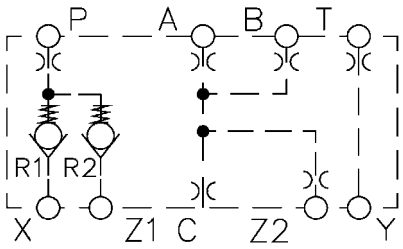
*not part of the delivery

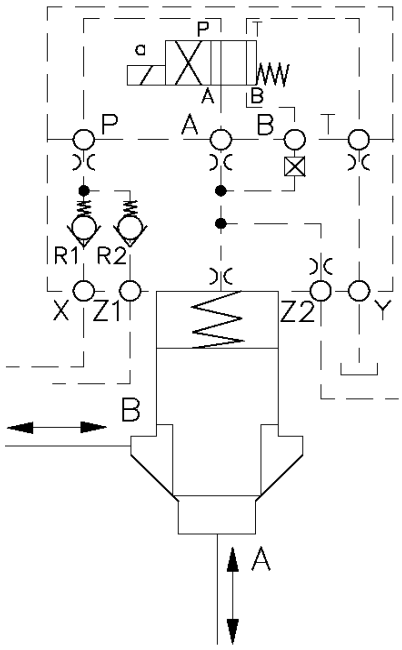
HYDAC INTERNATIONAL

2/2 slip-in cartridge cover
Function 4W
Series LD-CCE
Size16 up to 63

SYMBOL

P max = 350 bar





FEATURES:

- 2/2 slip-in cartridge covers with remote control port according to ISO 7368
- with possibility to built-in a nozzle at port P, A, B, T, C, Z2
- with port sheme size 6 and size 10
- with parallel check function

Pilot operated directional FUNCTION:

By using a 4W-cover in combination with a 2/2 slip-in cartridge and a body-mounted spool valve there is the same function as at the RM-cover.
It offers parallel check functions at ports X and Z1. The higher pressure of both pressures is at port P. This feature is helpful in applications where the risk of a short-term opening during pilot pressure switch-over should be excluded completely.
Additional the port Z2 could be used to actuate a second 2/2 slip-in cartridge.

The 2/2 slip-in cartridge covers 4W can be combined with cone B and C. Up to size 50 the 2/2 slip-in cartridge covers can be combined with 4/2-body mounted spool valves size 6. For 2/2 slip-in cartridge covers size 63 there may only be used 4/2 body mounted spool valves size 10.

SPECIFICATIONS:

Operating pressure:	max. 350 bar
Temp. range of operating fluid:	min. -20°C up to max. +80°C
Ambient temperature range:	min. -20°C up to max. +60°C
Operating fluid:	hydraulic fluid according to DIN 51524 part 1 and 2
Filtration:	Class 20/18/15 according to ISO 4406 (C)
Viscosity range:	2,8 up to 380 mm²/s
Seals:	FKM + PU (NBR / FKM on request)

E 5.238.0 /01.13

Standard models

Type	Part No.
LD-CCE 16 D 6 4W	6071686
LD-CCE 25 D 6 4W	6071687
LD-CCE 32 D 6 4W	6071688
LD-CCE 40 D 6 4W	6071689
LD-CCE 50 D 6 4W	6071690
LD-CCE 63 D 6 4W	6071691

Nozzles

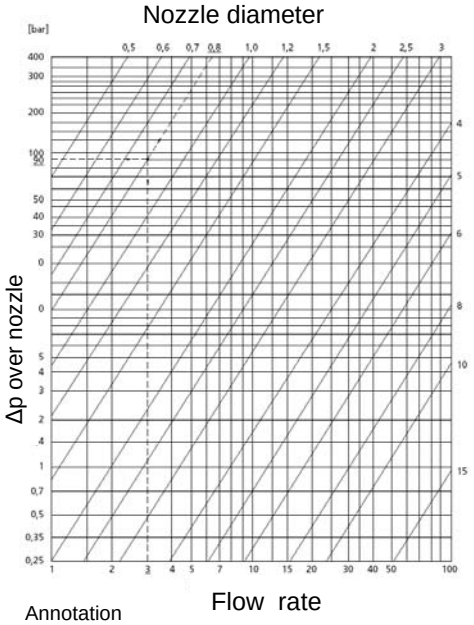
Ports	NG16	NG25	NG32
P, A, B, T	M6	M6	M6
C, Z2	M5	M6	M6

	NG40	NG50	NG63
P, A, B, T	M6	M6	M10
C, Z2	M8	M8	M10

Nozzle 0,8	Part No.
Nozzle covers M5x0,8	6071916
Nozzle covers M6x0,8	6071917
Nozzle covers M8x0,8	6071918
Nozzle covers M10x0,8	6071919

Nozzle 1,5	Part No.
Nozzle covers M5x1,5	6071920
Nozzle covers M6x1,5	6071921
Nozzle covers M8x1,5	6071922
Nozzle covers M10x1,5	6071923

Nozzle choice



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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

LD -C C E 16 D 6 4W

Name
LD-CCE= 2/2 slip-in cartridge cover, Standard

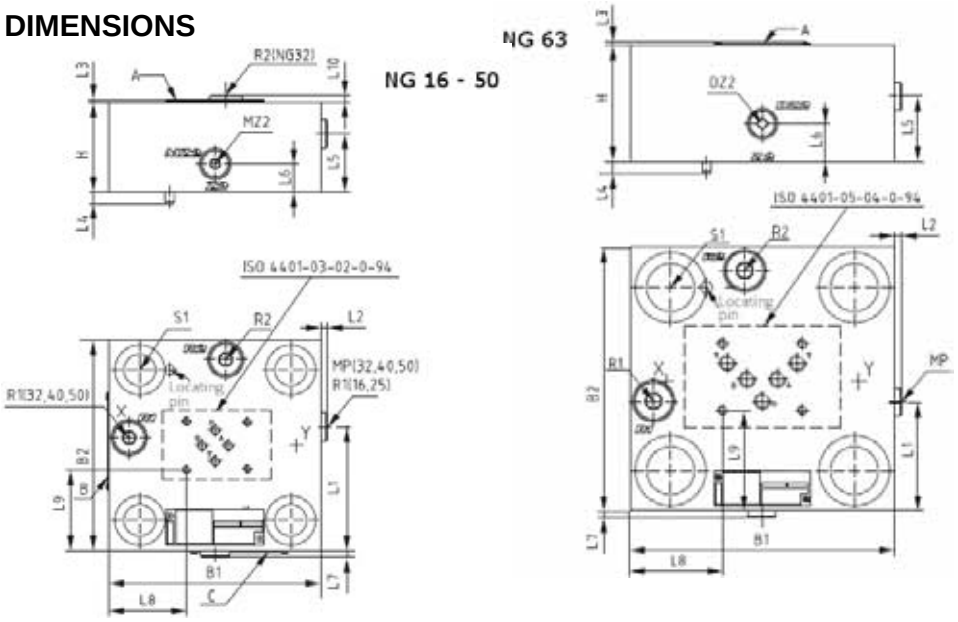
Nominal size
Size16, 25, 32, 40, 50, 63

Series
named by manufacturer

Type
Threads and control ports according to ISO 7368

Cover code
4W = functional symbol

DIMENSIONS



Size	16	25	32	40	50	63
B1 [mm]	80	85	102	125	140	180
B2 [mm]	65	85	102	125	140	180
H [mm]	40	40	45	60	60	80
L1 [mm]	43	53	59,5	73	82	74,5
L2 [mm]	0	0	3,5	4,5	4,5	4,5
L3 [mm]	1,6	1,6	1,6	1,6	1,6	1,6
L4 [mm]	5	5,5	6	6	7,5	8
L5 [mm]	17	20	25	38,5	39	45
L6 [mm]	-	-	18	19	19	26,25
L7 [mm]	-	-	3,5	4,5	4,5	4,5
L8 [mm]	7	23,5	32	43,5	51	63
L9 [mm]	16,25	26,25	34,65	46,25	53,75	68,6
Nameplate on the side	C	C	B	C	A	A
Plug MP, MZ2 + DZ2***	-	-	G 1/8"	G 1/4"	G 1/4"	G 1/4"
Tightening torque [Nm]	-	-	12	27	27	27
Socket width across flats	-	-	5	6	6	6
Plug R1 + R2	G 1/8"	G 1/8"	G 1/4"	G 3/8"	G 3/8"	G 1/2"
Tightening torque [Nm]	12	12	27	56	56	72
Socket width across flats	5	5	6	8	8	10
RKVE valve under plug R	G 1/8"	G 1/8"	G 1/4"	G 3/8"	G 3/8"	-
Tightening torque [Nm]	3	3	7	15	15	-
Socket width across flats**	M-04	M-04	M-06	M-08	M-08	-
S1* DIN EN ISO 4762 - 12.9	M8x35	M12x40	M16x50	M20x70	M20x70	M30x90
Tightening torque [Nm]	30	100	300	550	550	1800
Weight [kg]	1,5	2	3	6,2	8	16,5

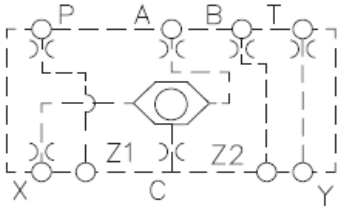
*not part of the delivery, **special tool, please contact ***may also be used as test port

HYDAC INTERNATIONAL

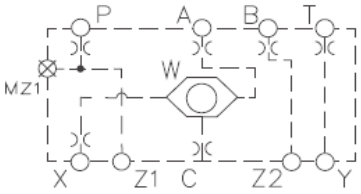
2/2 slip-in cartridge cover
Function 2WR
Series LD-CCE
Size16 up to 63

SYMBOL
Pmax = 350 bar

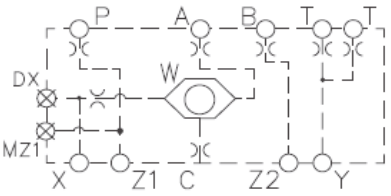
NG16. 25

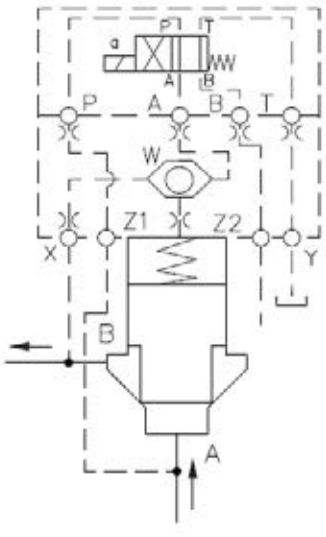


NG32, 40, 50



NG63





FEATURES:
- 2/2 slip-in cartridge covers with remote control port according to ISO 7368
- with possibility to built-in a nozzle at port P, A, B, T, X, C

FUNCTION:
Pilot operated directional valve with shuttle change over function

By using a 2WR-cover in combination with a 2 way directional cartridge valve and a check function will be realized in energized mode with flow from port A -> B. The flow direction from B -> A is always closed. In de-energized mode the flow direction from A -> B is closed. The control port Z1 of the cover is charged with the highest system pressure.
The control port Z2 may be used for the actuation of a second cartridge valve.

SPECIFICATIONS:

Operating pressure:	max. 350 bar
Temp. range of operating fluid:	min. -20°C up to max. +80°C
Ambient temperature range:	min. -20°C up to max. +60°C
Operating fluid:	hydraulic fluid according to DIN 51524 part 1 and 2
Filtration:	Class 20/18/15 according to ISO 4406 (C)
Viscosity range:	2,8 up to 380 mm²/s
Seals:	FKM + PU (NBR / FKM on request)

E 5.249.18 /01.13

Standard models

Type	Part No.
LD-CCE 16 D6 2WR	6083431
LD-CCE 25 D6 2WR	6083432
LD-CCE 32 D6 2WR	6083433
LD-CCE 40 D6 2WR	6083434
LD-CCE 50 D6 2WR	6083435
LD-CCE 63 D6 2WR	6083436

Nozzles

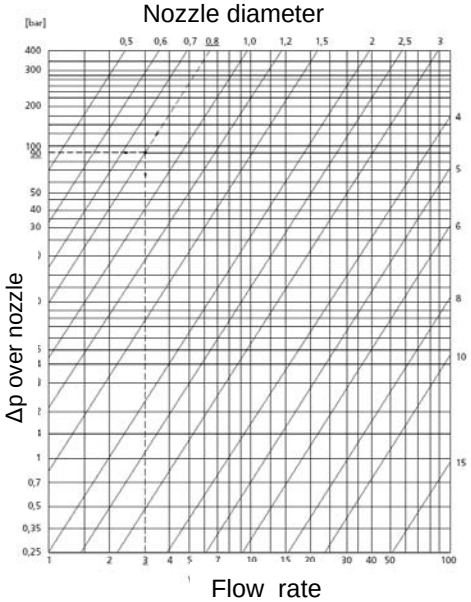
Ports	NG16	NG25	NG32
X, C	M5	M6	M6
P, A, B, T	M6	M6	M6

	NG40	NG50	NG63
X, C	M8	M8	M10
P, A, B, T	M6	M6	M10

Nozzle 0,8	Part No.
Nozzle Control cover M5x0,8	6071916
Nozzle Control cover M6x0,8	6071917
Nozzle Control cover M8x0,8	6071918
Nozzle Control cover M10x0,8	6071919

Nozzle 1,5	Part No.
Nozzle Control cover M5x1,5	6071920
Nozzle Control cover M6x1,5	6071921
Nozzle Control cover M8x1,5	6071922
Nozzle Control cover M10x1,5	6071923

Nozzle choice



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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

LD -C C E 16 D 6 2WR

Name
LD-CCE= Control cover for 2/2- cartridge valve, Standard

Nominal size
NG 16, 25, 32, 40, 50, 63

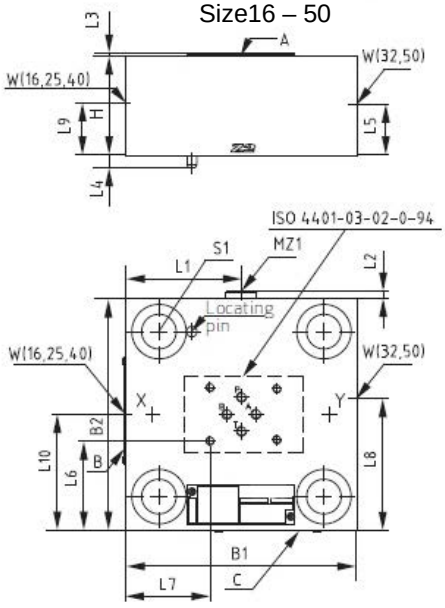
Series
named by manufacturer

Type
Threads and control ports according to ISO 7368

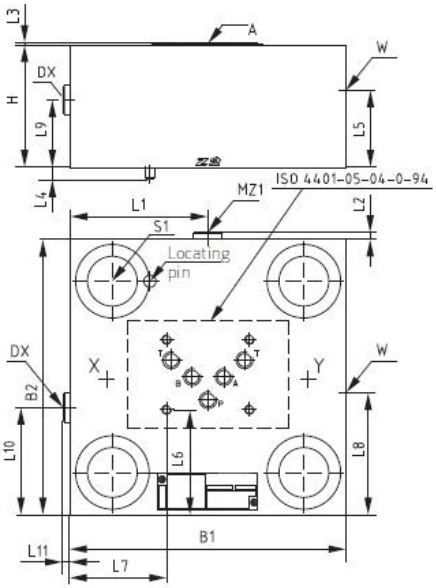
Cover code
2WR = functional symbol

DIMENSIONS

Size16 – 50



Size 63



Size	16	25	32	40	50	63
B1 [mm]	80	85	102	125	140	180
B2 [mm]	65	85	102	125	140	180
H [mm]	40	40	45	60	60	80
L1 [mm]	-	-	51	62,5	70	90
L2 [mm]	-	-	3,5	4,5	4,5	4,5
L3 [mm]	1,6	1,6	1,6	1,6	1,6	1,6
L4 [mm]	5	5,5	6	6	7,5	8
L5 [mm]	-	-	17,5	-	31	44
L6 [mm]	16,25	26,25	34,65	46,25	73	68,6
L7 [mm]	7	23,5	32	43,5	53,75	63
L8 [mm]	-	-	63	-	51	70
L9 [mm]	16,5	21	-	34,5	-	44
L10 [mm]	31,5	43,5	-	64	-	70
L11 [mm]	-	-	-	-	-	4,5
Nameplate on the side	C	C	B	C	A	A
Plug DX** + MZ1	-	-	G 1/8"	G 1/4"	G 1/4"	G 1/4"
Tightening torque [Nm]	-	-	12	27	27	27
Socket width across flats	-	-	5	6	6	6
Plug W	G 3/8"	G 3/8"	G 3/8"	G 3/8"	G 3/8"	G 3/4"
Tightening torque [Nm]	56	56	56	56	56	120
Socket width across flats	8	8	8	8	8	12
Shuttle valve under plug W	-	-	-	-	-	G 1/2"
Tightening torque [Nm]	-	-	-	-	-	40
Socket width across flats	-	-	-	-	-	10
S1* DIN EN ISO 4762 - 12.9	M8x35	M12x40	M16x50	M20x70	M20x70	M30x90
Tightening torque [Nm]	30	100	300	550	550	1800
Weight [kg]	1,5	2	3	6,2	8	16,5

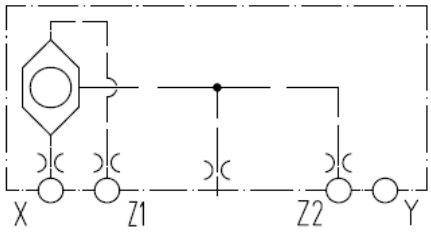
*not part of the delivery, **may also be used as test port

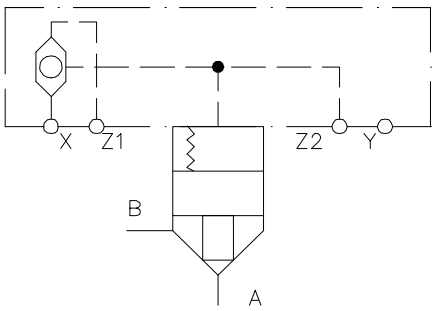
HYDAC INTERNATIONAL

2/2 slip-in cartridge cover
Function 2DR
Series LD-CCE
Size16 up to 32

SYMBOL

P max = 350 bar





FEATURES:

- 2/2 slip-in cartridge covers with remote control port according to ISO 7368
- with possibility to built-in a nozzle at port C, X, Z1,Z2

SPECIFICATIONS:

Operating pressure:	max. 350 bar
Temp. range of operating fluid:	min. -20°C up to max. +80°C
Ambient temperature range:	min. -20°C up to max. +60°C
Operating fluid:	hydraulic fluid according to DIN 51524 part 1 and 2
Filtration:	Class 20/18/15 according to ISO 4406 (C)
Viscosity range:	2,8 up to 380 mm²/s
Seals:	FKM + PU (NBR / FKM on request)

E 5.249.17 /01.13

Standard models

Type	Part No.
LD-CCE 16 D6 2DR	6083395
LD-CCE 25 D6 2DR	6083396
LD-CCE 32 D6 2DR	6083397

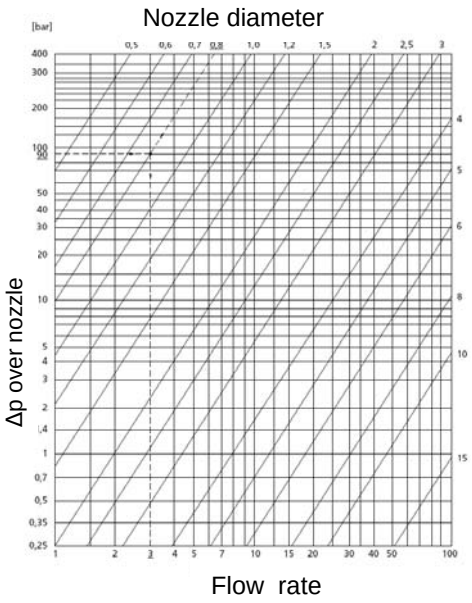
Nozzles

Ports	**NG16**	**NG25**	**NG32**
X, C, Z1, Z2	M5	M6	M6

Nozzle 0,8	**Part No.**
Nozzle Control cover M5x0,8	6071916
Nozzle Control cover M6x0,8	6071917

Nozzle 1,5	**Part No.**
Nozzle Control cover M5x1,5	6071920
Nozzle Control cover M6x1,5	6071921

Nozzle choice



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66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

MODEL CODE

LD -C C E 16 D 6 2DR

Name
LD-CCE= Control cover for 2/2- cartridge valve, Standard

Nominal size
NG 16, 25, 32

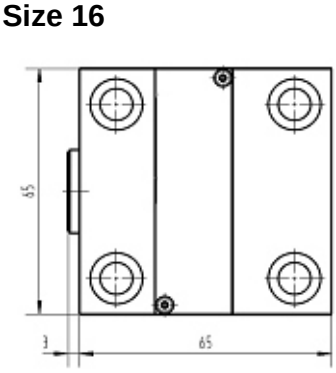
Series
named by manufacturer

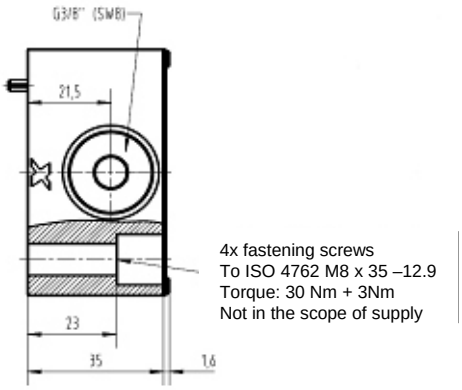
Type
Threads and control ports according to ISO 7368

Cover code
2DR = functional symbol

DIMENSIONS

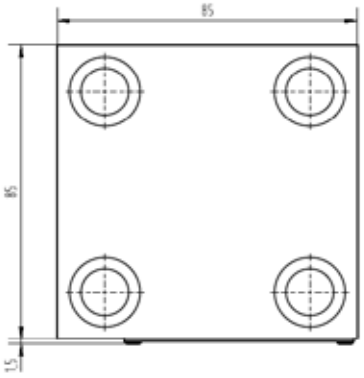
Size 16

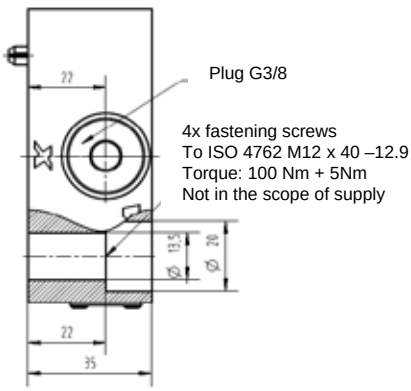




4x fastening screws
To ISO 4762 M8 x 35 –12.9
Torque: 30 Nm + 3Nm
Not in the scope of supply

Size 25

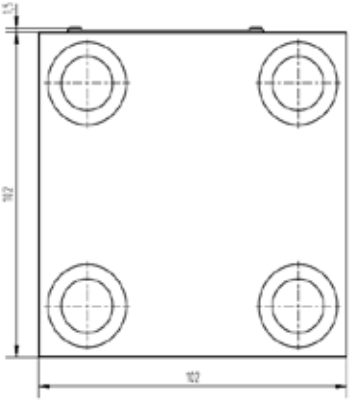


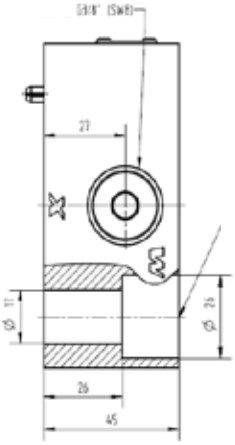


Plug G3/8

4x fastening screws
To ISO 4762 M12 x 40 –12.9
Torque: 100 Nm + 5Nm
Not in the scope of supply

Size 32





4x fastening screws
To ISO 4762 M16 x 50 –12.9
Torque: 300 Nm + 20Nm
Not in the scope of supply

HYDAC INTERNATIONAL

Zubehör für Industrieventile
Accessories for industrial valves

1) 4WE Wegeschieberventile, magnetgesteuert
4WE Directional spool valves solenoid operated

	Nenngröße / Size	Werkstoff / Material	Anzahl / Number	Beschreibung / Description	Mat.-nr. / Code no.
Dichtsätze / Seal kits	NG / NW6	NBR	4x	9,25 x 1,78 80Sh	3492432
		FPM	4x	9,25 x 1,78 80Sh	3120269
	NG / NW10	NBR	5x	12 x 2 80Sh	3492433
		FPM	5x	12 x 2 80Sh	3492434
Befestigungsschrauben / Screws	NG / NW6		4x	M5x30	3524313
	NG / NW10		4x	M6x40	3524314
Magnetspulen / Coils	NG / NW6			12DG	915050
				24DG	3191378
				96DG	3131288
				205DG	3131247
	NG / NW10			12DG	3136538
				24DG	3135636
				205DG	3136542
Dichtsatz Magnetspule / Seal kit for coil	NG / NW6			Mutter / Nut	3524345
				O-Ring	
	NG / NW10			Mutter / Nut	3524350
				O-Ring	
Stecker / Plug				Z4 Standard 2-polig o. PE/2 poles without PE	394287
				ZW4 inkl. Gleichrichter/incl. bridge rectifier	394293
Platten / Plates	NG / NW 6			siehe Punkt 8 Anschlussplatten	3565254
	NG / NW 10			see point 8 Subplates	3565280
Düsen / Orifices	NG / NW6			0,8 mm	6087869
				1,5 mm	6087870
	NG / NW10			0,8 mm	6092411
				1,5 mm	6092412
Sondernothand / Manual override special	NG / NW6			Pilznothand / Manual override mushroom-type	3506914

2) 4WH Wegeschieberventile, hydraulisch vorgesteuert
Directional spool valves hydraulically piloted

	Nenngröße / Size	Werkstoff / Material	Anzahl / Number	Beschreibung / Description	Anzahl / Number	Beschreibung / Description	Mat.-nr. / Code no.
Dichtsätze / Seal kits	NG / NW10	NBR	5x	12,42x1,78 90 Sh	2x	9,25x1,78 90 Sh	3524475
		FPM	5x	12,42x1,78 90 Sh	2x	9,25x1,78 90 Sh	3524523
	NG / NW16	NBR	4x	22,22x2,62 90 Sh	2x	10,82x1,78 90 Sh	3524553
		FPM	4x	22,22x2,62 90 Sh	2x	10,82x1,78 90 Sh	3524634
	NG / NW25	NBR	4x	29,8x2,62 90Sh	2x	20,24x2,62 90Sh	3524659
		FPM	4x	29,8x2,62 90Sh	2x	20,24x2,62 90Sh	3524660
	NG / NW32	NBR	4x	37,59x3,53 90Sh	2x	20,24x2,62 90Sh	3524685
		FPM	4x	37,59x3,53 90Sh	2x	20,24x2,62 90Sh	3524690
Befestigungsschrauben / Screws	NG / NW10		4x	M6x35			3524691
	NG / NW16		4x	M10x60	2x	M6x50	3524695
	NG / NW25		6x	M12x60 12.9			3524698
	NG / NW32		6x	M20x70 12.9			3524700
Platten / Plates	NG / NW6	NBR		Sperrplatte / Non-return plate			3611576
		FPM		Sperrplatte / Non-return plate			3611580
		NBR		Umlenkplatte / Diversion plate PATB			3581660
		FPM		Umlenkplatte / Diversion plate PATB			3581661
		NBR		Umlenkplatte / Diversion plate PBTA			3581662
		FPM		Umlenkplatte / Diversion plate PBTA			3581663
Stopfen, Stifte und Düsen / Plugs, pins, orifices	NG / NW10			M 5x 6-45H			3524747
	NG / NW16			M 6x 8-45H			3524750
	NG / NW25			M 6x 8-45H			
	NG / NW32			M 6x 8-45H			

3) ZW Zwischenplattenventile

Sandwich plate valves

	Nenngröße / Size	Werkstoff / Material	Anzahl / Number	Beschreibung / Description	Mat.-nr. / Code no.
Dichtsätze / Seal kits	NG / NW6	NBR	4x	9,25x1,78 90 Sh	3524355
		FPM	4x	9,25x1,78 90 Sh	3524413
	NG / NW10	NBR	5x	12,42x1,78 90 Sh	3524438
		FPM	5x	12,42x1,78 90 Sh	3524439
Platten / Plates	NG / NW6	NBR		Sperrplatte / Non-return plate	3611576
		FPM		Sperrplatte / Non-return plate	3611580
		NBR		Umlenkplatte / Diversion plate PATB	3581660
		FPM		Umlenkplatte / Diversion plate PATB	3581661
		NBR		Umlenkplatte / Diversion plate PBTA	3581662
		FPM		Umlenkplatte / Diversion plate PBTA	3581663

4) VP Plattenaufbauventile

Plate mounted valves

	Nenngröße / Size	Werkstoff / Material	Anzahl / Number	Beschreibung / Description	Anzahl / Number	Beschreibung / Description	Mat.-nr. / Code no.
Dichtsätze / Seal kits	VP-P2SRR6, VP-2SR6, VP-P2SRE6	NBR	2x	14x2			3526072
		FPM	2x	14x2			3526085
	VP-RP6, VP-DRP6, VP-PDB6, VP-PDRP6	NBR	4x	9,25x1,78			3526088
		FPM	4x	9,25x1,78			3526091
	VP-DBP10, VP-PDBP10	NBR	2x	17,86x2,62	1x	9,19x2,62	3526094
		Viton	2x	17,86x2,62	1x	9,19x2,62	3526098
	VP-DRP10, VP-RP10	NBR	2x	17,13x2,62	2x	5,28x1,78	3526099
		FPM	2x	17,13x2,62	2x	5,28x1,78	3526101
	VP-2SR10	NBR	2x	15x2,5			3526102
		Viton	2x	15x2,5			3526103
Befestigungsschrauben / Screws	VP-2SR6		4x	M5x75			3526116
	VP-RP6, VP-DRP6, VP-PDRP6,		4x	M5x50			3526118
	VP-DBP10, VP-PDBP10		4x	M12x40			3526122
	VP-DRP10, VP-RP10		4x	M10x70			3526126
	VP-PDB6		4x	M5x30			3526129
	VP-P2SRE6		4x	M5x70			3526131
	VP-P2SRR6		4x	M5x65			3526133
	VP-2SR10		4x	M8x60			3526134
Magnetspulen / Coils	auf Anfrage / on request						
Dichtsatz Magnetspule / Seal kit for coil	auf Anfrage / on request						
Stecker / Plug	Z4				Standard 2-polig	o. PE /2 poles without PE	394287
	ZW4				inkl. Gleichrichter	incl. bridge rectifier	394293

5) P4WE Proportional Wegeventile

Proportional directional valves

	Nenngröße / Size	Werkstoff / Material	Anzahl / Number	Beschreibung / Description	Mat.-nr. / Code no.
Dichtsätze / Seal kits	NG / NW6	NBR	4x	9,25x1,78 90 Sh	3524355
		FPM	4x	9,25x1,78 90 Sh	3524413
	NG / NW10	NBR	5x	12,42x1,78 90 Sh	3524438
		FPM	5x	12,42x1,78 90 Sh	3524439
Befestigungsschrauben / Screws	NG / NW6		4x	M5x30	3524313
	NG / NW10		4x	M6x40	3524314
Magnetspulen / Coils	NG / NW6		1x	12 Volt	3549725
			1x	24 Volt	3549737
	NG / NW10		1x	12 Volt	3549738
			1x	24 Volt	3549739
Dichtsatz Magnetspule / Seal kit for coil	auf Anfrage / on request				
Stecker / Plug				Z4 Standard 2-polig o. PE	394287
				Stecker für P4WEE OBE	6080324
Platten / Plates	NG / NW 6			siehe Punkt 8	3565254
	NG / NW 10			see point 8	3565280

6) L-CEE 2-Wege Einbauventile
Cartridge logic valves

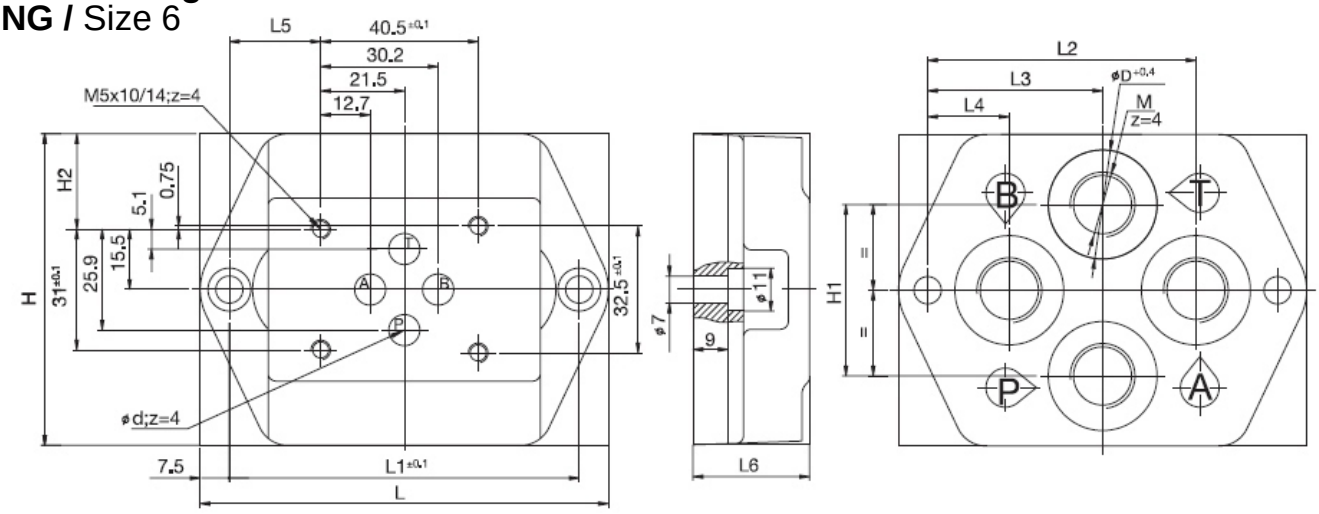
	Nenngröße / Size	Werkstoff / Material	Anzahl / Number	Beschreibung / Description	Mat.-nr. / Code no.
Dichtsätze / Seal kits	NG / NW16	FPM + PU		Dichtsatz / Seal kit L-CEE 16 Standard	6088069
	NG / NW25	FPM + PU		Dichtsatz / Seal kit L-CEE 25 Standard	6088070
	NG / NW32	FPM + PU		Dichtsatz / Seal kit L-CEE 32 Standard	6088071
	NG / NW40	FPM + PU		Dichtsatz / Seal kit L-CEE 40 Standard	6088072
	NG / NW50	FPM + PU		Dichtsatz / Seal kit L-CEE 50 Standard	6088073
	NG / NW63	FPM + PU		Dichtsatz / Seal kit L-CEE 63 Standard	6088074

7) LD-CCE Deckel für L-CEE 2-Wege Einbauventile
Covers for cartridge logic valves

	Nenngröße / Size	Werkstoff / Material	Anzahl / Number	Beschreibung / Description	Mat.-nr. / Code no.
Dichtsätze / Seal kits	NG / NW16	FPM + PU		Dichtsatz / Seal kit LD-CCE 16 1D	6093001
	NG / NW25	FPM + PU		Dichtsatz / Seal kit LD-CCE 25 1D	6093018
	NG / NW32	FPM + PU		Dichtsatz / Seal kit LD-CCE 32 1D	6093019
	NG / NW40	FPM + PU		Dichtsatz / Seal kit LD-CCE 40 1D	6093020
	NG / NW50	FPM + PU		Dichtsatz / Seal kit LD-CCE 50 1D	6093101
	NG / NW63	FPM + PU		Dichtsatz / Seal kit LD-CCE 63 1D	6093102
Befestigungsschrauben / Screws	NG / NW16	Stahl / Steel	4x	M8x35	3524859
	NG / NW25		4x	M12x40	3526065
	NG / NW32		4x	M16x50	3526067
	NG / NW40		4x	M20x70	3526069
	NG / NW50		4x	M20x70	
	NG / NW63		4x	M30x90	3526070
Stopfen, Stifte und Düsen / Plugs, pins, orifices	NG / NW16			M5x0,8	6071916
	NG / NW25/32			M6x0,8	6071917
	NG / NW40/50			M8x0,8	6071918
	NG / NW63			M10x0,8	6071919
	NG / NW16			M5x1,5	6071920
	NG / NW25/32			M6x1,5	6071921
	NG / NW40/50			M8x1,5	6071922
	NG / NW63			M10x1,5	6071923

Weitere Dichtsätze, Deckel auf Anfrage /
Other sealkits and covers on request

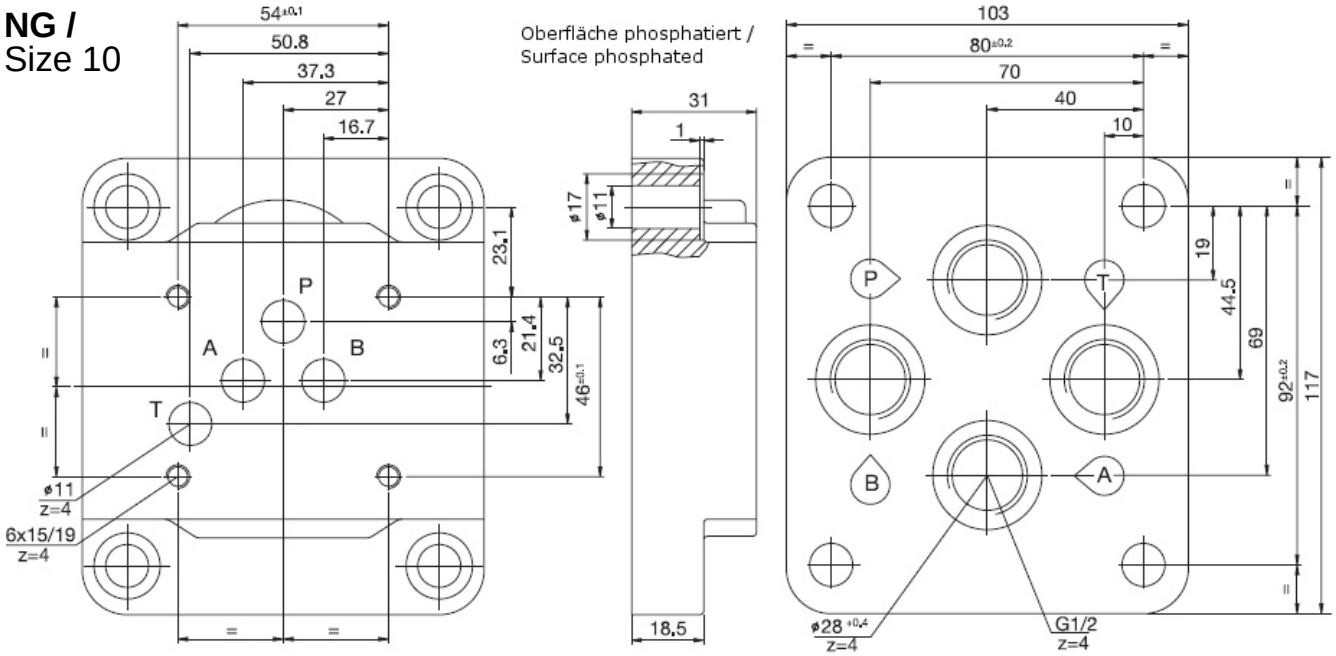
8) **Anschlussplatten /** Subplates
Abmessungen / Dimensions
NG / Size 6



Typ / Type	M	D+0.4	d	L	L1	L2	L3	L4	L5	L6	H	H1	H2	Oberflächenschutz / Surface protection
AP-6-G3/8-S01/1	G3/8	28	8	105	90	69	45	21	23,5	30	80	44	24,5	Phosphatiert / Phosphated

Abmessungen / Dimensions

NG /
Size 10



AP – 6 – G 3/8 – S01 / 1 / V

Name
AP = Anschlussplatte / Subplate
UP = Umlenkplatte / Diversion plate
SP = Sperrplatte / Non-Return plate

Nenngröße / Nominal size
6 = NG 6 / NW 6
10 = NG 10 / NW10

Anschlüsse / Ports oder/ or Funktion /Function
G3/8 = NG 6 / NW6
G1/2 = NG10 / NW10
PATB = Verbindung / Connection PA/TB
PBTA = Verbindung / Connection PB/TA
Ohne = Sperrplatten / Non-return plates

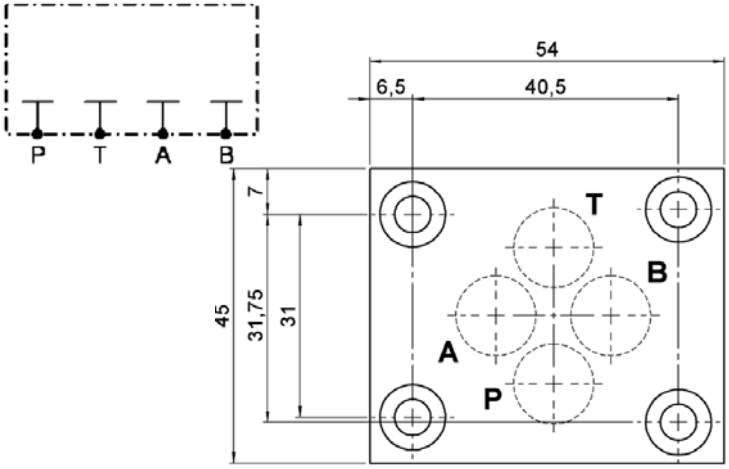
Ausführung / Type
S01 = phosphatiert / phosphated
S02 = verzinkt / zinc plated

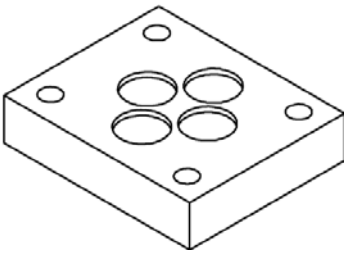
Hole pattern
1 = DIN 24340 Form A6 ISO4401 (NG6)
DIN 24340 Form A10 ISO4401 (NG10)

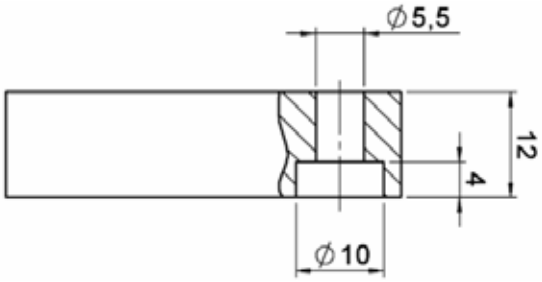
Dichtungswerkstoff / Seals
V = FPM / FKM
N = NBR

Standardausführungen / Standard models	**Mat.-Nr.** Part No.
AP-6-G3/8-S01/1	3565254
AP-10-G1/2-S01/1	3565280

9) **Sperrplatten /** Non-return plates
Abmessungen / Dimensions
NG / Size 6

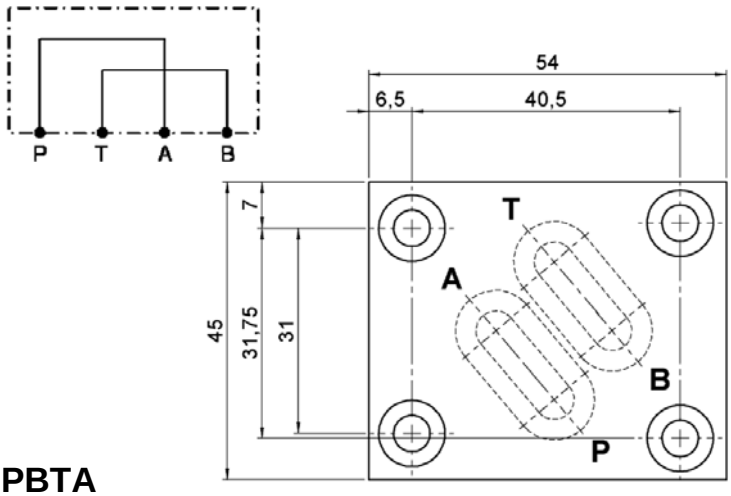


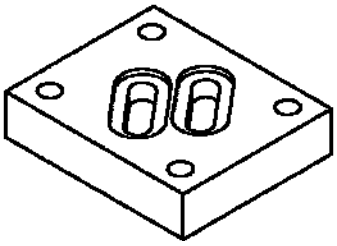


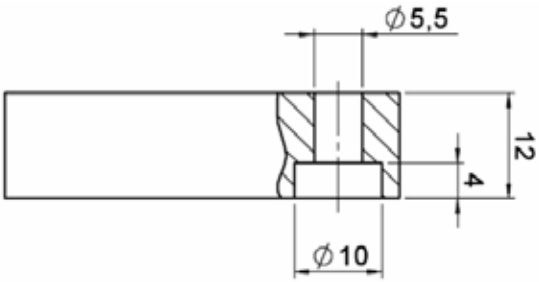


9) **Umlenkplatten /** Diversion plates
Abmessungen / Dimensions
NG / Size 6

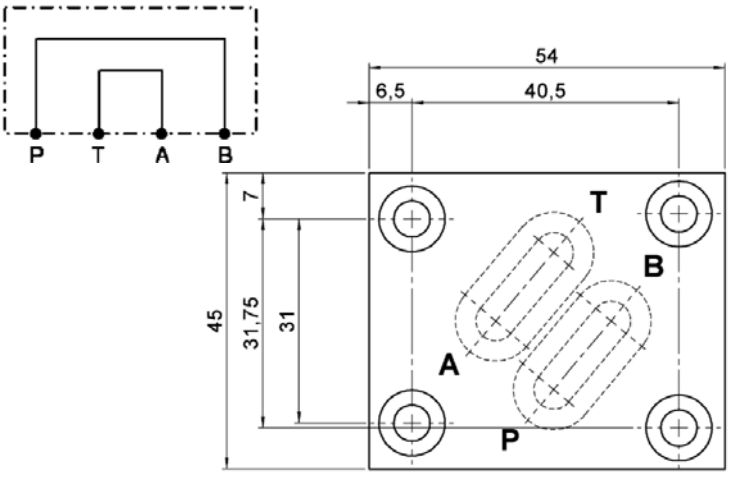
PATB

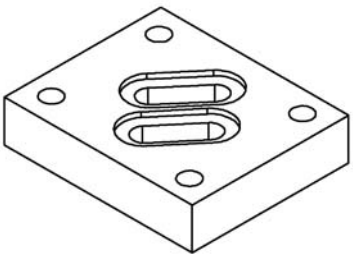






PBTA





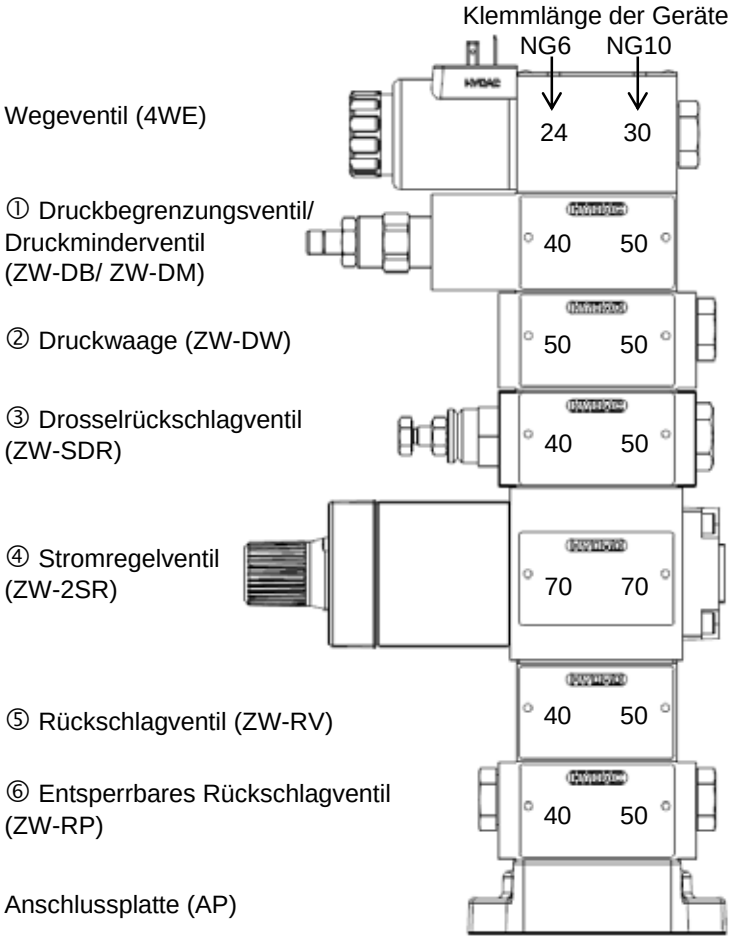
Standardausführungen / Standard models	**Mat.-Nr. /** Part No.
SP-6-S01/1/N	3611576
SP-6-S01/1/V	3611580
UP-6-PATB-S01/1/N	3581660
UP-6-PATB-S01/1/V	3581661
UP-6-PBTA-S01/1/N	3581662
UP-6-PBTA-S01/1/V	3581663

Anmerkung
Die Angaben in diesem Prospekt beziehen sich auf die beschriebenen Betriebsbedingungen und Einsatzfälle. Bei abweichenden Einsatzfällen und/ oder Betriebsbedingungen wenden Sie sich bitte an die entsprechende Fachabteilung. Technische Änderungen sind vorbehalten.

Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

10) Befestigungselemente für Höhenverkettungen



Zylinderschraube
(min. 10.9 empfohlen)

	NG6	NG10
	M5	M6
a	9mm	10mm

a= Einschraubtiefe
l= Schraubenlänge

Anzugsdrehmoment
M5 7,5Nm
M6 13Nm

Ventilkombinationen	NG6			NG10		
	Klemm-länge ♦	Schrauben-länge [l]	Mat# [1 Stück]	Klemm-länge ♦	Schrauben-länge [l]	Mat# [1 Stück]
Wegeventil + ①	64	75	688101	80	90	604214
Wegeventil + ②	74	85	625084	80	90	604214
Wegeventil + ③	64	75	688101	80	90	604214
Wegeventil + ④	94	105	6017490	110	120	612316
Wegeventil + ⑤	64	75	688101	80	90	604214
Wegeventil + ⑥	64	75	688101	80	90	604214
Wegeventil + ③ + ⑥	104	115	6004218	130	140	625106
Wegeventil + ① + ⑤	104	115	6004218	130	140	625106
Wegeventil + ① + ③	104	115	6004218	130	140	625106
Wegeventil + ③ + ⑤	104	115	6004218	130	140	625106
Wegeventil + ③ + ④	134	145	625098	150	160	nn
Wegeventil + ⑥ + ③ + ①	144	155	nn	180	190	603210

♦ abweichend bei Verwendung von Proportional Ventil NG6 +1,5mm oder NG10 +1mm (Klemmlänge)

Anmerkung
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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

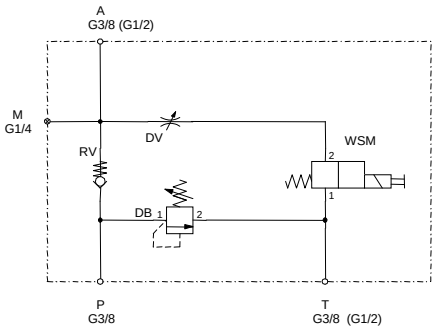
Lift-lowering manifold HSB-Z-030 and -040 with load-dependent speed control

for lift-lowering applications

FEATURES

- Application: for simple, load dependent lift-lowering controls e.g. scissor lifts, small forklifts and walky stackers
- Load dependent lowering of the lifted load via 2/2 solenoid poppet valve, combined with adjustable needle valve
- HSB manifolds for the lift-lowering hydraulics are tailored to the complex and varied demands of the lifting technology sector
- Permitted load is safeguarded by a built-in pressure relief valve
- Built-in check valve prevents uncontrolled lowering
- Flange-mounting onto a subplate is possible
- The 2/2 solenoid poppet valve includes an emergency lowering cable-pull type manual override (self-resetting), (optional with plastic knob Part-No. 6019472 for manual operation)

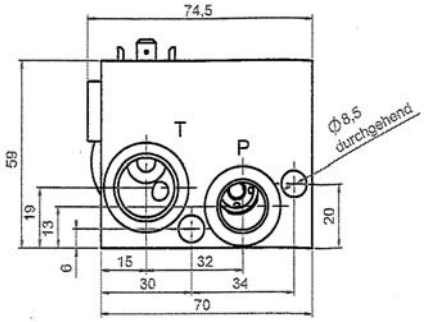
SYMBOL



Qmax = 40 l/min
Pmax = 350 bar

The operating pressure and the flow rate are dependent on the built-in solenoid poppet valve:
Symbol Y, Z = 40 l/min / 350 bar
Symbol V = 20 l/min / 350 bar
Symbol W = 19 l/min / 250 bar

INTERFACE



SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal Flow:	max. 40 l/min	
Fluids:	Hydraulic oil to DIN 51524 Part 1 and 2	
Media operating temp. range:	-20°C up to +100°C	
Ambient temperature range:	-20°C up to +60°C	
Viscosity range:	10 – 400 mm²/s is recommended	
Filtration:	Class 21/19/16 according to to ISO4406 or cleaner	
Ports 030:	A, P, T:	G 3/8“
	M:	G 1/4“
Ports 040:	A, T:	G 1/2“
	M:	G 1/4“
	P:	G 3/8“
Mounting:	2x M8 10.9, torque 20 Nm	
	pipe connection or	
	flange-mounted onto subplate (Part 3510081 NBR)	
Material:	steel, zinc-plated	
Weight:	2.5 kg incl. valves	

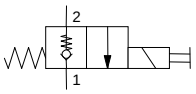
Electrical data: (solenoid poppet valve)

Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built-in the coil
Nominal current at 20° C:	0.8A at 24 V DC, 30 Ohm
	0.1A at 230 V AC, 2137 Ohm
Voltage tolerance:	+/- 15 % of nominal voltage
Response time:	100% ED Continuous up to 115% of nominal voltage at 60°C ambient temperature

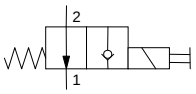
Standard models	Part No.
HSB-Z-030-350V-24DG	3327182
HSB-Z-040-350V-24DG	3327274

other types on request

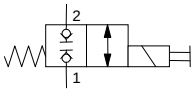
Available solenoid poppet valves:



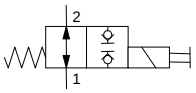
WSM06020Z-01J
See brochure 5.943.3



WSM06020Y-01M
See brochure 5.947.2



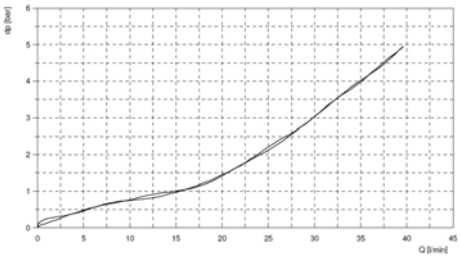
WSM06020W-01M
See brochure 5.949.2



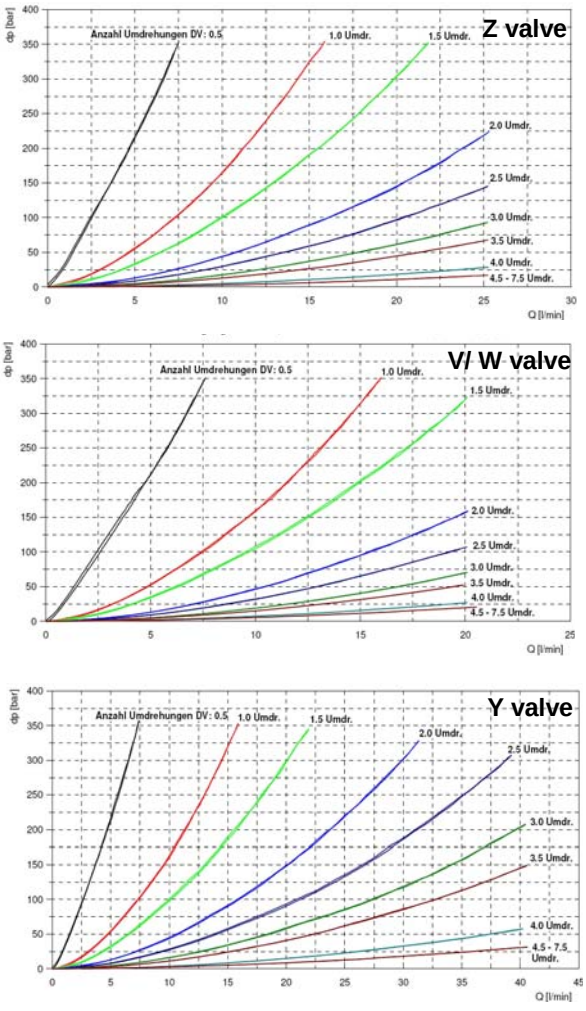
WSM06020V-01M
See brochure 5.949.1

PERFORMANCE

dp-Q curve from P to A (lifting)



dp-Q curves from A to T (lowering)



MODEL CODE

HSB – Z –030 –250 V 200 – 230 AG – Z4

Lift-lowering manifold

Symbol solenoid poppet valve (WSM)
Z = normally closed (s. adjacent chart)
(other symbols V, W, Y s. brochure WSM06020...

Type
030 = Standard, Ports A, P, T = 3/8“, M = 1/4“
040 = Standard, Ports A, T = 1/2“, P = 3/8“, M = 1/4“

Pressure range
250 = 250 bar (solenoid poppet valve symbol W)
350 = 350 bar (solenoid poppet valve symbols V, Y, Z)
other pressure ranges on request

Adjustment option for pressure relief valves (DB)
V = adjustable by tool
other adjustment options on request

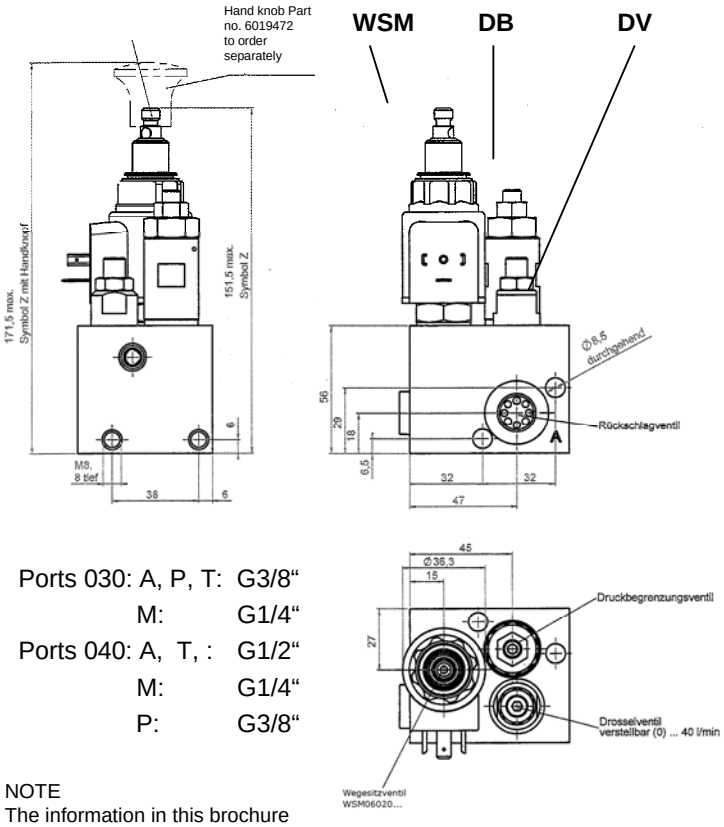
Pressure setting of pressure relief valve (DB)
omission = no pressure setting
200 = pressure setting on request (currently 210, 240, 250 bar)

Nominal voltage of solenoid poppet valve (WSM)
230 = 230 Volt AC
24 = 24 Volt DC

Coil connector
DG = DIN connector to EN 175301-803 (DC)
AG = DIN connector to EN 175301-803 (AC)
other connectors on request

Female connector
omission = none
Z4 = Female connector for DIN connector (supplied loose)

DIMENSIONS



Ports 030: A, P, T: G3/8“
M: G1/4“
Ports 040: A, T, : G1/2“
M: G1/4“
P: G3/8“

NOTE
The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

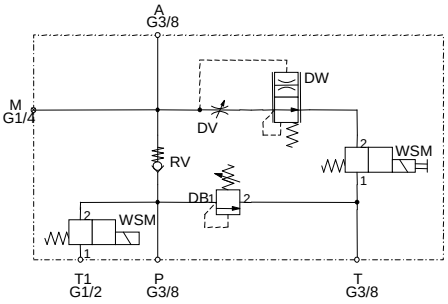
Lift-lowering manifold HSB-Z-020 with load independent speed control and circuit valve

for lift-lowering applications

FEATURES

- Application: for load independent lift-lowering controls e.g. scissor lifts, small forklifts and walky stackers
- Load independent lowering of the lifted load via 2/2 solenoid poppet valve, combined with flow control valve
- Additional valve for switching to unpressurized flow when using a fixed displacement pump
- HSB manifolds for the lift-lowering hydraulics are tailored to the complex and varied demands of the lifting technology sector
- Permitted load is safeguarded by a built-in pressure relief valve
- Built-in check valve prevents uncontrolled lowering
- The 2/2 solenoid poppet valve includes an emergency lowering cable-pull type manual override (self-resetting), (optional with plastic knob Part-No. 6019472 for manual operation)

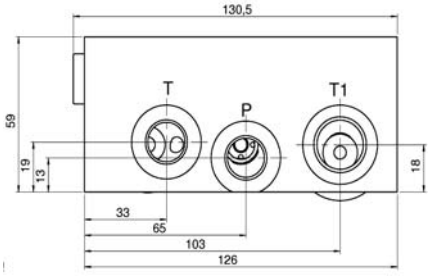
SYMBOL



Qmax = 40 l/min
Pmax = 350 bar

The operating pressure and the flow rate are dependent on built-in solenoid poppet valve:
Symbol Y, Z = 40 l/min / 350 bar
Symbol V = 20 l/min / 350 bar
Symbol W = 19 l/min / 250 bar

INTERFACE



SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal Flow:	max. 40 l/min
Fluids:	Hydraulic oil to DIN 51524 Part 1 and 2
Media operating temp. range:	-20°C up to +100°C
Ambient temperature range:	-20°C up to +60°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 21/19/16 according to to ISO4406 or cleaner
Ports:	A, P, T: G 3/8“
	M: G 1/4“
	T1: G 1/2“
Mounting:	2x M8 10.9, torque 20 Nm pipe connection or flange-mounted onto subplate (Part 3510081 NBR)
Material:	steel, zinc-plated
Weight:	3.0 kg incl. valves

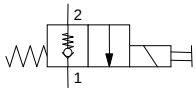
Electrical data: (solenoid poppet valve)

Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built-in the coil
Nominal current at 20° C:	1.5A at 12 V DC
	0.8A at 24 V DC, 30 Ohm
	0.1A at 230 V AC, 2137 Ohm
Voltage tolerance:	+/- 15 % of nominal voltage
Response time:	100% ED Continuous up to 115% of nominal voltage at 60°C ambient temperature

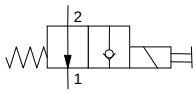
Standard models

	Part No.
HSB-Z-Y-020-350V-24DG-Z4	3284426
other types on request	

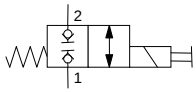
Available solenoid poppet valves for lowering:



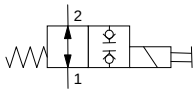
WSM06020Z-01J
See brochure 5.943.3



WSM06020Y-01M
See brochure 5.947.2

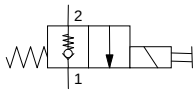


WSM06020W-01M
See brochure 5.949.2

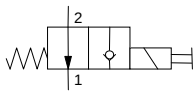


WSM06020V-01M
See brochure 5.949.1

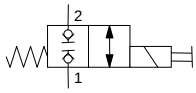
Available solenoid poppet valves for circuit:



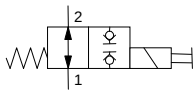
WSM06020Z-01J
See brochure 5.943.3



WSM06020Y-01M
See brochure 5.947.2



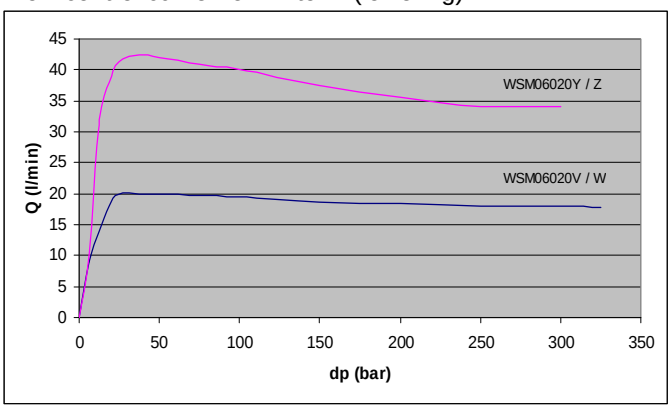
WSM06020W-01M
See brochure 5.949.2



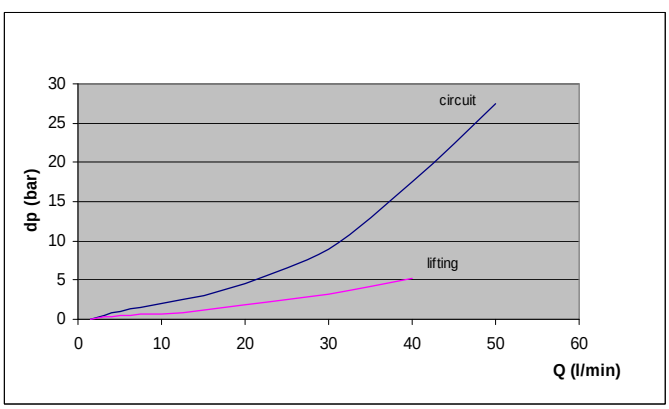
WSM06020V-01M
See brochure 5.949.1

PERFORMANCE

Flow control curve from A to T (lowering)



dp-Q curve from P to A (lifting)
dp curve P to T1 (circuit)



MODEL CODE

HSB – Z – Y - 020 –250 V 200 – 230 AG –Z4

Lift-lowering manifold

Symbol solenoid poppet valve (lowering)
Z = normally closed (s. adjacent chart)
(other symbols V, W, Y s. brochure WSM06020)

Symbol solenoid poppet valve (circuit)
Y = normally open (s. adjacent chart)
(other symbols V, W, Z s. brochure WSM06020...)

Type
020 = Standard with NBR seals

Pressure range
250 = 250 bar (solenoid poppet valve Symbol W)
350 = 350 bar (solenoid poppet valve symbols V, Y, Z)
other Pressure ranges on request

Adjustment option for pressure relief valves (DB)
V = adjustable by tool
other adjustment options on request

Pressure setting of pressure relief valve (DB)
omission = no pressure setting
200 = pressure setting on request

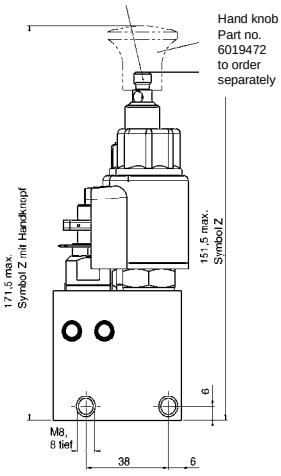
Nominal voltage solenoid poppet valve (WSM)
230 = 230 Volt AC
24 = 24 Volt DC

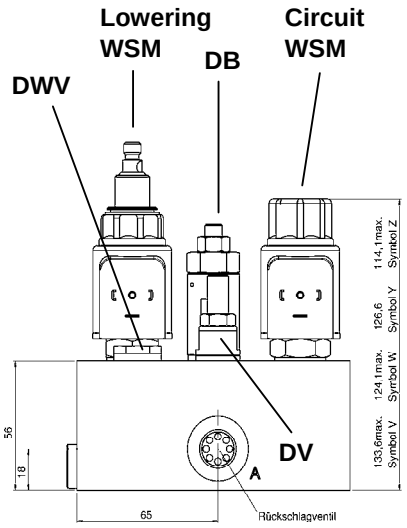
Coil connector
DG = DIN connector to EN 175301-803 (DC)
AG = DIN connector to EN 175301-803 (AC)

Female connector
omission = none
Z4 = Female connector for DIN connector (supplied loose)

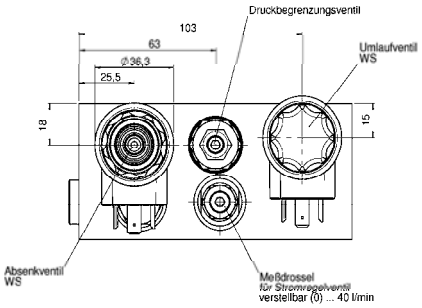
DIMENSIONS

Symbol Z - Manual override
Actuation by pulling and holding





Ports:
A, P, T: G3/8“
M: G1/4“
T1: G1/2“



NOTE
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For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

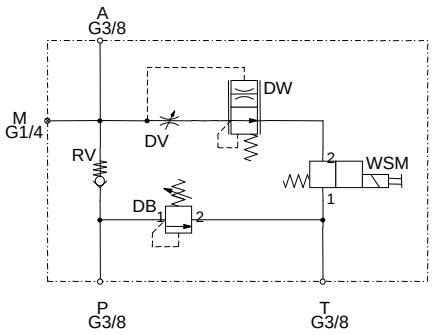
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

Lift-lowering manifold HSB-Z-010 with load independent speed control

for lift-lowering applications

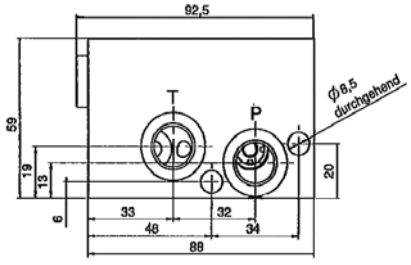
SYMBOL



Qmax = 40 l/min
Pmax = 350 bar

The operating pressure and the flow rate are dependent on built-in solenoid poppet valve:
Symbol Y, Z = 40 l/min / 350 bar
Symbol V = 20 l/min / 350 bar
Symbol W = 19 l/min / 250 bar

INTERFACE



FEATURES

- Application: for load independent lift-lowering controls e.g. scissor lifts, small forklifts and walky stackers
- Load independent lowering of the lifted load via 2/2 solenoid poppet valve, combined with flow control valve
- HSB manifolds for the lift-lowering hydraulics are tailored to the complex and varied demands of the lifting technology sector
- Permitted load is safeguarded by a built-in pressure relief valve
- Built-in check valve avoids uncontrolled lowering
- Flange-mounting onto a subplate is possible
- The 2/2 solenoid poppet valve includes an emergency lowering cable-pull type manual override (self-resetting), (optional with plastic knob Part-No. 6019472 for manual operation)

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal Flow:	max. 40 l/min
Fluids:	Hydraulic oil to DIN 51524 Part 1 and 2
Media operating temp. range:	-20°C up to +100°C
Ambient temperature range:	-20°C up to +60°C
Viscosity range:	0 – 400 mm²/s is recommended
Filtration:	Class 21/19/16 according to to ISO4406 or cleaner
Ports:	A, P, T: G 3/8“
	M: G 1/4“
Mounting:	2x M8 10.9, torque 20 Nm
	pipe connection or
	flange-mounted onto subplate (Part 3510081 NBR)
Material:	steel, zinc-plated
Weight:	3.0 kg incl. valves

Electrical data: (solenoid poppet valve)

Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built-in the coil
Nominal current at 20° C:	1.5A at 12 V DC
	0.8A at 24 V DC, 30 Ohm
	0.1A at 230 V AC, 2137 Ohm
Voltage tolerance:	+/- 15 % of nominal voltage
Response time:	100% ED Continuous up to 115% of nominal voltage at 60°C ambient temperature

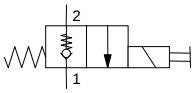
E 5.255.1/01.13

Standard models

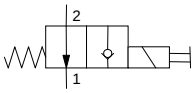
Standard models	Part No.
HSB-Z-010-250V-230AG-Z4	3355029
HSB-Z-010-250V-24DG-Z4	3355025
HSB-Z-010-350V-230AG-Z4	3355026
HSB-Z-010-350V-24DG-Z4	3279410

other types on request

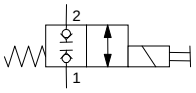
Available solenoid poppet valves:



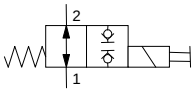
WSM06020Z-01J
See brochure 5.943.3



WSM06020Y-01M
See brochure 5.947.2



WSM06020W-01M
See brochure 5.949.2



WSM06020V-01M
See brochure 5.949.1

MODEL CODE

HSB – Z –010 –250 V 200 – 230 AG – Z4

Lift-lowering manifold

Symbol solenoid poppet valve (WSM)
Z = normally closed (s. adjacent chart)
(other symbols V, W, Y s. brochure WSM06020...

Type
010 = Standard with NBR seals

Pressure range
250 = 250 bar (solenoid poppet valve Symbol W)
350 = 350 bar (solenoid poppet valve symbols V, Y, Z)
other Pressure ranges on request

Adjustment option for pressure relief valves (DB)
V = adjustable by tool
other adjustment options on request

Pressure setting of pressure relief valve (DB)
omission = no pressure setting
200 = pressure setting on request

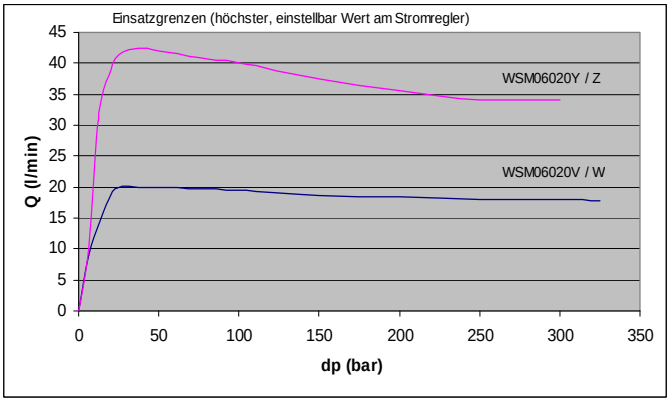
Nominal voltage solenoid poppet valve (WSM)
230 = 230 Volt AC
24 = 24 Volt DC

Coil connector
DG = DIN connector to EN 175301-803 (DC)
AG = DIN connector to EN 175301-803 (AC)
other connectors on request

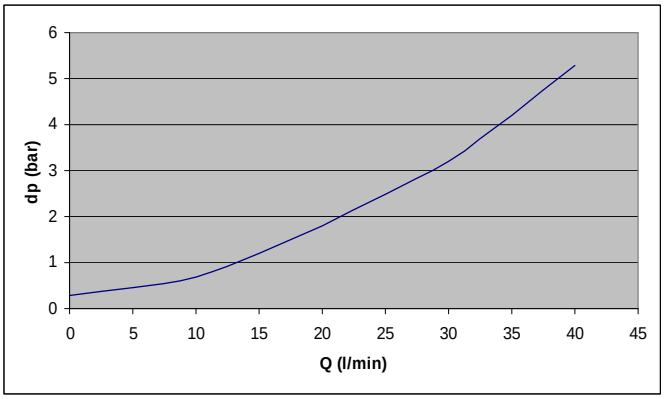
Female connector
omission = none
Z4 = Female connector for DIN connector (supplied loose)

PERFORMANCE

Flow control curve from A to T (lowering)

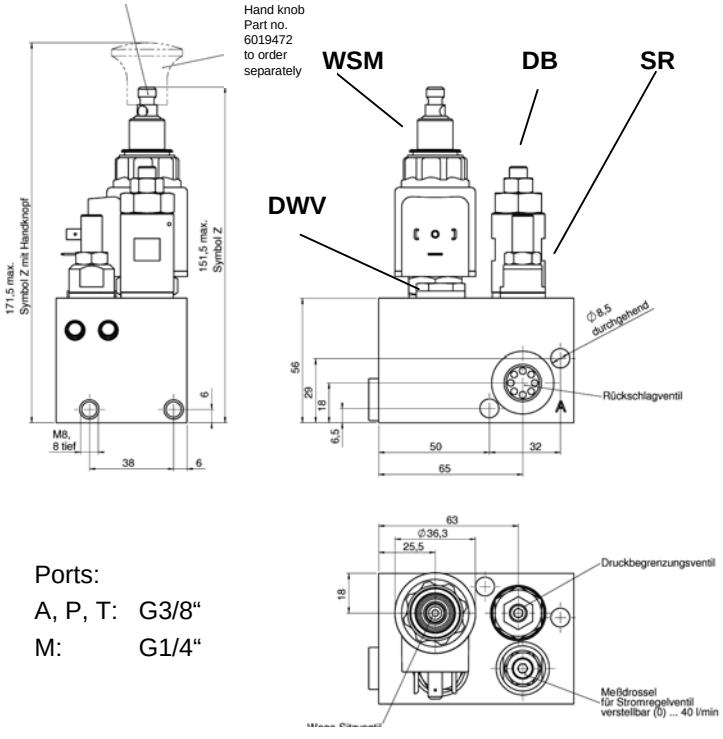


Dp-Q curve from P to A (lifting)



DIMENSIONS

Symbol Z Manual override
Actuation by pulling and holding



Ports:

A, P, T:	G3/8“
M:	G1/4“

NOTE
The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

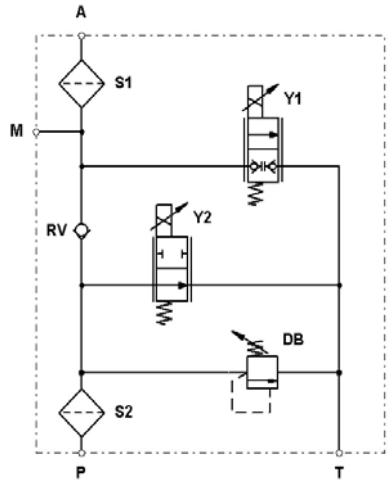
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

Lift-lowering manifold HSB-P-010 with load independent, proportional speed control

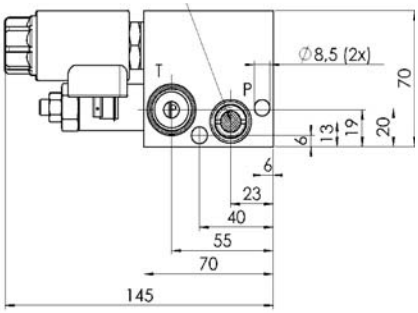
for lift-lowering applications

SYMBOL



Qmax = 25 l/min
Pmax = 250 bar

INTERFACE



FEATURES

- Application: for load independent lift-lowering controls e.g. scissor lifts, small forklifts and walky stackers
- Load independent and sensitive lowering of the lifted load via proportional flow control valves
- HSB manifolds for the lift-lowering hydraulics are tailored to the complex and varied demands of the lifting technology sector
- Permitted load is safeguarded by a built-in pressure relief valve
- Built-in check valve avoids uncontrolled lowering
- Flange-mounting onto a subplate is possible
- Emergency lowering integrated in proportional valve Y1

SPECIFICATIONS

Operating pressure:	max. 250 bar
Nominal Flow:	max. 25 l/min
Fluids:	Hydraulic oil to DIN 51524 Part 1 and 2
Media operating temp. range:	-20°C up to +100°C
Ambient temperature range:	-20°C up to +40°C
Viscosity range:	10 – 400 mm²/s is recommended
Filtration:	Class 18/16/13 according to ISO4406 or cleaner
Ports:	A, T: G 1/2“
	M: G 1/4“
	P: G 3/8“
Mounting:	pipe connection or flange-mounted onto subplate (see interface)
Material:	steel, zinc-plated
Weight:	2.5 kg incl. valves

Electronics: (Proportional valves)

Nominal voltage:	24 Volt (optional 12 Volt)
Coil resistance R20:	14.2 Ohm +/- 0.71 Ohm
PWM frequency:	150 – 250 Hz
Control current:	0 – 1300 mA (Prop. poppet valve Y1)
	0 – 900 mA (Prop. spool valve Y2)
Dead current:	approx. 200 mA (Prop. poppet valve Y1)
	approx. 100 mA (Prop. spool valve Y2)

E 5.255.1/01.13

Standard models

	Part No.
HSB-P-010-250V-DG24	3026635
other types on request	

MODEL CODE

HSB – P - 010 – 250 V 200 – 24DG - Z4

Lift-lowering manifold

Control
P = proportional via PWS06020 (Y1) and PWKD08130 (Y2)

Type
010 = Standard with NBR seals

Pressure range
250 = max. 250 bar
other pressure ranges on request

Adjustment option for pressure relief valves (DB)
V = adjustable by tool
other adjustment options on request

Pressure setting of pressure relief valve (DB)
omission = no pressure setting
200 = pressure setting on request

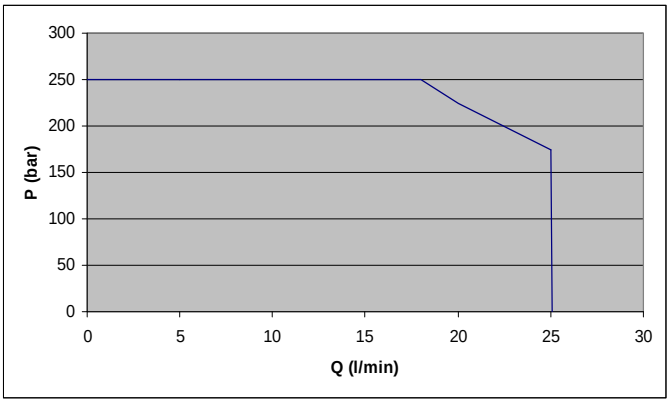
Nominal voltage proportional valves
24 = 24 Volt DC
12 = 12 Volt DC

Coil connector
G = DIN connector to EN 175301-803 (DC)
other connectors on request

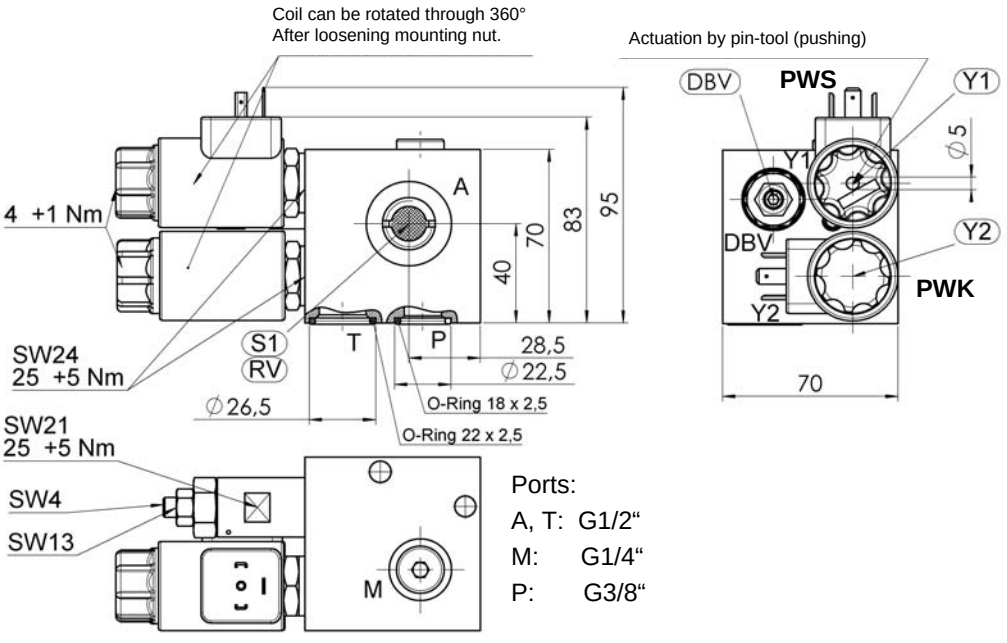
Female connector
omission = none
Z4 = Female connector for DIN connector (supplied loose)

PERFORMANCE

Switching performance P to A



DIMENSIONS



Ports:
A, T: G1/2“
M: G1/4“
P: G3/8“

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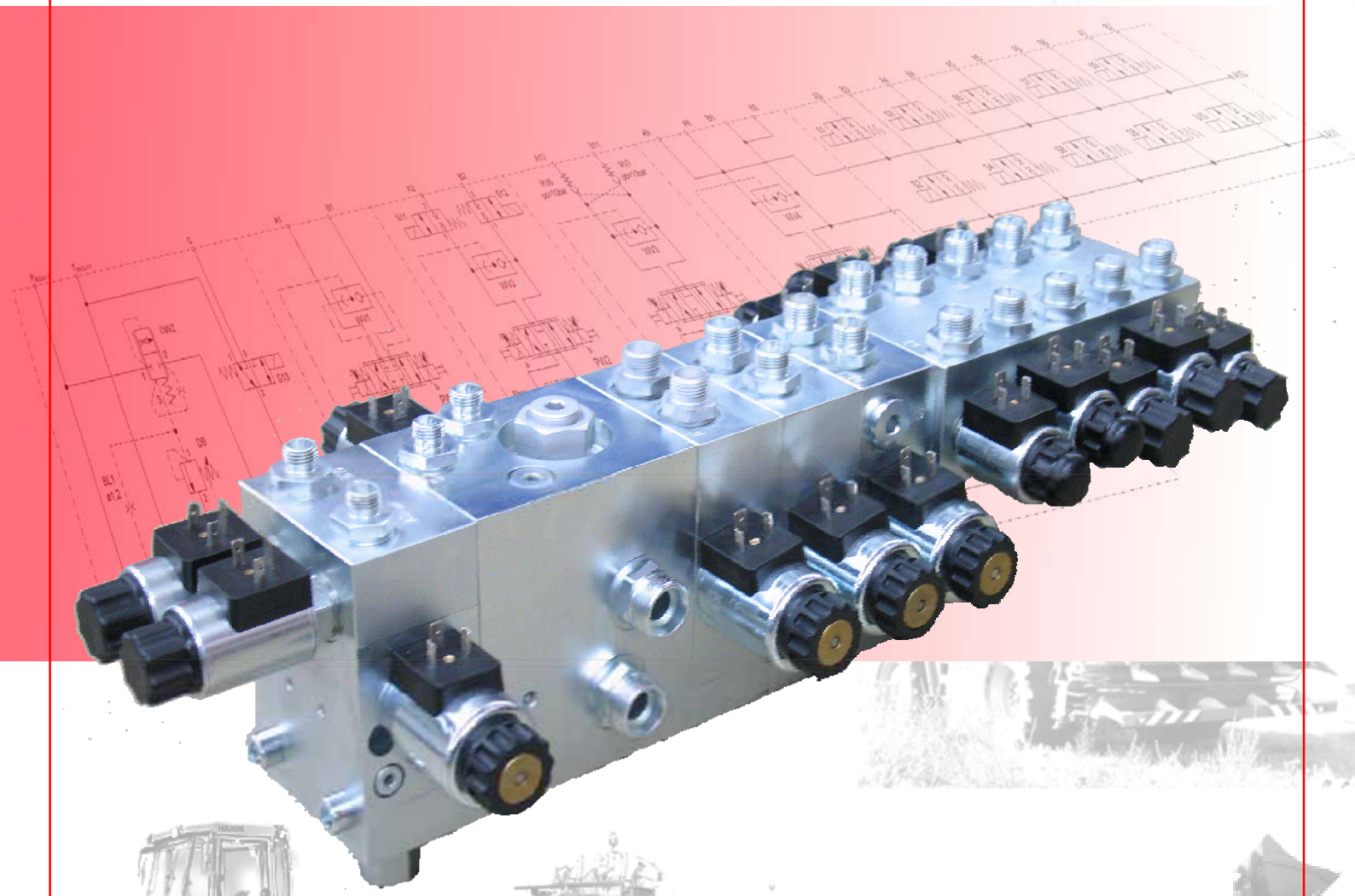
Email: flutec@hydac.com

HYDAC INTERNATIONAL

The modular manifold system for mobile work machines



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HYDAC INTERNATIONAL

Introduction

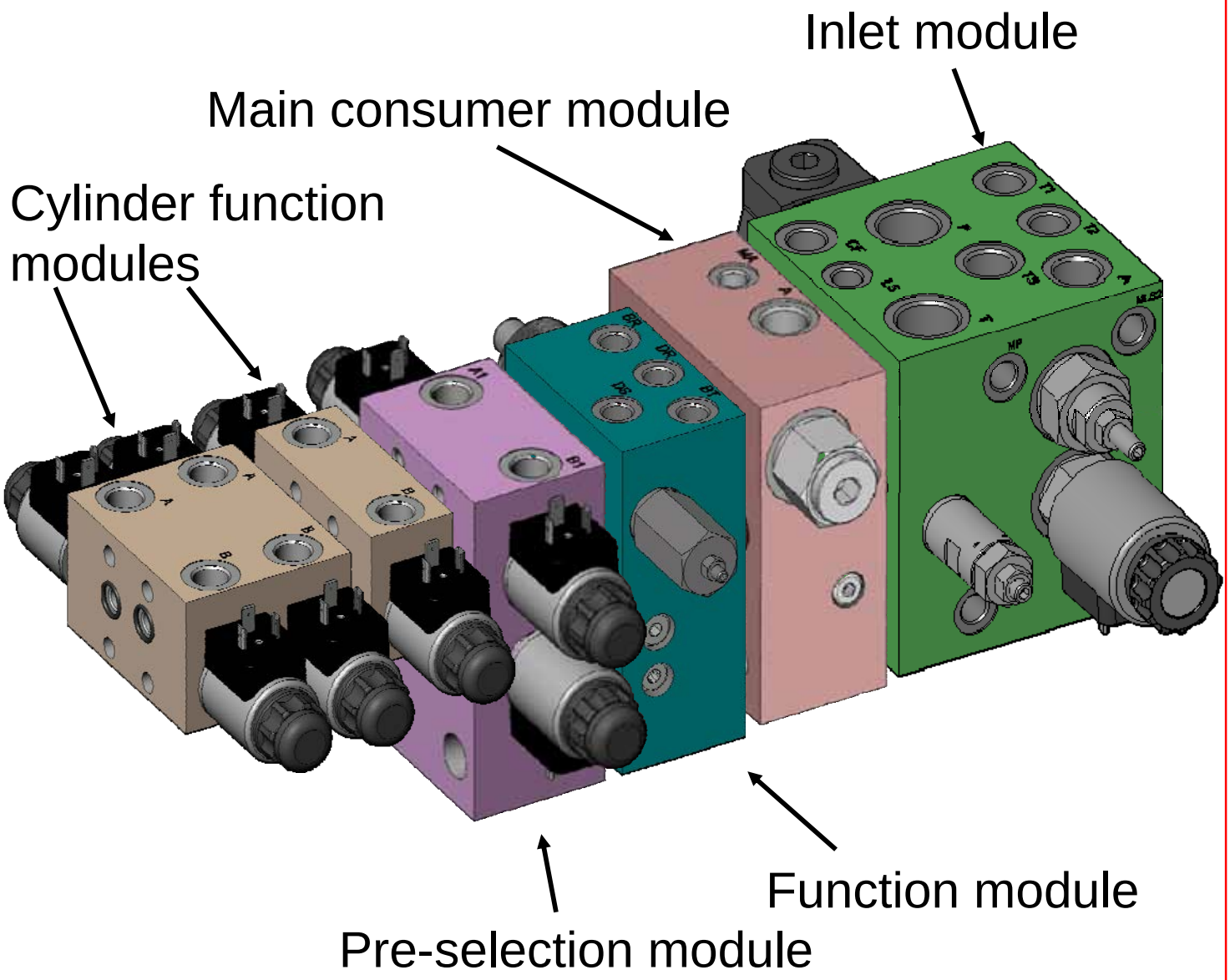
HYDAC herewith presents the modular manifold system for the work hydraulics in mobile machines. The performance range is depending on the module 0-60(100) L/min. It is adjusted to the complex and flexible demands of the mobile hydraulics (e.g. municipal-, agricultural- and construction machines).

The system is based on the existing valve technology of HYDAC. The special demands of the mobile branch were incorporated: compact, enlargeable, weight-optimized and service-friendly.

Machine development times at the producers of mobile work machines will be shortened more and more – as well as the times between project start and production start. Here the manifold system is an optimal development tool: the machine producer defines a basic machine (Standard), which may be enlarged with possible options. Exactly according to this schematic a basic manifold system will be chosen and optional modules defined. A short delivery time and the flexibility, which allows to integrate options in an easy way at every time of the process, are securing a fast and successful project start.

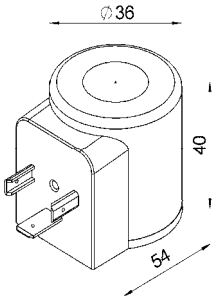
Application competence and reaction promptness are the decisive competitive advantages which are transferred by the system to the producers of work hydraulics. By specific accommodation of the system customers demands will be optimal fulfilled.

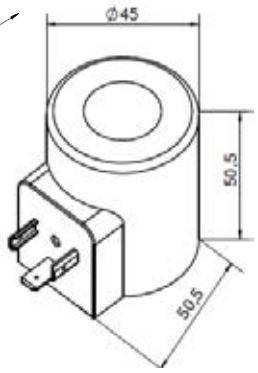
System assembly



Fittings:

Type of screw:	Allen screw, DIN 912
Screw quality:	10.9
Torque:	4 p. M8 = 18 + 2 Nm (for Cylinder function modules) 3 p. M10 = 30 + 3 Nm (for all other modules)
Screw length:	15 – 20mm longer than the clamping length of the screwed modules
Max. clamping lengths:	M10 400mm M8 300mm
Annotation:	the Cylinder function modules are screwed-in the Pre-selection module. All other modules are screwed-in the Inlet module.





DG (PG)

Nominal voltage / interfaces

Nominal voltage

There are nominal voltages of 12 and 24 Volt at disposal.
The standard-connection types for cartridge valves are:
DIN- plug DG (proportional (PG) (Pict. 1)
For the directional valves as spool valve installation kit:
DIN plug DG (proportional PG) (Pict. 2)

Interfaces

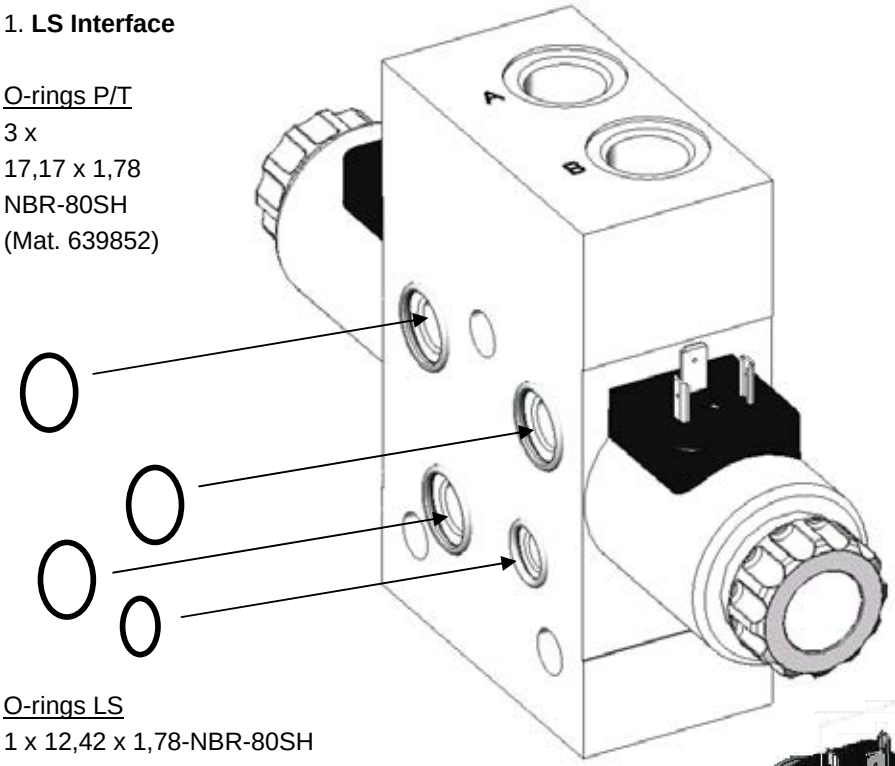
Nominal size 8, Load-Sensing capable: HIF8LS

The hydraulic ports are: Threads and countersinks. (P, TA and TB = G1/4“ and at LS = G1/8“).
For the system-enlargement there are O-rings in the countersinks. The last module is foreseen with blanking plugs (VSTI).

Standard HYFLEX-interfaces:

1. **LS Interface**

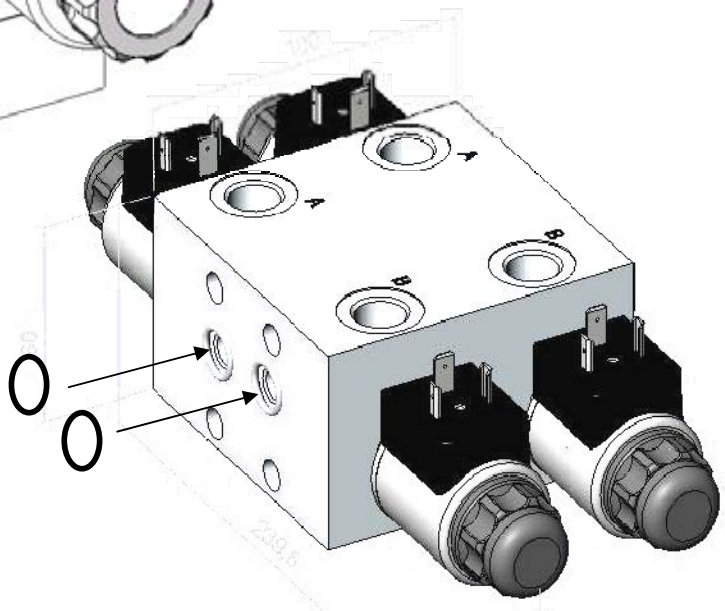
O-rings P/T
3 x
17,17 x 1,78
NBR-80SH
(Mat. 639852)



O-rings LS
1 x 12,42 x 1,78-NBR-80SH
(Mat. 609441)

At the On/Off Interface the pressure may be at both ports.

2. **On/Off Interface** for cylinder functions



O-rings
2 x 12,42 x 1,78-NBR-80SH
(Mat. 609441)

Projecting hints

In general

Relief of the LS-line:
In general the relief of the LS-line is realized either over one pressure compensator DWM with LS-relief (Type 01, 02 and 03) or over one corresponding orifice (diameter 0,4 – 0,5mm) between LS- and T-line.
If a LS-relief over the Inlet module is not possible (e.g. at E2P... at the 1.priority), the LS-relief should be done via a check valve RVP06 with borehole in the cone. This relief has to be realized directly at the function with the highest possible flow rate and highest possible switch-on time because of the reason that the LS-signal is not falsified by a leakage.
In the system only one relief in the system makes sense, therefore one has to pay attention that the used LS-pump has an own relief.
The LS-relief in the Inlet module of the system leads to permanent pressure loss. But this has the advantage that in different system variations the relief is always realized.

Nozzle equipment at the Load-Sensing (LS)-tap:
The equipment of the LS-tap with orifice falsifies the LS-signal, especially at functions with high flow rate. This may lead to that the single function is not running at highest speed because the inlet pressure compensator gets a too low LS-pressure.

Technical specifications of the module:
The named values for operating pressure, flow rate and temperatures in the technical specifications are consisting of the values for the deployed valves. Conditions: 100% ED, 115% of the nominal voltage and max. Ambient temperature. If these conditions are not or only partly given, temperatures have to be enlarged.

Operation at deep temperatures:
Minimal stock temperature: -30°C
Operating temperature: at –20°C

- attention should be paid to the viscosity at start. Danger of cavitation at highly viscous media. The listed limits in viscosity has to be paid attention to and to be kept by corresponding media.
- New components have to be filled at higher temperatures to ensure a sufficient lubrication
- Measure for pumps, filters, cylinders, gears, etc. have to be adjusted with the producers.

Warming up instructions:

- warm-up system to minimal –30°C, start engine
- adjust pumps to neutral position without flow
- use pumps for at least 10 min at idle speed
- afterward swivel pumps slowly or use in pressure-reduced mode (max.50 bar and 50% flow)
- act all system-functions some times without load
- continuous flow through all components to avoid temperature shocks
- maximal temperature difference between media and component max.20°C
- Hydro-motors between flush and leakage port cross sectional (pay attention to permitted housing pressure)
- system if ready for use at temperatures over –20°C

Projecting hints

Inlet modules:

Influence of the inlet pressure compensator and the individual pressure compensator on the flow:

The size of the used spring in the inlet pressure compensator is responsible for the whole flow in the complete system. The spring hast to be always bigger than in the following individual pressure compensators. In countless tests have shown, that the spring rate of the inlet pressure compensator has to be as strong(e.g. 8bar) that the demanded flow at the biggest consumer is only overrided a little. By this measure the deltaP value of the unpressurized flow is smaller – lower energy consumption.
The spring rate of the individual pressure compensator is layouted accordingly to the inlet pressure compensator. The spring pressure should be around 3bar smaller than inlet.(necessary delta P) If the chosen individual pressure compensator begins with the throttling of the oilflow to early – the chosen spring is too weak.

Function modules:

Position of the modules in the compete system:

The Module (Function module) with the highest flow have to be directly installed at the Inlet module. Smaller consumers follow. The smallest consumers (e.g. cylinder functions) have to be mounted at the end. By doing this the best supply is assured.

Modules specifically:

Inlet modules

E1-BD13/200-0/0-O

Could be varied by all other DWM12121Z.... Usage of a closing plug (e.g. #3150400) possible, in this caste the Inlet module contains only one port for P, T and LS.

E1 P3-ZD8/0-BD6/200-LV

Shown type is used in Open-Center-steering.
By connecting a Closed-Center-steering the orifice between priority valve and CF and the orifice between CF and LS have to be substituted by set screws. No LS-relief over pressure compensator DWM.

E2 P2-DD8/200-LV

Shown type is used for Open-Center-steerings.
By connecting a Closed-Center-steering the orifice between priority valve and CF and the orifice between CF and LS have to be substituted by set screws. No LS discharge over pressure compensator DWM.

E2 P2-ZD08/0-DD14/200-O

1.priority in the circuit to be connected at the left side, 2.priority right. In the manifold: 1.priority at the side of the P1-port, 2.priority at the side of the P2-port.
At 1.priority only 1 T-port is connected !!
At 1.priority no LS-relief.

E2 DB-WS-24DG

Inlet module to connect one LS-pump. No unpressurized flow in the module. LS-report is reported to pump. Pressure relief valve DB4E prevents pressure peaks. Solenoid poppet valve WSM06020 reports P to LS-signal and forces the pump to act.

E1 DD10/200-FZ

Good filtration performance but more pressure loss.
Clogging indicator only optically - others possible.

Projecting hints

Function modules

FS20D-SR-WS
Single acting consumers. Valves only up to 19l/min. Flow control valve SRE1 with different flow rates at disposal.

FS19D-2SR-2RP-2DB
J-function realized by 2x directional valves WK08D. Flow control valve SRE2 with different flow rates flow rates built-in. Check function by 2x RV08A valves. Pressure control of the consumer by 2x DB4E valves.

FS38J-ID-WS
Flow control function realized by installation kit pressure compensator DWV08 + measuring orifice M10 under regulating piston. By Variation of the orifice different flow rates could be realized. Maximal flow rate determined by the solenoid poppet valve WS08Z.

FS70J-BL-O
Inlet flow via orifice, this means different pressure in P-line lead to different flow rates at A or B.

FS70J-ID-O
Flow control function realized by installation kit pressure compensator DWV08 + measuring orifice M10 under regulating piston. By variation of the orifice different flow rates could be realized. 80l/min is limit for den installation kit-spool 4WKK10J. Variations possible by solenoid poppet valve WS08... at ports A and B -> FS40J-S-W-O, as well as usage EBS 4PWKK10J (then do not mount measuring orifice under EBS DWV08) -> FP35J-I-O-O; FP35J-I-W-O

FS38J-ID-2RP
Flow control function realized by installation kit pressure compensator DWV08 + measuring orifice M10 under regulating piston. By variation of the orifice different flow rates could be realized.

FP35J-ID-O
Variations possible by solenoid poppet valve WS08... at ports A and B -> FP35J-I-W-O, as well as usage of the installation kit-spool 4WKK10J (then do not mount measuring orifice under EBS DWV08) -> FS80J-S-O-O

FP35E-ID-2AK210/210
Anti-cavitation valve (combination DB and feeding) as installation kit. Different pressure relief pressures possible, but valves not adjustable (preset). Please ask for detailed adjust values. Usage of the installation kit-spools 4WKK10E possible (then mount measuring orifice under EBS DWV08) -> FS80E-S-O-2

FP35E-ID-2AK210/210
Anti-cavitation valve (combination DB and feeding) as installation kit. Different pressure relief pressures possible, but valves not adjustable (preset). Please ask for detailed adjust values. Usage of the installation kit-spools 4WKK10E possible (then mount measuring orifice under EBS DWV08) -> FS80E-S-O-2S

FS38-ID-DL
Accumulator charging valve. At pilot control accumulator pressure adjustable (upper switch point); the lower switch point is depending in the upper one – different differentials possible.
The pilot control is very fragile against dirt, therefore use filter with10µm.
Accumulator charging minimal pressure approx. 30bar.

Projecting hints

Main consumer modules

H1-PWK-RD15
Better load pressure reporting if optional orifice D1 is not mounted.

H1-PWK-O
Better load pressure reporting if optional orifice D1 is not mounted.

H2-2PWK-2RD15
Better load pressure reporting if optional orifices D1 and D2 are not mounted. Relief 3.5 is realized in the Inlet module realized – here omitted.

Pre-selection modules od other Cylinder function modules

WS19D-SR-2WS
J-function realized by 2x directional spool valves WK08D. Flow control valve SRE with different flow rates existing. Solenoid poppet valve WSM06020 realizes the first cylinder function could also be closed by corresponding plugs. Throttle with reverse flow check possible in ports A and B (not mounted). LS-relief via check valve with 0,5mm-borehole at port A.

WS70J-BL-O
Inlet flow via orifice, this means different pressures in P-line lead to different flow rates at A or B.

Cylinder function modules

S02-02-W
Supply of one double-acting consumer or two single acting consumers possible.

S02-02-W
Supply of two single acting consumers possible.

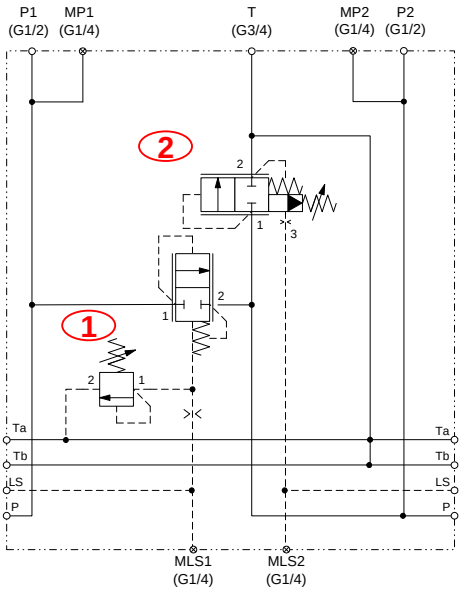
S04-04-W
Supply of two double-acting consumer or four single acting consumers possible.

S05-05-W
End module. Inlet and outlet lines are closed at the end. One additional cylinder function could be built-in before this module.

S08-07A-W
Supply of three double acting consumers and one single acting consumer or seven single acting consumers possible. By removal of one plug and equipment with the corresponding valve the possibility is given to act four double acting consumers or eight single acting consumers.

Inlet modules
Model code

Example:



E1 BD 5/180 – DD 10/200 - LV – 24DG

Name
E1 = Inlet module with flange-mount possibility at the right side
E2 = Inlet module with flange-mount possibility at both sides

Inlet valve (1)
ZD = *Pressure compensator DWM…Z Standard
BD = *Pressure compensator DWM…ZB (lockable by tool)
HD = *Pressure compensator DWM…ZH (lockable by hand)
RD = *Pressure compensator DWM…R
DD = *Pressure compensator DWM…ZD (integr. PR-funct.)
P2 = Module with 2 priorities
P3 = Module with 3 priorities
DB = pressure relief valve DB4E and circuit valve
SD = throttle valve DV or SD
RV = check valve
WS = solenoid poppet valve WS...
WK = directional valve WK...
Pressure compensators choice
*Equipment with pressure compensator is named with bypass and PR pressure, e.g. 05/200 (s.choice list)
O/O = no pressure compensator

2. Pressure compensator (*s. point inlet valve) (2)
O/O = no pressure compensator (with blindfold)
*Equipment with pressure compensator is named with bypass and PR pressure, e.g. 05/200 (s.choice list)

Module with special functions (not in all manifolds)
FZ = filter in inlet
LV = steering supply
WS = solenoid poppet valve
DS = pressure switch or pressure sensor
DU = pressure circuit valve
ZA = additional port
UN = universal application

Coils (sw or prop. possible)
12DG = 12 Volt DC, with DIN plug according to EN 175301-803
24DG = 24 Volt DC, with DIN plug according to EN 175301-803
12PG = 12 Volt proportional, with DIN plug according to EN 175301-803
24PG = 24 Volt proportional, with DIN plug according to EN 175301-803

Choice list for pressure compensators:

Name	Brochure No.
DWM08130	5.196.0
DWM12130	5.191
DWY08130	5.194.0
DWY12130	5.192
DWR10130	in prep.
DWR12130	in prep.
DWM12121ZD	in prep.
DWM12121Z-B/H	in prep.
DWM12121Z MD	in prep.
DWV05830	5.195.0

HYDAC INTERNATIONAL

Function modules

Model code

F S 10 E - ID - ST- WE - 24DG

Name
F = Function module

Type of valves
S = On/Off
P = Proportional

Flow rate l/min
10 = 10 l/min (up to 70 at On/Off, up to 40 Prop.)

Main directional-valve equipment (1)
E = E - spool installation kit
J = J - spool installation kit
W = W - spool installation kit
D = WK08D directional spool valve

Inlet side equipment* (2)
O = none
BL = orifice
SD = throttle valve DV or SD
SR = flow control valve SRE
ID = individual pressure compensator DW08V
RV = check valve
(BL, SD, SR, ID: only On/Off)

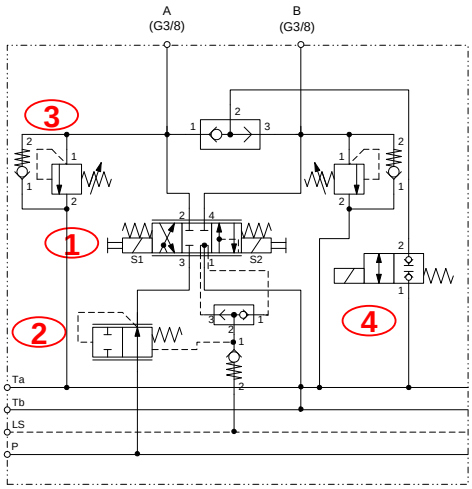
Consumer side equipment (simple)* (3)
O = none
RP = check valve RPDR
WS = solenoid poppet valve WS...
Wk = directional valve WK...
ID = individual pressure compensator DW08V (only Prop.)
SD = throttle valve DV or SD
RV = check valve RV:..
ST = flow divider ST...
SB = counter balance valve SBVE... or RS
DL = accumulator charging valve DLHS...
AK = anti-cavitation valve with integrated PR function (Type-in values for Max. pressure relief)
UV = switch-over valve EBS 6/2-WK10-01
DB = pressure relief valve DB4E

*(Attention: if more than one valve is equipped, the corresponding valves are named one after the other, if two valves of the same type are equipped just fill-in the number “2“)

Additional information (4)
WE = 4WE spool valve, SS = floating position
CP = plug (cavity plug), LH, DS, HD, MA ....

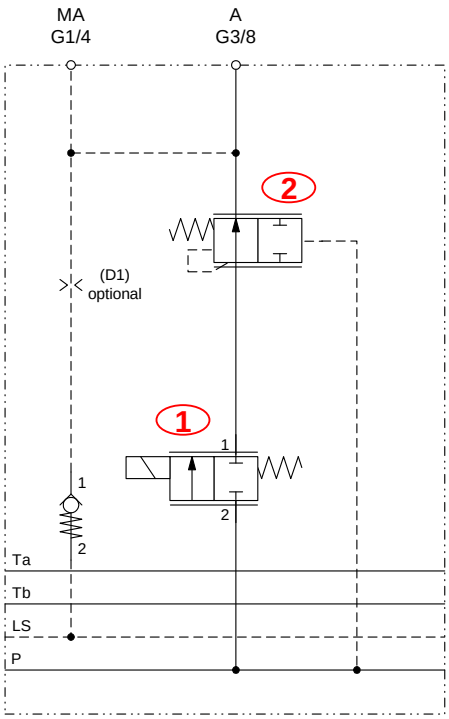
Coils (on/off or prop. possible)
12DG = 12 Volt DC, with DIN plug according to EN 175301-803
24DG = 24 Volt DC, with DIN plug according to EN 175301-803
12PG = 12 Volt proportional, with DIN plug according to EN 175301-803
24PG = 24 Volt proportional, with DIN plug according to EN 175301-803

Example:



Main consumer modules

Example:



Model code

H 1 – PWP – RD15 - 24PG

Name

H = Main consumer module

Number of function axis

1 = 1. major axis

2 = 2. major axis

Proportional needle valve (1)

PWK = PWK12120W direct acting

PWP = PWK12120WP pilot operated

(If 2 PWK are equipped, please type in "2" before the name)

Pressure compensator with circuit pressure (2)

O = without pressure compensator (with plug)

RD15 = pressure compensator DWM12130R (15 bar)

RD07 = pressure compensator DWM12130R (7 bar)

(Equipped with 2 pressure compensators, just fill-in a "2")

Coils (only prop. possible)

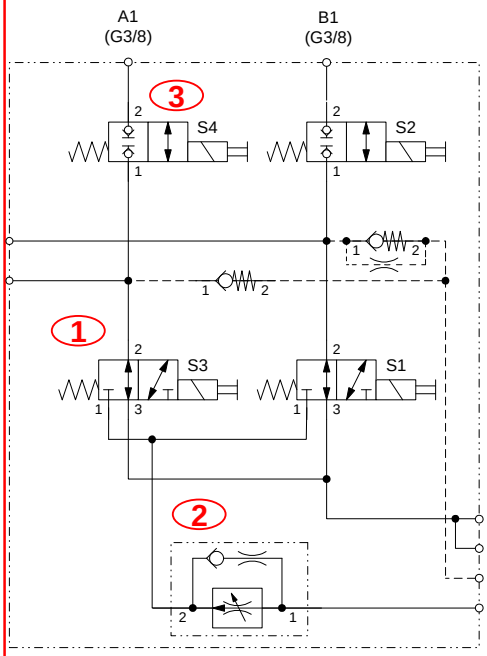
12PG = 12 Volt proportional, with DIN plug according to EN 175301-803

24PG = 24 Volt proportional, with DIN plug according to EN 175301-803

HYDAC INTERNATIONAL

Pre-selection modules

Example:



Model code

W S 40 E - BL - RP - SS - 24DG

Name
W = Pre-selection module

Equipment
S = On/Off
P = Proportional

Flow rate in l/min
40 = 0 - 40 l/min only Prop. (0 - 80 l/min only On/Off)

Directional spool valve equipment (1)
O = no directional valve
E = E – spool installation kit
J = J – spool installation kit
W = W – spool installation kit
D = WK08D cartridge valve (only On/Off)

Inlet side equipment* (2)
O = none
BL = orifice
SD = throttle SD or DV
SR = flow control valve SRE...
} only On/Off
ID = Individual pressure compensator DW…V (only Prop.)

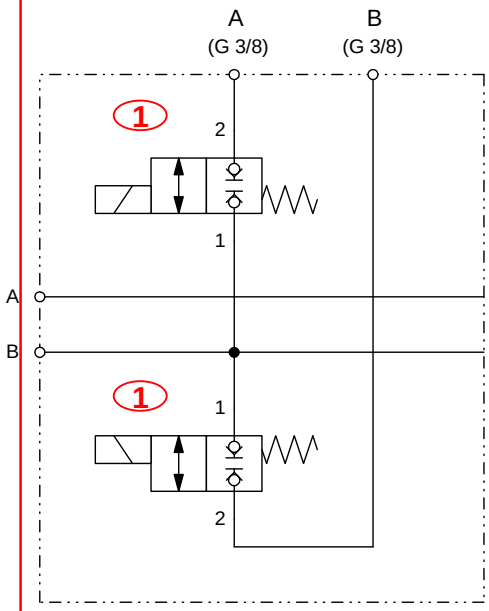
Consumer side equipment (simple)* (3)
O = none
RP = check valve pilot-to-open RPDR...
WS = solenoid poppet valve WS08W...
AK = anti-cavitation valve with values (e.g. 50/150)
*(Attention: if more than one valve is equipped, the corresponding valves are named one after the other, if two valves of the same type are equipped just fill-in the number “2“)

Additional information
SS = floating position

Coils (on/off or prop. possible)
12DG = 12 Volt DC, with DIN plug according to EN 175301-803
24DG = 24 Volt DC, with DIN plug according to EN 175301-803
12PG = 12 Volt proportional, with DIN plug according to EN 175301-803
24PG = 24 Volt proportional, with DIN plug according to EN 175301-803

Cylinder function modules
Model code

Example:



S 02 – 01 - W - 24DG

Name
S = Cylinder function module

Max. possible equipment of poppet valves (1)
02 = 2 poppet valves
04 = 4 poppet valves
06 = 6 poppet valves
08 = 8 poppet valves
10 = 10 poppet valves

Real equipped poppet valves
01 = 1 poppet valve (1 up to 10 St possible) (s. point before)

Poppet valve symbols for choice
W = normally closed, both sides
V = normally open, both sides
Z = normally closed
ZR = normally closed, with backflow
Y = normally open
YR = normally open, with backflow

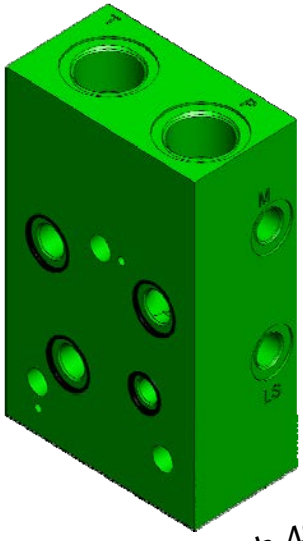
Coils (only on/off possible)
12DG = 12 Volt DC, with DIN plug according to EN 175301-803
24DG = 24 Volt DC, with DIN plug according to EN 175301-803

HYDAC INTERNATIONAL

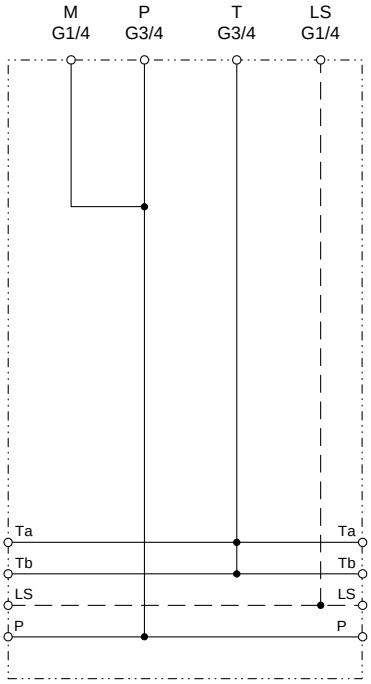
Inlet module Standard

E2 O

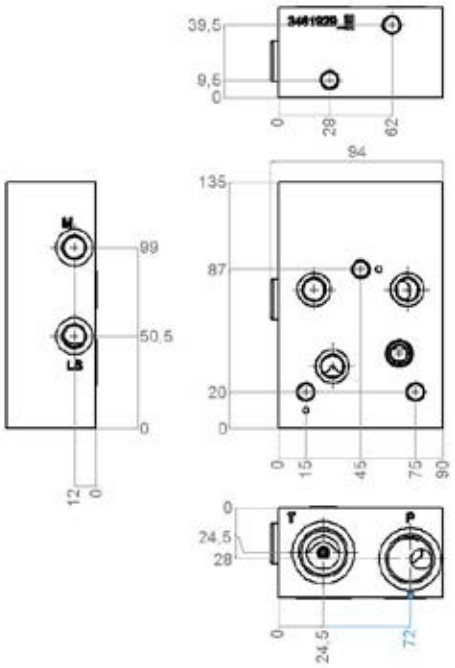
Mat. 3461934



clamping width 49 mm



Pmax = 250 bar
Qmax = 100 l/min



The inlet module realizes a direct supply of consumers. By building-in an orifice it is possible to add a LS discharge optionally. It is possible to flange-on modules on both sides.

Technical Specifications:

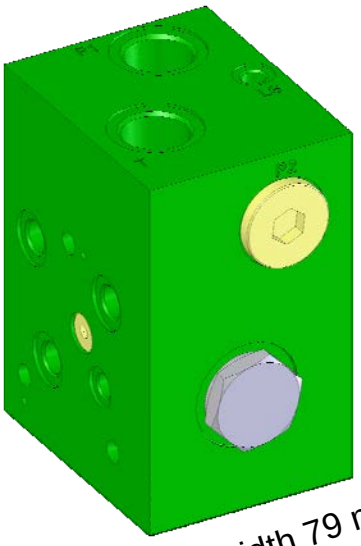
Operating pressure:	max. 250 bar
Flow rate:	max. 100 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves:	none
Ports: P, T:	G 3/4”
M, LS:	G 1/4”

Fixation:
2x M8 on the bottom of the manifold for the fixation of the system in the machine
3x M10 to flange on Function modules, Main consumer modules or Pre-selection modules

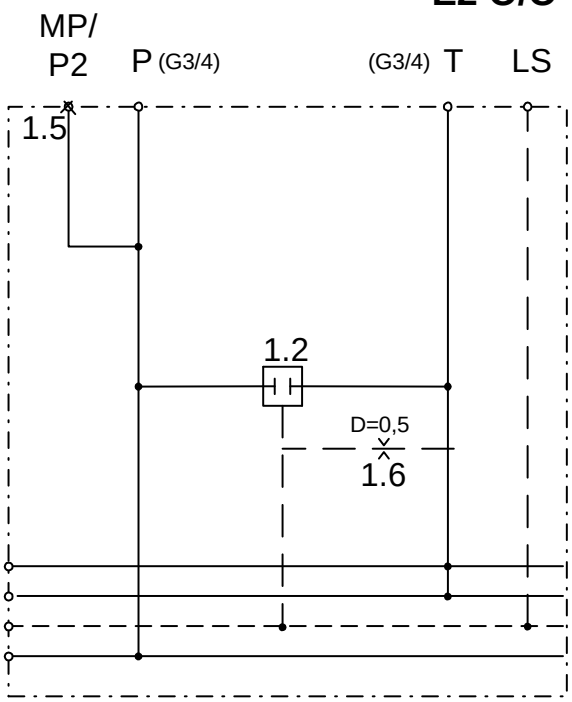
Inlet module Standard plus

E2 O/O-O

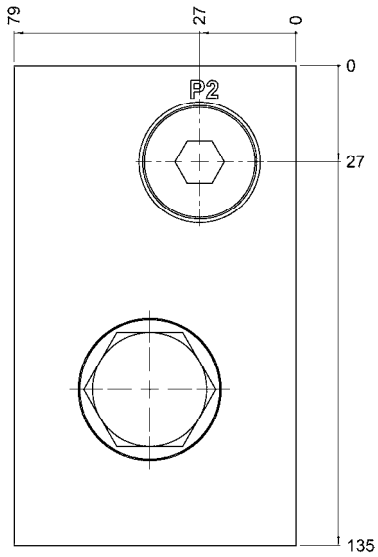
Mat. 3420487

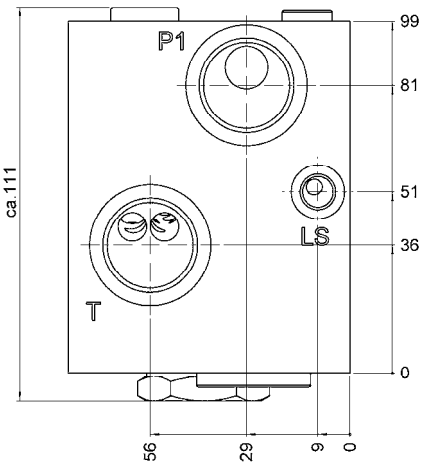


clamping width 79 mm



Pmax = 250 bar
Qmax = 100 l/min





The Inlet module realizes a LS-pressure depending supply of consumers. At Pos. 1.2 there is a cavity plug as standard. The module may optionally be equipped with a pressure compensator at Pos. 1.2 – by the help of this the highest pressure will always be at disposal. If there are no consumers active there will be an unpressurized flow corresponding to the pressure compensator. It is possible to flange-on modules on both sides.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 100 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner

Basic equipment valves:	- Standard = Cavity plug without function
For choice:	- pressure compensator DWM12121Z

(the pressure compensator could be delivered as standard, with PR, with blocking and different pressure differentials and adjusted pressures, see brochure DWM12121)

Ports: P, T: G 3/4”

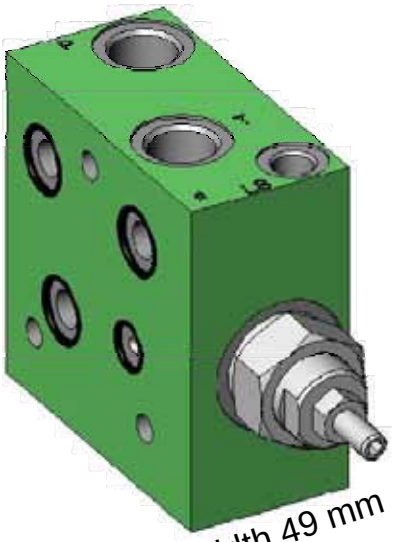
Fixation:
2x M8 on the bottom of the manifold for the fixation of the system in the machine
3x M10 to flange on Function modules, Main consumer modules or Pre-selection modules

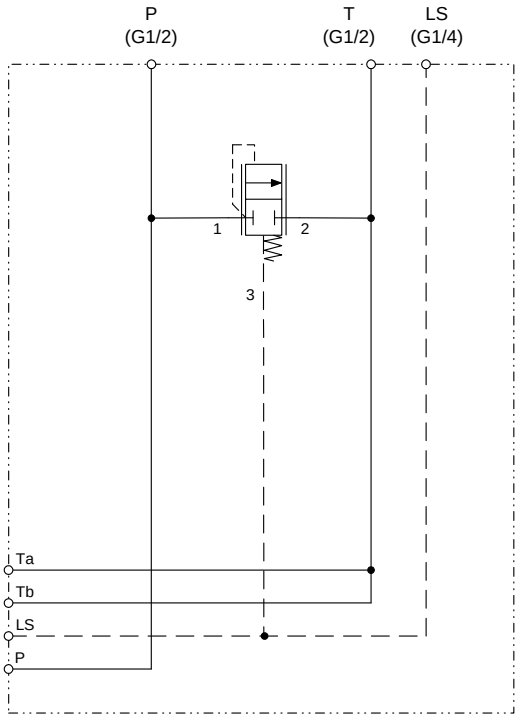
HYDAC INTERNATIONAL

Inlet module with pressure compensator

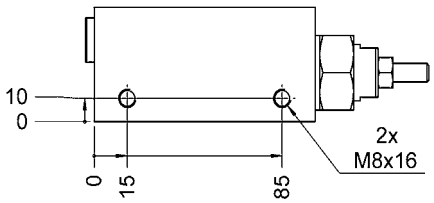
E1 BD13/200-O/O-O

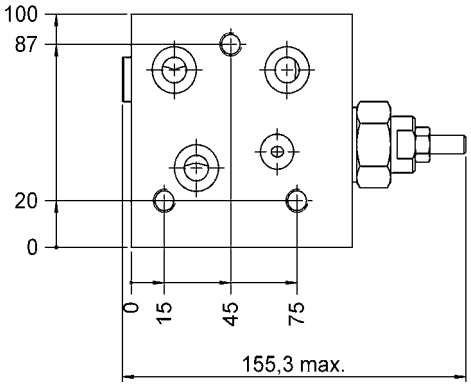
Mat. 3366221

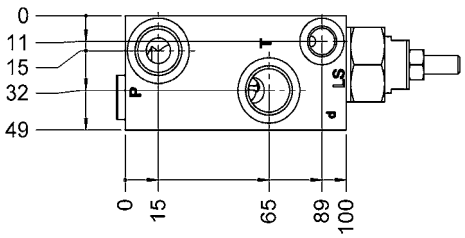




Pmax = 250 bar
Qmax = 100 l/min







The inlet module with pressure compensator realizes a LS pressure depending supply of consumers. Herby always the highest pressure required will be provided. If there are no consumers active there will be an unpressurized flow corresponding to the pressure compensator. It is possible to flange-on modules on one side.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 100 l/min
Nominal pressure differential:	13 bar
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner

Basic equipment valves
for choice: - pressure compensator
DWM12121ZB-01-C-N-13

(the pressure compensator could be delivered as standard, with PR, with blocking, and different pressure differentials and adjusted pressures, see brochure DWM12121)

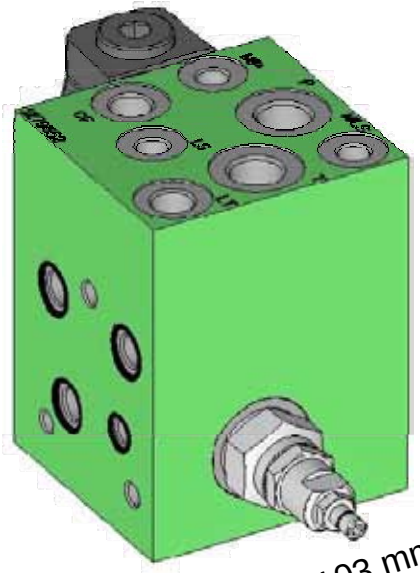
Ports: P, T: G 1/2”
LS: G 1/4”

Fixation:
2x M8 on the bottom of the manifold for fixation of the system in the machine
3x M10 to flange on Function modules, Main consumer modules or Pre-selection modules

Inlet module pressure compensator and priority valve

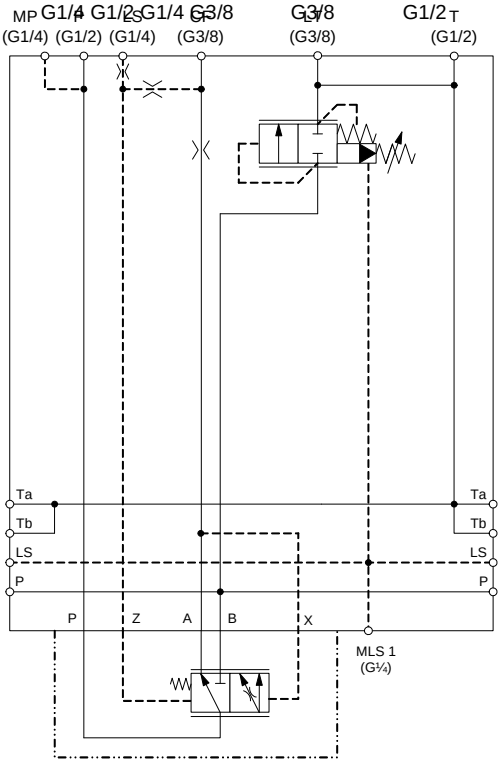
E2 P2DD8/200-LV

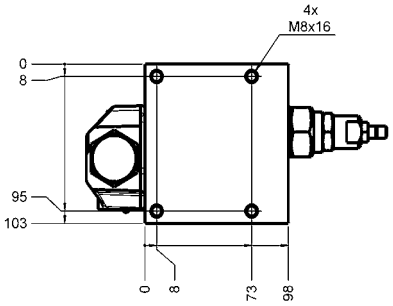
Mat. 3279943

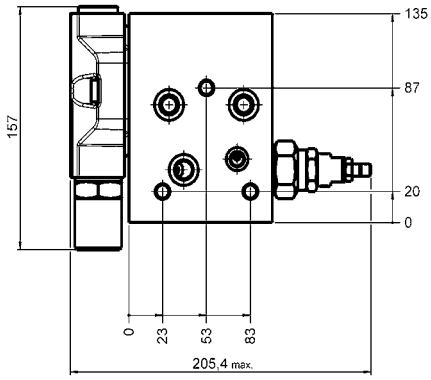


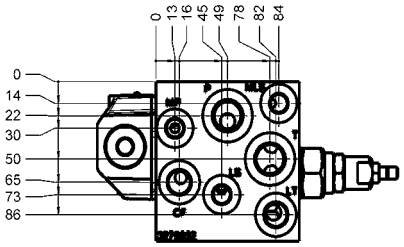
clamping width 103 mm

Pmax = 250 bar
Qmax = 90 l/min









The inlet module with priority valve realizes a supply of consumers in the first and second priority. In the first priority (Port CF) often there is the supply of a steering (Open- or closed centre) , in the second priority (Port P) a work hydraulics. If there are no consumers active there will be an unpressurized flow corresponding to the pressure compensator. It is possible to flange-on modules on both sides, so that it is possible to supply multiple functions.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 90 l/min
Nominal pressure differential of the pressure compensator:	8 bar
Nominal pressure differential of priority valves:	11 bar
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Basic equipment valves:	- Priority valve MPV10-F-10-011
For choice:	- Pressure compensator DWM12121ZD-11-C-V-08-230V200

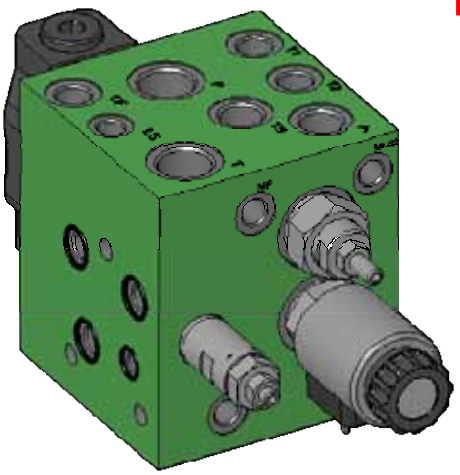
(the pressure compensator could be delivered as standard, with PR, with blocking and different pressure differentials and adjusted pressures, see brochure DWM12121)

Ports:	P, T:	G 1/2”
	CF, LT:	G 3/8”
	LS, MP1, MLS1:	G 1/4”

Fixation:
2x M8 on the bottom of the manifold for the fixation of the system in the machine
3x M10 to flange on Function modules, Main consumer modules or Pre-selection modules

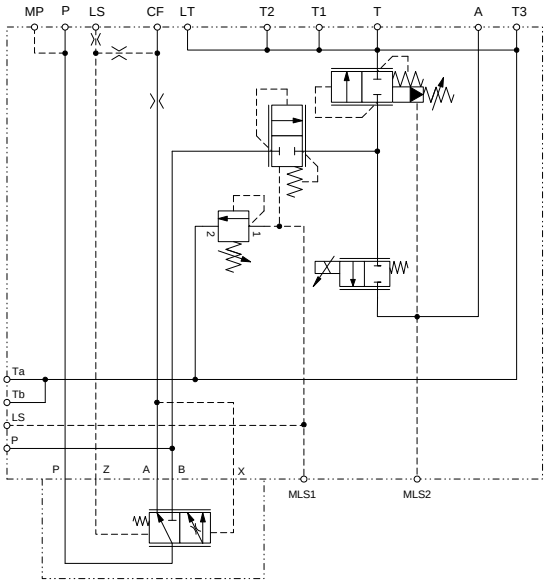
HYDAC INTERNATIONAL

Inlet module with priority valve and 1 main consumer E1 P3ZD8/0–BD6/200-LV-XXDG

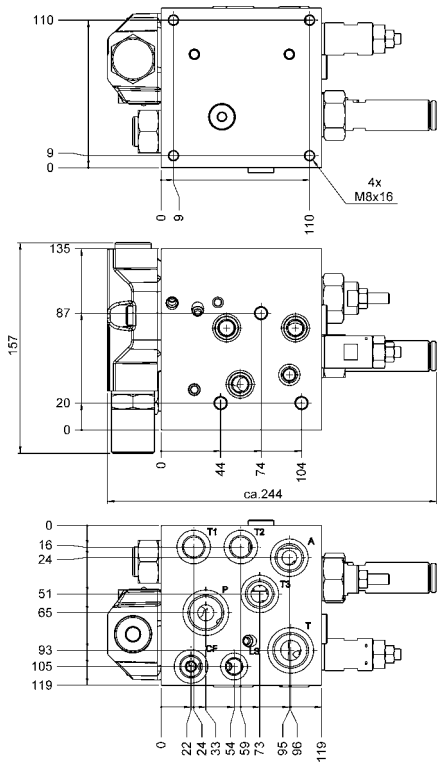


clamping width 119 mm

Mat. 3540152 12 Volt
Mat. 3540154 24 Volt



Pmax = 250 bar
Qmax = 90 l/min



The inlet module with priority valve and one integrated main consumer realizes a supply of consumers in the first, second and third priority. In the first priority there will be often a steering (Open- or closed centre), in the second a work hydraulics. This will be supplied by a pressure compensator end protected by a separate PR valve. In the third priority the possibility is existing to use the integrated consumer in proportional mode. The supply and protection is done by a pressure compensator with integrated relief function. If there are no consumers active there will be an unpressurized flow corresponding to the pressure compensator. It is possible to flange-on modules on one side.

Technical Specifications:

Operating pressure:	max. 250 bar	
Flow rate:	max. 90 l/min	
Nominal pressure differential the pressure compensator:		8 bar
Nominal pressure differential des priority valves:		11 bar
Temp. range of the operating fluid:	-20°C up to +100°C	
Ambient temperature range:	-20°C up to + 60°C	
Filtration:	Class 21/19/16 according to ISO 4406	
Basic equipment valves:	- pressure relief valve DB4E-01X-200V180 (Broch. 5.161) - priority valve MPV10-F-10-011	
For choice:	- Prop.directional valve PWK12120W-01M-C-V-45 - pressure compensators DWM12121Z-11-C-V-08 DWM12121ZD-11-C-V-06- 230V200	

(the pressure compensator could be delivered as standard, with PR, with blocking and different pressure differentials and adjusted pressures, see brochure DWM12121)

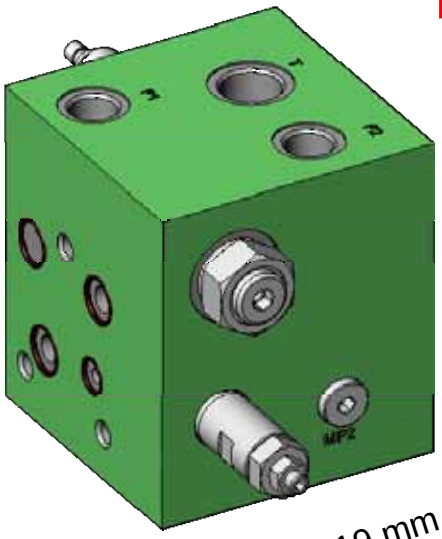
Ports:	P, T:	G 3/4“
	A, T3:	G 1/2”
	CF, LT, T1, T2:	G 3/8”
	LS, MP, MLS1, MLS2:	G 1/4”

Fixation:
4x M8 on the bottom of the manifold / 3x M10 to flange on Function modules, Main consumer modules or Pre-selection modules

Inlet module for 2 priorities

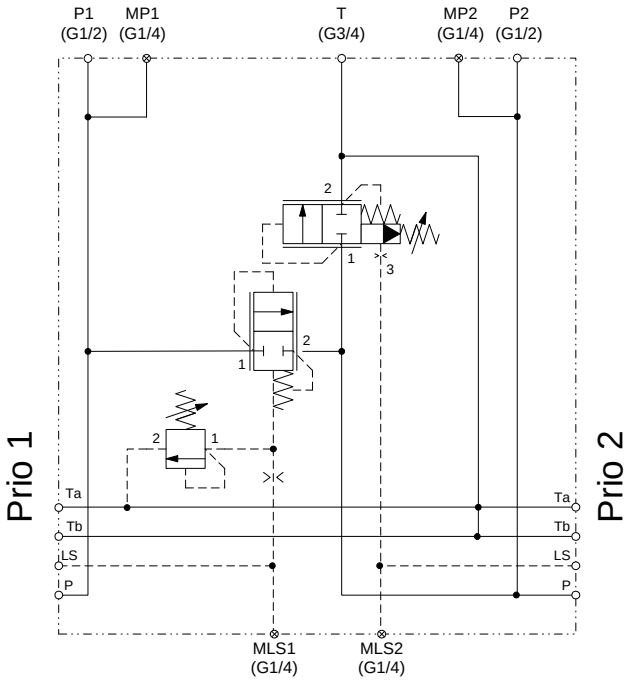
E2 P2ZD8/O-DD14/200-O

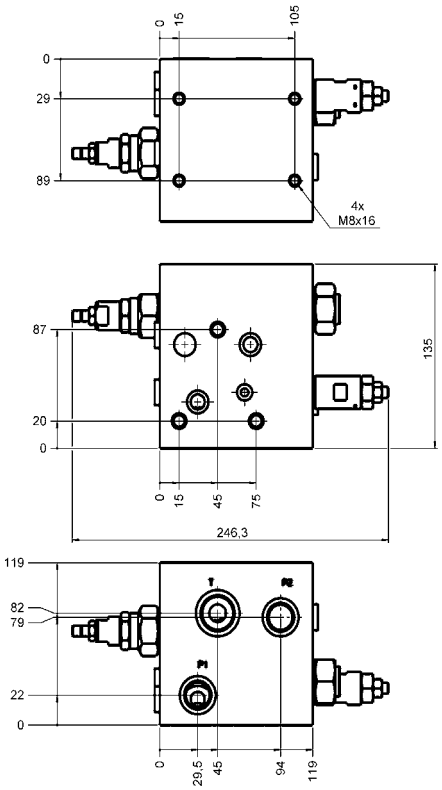
Mat. 3263098



clamping width 119 mm

Pmax = 250 bar
Qmax = 120 l/min





The inlet module for two priorities realizes a LS depending supply of consumers. The consumers (no steering!) could be flanged-on both sides of the module and are supplied by the corresponding pressure compensator in priority. Therefore the highest pressure required will be provided. If there are consumers of the first priority active, only the flow which is not needed in the first priority will be provided to the consumers in the second priority. The protection is done by a separate pressure relief valve. If there are no consumers in the first priority active the complete flow is provided to consumers in the second priority. The supply and protection is done by a pressure compensator with integrated relief function. If there are no consumers active there will be an unpressurized flow corresponding to both pressure compensators. It is possible to flange-on modules on both sides.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 60 l/min at P1 and P2
Nominal pressure differential:	Prio 1 = 8 bar, Prio 2 = 14 bar
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Basic equipment valves:	- pressure relief valve DB4E-01X-230V200 (Broch. 5.161)
For choice:	- pressure compensator DWM12121Z-12-C-V-08 - pressure compensator DWM12121ZD-11-C-V-14-230V200

(the pressure compensator could be delivered as standard, with PR, with blocking, and different pressure differentials and adjusted pressures, see brochure DWM12121)

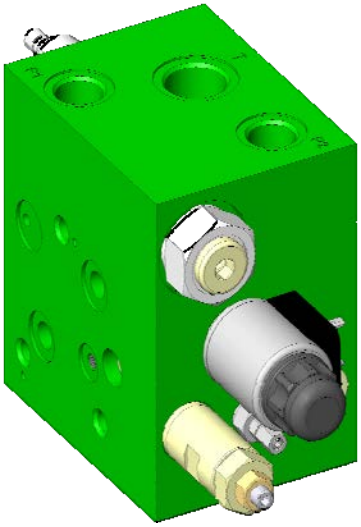
Ports:	P1, P2:	G 1/2”
	T:	G 3/4”
	MLS1, MLS2, MP1 / 2:	G 1/4”

Fixation:

4x M8 on the bottom of the manifold / 3x M10 to flange on Function modules, Main consumer modules or Pre-selection modules

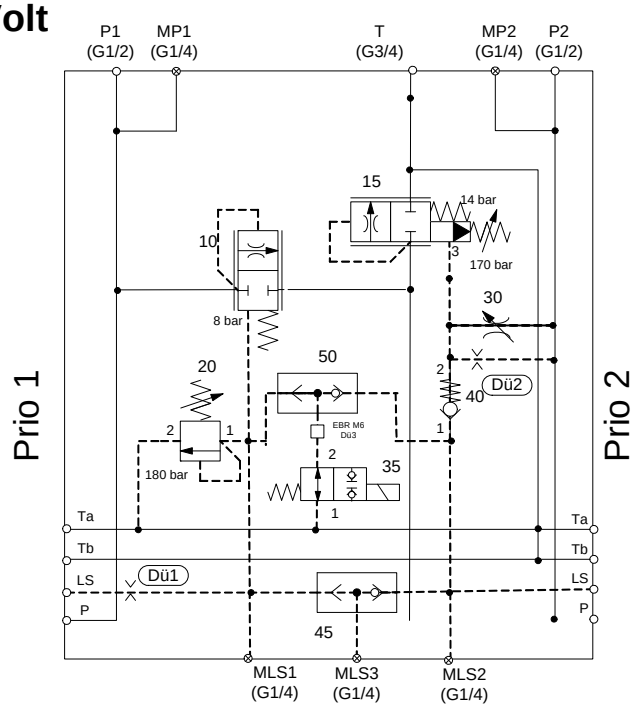
HYDAC INTERNATIONAL

Inlet module 2 priorities, universal application
E2 P2ZD8/O-DD14/200-UN-XXDG

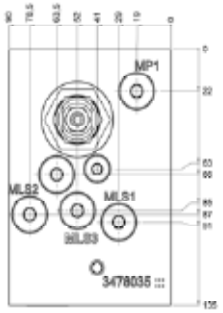


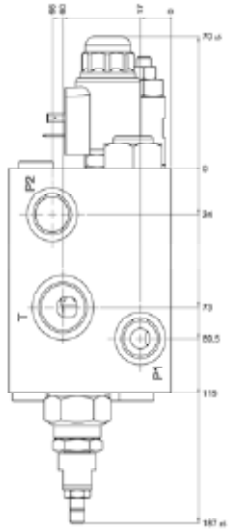
clamping width 90 mm

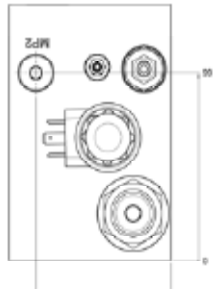
Mat. 3543195 12 Volt
Mat. 3543196 24 Volt



Pmax = 250 bar
Qmax = 120 l/min







The inlet module for two priorities realizes a LS depending supply of consumers in universal mode. The enlargement “universal” is foreseen for the use of different pump types. The supply realized via a constant or LS-pump. By using the constant pump the behaviour is like the one described on page 18. If a load-sensing capable pump is connected, the pressure compensator on pos. 15 has to be blocked hydraulically. The control signal for this pump could be taken from MLS3 port. In both usages a pressure relief is foreseen for each priority. The first priority should have a higher pressure level than the second one. Additionally an LS-relief could be switched y valve Pos. 35. . It is possible to flange-on modules on both sides.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 60 l/min at P1 and P2
Nominal pressure differential:	Prio 1 = 8 bar, Prio 2 = 14 bar
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Basic equipment valves:	- pressure relief valve DB4E-01X-230V200 (Broch. 5.161)
For choice:	- pressure compensator DWM12121Z-12-C-V-08 - pressure compensator DWM12121ZD-11-C-V-14-230V200

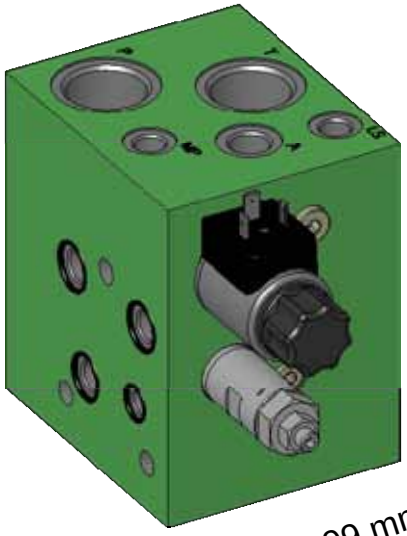
(the pressure compensator could be delivered as standard, with PR, with blocking, and different pressure differentials and adjusted pressures, see brochure DWM12121)

Ports:	P1, P2:	G 1/2”
	T:	G 3/4”
	MLS1, MLS2, MP1 / 2:	G 1/4”

Fixation:
4x M8 on the bottom of the manifold / 3x M10 to flange on further Function modules

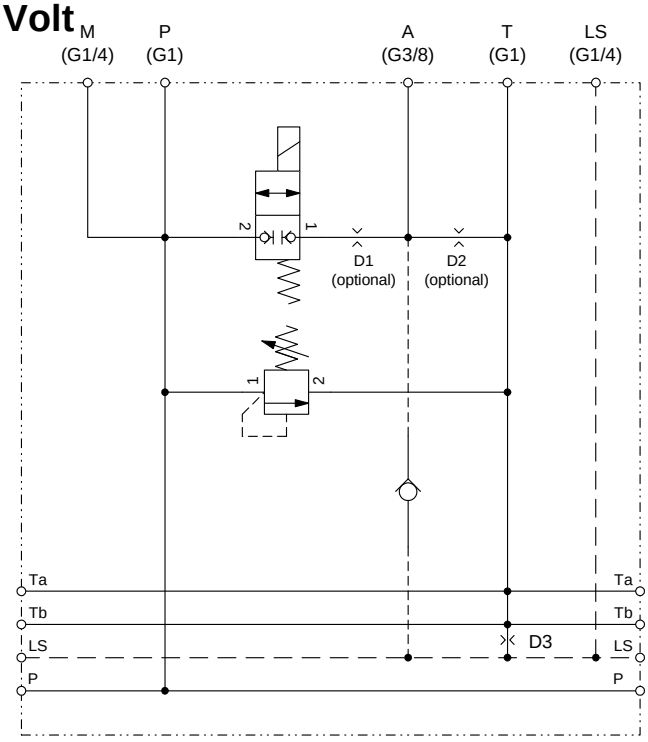
Inlet module with pressure relief - and circulation valve E2 DB-WS-XXDG

Mat. 3540188 12 Volt
Mat. 3540186 24 Volt

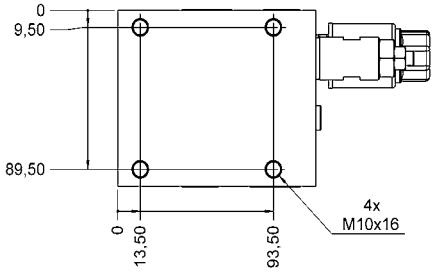


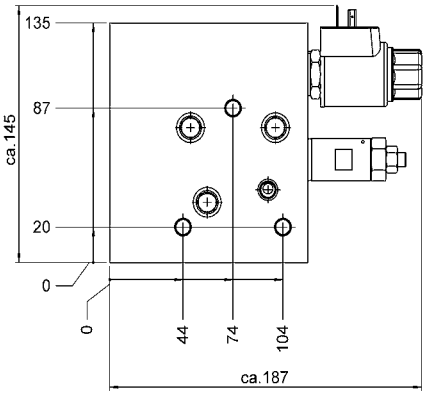
clamping width 99 mm

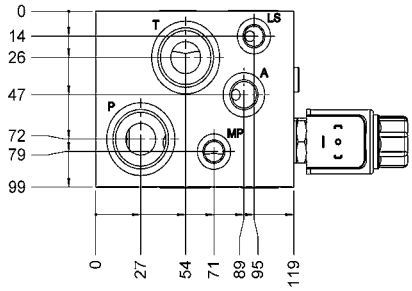
Pmax = 250 bar
Qmax = 100 l/min



The inlet module for LS-pump supply realizes a constant supply of consumers with the corresponding flow-rate. The protection is done by a separate pressure relief valve. If there are no consumers active, the solenoid valve may switch to unpressurized flow. A built-in solenoid poppet valve supplies one consumer at port A or may switch to unpressurized flow to warm up the oil (cold start phase). It is possible to flange-on modules on both sides.







Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 100 l/min
Nominal pressure differential:	13 bar
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves:	- pressure relief valve DB4E-01X-350V280 (Broch. 5.161)
For choice:	- installation kit check valve RV06- 2/2 - poppet valve WSM06020W-01-C-V... (Broch. 5.949 - other symbols V, Z, ZR, Y, YR s. Model code)
Ports: P, T:	G 1”
A:	G 3/8”
LS, M:	G 1/4”

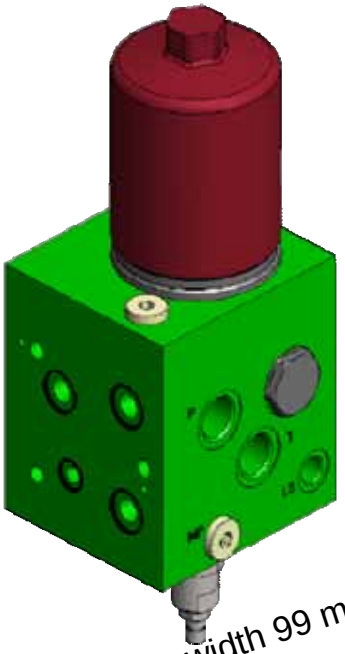
Fixation:
4x M10 on the bottom of the manifold for the fixation of the system in the machine
3x M10 to flange on Function modules, Main consumer modules or Pre-selection modules

HYDAC INTERNATIONAL

Inlet module with filter

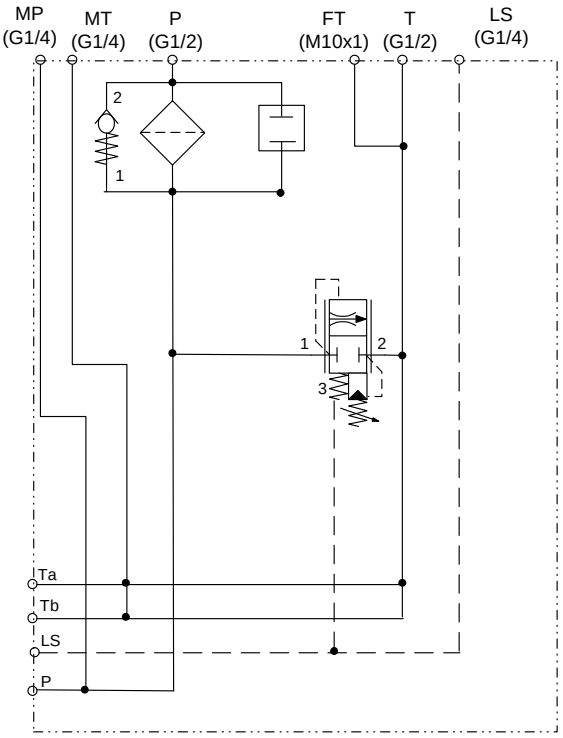
E1 DD10/200-FZ

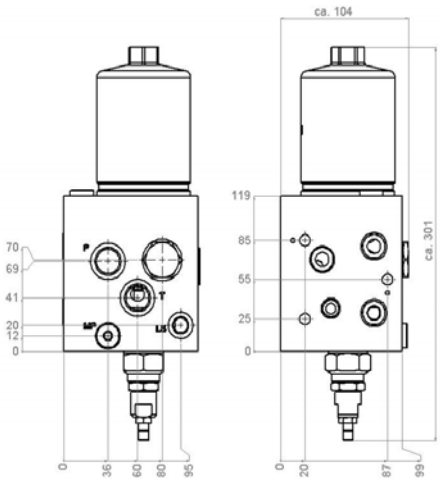
Mat. 3442121



clamping width 99 mm

Pmax = 220 bar
Qmax = 100 l/min





The inlet module realizes a LS pressure depending supply of consumers. The oil for the consumer is filtered upstream. If there are no consumers active there will be an unpressurized flow corresponding to the pressure compensator. Optionally it is possible to built-in a pressure switch beside the filter. It is possible to flange-on modules on one side.

Technical Specifications:

Operating pressure:	max. 220 bar
Flow rate:	max. 100 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves:	- Filterset DF BN/HC 60 SET 10W1.0 (Broch. 7.200.11) - check valve RV08A-01-C-N-70 (Broch. 5.912)
For choice:	- pressure compensator DWM12121ZD-02-C-V-10-230V200

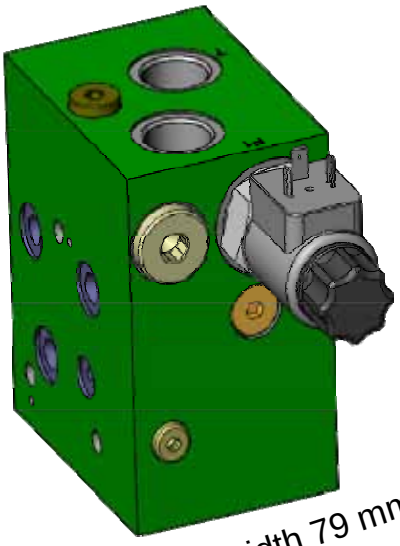
(the pressure compensator could be delivered as standard, with PR, with blocking, and different pressure differentials and adjusted pressures, see brochure DWM12121)

Ports:	P, T:	G 1/2“
	MP, LS, MT, FT:	G 1/4“

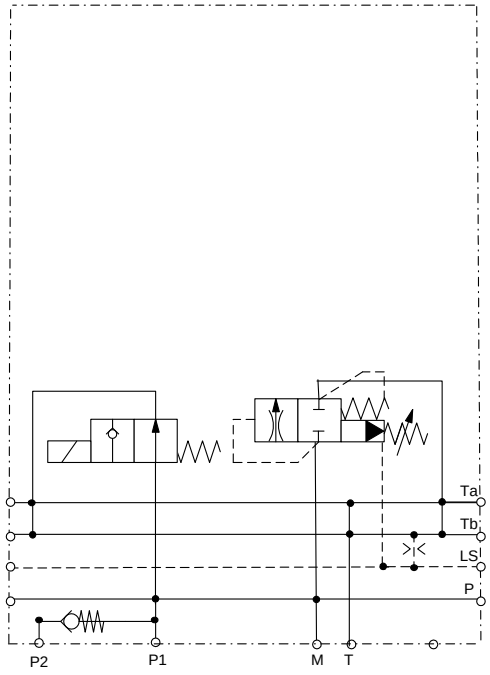
Fixation:
2x M8 on the bottom of the manifold for the fixation of the system in the machine
3x M10 to flange on Function modules, Main consumer modules or Pre-selection modules

Inlet module with pressure circulation switch-over E2 DD14/200-DU-XXDG

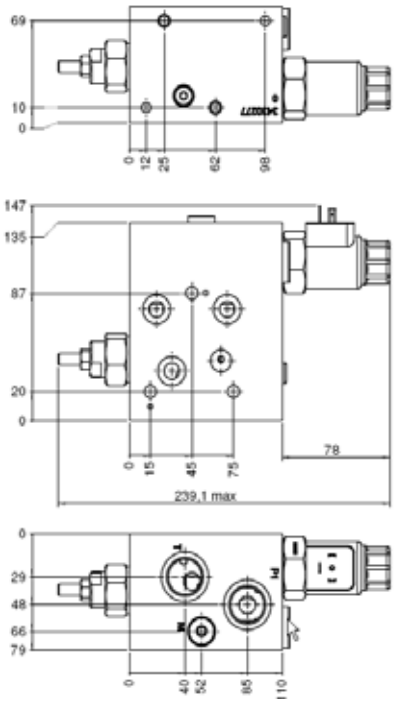
Mat. 3540190 12 Volt
Mat. 3540191 24 Volt



clamping width 79 mm



Pmax = 250 bar
Qmax = 100 l/min



The inlet module realizes a LS pressure depending supply of consumers. For saving energy an unpressurized flow may be switched via a poppet valve. Two separate pumps may be connected on ports P1/P2. A screen is built-in for pre-relieving of load. If there are no consumers active there will be an unpressurized flow corresponding to the pressure compensator. It is possible to flange-on modules on both sides.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 100 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves:	- pressure relief valve DB4E-01X-200V180 (Broch. 5.161)
	- installation kit check valve RVP-12-M
For choice:	- 2/2 poppet valve WS16Y-01-C-N (Broch. 5.940)
	- pressure compensator DWM212121ZD-11-C-V-14-230V 200

(the pressure compensator could be delivered as standard, with PR, with blocking and different pressure differentials and adjusted pressures, see brochure DWM12121)

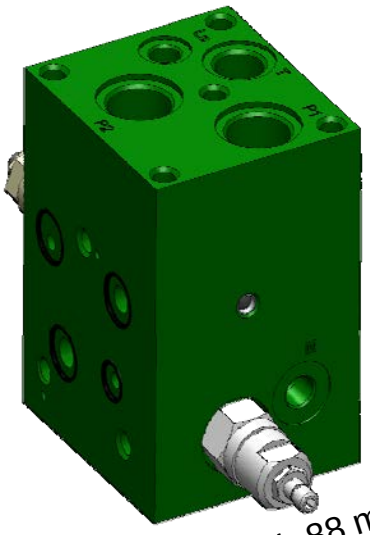
Ports:	P1, P2, T:	G3/4“
	M:	G1/4“

Fixation:
4x M8 on the bottom of the manifold for the fixation of the system in the machine
3x M10 to flange on Function modules, Main consumer modules or Pre-selection modules

HYDAC INTERNATIONAL

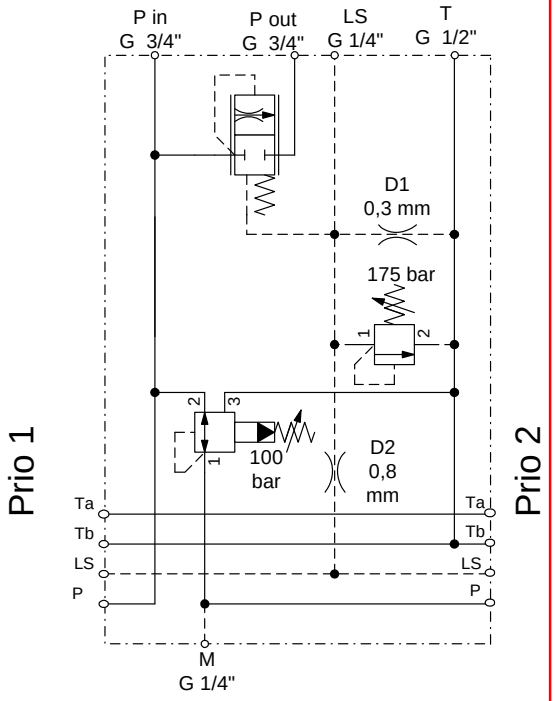
Inlet module with preference switch and two pressure circuits E2 DR-ZD8/0-DU

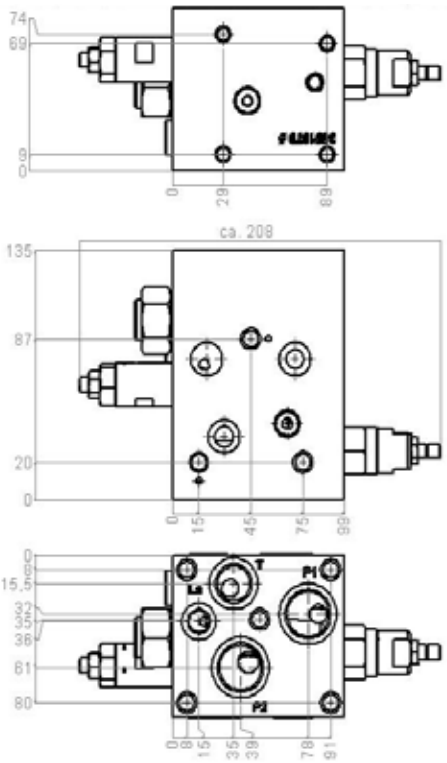
Mat. 3459383



clamping width 88 mm

Pmax = 250 bar
Qmax = 100 l/min





The Inlet module realizes a LS- preference switch (P-in, P-out)
At port P-out an additional manifold could be flanged-on. The pressure differential between P-in and P-out is depending on the pressure compensator (here 8 bar). The hoses could be connected directly or via the flangeplate. Inside the Inlet module the left side is supplied in priority from 1 to 175 bar. Hereinafter the supply of the right side follows – the maximal pressure is limited by a pressure reducing valve to 100 bar. It is possible to flange-on modules on both sides.

Technical Specifications:

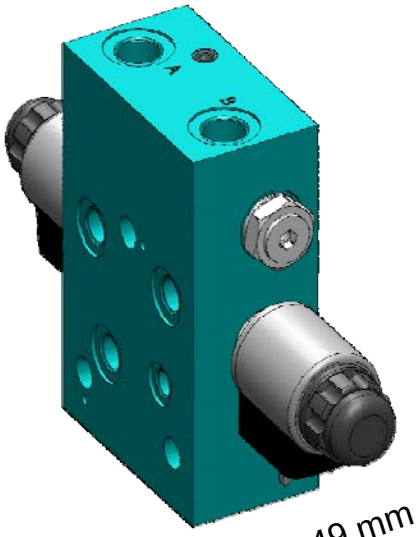
Operating pressure:	max. 250 bar
Flow rate:	max. 100 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves:	- pressure relief valve DB4E-01X-200V175 (Broch. 5.161)
	- pressure reducing valve DR10P-01-C-N-180V (Broch. 5.982)
For choice:	- pressure compensator DWM12121Z-11-C-V-08

(the pressure compensator could be delivered as standard, with PR, with blocking and different pressure differentials and adjusted pressures, see brochure DWM12121)

Ports:	Pin, Pout:	G 3/4“
	T:	G 1/2“
	LS, M:	G 1/4“

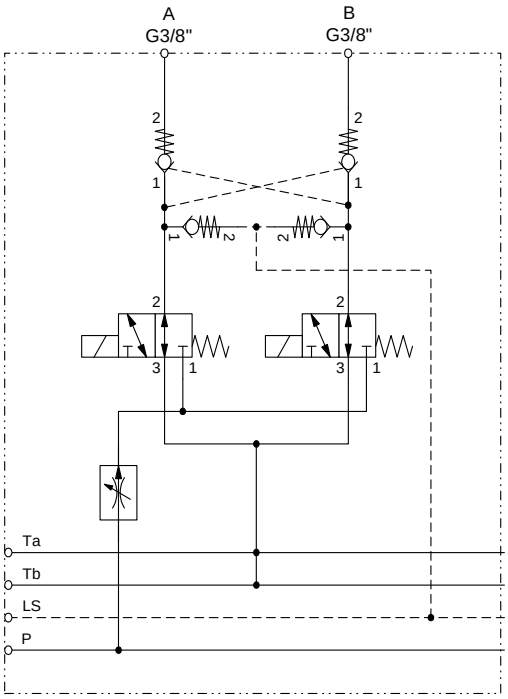
Fixation:
4x M8 on the bottom of the manifold for the fixation of the system in the machine
5x M10 for the fixation of a flangeplate with hosing
3x M10 to flange on Function modules, Main consumer modules or Pre-selection modules

Function module 19L sw with RPDR
FS19D-SR-2WK-2RP-XXDG

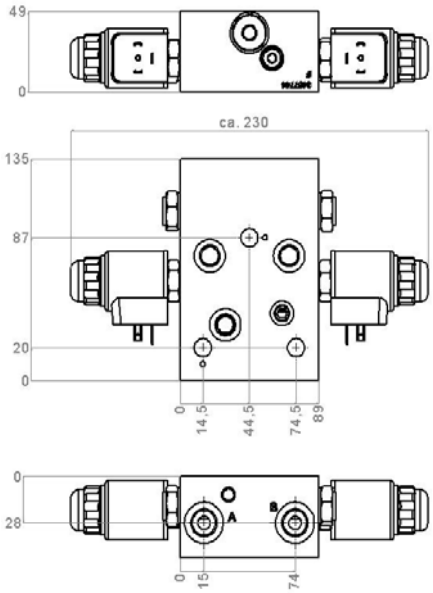


clamping width 49 mm

Mat. 3540477 12 Volt
Mat. 3540478 24 Volt



Pmax = 250 bar
Qmax = 19 l/min



The Function module 19L realizes an on/off consumer supply (proportional not possible!). In de-energized mode the consumer ports are closed by pilot-to open check valves (RPDR). In the place of the standard 4/3 spool valve there are 3/2 spool valves built-in – a cost saving version for the supply up to max. 19 l/min. The LS-signal will be reported via check valves. The inlet flow is effected controlled by a flow control valve.

Technical Specifications:

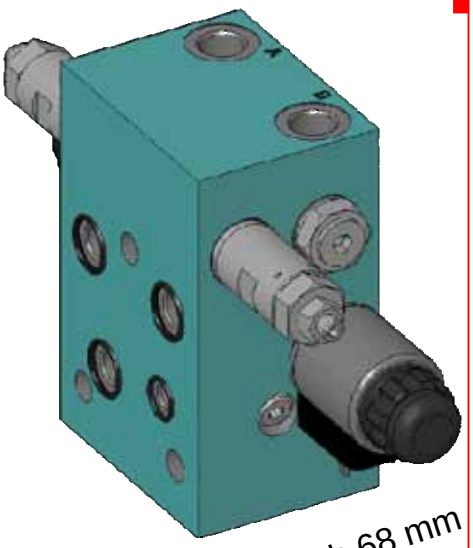
Operating pressure:	max. 250 bar
Flow rate:	max. 19 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves:	- check valve RV08A-01-C-V-15 (Broch. 5.912) - installation kit check valve RV06 - installation kit check valve RPDR
For choice:	- 3/2 directional valve WK08D-01M-C-V... (Broch. 5.915) - flow control valve SRE2-G3/8-01X/5 (5-7,5 l/min) (Broch. 5.118)
Ports: A, B:	G 3/8“

Fixation:
3x ø11 to flange on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

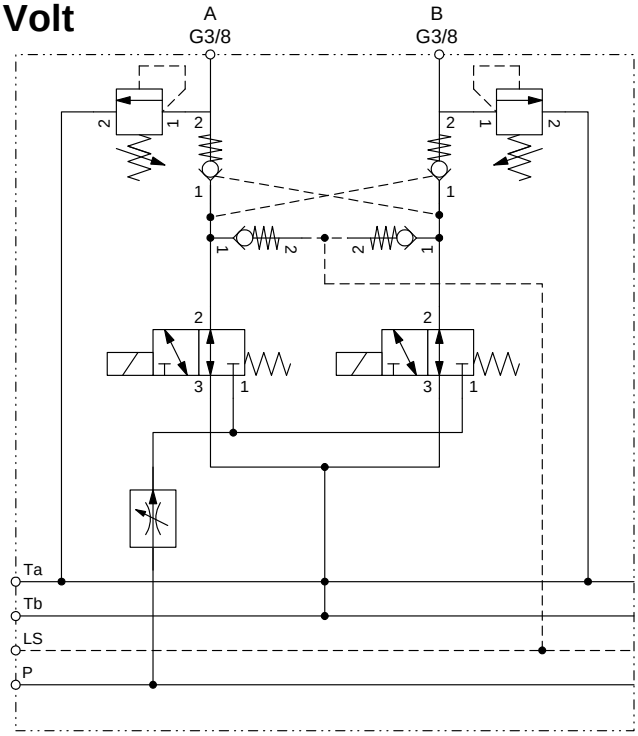
HYDAC INTERNATIONAL

Function module 19L sw with RPDR and DB
FS19D-SR-2RP-2DB-XXDG

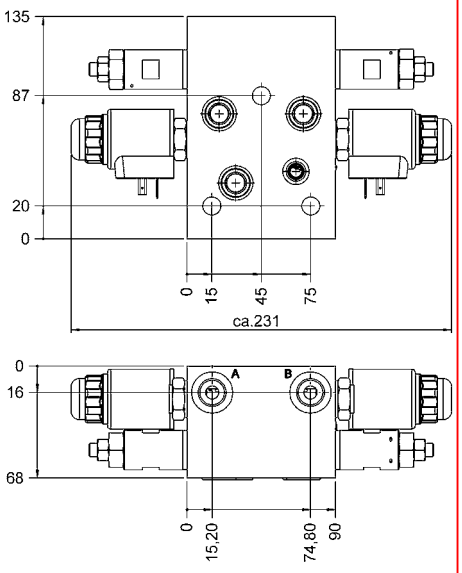
Mat. 3540216 12 Volt
Mat. 3540218 24 Volt



clamping width 68 mm



Pmax = 250 bar
Qmax = 19 l/min



The Function module 19L sw with DB realizes a consumer supply in on/off mode. Both sides of the consumer are speed-controlled – with the same control-speed (adjustment by tool). The control is done by a directional valve. In de-energized mode the consumer rests on pilot-to-open double check valves. The consumer ports are protected by corresponding pressure relief valves. The highest consumer pressure is always reported to the LS-channel.

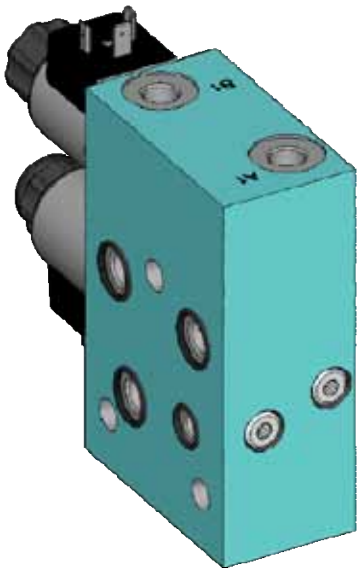
Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 19 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves:	- pressure relief valve DB4E-01X-200F180 (Broch. 5.161)
For choice:	- check valve RV08A-01-C-V-05 (Broch. 5.912) - installation kit check valve RV06 - 3/2 directional valve WK08D-01M-C-V... (Broch. 5.915) - flow control valve SRE2 (5,0 – 7,5 l/min) (Broch. 5.118)
Ports: A, B:	G 3/8”

Fixation:
3x Ø11 to flange-on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

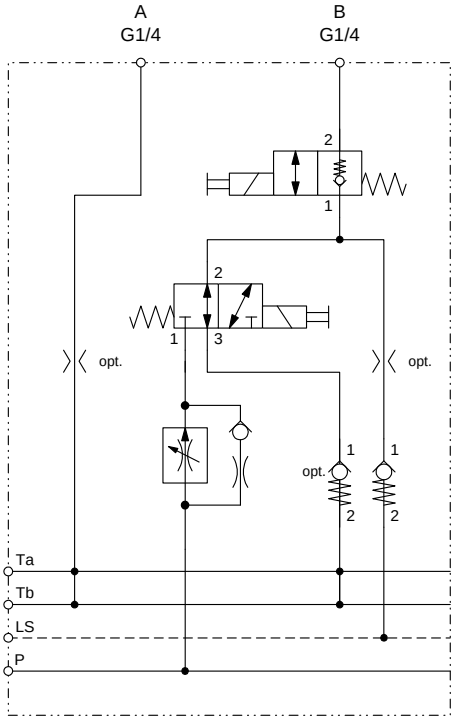
Function module 20L sw single sided

FS20D-SR-WS-XXDG

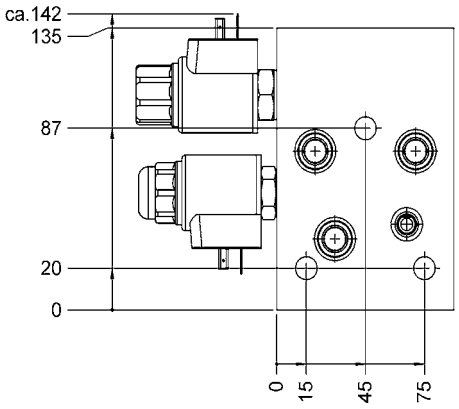


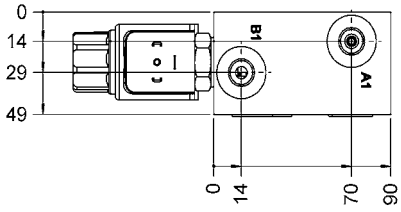
clamping width 49 mm

Mat. 3540149 12 Volt
Mat. 3540151 24 Volt



Pmax = 250 bar
Qmax = 20 l/min





The Function module 20L single sided realizes a supply of consumers in on/off mode. The consumer-port B is controlled by a flow control valve and an energized 3/2 solenoid poppet valve. The following 2/2-solenoid poppet valve could be passed through in de-energized mode to the consumer. The backflow is done over consumer-port A and is throttled downstream by an orifice. This is also valid for single acting cylinders.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 20 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner

Basic equipment valves:
- installation kit check valve RV06…

For choice:
- 3/2 directional valve WK08D-01M-C-N... (Broch. 5.915)
- 2/2 poppet valve WSM06020ZR-01-C-N... (Broch. 5.946)
- flow control valve SRE1(0,6-8,6 l/min standard, optional 0,6-15l/min) (Broch. 5.118)

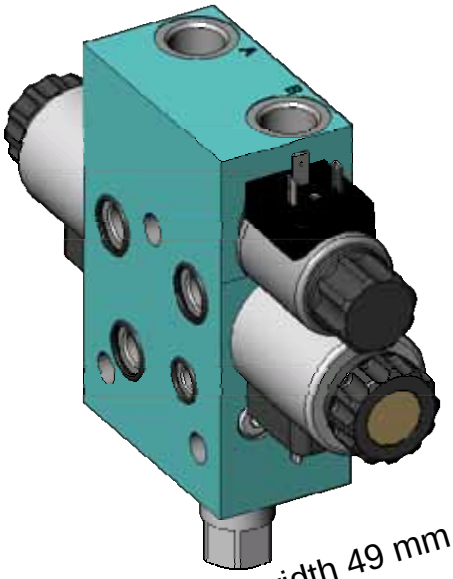
Ports: A, B: G 1/4”

Fixation:
3x Ø11 to flange-on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

HYDAC INTERNATIONAL

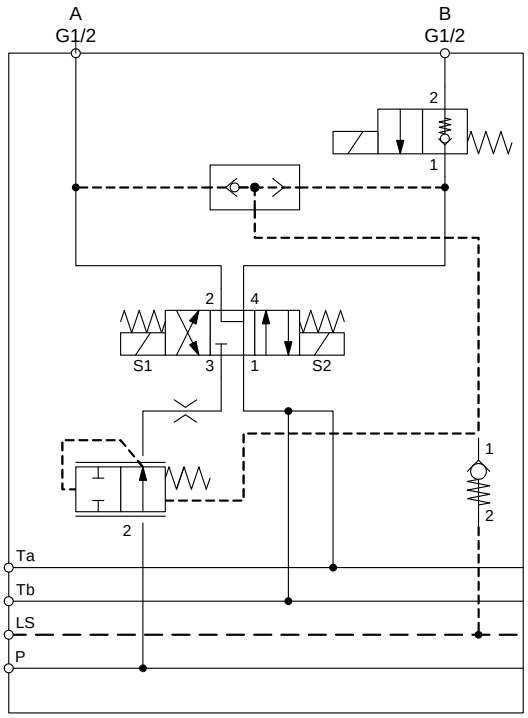
Function module 38L sw 1xWS-valve

FS38J-ID-WS-XXDG

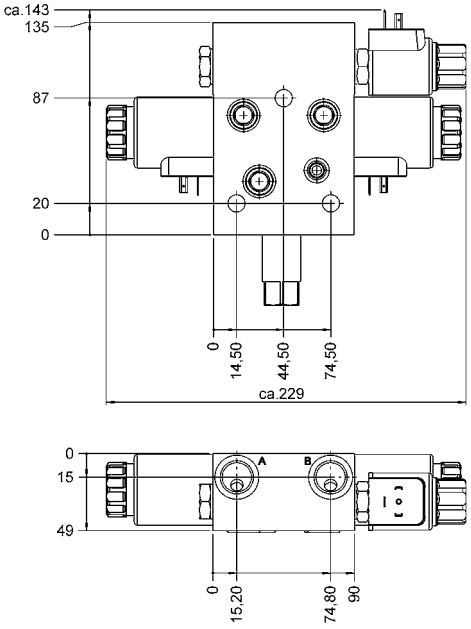


clamping width 49 mm

Mat. 3540220 12 Volt
Mat. 3540222 24 Volt



Pmax = 250 bar
Qmax = 38 l/min



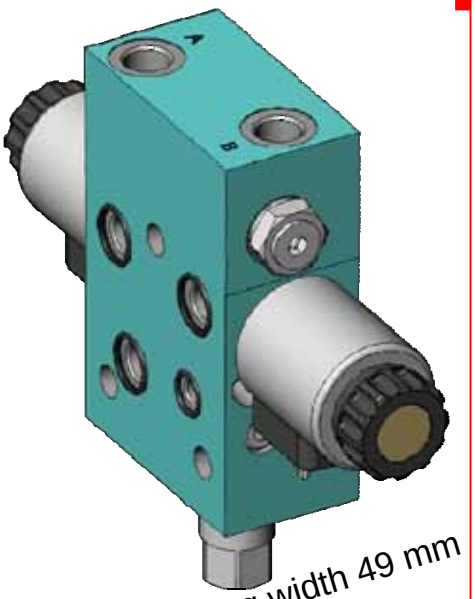
The Function module 38L sw with 1 WS valve realizes a consumer supply in on/off mode via individual pressure compensator. At parallel operation of several consumers with different pressure the pressure compensator is responsible that the flow-rate at the consumer remains constant. If consumers are active the pressure in the LS-channel acts against the opening of the pressure compensator.The inflow is on both sides via the 4/3 directional spool-valves. In de-energized mode the consumer on port B rests on the 2/2 solenoid poppet valve. (Optional also at port A possible.) The shuttle valve always reports the highest pressure to the LS-channel as well as to the pressure compensator.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 38 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Basic equipment valves:	- installation kit check valve RV06 - shuttle valve WVE-R1/8-010 (Broch. 5.173)
For choice:	- installation kit 4/3 directional valve 4WKK10J-11M... - installation kit pressure compensator DW08V-02-08 - solenoid poppet valve WS08Z-01-C-V... (Broch. 5.907)
Ports: A, B:	G 1/2”

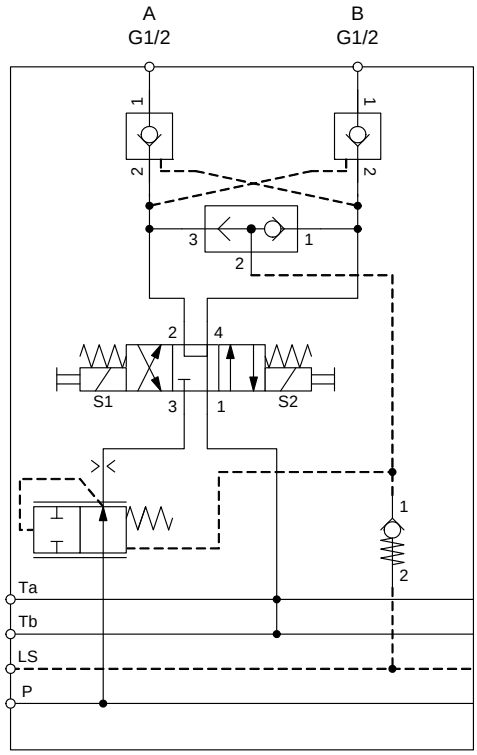
Fixation:
3x Ø11 to flange-on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

Function module 38L sw + flow control valve + RPDR J valve FS38J-ID-2RP-XXDG

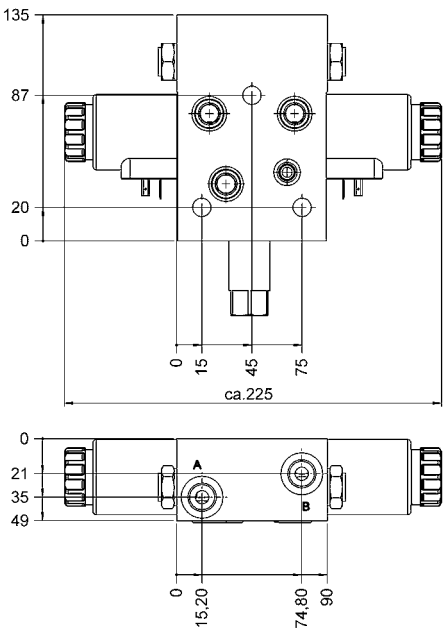


clamping width 49 mm

Mat. 3540260 12 Volt
Mat. 3540261 24 Volt



Pmax = 250 bar
Qmax = 38 l/min



The Function module 38L realizes a consumer supply in on/off mode via individual pressure compensator. At parallel operation of several consumers with different pressure the pressure compensator is responsible that the flow-rate at the consumer remains constant. If consumers are active, the pressure in the LS-channel acts against the opening of the pressure compensator.The inflow is on both sides via the 4/3 directional spool-valve. In switched-off mode the consumer rests on pilot-to-open check valves. The inflow is done via a flow control valve (DWV plus variable orifice). The shuttle valve always reports the highest pressure to the LS-channel as well as to the pressure compensator.

Technical Specifications:

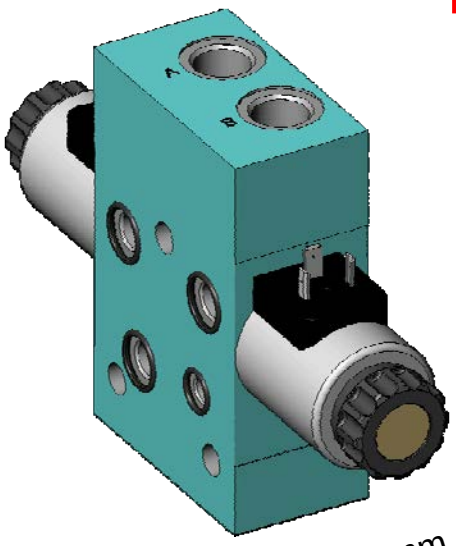
Operating pressure:	max. 250 bar
Flow rate:	max. 38 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Basic equipment valves:	- check valve RV08A-51-C-N-05
	- shuttle valve WVE-R1/8-010 (Broch. 5.173)
	- installation kit check valve RV06 - For
For choice:	- installation kit 4/3 directional valve 4WKK10J-11M...
	- installation kit pressure compensator DW08V-02-08
Ports: A, B:	G 1/2”

Fixation:
3x Ø11 to flange-on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

HYDAC INTERNATIONAL

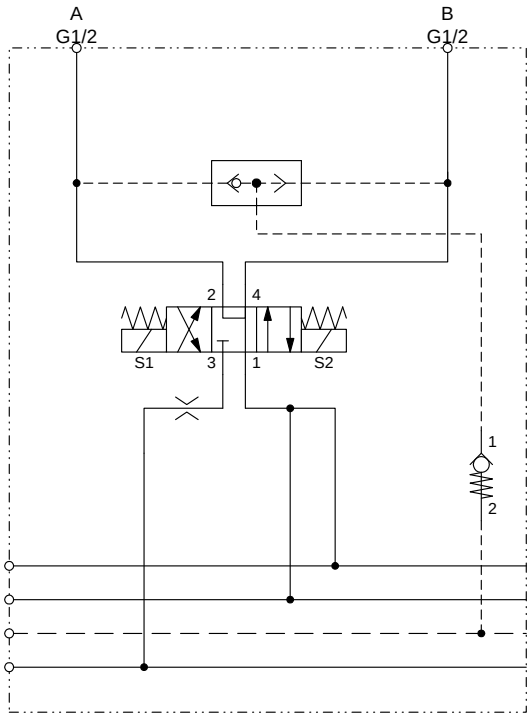
Function module 70L sw
J valve

FS70J-BL-O-XXDG

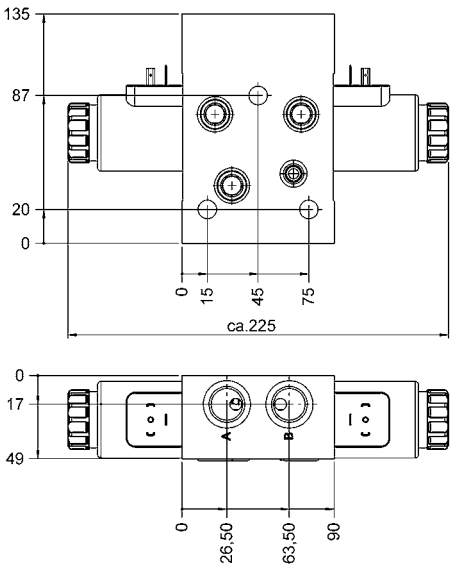


clamping width 49 mm

Mat. 3342922 12 Volt
Mat. 3540226 24 Volt



Pmax = 250 bar
Qmax = 70 l/min



The Function module 70L realizes a consumer supply in on/off mode via 4/3 directional spool valve. In de-energized mode both consumer ports are connected to tank. The inflow is done via an orifice. The shuttle valve always reports the highest pressure to the LS-channel.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 70 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner

Basic equipment valves:	- shuttle valve WVE-R1/8-010 (Broch. 5.173) - installation kit check valve RV06
For choice:	- installation kit 4/3 directional valve 4WKK10J-11M...

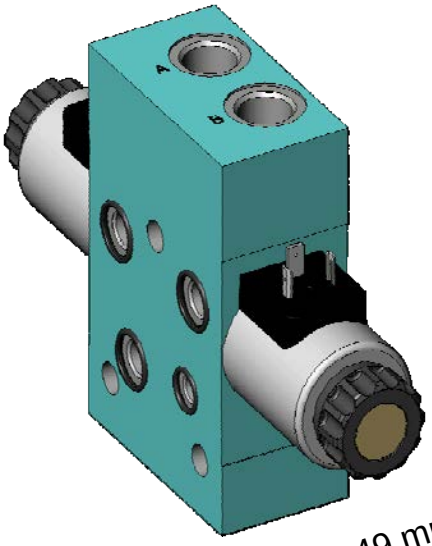
Ports: A, B: G 1/2”

Fixation:
3x Ø11 to flange-on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

Function module 70L sw
E valve

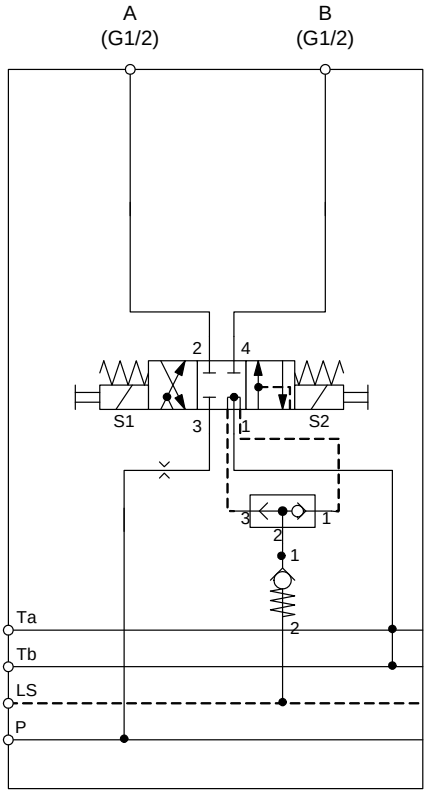
FS70E-BL-O-XXDG

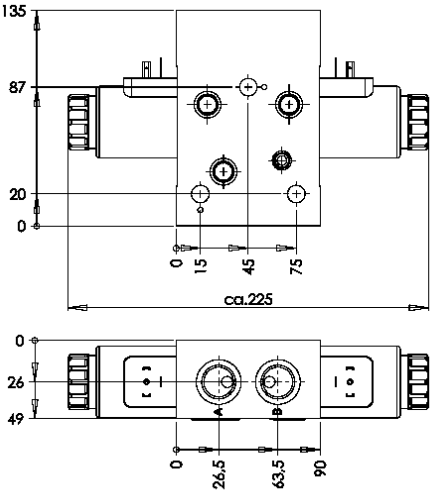
Mat. 3378740 12 Volt
Mat. 3540231 24 Volt



clamping width 49 mm

Pmax = 250 bar
Qmax = 70 l/min





The Function module 70L sw realizes an on/off consumer supply for one double-acting cylinder / motor. In de-energized mode the consumer-ports are spool-tight shut-off from the tank. The inlet control is done via an orifice which size determines the inlet flow. The shuttle valve always reports the highest pressure to the LS-channel. A special LS-pick-off in the spool valve provides for the center position that there is no pressure build-up at the consumer. (optional also as proportional version available with Qmax 35 l/min).

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 70 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner

Basic equipment valves:
- shuttle valve WVE-R1/8-010 (Broch. 5.173)
- installation kit check valve RV06

For choice:
- installation kit 4/3 directional valve 4WKK10E-21M...

Ports: A, B: G 1/2”

Fixation:
3x Ø11 to flange-on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

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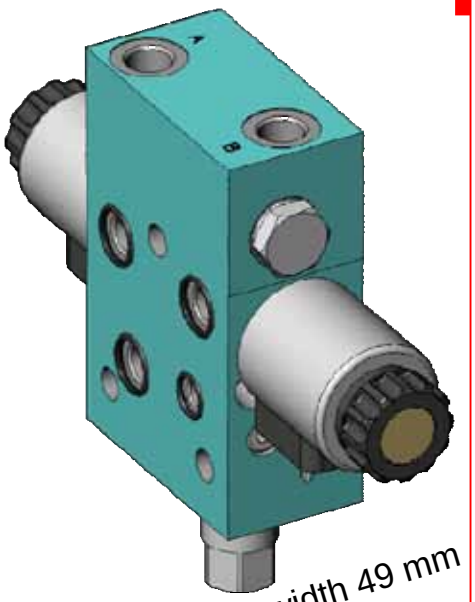
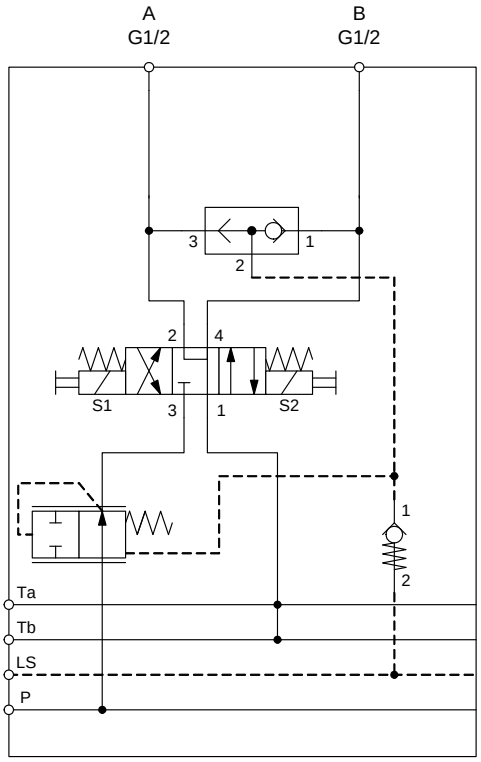
Function module 70L sw + flow control valve
J valve FS70J-ID-O-XXDG

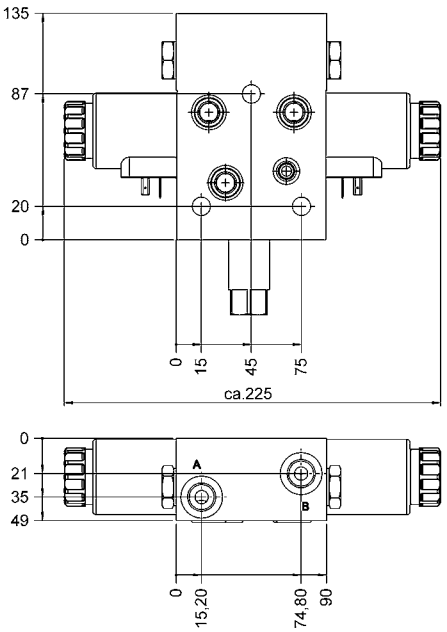


clamping width 49 mm

Mat. 3540233 12 Volt
Mat. 3540230 24 Volt



Pmax = 250 bar
Qmax = 70 l/min



The Function module 70L realizes a consumer supply in on/off mode via individual pressure compensator. At parallel operation of several consumers with different pressure the pressure compensator is responsible that the flow-rate at the consumer remains constant. If consumers are active the pressure in the LS-channel acts against the opening of the pressure compensator.The inflow is on both sides via the 4/3 directional spool-valve. In de-energized mode the consumers are connected to tank. The inflow is done via a flow control valve (DWV plus variable orifice). The shuttle valve always reports the highest pressure to the LS-channel as well as to the pressure compensator.

Technical Specifications:

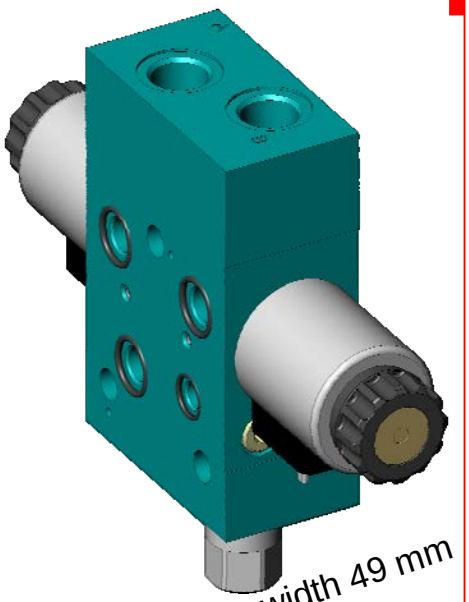
Operating pressure:	max. 250 bar
Flow rate:	max. 70 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Basic equipment valves:	- shuttle valve WVE-R1/8-10 (Broch. 5.173) - installation kit check valve RV06
For choice:	- installation kit 4/3 directional valve 4WKK10J-11M... - installation kit pressure compensator DW08V-02-08
Ports: A, B:	G 1/2”

Fixation:
3x Ø11 to flange-on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

Function module 35L prop E valve

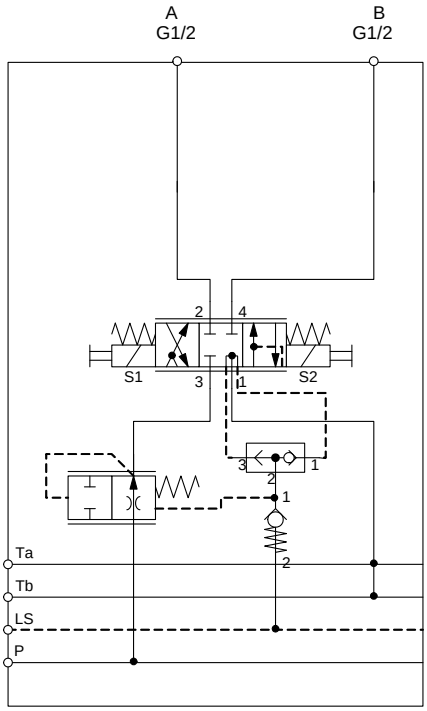
FP35E-ID-O-XXPG

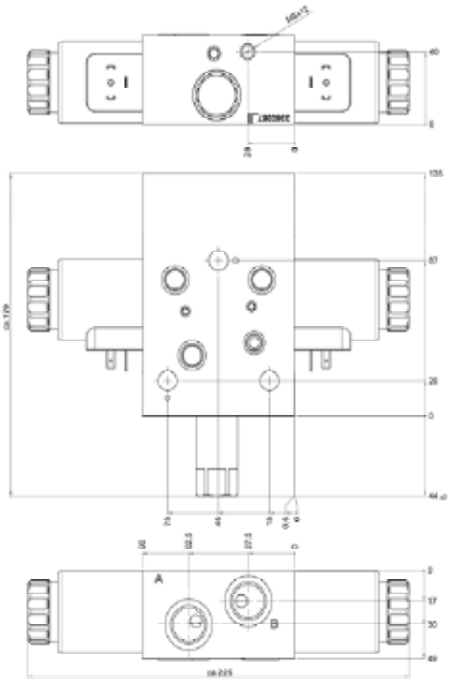
Mat. 3540279 12 Volt
Mat. 3540280 24 Volt



clamping width 49 mm

Pmax = 250 bar
Qmax = 35 l/min





The Function module 35L prop realizes a consumer supply in proportional mode via individual pressure compensator. By the individual pressure compensator the pressure differential via the spool valve is held constant.
At parallel operation of several consumers with different pressure the pressure compensator is responsible that the flow-rate at the consumer remains constant. If consumers are active the pressure in the LS-channel acts against the opening of the pressure compensator.The inflow is on both sides via the 4/3 proportional spool-valve. The shuttle valve always reports the highest pressure to the LS-channel as well as to the pressure compensator. In de-energized mode the consumer ports are separated spool-tight from tank. A special LS-pick-off the spool valve provides for the center position that there is no pressure build-up at the consumer.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 35 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 18/16/13 according to ISO 4406 or cleaner
Basic equipment valves:	- shuttle valve WVE-R1/8-010 (Broch. 5.173)
	- installation kit check valve RV06
For choice:	- installation kit 4/3 Proportional-directional valve 4PWKK10E-11M-01-35...
	- installation kit pressure compensator DW08V-02-12
Ports: A, B:	G 1/2”

Fixation:
3x Ø11 to flange-on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

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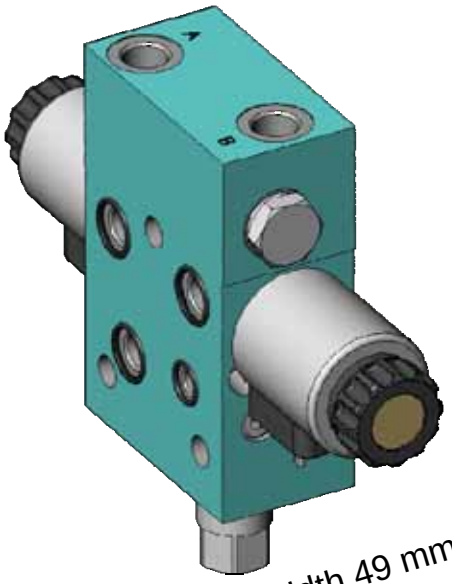
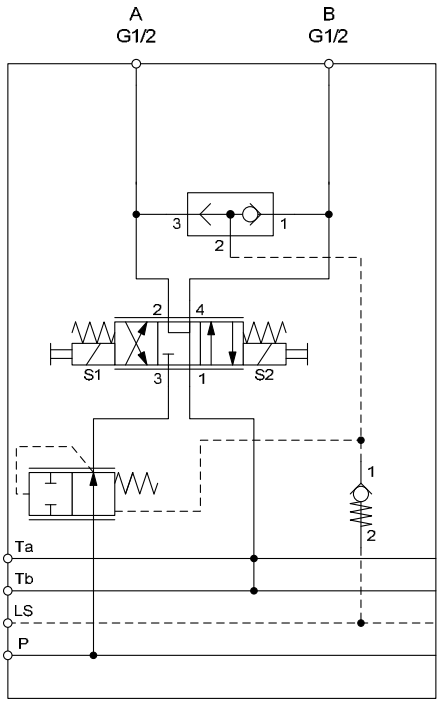
Function module 35L prop
J valve

FP35J-ID-O-XXPG

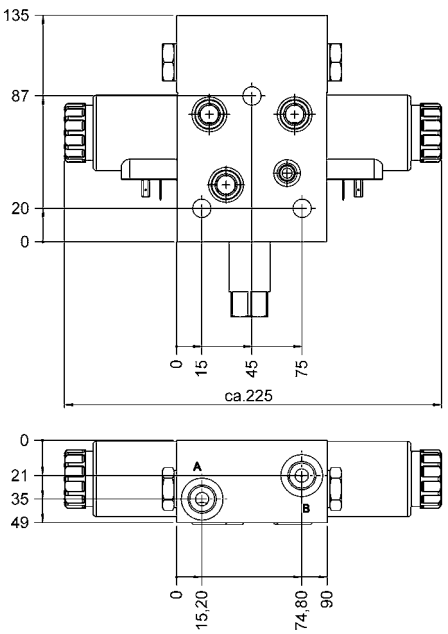


clamping width 49 mm

Mat. 3540256 12 Volt
Mat. 3540257 24 Volt



Pmax = 250 bar
Qmax = 35 l/min



The Function module 35L prop realizes a consumer supply in proportional mode via individual pressure compensator. By the individual pressure compensator the pressure differential via the spool valve is held constant. At parallel operation of several consumers with different pressure the pressure compensator is responsible that the flow-rate at the consumer remains constant. If consumers are active the pressure in the LS-channel acts against the opening of the pressure compensator.The inlet flow is effected on both sides via the 4/3 proportional spool-valve. The shuttle valve always reports the highest pressure to the LS-channel. In de-energized mode the consumer ports are connected to tank.

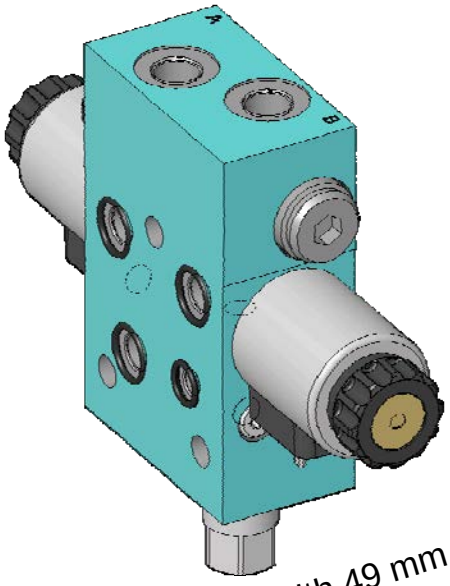
Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 35 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 18/16/13 according to ISO 4406 or cleaner
Basic equipment valves:	- shuttle valve WVE-R1/8-010 (Broch. 5.173)
	- installation kit check valve RV06
For choice:	- installation kit 4/3 Proportional-directional valve 4PWKK10J-11M-01-35...
	- installation kit pressure compensator DW08V-02-12
Ports: A, B:	G 1/2”

Fixation:
3x Ø11 to flange-on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

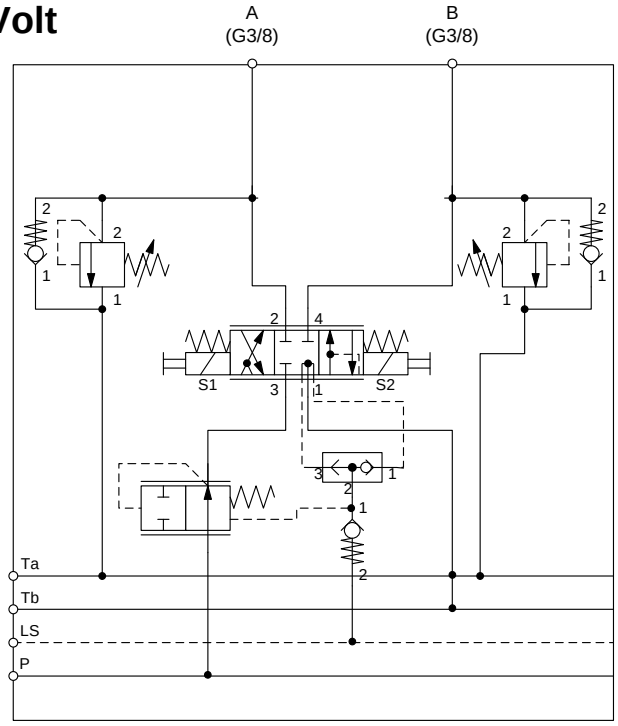
Function module 35L prop +Anticav
E valve FP35E-ID-2AK210/210-XXPG

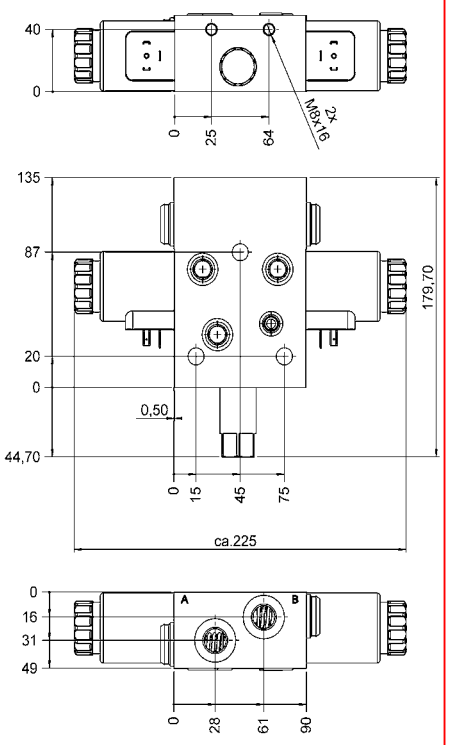
Mat. 3540416 12 Volt
Mat. 3540418 24 Volt



clamping width 49 mm

Pmax = 250 bar
Qmax = 35 l/min





The Function module 35L prop + Anticav realizes a consumer supply in proportional mode via individual pressure compensator. By the individual pressure compensator the pressure differential via the spool valve is held constant.
The consumer ports are equipped with anti-cavitation feeding function. At parallel operation of several consumers with different pressure the pressure compensator is responsible that the flow-rate at the consumer remains constant. If consumers are Active, the pressure in the LS-channel acts against the opening of the pressure compensator. The shuttle valve always reports the highest pressure to the LS-channel.
The inlet flow is effected on both sides via the 4/3 proportional spool-valve. In de-energized mode the consumer ports are “spool-tight” connected to tank. A special LS-pick-off in the spool valve provides for the center position that there is no pressure build-up at the consumer.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 35 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 18/16/13 according to ISO 4406 or cleaner

Basic equipment valves:
- shuttle valve WVE-R1/8-010 (Broch. 5.173)
- installation kit check valve RV06

For choice:
- installation kit 4/3 Proportional-directional valve 4PWKK10E-11M-21M-01-30...
- installation kit pressure compensator DW08V-02-08
- DBV + anti-cavitation valve VMA 1.080.0U-210

Ports: A, B: G 1/2” (optional with G3/8” ports)

Fixation:
3x Ø11 to flange-on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

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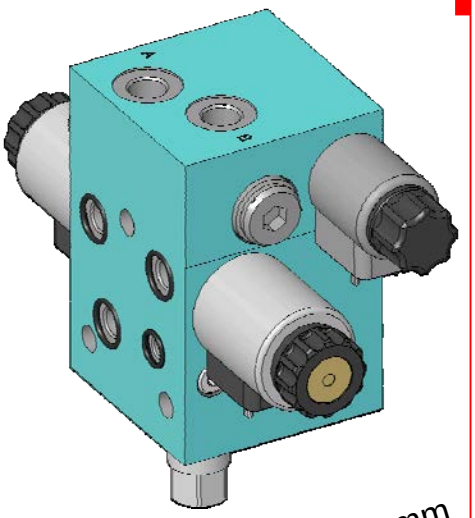
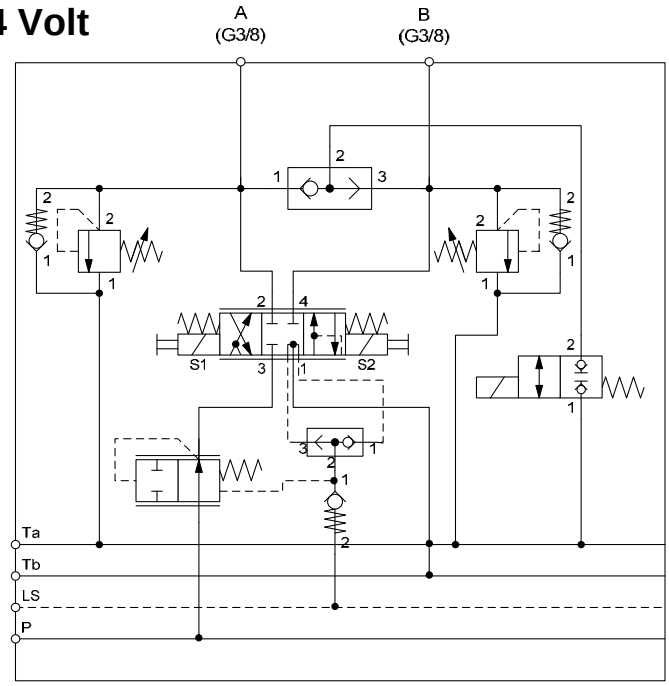
Function module 35L prop +Anticav +floating position FP35E-ID-2AK210/175-SS-XXPG

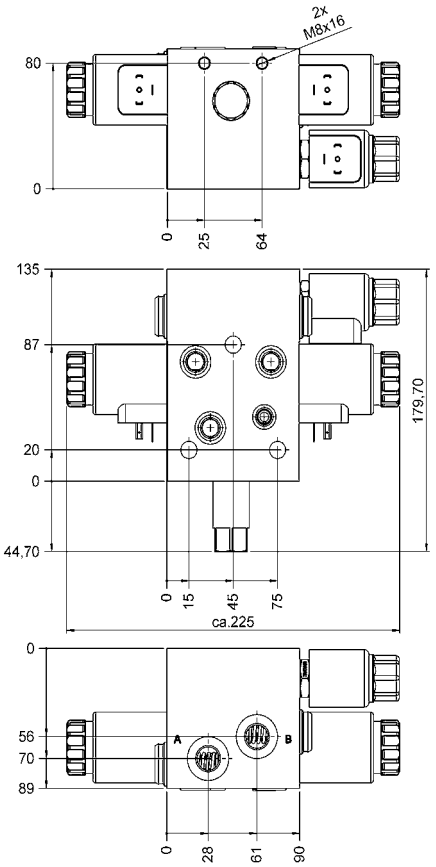
Mat. 3540421 12 Volt
Mat. 3540423 24 Volt



clamping width 89 mm

Pmax = 250 bar
Qmax = 35 l/min





The Function module 35L prop + Anticav realizes a consumer supply in proportional mode via individual pressure compensator. The consumer ports are equipped with anti-cavitation feeding function. At parallel operation of several consumers with different pressure the pressure compensator is responsible that the flow-rate at the consumer remains constant. If consumers are active the pressure in the LS-channel acts against the opening of the pressure compensator.
The inlet flow is effected on both sides via the 4/3 proportional spool-valve. In de-energized mode the consumer ports are “spool-tight” connected to tank.
Via a 2/2 directional valve the pressure relief valves could be overrided and a floating position could be realized. A special LS-pick-off in the spool valve provides for the center position that there is no pressure build-up at the consumer.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 35 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 18/16/13 according to ISO 4406

Basic equipment valves:
- shuttle valves WVE-R1/8-010 WVE-R1/4 (Broch. 5.173)
- installation kit check valve RV06

For choice:
- installation kit 4/3 Proportional-directional valve 4PWKK10E-21M-02-10...
- installation kit press.compensator DW08V-03-05
- solenoid poppet valve WSM06020W-01-C-V... (Broch. 5.949)
- DBV + 2x Anticavation valve VMA 1.080.0U-210 and VMA 1.080.0U-175

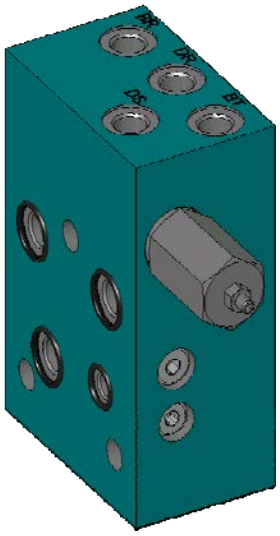
Ports: A, B: G 3/8”

Fixation:
3x Ø11 to flange-on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

Function module accumulator charging

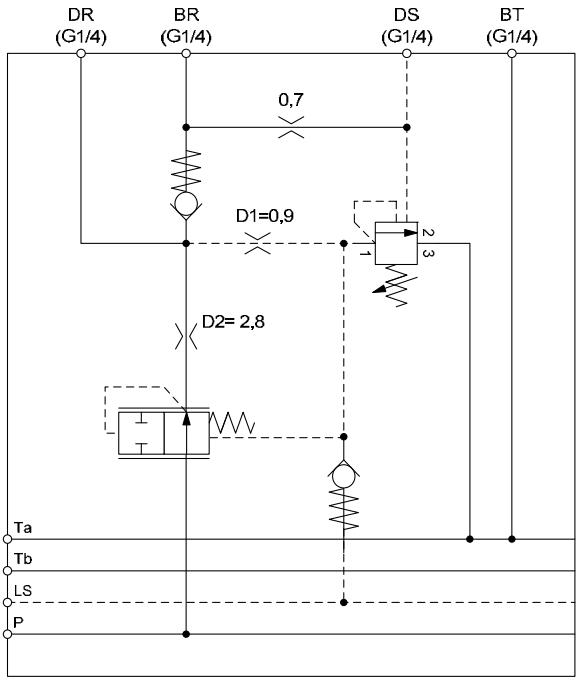
FS38-ID-DL

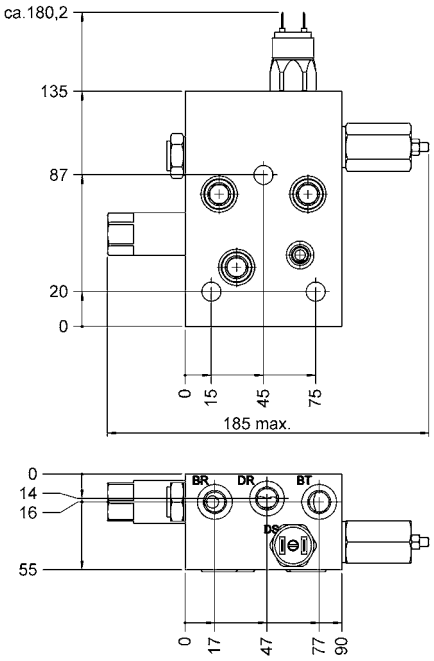
Mat. 3281293



clamping width 55 mm

Pmax = 250 bar
Qmax = 38 l/min





The Function module accumulator charging serves to charge the accumulator at port BR. The whole circuit is controlled by fixed switch-pressure differentials. The pressure differential is depending on the deployed charging valve. There are three different charging valves (12, 16, 21%). So, the switch-off pressure is the maximal pressure in the accumulator. By variation of the orifice D1 in combination with the accumulator charging valve, charging pressures between 50 and 250 bar are possible. The orifice D2 determines the flow rate of the charging and therefore the charging-speed. The inflow control is done via an individual pressure compensator , so that the needed pressure will be measured and controlled by the Ls-signal.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 38 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406

Basic equipment valves: - check valve RV08A-01-C-V-05 (Broch. 5.912)

For choice:
- installation kit pressure compensator DW08V-01-08
- accumulator charging valve DLHS... (e.g. DLHS-21/250-150)

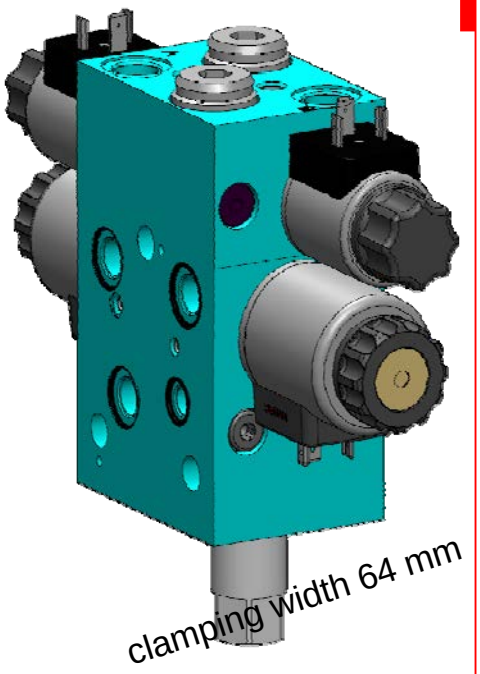
Ports: BR, DR, DS, BT: G 1/4”

Fixation:
3x Ø11 to flange-on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

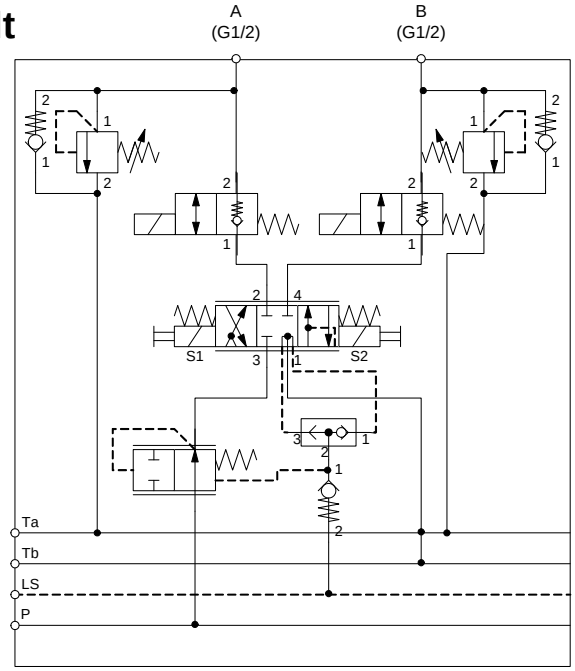
HYDAC INTERNATIONAL

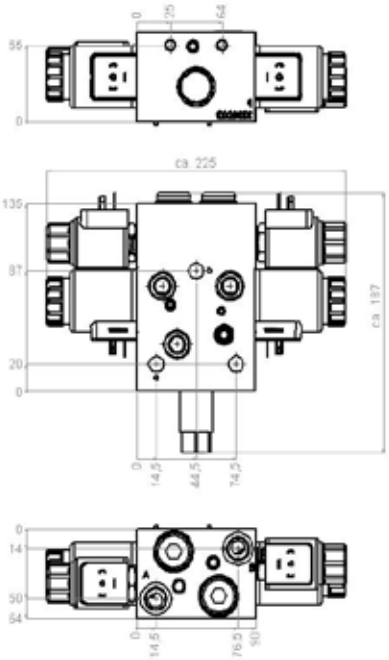
Function module 25L prop + Anticav
E valve FP25E-ID-2AK150/100-2WS-XXPG

Mat. 3540433 12 Volt
Mat. 3540434 24 Volt



Pmax = 250 bar
Qmax = 25 l/min





The Function module 25L prop + Anticav realizes a consumer supply in proportional mode via individual pressure compensator. The consumer ports are equipped with anti-cavitation feeding function. At parallel operation of several consumers with different pressures the pressure compensator is responsible that the flow-rate at the consumer remains constant. If consumers are active, the pressure in the LS-channel acts against the opening of the pressure compensator. The inlet flow is effeted on both sides via the 4/3 proportional spool-valve. In de-energized mode the consumer ports are “spool-tight” connected to tank. The shuttle valve always reports the highest pressure to the LS-channel. A special LS-pick-off in the spool valve provides for the center position that there is no pressure build-up at the consumer.

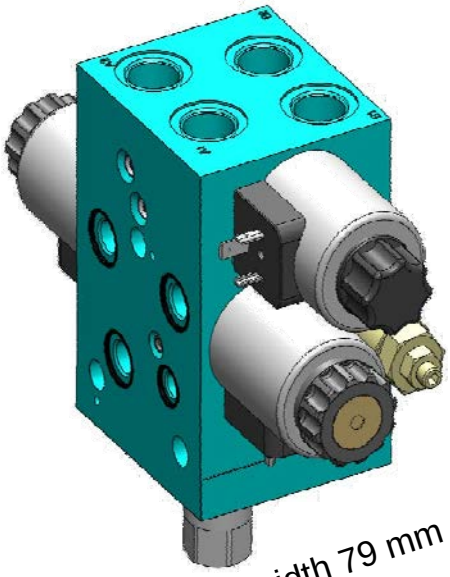
Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 25 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 18/16/13 according to ISO 4406
Basic equipment valves:	- DBV + anti-cavitation valve VMA 1.080.0U.150 and VMA 1.080.0B.100 - shuttle valve WVE-R1/8 (Broch. 5.173) - installation kit check valve RV06
For choice:	- installation kit 4/3 directional valve proportional 4PWKK10E-21M-01-30... - installation kit pressure compensator DW08V-03-03 - 2/2 directional-poppet valves WSM06020ZR (Broch. 5.946)
Ports: A, B:	G 3/8“

Fixation: 3x Ø11 to flange-on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

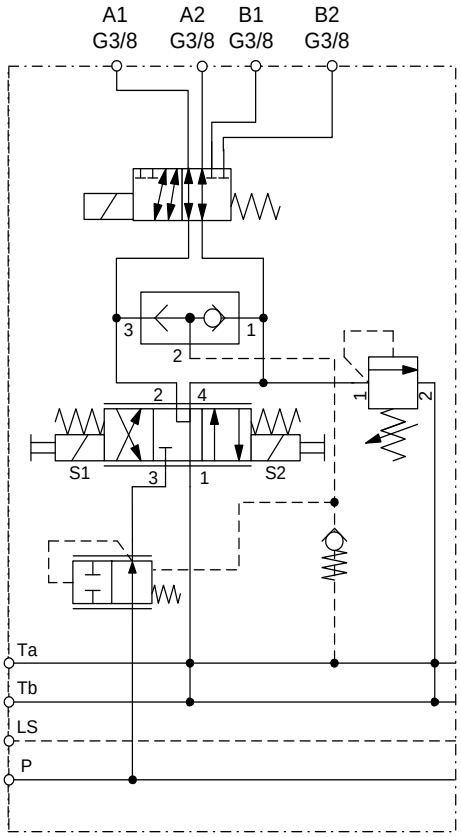
Function module 32L prop switch-over
J valve FP32J-ID-UV-DB-XXPG

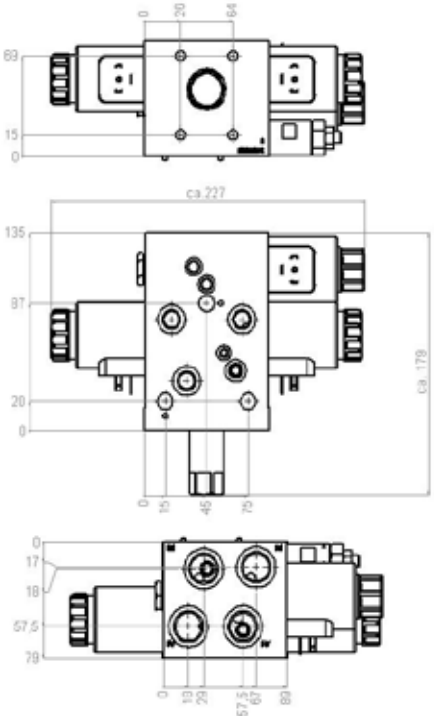
Mat. 3540456 12 Volt
Mat. 3540457 24 Volt



clamping width 79 mm

Pmax = 250 bar
Qmax = 32 l/min





The Function module realizes a consumer supply in proportional mode. The consumer ports are equipped with a 6/2 switch-over valve. Therefore two double-acting cylinders could be controlled one after the other. The driving direction is protected against over-pressure. In de-energized mode the consumer ports are connected to tank. The shuttle valve always reports the highest pressure to the LS-channel. The inflow is done via a pressure compensator.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 32 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 18/16/13 according to ISO 4406 or cleaner
Basic equipment valves:	- 6/2 directional switch-over valve - pressure relief valve DB4E-01X-200V190 (Broch. 5.161) - shuttle valve WVE-R1/8-010 (Broch. 5.173) - installation kit check valve RV06
For choice:	- installation kit 4/3 directional valve proportional 4PWKK10J-11M-01-35... - installation kit pressure compensator DW08V-02-12
Ports: A1, A2, B1, B2 :	G3/8“

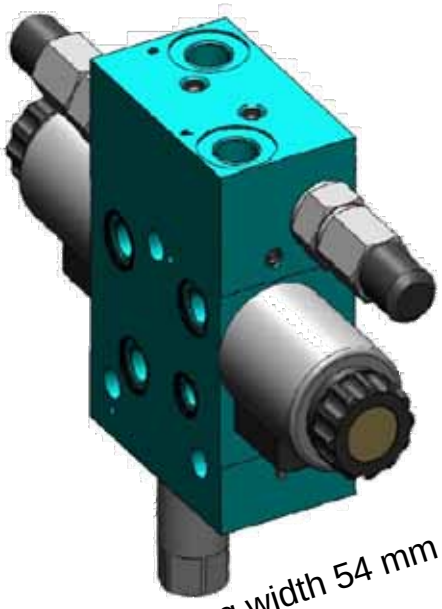
Fixation:
4x M6 on the bottom of the manifold for the fixation of the system in the machine
3x ø11 to flange at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

HYDAC INTERNATIONAL

Function module 10L lift-lowering
J valve

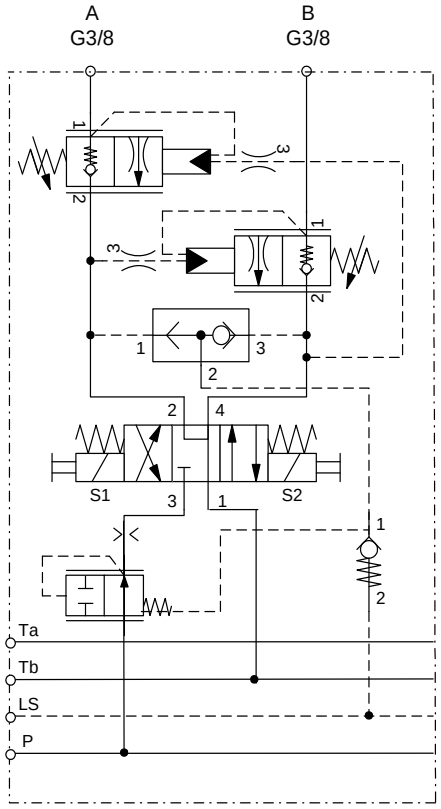
FS10J-ID-2SB-XXDG

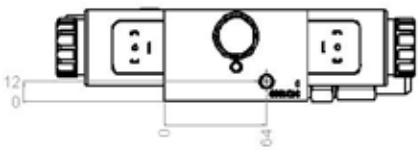
Mat. 3540459 12 Volt
Mat. 3540460 24 Volt

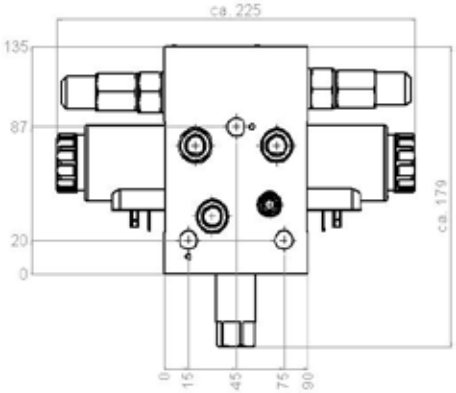


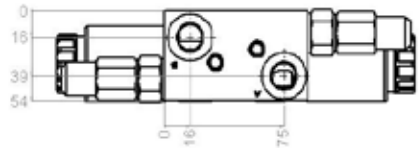
clamping width 54 mm

Pmax = 250 bar
Qmax = 10 l/min









The Function module realizes an on/off consumer supply. By varying the orifice D a supply up to 35 l/min could be established. The consumer ports are foreseen with counter balance valves for load-holding applications. Therefore it is possible to precisely control the consumers under load. Upstream control is done by one pressure compensator.

Technical Specifications:

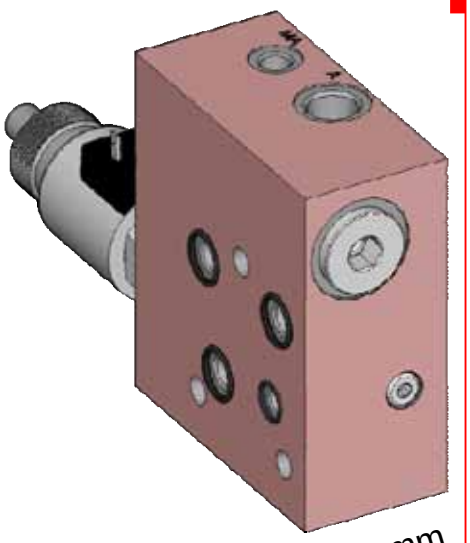
Operating pressure:	max. 250 bar
Flow rate:	max. 10 l/min (up to 35 l/min by orifice)
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves:	- counter balance valveRS08-01-C-V-3-500V (Broch. 5.933) - shuttle valve WVE-R1/8 (Broch. 5.173) - installation kit check valve RV06
For choice:	- 4/3 directional valve 4WKK10J-11M.. - installation kit pressure compensator DW08V-02-08
Ports: A, B:	G3/8“

Fixation:
1x M8 on the bottom of the manifold for the fixation of the system in the machine
3x ø11 to flange on at Inlet modules, other Function modules, Main consumer modules or Pre-selection modules

Main consumer module without pressure compensator

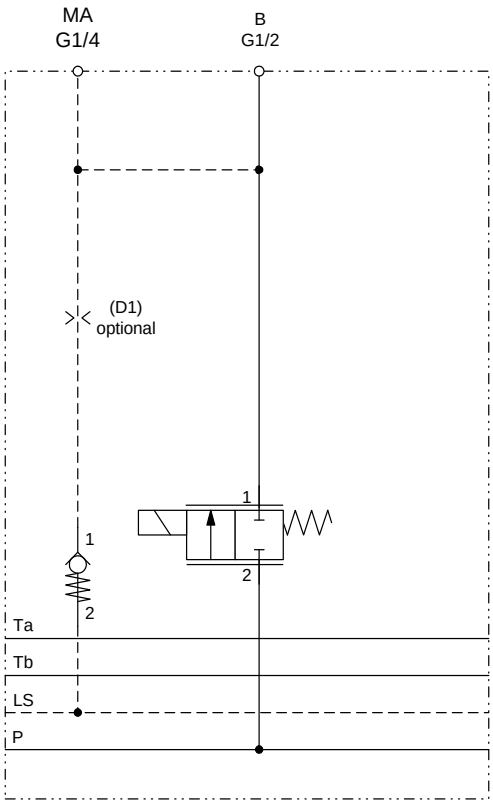
H1 PWK-O-XXPG

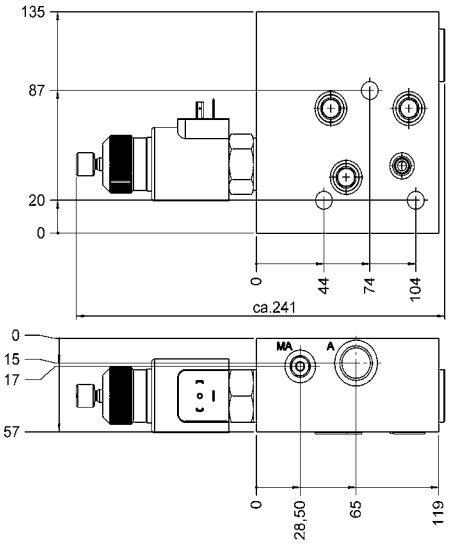
Mat. 3540483 12 Volt
Mat. 3540484 24 Volt



clamping width 57 mm

Pmax = 250 bar
Qmax = 55 l/min





The Main consumer module is used in the first line for hydro-motors, which shall only be driven in one direction. The supply is done via a proportional throttle valve. The flow rate at the consumer may rise in parallel motion if some more functions are in usage. The LS-signal will be reported.

Technical Specifications:

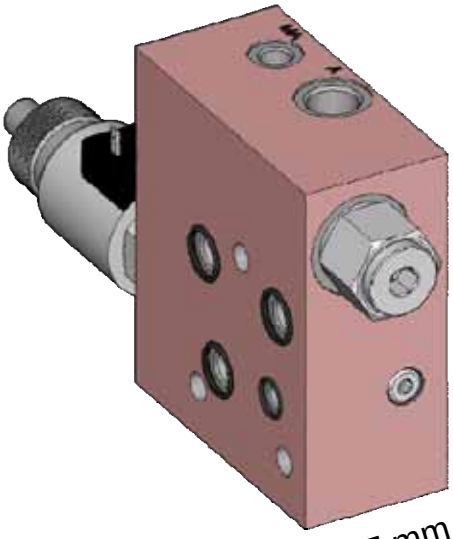
Operating pressure:	max. 250 bar
Flow rate:	max. 60 l/min, (80 l/min with valve: PWK12120WP...)
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 18/16/13 according ISO 4406
Basic equipment valves:	- installation kit check valve RV06
For choice:	- Proportional directional valve PWK12120W-01M-C-V-45... or PWK12120WP...

Ports:	A:	G 1/2”
	MA:	G 1/4”

Fixation:
3x Ø11 to flange-on at Inlet modules, Function modules, other Main consumer modules or Pre-selection modules

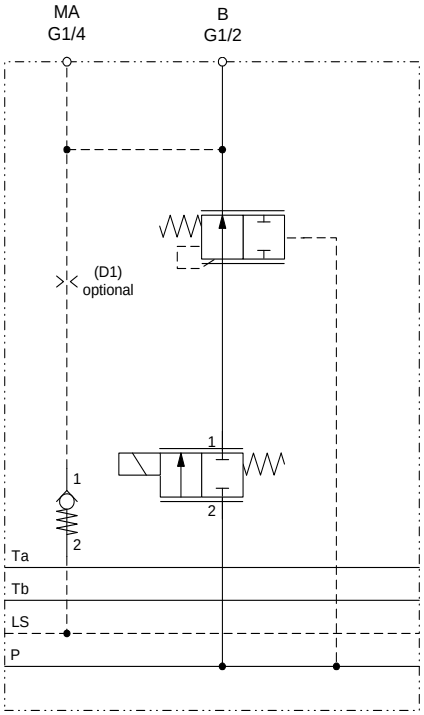
HYDAC INTERNATIONAL

Main consumer module with 1 pressure compensator H1 PWK-RD15-XXPG

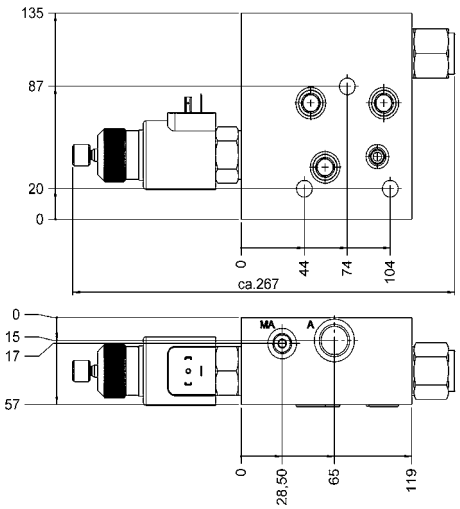


clamping width 57 mm

Mat. 3540481 12 Volt
Mat. 3540482 24 Volt



Pmax = 250 bar
Qmax = 55 l/min



The Main consumer module is used in the first line for hydro-motors, which shall only be driven in one direction. The supply is done via a pressure-compensated proportional flow control valve (Prop.-throttle plus pressure compensator). This alignment is taking care of a constant flow rate at the consumer even in parallel motion. The LS-signal will be reported.

Technical Specifications:

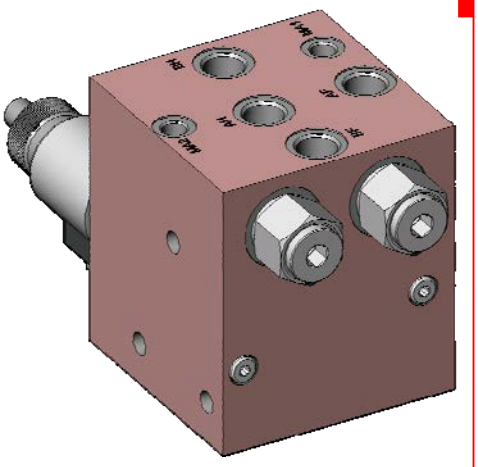
Operating pressure:	max. 250 bar
Flow rate:	max. 60 l/min, (80 l/min with valve: PWK12120WP...)
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 18/16/13 according to ISO 4406
Basic equipment valves:	- installation kit check valve RV06
For choice:	- Proportional directional valve PWK12120W-01M-C-V-45... or PWK12120WP... - pressure compensator DWM12130R-01-C-V-15

Ports:	A:	G 1/2”
	MA:	G 1/4”

Fixation:

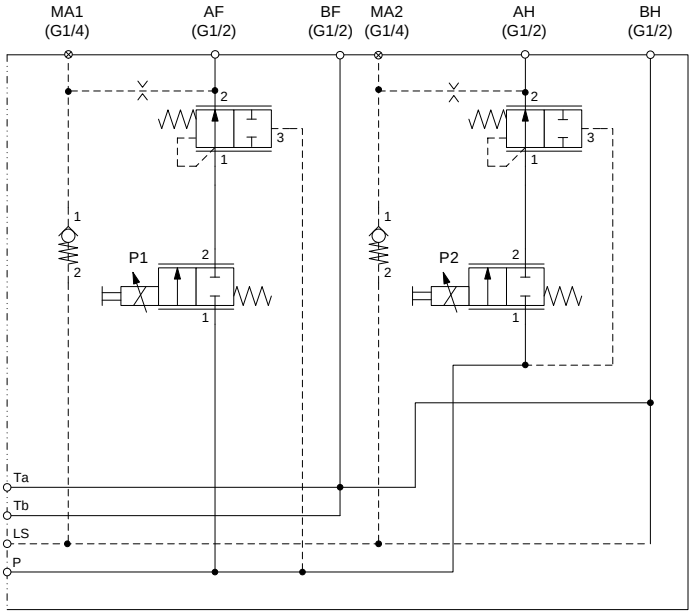
3x Ø11 to flange-on at Inlet modules, Function modules, other Main consumer modules or Pre-selection modules

Main consumer module two-times
H2 2PWK-2RD15-XXPG

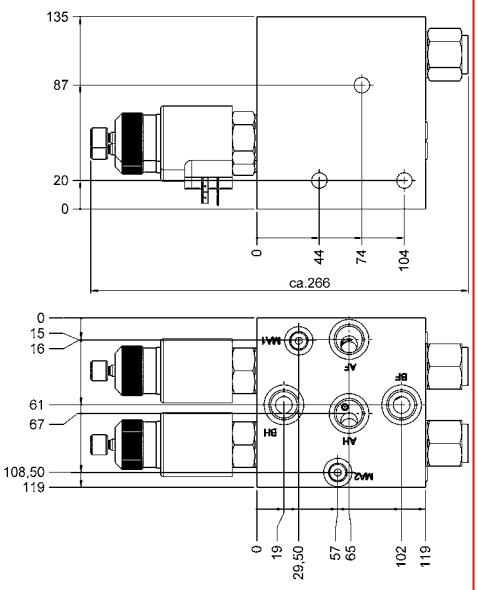


clamping width 119 mm

Mat. 3540504 12 Volt
Mat. 3540525 24 Volt



Pmax = 250 bar
Qmax = 60 l/min



The Main consumer module is used in the first line for hydro-motors, which shall only be driven in one direction. The supply is done via a pressure-compensated proportional flow control valve (Prop.-throttle plus pressure compensator). This alignment is taking care of a constant flow rate at the consumer even in parallel motion. The stronger LS-Signal of the double consumers will be reported. The A further flange-on of modules is not foreseen.

Technical Specifications:

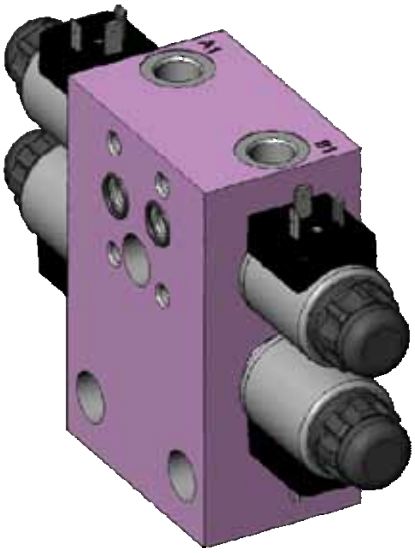
Operating pressure:	max. 250 bar
Flow rate:	max. 2x 60 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves:	- installation kit check valve RV06
For choice:	- Proportional directional valve PWK12120W-01M-C-V-45... or PWK12120WP...
	- pressure compensator DWM12130R-01-C-V-15
Ports: AF, BF, AH, BH:	G 1/2”
MA1, MA2:	G 1/4”

Fixation:
3x Ø11 to flange-on at Inlet modules, Function modules, other Main consumer modules or Pre-selection modules

HYDAC INTERNATIONAL

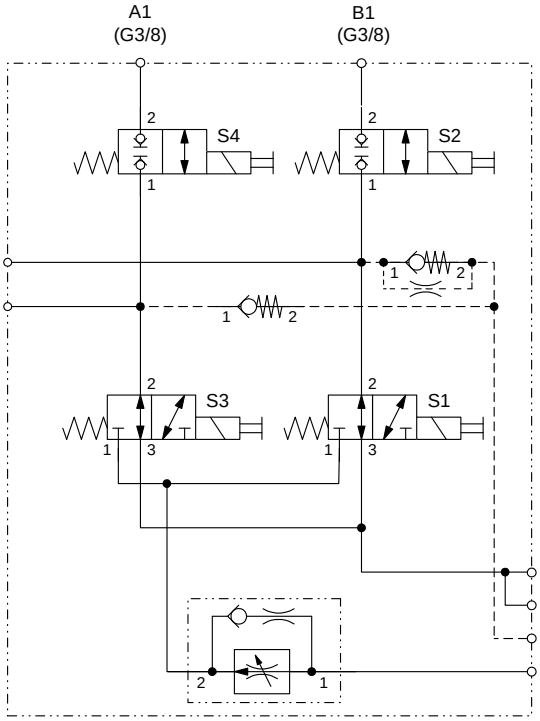
Pre-selection module 19L sw

WS19D-SR-2WS-XXDG

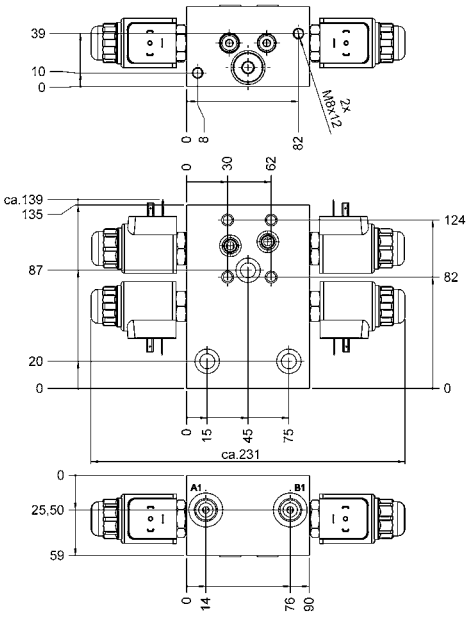


clamping width 49 mm

Mat. 3540526 12 Volt
Mat. 3540527 24 Volt



Pmax = 250 bar
Qmax = 19 l/min



The Pre-selection module sw 19L realizes an on/off supply of the Cylinder function modules which are adapted to this module at one side. The first cylinder function is already integrated in this module and will be switched by two 2/2-directional-poppet valves. The inlet flow is effectedcoming via a common flow control valve, this means that all following Cylinder function modules are used at the same velocity. The 3/2 directional valves are controlling which line A or B, depending on functional site is the inlet or outlet flow. The needed pressure in all following Function modules is reported as pressure signal to the LS-line. At parallel motion of cylinder functions together with main consumers the LS-pressure has an influence on these cylinder functions, too. (velocity, power).

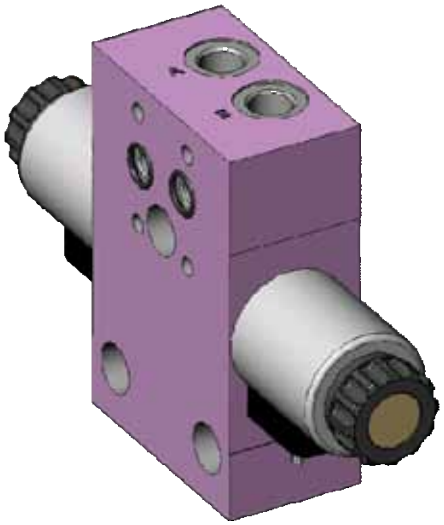
Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 19 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves:	- shuttle valve WVE-R1/8-010 (Broch. 5.173) - installation kit check valve RV06
For choice:	- 3/2 directional valve WK08D-01M-C-N... (Broch. 5.915) - 2/2 poppet valve WSM06020W-01M-C-V... (Broch. 5.949) - flow control valve (Broch. 5.118) SRE2-G3/8-01X/15-19 (15 – 19 l/min)
Ports: A,B:	G 3/8”

Fixation:
3x Ø11 mm to flange-on at Function modules or Main consumer modules
4x M8 to flange-on further cylinder function modules

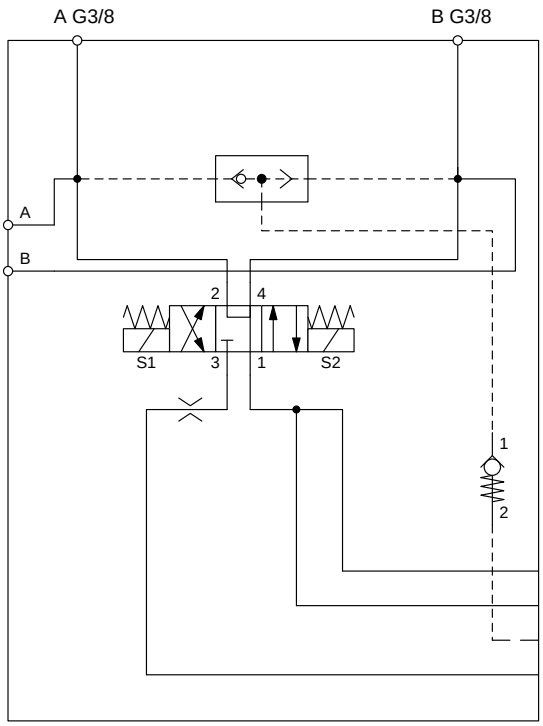
Pre-selection module 70L sw

WS70J-BL-O-XXDG

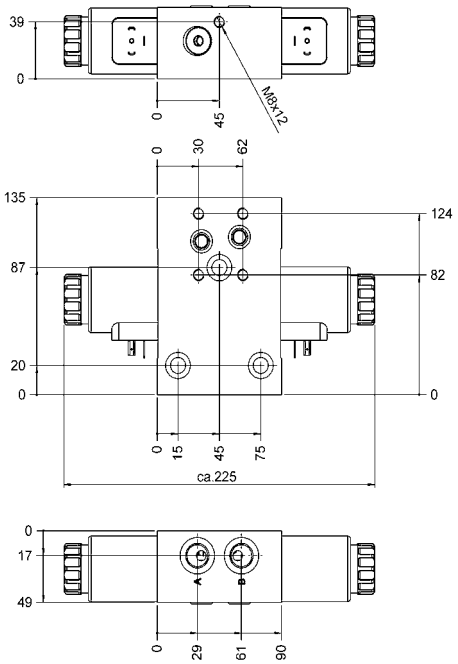


clamping width 49 mm

Mat. 3541901 12 Volt
Mat. 3541902 24 Volt



Pmax = 250 bar
Qmax = 70 l/min



The Pre-selection module sw 70L realizes an on/off supply of the Cylinder function modules which are adapted to this module at one side. The 3/2 directional valves are controlling which line A or B, depending on functional site is the inlet or outlet flow. The needed pressure in all following Function modules is reported as pressure signal to the LS-line. At parallel motion of cylinder functions together with main consumers the LS-pressure has an influence on these functions, too. (velocity, power).

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 70 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406

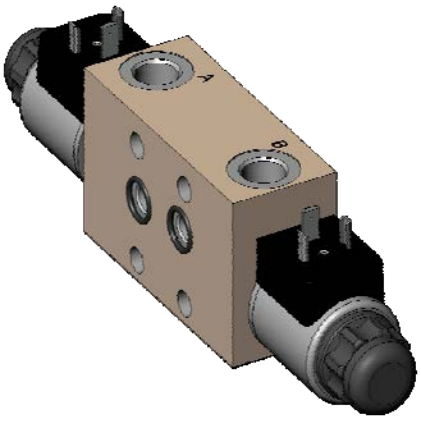
Basic equipment valves:	- shuttle valve WVE-R1/8-010 (Broch. 5.173)
	- installation kit check valve RV06
For choice:	- installation kit 4/3 directional valve 4WKK10J-11M...

Ports: A,B: G 3/8”

Fixation:
3x Ø11 mm to flange-on at Function modules or Main consumer modules
4x M8 to flange-on further Cylinder function modules

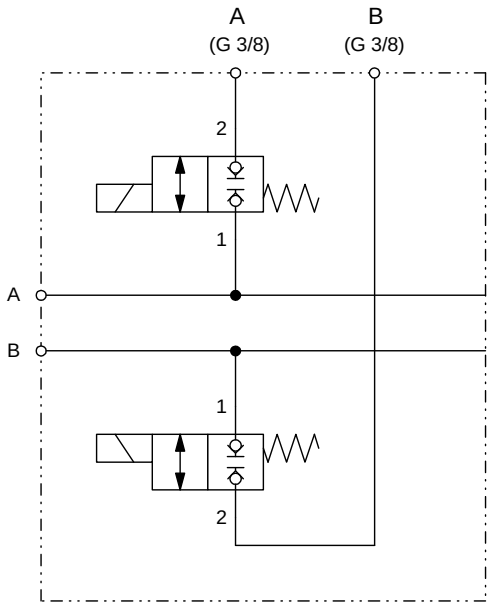
HYDAC INTERNATIONAL

Cylinder function module 2-times, special for 1 double acting cylinder S02 02-W-XXDG

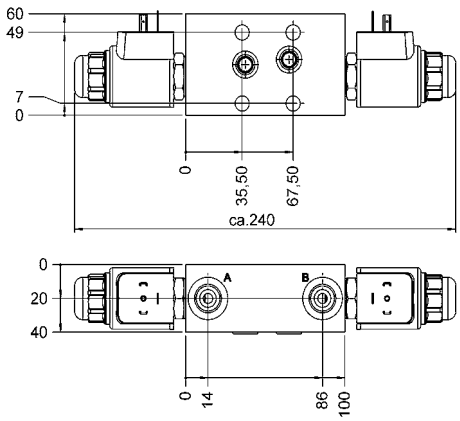


clamping width 40 mm

Mat. 3541904 12 Volt
Mat. 3541917 24 Volt



Pmax = 250 bar
Qmax = 19 l/min



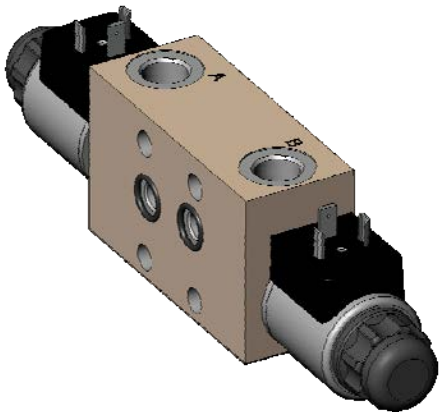
The cylinder function module 2-times special realizes an on/off supply of e.g. double acting cylinders. By using this module as end-module the ports A and B will be closed by plugs.

Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 19 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves for choice:	- solenoid poppet valve WSM06020W-01M-C-V... (Broch. 5.949) (other symbols V, Z, ZR, Y, YR s. model code)
Ports: A,B:	G 3/8”

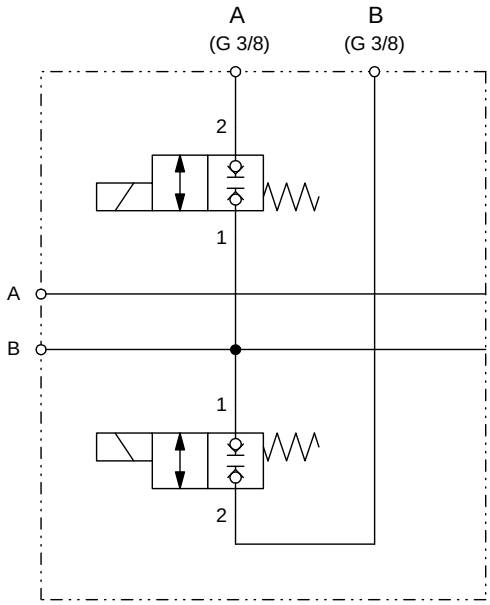
Fixation:
4x Ø 9mm to flange-on at Pre-selection modules or other Cylinder function modules

Cylinder function module 2-times single sided for 1 single acting cylinder S02 02-W-XXDG

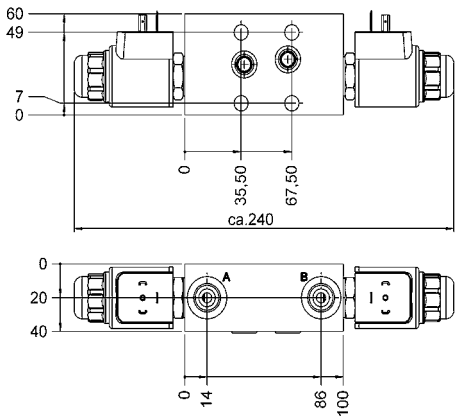


clamping width 40 mm

Mat. 3542074 12 Volt
Mat. 3542117 24 Volt



Pmax = 250 bar
Qmax = 19 l/min



The cylinder function module 2-times single realizes an on/off supply of single acting cylinders. Here two single acting cylinders may be controlled which have to be driven-in by manual force. The inlet and outlet boreholes (A and B) have to be switched-over in the pre-selection module. By using this module as end-module the ports A and B will be closed by plugs.

Technical Specifications:

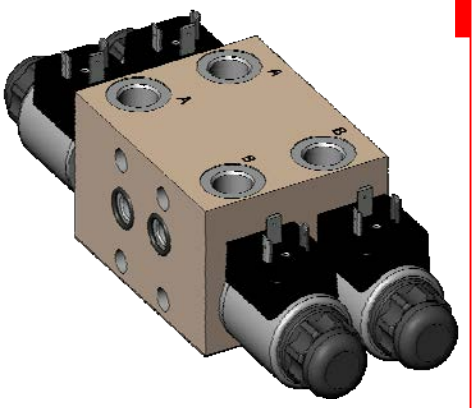
Operating pressure:	max. 250 bar
Flow rate:	max. 19 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves for choice:	- solenoid poppet valve WSM06020W-01M-C-V... (Broch. 5.949) (other symbols V, Z, ZR, Y, YR s. Model code)
Ports: A,B:	G 3/8”

Fixation:
4x Ø 9mm to flange-on at Pre-selection modules or other Cylinder function modules

HYDAC INTERNATIONAL

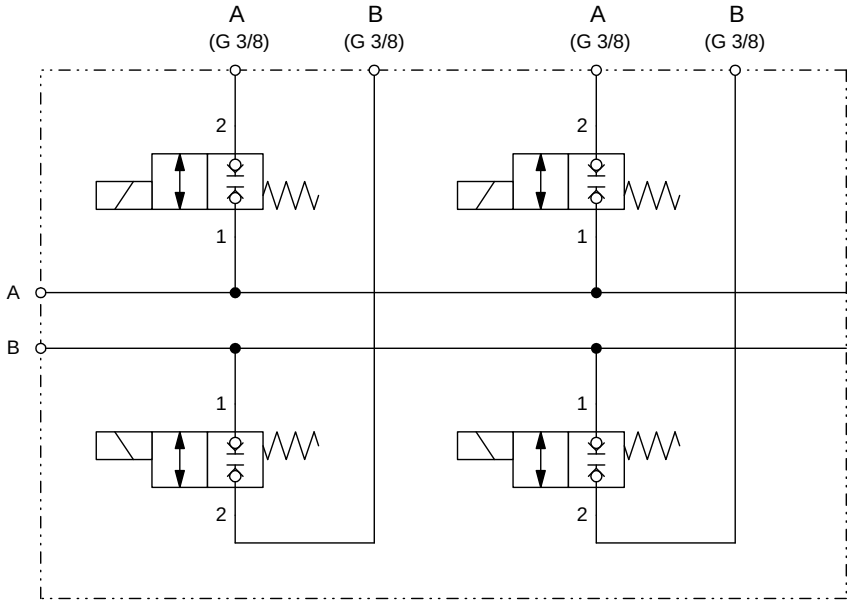
Cylinder function module 4-times

S04 04-W-XXDG

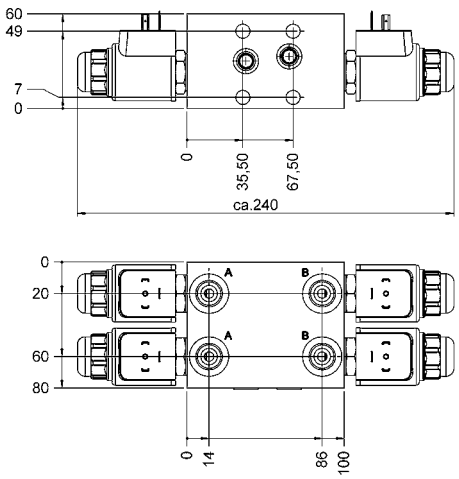


clamping width 80 mm

Mat. 3542147 12 Volt
Mat. 3542148 24 Volt



Pmax = 250 bar
Qmax = 19 l/min



The cylinder function module 4-times realizes an on/off supply of double acting cylinders. Here two double acting cylinders may be controlled which could be driven-in and out. By using this module as end-module the ports A and B will be closed by plugs.

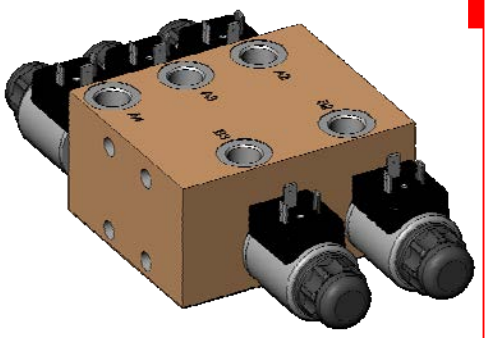
Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 19 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves for choice:	- solenoid poppet valve WSM06020W-01M-C-V... (Broch. 5.949) (other symbols V, Z, ZR, Y, YR s. Model code)
Ports: A,B:	G 3/8”

Fixation:
4x Ø 9mm to flange-on at Pre-selection modules or other Cylinder function modules

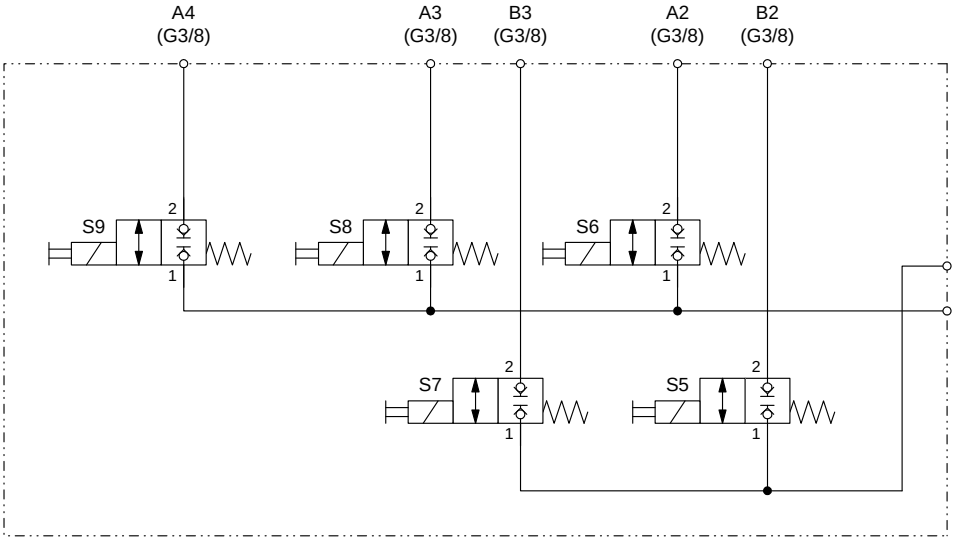
Cylinder function module 5-times

S05 05-W-XXDG

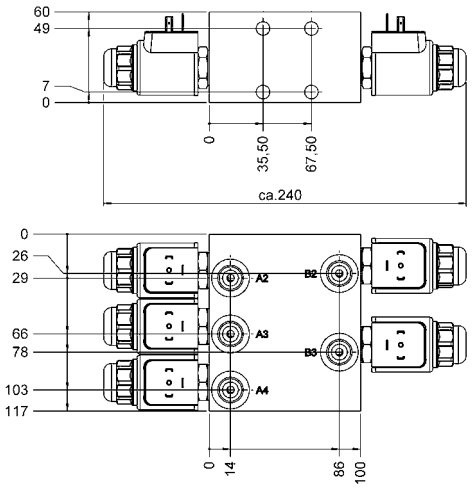


clamping width 117 mm

Mat. 3542153 12 Volt
Mat. 3542155 24 Volt



Pmax = 250 bar
Qmax = 19 l/min



The cylinder function module 5-times realizes an on/off supply of double acting cylinders. Here two double acting cylinders may be controlled which could be driven-in and out. By using this module as end-module the ports A and B will be closed by plugs.

Technical Specifications:

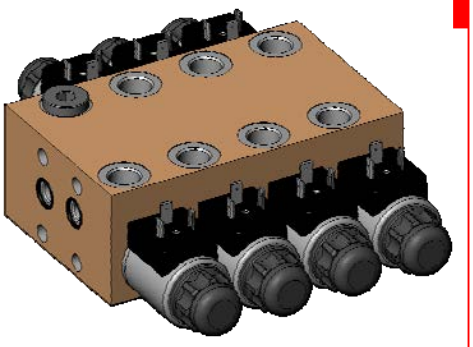
Operating pressure:	max. 250 bar
Flow rate:	max. 19 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves For choice:	- solenoid poppet valve WSM06020W-01M-C-V... (Broch. 5.949) (other symbols V, Z, ZR, Y, YR s. Model code)
Ports: A,B:	G 3/8”

Fixation:
4x Ø 9mm to flange-on at Pre-selection modules or other Cylinder function modules

HYDAC INTERNATIONAL

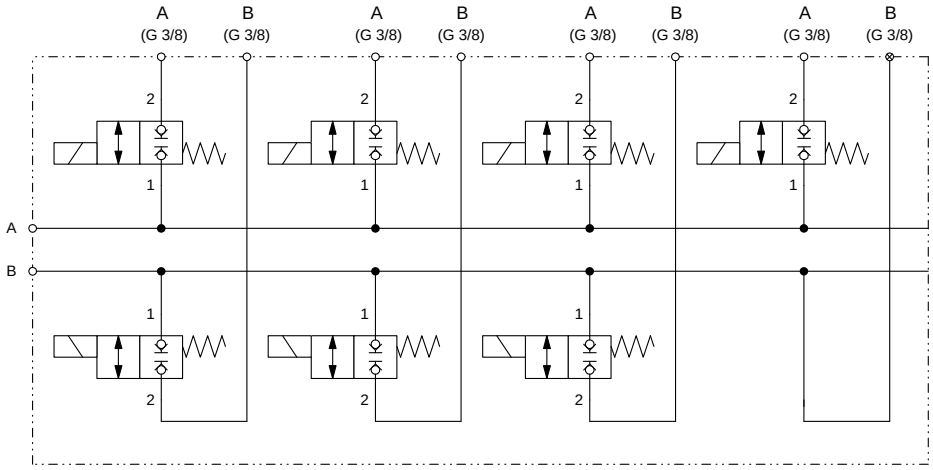
Cylinder function module 7-times

S08 07-W-XXDG

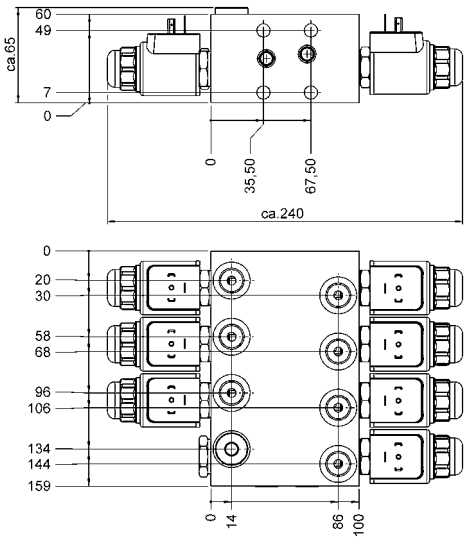


clamping width 159 mm

Mat. 3542153 12 Volt
Mat. 3542155 24 Volt



Pmax = 250 bar
Qmax = 19 l/min



The cylinder function module 7-times realizes an on/off supply of double acting cylinders. Here three double acting cylinders and one single acting cylinder may be controlled. The free cavity could also be equipped with a directional valve. By using this module as end-module the ports A and B will be closed by plugs.

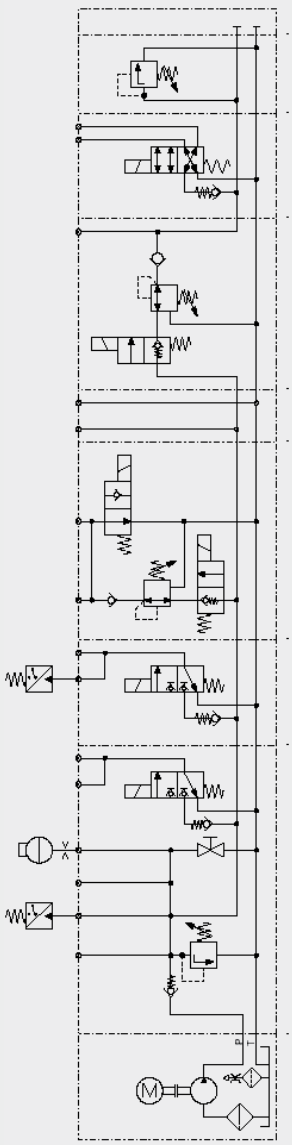
Technical Specifications:

Operating pressure:	max. 250 bar
Flow rate:	max. 19 l/min
Temp. range of the operating fluid:	-20°C up to +100°C
Ambient temperature range:	-20°C up to + 60°C
Filtration:	Class 21/19/16 according to ISO 4406
Basic equipment valves for choice:	- solenoid poppet valve WSM06020W-01M-C-V... (Broch. 5.949) (other symbols V, Z, ZR, Y, YR s. Model code)
Ports: A, B:	G 3/8”

Fixation:
4x Ø 9mm to flange-on at Pre-selection modules or other Cylinder function modules

HYDAC INTERNATIONAL

HYDAC
Valve Stacking System
ML



Individually extendable stacking system with integrated mounting and sealing elements.

P_{max} = 350 bar
Q_{max} = 20 l/min

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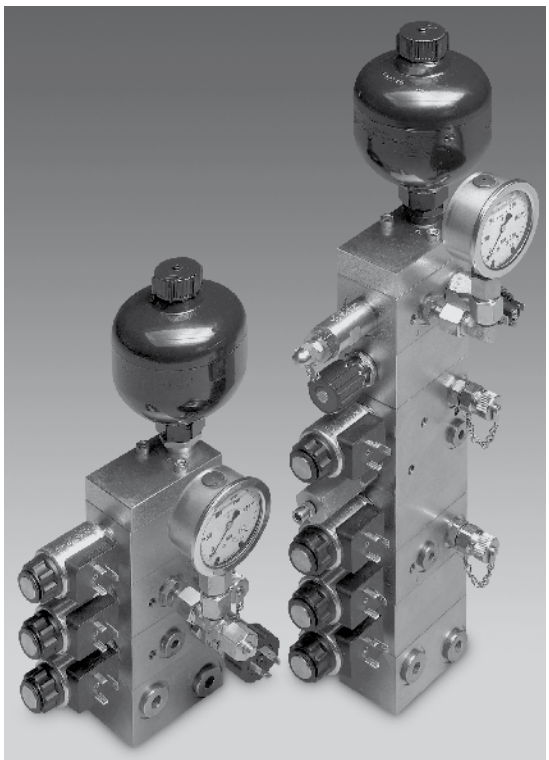


1. GENERAL

1.1 DESCRIPTION

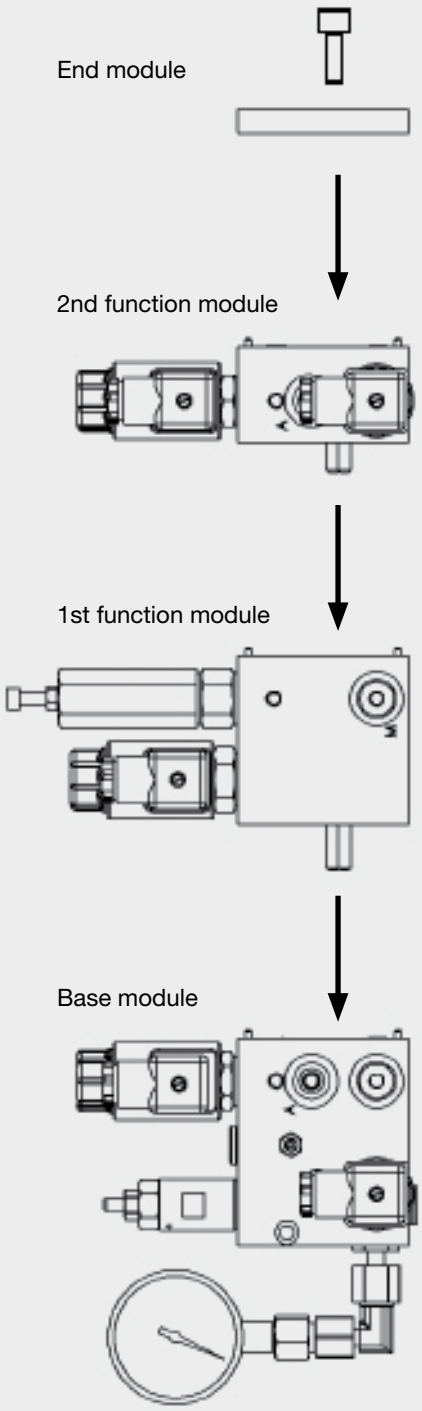
The HYDAC valve stacking system type ML is a control block composed of individual standard modules for hydraulic systems.
This system is designed chiefly for controlling low-volume consumers and for pressure/force resistance tasks.

Different function modules can be flanged to the base module.
The sequence of modules depends on the control task, as does the fitting of pressure, flow control, shut-off and directional valves. Additional modules such as pressure switches, pressure gauges and accumulators can also be incorporated.
An end module completes the block.

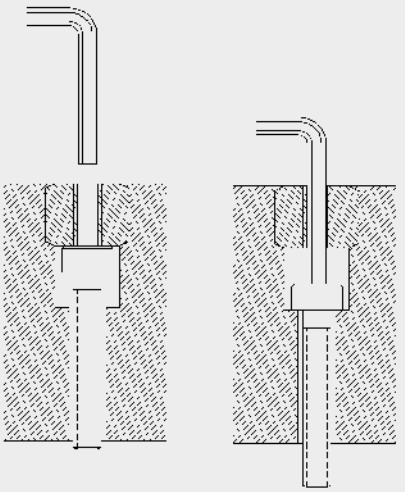
The ML valve stacking system can be built onto HYDAC CA, CO1, DC1 and HP power units using different base modules.
Similarly, the valve stacking system can be built onto any hydraulic system by using a module for inline mounting.
The system offers individual possibilities for very simple expansion and exchange.

This modular system ensures:

- **A high level of flexibility for both designers and builders**
- **Individual solutions for control problems**
- **Small dimensions combined with high performance**
- **No leakage thanks to short, robust connections**
- **Valve stack can be extended at a later date by adding modules**
- **Cost-effective control due to volume production**



Bolt connection
Module to module



1.2 FUNCTION

Oil is supplied to the valves in the modules through the pressure and return line in the centre of all modules. It is possible to separate the functions of consumers which are arranged in parallel by using check valves and special modules. Built-on pressure switches enable simple control of the pump and pressure monitoring, also on the consumer.

Leakage-free directional poppet valves provide secure positioning of the consumer and maintain pressures over a longer time without repeated oil supply. Through the use of appropriate modules, the pressure in the central pressure line can also be shut-off or altered.

1.3 APPLICATIONS

In conjunction with power units, valve stacking systems type ML can be used as ready-to-install oil supply units. Particularly compact systems can be built in combination with HYDAC Fluidtechnik HP, CA, DC and CO power units.

Valve stacking systems are used mainly in the following areas:

- Hydraulic clamping systems
- Machine tool engineering
- Press manufacture
- Fixture construction
- Loaders and feeders
- Auxiliary drives
- Mobile hydraulics
- Customized and other applications ...

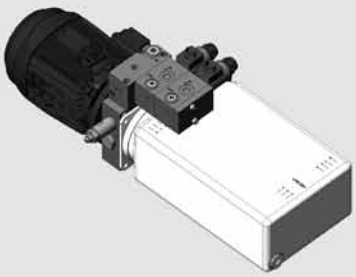
1.4 BASIC SETUP

Base module + Function modules + End module

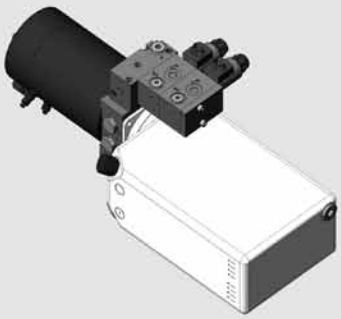
Technical benefits:

- Mounting bolts (captive) and sealing elements incorporated in the module
- Robust control stack possible through the use of short mounting bolts
- Easy to extend at a later date
- Housing and valves zinc-plated
- Compact design

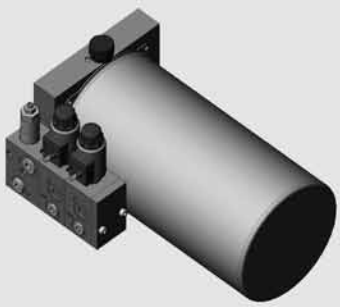
CO1



DC1



CA



HP

1.5 CONNECTION OF BASE MODULES TO POWER UNITS

This overview shows the HYDAC compact power units to which the ML valve stacking system can be mounted.
Depending on the power unit and base module selected, adapters may be required.
In Section 3.1 "BASE MODULES", the types of power unit possible and the adapters required are indicated for each base module.
Further technical information on the power units is given in the relevant brochures.

CO1 3-Phase Compact Power Unit up to 250 bar, up to 20 l/min
(For further technical information, see brochure on CO1, Brochure No. E 5.306)

DC1 DC Power Unit 12 V/24 V up to 250 bar, up to 18.4 l/min
(For further technical information, see brochure on DC1, Brochure No. E 5.307)

CA 3-Phase Compact Power Unit (oil-immersed motor) up to 250 bar, up to 20 l/min
(For further technical information, see brochure on CA, Brochure No. E 5.305)

HP High Pressure Power Unit up to 500 bar, up to 5.25 l/min
Important: When used in combination with ML, max. permitted pressure is 350 bar
(For further technical information, see brochure on HP, Brochure No. E 5.301)

1.6 MODEL CODE

ML + G24-Z4 + B1/20X + ML-GMS 210 CE + ML-BM + ML-ERZZ + ML-CR + ML-EM

- Valve stacking system ML
- Electrical voltage, see Section 4.1
- Adapter B1/20X, see Section 4.3 Accessories, or Brochure on CO1, No.: E 5.306
- Base module
- 1st function module
- 2nd function module
- 3rd function module
- End module

2. TECHNICAL SPECIFICATIONS

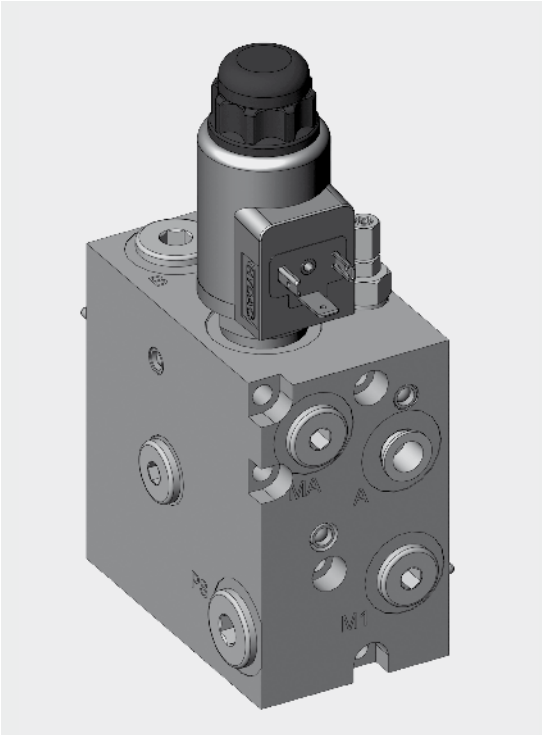
Design:	Valve stacking system
Type of mounting:	M6 hexagon bolt (when stack is approx. 500 mm or above in length, use mounting plate for additional support)
Dimensions:	For dimensions and weight, see individual modules
Ambient temperature range:	min. –20 °C to max. +40 °C
Installation:	No orientation restrictions
Direction of flow:	According to symbol, only permitted in direction of arrow.

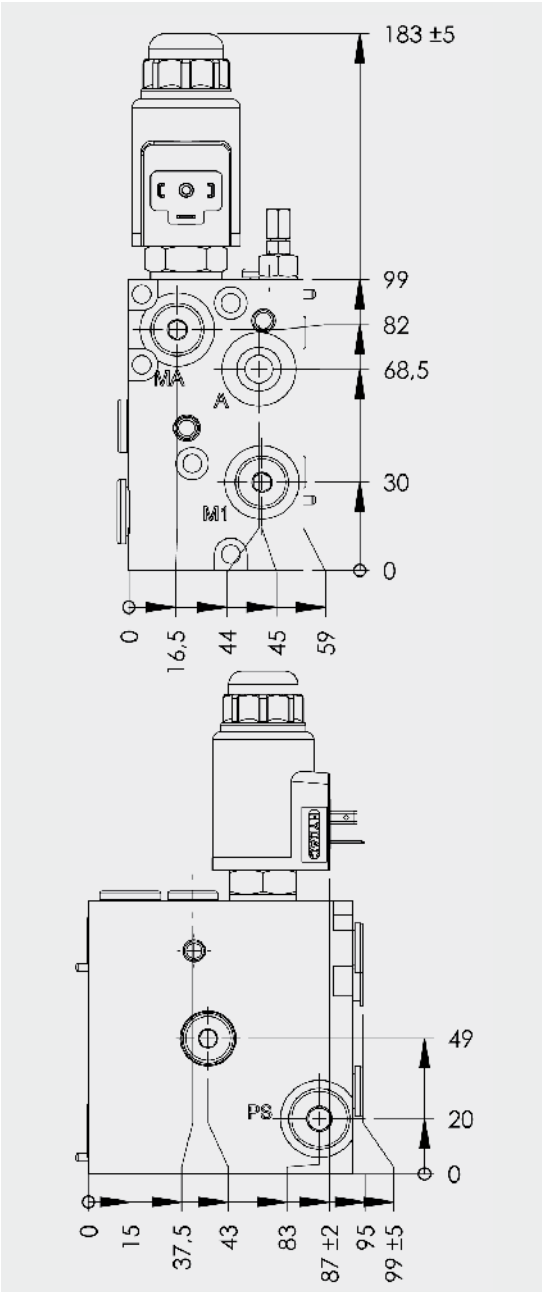
Hydraulic specifications

Nominal pressure:	PN = 350 bar Q_{max} = 12 l/min for consumer port G¼”
Flow rate:	Q_{max} = 20 l/min for consumer ports G⅜” Pressure-related performance limits of the individual components must be taken into account!
Operating fluid:	Hydraulic oil to DIN 51 524, Part 1 and 2
Temperature range of operating fluid:	min. –20 °C to max. +80 °C
Viscosity range:	Min. 10 mm²/s to max. 380 mm²/s
Filtration:	Min. cleanliness level of the operating fluid: ISO 4406 – class 21/19/16 or cleaner We therefore recommend a filter with a minimum retention rate of β20 ≥ 100 (The fitting of filters and regular replacement of filter elements guarantees correct function, reduces wear and tear and extends the service life)

Electrical details

Type of actuation:	Solenoid-operated by means of pressure-tight wet-pin single-stroke solenoids to VDE 0580
Coil voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil
Nominal voltage UN:	24 V DC or 230 V AC, other voltages on request
Voltage tolerance:	+/- 15%
Power consumption:	p20 = 18 – 26 W
Duty:	100 % = continuous
Protection class:	Protection class IP 65 to DIN 40050 (if fitted correctly)
Switching frequency:	3,600 per hour





All dimensions are subject to technical modifications.

3. MODULES

3.1 BASE MODULES

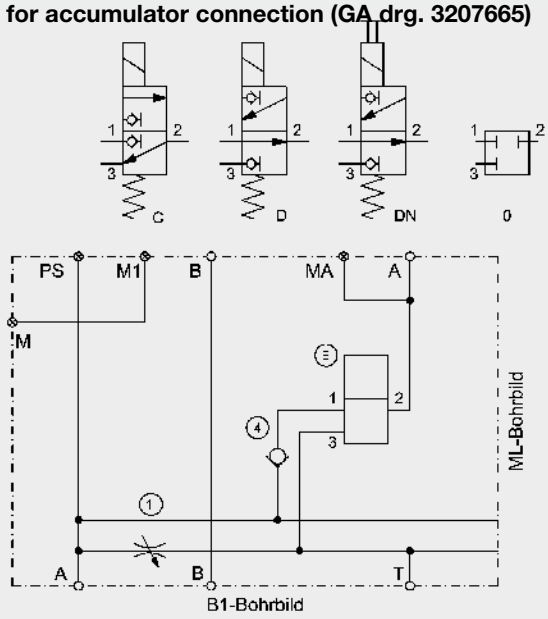
3.1.1 Base module with interface B1

CO1 Suitable for CO1 power unit without adapter

DC1 Suitable for DC1 power unit without adapter

B1 / GML Base module

for accumulator connection (GA drg. 3207665)



Base module for mounting an accumulator with manually-operated pressure release and a 3/2 directional poppet valve to control, for example, a single-acting cylinder.
Protection via a pressure relief valve (CE) required separately.
May be extended using ML function modules or end modules.

P_{max}	250 bar
Q_{max}	12 l/min
Interface	B1 / ML
Weight	approx. 4.4 kg
Ports	A, MA, M1 = G1/4'' B, PS = 3/8''

Model code

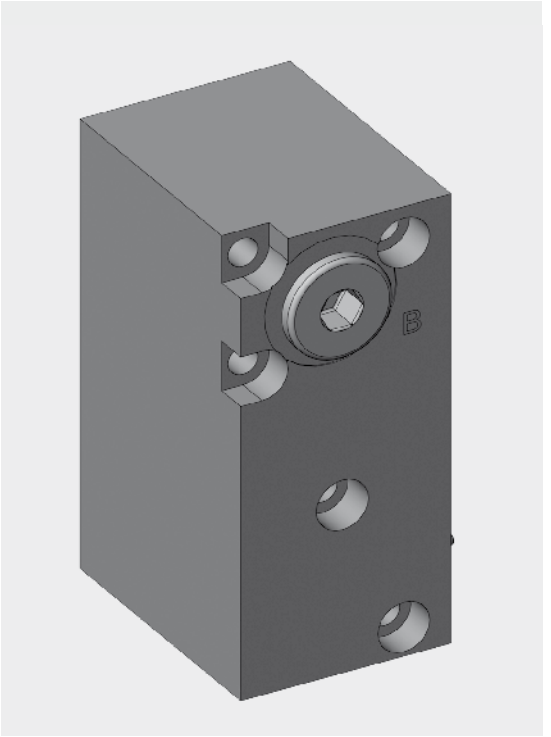
③ ④
B1 / GML – C R – XXX

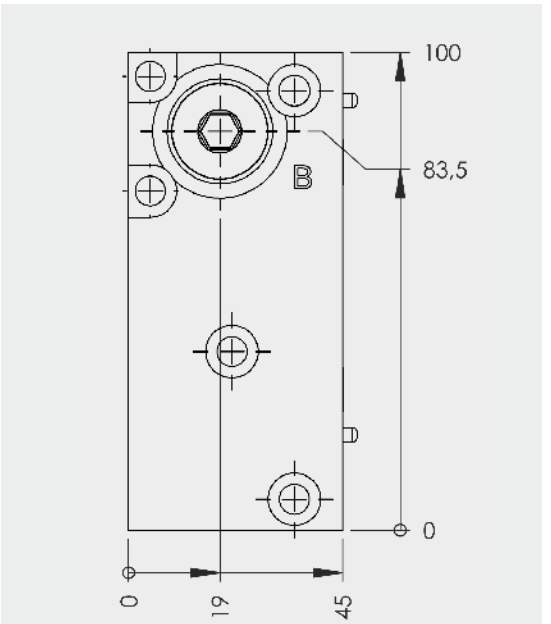
Basic model
B1/GML = Base module

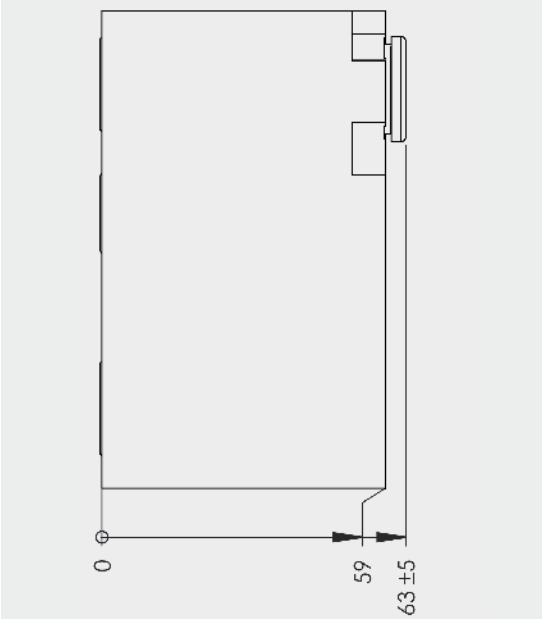
Directional valves
C = WSM08130C
D = WSM08130D
DN = WSM08130D-01M with manual override
0 = with blanking plug instead of directional valve

Check valve
no details = without check valve
R = check valve

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, accumulator, etc. (supplied loose) see Section 4
without details = no accessories







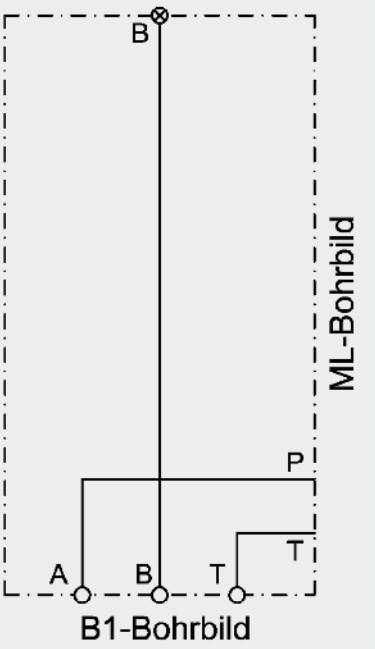
All dimensions are subject to technical modifications.

3.1.1 Base module with interface B1

CO1 Suitable for CO1 power unit without adapter

DC1 Suitable for DC1 power unit without adapter

B1 / ML Base module without valve (GA drg. 3243460)



Base module without additional functionality for extending, with ML function modules.
May also be extended using end modules.

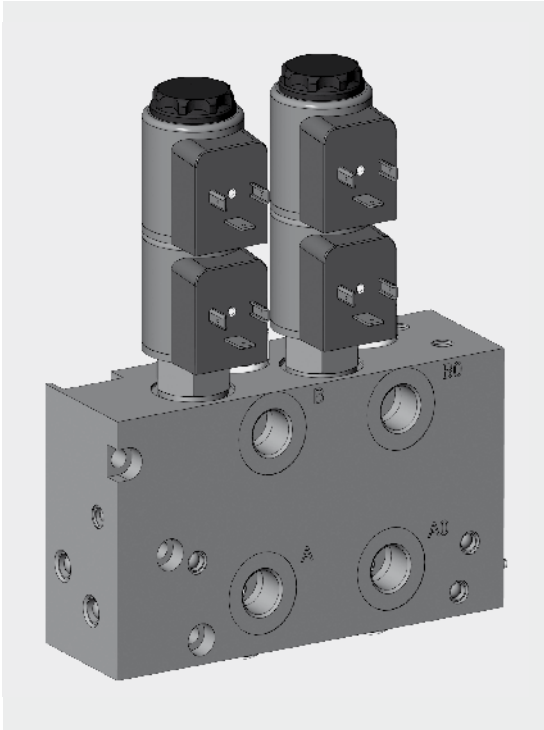
P_{max}	250 bar
Q_{max}	20 l/min
Interface	B1 / ML
Weight	approx. 2.0 kg
Ports	B = G⅜''

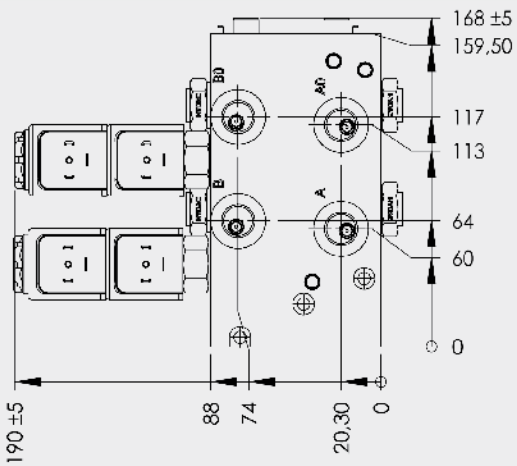
Model code

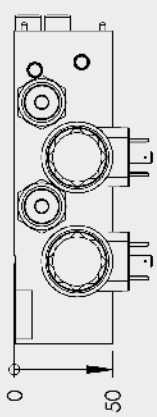
B1 / ML – XXX

Basic model
B1/ML = Base module

Accessories
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
without details = no accessories







All dimensions are subject to technical modifications.

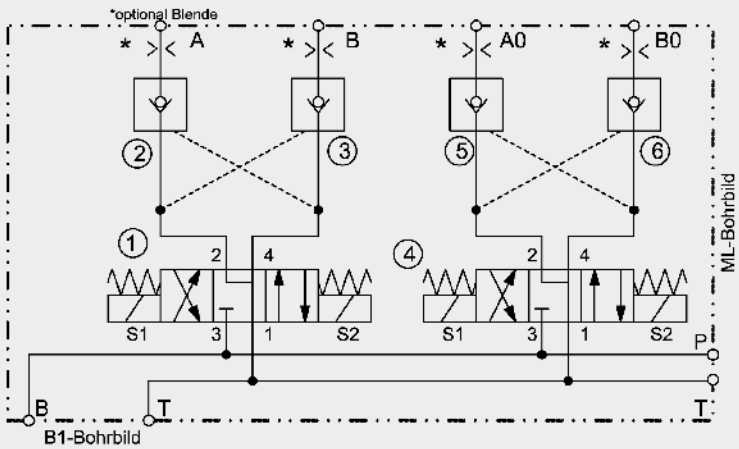
3.1.1 Base module with interface B1

CO1 Suitable for CO1 power unit without adapter

DC1 Suitable for DC1 power unit without adapter

B1 / ML 2xSC Base module

with two 4/3 Directional spool valves (GA drg. 3398242)



Base module to actuate two double-acting cylinders
with pilot-operated non-return function.
An orifice for determining the travel speed is possible.
May be extended using ML function modules or end modules.

P_{max}	250 bar	
Q_{max}	20 l/min	
Control ratio 2.8:1		
Interface	B1 / ML	
Weight	approx. 6 kg	
Ports	A, B, A0, B0 = G⅜''	
$\Delta p/Q_{max}$	25 bar P → A0	17 bar B → T
$\Delta p/Q_{max}$	27 bar P → B0	18 bar B0 → T

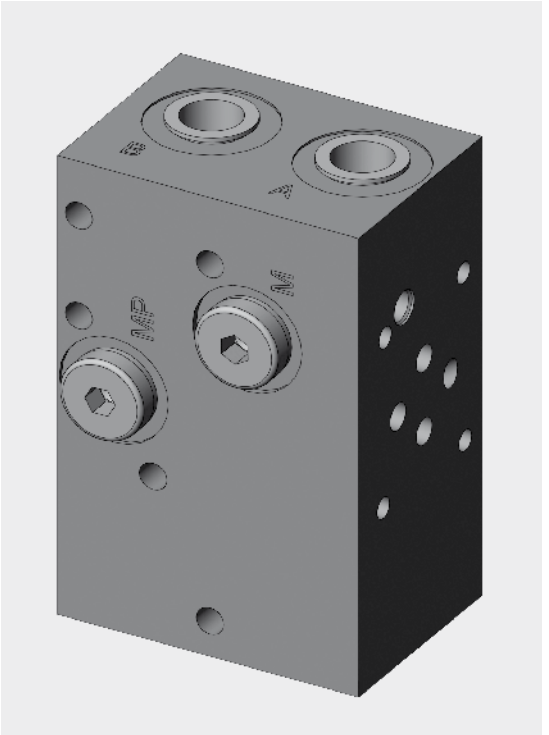
Model code

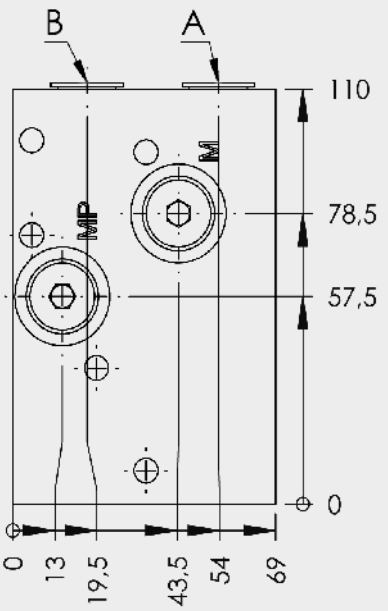
B1 / ML-2xSC – B0.6 – XXX

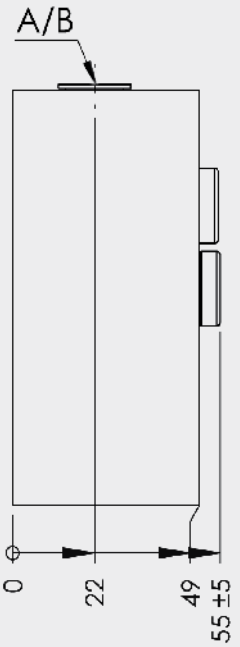
Basic model
B1/ML-2xSC = Base module

Orifice
no details = without orifices
B0.6 = orifices in A, A0 and B, B0
(available in sizes from 0.6 to 4.0)

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc.
(supplied loose) see Section 4
no details = without accessories







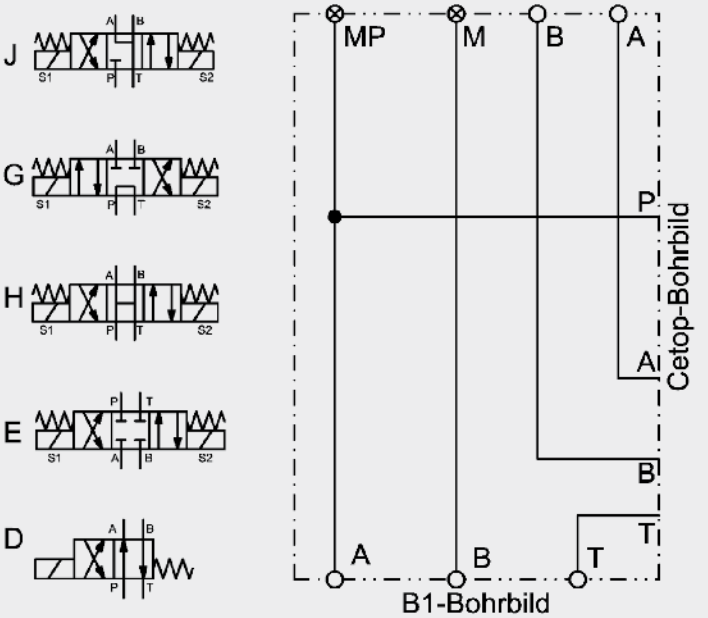
All dimensions are subject to technical modifications.

3.1.1 Base module with interface B1

CO1 Suitable for CO1 power unit without adapter

DC1 Suitable for DC1 power unit without adapter

B1/ A6 Base module for a directional spool valve with DIN interface (GA drg. 3191873)



Base module for mounting a spool valve with DIN interface
to actuate a double-acting cylinder.
May be extended using extension module 3A6 with DIN interface.

P_{max}	250 bar
Q_{max}	20 l/min
Interface	B1 / ML
Weight	approx. 2.8 kg
Ports	M, MP = G¼" A, B = G⅜"

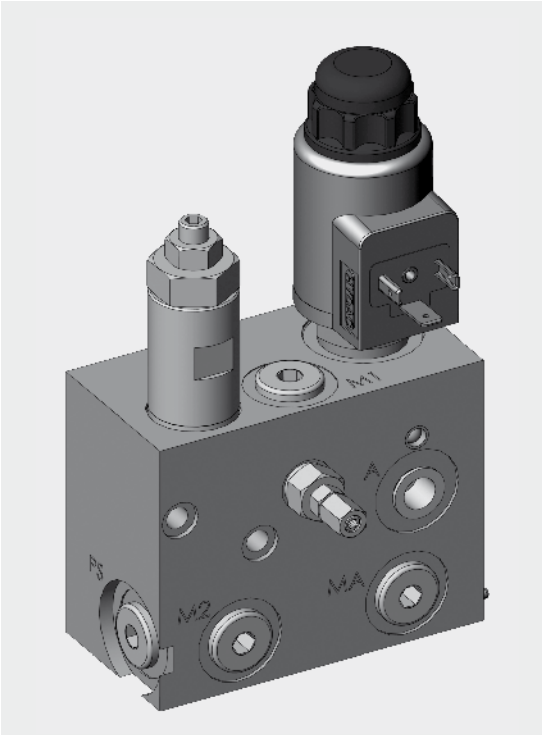
Model code

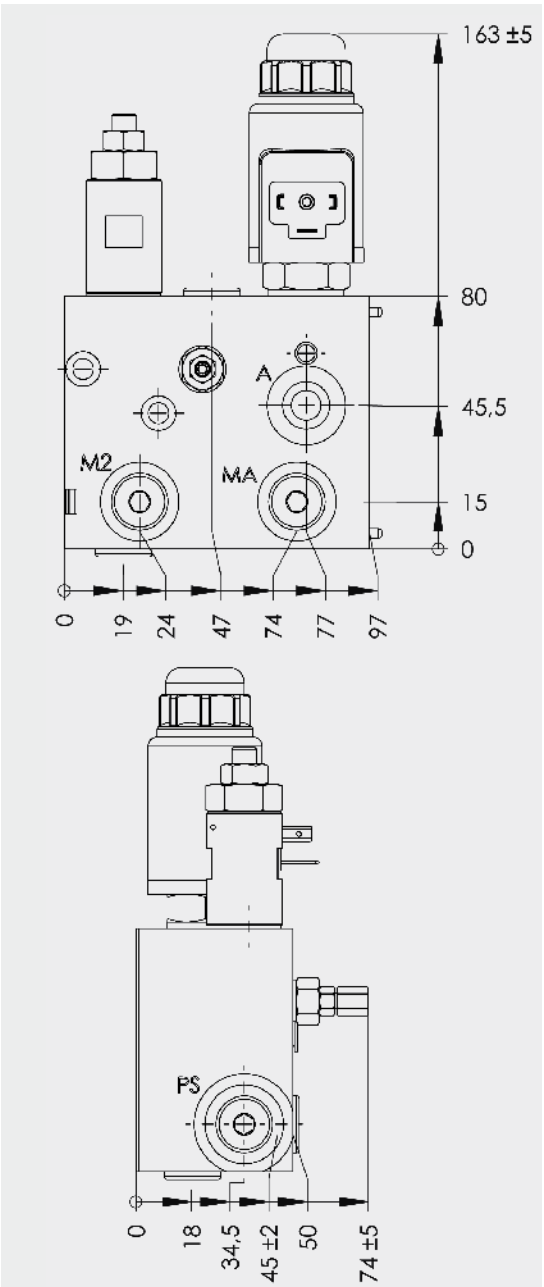
B1 / A6 – J – XXX

Basic model
B1/A6 (adapter plate with interface A6)

Design of spool valve
J = Spool valve symbol J
(D, J, G, H, E symbols available)
no details = without spool valve

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc.
(supplied loose) see Section 4
no details = without accessories





All dimensions are subject to technical modifications.

3.1.2 Base modules with interface 20X

CO1 Suitable for CO1 power unit with adapter block B1 / 20X (GA drg. 3243461)

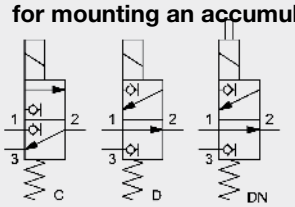
DC1 Suitable for DC1 power unit with adapter block B1 / 20X (GA drg. 3243461)

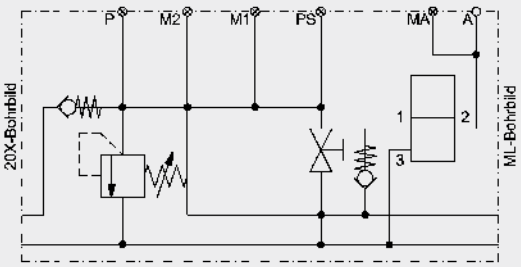
CA Suitable for CA power unit without adapter

HP Suitable for HP power unit with sandwich plate HP 9.5 mm (Part No. 3114749)

ML Base module

for mounting an accumulator (GA drg. 3090671)





Base module for mounting an accumulator protected by a pressure relief valve (CE), with manually-operated pressure release and a 3/2 directional poppet valve to control, for example, a single-acting cylinder.
May be extended using ML function modules or end modules.

P_{max}	350 bar
Q_{max}	12 l/min
Interface	20X / ML
Weight	approx. 4.4 kg
Ports	A, M1, M2, MA, P, PS = G¼''
$\Delta p/Q_{max}$	15 bar P → A

Model code

ML – 210CE – C R – XXX

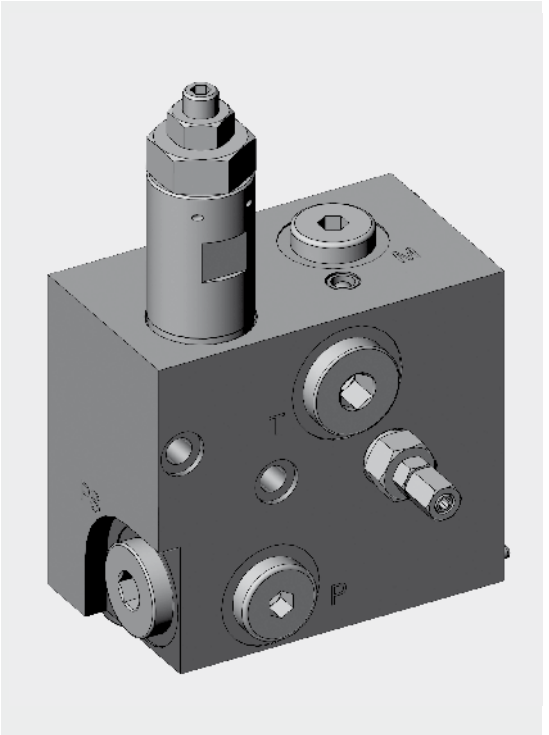
Basic model
ML = Base module

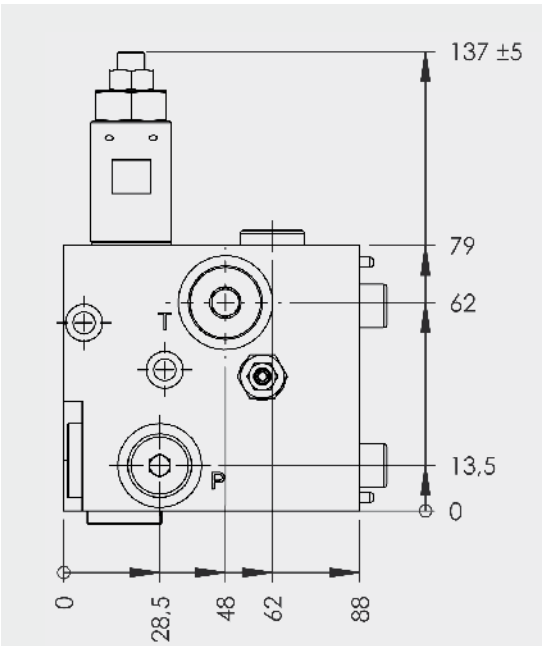
Pressure relief valve
Setting range:
100 V = 100 bar (adjustable)
250 V = 250 bar (adjustable)
350 V = 350 bar (adjustable)
210 CE = 210 bar with CE mark

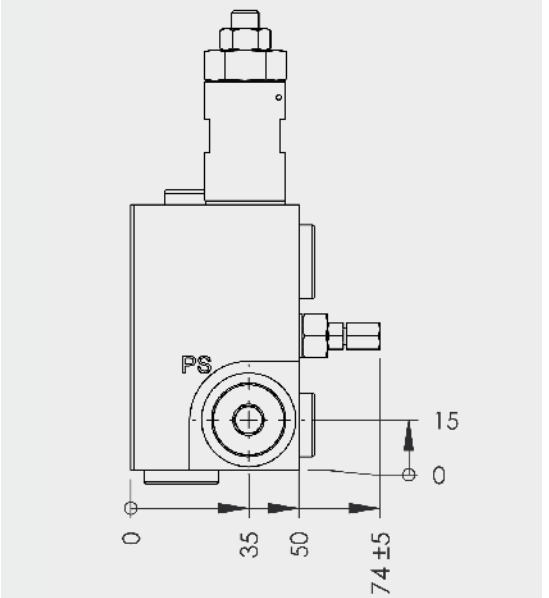
Directional valves
C = WSM08130C
D = WSM08130D
DN = WSM08130D-01M with manual override
0 = with blanking plug instead of directional valve

Check valve
no details = without check valve
R = check valve

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories







All dimensions are subject to technical modifications.

3.1.2 Base modules with interface 20X

CO1 Suitable for CO1 power unit with adapter block B1 / 20X (GA drg. 3243461)

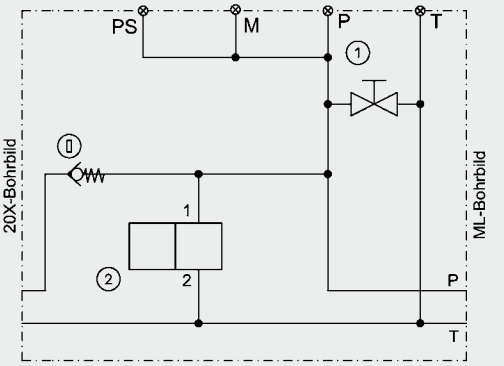
DC1 Suitable for DC1 power unit with adapter block B1 / 20X (GA drg. 3243461)

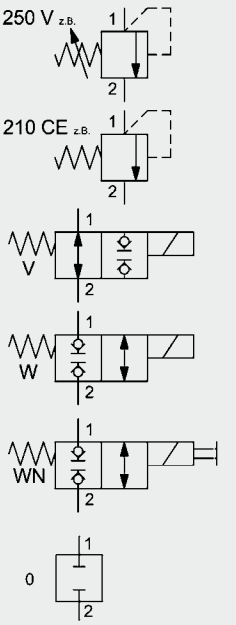
CA Suitable for CA power unit without adapter

HP Suitable for HP power unit with sandwich plate HP 9.5 mm (Part No. 3114749)

ML-GMS Base module

for mounting an accumulator (GA drg. 3227906)





Base module for mounting an accumulator protected by a pressure relief valve (CE), with manually-operated pressure release valve.

May be extended using ML function modules or end modules.

P_{max}	350 bar		
Q_{max}	12 l/min		
Interface	20X / ML		
Weight	approx. 2.8 kg		
Ports	P, M = G¼''	T, PS = G⅜''	
$\Delta p/Q_{max}$	2 bar T1 → T	6 bar P → PS	6 bar P → P1

Model code

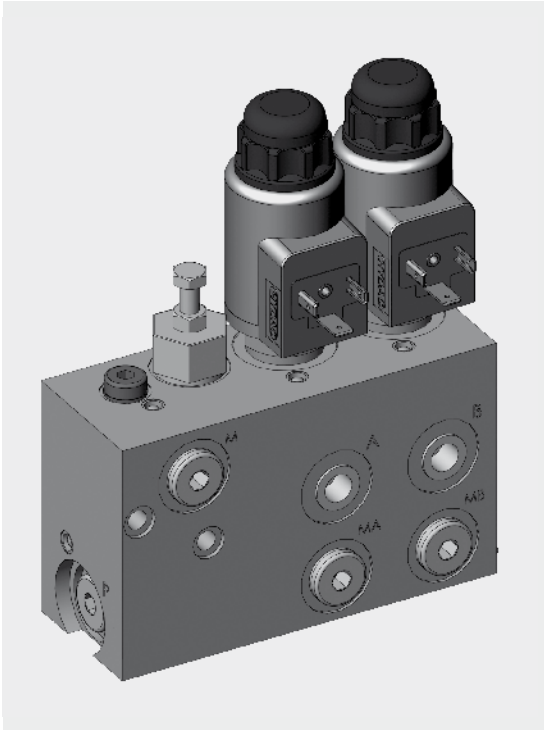
② **ML-GMS – 210CE – XXX**

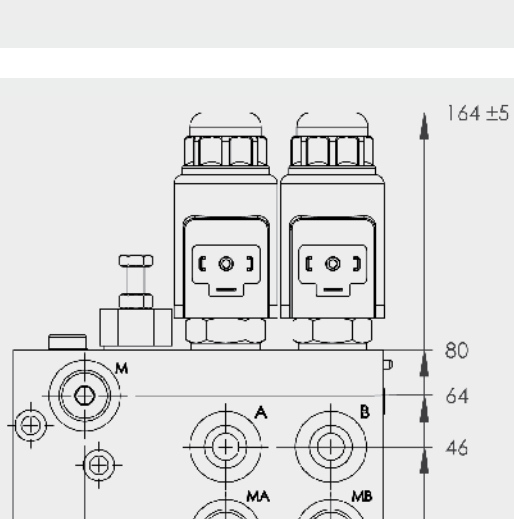
Basic model
ML-GMS = Base module

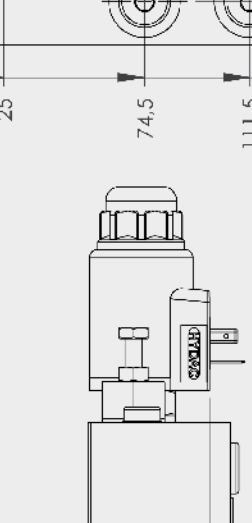
Pressure relief valve or directional valve

100 V	= 100 bar (adjustable)
250 V	= 250 bar (adjustable)
350 V	= 350 bar (adjustable)
210 CE	= 210 bar CE pressure relief valve
V	= WSM06020V
W	= WSM06020W
WN	= WSM06020W-01M with manual override
0	= with blanking plug instead of valve

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories







All dimensions are subject to technical modifications.

3.1.2 Base modules with interface 20X

CO1 Suitable for CO1 power unit with adapter block B1 / 20X (GA drg. 3243461)

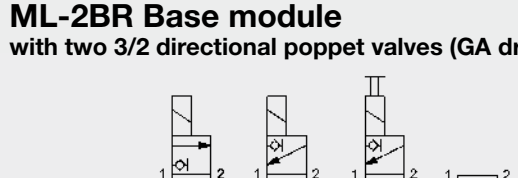
DC1 Suitable for DC1 power unit with adapter block B1 / 20X (GA drg. 3243461)

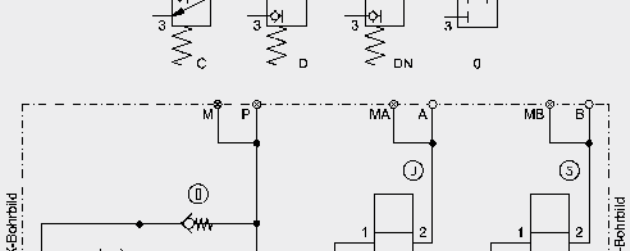
CA Suitable for CA power unit without adapter

HP Suitable for HP power unit with sandwich plate HP 9.5 mm (Part No. 3114749)

ML-2BR Base module

with two 3/2 directional poppet valves (GA drg. 3088420)





Base module with pressure relief valve and check valve.
With two 3/2 directional poppet valves to control, for example, two single-acting clamping cylinders.
May be extended using ML function modules or end modules.

P_{max}	350 bar
Q_{max}	12 l/min
Interface	20X / ML
Weight	approx. 3.5 kg
Ports	A, B, M, P, MA, MB = G¼"

Model code

② ③④ ⑤⑥

ML-2BR – 250V – C R C R – XXX

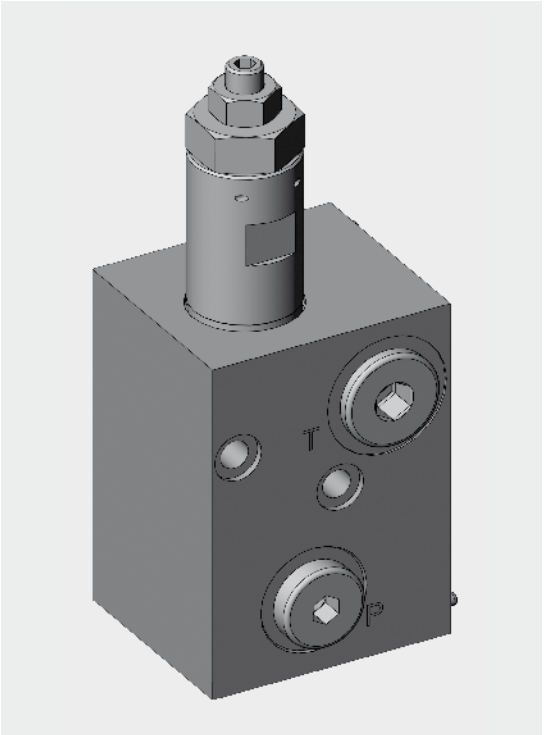
Basic model
ML-2BR = Base module

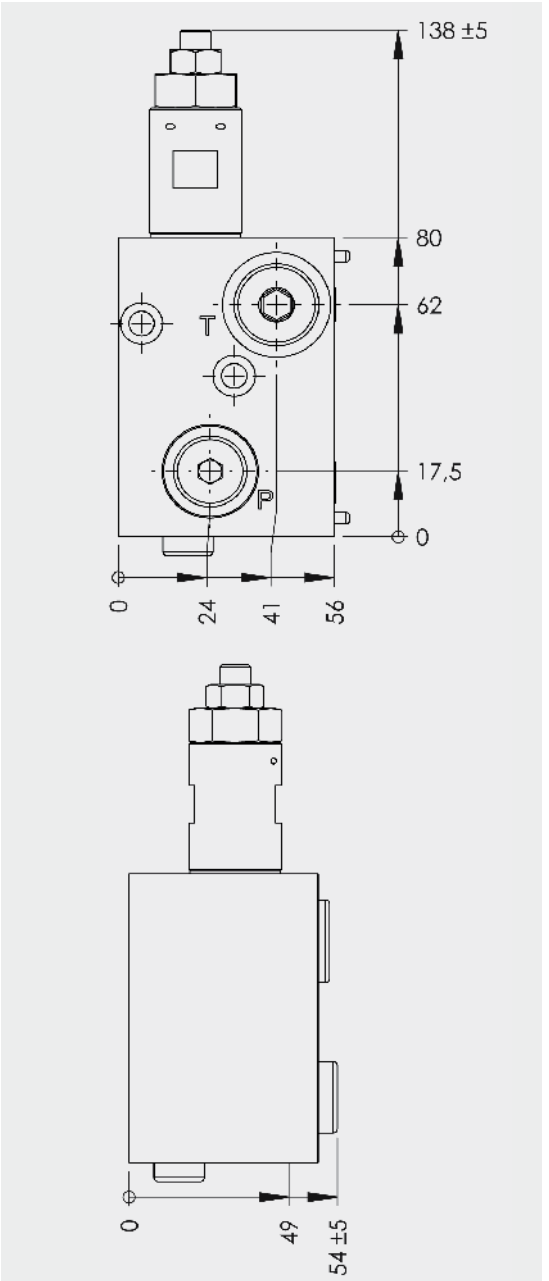
Pressure relief valve
Setting range: 100 V = 100 bar (adjustable)
250 V = 250 bar (adjustable)
350 V = 350 bar (adjustable)

Directional valves
C = WSM08130C
D = WSM08130D
DN = WSM08130D-01M with manual override
0 = with blanking plug instead of directional valve

Check valve
no details = without check valve
R = check valve

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories





All dimensions are subject to technical modifications.

3.1.2 Base modules with interface 20X

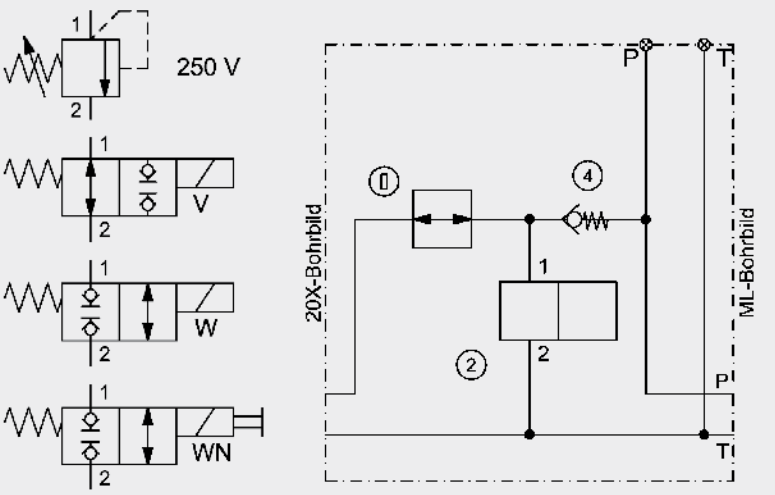
CO1 Suitable for CO1 power unit with adapter block B1 / 20X (GA drg. 3243461)

DC1 Suitable for DC1 power unit with adapter block B1 / 20X (GA drg. 3243461)

CA Suitable for CA power unit without adapter

HP Suitable for HP power unit with sandwich plate HP 9.5 mm (Part No. 3114749)

ML-2RV Base module with check valve
2 positions selectable (GA drg. 3126482)



Base module for pressure relief where the position of the check valve can be selected (before or after the pressure relief valve).
May be extended using ML function modules or end modules.

P_{max}	350 bar
Q_{max}	12 l/min
Interface	20X / ML
Weight	approx. 1.8 kg
Ports	P = G¼'' T = G⅜''

Model code

ML-2RV R 100V – R – XXX

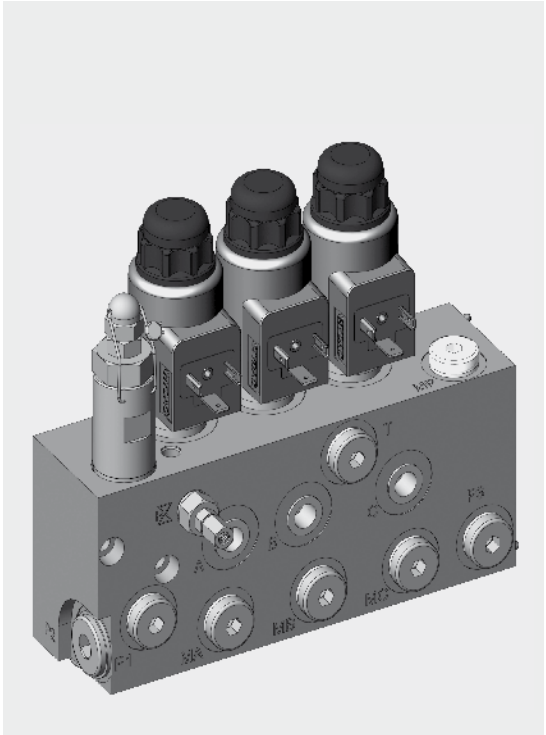
Basic model
ML-2RV = Base module with two positions for RV check valve

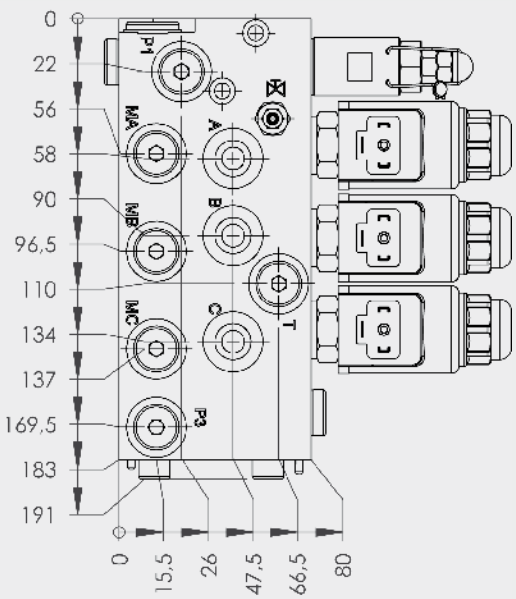
Check valve
no details =without check valve
R =check valve

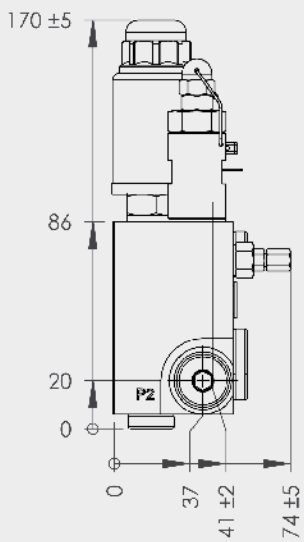
Pressure relief valve or directional valve
100 V = 100 bar (adjustable)
250 V = 250 bar (adjustable)
350 V = 350 bar (adjustable)
210 CE = 210 bar CE pressure relief valve
V = WSM06020V
W = WSM06020W
WN = WSM06020W-01M with manual override
0 = with blanking plug instead of valve

Check valve
no details = without check valve
R = check valve

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories







All dimensions are subject to technical modifications.

3.1.2 Base modules with interface 20X

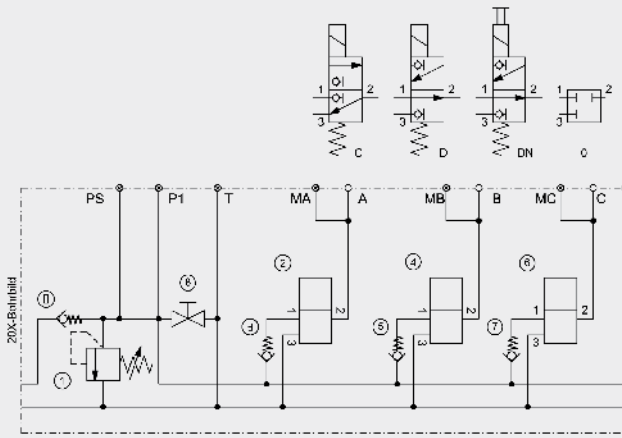
CO1 Suitable for CO1 power unit with adapter block B1 / 20X (GA drg. 3243461)

DC1 Suitable for DC1 power unit with adapter block B1 / 20X (GA drg. 3243461)

CA Suitable for CA power unit without adapter

HP Suitable for HP power unit with sandwich plate HP 9.5 mm (Part No. 3114749)

Flexi-ML Base module with three 3/2 directional valves and accumulator port (GA drg. 3304515)



Base module for mounting an accumulator protected by a pressure relief valve (CE), with manually-operated pressure release valve.
With up to three 3/2 directional poppet valves to control, for example, three single-acting cylinders.
May be extended using ML function modules or end modules.

P_{max}	250 bar
Q_{max}	12 l/min
Interface	20X / ML
Weight	approx. 6.4 kg
Ports	A, MA, B, MB, C, MC, P1, T, MP P3 = G¼" P2 = G⅜"

Model code

⓪ ① ②③ ④⑤ ⑥⑦

Flexi-ML – R / 210CE C R C R C R XXX

Basic model
Flexi-ML = Base module with 3x 3/2 directional valves

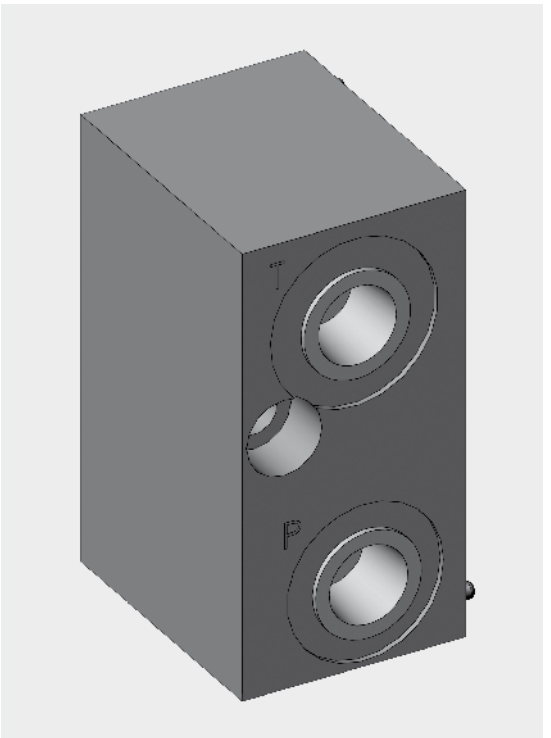
Check valve
no details = without check valve
R = check valve E-R¼

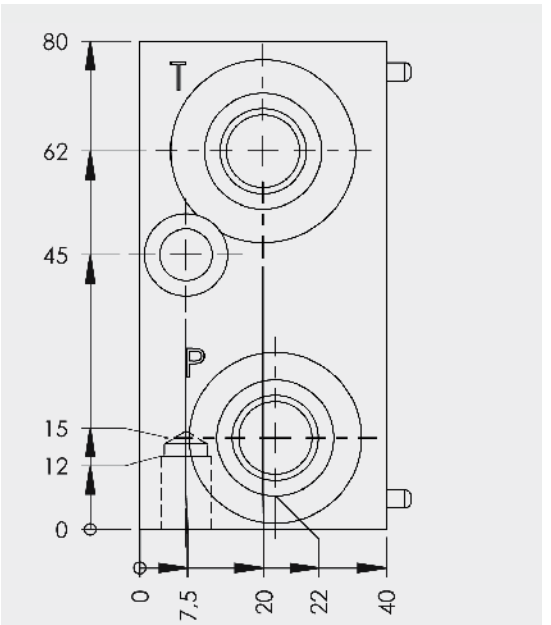
Pressure relief valve
Setting range: 100 V = 100 bar (adjustable)
250 V = 250 bar (adjustable)
350 V = 350 bar (adjustable)
210 CE = 210 bar with CE mark

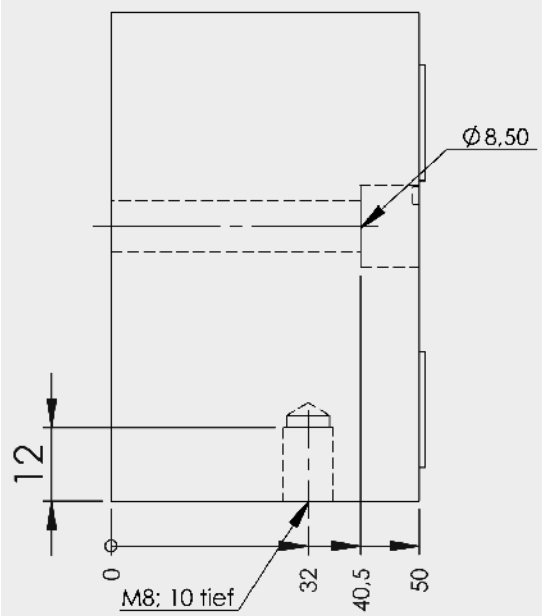
Directional valves
C = WSM08130C
D = WSM08130D
DN = WSM08130D-01M with manual override
0 = with blanking plug instead of valve

Check valve
no details = without check valve
R = check valve

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories





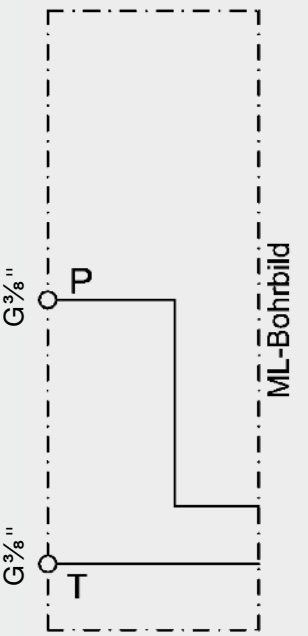


All dimensions are subject to technical modifications.

3.1.3 Base module for inline mounting G⅜”

ML Base module for inline mounting G⅜”
for further mounting of function modules

MRL Base module without valve connection port
(GA drg. 3090673)



Base module for mounting an ML valve stacking system separately.
Has G⅜” inline connection mounting.
May be extended using ML function modules or end modules.

P_{max}	350 bar
Q_{max}	20 l/min
Interface	G⅜'' / ML
Weight	approx. 1.2 kg
Ports	P, T = G⅜''

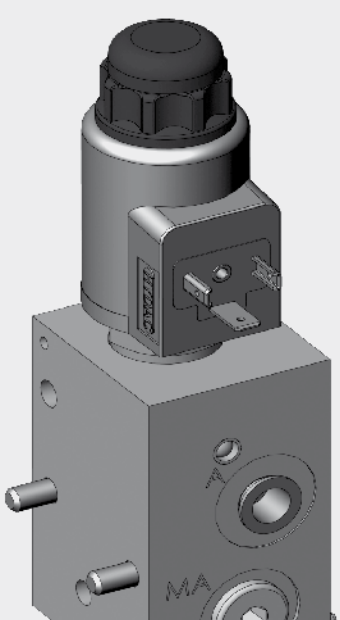
Model code

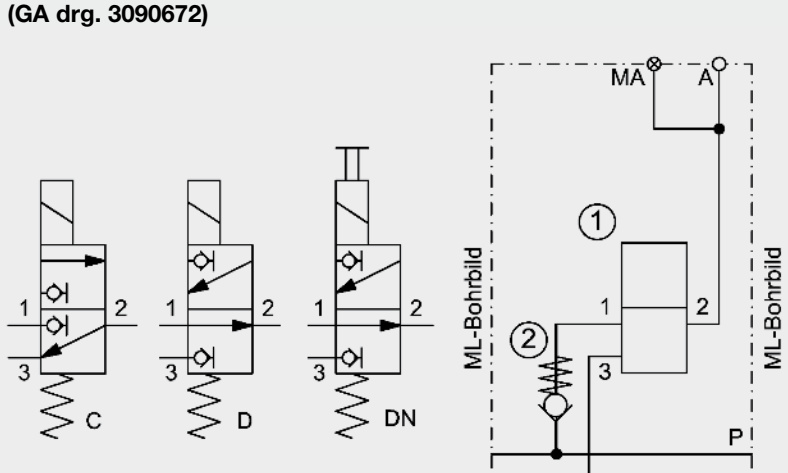
MRL

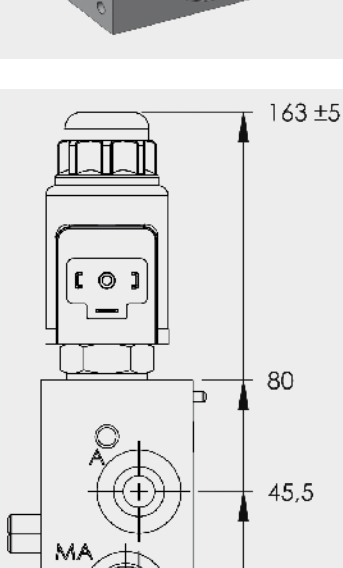
Basic model
MRL = Base module

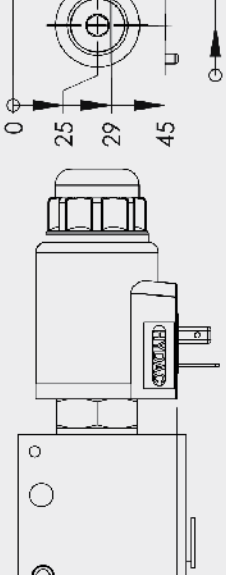
ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-C/D Function module with a 3/2 directional poppet valve (GA drg. 3090672)









All dimensions are subject to technical modifications.

Function module, for example, to control a single-acting cylinder.
May be extended using ML function modules or end modules.

P_{max}	350 bar
Q_{max}	12 l/min
Interface	ML / ML
Weight	approx. 1.6 kg
Ports	A, MA = G¼''
$\Delta p/Q_{max}$	15 bar P → A

Model code

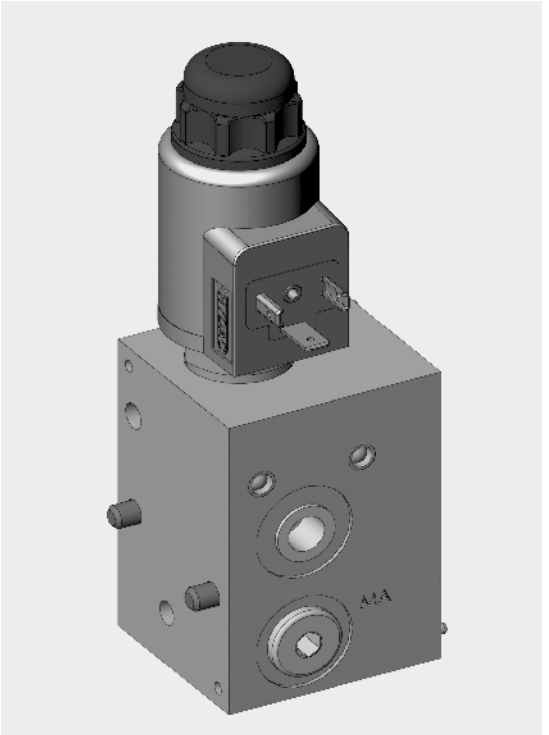
① ② **ML – C R – XXX**

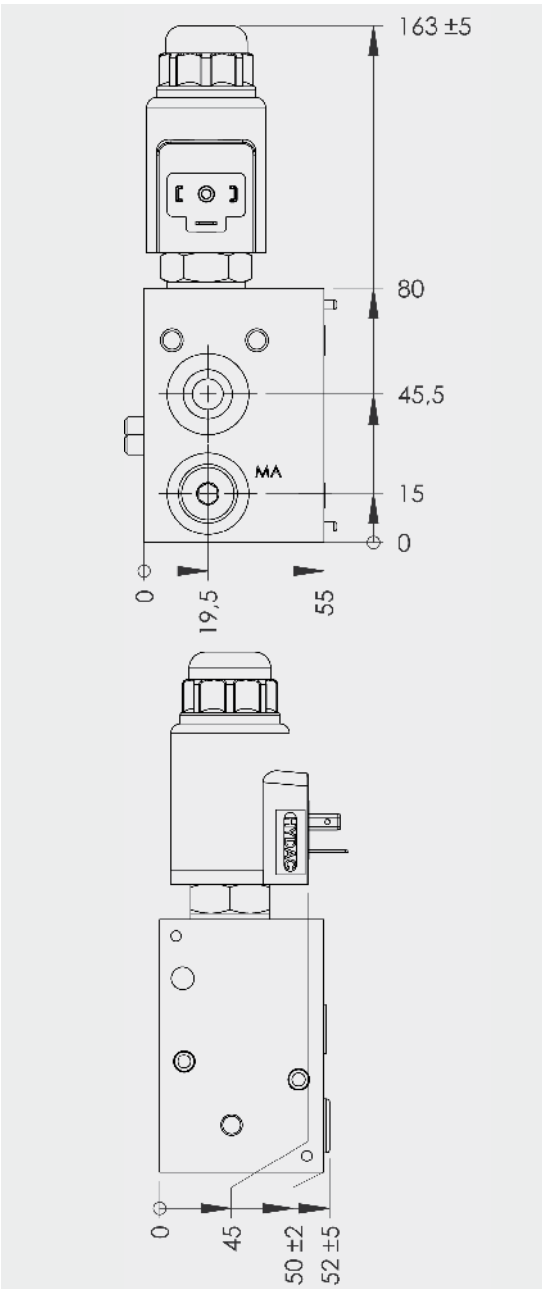
Basic model
ML-C/D

Directional valves
C = WSM08130C
D = WSM08130D
DN = WSM08130D-01M with manual override
0 = with blanking plug instead of valve

Check valve
no details = without check valve
R = check valve R¼

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories



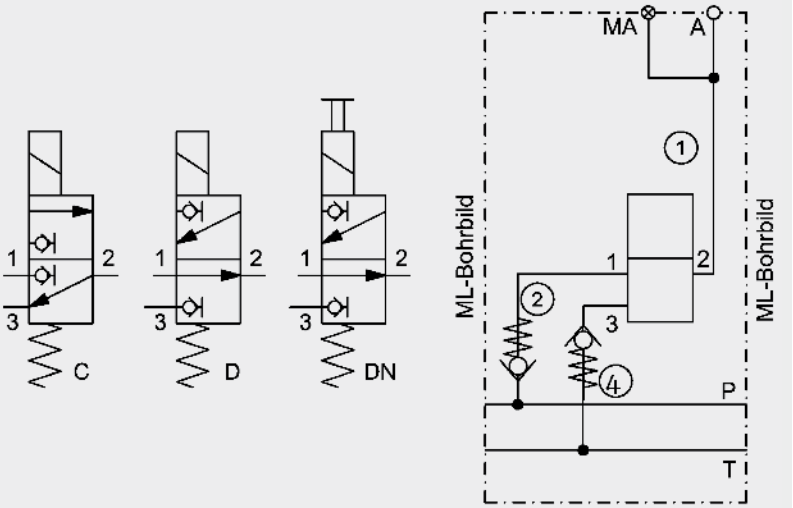


All dimensions are subject to technical modifications.

ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-CTR/DTR Function module

with a 3/2 directional poppet valve (GA drg. 3146872)



Function module, for example, to control a single-acting cylinder.
With check valve in the T-line.
This valve prevents draining of the consumer line and prevents back-pressures from reaching the consumer.
May be extended using additional ML function modules or an end module.

P_{max}	350 bar
Q_{max}	12 l/min
Interface	ML / ML
Weight	approx. 1.9 kg
Ports	A, MA = G¼''
$\Delta p/Q_{max}$	15 bar P → A

Model code

① ② ④
ML – C R TR – XXX

Basic model
ML-CTR/DTR

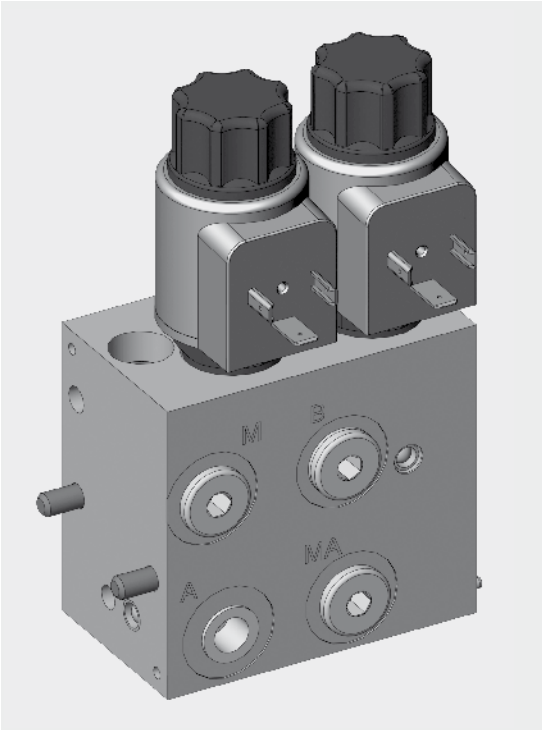
Directional valves

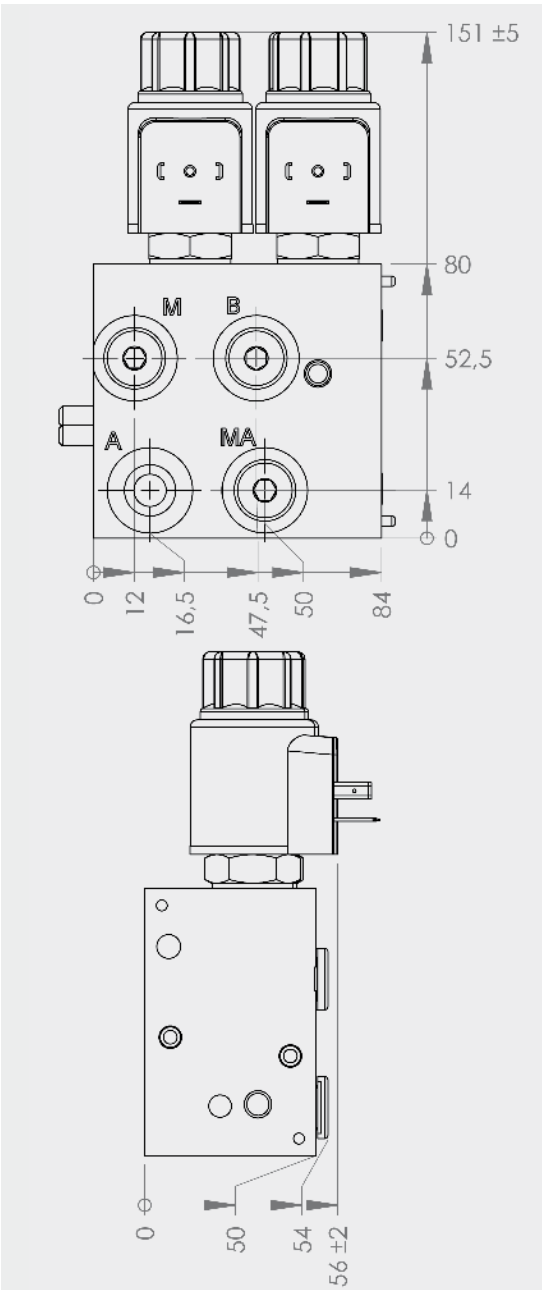
C	= WSM08130C
D	= WSM08130D
DN	= WSM08130D-01M with manual override
0	= with blanking plug instead of valve

Check valve

no details	= without check valve
R	= check valve
TR	= Pre-charge in return line (0.5 bar)

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories

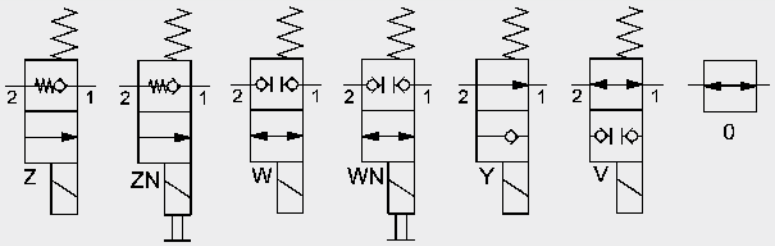


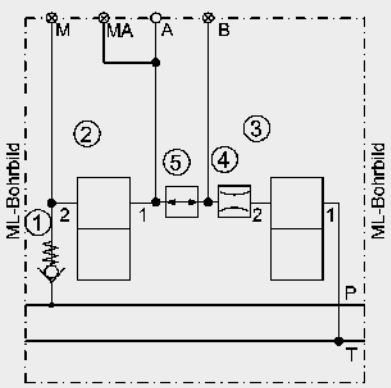


All dimensions are subject to technical modifications.

ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-E Function module with two 2/2 directional poppet valve (GA drg. 3101119)





Function module, for example, to control a single-acting cylinder which can be held in any position.
An orifice for determining the travel speed is possible.
May be extended using ML function modules or end modules.

P_{max}	350 bar
Q_{max}	12 l/min
Interface	ML / ML
Weight	approx. 3.0 kg
Ports	A, MA, B, M = G¼''
$\Delta p/Q_{max}$	17 bar P → A 7.5 bar A → T 17.5 bar P → B

Model code

①	②	③	④	⑤	
ML-E	R	Z	Y	B0.8	G – XXX

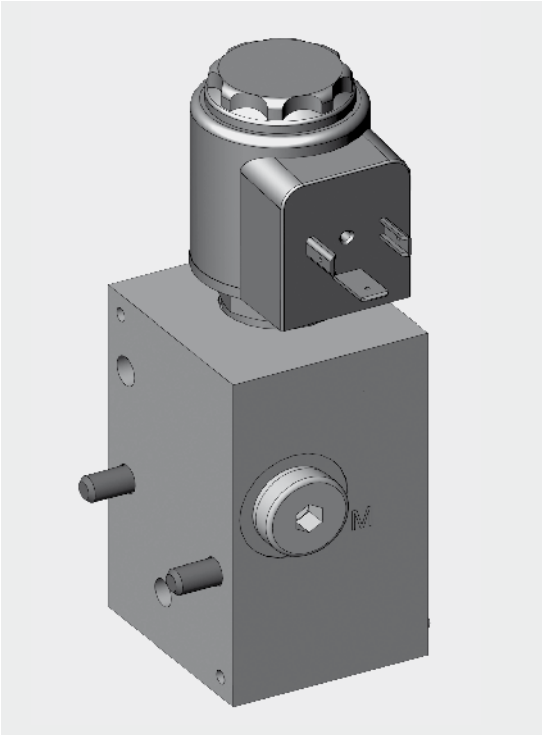
Basic model
ML-E

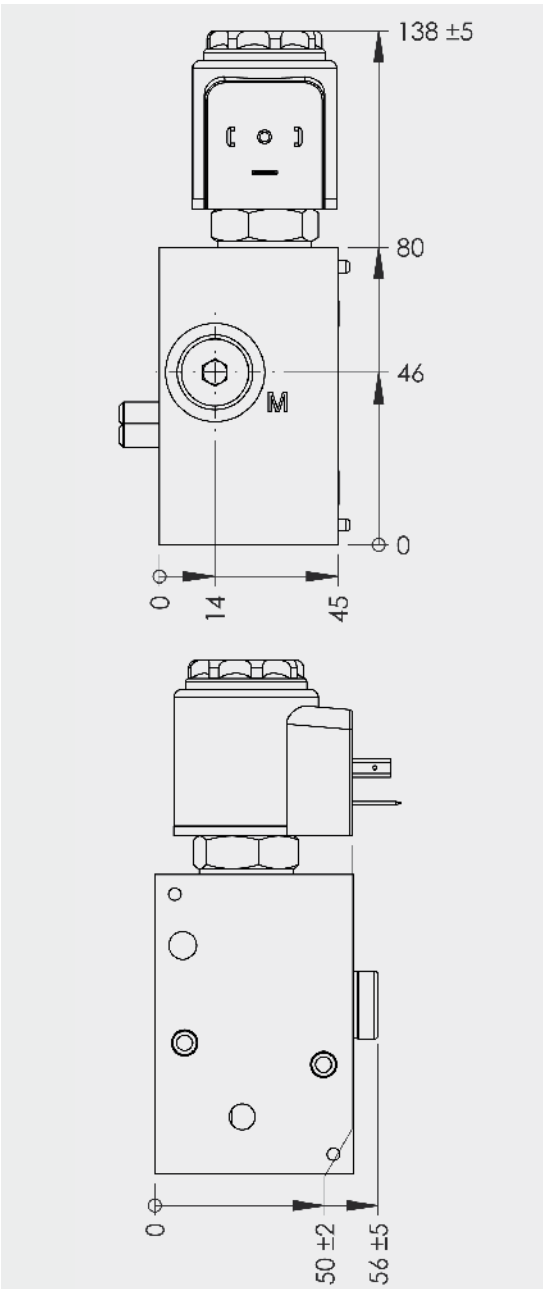
Check valve
no details = without check valve
R = check valve R1/4

Directional valves
Y = WSM06020Y
W = WSM06020Z
WN = WSM06020Z-01M with manual override
0 = with blanking plug instead of directional valve

Orifice
no details = without orifice
B0.6 = orifice M6 in B ...3.0 (available in sizes 0.6 to 3.0)
G = plugged with threaded pin

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories

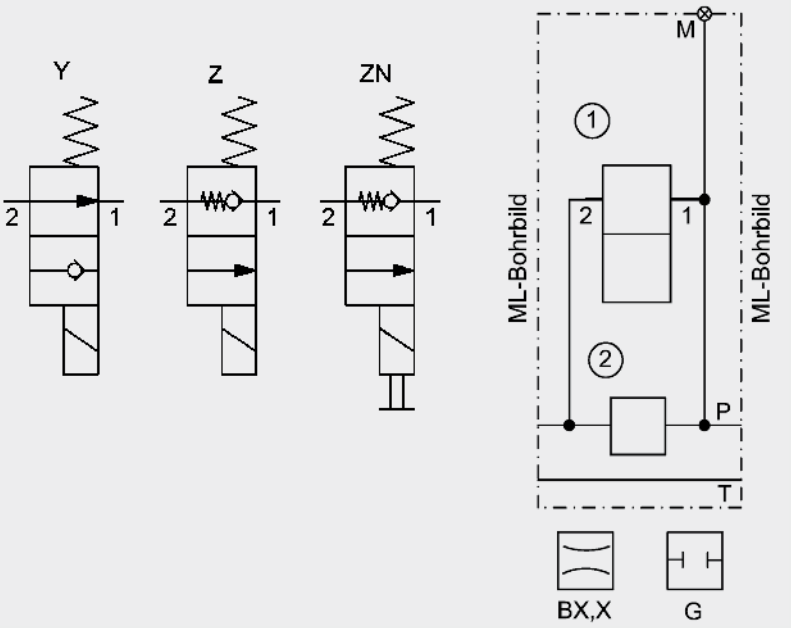




All dimensions are subject to technical modifications.

ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-P Function module with a 2/2 directional poppet valve (GA drg. 3189815)



Function module for fast/slow speed function.
An orifice for determining travel speed is possible in central pressure line. (Supply speed regulation).
Can also be used to shut off the central pressure line. May be extended using ML function modules.

P_{max}	350 bar
Q_{max}	12 l/min
Interface	ML / ML
Weight	approx. 1.7 kg
Ports	M = G¼''

Model code

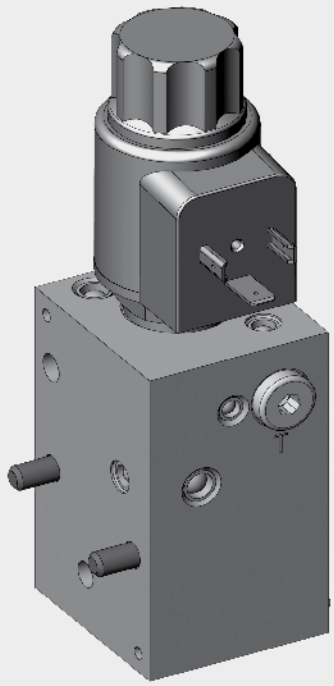
ML-P	Y	–	B0.8	–	XXX
	①		②		

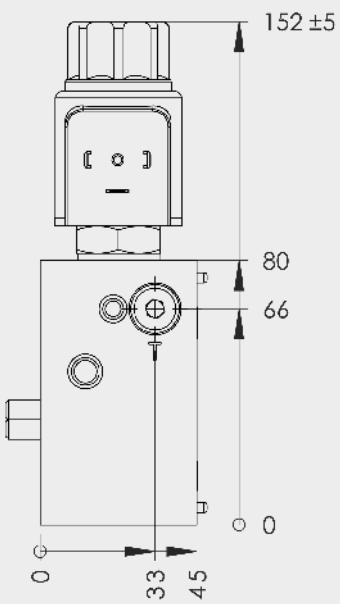
Basic model
ML-P = Function module for central P-line

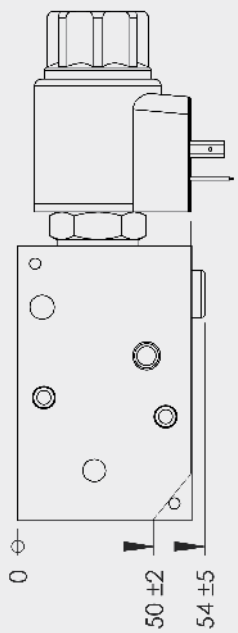
Directional valves
Y = WSM06020Y
W = WSM06020Z
WN = WSM06020Z-01M with manual override
0 = with blanking plug instead of directional valve

Orifice
no details = without orifice
B0.8 = orifice M6 0.8 mm (available in sizes 0.6 to 3.0 mm)
G = plugged with threaded pin

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories



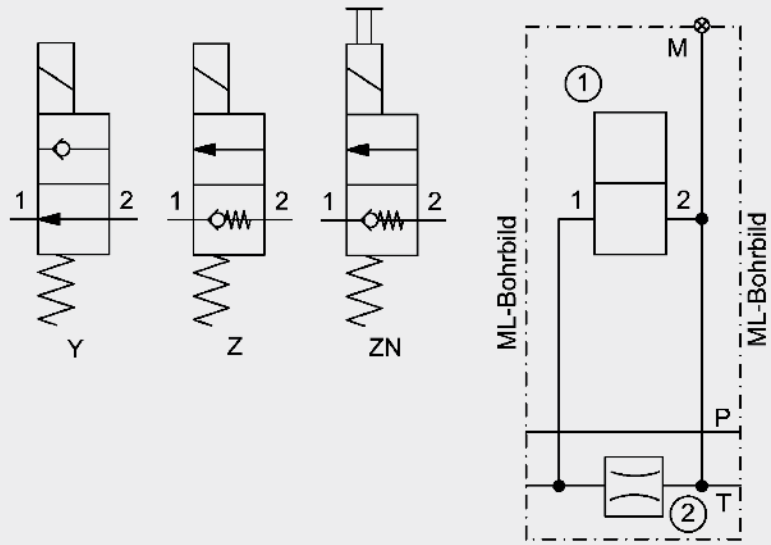




All dimensions are subject to technical modifications.

ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-T Function module with a 2/2 directional poppet valve (GA drg. 3358267)



Function module for fast/slow speed function.
An orifice for determining travel speed is possible in the central tank line. (Drain speed regulation).
May be extended using ML function modules.

P_{max}	350 bar
Q_{max}	20 l/min
Interface	ML / ML
Weight	approx. 1.7 kg
Ports	T = G⅛"

Model code

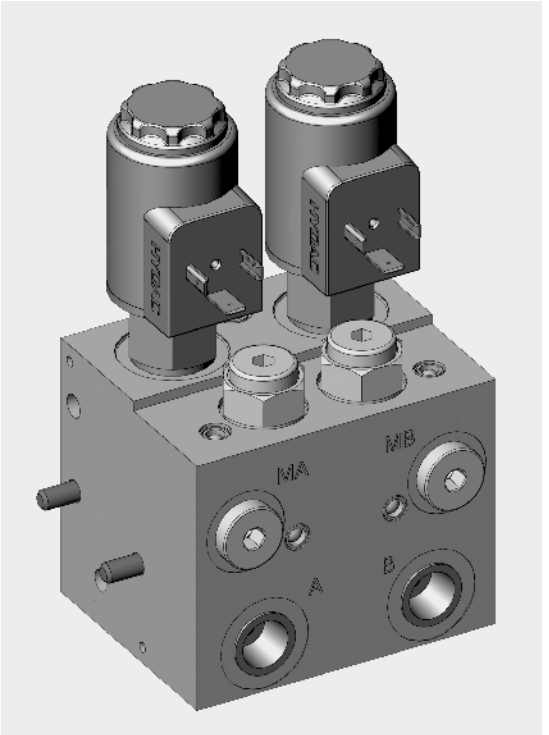
① ②
ML-T Y – B0.8 – XXX

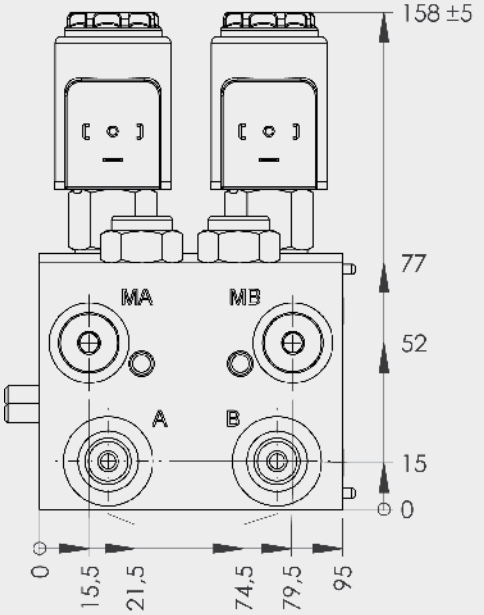
Basic model
ML-P = Function module for central T-line

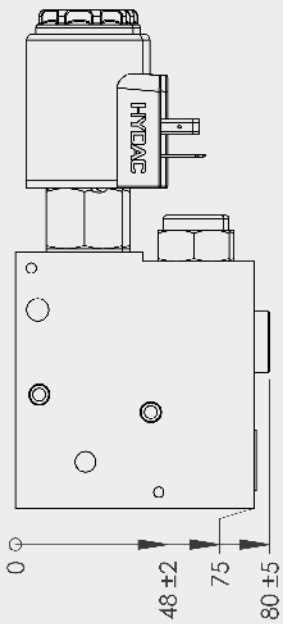
Directional valves
Y = WSM06020Y
W = WSM06020Z
WN = WSM06020Z-01M with manual override
0 = with blanking plug instead of directional valve

Orifice
B0.8 = Orifice M6 0.8 mm (available in sizes 0.6 to 3.0 mm)

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories



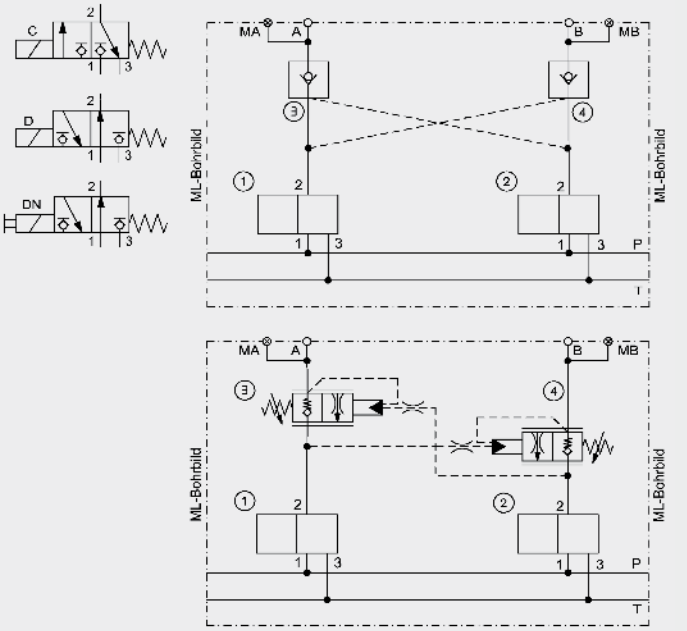




All dimensions are subject to technical modifications.

ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-K Function module with two 3/2 directional poppet valves (GA drg. 3287660)



Function module, for example, to control a double-acting cylinder.
Includes two pilot-operated check valves to hold the cylinder in any position, leakage-free.
Alternatively with counterbalance valves to prevent overrunning of the load.
May be extended using ML function modules or end modules.

P_{max}	350 bar
Q_{max}	20 l/min
Control ratio	4:1 for appropriate check valves
Interface	ML / ML
Weight	approx. 5.2 kg
Ports	A, B = G⅜'' MA, MB = G¼''
$\Delta p/Q_{max}$	20 bar P → B

Model code

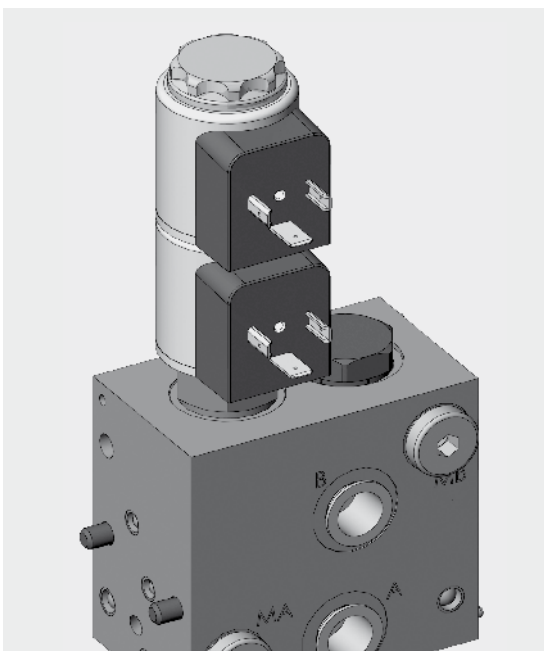
①② ③+④
ML-K C / 2x RP08 – XXX

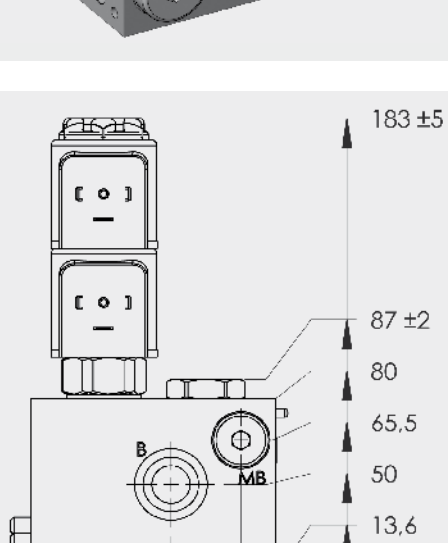
Basic model
ML-K

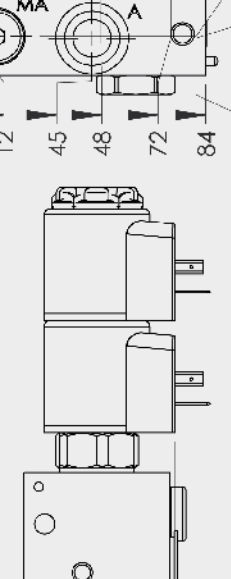
With 2 directional valves
C = WSM08130C (standard no details)
D = WSM08130D

Check valve
2x RP08 = Check valves RP08
2x RS08 = Counterbalance valves RS08

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories



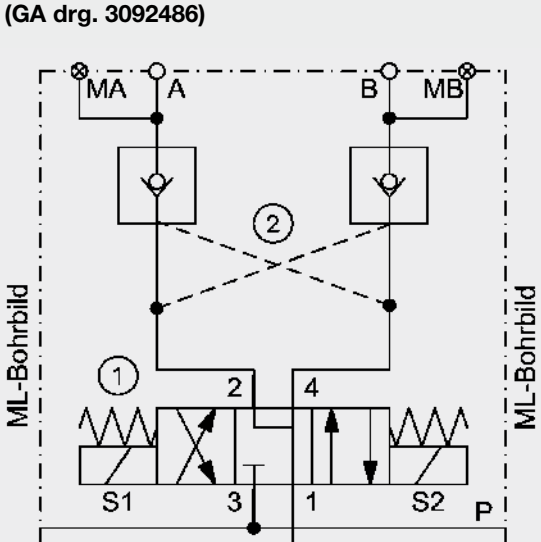




All dimensions are subject to technical modifications.

ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-SC Function module with one 4/3 directional spool valve (GA drg. 3092486)



Function module, for example, to control a double-acting cylinder. Includes two pilot-operated check valves to hold the cylinder in any position.
May be extended using ML function modules or end modules.

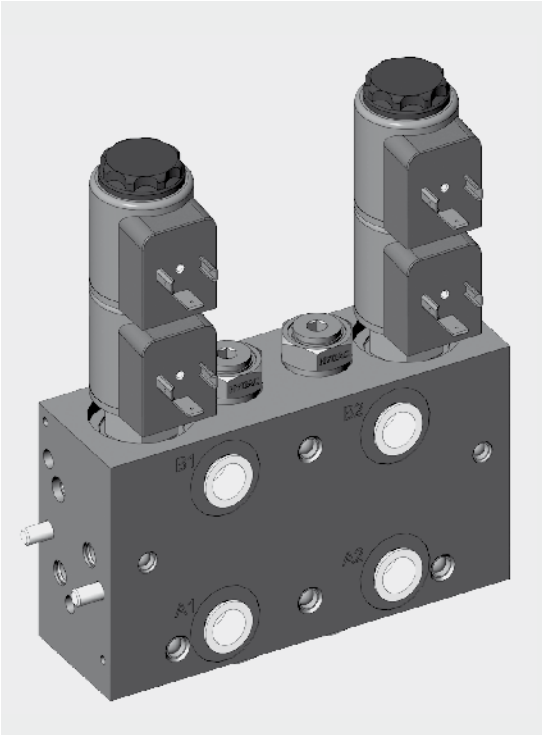
P_{max}	350 bar	
Q_{max}	20 l/min	
Control ratio	9.7:1	
Interface	ML / ML	
Weight	approx. 2.8 kg	
Ports	A, B = G⅜''	MA, MB = G¼''
$\Delta p/Q_{max}$	13 bar P → A	17 bar B → T

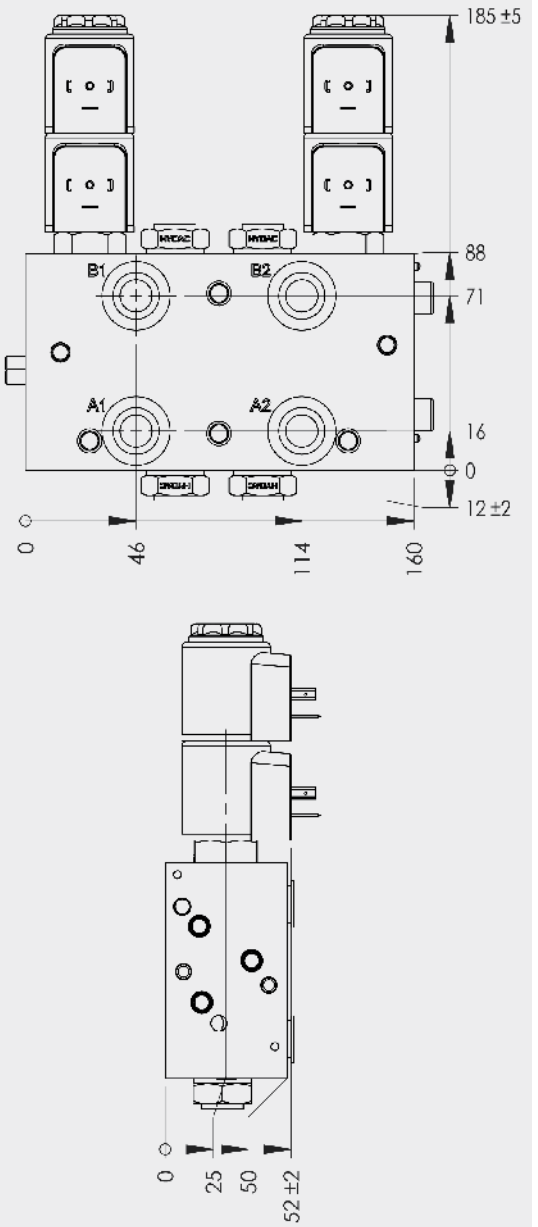
Model code

ML-SC – XXX

Basic model
ML-SC

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories



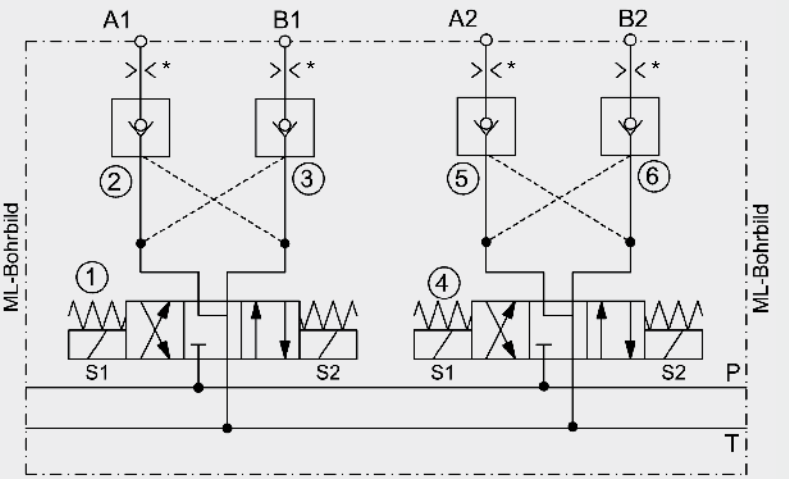


All dimensions are subject to technical modifications.

ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-2xSC1 Function module

with two 4/3 Directional spool valves (GA drg. 3405025)



* optional orifices

Function module, for example, to control two double-acting cylinders.
Includes pilot-operated check valves to hold cylinders in any position leakage-free.
Orifice for determining the travel speed.
May be extended using ML function modules or end modules.

P_{max}	350 bar	
Q_{max}	20 l/min	
Control ratio	2.8:1	
Interface	ML / ML	
Weight	approx. 5.5 kg	
Ports	A1, B1, A2, B2 = G⅜''	
$\Delta p/Q_{max}$	25 bar P → A1	17 bar A1 → T
	27 bar P → B1	18 bar B1 → T

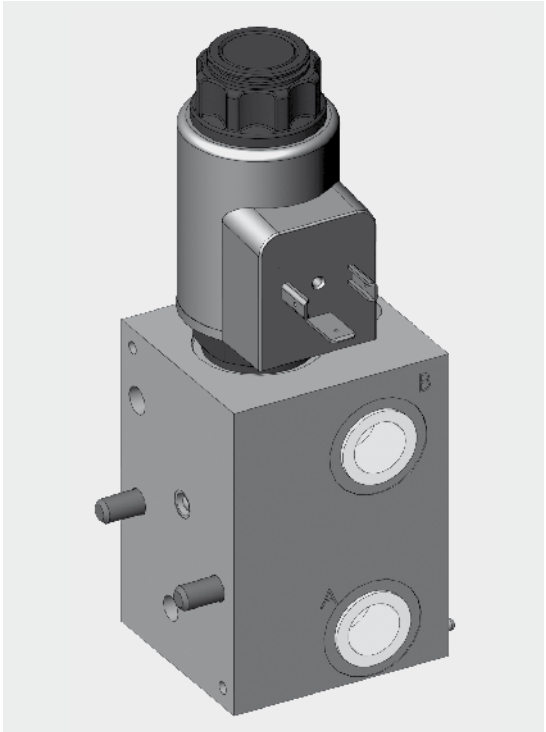
Model code

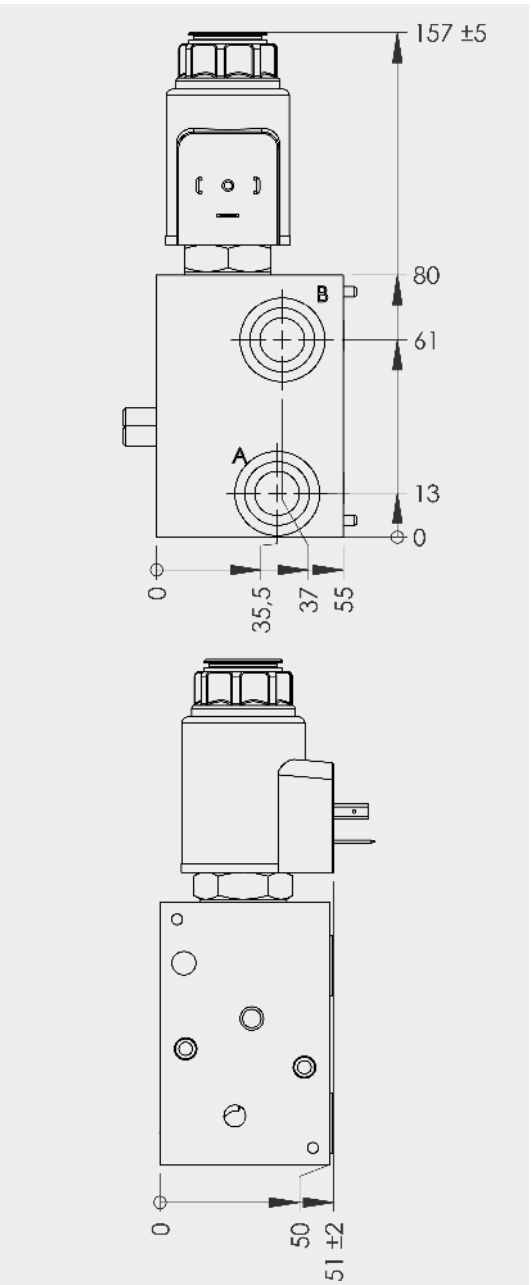
ML-2xSC1 – A1/B0.8 – B1/B0.8 – XXX

Basic model
ML-2xSC1

Orifices
A1/B0.8 = Orifice M8 0.8 mm in port A1
(ports AX, X, B1, A2, B2 also)
(available in sizes 0.6 to 4.0 mm)
B1/B0.8 = orifice M8 0.8 mm in port B1

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories



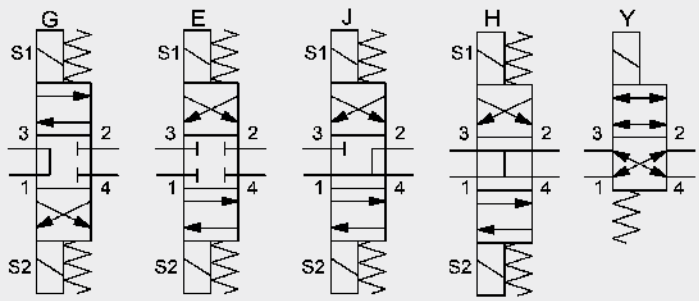


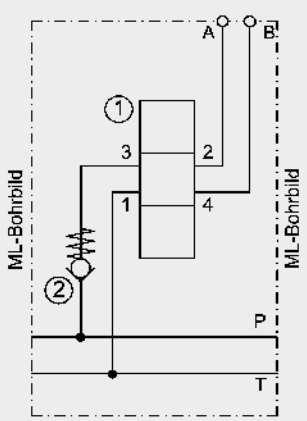
All dimensions are subject to technical modifications.

ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-U Function module

with a 4/3 or 4/2 directional spool valve (GA drg. 3156612)





Function module, for example, to control a double-acting cylinder.
May be extended using ML function modules or end modules.

P_{max}	350 bar		
Q_{max}	20 l/min		
Interface	ML / ML		
Weight	approx. 1.8 kg		
Ports	A, B = G⅜''		
$\Delta p/Q_{max}$	7 bar P → A	6 bar B → T	(ML-UY)

Model code

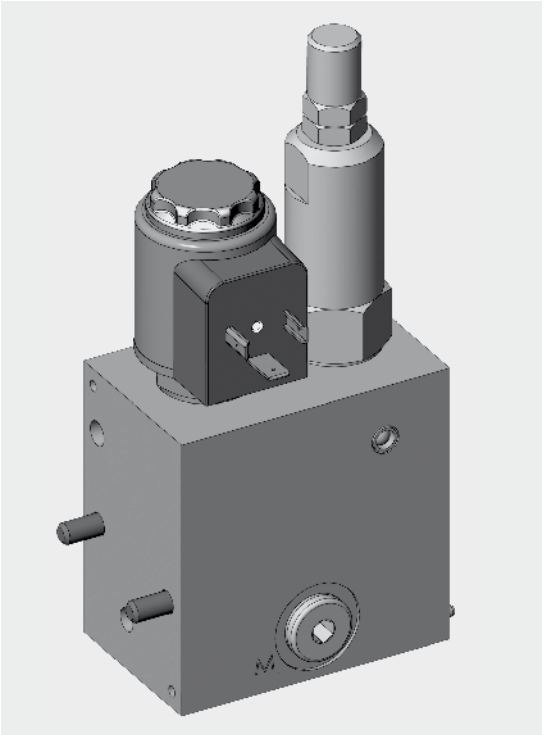
① ②
ML-U E R – XXX

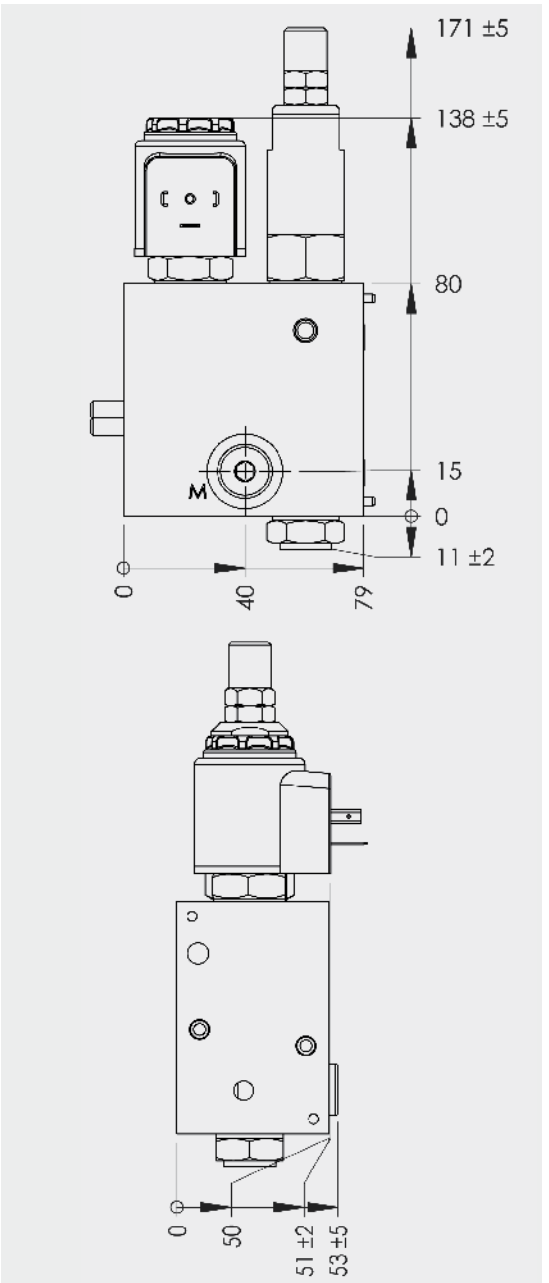
Basic model
ML-U

Directional valves
E = WK10E spool valve
G = WK10G spool valve
J = WK10J spool valve
Y = WK10Y spool valve

Check valve
no details = without check valve
R = check valve

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories

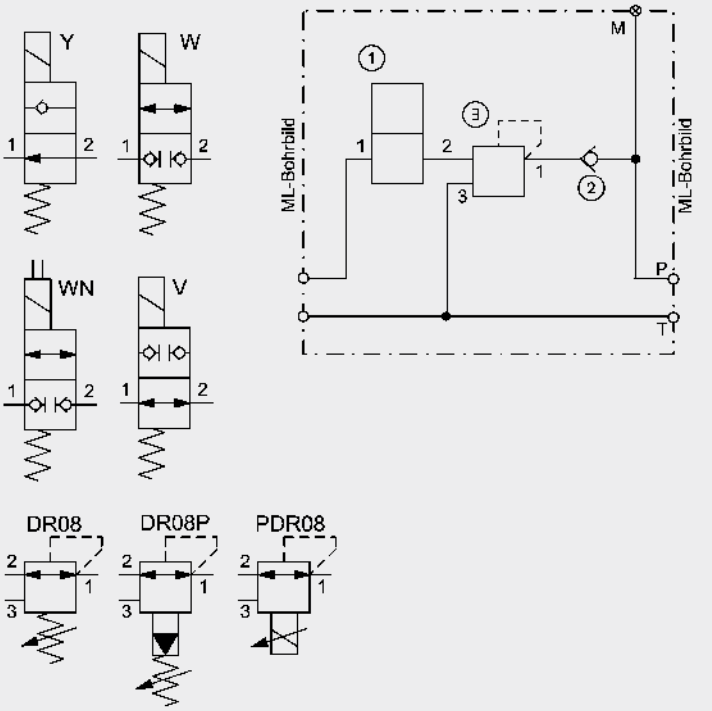




All dimensions are subject to technical modifications.

ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-DM1 Function module with pressure reducing function and a 2/2 directional poppet valve installed before it (GA drg. 3385238)



Function module to reduce pressure in central pressure line.
Alternatively, proportional pressure reducing valve possible.
A directional poppet valve shuts off the control oil.
May be extended using ML function modules or end modules.

P_{max}	350 bar (250 bar W valve)
Q_{max}	15 l/min
Interface:	ML / ML
Weight:	approx. 2.8 kg
Ports:	M = G¼"

Model code

① ②
ML-DM1 – Y – R – XXX

Basic model
ML-DM1
Including DR08 pressure reducing valve, direct-acting

Directional valves

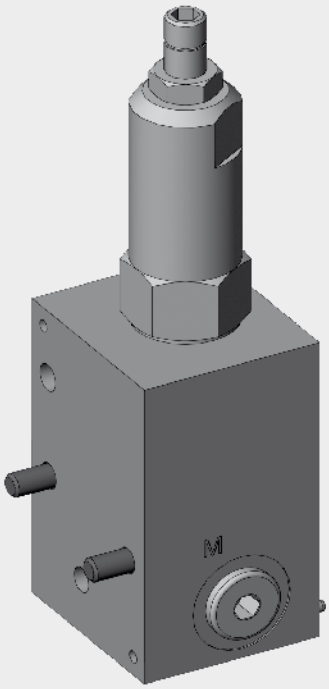
Y	= WSM06020Y
W	= WSM06020W
WN	= WSM06020W-01M with manual override
0	= with blanking plug instead of directional valve

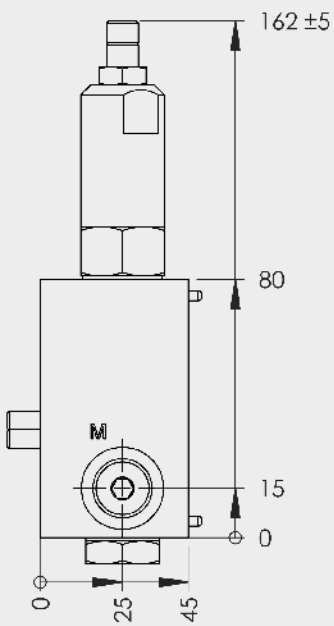
Check valve

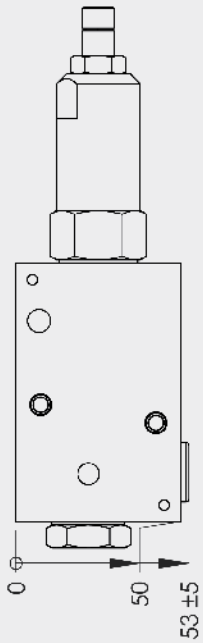
no details	= without check valve
R	= check valve

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4

no details	= without accessories



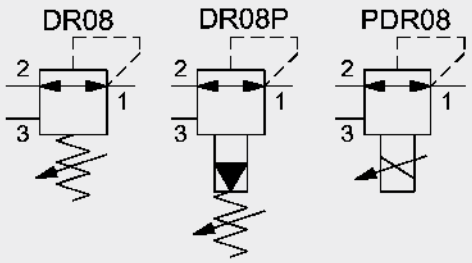


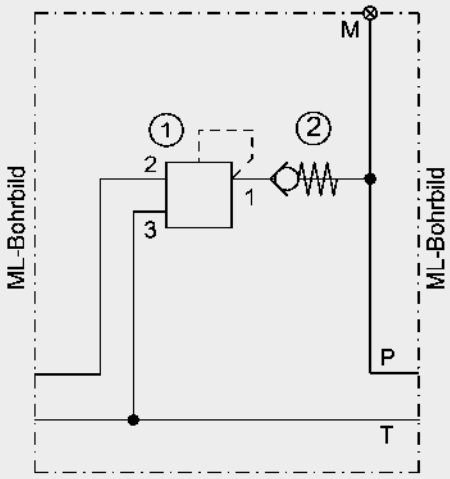


All dimensions are subject to technical modifications.

ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-DM2 Function module with pressure reducing function (GA drg. 3153189)





Function module to reduce pressure in central pressure line.
May be extended using ML function modules or end modules.

P_{max}	350 bar
Q_{max}	12 l/min
Interface:	ML / ML
Weight:	approx. 1.7 kg
Ports:	M = G¼''

Model code

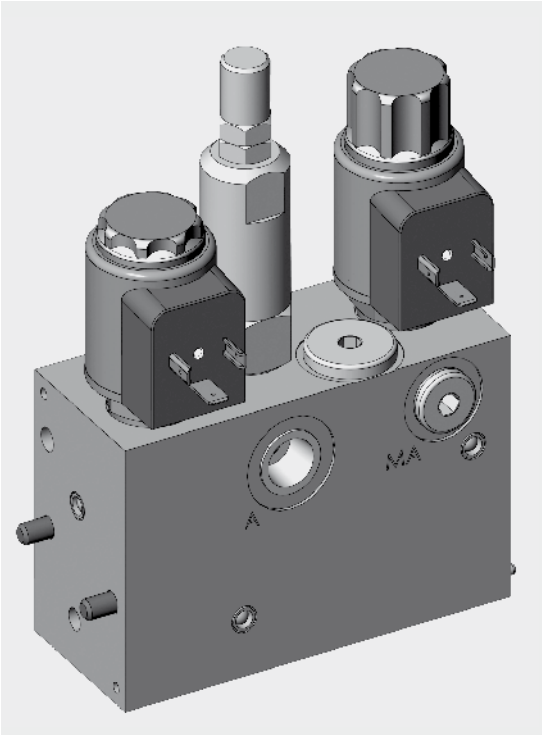
① ②
ML-DM2 – S – R – XXX

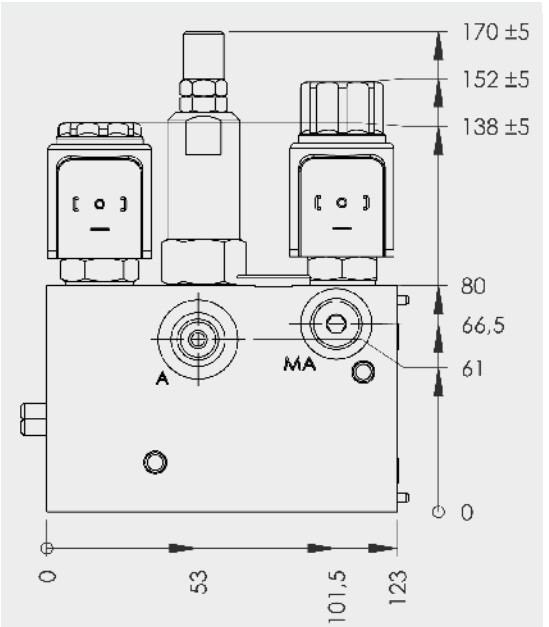
Basic model
ML-DM2 = Function module DM2

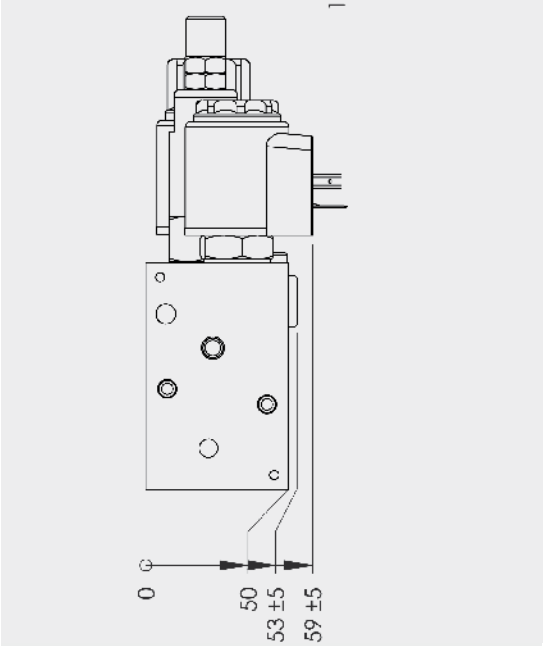
Pressure reducing valves
S = pressure reducing valve, direct-acting DR08
V = pressure reducing valve pilot operated DR08P
P = pressure reducing valve, proportional PDR08

Check valve
no details = without check valve
R = check valve

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories



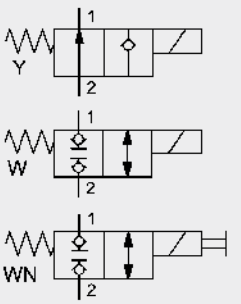


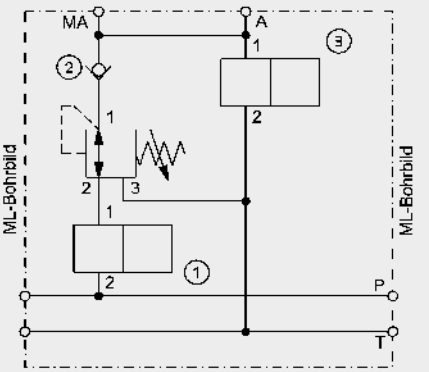


All dimensions are subject to technical modifications.

ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-DM3 Function module with pressure reducing function (GA drg. 3386760





Function module for reducing the pressure to the consumer.
Alternatively, proportional pressure reducing valve possible.
A directional poppet valve shuts off the control oil.
The consumer line is relieved to tank via 2/2 directional poppet valve.
May be extended using ML function modules or end modules.

P_{max}	350 bar (250 bar W valve)
Q_{max}	12 l/min
Interface	ML / ML
Weight	approx. 4.3 kg
Ports	A = G⅜'' MA = G¼''

Model code

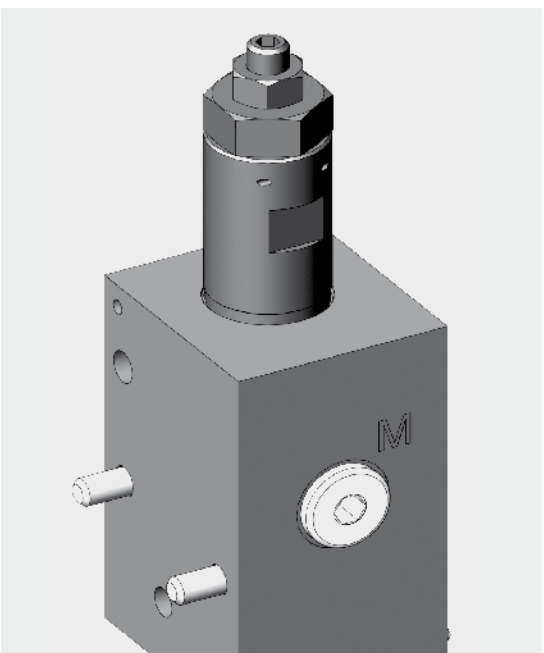
① ② ③
ML-DM3 – W – R – W – XXX

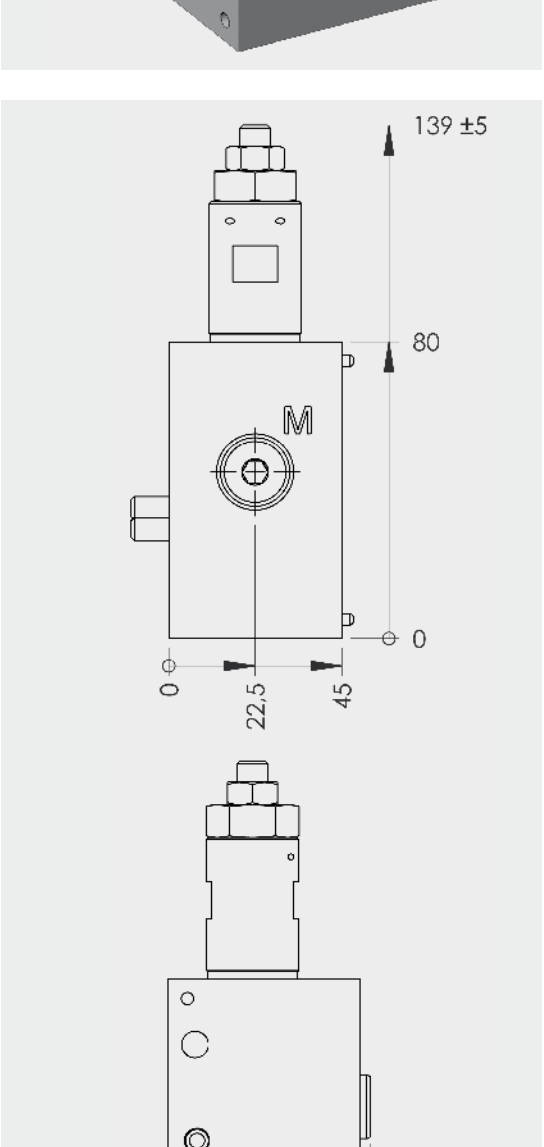
Basic model
ML-DM3

Directional valves
Y = WSM06020Y
W = WSM06020W
WN = WSM06020W-01M with manual override
0 = with blanking plug instead of directional valve

Check valve
no details = without check valve
R = check valve

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories

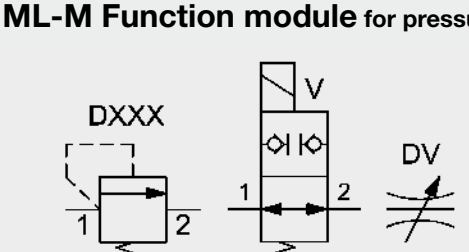


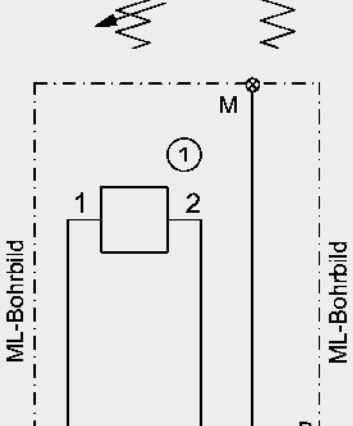


All dimensions are subject to technical modifications.

ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-M Function module for pressure relief (GA drg. 3090675)





Function module for example to relieve pressure in the central pressure line, adjustable mechanically or proportionally.
May be extended using ML function modules or end modules.

P_{max}	350 bar
Q_{max}	20 l/min
Interface	ML / ML
Weight	approx. 1.6 kg
Ports	M = G¼''

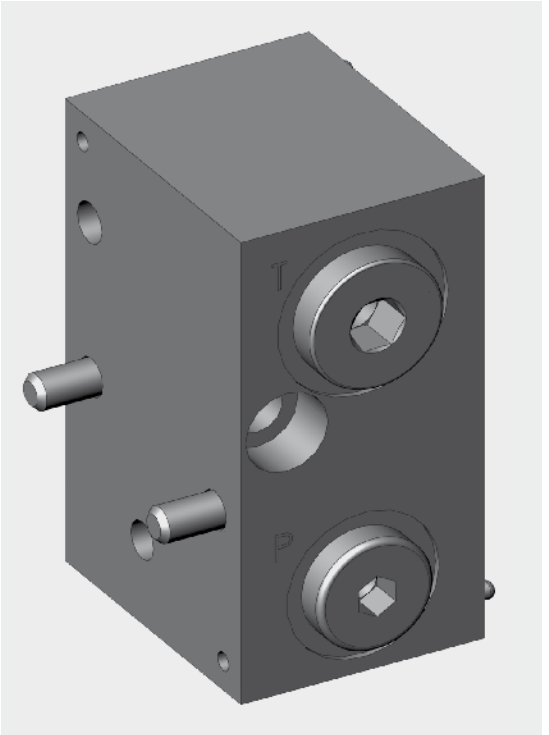
Model code

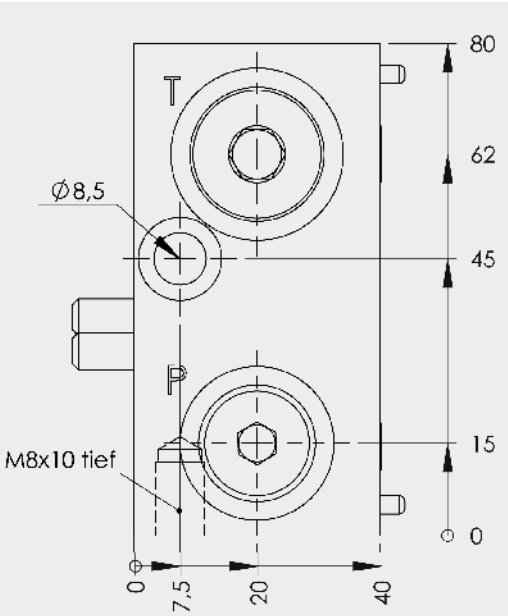
① ML-M – D100V – XXX

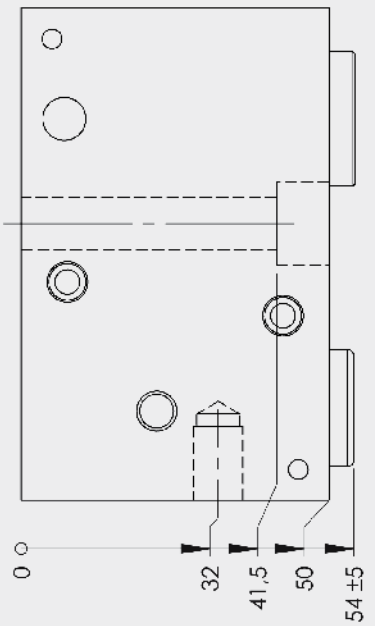
Basic model
ML-M = Function module M for pressure relief

Valve
D100V = 100 bar (Allen head)
D250V = 250 bar (Allen head)
D350V = 350 bar (Allen head)
V = WSM06020V
DV = DV5Z

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories



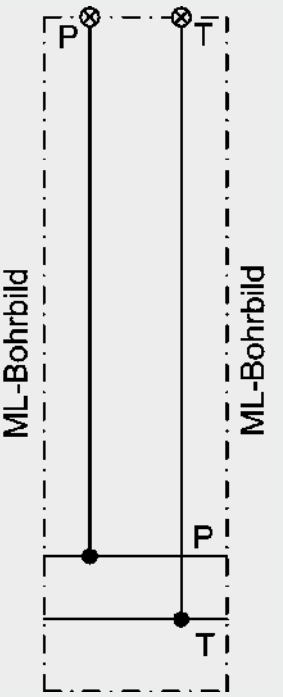




All dimensions are subject to technical modifications.

ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-BM Mounting module (GA drg. 3076803)



Function module without valves, with P and T port.
With through-bore as additional mounting point
for ML valve stacking systems.
May be extended using ML function modules or end modules.

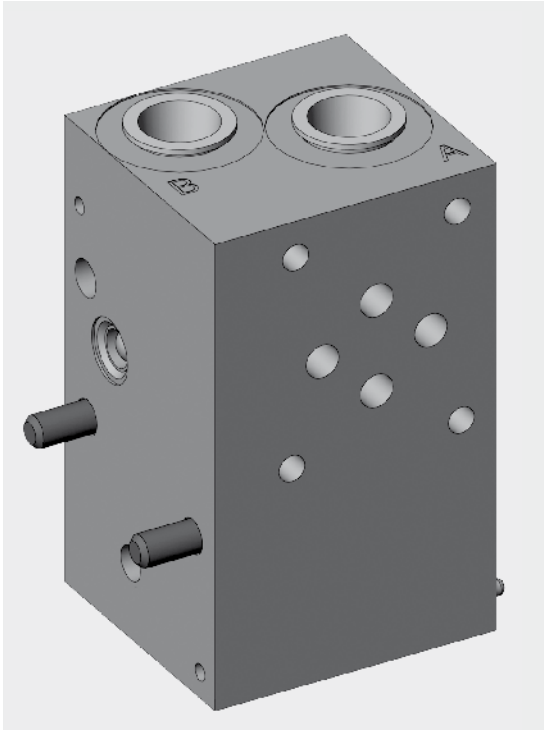
P_{max}	350 bar
Q_{max}	12 l/min
Interface	ML / ML
Weight	approx. 1.2 kg
Ports	P = G¼'' T = G⅜''

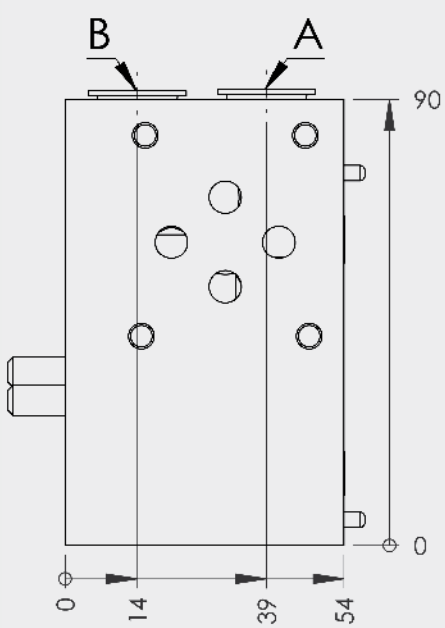
Model code

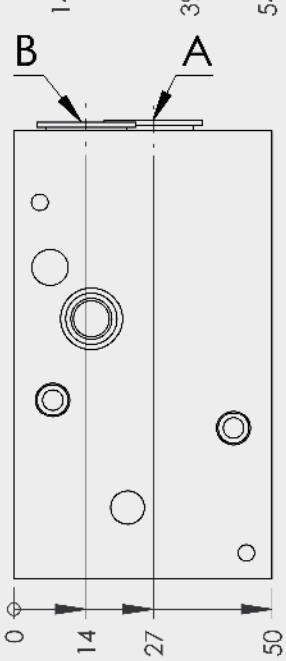
ML-BM – XXX

Basic model
ML-BM = Mounting module

Accessories
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
No details = without accessories



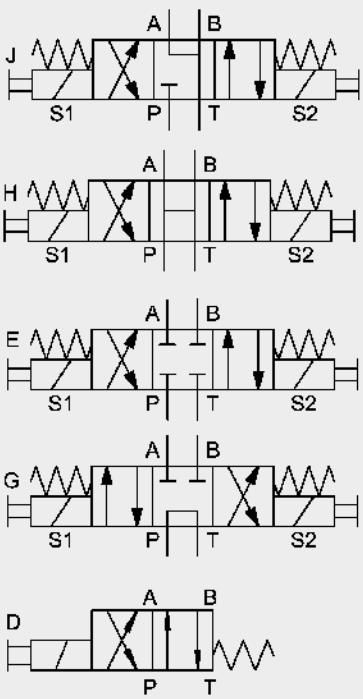


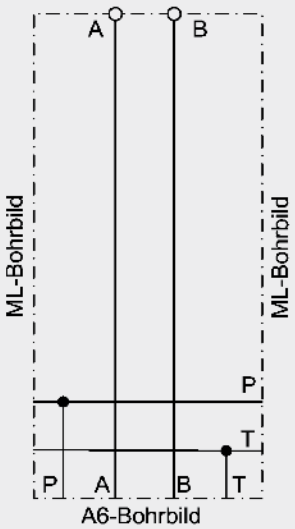


All dimensions are subject to technical modifications.

ML Function module for mounting onto base and function modules of ML valve stacking systems

ML-MA6 Function module for a directional spool valve with DIN interface (GA drg. 3287303)





Function module, for example, to mount a spool valve with DIN interface to actuate a double-acting cylinder.
May be extended using ML function modules or end modules.

P_{max}	315 bar
Q_{max}	20 l/min
Interface	ML / ML
Weight	approx. 1.9
Ports	A, B = G⅜''

Model code

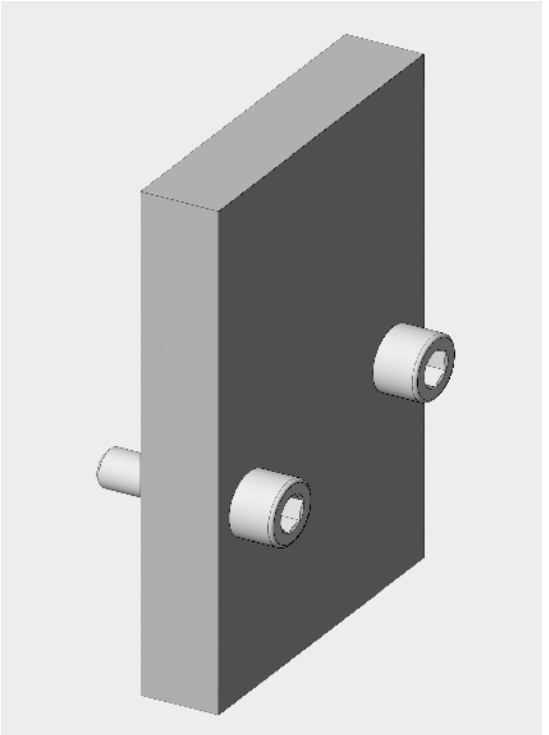
ML-MA6 – J – XXX

Basic model
ML-MA6 = Function module with A6 interface

Directional valves
E = 4WE6E 4/3 spool valve
G = 4WE6G 4/3 spool valve
J = 4WE6J 4/3 spool valve
H = 4WE6H 4/3 spool valve
D = 4WE6D 4/2 spool valve

Accessories, coil voltage
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
no details = without accessories

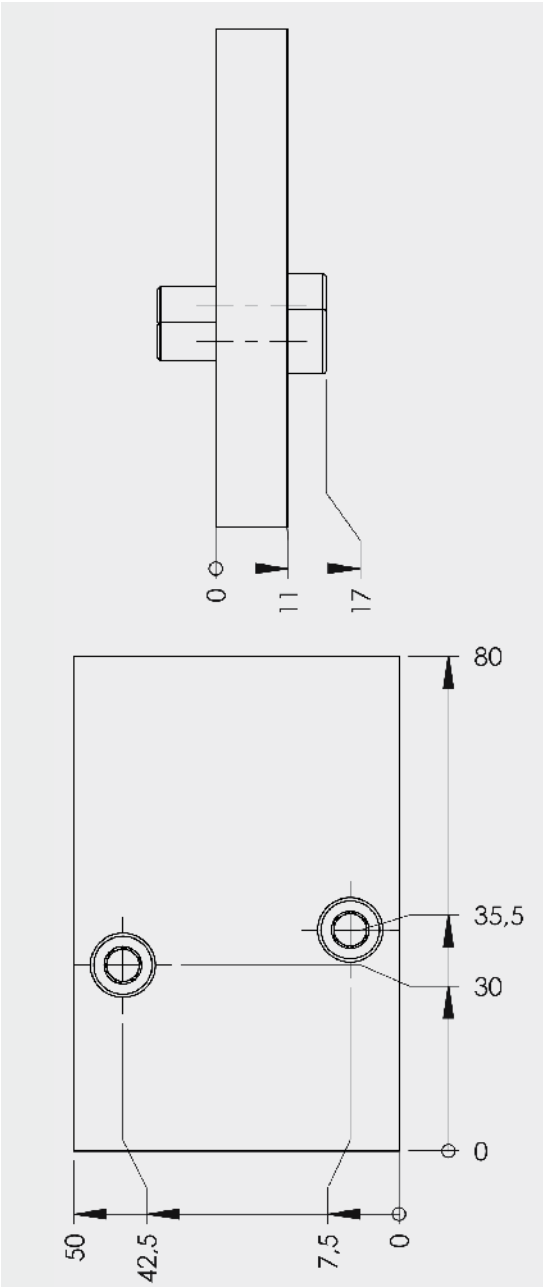
ML



ML-EM End module (GA drg. 3090911)

End module to blank off the central P-line and T-line of the ML valve stacking system.
Final module (cannot be extended).

P_{max}	350 bar
Q_{max}	0 l/min (not relevant)
Interface	ML
Weight	approx. 0.5 kg
Ports	none

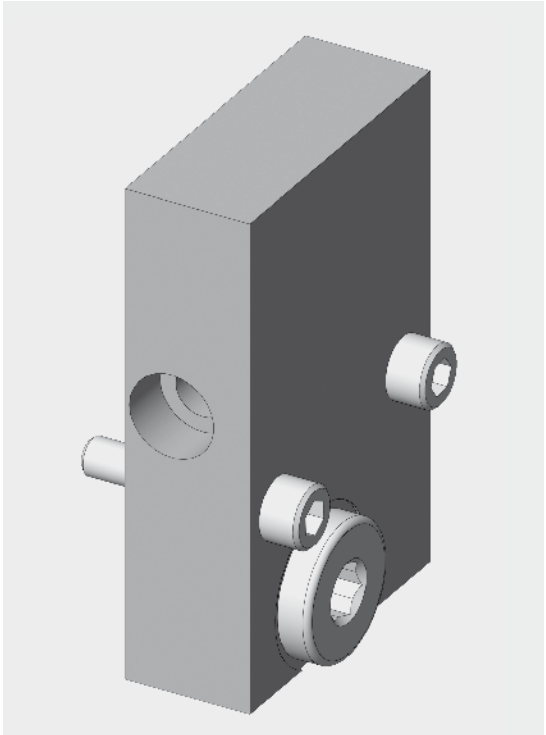


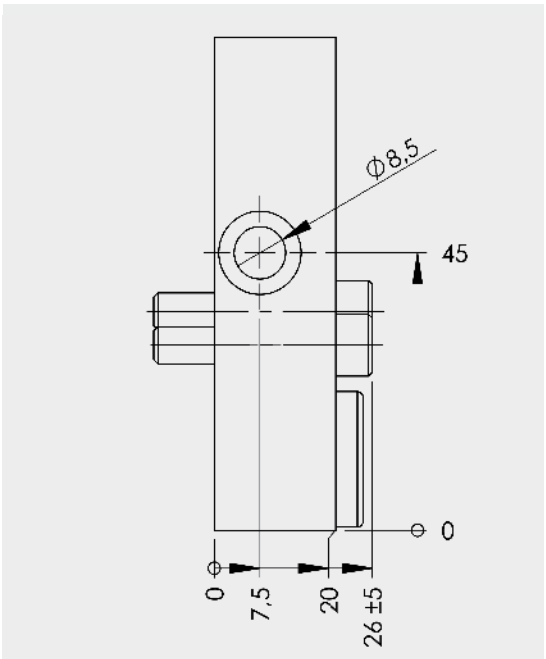
All dimensions are subject to technical modifications.

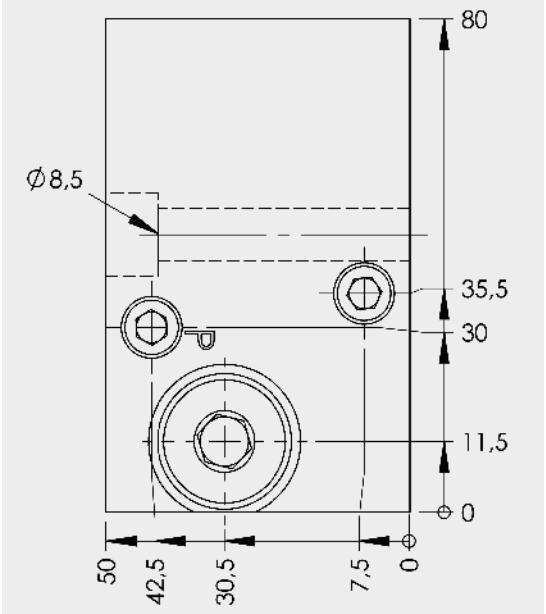
Model code

ML-EM

Basic model
ML-EM = End module







All dimensions are subject to technical modifications.

ML

ML-EMS D End module (GA drg. new 3205054, 3090911)

End module to blank off the central P-line and T-line of the ML valve stacking system, with a G⅜'' port for accumulator or pressure gauge. With through-bore as additional mounting point. Final module (cannot be extended).

P_{max}	350 bar
Q_{max}	20 l/min
Interface	ML
Weight	approx. 0.7 kg
Ports	P = G⅜''

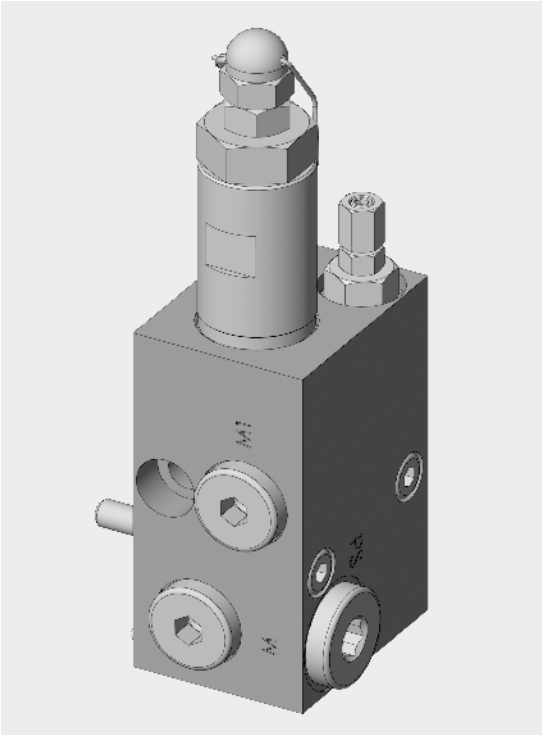
Model code

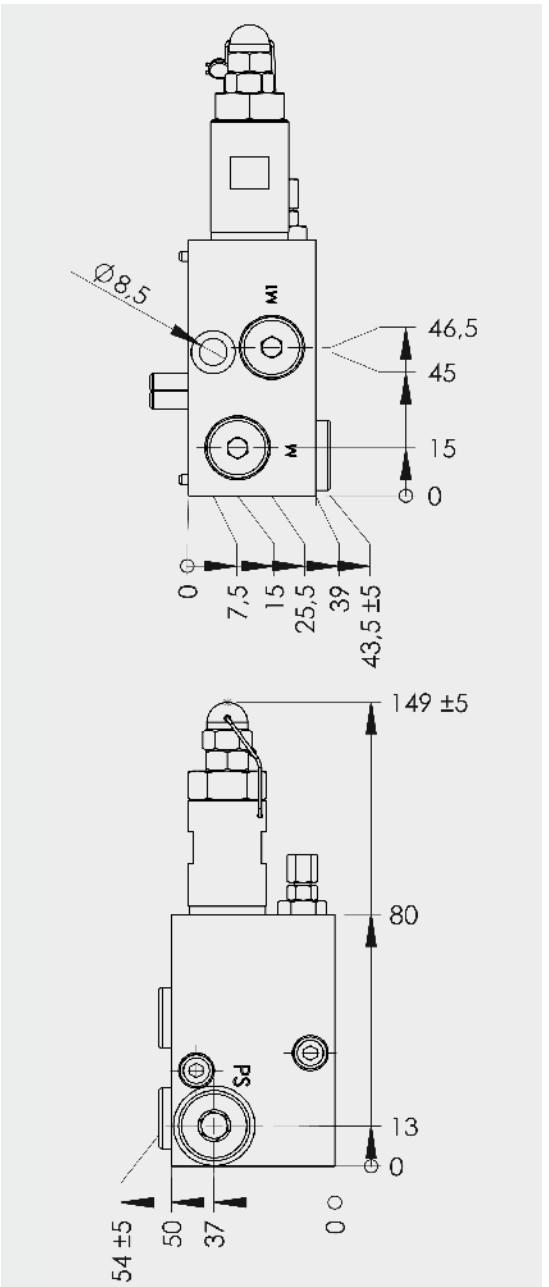
ML-EMS D – XXX

Basic model
ML-EMS D = End module

Through-bore
No details = no through-bore
D = with through-bore

Accessories
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
No details = without accessories

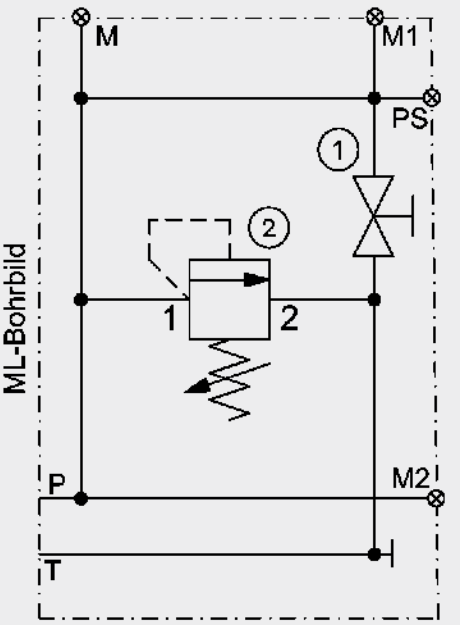




All dimensions are subject to technical modifications.

ML

ML-EMD Accumulator Safety End Module
(GA drg. 3310364)



Accumulator safety end module for mounting an accumulator with manually-operated pressure release.
Pressure relief valve (CE)
With through-bore as additional mounting point.
Final module (cannot be extended).

P_{max}	350 bar
Q_{max}	20 l/min
Interface	ML
Weight	approx. 1.4 kg
Ports	P = G⅜'' M, M1, M2 = G¼''

Model code

ML-EMD – 210 CE – XXX

Basic model
ML-EMD = End module

Pressure relief valve
210 = pressure range 210 bar (not adjustable)

Accessories
For accessories such as pressure gauge, pressure switch, etc. (supplied loose) see Section 4
No details = without accessories

4. ACCESSORIES

4.1 COIL VOLTAGE AND CONNECTORS

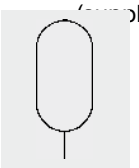
24DG = 24 Volt DC
with DIN male connector to EN175301-803
230DG = 230 Volt AC
with DIN male connector to EN175301-803

Other voltages on request

Z4 = Female connector Z4 (2-pole)
for connection to DIN male connection

4.2 ACCESSORIES FOR MOUNTING ONTO MODULES

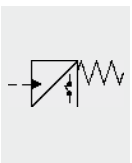
(supplied loose)



SBO1 = accumulator SBO210-0.16E1 / 112U-210AK80
SBO3 = accumulator SBO210-0.32E1 / 112U-250AK80
SBO5 = accumulator SBO210-0.5 E1 / 112U-250AK70

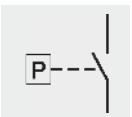
(Please take accumulator pre-charge pressure into account!)

MA1 = pressure gauge Ø 63mm
incl. threaded connection 160 bar
MA2 = pressure gauge Ø 63mm
incl. threaded connection 250 bar
MA4 = pressure gauge Ø 63mm
incl. threaded connection 400 bar



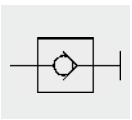
DS1 = mechanical pressure switch
10 - 100 bar

DS2 = mechanical pressure switch
50 - 200 bar



DS4 = mechanical pressure switch
100 - 400 bar

EDS3 = electronic pressure switch
EDS3446-2-250-000
EDS8 = electronic pressure switch
EDS8000-2-250



M = Minimess

4.3 ACCESSORIES, OTHER MODULES AND ADAPTERS

ML-MRL2 (GA drg. 3061157)
Base module without valve with 20X interface and for inline mounting

Module for separate mounting of an ML valve stacking system with G⅜" inline port.
Unlike the MRL base module,
may only be extended using ML base modules 20X.

P_{max}	350 bar
Q_{max}	20 l/min
Interface	G⅜'' / 20X
Weight	approx. 1.3 kg
Ports	P, T = G⅜''

Model code: **ML-MRL2**

Basic model
ML-MRL2 = Base module

ML-B1/20x (GA drg. 3243461) Adapter plate
(For documentation see CO1 brochure, No. E 5.306.)

To convert interface B1 (CO1/DC1) to interface 20X

P_{max}	250 bar
Q_{max}	20 l/min
Interface	B1/ 20X
Ports	none

Model code: **ML-B1/20X**

Basic model
ML-B1/20X = Adapter plate

S6-C (GA drg. 3054485) Cooler module

Special module as a sandwich plate with interface 20X with oil/air cooler.
Also available as unpressurized circulating module without cooler (Version S6-0).

P_{max}	250 bar
Q_{max}	20 l/min (pressure and tank line)
Interface	20X / 20X
Ports	none
Cooling capacity	0.8 kW at ΔT 40 °C (see graph)
Max. permitted operating pressure cooler element	16 bar
Nominal voltage Fan motor	220 - 240 V, 50 / 60 Hz
Power consumption Fan motor	35 W
Type of operation	S1 (Continuous operation)
Protection class	IP54 to DIN EN 60034-5

Model code: **S6-C**

Basic model
S6-C = Cooler module

ML-3A6 (GA drg. 3096922) Extension module
to a DIN interface
for connection, for example, to EML / A6 or B1 / A6

Module for mounting two spool valves onto DIN-interface.
May only be extended using 3A6 modules.

P_{max}	350 bar (Take note of permitted operating pressure of built-on valve with DIN interface)
Q_{max}	20 l/min
Interface	A6 / A6
Ports	A, B = G⅜''

Type code: **ML-3A6**

Basic model
ML-3A6 = Adapter plate with 3 interfaces

FP3 (GA drg. 3129987) Pressure filter module

Special module as sandwich plate with interface 20X with filter in the pressure line and clogging indicator

P_{max}	320 bar
Q_{max}	20 l/min
Interface	20X / 20X
Ports	M = G¼''

Model code: **FP3 – 20 – B**

Basic model
FP3 = Special module with pressure filter

Filtration rating
20 µm = Filtration rating
10 µm = Filtration rating

Clogging indicator
B = visual
C = electrical

(Replacement filter element = Part No.)

FA25 (GA drg. 3114513) Pressure Filter

Cartridge pressure filter in the consumer ports

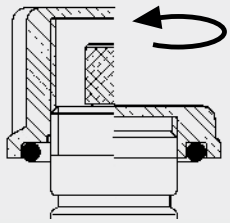
P_{max}	350 bar
Q_{max}	12 l/min
Interface	none
Ports	A, B = G¼'' male and female

Model code: **FA25**

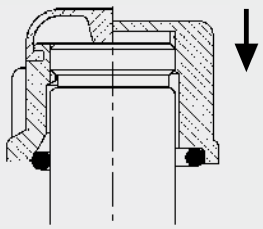
Basic model
FA25 = Module with pressure filter
(filtration rating 25 µm)

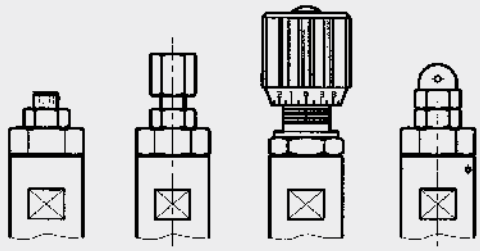
Part No. 715896
(Replacement filter element = Part No.)

Pulling action



Pressing action





5. DESIGN RECOMMENDATIONS

5.1 Manual override

Pulling action
(Remove mounting nut,
turn knurled screw anti-clockwise.
Remember: Turn back after use – will not function otherwise)

-01M

WS Symbol Z / ZR

WK Symbol /D /L/P /W /X

except:
(WK08D / WK08L)

Pressing action
(Activated by thumb pressure on rubber cap)

-01M

WS Symbol Y /YR /W /X

WK Symbol A /C /K /R /V /Y /Z /EB

+ WK08D +WK08L

5.2 Order details for pressure valves

Pressure relief valves **350 M 315 – 300**

Pressure range
100 = 100 bar
200 = 200 bar
350 = 350 bar
630 = 630 bar

Type of adjustment
V = Allen head
M = adjustable, maximum pressure relief
S = scaled knob, maximum pressure relief
P = can be lead-sealed

Maximum pressure setting
315 = 315 bar (as example)
Must be specified for M, SM,
Not required for V, P

Pre-set opening pressure
no details = valve not set, spring relaxed
300 = 300 bar (for example)
(optional information)

Pressure reducing valves

Adjustable
V = Allen head
H = hand wheel

Accumulators

For further diaphragm accumulators, see Brochure E 3.100,
for further bladder accumulators, see brochure E 3.201
(give full details when ordering)

Please check the mounting compatibility with regard to thread, diameter and weight of the accumulator!

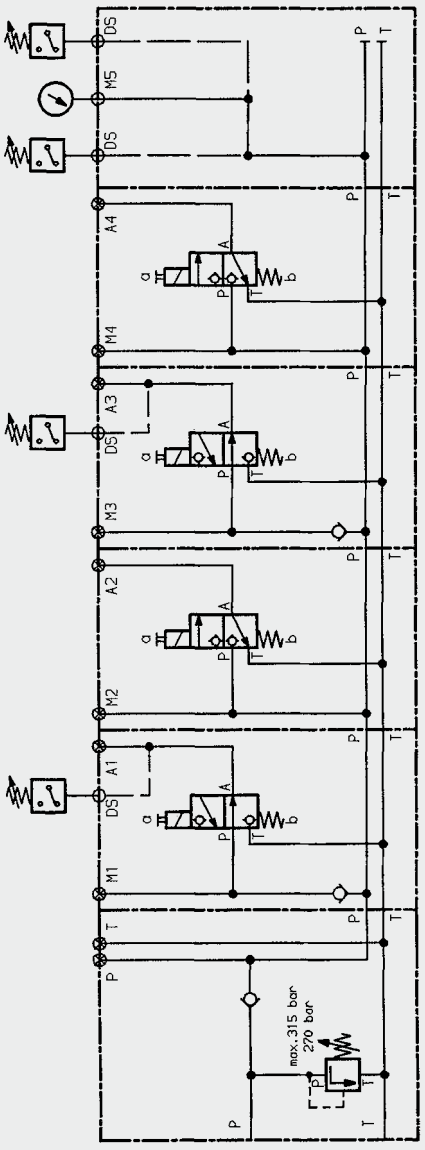
Modules

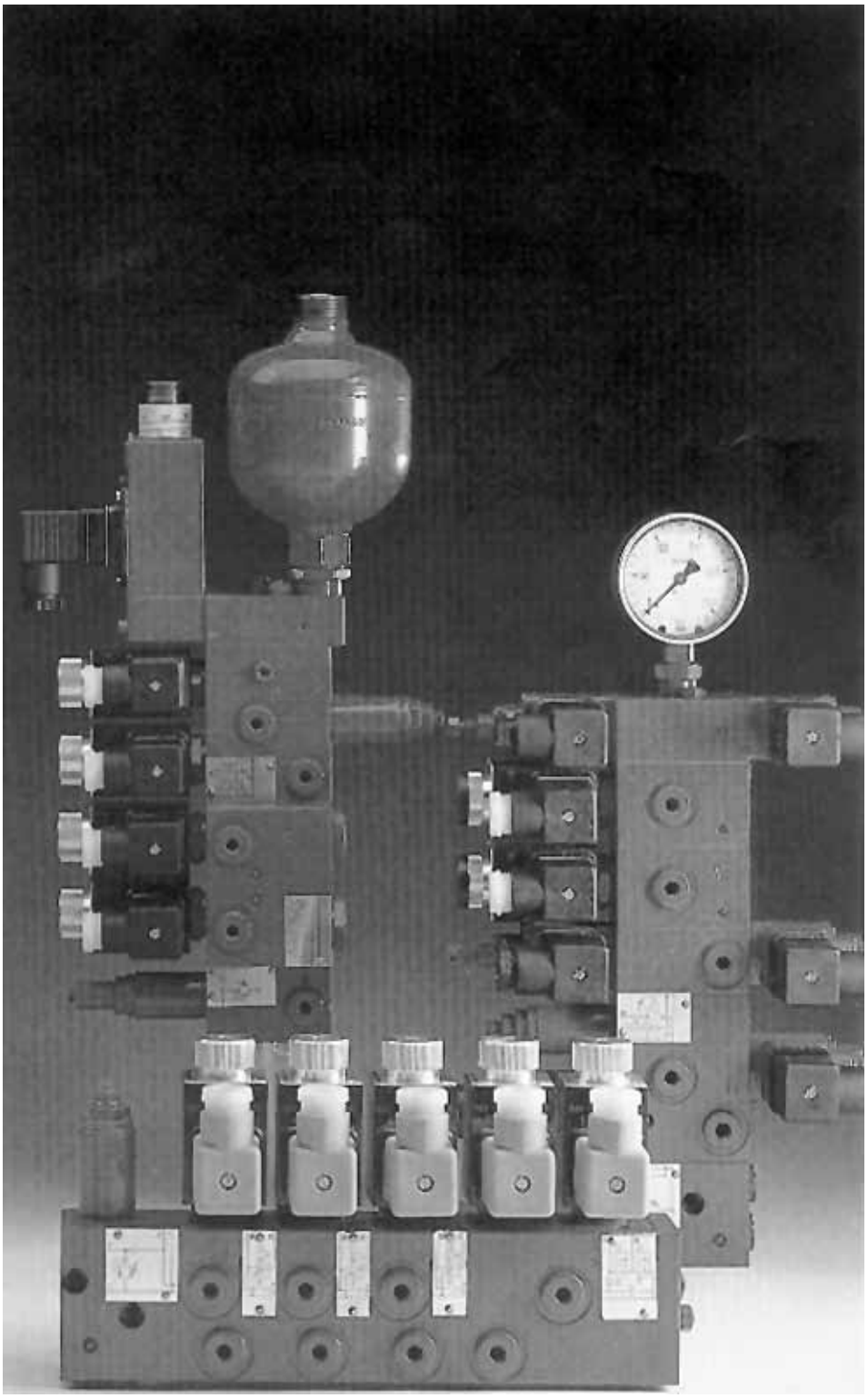
The reference axes X and Y given in the dimensions column allow the installation size of the complete control block to be calculated.
The reference axis X applies only to HP and CA power units!

NOTE
The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

Valve Stacking System L





Up to 500 bar
Up to 12 l/min

1. DESCRIPTION

1.1. GENERAL

The HYDAC valve stacking system, type L, is a control block composed of individual modules for hydraulic systems in parallel arrangement. This system is designed chiefly for controlling low-volume consumers and for pressure/force resistance tasks.

Function modules with directional poppet valves, pressure and shut-off valves and pressure switches can be combined on a base module in any order in accordance with the sequence of the control tasks. The end is represented by an end module with or without additional functions. The stack is held together with two tie-bolts.

Different base modules are suitable for building onto HYDAC HP and CA power units, or onto any hydraulic system by means of an inline base module.

This modular system ensures:

- A high level of flexibility due to variable module arrangement,
- Individual solutions to control problems
- Small dimensions combined with high performance
- No leakage
- Cost-effective control due to series production of modules.

1.2. FUNCTION

With a central pressure and return line, oil can be supplied to or released from several consumers simultaneously or independently. It is possible to separate the functions of consumers which are arranged in parallel by using check valves and special modules. Built-on pressure switches enable simple control of the pump and pressure monitoring, also on the consumer.

Leakage-free directional poppet valves provide secure positioning of the consumer and maintain pressures over a longer time without repeated oil supply.

Through the use of appropriate modules, the pressure in the central pressure line can also be shut-off or altered.

1.3. APPLICATIONS

In conjunction with power units, valve stacking systems type L can be used as ready-to-install oil supply units.

The systems are particularly compact when combined with HYDAC HP and CA power units.

Valve stacking systems are used in the following areas:

- Hydraulic clamping systems
- Machine tool engineering
- Press manufacture
- Fixture construction
- Loading and feeding apparatus
- Auxiliary and parallel drives
- Mobile hydraulics etc.

2. SPECIFICATIONS

2.1. GENERAL

2.1.1 Basic model
Valve stacking system in parallel arrangement.

2.1.2 Type of construction
Control modules in sandwich stacking construction with valve cartridges and additional devices.

2.1.3 Type of mounting
2 screws M6 for HP and CA mounting.

2 threaded holes M8 in the base block on RL and RLRD and in the end module PF.

It is also possible to insert a mounting sandwich plate in the control (necessary for support when the stack is approx. 500 mm or above in length).

2.1.4 Weight
The total weight of a stack is derived from the sum of the weights of the individual modules (see point 3.2. - 3.4.) and of the valves and units fitted (see point 4).

2.1.5 Ambient temperature range
Min. – 20 °C
Max. + 40 °C

2.1.6 Installation
When building onto HP and CA, determined by the unit.
As a control strip, optional.

2.1.7 Flow direction
According to symbol, only permitted in direction of arrow.

2.2. HYDRAULIC DETAILS

2.2.1 Nominal pressure
For building onto inline base block
p_N = 350 bar
For building onto CA unit
p_N = 210 bar
For building onto HP unit
p_N = 500 bar
Exceptions:
modules with 2/2 directional poppet valves, symbol Z, Y, V, W
p_N = 350 bar

2.2.2 Flow rate
Q_{max} = 12 l/min
Pressure-related performance limits of the individual valves and units must be taken into account. See point 4 for design recommendations.

2.2.3 Operating Fluid
Hydraulic oil to DIN 51 524 Part 1 and 2

2.2.4 **Temperature range of operating fluid**
Min. – 20 °C
Max. + 80 °C

2.2.5 **Viscosity range**
Min. 10 mm²/s
Max. 380 mm²/s

2.2.6 **Filtration**
Max. permitted contamination level of the operating fluid:

– **For operating pressure up to 350 bar**
NAS 1638, class 10.
We recommend a filter with a minimum retention rate of $\beta_{20} \geq 100$

– **For operating pressure up to 500 bar**
NAS 1638, class 9.
We recommend a filter with a minimum retention rate of $\beta_{10} \geq 100$.

The fitting of filters and regular replacement of elements guarantees correct functioning, reduces wear and tear and increases the service life.

2.3. ELECTRICAL DETAILS

2.3.1 **Type of actuation**
Solenoid-operated by means of pressure-tight, wet-pin single stroke solenoids to VDE 0580.

2.3.2 **Type of voltage**
Switching solenoids:
DC solenoid
(code G)
For use with AC, the required DC is produced by using a bridge rectifier connector (code W)

Proportional solenoid:
DC solenoid G 24.

2.3.3 **Nominal voltage U_N**
Standard voltages
Voltage type G: 24 V
Voltage type W: 220 V
Other voltages in the range 6 to 240 V are also available on request.

2.3.4 **Voltage tolerance**
+ 10 %
– 5 %

2.3.5 **Power consumption**
p_{20} = 26 W

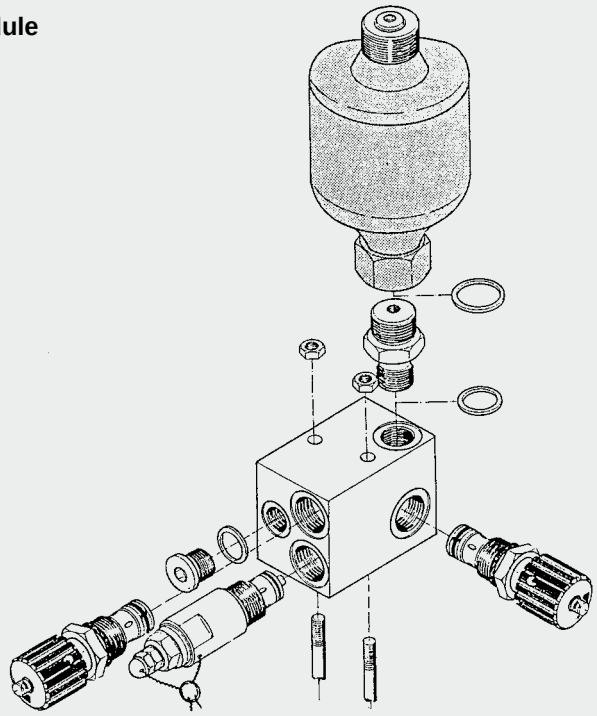
2.3.6 **Duty cycle**
100% = continuous operation

2.3.7 Protection class
IP 65 to DIN 40050 provided connector is fitted correctly.

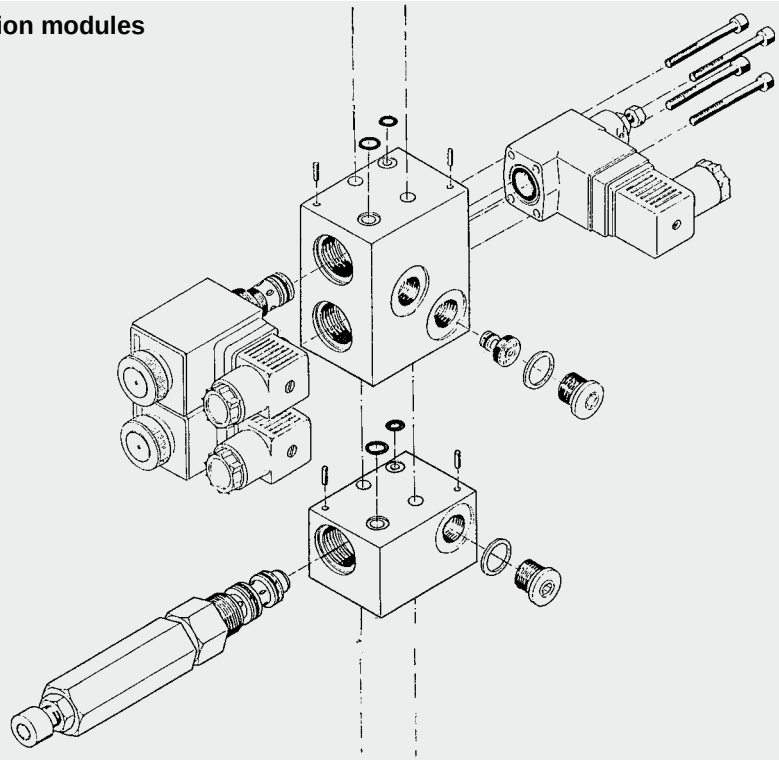
2.3.8 **Switching frequency**
3,600 per hour

EXPLODED DIAGRAM OF SYSTEM CONSTRUCTION

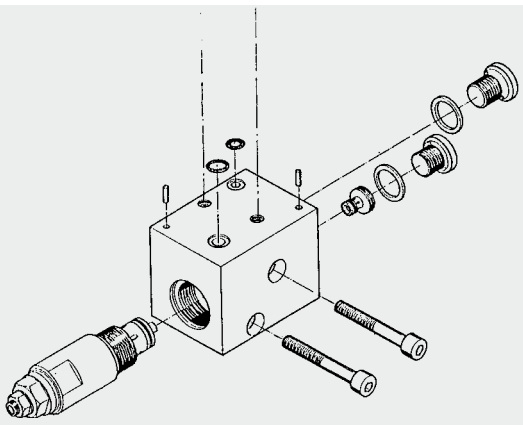
End module



Function modules



Base module



3. SELECTION TABLE, SYMBOL, DIMENSIONS, WEIGHT, TYPE

3.1. MODEL CODE

(also order example)

LR/350M315-270 + DR-7 + C + DR-7 + C + PB-77/63-400 + G24 - Z4 - N

Valve stacking base module
(see point 3.2.)

Function modules
(see point 3.3.)

1st function module

2nd function module

3rd function module

4th function module

… further function modules

End modules (see point 3.4.)

Nominal voltage for actuating solenoids

G 24	… DC 24 V
W 220	… AC 220 V-50/60 Hz

other voltages on request

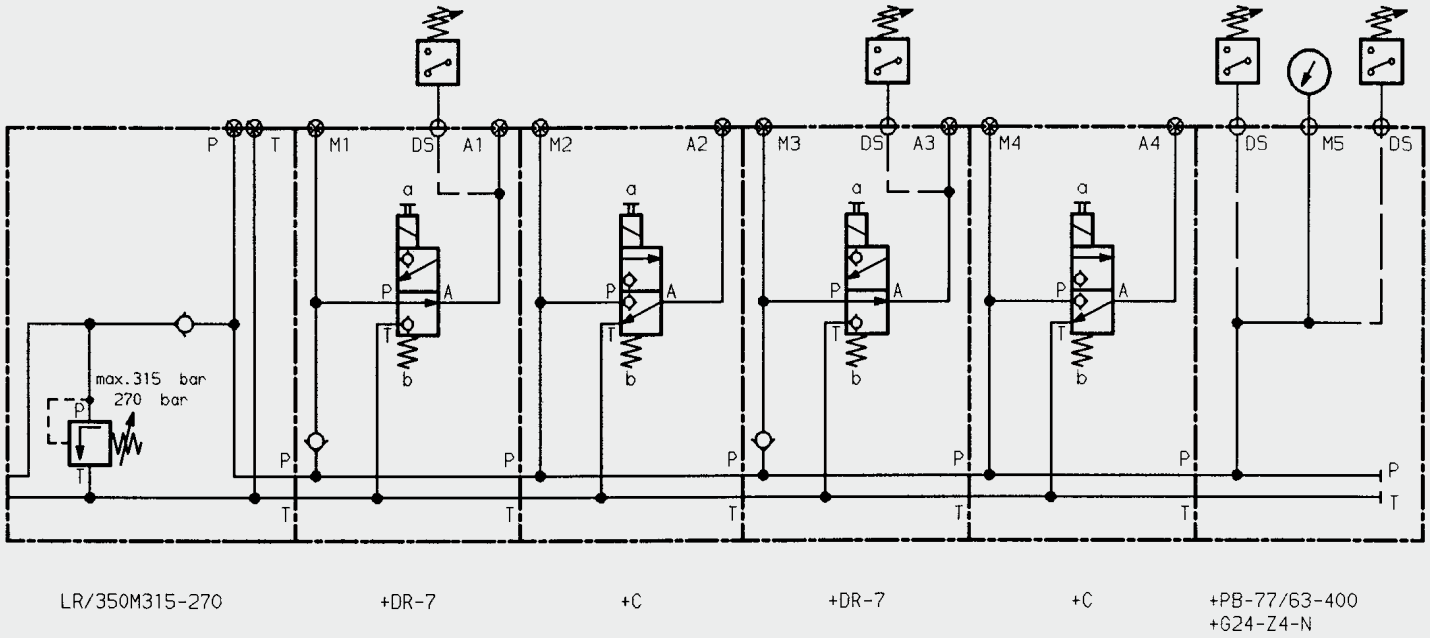
Electrical connection for actuating solenoids

no details	… DIN 43650 without connector
Z4	… connector to DIN 43650-AF2-PG11
Z5L	… large connector with light

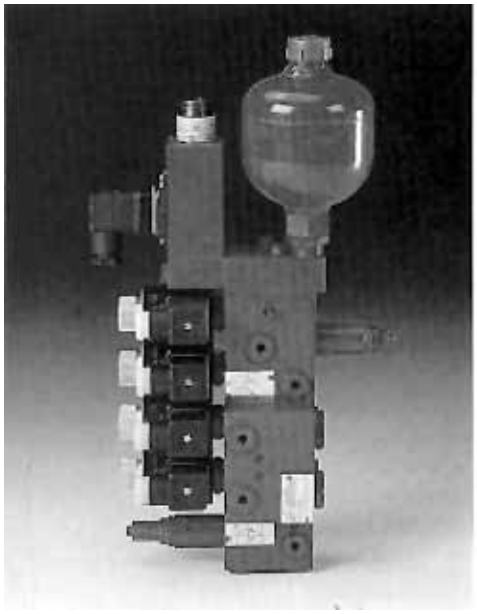
For AC type, connector is automatically supplied with bridge rectifier insert

Manual override on directional poppet valves
(see point 4.5.)
no details … without manual override
N … pin type operation
NG … thumb pressure operation
(symbols V, W, Y, C, D only)

Circuit diagram corresponding to order example above

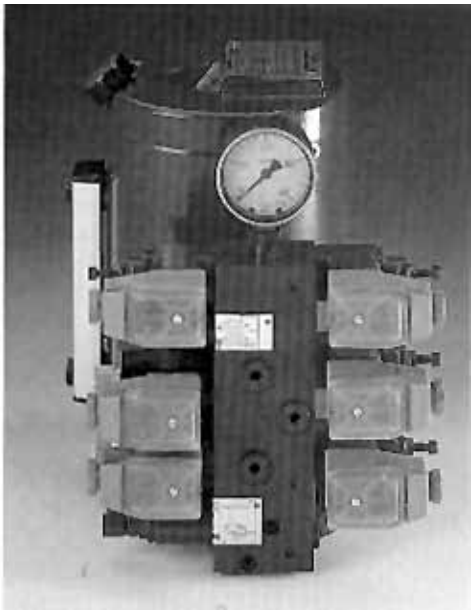


Base module RL for inline mounting



Base module L for flanging to CA power units

Base module L for flanging to HP power units

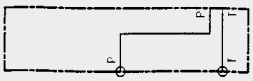


Name and symbol

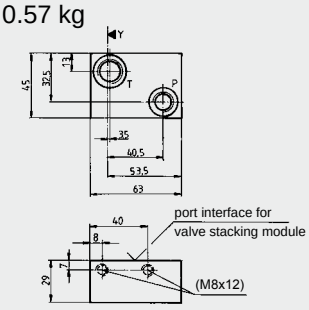
Dimensions

Model code

3.2.1 Base module for inline mounting



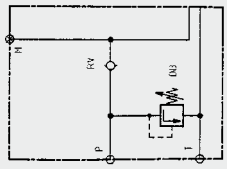
Ports
P = G 1/4
T = G 3/8
Weight 0.57 kg



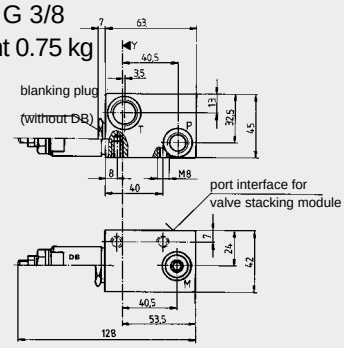
RL+

Base module for inline mounting

3.2.2 Base module for inline mounting



Ports
M, P = G 1/4
T = G 3/8
Weight 0.75 kg



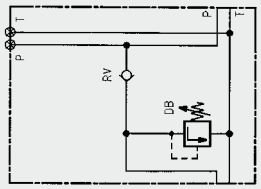
RL R / 350 V+

Base module for inline mounting

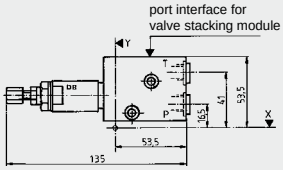
Check valve RV
no details … without
R … with RV

Pressure relief valve DB pressure range and type of adjustment
see point 4.2.

3.2.3 Base module for flange-mounting



Ports
P, T = G 1/4
Weight 0.97 kg



L R / 350 M 315 +

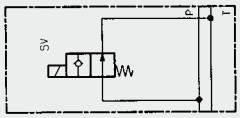
Base module for flange-mounting

Check valve RV
no details … without
R … with RV

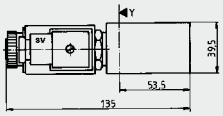
Pressure relief valve DB pressure range and type of adjustment
see point 4.2.
V-type adjustment not possible on this base module

Name and symbol | **Dimensions** | **Model code**

3.3.1 2/2 Directional poppet valve module



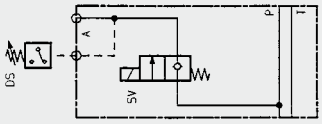
Weight 0.74 kg



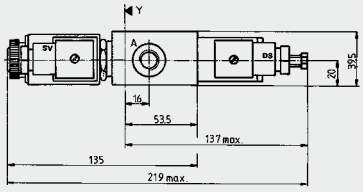
+ Y +

Dir. poppet valve SV
possible symbols Z, Y, W, V
see point 4.3.

3.3.2 2/2 Directional poppet valve module



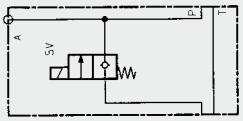
Weight 0.74 kg



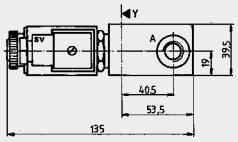
+ Z A – 5 +

Dir. poppet valve SV
possible symbols Z, Y, W, V
see point 4.3.
Module code
Pressure switch DS
no details … without
5–8 … see point 4.4.

3.3.3 2/2 Directional poppet valve module



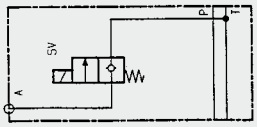
Weight 0.74 kg



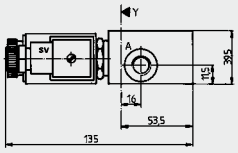
+ Z P +

Dir. poppet valve SV
possible symbols Z, Y, W, V
see point 4.3.
Module code

3.3.4 2/2 Directional poppet valve module



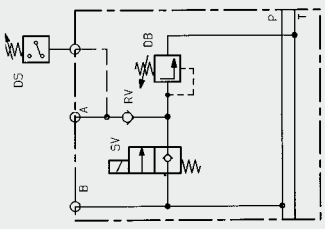
Weight 0.75 kg



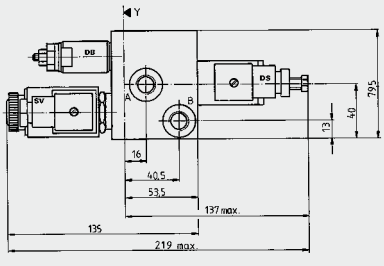
+ Z T +

Dir. poppet valve SV
poss. symbols Z, Y, W, V
see point 4.3.
Module code

3.3.5 2/2 Directional poppet valve combination

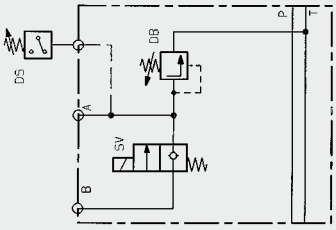
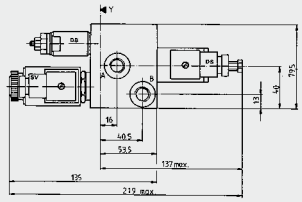
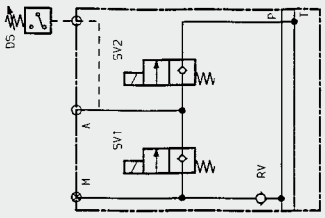
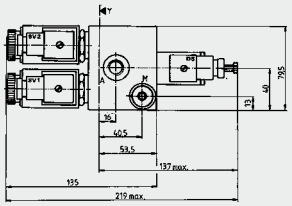
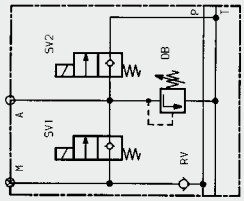
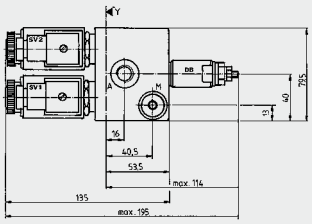
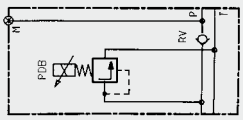
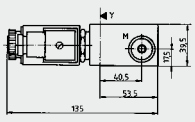


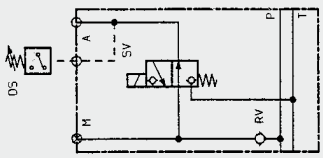
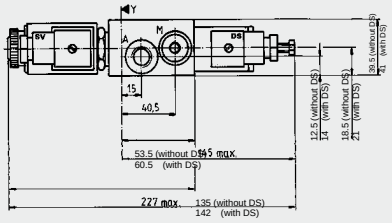
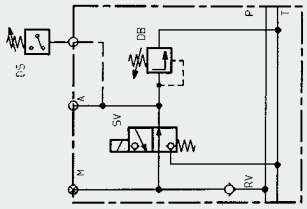
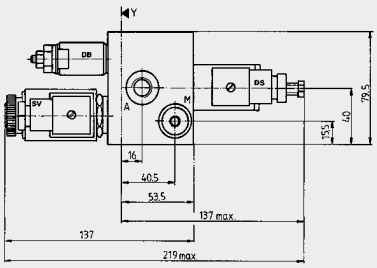
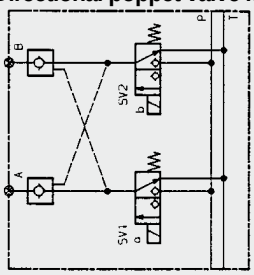
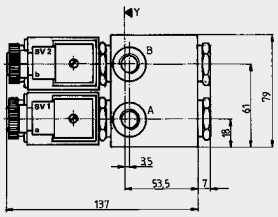
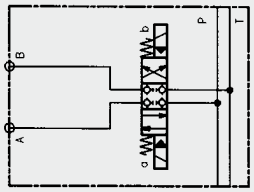
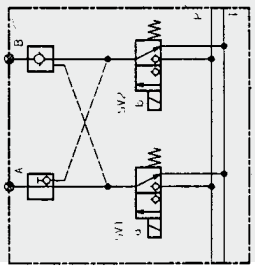
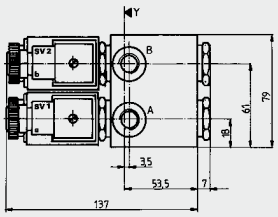
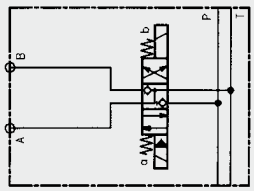
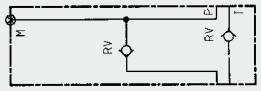
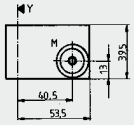
Weight 1.45 kg

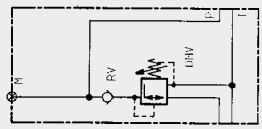
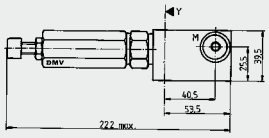
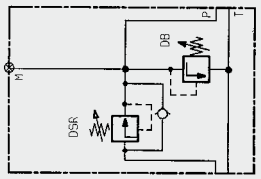
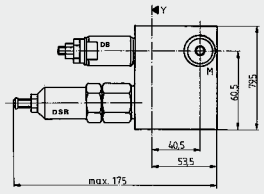
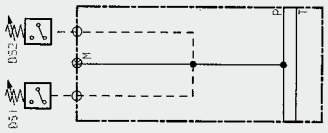
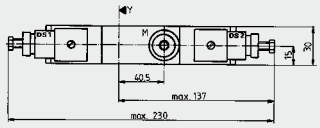
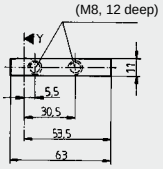


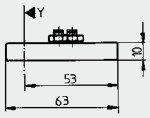
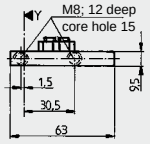
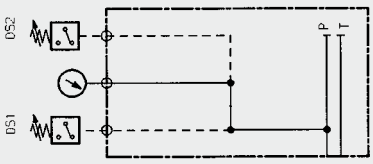
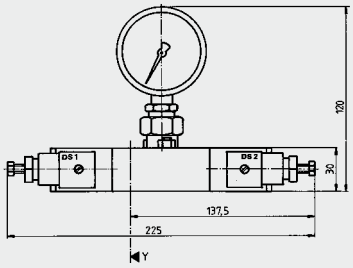
+ Z R – 6 / 350 V +

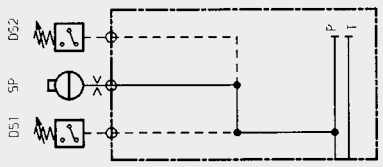
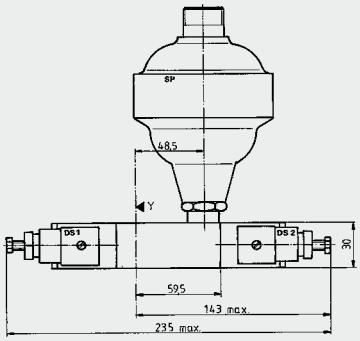
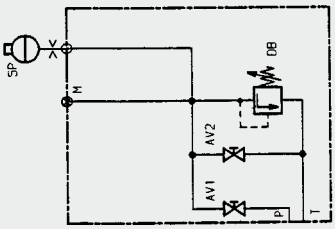
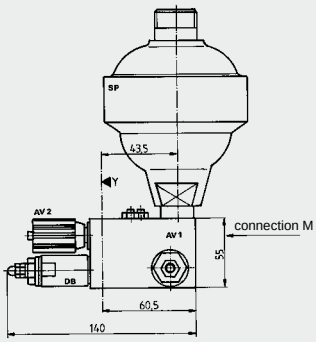
Dir. poppet valve SV
possible symbols
Z, Y, W, V
see point 4.3.
Check valve
no details … without
R … with RV
Pressure switch DS
no details … without
5–8 … see point 4.4.
Pressure relief valve DB
pressure range and type of adjustment
see point 4.2.

Name and symbol	Dimensions	Model code
3.3.6 **2/2 Directional poppet valve combination** 	Weight 1.45 kg 	+ Z T - 6 / 350 V + **Dir. poppet valve SV** possible symbols Z, Y, W, V see point 4.3. **Module code** **Pressure switch DS** no details … without 5–8 … see point 4.4. **Pressure relief valve DB pressure range and type of adjustment** see point 4.2.
3.3.7 **2/2 Directional poppet valve combination** 	Weight 1.48 kg DS – series 5-8 	+ E R Z Z - 3 + **Module code** **Check valve** no details … without R … with RV **Dir. poppet valve SV1** **Dir. poppet valve SV2** possible symbols for SV1 and SV2: Z, Y, W, V see point 4.3. **Pressure switch DS** no details … without 5–8 … see point 4.4.
3.3.8 **2/2 Directional poppet valve combination** 	Weight 1.45 kg 	+ E R Z Z / 350 V + **Module code** **Check valve** no details … without R … with RV **Dir. poppet valve SV1** **Dir. poppet valve SV2** possible symbols for SV1 and SV2: Z, Y, W, V see point 4.3. **Pressure relief valve DB pressure range and type of adjustment** see point 4.2.
3.3.9 **Pressure relief valve module** 	Weight 0.74 kg 	+M R P 210 A+ **Module code** **Check valve RV** no details … without R … with RV **Pressure relief valve** P… proportional pressure relief valve PDB D… pressure relief valve DB 4 (not illustrated) **Pressure range** code P: 70 (… 70 bar) 210 (… 210 bar) 350 (… 350 bar) code D: see point 4.2. **Code** Control amplifier for code P (PDB) A… Z4, without control amplifier B… plug amplifier C… module can be clipped to DIN rails D… 19" Euro card For type of adjustment for code D (DB4) see point 4.2.

Name and symbol	Dimensions	Model code
3.3.10 **3/2 Directional poppet valve module** 	Weight 0.71 kg DS – series 5-8 	+ D R - 2 + **Direct. poppet valve SV** possible symbols C, D see point 4.3. **Code** no details …without additional elements B … orifice / Ø in mm R … check valve RV **Pressure switch DS** no details … without 5–8 … see point 4.4.
3.3.11 **3/2 Directional poppet valve module** 	Weight 1.47 kg 	+ D R - 5 / 350 V + **Dir. poppet valve SV** possible symbols C, D see point 4.3. **Code** no details … without additional elements B … orifice / Ø in mm R … check valve RV **Pressure switch DS** no details … without 5–8 … see point 4.4. **Pressure relief valve DB pressure range and type of adjustment** see point 4.2.
3.3.12 **4/3 Directional poppet valve module** 	Weight 2.16 kg 	+ K + **Module code** 
3.3.13 **4/3 Directional poppet valve module** 	Weight 2.16 kg 	+ L + **Module code** 
3.3.14 **Check valve module** 	Weight 0.79 kg 	+ R PT + **Module code** **Code** **Check valve RV** P … RV in P line T … RV in T line PT … RV in P and T line Cracking pressure p_o = 0.5 bar

Name and symbol	Dimensions	Model code
3.3.15 **Pressure reducing module** 	Weight 0.7 kg 	+ RM 140 V 40 R+ **Module code** **Pressure range pressure reducing valve DMV** 50 (… 50 bar) 140 (… 140 bar) **Type of adjustment DMV** V … Allen head H … hand wheel A … lockable, type 2H lock see point 4.6. **Setting pressure DMV** no details … valve not set (spring relaxed) **Check valve RV** no details … without R … with RV
3.3.16 **Pressure reducing module** 	Weight 1.53 kg 	+ H 350 V 290 / 350 V + **Module code** **Pressure range pressure reducing valve DSR** 100 (… 100 bar) 250 (… 250 bar) 350 (… 350 bar) **Type of adjustment DSR** V … Allen head **Pre-set closing pressure** **DB pressure range and type of adjustment** see point 4.2.
3.3.17 **Pressure switch module** 	Weight 0.6 kg DS – series 5–8 	+ G - 3 3 + **Module code** **Pressure switch DS1** 5–8 … see point 4.4. **Pressure switch DS2** 1–4 … or 5–8 … see point 4.4. If only one figure is given, DS1 is removed Combining series 1-4 with 5-8 is not possible.
3.3.18 **Mounting sandwich plate** 	Weight 0.23 kg 	+ BP + **Module code**

Name and symbol	Dimensions	Model code
3.4.1 **Standard end module**	Weight 0.21 kg 	+ PA **Module code**
3.4.2 **End module with mounting thread**	Weight 0.20 kg 	+ PF **Module code**
3.4.3 **End module with pressure gauge and pressure switches** 	Weight 0.61 kg 	+ PB - 5 5 / 63-100 **Module code** **Pressure switch DS1** no details … without 5–8 … see point 4.4. **Pressure switch DS2** no details … without 5–8 … see point 4.4. If only one figure is given, DS2 is removed **Pressure gauge Ø 63 mm** no details … without Gauge range: 100 bar 160 bar 250 bar 400 bar 600 bar 1000 bar **Note:** Pressure range max. 2/3 of scale range

Name and symbol	Dimensions	Model code
3.4.4 **End module with accumulator and 2 pressure switches** 	Weight 0.66 kg 	+ PC - 55 / . . . **Code** **Pressure switch DS1** no details … without 5–8 … see point 4.4. **Pressure switch DS2** no details … without 5–8 … see point 4.4. If only one figure is given, DS2 is removed **Details for pressure accumulator SP** please give full details, see point 4.1.2 All pressure accumulators up to Ø 96 mm can be fitted.
3.4.5 **Accumulator safety end module** 	Weight 1.06 kg 	+ PS 350 P 350 TÜV / . . . **Code** **Pressure relief valve DB Pressure range** see point 4.2. **Pressure relief valve DB Type of adjustment** P … can be lead-sealed, on TÜV version lead-sealed **Pre-set cracking pressure DB** **TÜV** … with TÜV approval for DB no details … no TÜV approval for DB **Details for pressure accumulator SP** please give full details, see point 4.1.2 All pressure accumulators up to Ø 96 mm can be fitted.

4. DESIGN RECOMMENDATIONS

4.1. DOCUMENTATION

4.1.1 Valves and units

DB – Pressure relief valve DB 4E
Brochure no. E 5.161

– Pressure relief valve DB 4E pressure-set and lead-sealed
Brochure no. E 5.163

PDB – Proportional pressure relief valve

DMV – Pressure reducing valve DMVE–G 1/2
Brochure no. E 5.162

AV – Flow control valve AV 5E
Brochure no. E 5.113

RV – Check valve RVE
Brochure no. E 5.176

SV – 2/2 directional poppet valve WSM06020
3/2 directional poppet valve, WSM03230C and D
Brochure no. E 5.203

DS – Pressure switch
Series 1–4
Series 5–8

ERV – Pilot-operated check valve ERVE-R 1/2
Brochure no. E 5.172

DSR – Pressure reducing valve DSR 5E

4.1.2 Hydraulic accumulators

The following hydraulic accumulators can be fitted (when ordering, please state type in full):

Diaphragm accumulators, weld or screw type: SBO
Brochure no. E 3.100

Bladder accumulators type: SB
Brochure no. E 3.201

4.1.3 Modules

The reference axes X and Y given under the heading Dimensions are for calculating the installation dimensions of a complete control. The reference axis X applies only in conjunction with HYDAC HP and CA units.

4.2. ORDER DETAILS FOR PRESSURE RELIEF VALVE DB

350 M 315 - 300

Pressure range
100 bar (… 100 bar)
200 bar (… 200 bar)
350 bar (… 350 bar)
630 bar (… 630 bar)

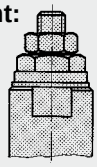
Type of adjustment
V … Allen head
M … adjustable, advise pressure setting limit
SM … scaled knob, advise pressure setting limit (standard)
P … can be lead-sealed
A … lockable, 2H lock

Max. pressure setting
Must be specified for M and SM
Not required for A, V and P

Pre-set cracking pressure
Optional for M, SM, A, P and V
(no details … valve not set, spring relaxed)

Type of adjustment:

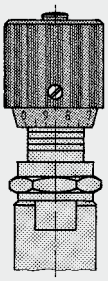
V



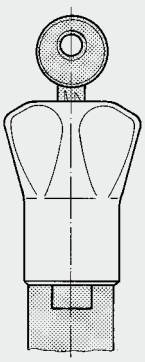
P

M

SM



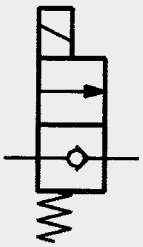
A



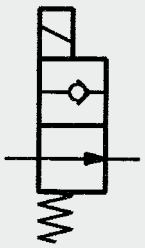
4.3. DIRECTIONAL POPPET VALVES

Symbols

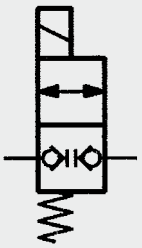
Z



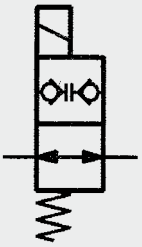
Y



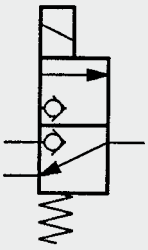
W



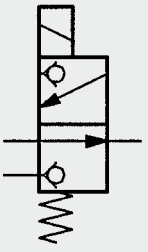
V



C



D

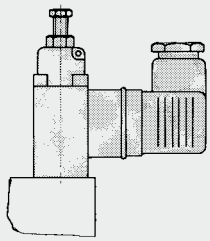


4.4. ORDER DETAILS FOR PRESSURE SWITCH DS

Series 5–8

Order code	Pressure range
5	50 bar
6	200 bar
7	350 bar
8	630 bar

– With adjustment screw
– Compact construction



If solenoid valves with Z4 connectors are ordered, pressure switches with Z14 connectors are supplied (standard).

If solenoid valves with Z5L connectors are ordered, pressure switches with Z15L connectors are supplied.

4.5. MANUAL OVERRIDE FOR DIRECTIONAL POPPET VALVES

N … Push-pin type operation

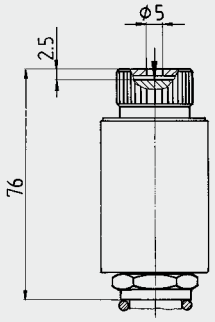
Available for symbols V, W, Y, C, D

Mechanical operation is only possible with a pin.

The opening has a diameter of 5 mm.

The pin is countersunk by 2.5 mm.
The operating stroke is 1.5 mm

The valve is switched as pressure is applied to the actuating mechanism by means of an appropriate pin.

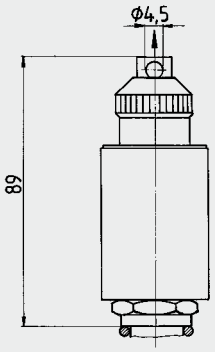


N … Pull-and-hold type operation

Available for symbol Z

The valve is switched as the actuating mechanism is pulled out using an appropriate tool.

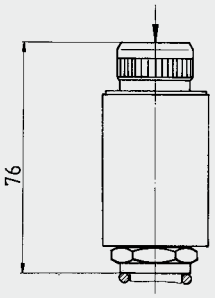
The operating stroke is 1.5 mm.



NG … thumb pressure operation (rubber cap)

Available for symbols V, W, Y, C, D

Manual operation is possible without tool (thumb pressure)

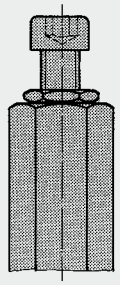


4.6. ORDER DETAILS- FOR PRESSURE REDUCING VALVES DMV

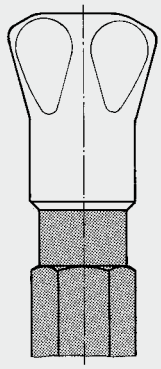
Type of adjustment

V . . . Allen head
H . . . hand wheel
A . . . hand wheel lockable, type 2H lock

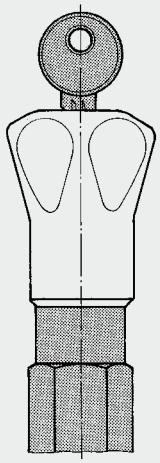
V



H



A



NOTE
The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

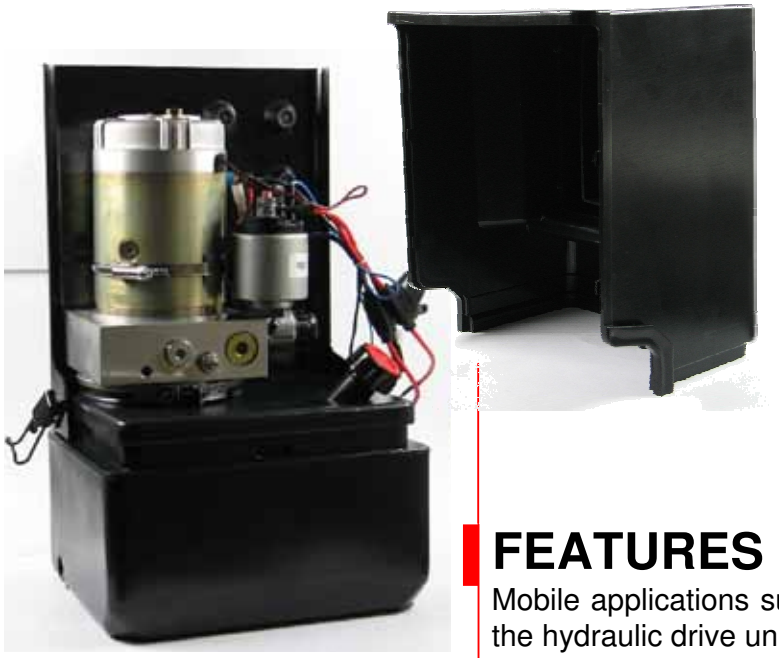
HYDAC INTERNATIONAL

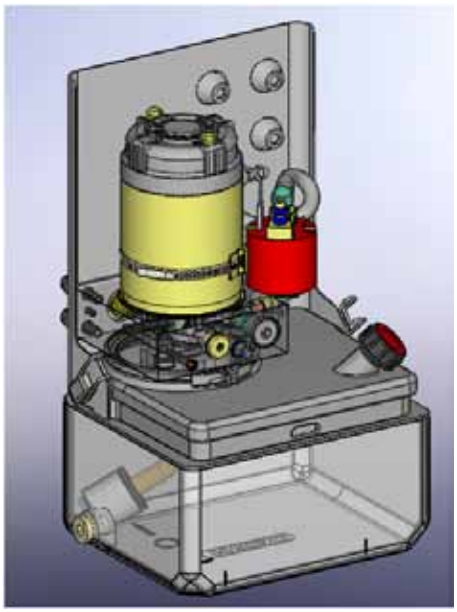
HYDAC
DC Compact power units
DC MOBILE

Up to 250 bar
Up to 5,6 l/min

According to EN60034-1 suitable for short-term operation

For the control of tail gates
and other rugged mobile applications
- slewable





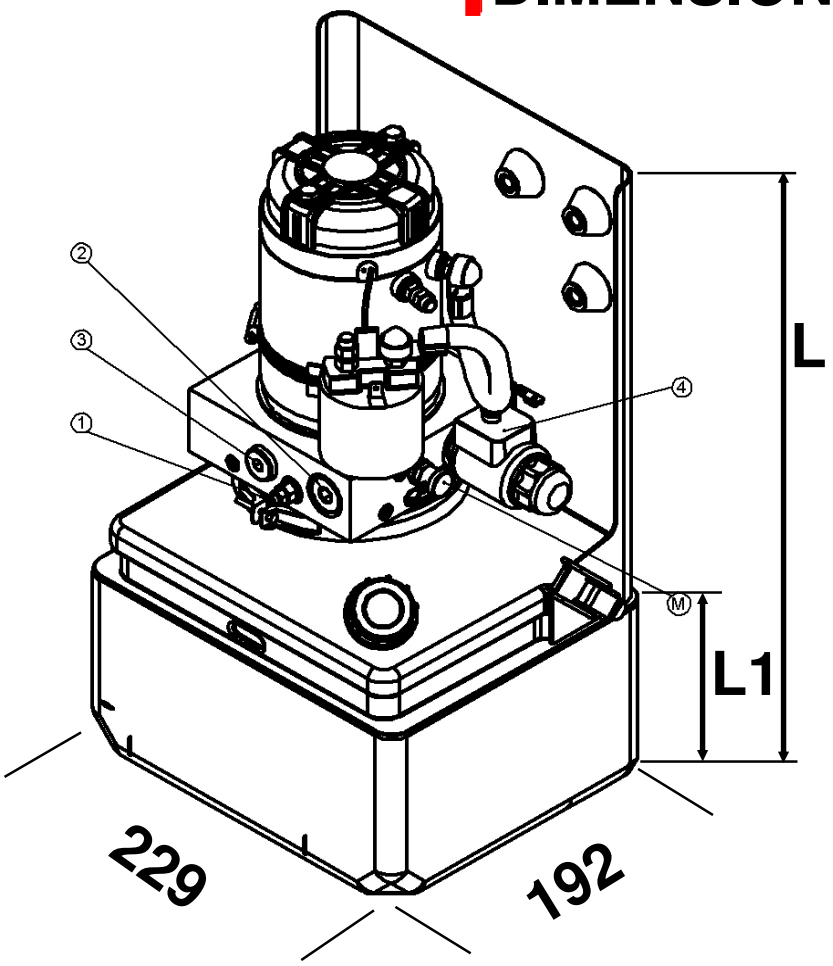
FEATURES

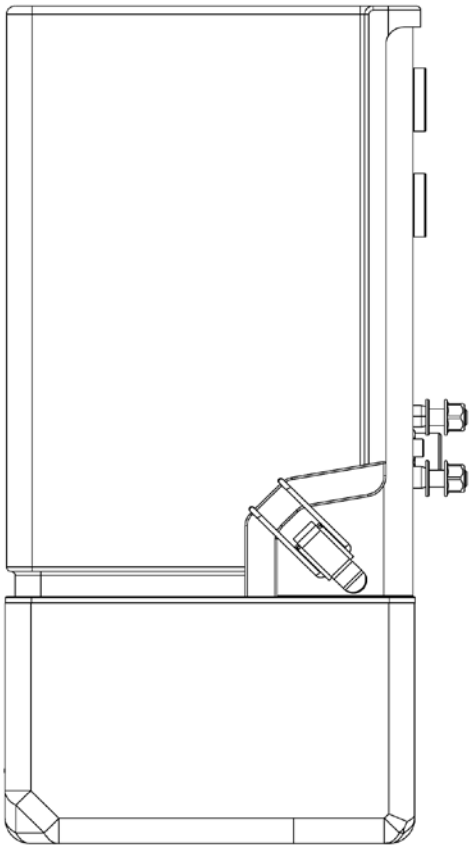
Mobile applications such as tail lifts are placing growing demands on the hydraulic drive units.
It should be related to the subject of CO_2 reduction, weight reduction and the integration of as many functions in a confined space. The lightweight construction of the HYDAC new development was achieved through the maximum use of plastic components. Furthermore, this generation of compact power units features some more advantages against the DC units which are currently on the market:
The use of specially shaped plastic parts such as tank and cover provide a visually attractive exterior of the unit and maximum protection against salt and splash water. In addition to this, the noise is reduced to a minimum by the low-vibration plastic coating. As the only engine in its class, it can be mounted in 3 different positions, without modifications.
The modular design allows performances of 1.2 to 2.2 kW in 12 and 24 volts DC, and 3 different sizes of tanks. Additionally to the optimal use of materials and the simple mounting methods of the individual components, the production costs could be reduced radically. This we can pass as a reasonable price to the customer. Despite its compact design, the structural design is distinguished by its ease of maintenance.

TECHNICAL SPECIFICATIONS

Flow-rate:	up to 2.5 ... 5.6 l/min
Operating pressure:	up to 200 bar
Peak pressure:	up to 250 bar
Engine:	Pn = 1.2 kW ... 2.2 KW
Voltages:	12 and 24 Volt
IP rating:	min. IP 54 according to DIN EN 60034-5
Pump displacement:	Vg: 0.8 cm ³ / rev. ... 2.6 cm ³ / rev.
Tank volume:	4,0 - 7,5 l
Usable volume:	2.2 - 6.3 l
Duty ratio:	S2 (Short term operation) S3 (intermittent duty)
Fluid:	Mineral oil IAW DIN 51524 Part 2
Fluid temperature:	min. -20 ° C to + 80 ° C
Ambient temperature:	min. -20 ° C to + 40 ° C
Viscosity range:	min. 10 mm²/s - max. 380 mm²/s
Filtration:	operating fluid according to ISO4406 class 21/19/16 or better

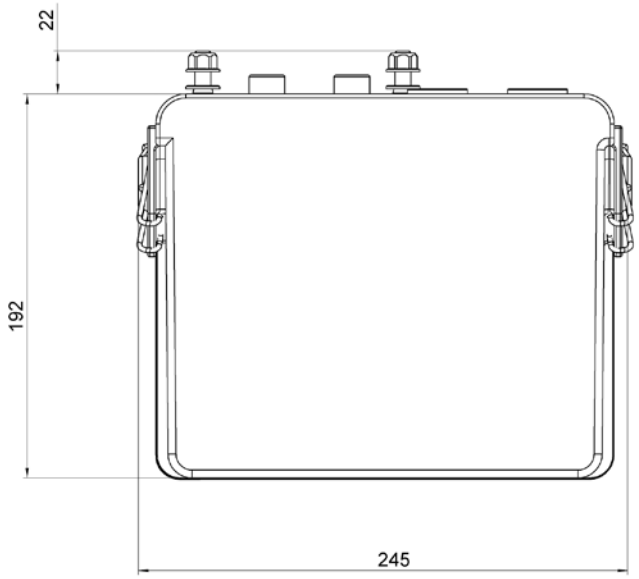
DIMENSIONS

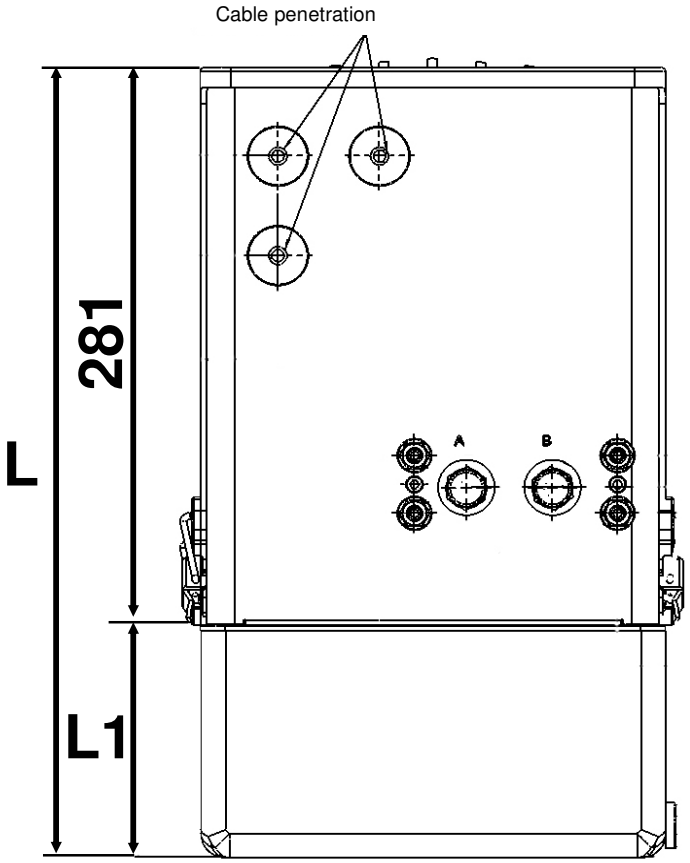




Main dimensions in mm

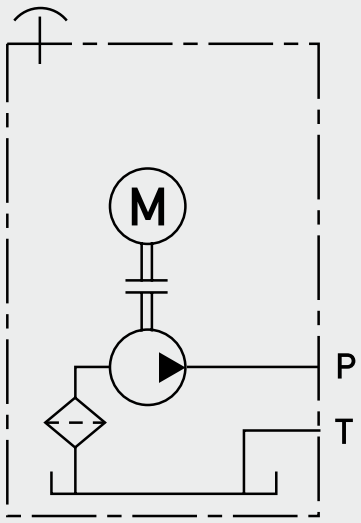
Size	L	L1
1	398	117
2	423	142
3	463	182





HYDAC INTERNATIONAL

HYDAC
DC Compact
Power Units DC1



up to 250 bar
up to 18.4 l/min

In accordance with EN 60034-1
suitable for short-term operation

1. TECHNICAL SPECIFICATIONS

1.1 GENERAL

- Very low noise level due to special construction
- Space-saving design due to small flange
- Possibility of different hydraulic controls in the same flange due to flexible configuration of cartridge valves and/or fitting of control blocks and serial function modules

1.2 SAFETY INSTRUCTIONS

Observance of the safety instructions is of the utmost importance. Before commissioning, the safety instructions must be read and followed without fail – see point 8! Failure to observe these instructions will invalidate the product warranty.

1.3 HYDRAULIC DETAILS

Flow rate Q	up to 18.4 l/min
Continuous pressure	up to 250 bar
Peak pressure	up to 300 bar (on request) (possible with a reduced number of cycles depending on pump size!)
Motor	1.7 – 3.0 kW
Protection class	DIN EN 60034-5 min. IP 54
Pump displacement	1.0 – 8 cm³
Tank volume	draw-off/useable volume 1.2 l – 7.8 l
Duty cycle	see point 4
Operating fluid	mineral oil to DIN 51524 Part 2
Temperature range of operating fluid	min. –20 °C to max. +80 °C
Viscosity range	min. 10 mm²/s – max. 380 mm²/s
Filtration	operating fluid to ISO 4406 Class 21/19/16 or cleaner
Ambient temperature	–20 °C to +40 °C
Return flow rate	up to maximum 40 l/min

1.4 MECHANICAL AND ELECTRICAL DETAILS

Pressure-compensated external gear pump, direction of rotation: anti-clockwise

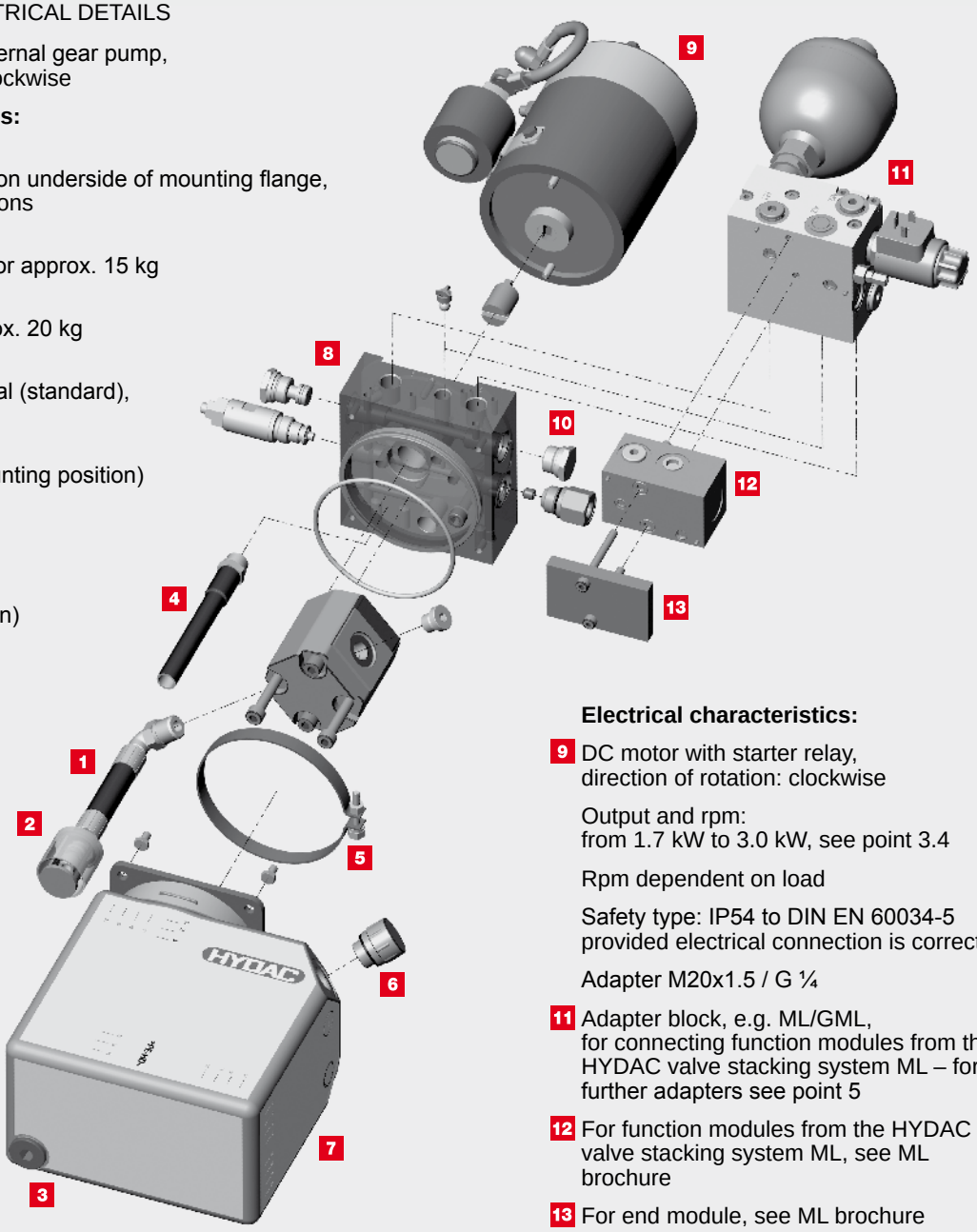
Mechanical characteristics:

Type of mounting:
2 x M10 (min. 8.8) threads on underside of mounting flange, see point 3.6 Mounting options

Weight of basic unit:
DC1 with 1.7 – 2.2 kW motor approx. 15 kg (without oil)

DC1 with 3 kW motor approx. 20 kg (without oil)

Mounting position: horizontal (standard), vertical possible



1 Suction line (vertical in mounting position)

2 Suction strainer 350 µm

3 Oil drain plug

4 Return line (vertical in mounting position)

5 Clamp

6 Breather filter

7 Plastic oil tank (see point 3.3, Oil tank) in PE, semi-transparent with oil level markings
– depending on the application, provide as much support to tank as possible (see point 3.5)
– do not expose to direct sunlight over long periods

8 Flange enables a variety of different hydraulic controls due to versatile configuration of cartridge valves – see point 4 for application examples

Electrical characteristics:

9 DC motor with starter relay, direction of rotation: clockwise

Output and rpm:
from 1.7 kW to 3.0 kW, see point 3.4

Rpm dependent on load

Safety type: IP54 to DIN EN 60034-5 provided electrical connection is correct

Adapter M20x1.5 / G ¼

11 Adapter block, e.g. ML/GML, for connecting function modules from the HYDAC valve stacking system ML – for further adapters see point 5

12 For function modules from the HYDAC valve stacking system ML, see ML brochure

13 For end module, see ML brochure

2. MODEL CODE

Power unit | Flange controls | Build-on controls | Valve voltage | Adapter block

Example **DC1 H B05 R - 2.0 - 250 - 2.2 - 24A - TSM - M23-0DV - 250V210 + ML + 24DG – Z4 + B1/ML ...**

Type of power unit

Mounting pos., see point 3.1
- H = horizontal
- V = vertical

Oil tank, see point 3.3
- B04 = length 165 mm
- B05 = length 220 mm
- B08 = length 340 mm
- B12 = length 500 mm

Mounting orientation Oil tank, see point 3.2
- L = left
- R = right
- T = top (not with ML or adapter)

Displacement volume of pump and maximum pressure, see point 4.

Motor: output and **voltage,** see point 3.4
- **1.7 kW** **12 V DC**
- **2.2 kW** **24 V DC**
- **3.0 kW** **24 V DC**

Thermoswitch

Flange controls, see point 4
- **M23-0DV** = see overview of flange controls
- **250V** = pressure relief valve DB, pressure range and type of adjustment
- **210** = DB pre-set to 210 bar, no details: not pre-set

Build-on controls
- **ML** = with valve stacking system ML, no details: no stacking system

Valve voltage
- **24DG** = 24 V DC without connector (standard)
- **230AG** = 230 V AC without connector
- **Z4** = with connector; no details: without connector

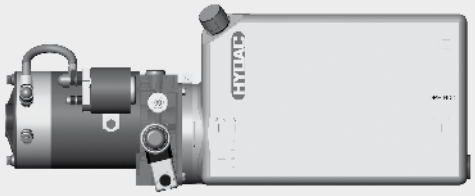
Adapter block, see point 5
Required for connecting ML stacking system or control valve NG6

Build-on valves or controls
e.g. valve stacking system ML or control valve NG6 in accordance with DIN 24340 Form A, ISO 4401

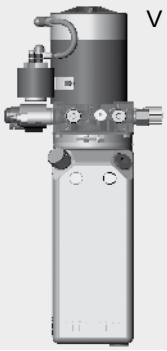
3. TECHNICAL DETAILS AND DIMENSIONS

3.1 MOUNTING POSITION OF POWER UNIT

H = horizontal

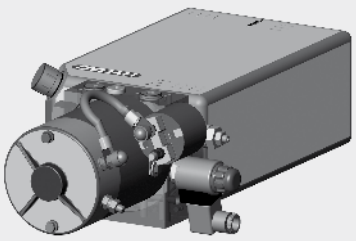


V = vertical

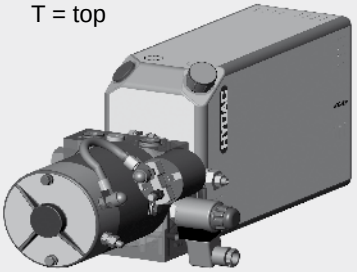


3.2 MOUNTING ORIENTATION OF OIL TANK

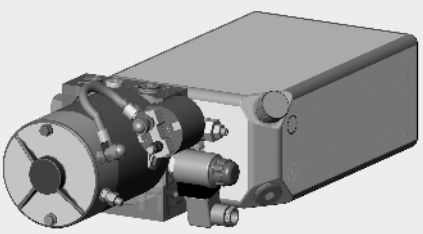
L = left



T = top



R = right

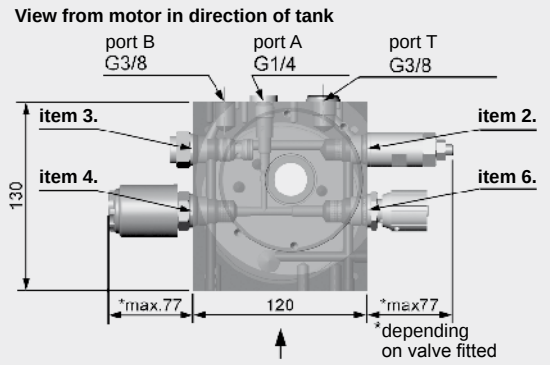


3.3 OIL TANK

Tank code	Filling volume / draw-off volume [l]****			
	Horizontal tank position R and L	Horizontal tank position T**	Vertical	Tank length [mm]
B04***	1.9/1.5	2.2/2.0	1.8/1.2	165*
B05	2.7/2.2	3.0/2.7	3.0/2.4	220*
B08	4.4/3.5	5.1/4.6	5.1/4.5	340*
B12	6.5/5.2	8.4/7.6	8.4/7.8	500*

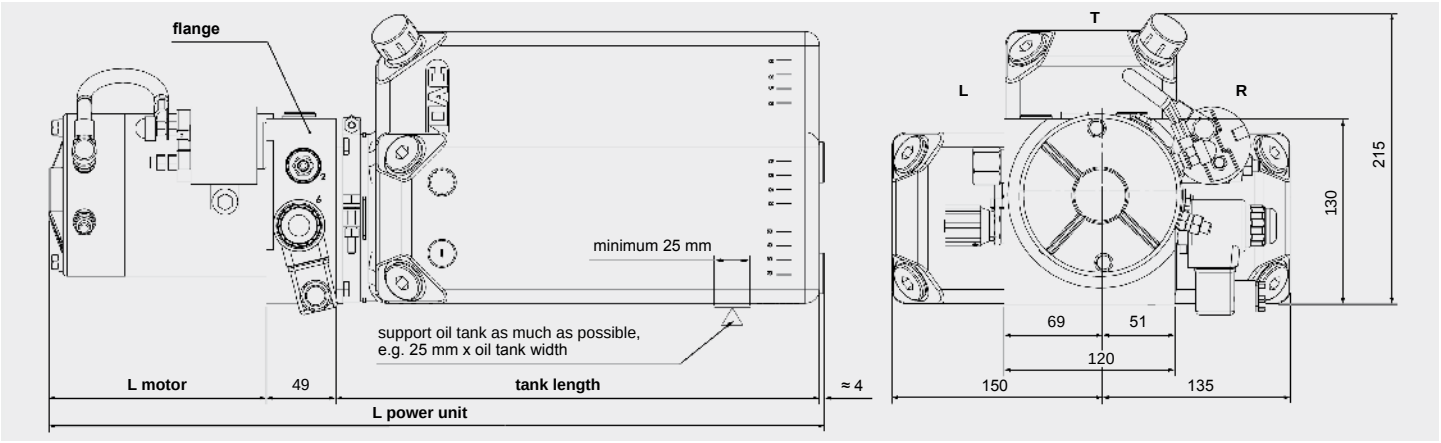
* where mounted horizontally, support for oil tank must be provided by the customer – see dimensions
** cannot be selected if adapter blocks are to be fitted (see point 6)
*** can only be used up to pump size 3.75
**** The usable volume given is the maximum value (will be achieved with a clean suction filter, low to medium flow rate and viscous fluid!)

3.4 FLANGE DIMENSIONS (M23Z-DV-A/M)



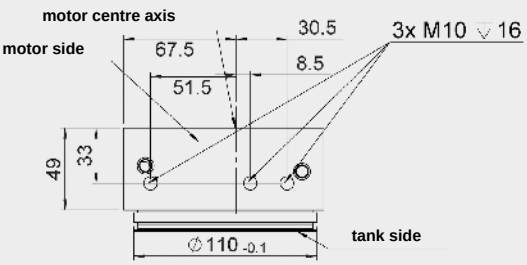
View of mounting option on flange - see point 3.6.

3.5 DIMENSIONS



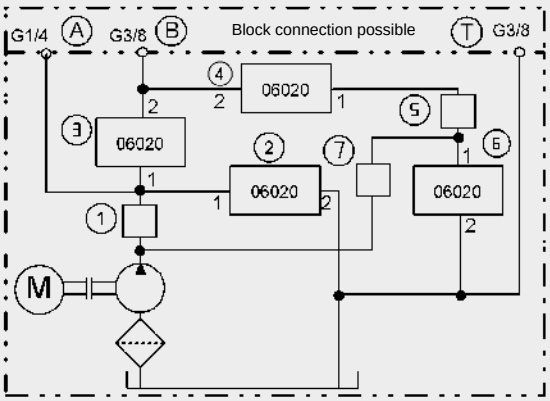
Motor performance DC [kW]	Voltage DC [V]	L motor [mm]	Thermoswitch
1.7	12	approx. 156	TS
2.2	24	approx. 156	TS
3	24	approx. 205	TS

3.6 MOUNTING OPTIONS ON FLANGE UNDERSIDE



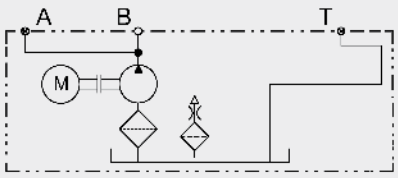
Torque for mounting screws 40 Nm,
Minimum screw quality 8.8

3.7 CAVITIES IN DC1 FLANGE



Item ① = Cavity for RV mounting kit
Item ②③④⑥ = Cavity 06020 for valves
Item ⑤⑦ = Cavity for blanking plugs

3.8 FLANGE CONTROLS (also see point 5)
BASIC CONTROL M00



Ports:
A = G 1/4
B and T = G 3/8

M 0 0
Flange version
without DB
without RV

3.9 VALVES FOR 06020 CAVITY

Type			
	250V CE210		DB4E (brochure no. 5.161) DB4E-CE (brochure no. 5.163)
	V		WSM 06020 V-01 (brochure no. 5.949.1)
	W		WSM 06020 W-01 (brochure no. 5.949.3)
	WN		WSM 06020 W-01J (brochure no. 5.949.3)
	Y		WSM 06020 Y-01 (brochure no. 5.947)
	Z		WSM 06020 Z-01 (brochure no. 5.943)
	ZN		WSM 06020 Z-01J (brochure no. 5.949.2)
	DV		DV5E (brochure no. 5.113)
	SR		SR5E (brochure no. 5.117)
	A3 A4		Adapter M20x1.5 – G¼ for build-on parts
	0		Long blanking plug (closed)
	0		Short blanking plug (open)

4. PUMP – MOTOR CHARACTERISTICS

4.1 PUMP – MOTOR CHARACTERISTICS: 1.7 KW – 12 V

Pump displacement [ccm]	Pressure [bar]				
	50	100	150	200	250
1.0	3.3 l/min 80 A 10 min 26 %	3.2 l/min 110 A 10 min 26 %	2.9 l/min 130 A 8 min 20 %	2.8 l/min 164 A 6 min 16 %	2.7 l/min 175 A 4.5 min 13 %
2.0	6.5 l/min 110 A 10 min 25 %	6.0 l/min 160 A 6 min 16 %	5.4 l/min 220 A 3.5 min 10 %	4.9 l/min 264 A 2.5 min 6 %	4.6 l/min 317 A 1.7 min 5 %
2.65	8.3 l/min 125 A 8 min 21 %	7.3 l/min 200 A 4 min 11 %	6.6 l/min 260 A 2 min 7 %	6.0 l/min 367 A 1.5 min 4 %	
3.75	10.8 l/min 150 A 6 min 17 %	9.1 l/min 250 A 3 min 7.5 %	8.2 l/min 340 A 1.5 min 4 %		
4.75	13 l/min 175 A 5 min 12.5 %	10.8 l/min 280 A 2 min 6 %			
6.3	16.4 l/min 220 A 3 min 9 %				
8.0	18.1 l/min 250 A 3 min 7.5 %				Q: [l/min] I: A] S2: [min] S3: [%]

4.2 PUMP – MOTOR CHARACTERISTICS: 2.2 KW – 24 V

Pump displacement [ccm]	Pressure [bar]				
	50	100	150	200	250
1.0	3.4 l/min 35 A 5.5 min 12 %	3.2 l/min 50 A 5.5 min 12 %	3.0 l/min 70 A 5 min 11 %	2.8 l/min 77 A 4 min 9 %	2.7 l/min 90 A 3 min 7 %
2.0	6.5 l/min 55 A 5.5 min 12 %	5.9 l/min 80 A 4 min 8 %	5.4 l/min 110 A 2 min 5.5 %	4.9 l/min 130 A 1 min 4 %	
2.65	8.3 l/min 65 A 5.5 min 12 %	7.3 l/min 100 A 2.5 min 6 %	6.5 l/min 130 A 1 min 4 %		
3.75	10.9 l/min 75 A 4.5 min 9 %	9.2 l/min 120 A 1.5 min 4.5 %			
4.75	12.9 l/min 90 A 3.5 min 7.5 %	10.6 l/min 155 A 0.8 min 3.5 %			
6.3	16.2 l/min 110 A 2 min 5.5 %				
8.0	18.4 l/min 125 A 1.5 min 4.5 %				Q: [l/min] I: A] S2: [min] S3: [%]

4.3 PUMP – MOTOR CHARACTERISTICS: 3.0 KW – 24 V

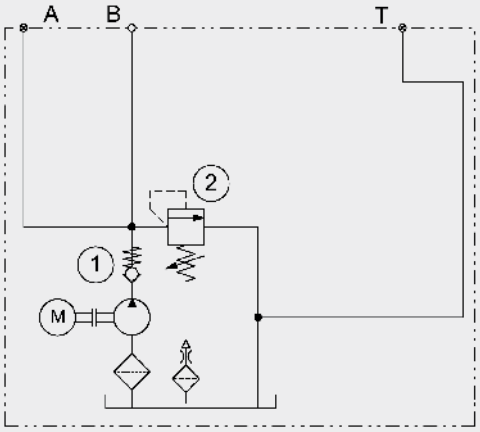
Pump displacement [ccm]	Pressure [bar]				
	50	100	150	200	250
1.0	4.1 l/min 40 A 10 min 34 %	3.8 l/min 57.5 A 10 min 32 %	3.7 l/min 80 A 9 min 30 %	3.5 l/min 90 A 8 min 25 %	3.4 l/min 92.5 A 7 min 22 %
2.0	8.0 l/min 67.5 A 9.5 min 34 %	7.3 l/min 100 A 8 min 24 %	6.9 l/min 137.5 A 6 min 20 %	6.5 l/min 170 A 4.5 min 16 %	5.9 l/min 200 A 3.5 min 12.5 %
2.65	10.4 l/min 75 A 9 min 30 %	9.4 l/min 120 A 6 min 21 %	8.7 l/min 170 A 4.5 min 16 %	7.7 l/min 212.5 A 3 min 12 %	
3.75	13.4 l/min 93 A 8 min 26 %	11.9 l/min 160 A 5 min 17 %	10.4 l/min 215 A 3 min 12 %		
4.75	16 l/min 110 A 5.5 min 22 %	13.7 l/min 185 A 4 min 14 %			Q: [l/min] I: A] S2: [min] S3: [%]

5. FLANGE CONTROLS

5.1 BASIC CONTROL M21

M 2 1

Flange version
with pressure relief valve, item 2
with check valve, item 1



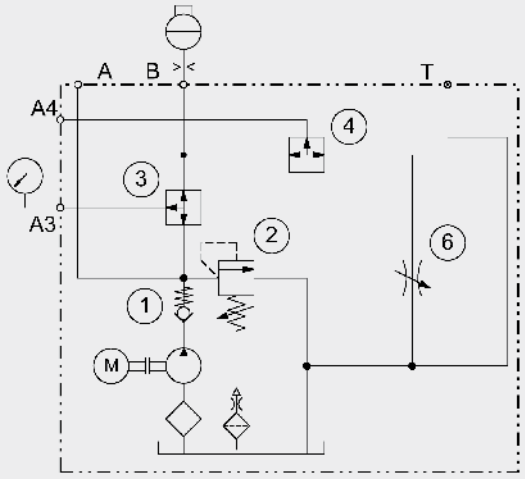
Ports:
A = G 1/4
B and T = G 3/8

For further technical information on valves see:

DB4E	Brochure no. 5.161../.. and 5.163../..
DV5E	Brochure no. 5.113../..
WSM 06020	Brochure no. 5.949../..

Example: **M21-A3 A4 DV-CE210-MA2-EDS3-SBO3**

Supplied loose, see page 9



Ports:
A = G 1/4, B and T = G 3/8
A3 and A4 = G 1/4
(Adapter M 20 x 1.5-G 1/4)

ACCUMULATOR CHARGING CONTROL

Example: **M 2 1 - A3 A4 DV - CE210 + 24DG**

Flange version metric

Item 2 Pressure relief valve DB4E

Item 1 Check valve EBS RV06

Item 3	Blanking plug	**0**
	Port with adapter M20x1.5 / G1/4	**A3**
Item 4	Blanking plug	**0**
	Port with adapter M20x1.5 / G1/4	**A4**
Item 6	Blanking plug	**0**
	Flow control valve DV5E	**DV**
	WSM06020W...01M...with M/O*	**WN**
	WSM06020V...	**V**
	DB4E...CE...type-approved Pressure setting DB4E e.g. 210 bar	**CE210**
	Valve voltage 24 V DC =	**24DG**
	230 V AC =	**230AG**

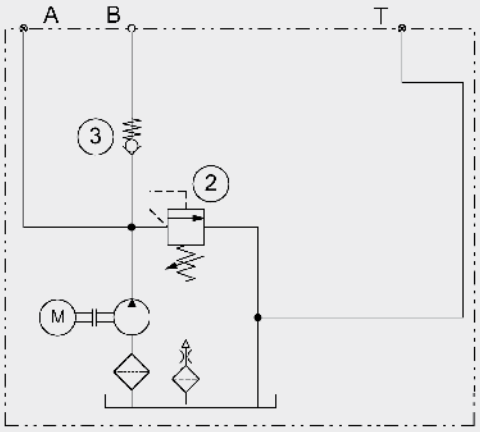
For further build-on parts see point 7.

For more detailed information on build-on parts for A3 / A4, see page 9.

5.2 BASIC CONTROL M23

M 2 3

Flange version
with pressure relief valve, item 2
with check valve, item 3

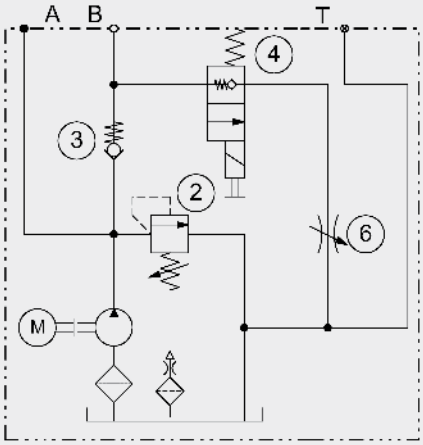


Ports:
A = G 1/4
B and T = G 3/8

For further technical information on valves see:

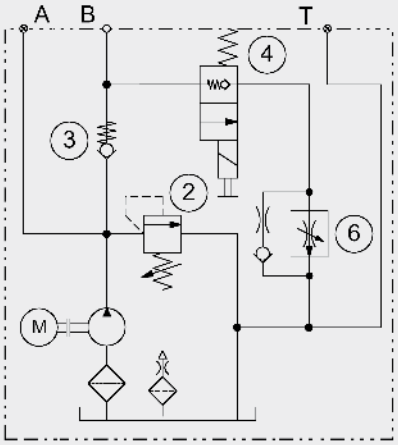
DB4E	Brochure no. 5.161../..
RVM 06020	Brochure no. 5.193../..
DV5E	Brochure no. 5.113../..
WSM 06020	Brochure no. 5.949../..
SRE	Brochure no. 5.118../..
SR5E	Brochure no. 5.117.4../..

Example: **M23-ZNDV-250V**



Ports:
A = G 1/4
B and T = G 3/8

Example: **M23-ZN SR2.5-250V**



Ports:
A = G 1/4
B and T = G 3/8

LIFT-LOWER CONTROL

Example: **M 2 3 - ZN DV - 250V + 24DG**

Flange version metric

Item 2 Pressure relief valve DB4E

Item 3 Check valve RVM06020

Item 4	Blanking plug	**0**
	Adapter M20x1.5 / G1/4	**A4**
	WSM06020Z	**Z**
	WSM06020Z...01M...with M/O* (standard)	**ZN**
	WSM06020Y	**Y**
	WSM06020W...01M...with M/O* (standard)	**WN**
Item 6	Blanking plug	**0**
	Flow control valve DV5E (standard)	**DV**
	Pressure comp. flow control valve SR5E	**SR**
	WSM06020V	**V**
	WSM06020W	**W**
	WSM06020W...01M...with M/O* (standard)	**WN**

Pressure relief valve not pre-set (p_{max} 250 bar)

Valve voltage
24 V DC = **24DG**
230 V AC = **230AG**

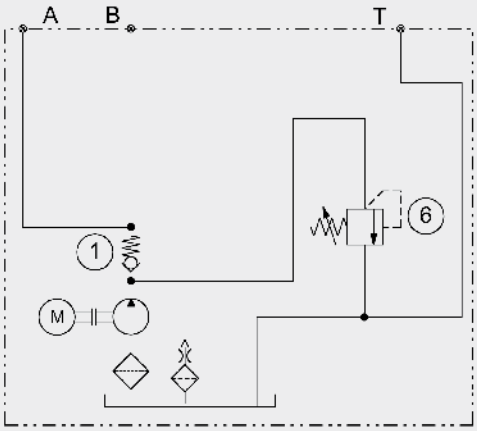
For further build-on parts see point 7.

*M/O = Manual override

BASIC CONTROL M61

M 6 1

Flange version
with pressure relief valve, item 6
with check valve, item 1



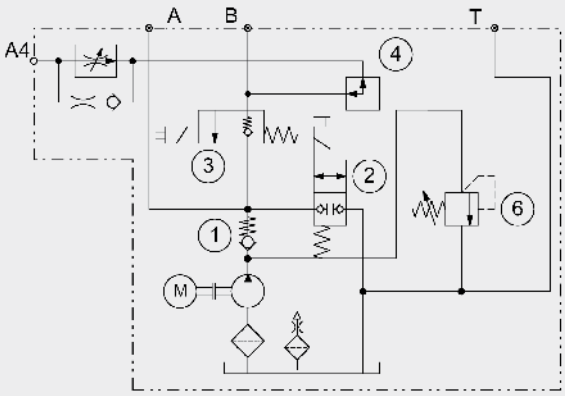
Ports:
A and A4 = G 1/4
B and T = G 3/8

For further technical information on valves see:

DB4E	Brochure no. 5.161../..
RVM 06020	Brochure no. 5.193../..
DV5E	Brochure no. 5.113../..
WSM 06020	Brochure no. 5.949../..
SRE	Brochure no. 5.118../..
SR5E	Brochure no. 5.117.4../..

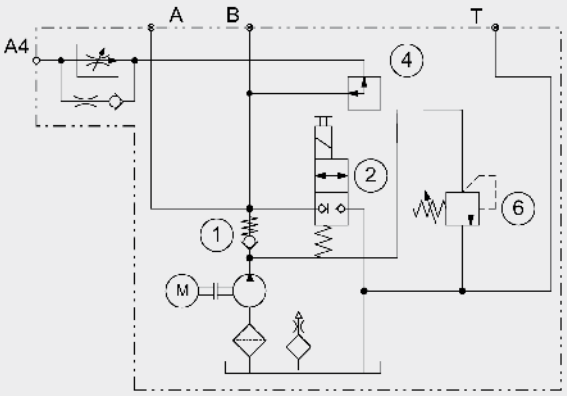
Example: **M61-WNZN-A4/S4.0-250V200**

Unpressurized circulation



Ports:
A and A4= G 1/4
B and T = G 3/8

Example: **M61-WN0-A4/S4.0-250V200**



Ports:
A and A4= G 1/4
B and T = G 3/8

LIFT-LOWER CONTROL

Example: **M 6 1 - WNZN - A4/S4.0 - 250V200 + 24DG**

Flange version metric

Item 6 Pressure relief valve DB4E

Item 1 Check valve EBS RV06

Item 2	no details = no control valve	**0**
	WSM06020W...	**W**
	WSM06020W...01M...with M/O*	**WN**
	WSM06020V...	**V**
Item 3	no details = no control valve	**0**
	Adapter M20x1.5 / G1/4	**A3**
	WSM06020Z...	**Z**
	WSM06020Z...01M...with M/O*	**ZN**
Item 4	no details = no port A4	**0**
	Port with adapter M20x1.5 / G1/4	**A4**
	Adapter with flow control valve SRE1 (built-on), see point Punkt 7.1	**A4 / S4.0**
	Pressure relief valve (p_{max} 250 bar) 200 bar pre-set	
	Valve voltage 24 V DC =	**24DG**
	230 V AC =	**230AG**

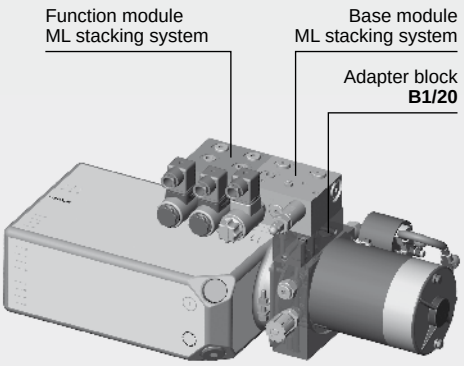
For further build-on parts see point 7.

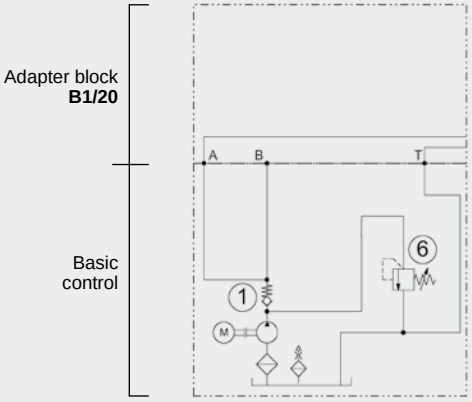
*M/O = Manual override

6. ADAPTER BLOCKS

Type:
DC1...M61...ML...**+ B1/20 +**...

Block for mounting base modules from the HYDAC valve stacking system ML (see ML brochure)



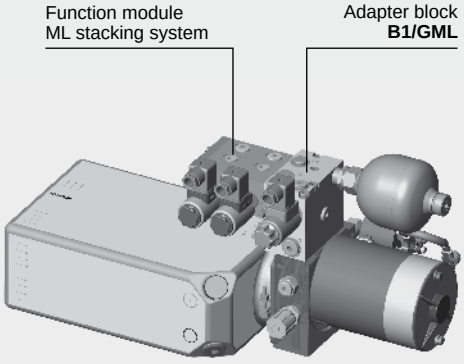


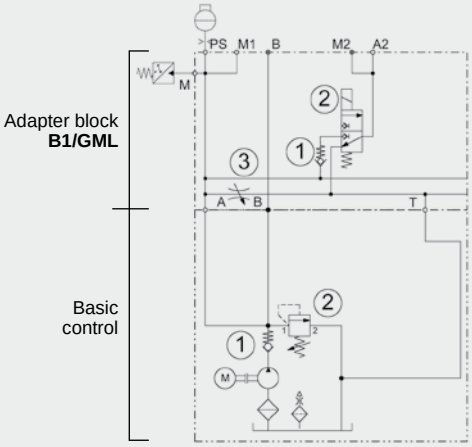
Type:
DC1...M21...ML...**+ B1/GML +**...

Block for mounting function modules from the HYDAC valve stacking system ML (see ML brochure), suitable for optional mounting of an accumulator, with manually-operated pressure release (3)

For further technical information on valves see:

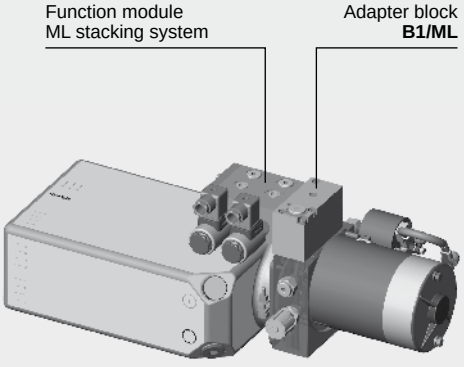
DB4E	brochure no. 5.161../..
DV5E	brochure no. 5.113../..
WSM 06020	brochure no. 5.949../..
SRE	brochure no. 5.118../..

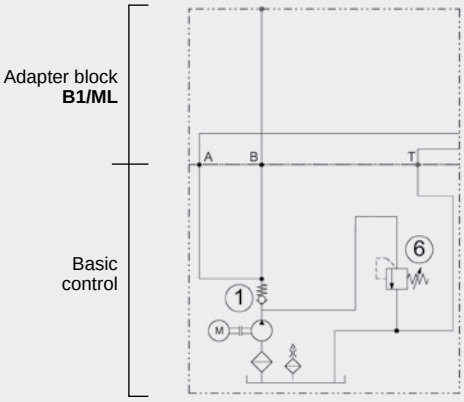




Type:
DC1...M61...ML...**+ B1/ML +**...

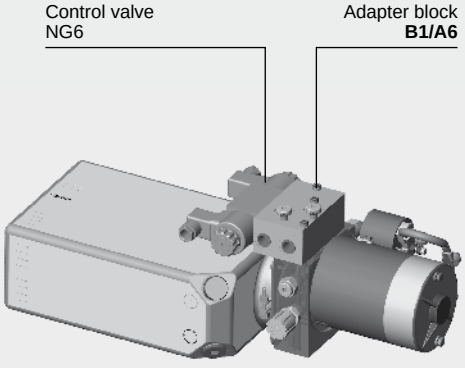
Block for mounting function modules from the HYDAC valve stacking system ML (see ML brochure)

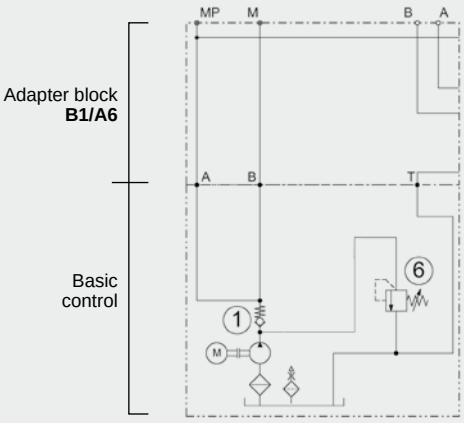




Type:
DC1...M61...**+ B1/A6 +**...

Block for mounting control valves, nominal size 6 in accordance with DIN 24340 Form A, ISO 4401. When fitting several control valves, extension module 3A6 is required (see ML brochure)

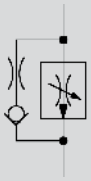




7. BUILD-ON PARTS FOR A, A3, A4 (on A3, A4 with adapter M20x1.5 / G1/4)

Example **DC1... - A4 / MA4 + ...**

7.1 FLOW CONTROL VALVES - supplied fitted -



S1.6	Pressure compensated flow control valve with pre-set flow rate = 1.6 l/min (Part No. 3055053)	SRE1
S2.5	Pressure compensated flow control valve with pre-set flow rate = 2.5 l/min (Part No. 3055131)	SRE1
S4.0	Pressure compensated flow control valve with pre-set flow rate = 4.0 l/min (Part No. 554533)	SRE1
S5.0	Pressure compensated flow control valve with pre-set flow rate = 5.0 l/min (Part No. 558362)	SRE1
S6.0	Pressure compensated flow control valve with pre-set flow rate = 6.0 l/min (Part No. 554534)	SRE1
S8.0	Pressure compensated flow control valve with pre-set flow rate = 8.0 l/min (Part No. 554535)	SRE1
S10.0	Pressure compensated flow control valve with pre-set flow rate = 10.0 l/min (Part No. 554536)	SRE1
S12.0	Pressure compensated flow control valve with pre-set flow rate = 12.0 l/min (Part No. 555040)	SRE1

For further technical details, see brochure no. 5.118../..

7.2 PRESSURE SWITCHES - supplied loose -

DS1	Mechanical pressure switch	10 – 100 bar
DS2	Mechanical pressure switch	50 – 200 bar
DS3	Mechanical pressure switch	100 – 350 bar
EDS3	Electronic pressure switch EDS3446-2-250-000	up to 250 bar

For further technical details on the EDS 3000, see brochure no. 18.060.0../..

7.3 PRESSURE GAUGES - supplied loose -

MA1	Pressure gauge Ø 63 – 160 bar
MA2	Pressure gauge Ø 63 – 250 bar
MA4	Pressure gauge Ø 63 – 400 bar
M	Minimess test point

7.4 ACCUMULATORS - supplied loose -

SBO1	Accumulator SBO210-0.16
SBO3	Accumulator SBO210-0.32
SX	Accumulator, give full details
AS	Accumulator adapter with orifice Ø 2.0 mm

For further technical details on the SBO, see brochure no. 3.100.19../..

8. SAFETY INSTRUCTIONS AND DOCUMENTATION

8.1 SAFETY INSTRUCTIONS DURING OPERATION

- Ensure that the unit is only used for its designated purpose
- Do not exceed maximum permitted operating pressure
- Do not exceed maximum permitted oil temperature of 80°C
- Power units and build-on parts can become hot during operation – risk of injury!

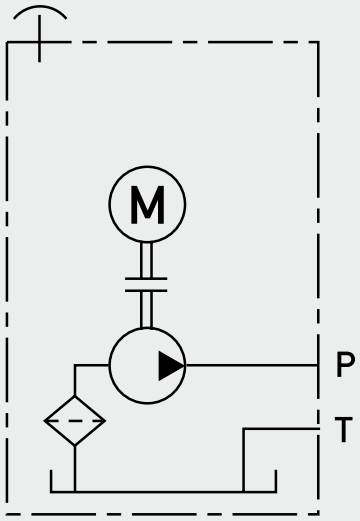
8.2 REQUIREMENTS AT THE INSTALLATION SITE

- Permitted ambient temperature range -20 °C to +40 °C
- Ensure adequate ventilation for heat dissipation
- Do not mount power unit to moving parts
- Finish required on mounting surface 0.3 mm over 100 mm length
- To avoid excessive noise, use flexible mounts and avoid mounting on resonating surfaces
- To prevent vibration transfer, hoses must be used wherever possible when connecting the power unit

NOTE
The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax.: 0 68 97 /509-598
E-Mail: flutec@hydac.com

HYDAC (Three-Phase Current) Compact Power Units CO1



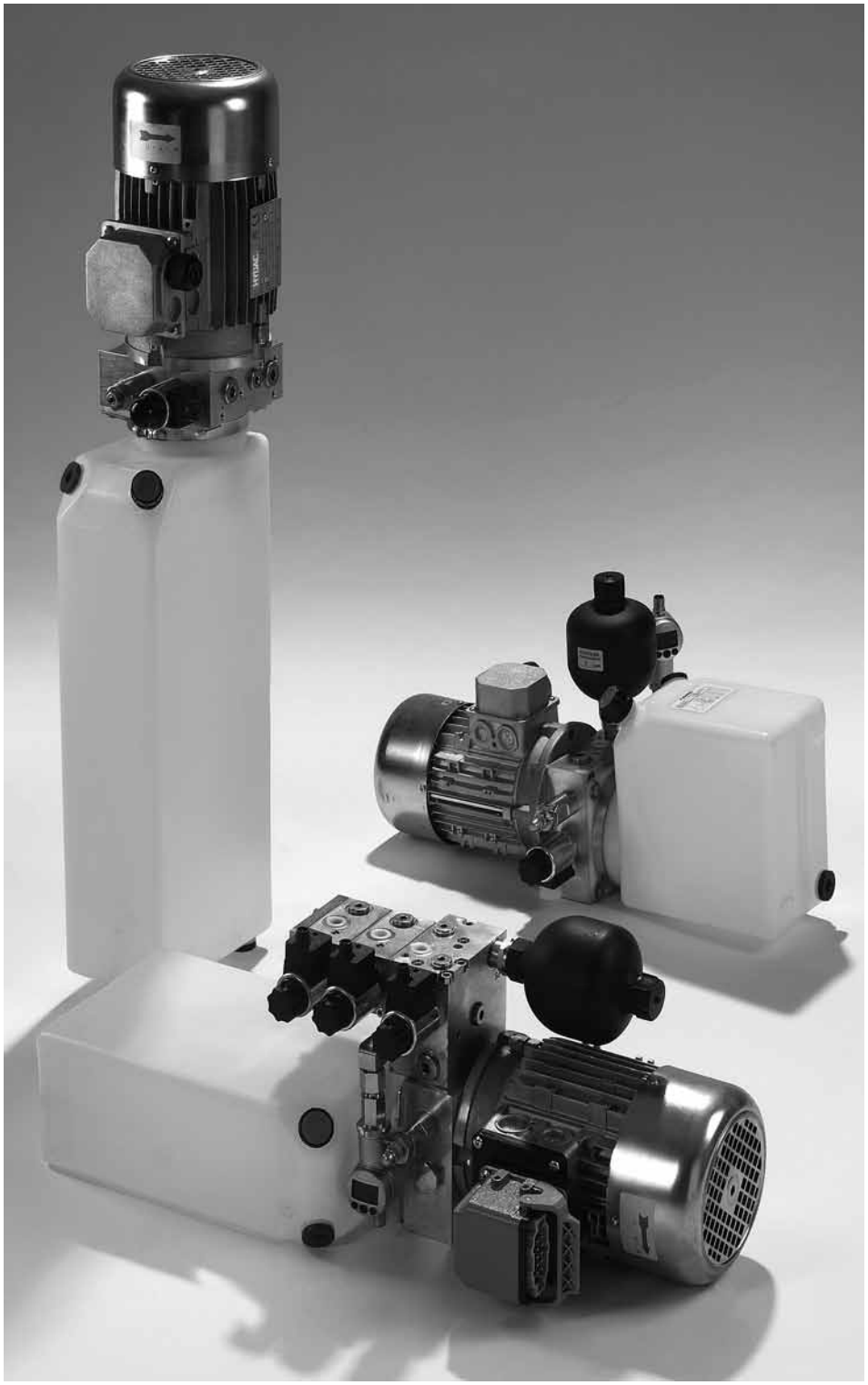
Up to 250 bar
Up to 20 l/min

In accordance with EN 60034-1 suitable for:

Short-term operation:
S2 = 5 min* (average value)

Intermittent operation:
S3 = 20 %* (average value)

* maximum oil temperature of 80 °C must not be exceeded



1. TECHNICAL SPECIFICATIONS

1.1 GENERAL

- Very low noise levels due to special construction
- Space-saving design due to small flange
- Possibility of different hydraulic controls in the same flange due to flexible configuration of cartridge valves and / or fitting of control blocks and serial function modules

1.2 SAFETY INSTRUCTIONS

Observance of the safety instructions is of the utmost importance.
Before commissioning, the safety instructions must be read and followed without fail – see point 7!
Failure to observe these instructions will invalidate the product warranty.

1.3 HYDRAULIC SPECIFICATIONS

Flow rate Q	Up to 20.0 l/min
Continuous pressure	Up to 250 bar
Peak pressure	Up to 300 bar (on request) (possible with a reduced number of cycles depending on pump size!)
Motor	0.37 – 3.0 kW standard (4.0 and 5.5 kW on request)
Protection class	DIN EN 60034-5 min IP 54
Pump displacement	1.0 – 10 cm3
Tank volume	Usable volume 1.2 l – 7.8 l
Duty cycle	S2 (short-term operation) approx. 5 min S3 (intermittent operation) approx. 20 %
Operating fluid	Mineral oil to DIN 51524 Part 2
Temperature range of operating fluid	min. –20 °C to max. +80 °C
Viscosity range	min. 10 mm²/s – max. 380 mm²/s
Filtration	Operating fluid to ISO 4406 Class 21/19/16 or cleaner
Ambient temperature	–20 °C to +40 °C
Return flow rate	Up to maximum 40 l/min

1.4 MECHANICAL AND ELECTRICAL SPECIFICATIONS

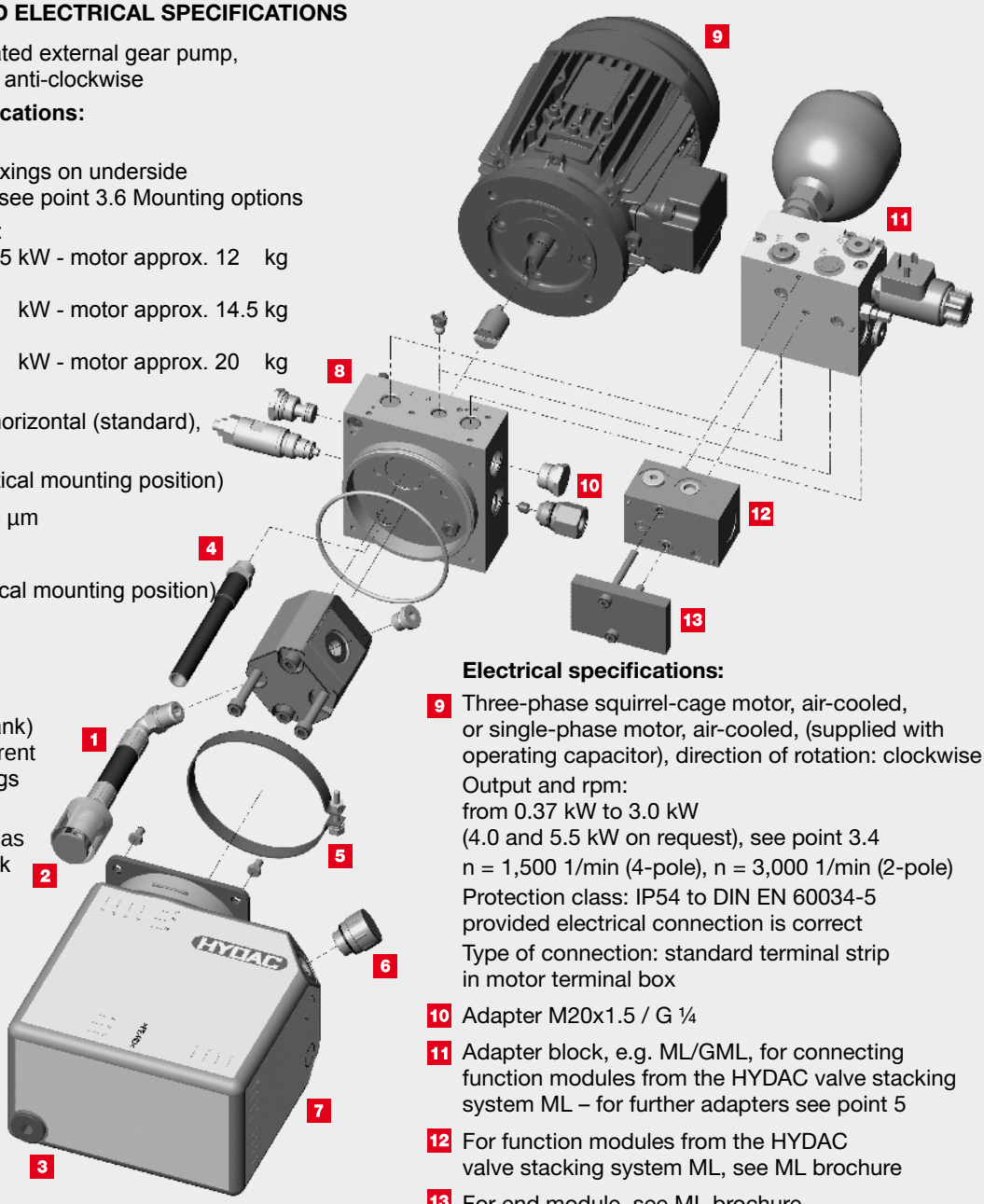
Pressure-compensated external gear pump, direction of rotation: anti-clockwise

Mechanical specifications:

Type of mounting:
2 x M10 (min. 8.8) fixings on underside of mounting flange, see point 3.6 Mounting options

Weight of basic unit:
CO1 with 0.37 – 0.55 kW - motor approx. 12 kg (dry unit)
CO1 with 0.75 – 1.5 kW - motor approx. 14.5 kg (dry unit)
CO1 with 2.2 – 3.0 kW - motor approx. 20 kg (dry unit)

Mounting position: horizontal (standard), vertical possible



1. Suction line (for vertical mounting position)
2. Suction strainer 350 µm
3. Oil drain plug
4. Return line (for vertical mounting position)
5. Clamp
6. Breather filter
7. Plastic oil tank (see point 3.3, Oil tank) in PE, semi-transparent with oil level markings
   - depending on the application, provide as much support to tank as possible (see point 3.5)
   - do not expose to direct sunlight over long periods
8. Flange enables a variety of different hydraulic controls due to versatile configuration of cartridge valves – see point 4 for application examples

Electrical specifications:

9. Three-phase squirrel-cage motor, air-cooled, or single-phase motor, air-cooled, (supplied with operating capacitor), direction of rotation: clockwise
   Output and rpm:
   from 0.37 kW to 3.0 kW
   (4.0 and 5.5 kW on request), see point 3.4
   n = 1,500 1/min (4-pole), n = 3,000 1/min (2-pole)
   Protection class: IP54 to DIN EN 60034-5 provided electrical connection is correct
   Type of connection: standard terminal strip in motor terminal box
10. Adapter M20x1.5 / G ¼
11. Adapter block, e.g. ML/GML, for connecting function modules from the HYDAC valve stacking system ML – for further adapters see point 5
12. For function modules from the HYDAC valve stacking system ML, see ML brochure
13. For end module, see ML brochure

2. MODEL CODE

Power unit | Flange controls | Build-on-controls | Valve voltage | Adapter block

Example **CO1 H B05 R - 2.4 - 250 - 03 - M23-0DV - 250V210 + ML + 24DG – Z4 + B1/ML ...**

Type of power unit

Mounting position, see point 3.1
- **H** = horizontal
- **V** = vertical

Oil tank, see point 3.3
- **B04** = length 165 mm
- **B05** = length 220 mm
- **B08** = length 340 mm
- **B12** = length 500 mm

Tank / motor orientation, see point 3.2
- **L** = left
- **R** = right
- ***T** = top

*not if an adapter block is to be fitted

Flow rate, see point 3.4

Maximum pressure, see Point 3.4

Motor code
- **03** = 3-phase 230 / 400 V – 50 Hz
- **03** = 3-phase 254 / 460 - 480 V – 60 Hz
- **63** = single phase 230 V – 50 Hz

Special voltages on request (min. 10 pieces)

Flange control, see point 4
- **M23-0DV** = see overview of flange controls
- **250V** = pressure relief valve DB, pressure range and type of adjustment
- **210** = DB pre-set to 210 bar, no details: not pre-set

Build-on controls **ML** = with valve stacking system ML, no details: no stacking system

Valve voltage
- **24DG** = 24 V DC without connector (standard)
- **230AG** = 230 V AC without connector
- **Z4** = with connector, no details: no connector

Adapter block, see point 5

Required for connecting ML stacking system or directional valve NG6

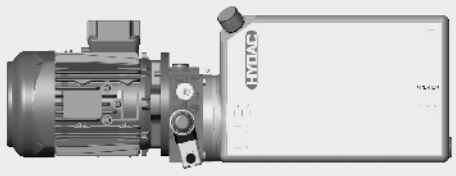
Build-on valves or controls

e.g. valve stacking system ML or directional valve NG6 to DIN 24340 Form A, ISO 4401

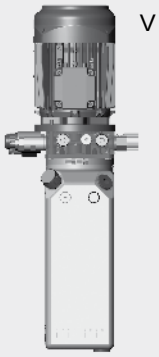
3. TECHNICAL SPECIFICATIONS AND DIMENSIONS

3.1 MOUNTING POSITION OF POWER UNIT

H = horizontal

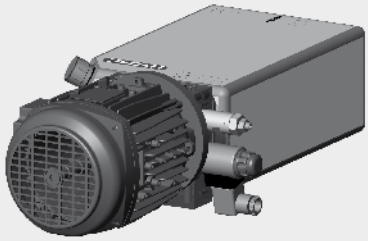


V = vertical

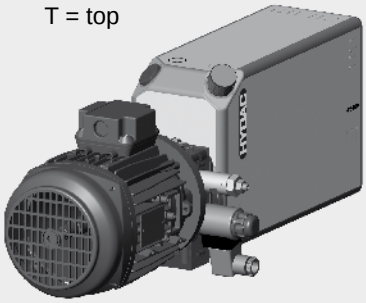


3.2 MOUNTING ORIENTATION OF OIL TANK AND MOTOR TERMINAL BOX

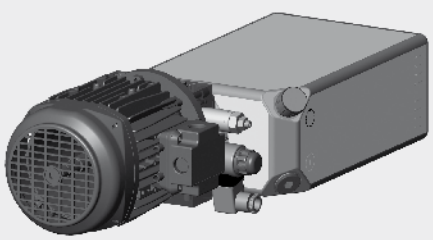
L = left



T = top



R = right



3.3 OIL TANK

	Filling volume / usable volume [l]***			
Tank code	Horizontal tank position R and L	Horizontal tank position T**	Vertical	Tank length [mm]
B04	1.9 /1.5	2.2 /2.0	1.8 /1.2	165* ± 5
B05	2.7 /2.2	3.0 /2.7	3.0 /2.4	220* ± 5
B08	4.4 /3.5	5.1 /4.6	5.1 /4.5	340* ± 5
B12	6.5 /5.2	8.4 /7.6	8.4 /7.8	500* ± 5

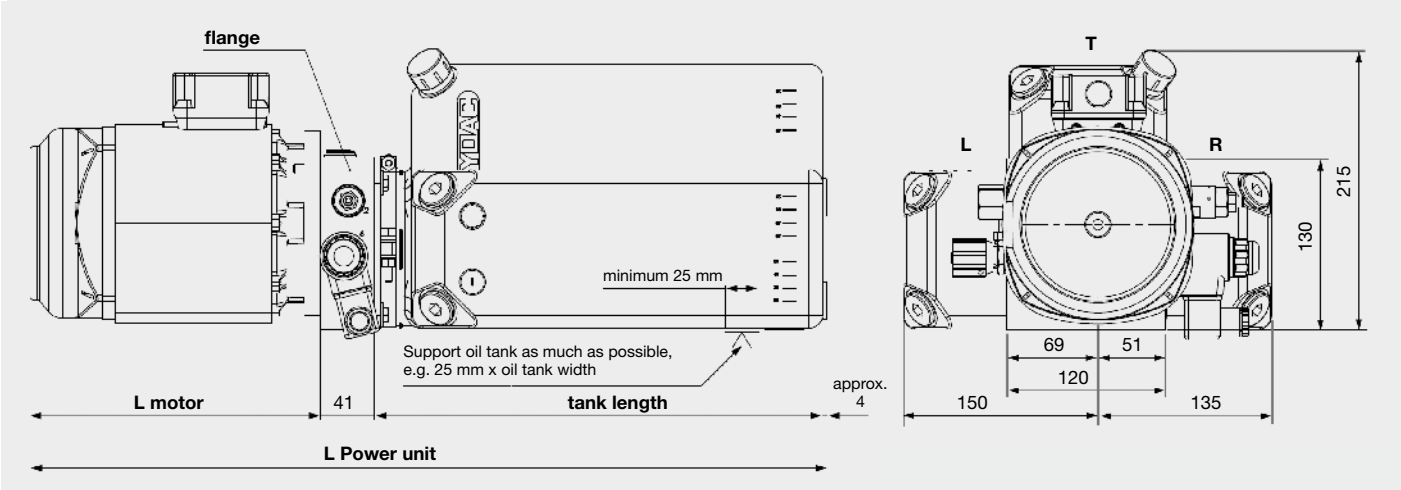
* where mounted horizontally, support for oil tank must be provided by the customer – see dimensions
** cannot be selected if adapter blocks are to be fitted (see point 5)
*** The usable volume given is the maximum value (will be achieved with a clean suction filter, low to medium flow rate and viscous fluid!)
Subject to modifications.

3.4 FLOW RATE AND PRESSURE

Flow rate				Motor output at 3 ~ 50 Hz 230 / 400 V Motor also suitable for 3 ~ 60 Hz 257 / 480 V } Motor code 03							Motor code 63 1 ~ 50 Hz / 230 V
50 Hz [l/min]	60 Hz [l/min]	No. of poles on motor	Pump displ. [ccm/rev.]	0.37 kW [bar]	0.55 kW [bar]	0.75 kW [bar]	1.1 kW [bar]	1.5 kW [bar]	2.2 kW [bar]	3.0 kW [bar]	1.5 kW [bar]
1.3	1.6	4	1.0	**215**	**250**						**250**
2.4	2.9	4	2.0	**110**	**170**	**235**	**250**				**250**
3.7	4.4	4	2.65	**75**	**115**	**155**	**230**	**250**			**230**
5.0	6.0	4	3.75	**50**	**85**	**115**	**170**	**230**	**250**		**180**
6.3*	7.6*	4	4.75*	**40**	**70**	**90**	**140**	**185**	**250**		**140**
7.4	8.9	2	2.65						**230**	**250**	
8.6*	10.3*	4	6.3*	**30**	**50**	**65**	**100**	**130**	**200**		**100**
10.0	12.0	2	3.75						**165**	**230**	
12.6*	15.1*	2	4.75*						**135**	**185**	
13.3*	16.0*	4	10.0*		**30**	**40**	**60**	**85**	**120**		**65**
17.3*	20.7*	2	6.3*						**95**	**130**	
20.0*		2	8.0*						**80**	**110**	
				4-pole motor types are low-noise							

* not possible with oil tank B04

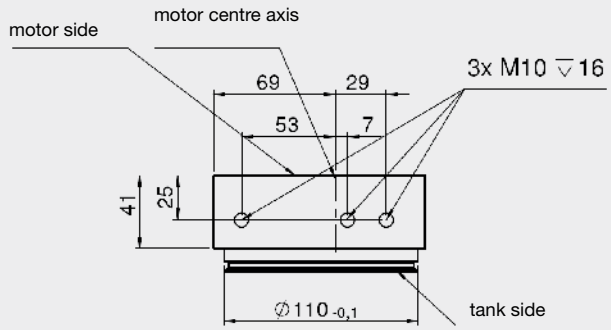
3.5 DIMENSIONS



P [kW]	No. of poles	L Motor [mm]	ø Motor [mm]
0.37	4	approx. 220	141
0.55	4	approx. 220	141
0.75	4	approx. 220	141
1.1	4	approx. 255	159
1.5	4	approx. 255	159
2.2	2	approx. 255	159
2.2*	4	approx. 280	176
3*	2	approx. 280	176

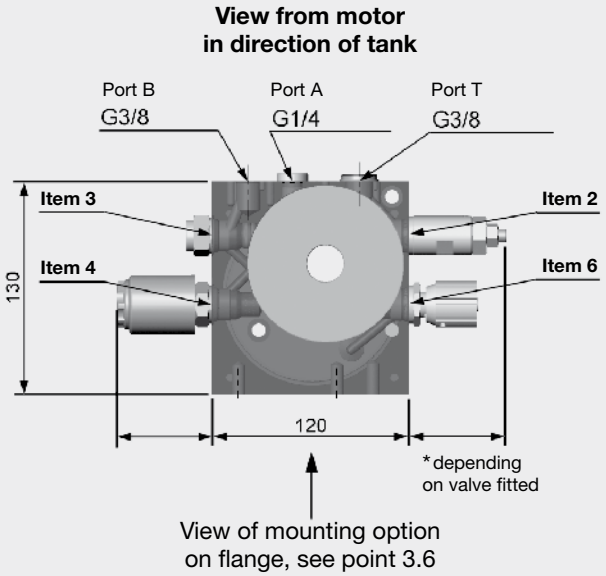
* On 2.2 and 3 kW motors the flange must have at least 15 mm of support.

3.6 MOUNTING OPTIONS ON FLANGE UNDERSIDE



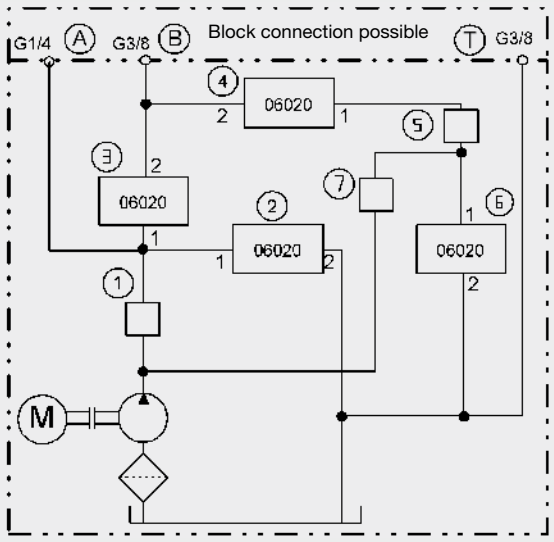
Torque for fixing screws 40 Nm,
Minimum screw quality 8.8

3.7 FLANGE DIMENSIONS



View of mounting option
on flange, see point 3.6

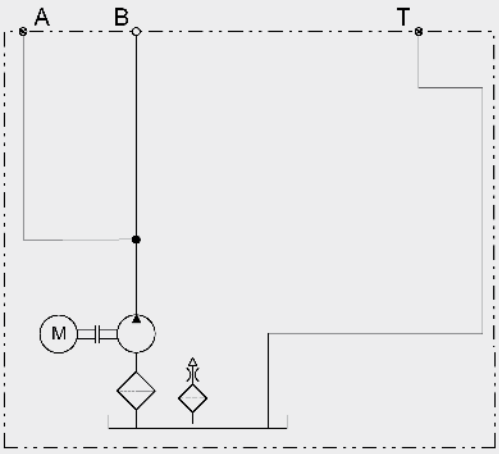
3.8 CAVITIES IN CO1 FLANGE



Item ① = Cavity for RV mounting kit
Item ②③④⑥ = Cavity 06020 for valves
Item ⑤⑦ = Cavity for blanking plugs

4. FLANGE CONTROLS

4.1 BASIC CONTROL M00



Ports:
A = G 1/4
B and T = G 3/8

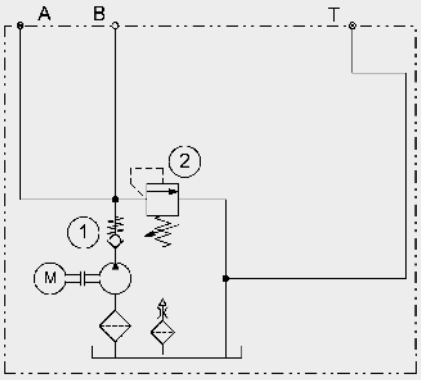
M 0 0

Flange version
without DB
without RV

4.2 BASIC CONTROL M21

M 2 1

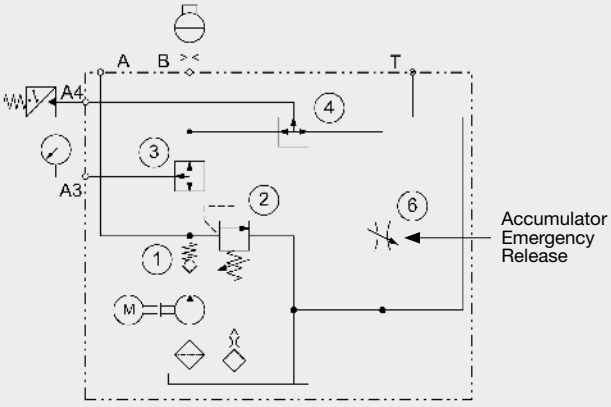
Flange version
with pressure relief valve, item 2
with check valve, item 1



Ports:
A = G 1/4, B and T = G 3/8

Example: **M21-A3 A4 DV-CE210-MA2-EDS3-SBO3**

Supplied loose, see point 6.

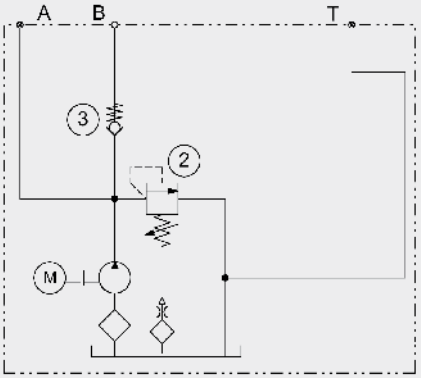


Ports:
A = G 1/4, B and T = G 3/8
A3 and A4 = G 1/4
(Adapter M 20 x 1.5-G 1/4)

4.3 BASIC CONTROL M23 / M61

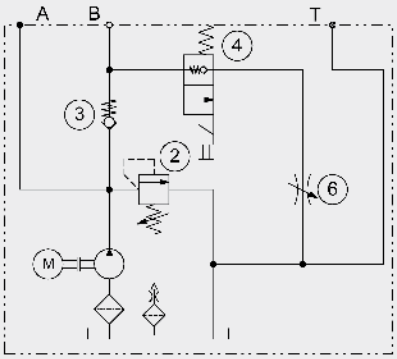
M 2 3

Flange version
with pressure relief valve, item 2
with check valve, item 3



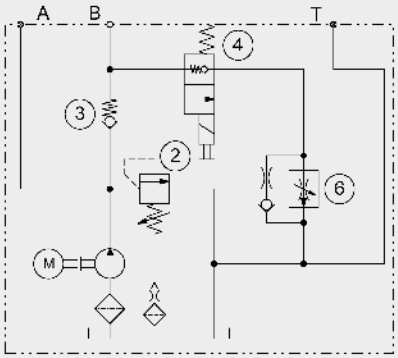
Ports:
A = G 1/4, B and T = G 3/8

Example: **M23-ZNDV-250V**



Ports:
A = G 1/4
B and T = G 3/8

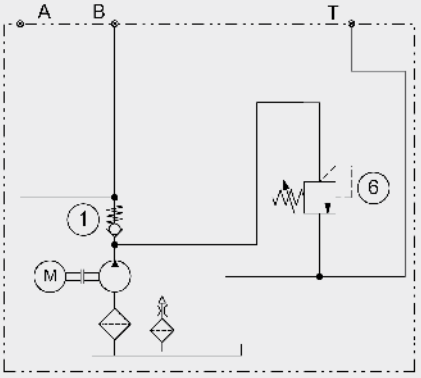
Example: **M23-ZN SR2.5-250V**



Ports:
A = G 1/4
B and T = G 3/8

M 6 1

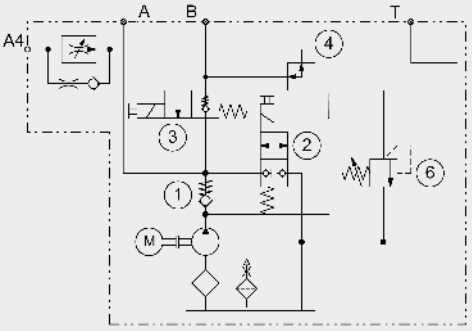
Flange version
with pressure relief valve, item 6
with check valve, item 1



Ports:
A and A4 = G 1/4, B and T = G 3/8

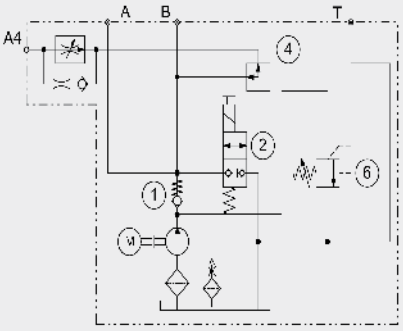
Example: **M61-WNZN-A4/S4.0-250V200**

Unpressurized circulation



Ports:
A and A4 = G 1/4
B and T = G 3/8

Example: **M61-WN0-A4/S4.0-250V200**



Ports:
A and A4 = G 1/4
B and T = G 3/8

ACCUMULATOR CHARGING CONTROL

Example: **M 2 1 - A3 A4 DV - CE210 + 24DG**

Flange version

Item 2 Pressure relief valve DB4E

Item 1 Check valve EBS RV06

Item 3 Blanking plug **0**
Port with adapter M20x1.5 / G1/4 **A3**

Item 4 Blanking plug **0**
Port with adapter M20x1.5 / G1/4 **A4**

Item 6 Blanking plug **0**
Needle valve DV5E **DV**
WSM06020W...01M...with manual override **WN**
WSM06020V... **V**

DB4E...CE...type-approved **CE210**
Pressure setting DB4E e.g. 210 bar

Valve voltage
24 V DC = **24DG**
230 V AC = **230AG**

For more detailed information on add-on equipment for A3 / A4, see point 6.

For further technical details on valves see:

DB4E	Brochure no. E 5.161 and 5.163
DV5E	Brochure no. E 5.113
WSM 06020	Brochure no. E 5.949

LIFT/LOWERING CONTROLS

Example: **M 2 3 - ZN DV - 250V + 24DG**

Flange version

Item 2 Pressure relief valve DB4E

Item 3 Check valve RVM06020

Item 4 Blanking plug **0**
Adapter M20x1.5 / G1/4 **A4**
WSM06020Z **Z**
WSM06020Z...01M...with manual override (standard) **ZN**
WSM06020Y **Y**
WSM06020W...01M...with manual override (standard) **WN**

Item 6 Blanking plug **0**
Needle valve DV5E (standard) **DV**
Pressure comp. flow control valve SR5E **SR**
WSM06020V **V**
WSM06020W **W**
WSM06020W...01M...with manual override (standard) **WN**

Pressure relief valve not pre-set (pmax 250 bar)

Valve voltage
24 V DC = **24DG**
230 V AC = **230AG**

For further technical details on valves see:

DB4E	Brochure no. E 5.161
RVM 06020	Brochure no. E 5.193
DV5E	Brochure no. E 5.113
WSM 06020	Brochure no. E 5.949
SRE	Brochure no. E 5.118
SR5E	Brochure no. E 5.117.4

Example: **M 6 1 - WNZN - A4/S4.0 - 250V200 + 24DG**

Flange version

Item 6 Pressure relief valve DB4E

Item 1 Check valve EBS RV06

Item 2 No details = no directional valve **0**
WSM06020W... **W**
WSM06020W...01M...with manual override **WN**
WSM06020V... **V**

Item 3 No details = no directional valve **0**
Adapter M20x1.5 / G1/4 **A3**
WSM06020Z... **Z**
WSM06020Z...01M...with manual override **ZN**

Item 4 No details = no port A4 **0**
Port with adapter M20x1.5 / G1/4 **A4**
Adapter with pressure comp. flow control valve SRE1 (fitted), see point 6.1 **A4 / S4.0**

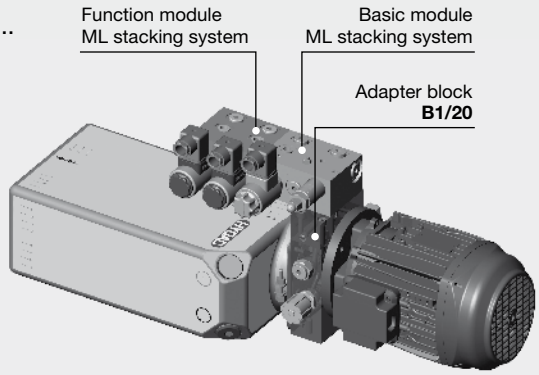
Pressure relief valve (p_{max} 250 bar) 200 bar pre-set

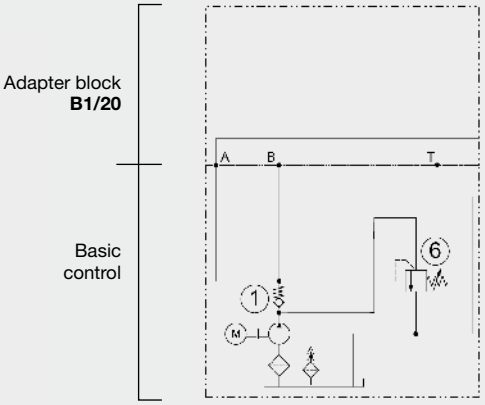
Valve voltage
24 V DC = **24DG**
230 V AC = **230AG**

5. ADAPTER BLOCKS

Type:
CO1...M61...ML...**+ B1/20 +**...

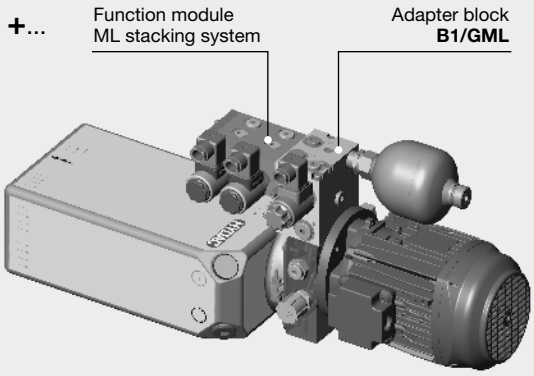
Block for mounting
basic modules
from the HYDAC
valve stacking system ML
(see ML brochure E 5.308.0)

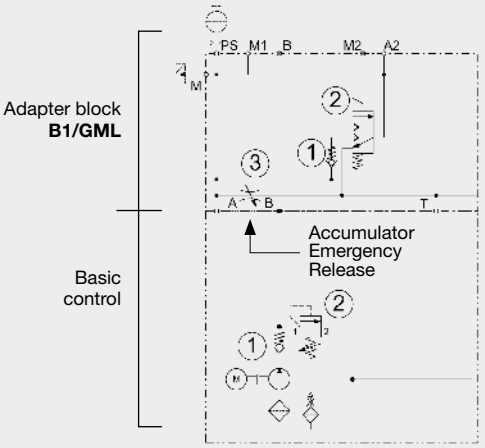




Type:
CO1...M21...ML...**+ B1/GML +**...

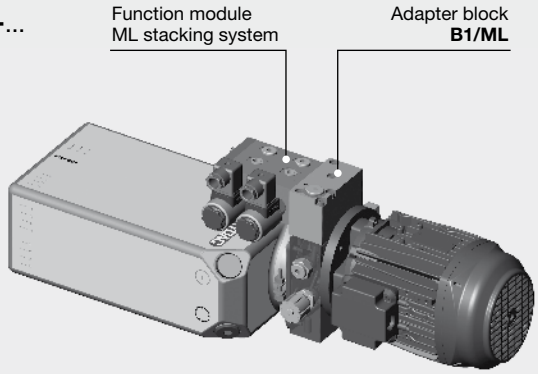
Block for mounting
function modules
from the HYDAC
valve stacking system ML
(see ML brochure E 5.308.0)
suitable for optional
mounting of an accumulator,
with manually-operated
pressure release

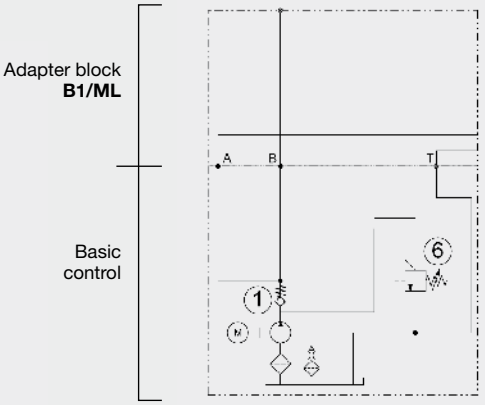




Type:
CO1...M61...ML...**+ B1/ML +**...

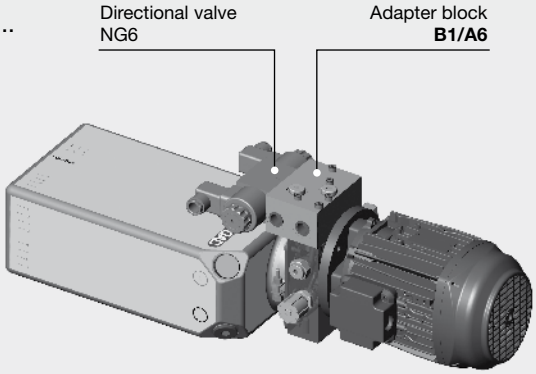
Block for mounting
function modules
from the HYDAC
valve stacking system ML
(see ML brochure E 5.308.0)

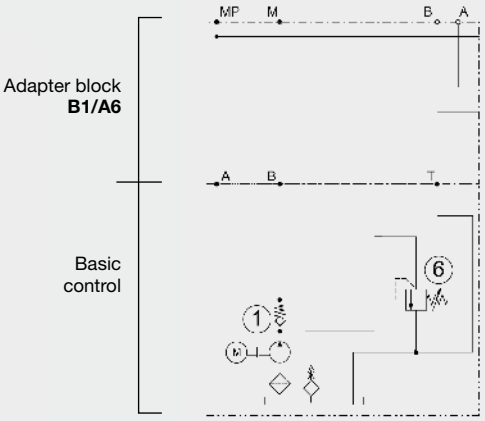




Type:
CO1...M61...ML...**+ B1/A6 +**...

Block for mounting
directional valves,
nominal size 6
in accordance with
DIN 24340 Form A, ISO 4401.
When fitting
several directional valves,
extension module 3A6
is required
(see ML brochure E 5.308.0)

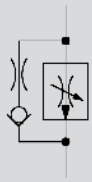




6. ADD-ON EQUIPMENT FOR A, B, A3, A4 (on A3, A4 with adapter M20x1.5 / G1/4)

Example **CO1... ...SBO3-MA2-EDS3**

6.1 FLOW CONTROL VALVES - supplied fitted - (only on A3, A4)



S1.6	Pressure compensated flow control valve SRE1 with pre-set flow rate = (Part No. 3055053)	1.6 l/min
S2.5	Pressure compensated flow control valve SRE1 with pre-set flow rate = (Part No. 3055131)	2.5 l/min
S4.0	Pressure compensated flow control valve SRE1 with pre-set flow rate = (Part No. 554533)	4.0 l/min
S5.0	Pressure compensated flow control valve SRE1 with pre-set flow rate = (Part No. 558362)	5.0 l/min
S6.0	Pressure compensated flow control valve SRE1 with pre-set flow rate = (Part No. 554534)	6.0 l/min
S8.0	Pressure compensated flow control valve SRE1 with pre-set flow rate = (Part No. 554535)	8.0 l/min
S10.0	Pressure compensated flow control valve SRE1 with pre-set flow rate = (Part No. 554536)	10.0 l/min

For further technical details, see brochure no. E 5.118

6.2 PRESSURE SWITCHES - supplied loose -

DS1	Mechanical pressure switch	10 – 100 bar
DS2	Mechanical pressure switch	50 – 200 bar
DS4	Mechanical pressure switch	100 – 400 bar
EDS3	Electronic pressure switch EDS3446-2-250-000	up to 250 bar

For further technical details on the EDS 3000, see brochure no. E 18.060

6.3 PRESSURE GAUGES - supplied loose -

MA1	Pressure gauge Ø 63 – 160 bar
MA2	Pressure gauge Ø 63 – 250 bar
MA4	Pressure gauge Ø 63 – 400 bar
M	Minimess - supplied fitted -

6.4 ACCUMULATORS - supplied loose -

SBO1	Accumulator SBO210-0.16
SBO3	Accumulator SBO210-0.32
SBO5	Accumulator SBO210-0.5
SX	Accumulator, give full details
AS	Accumulator adapter with orifice Ø 2.0 mm

For further technical details on the SBO see brochure no. E 3.100

7. SAFETY INSTRUCTIONS AND DOCUMENTATION

7.1 SAFETY INSTRUCTIONS DURING OPERATION

- The power unit must only be used for its intended purpose
- Do not exceed maximum permitted operating pressure
- Ensure adequate ventilation for heat dissipation
- Do not mount power unit onto moving parts
- Power units and add-on equipment can get hot during operation – risk of injury
- Refer also to HYDAC Operating Instructions and drawing no. 3111722

7.2 REQUIREMENTS AT THE INSTALLATION SITE

- Permitted ambient temperature range -20 °C to +40 °C
- Do not mount power unit onto moving parts
- Finish required on mounting surface 0.3 mm over 100 mm length
- To avoid excessive noise, use flexible mounts and avoid mounting on resonating surfaces
- To prevent vibration transfer, hoses must be used wherever possible when connecting the power unit

The information in this brochure relates to the operating conditions and applications described.

For applications and operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

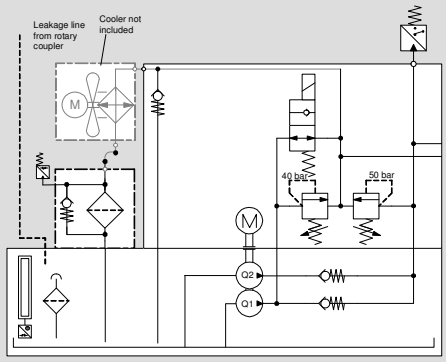
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax.: 0 68 97 /509-598
E-Mail: flutec@hydac.com

HYDAC INTERNATIONAL

NEW!

Compact power units CO3

with single or 3-phase AC motor



up to 250 bar
up to 30 l/min

FEATURES

- very low noise level by special design
- flexible control of consumers by combination with tandem pumps possible
- rigid aluminium-oil tank with up to 70 litres content

SPECIFICATIONS

Flow rate:	1,3 up to 30 l/min
Operating pressure:	max. 250 bar
Motor:	0,55 up to 5,5 KW
IP protection class:	DIN EN 60034-5 min IP54
Pump size:	1,0 – 10,0 cm³ also tandem pump possible
Oil tank:	20, 30, 44 and 70 l content
Fluids:	Hydraulic oil according to DIN 51524 part 1/ 2
Temperature range of operating fluid:	-20 °C up to max. +80 °C
Ambient temperature range:	-20 °C up to max. +40 °C
Viscosity range:	10 – 380 mm²/s is recommended
Filtration:	Class 21/19/16 according to ISO 4401 or cleaner
Cooling:	Air- or water cooler
Weight:	from 17 up to 70 kg
Backflow:	up to max. 60 l/min

1

1. Oil tank

Rigid oil tank made of aluminium with filling volume from 20 l to 70 l.
The size of the oil tank can be calculated like this: the oil content in the consumers as well as the content in hoses and pipes plus surplus of approx. 25% for a remaining amount in the oil tank.

Type	Filling volume	Take-out volume	Tankdimensions(BxLxH)
A 20	20 l	17 l	288 x 366 x245 mm
A 30	30 l	25 l	340x 490 x 285 mm
A 44	44 l	36 l	415 x 515 x 315 mm
A 70	70 l	58 l	465 x 605 x 365 mm

Equipment oil tank:

1.1

1.1 Oil tank cover

To close the oil tank, made of steel Type e.g. DA 44.1

1.2 Oil control

1.2

Type	annotation
F	with FSA 127 is Standard (Oil content control)
Optional:	
O	optical/electrical level indicator FSK
ENS3	electrical level indicator ENS3000 (with temperature display)
TS-80	Thermal switch opener 80°C; 190 lg; Electrical connect. M12x1

2

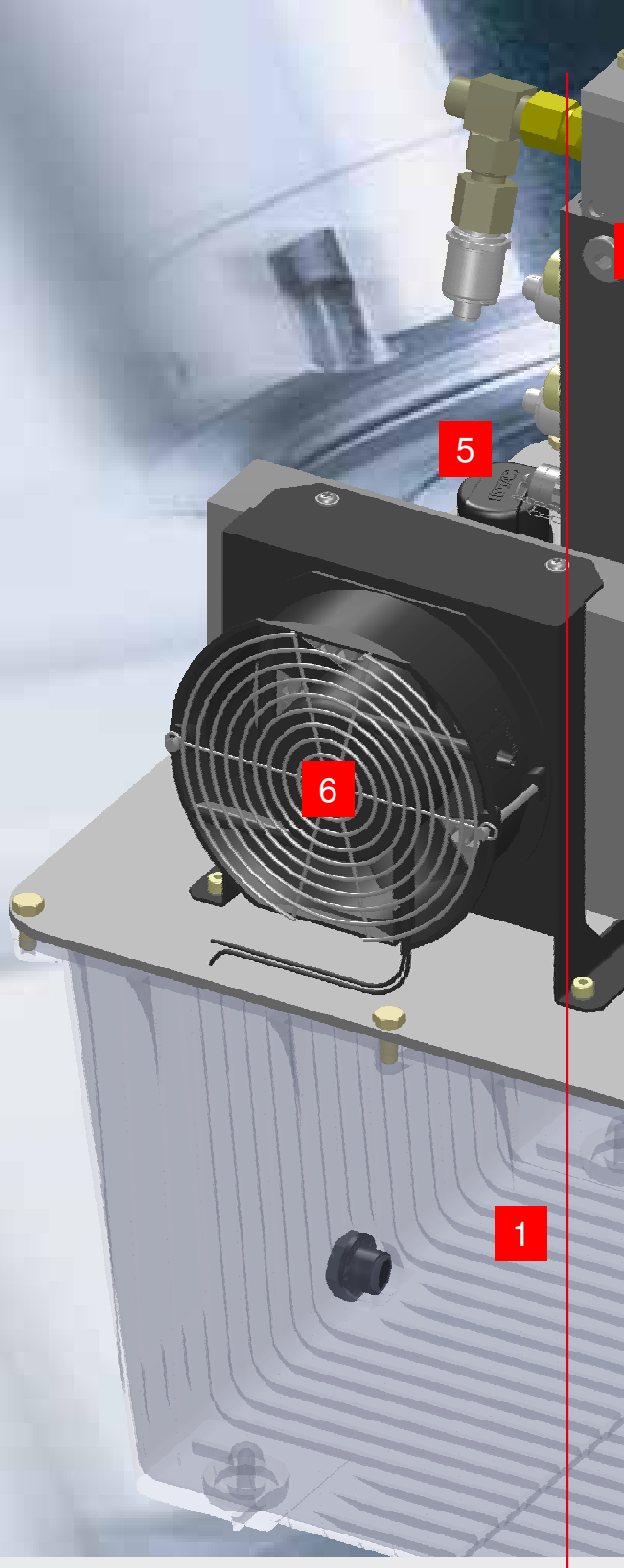
2. Motor - pump - group

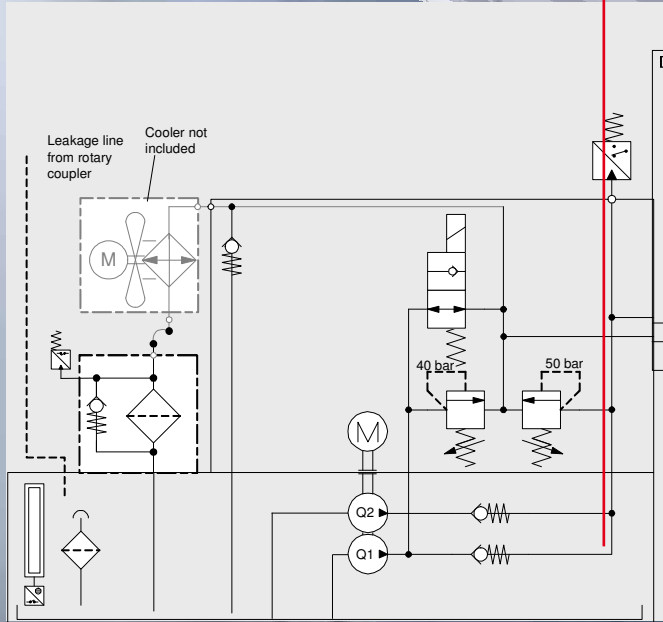
Performances from 0.55 up to 5.5 kW, sizes BG71 - BG100. Choice from a large number of displacement volumes. Selection of gear pumps and gear tandem pumps possible, sizes Bg1 and Bg2..

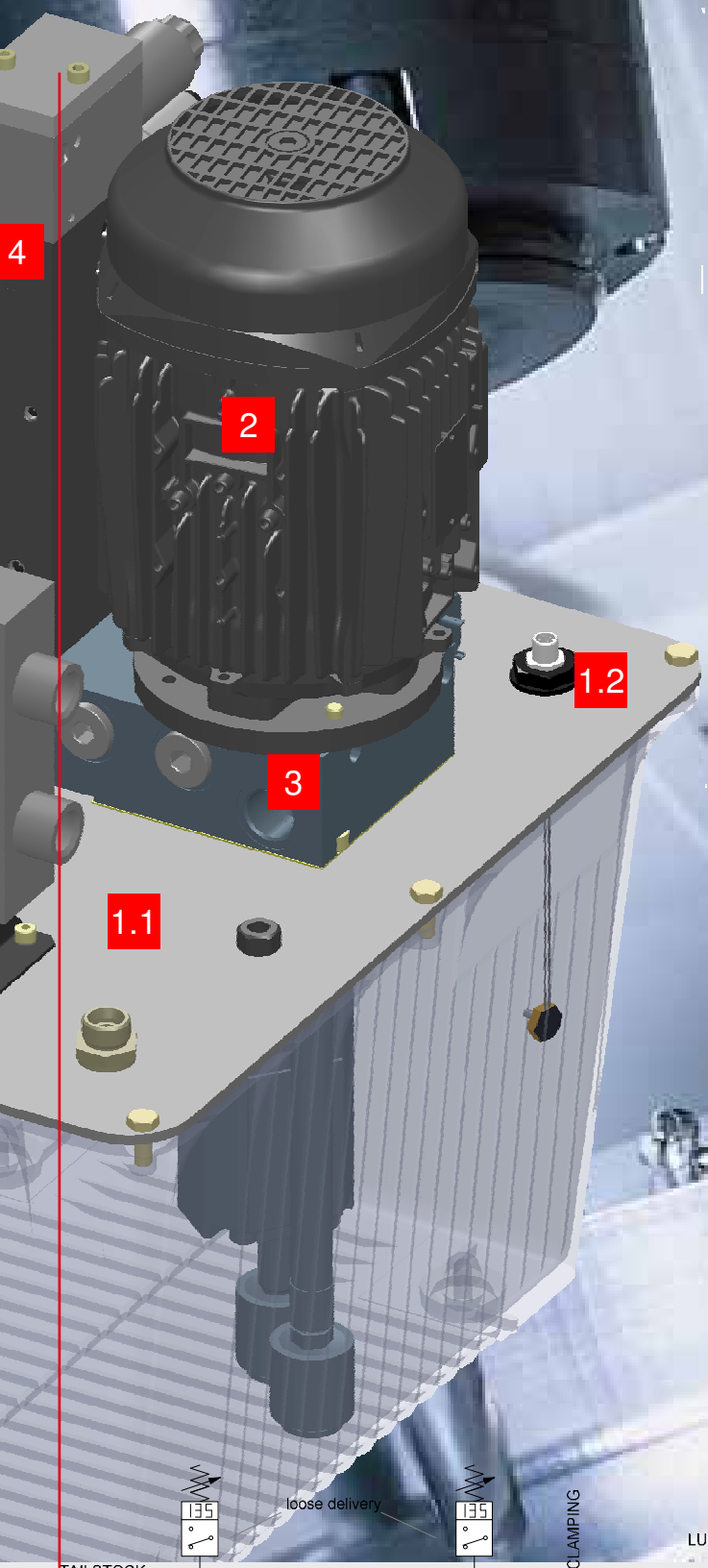
Choice single pump Bg1

Flow rate				Motor capacity at 3~ 50 Hz 230/400 V (Motor also suitable for 3~ 60 Hz) 257/480 V					Code 03		Rate code 63 **1~ 50 Hz/230V
50 Hz [l/min]	60 Hz [l/min]	Pole no. Motor	V_g Pump [ccm/U]	0,37 kW [bar]	0,55 kW [bar]	0,75 kW [bar]	1,1 kW [bar]	1,5 kW [bar]	2,2 kW [bar]	3,0 kW [bar]	1,5 kW [bar]
1.3	1.6	4	1.0	215	250						250
2.4	2.9	4	2.0	110	170	235	250				250
3.7	4.4	4	2.65	75	115	155	230	250			230
5.0	6.0	4	3.75	50	85	115	170	230	250		180
6.3	7.6	4	4.75	40	70	90	140	185	250		140
7.4	8.9	2	2.65						230	250	
8.6	10.3	4	* 6.3	30	50	65	100	130	200		100
10.0	12.0	2	3.75						165	230	
12.6	15.1	2	4.75						135	185	
13.3	16.0	4	* 10.0		30	40	60	85	120		65
17.3	20.7	2	* 6.3						95	130	
20.0		2	* 8.0						80	110	
				4-pole motor low noise							

Tandem pumps for choice Bg1
Flow rate 14 up to 56 l/min, S6
Type: Z18.3-40 / Z5.0-100 (Typedefinition: Q1+Q2-p12 / Q2-p2)







3. Flange control

Compact control which covers the hydraulic basic functions and the supply of the modular stacking system

Flange choice single pump Bg1

See brochure CO1 Nr. 5.306.0

Flange choice tandem pump Bg 1

Currently 1 flange available

Type: **F1-40-50-V**

4. Modular stacking system

Function modules for the enlargement of the flange control – connection via adaptor-manifold to flange.

4.1 at single pump Bg1

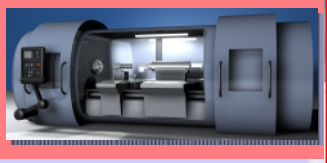
Controls see brochure Stacking systems No. 5.308.0

4.2 at tandem pump Bg1

Stacking systems hole pattern ML plus (MLp)

All relevant functions for the turning machine on the basis of the ML-stacking system (see brochure stacking system 5.308.0)

Functions: e.g. workpiece clamping, Option Differential pressure, tail stock actuation (with rapid feed), steady rest actuation, tailstock- / spindle clamping, lubrification



5. Return filter

Reliable filtration concept for the operating fluid.

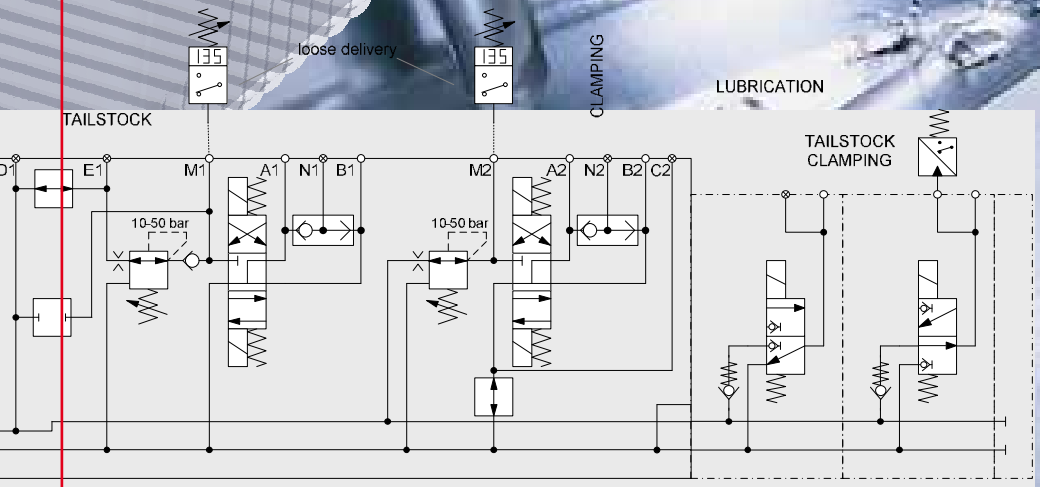
Type	Annotation
RF 60-10- B	Return filter

6. Coolers

To guarantee the thermal stability of the system.

The layout of the cooler is done in dependency of the motor capacity and the flow rate. In general the water cooler is more powerful and will be used if cooling water is available at place.

Type	Annotation	Cooling capacity (W / °C)
ELC0	Aircooler	
KW 10	Watercooler	



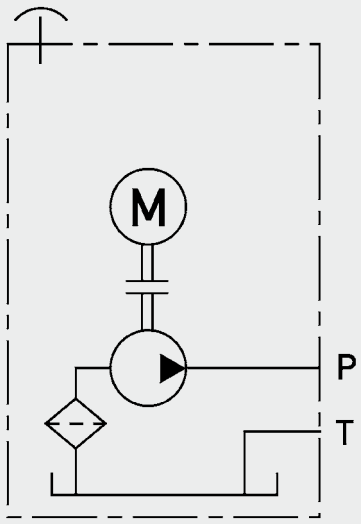
8. Optional equipment

E.g. oil collecting pan, etc.

On request

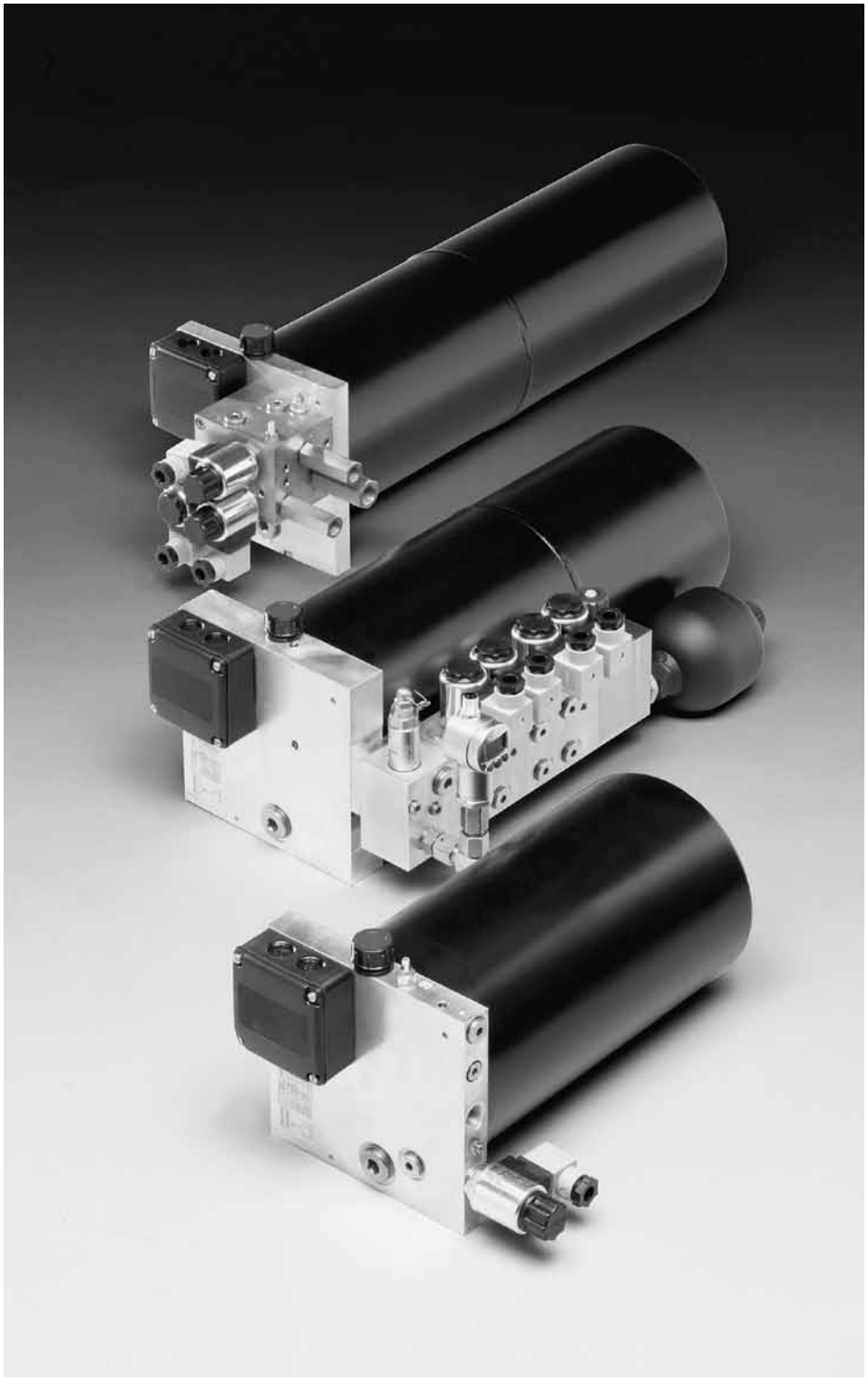
HYDAC INTERNATIONAL

HYDAC
Compact Power Units
CA



Up to 250 bar
Up to 12.6 l/min

Suitable for:
Short-term operation S2
Intermittent operation S3



1. TECHNICAL SPECIFICATIONS

1.1 GENERAL

- For short-term operation S2 or intermittent operation S3
- High performance compact units
- Motor-pump unit is oil-immersed in the tank, therefore low-noise levels and compact design
- Standard control blocks or modular valve stacking systems are available to create customized control solutions
- High leakage resistance and stability due to deep-drawn steel tank
- Terminal board on the front face simplifies electrical installation
- Space-saving design due to small flange
- Optional thermal switch available for monitoring the oil temperature and to prevent overheating

1.2 HYDRAULIC SPECIFICATIONS

Nominal pressure Pn	Up to 250 bar (depending on the flow rate and motor output)
Flow rate Q	1.3 to 12.6 l/min (see table 6.1)
Operating fluid	Hydraulic oil to DIN 51524 Part 2, HLP
Temperature range of operating fluid	-20 °C to +80 °C
Viscosity range	min.10 mm²/s; max. 380 mm²/s
Filtration	Class 21/19/16 according to ISO 4406 or cleaner

1.3 ELECTRICAL SPECIFICATIONS

Type of construction	Three-phase squirrel-cage motor, oil-cooled, or single-phase motor, oil-cooled (supplied with operating capacitor)
Output and rpm	From 0.55 kW to 3.0 kW, ns = 1500 or 3000 rpm
Nominal voltage	Standard: 3-phase 220-240 V/380-420 V, 50 Hz 3-phase 254-277 V/440-460 V, 60 Hz (see table 6.3) single-phase 230 V, 50 Hz (see table 6.1 and 6.3)
Tank volume	Usable volume 2.5 – 7.2 l (others on request), see chapter 6.2
Duty cycle	S3 (short-term operation): approx. 10 % S2 (short-term operation): 3 min
Safety type	IP54 to VDE 0470 = EN 60529 provided electrical connection is correct
Type of connection	Standard terminal board in the motor terminal box

2. MODEL CODE

Power unit — Control

CA2 R 05 H 01.3 – 250 – 03 – 1 TS – 99 X + HSDZ + Accessories

Compact power unit series

Tank
R = cylindrical deep-drawn tank

Tank size
05, 07, 09 see table on tank size, point 6.2

Installation position
H = horizontal (standard),
(S = standing, V = suspended, on request)

Flow rate
See table on flow rate, point 6.1

Maximum operating pressure
See table on flow rate, point 6.1

Motor supply voltage code
See table on motor supply voltage, point 6.3

Air breather filter
No details = standard air breather filter
1 = BF4, filtration rating 10 µm, see point 5.4

Temperature switch
No details = without (standard)
TS = temperature switch, actuating temperature 80 °C +/- 2.5 K, see point 5.5

Flange type, see 4.1 - 4.4
99 = control with valves in the flange (HS and KK)
20 = for valve stacking connection (ML)
10 = for block connection on front face (VS)

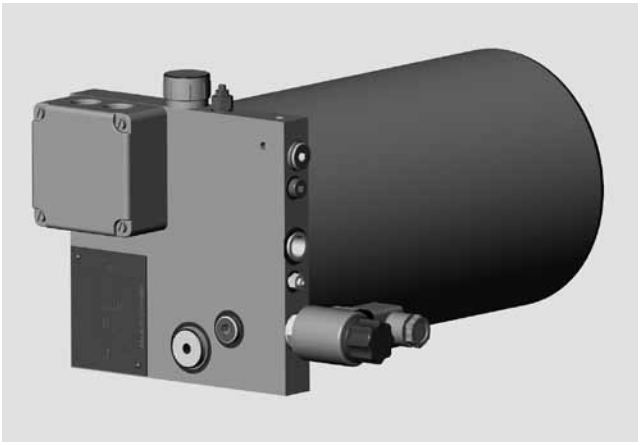
Series, determined by manufacturer

Control, see point 4.1 - 4.4

Additional equipment such as pressure gauge, test point, etc. please give full details

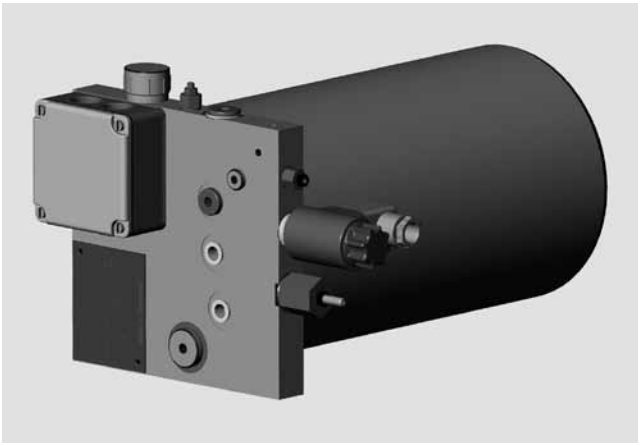
3. TYPICAL APPLICATIONS

3.1 CONTROL HS



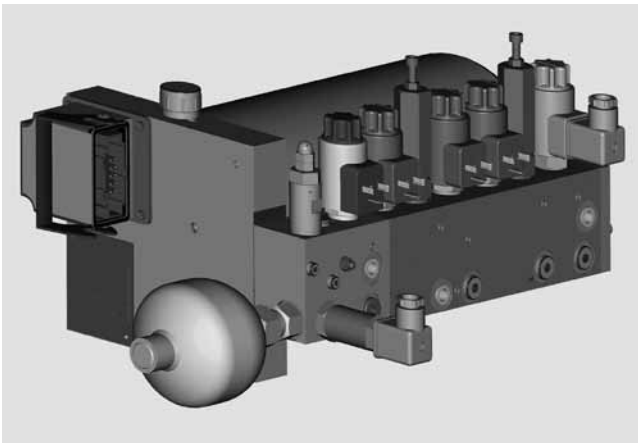
Scissor lift

3.2 CONTROL KK



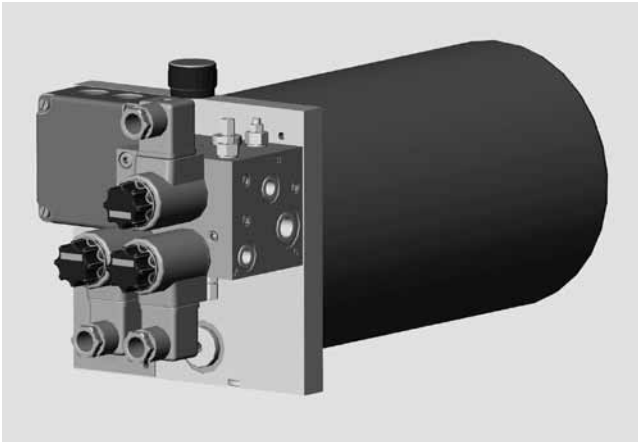
Tilting dock leveller with door seal

3.3 CONTROL ML



Milling machine

3.4 CONTROL VS

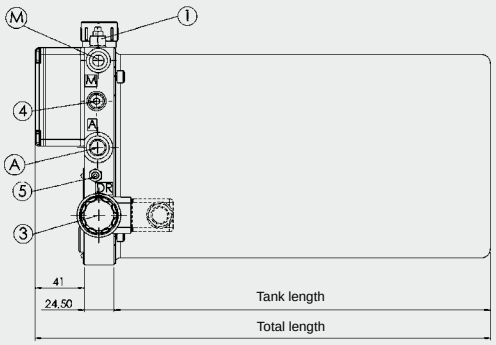


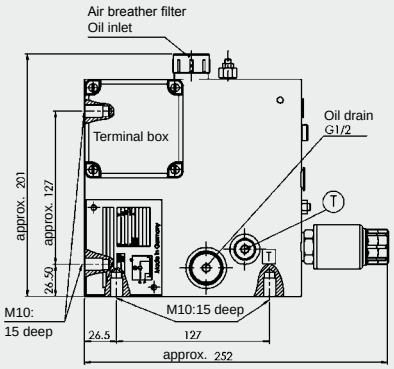
Telescopic dock leveller

4. CONTROLS: DIMENSIONS, CONNECTIONS AND SYMBOLS

4.1 CONTROL HS (LIFT/LOWER CONTROL)

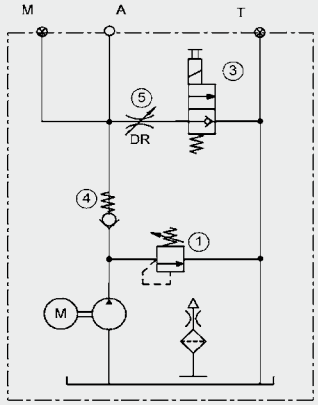
Dimensions





Tank length, see table, point 6.2
Port A: G 3/8
Port M, T: G 1/4

Symbol



Model code

+ HS D Z + G24 - N

Basic model
HS = lift/lowering control

With needle valve
D = needle valve

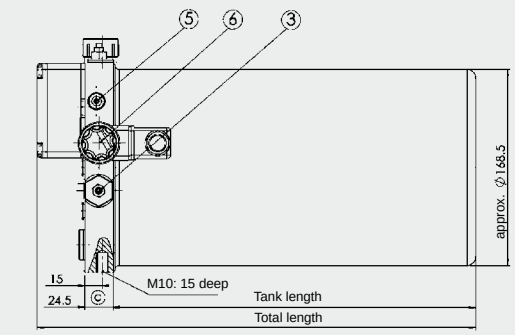
With directional valve
Z = directional poppet valve WSM06020Z without coil
Y = directional poppet valve WSM06020Y without coil

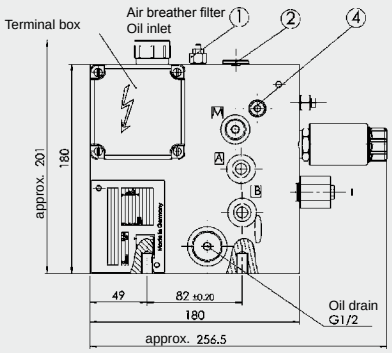
Coil voltage
G24 = 24 V DC (without connector)
W230 = 230 V AC (without connector)
Connector G24 / W230 = Part No. 394287

Manual override for directional valve
N = with manual override
No details = without manual override

4.2 CONTROL KK (tilting dock leveller control)

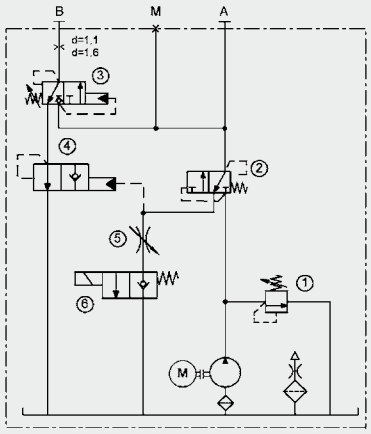
Dimensions





Tank length, see table, point 6.2
Port A, B, M: G 1/4

Symbol



Model code

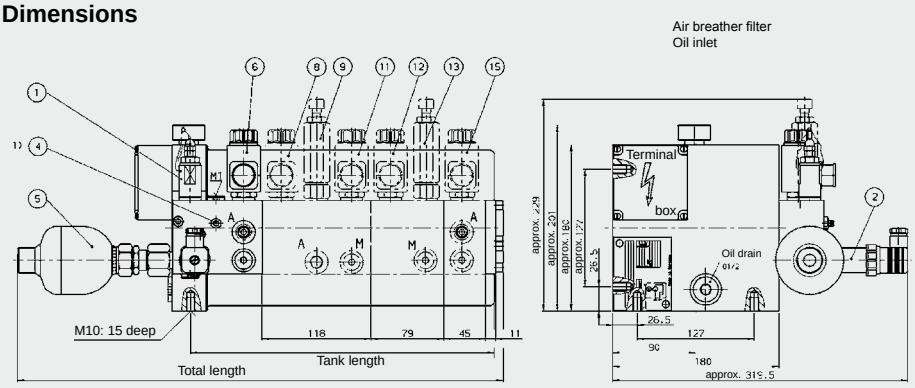
+ KK + G24

Basic model
KK = tilting lock leveller control

Coil voltage
G24 = 24 V DC (without connector)
W230 = 230 V AC (without connector)
Connector G24/W230 = Part No. 394287

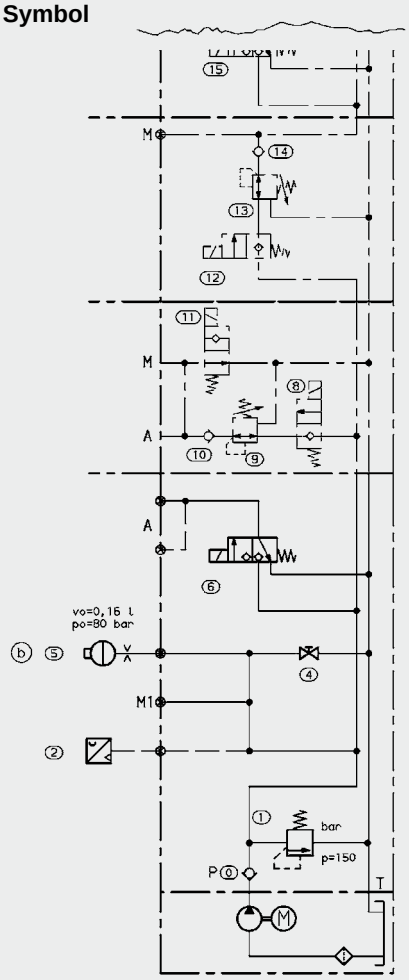
4.3 CONTROL ML (valve stacking control)

Dimensions



Tank length, see table, point 6.2
Port A, M, M1: G 1/4

Symbol



Model code

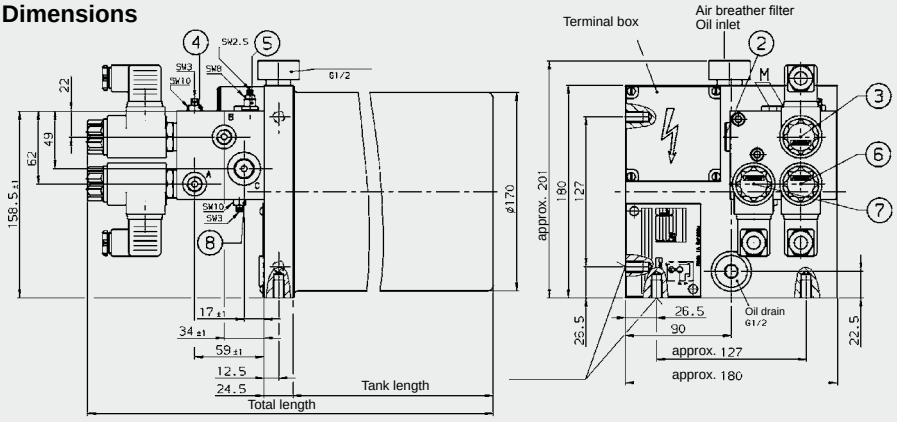
+ ML ... + G24

Basic model
ML = valve stacking control
For model code and dimensions, please see brochure for Valve Stacking System ML

Coil voltage
G24 = 24 V DC (without connector)
W230 = 230 V AC (without connector)
Connector G24/W230 = Part No. 394287

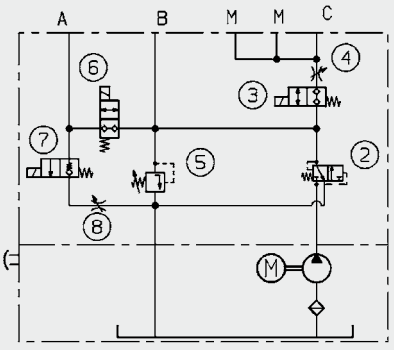
4.4 CONTROL VS (telescopic dock leveller control)

Dimensions



Tank length, see table, point 6.2
Port A, B, M: G 1/4
Port C: G 3/8

Symbol



Model code

+ VS + G24

Basic model
VS = telescopic dock leveller control

Coil voltage
G24 = 24 V DC (without connector)
W230 = 230 V AC (without connector)
Connector G24/W230 = Part No. 394287

5. SAFETY INSTRUCTIONS AND DOCUMENTATION

7.1 SAFETY INSTRUCTIONS DURING OPERATION

- The power unit must only be used for its intended purpose
- Do not exceed maximum permitted operating pressure
- Max. permissible oil temperature in the unit of 80 °C must not be exceeded
- Power unit and attachments can get hot during operation
- Risk of injury!

5.2 REQUIREMENTS AT THE INSTALLATION SITE

- Permitted ambient temperature range -20 °C to +40 °C
- Ensure adequate ventilation for heat dissipation
- Do not mount power unit onto moving parts
- Finish required on mounting surface 0.3 mm over 100 mm length
- To avoid excessive noise, use anti-vibration mounts and avoid mounting on resonating surfaces
- To prevent vibration transfer, hoses must be used wherever possible when connecting the power unit

5.3 HYDRAULIC ACCUMULATORS

The following hydraulic accumulators can be fitted (please state clearly when ordering):

Diaphragm accumulator, weld-type

Type SBO 210-0.16 and SBO 210-0.32

See brochure E 3.100…

Attention:
Systems fitted with an accumulator must always include a safety valve (DB4-CE pressure relief valve) and a manual pressure release device.

5.4 BREATHER FILTER

Filtration rating 10 µm, without dipstick, for use in heavily-contaminated environments (Illustrated under point 4. Dimensions).

5.5 TEMPERATURE SWITCH TS
(to protect the power unit from overheating)

Actuating temperature:	80 °C +/- 2.5 K
Switch-back hysteresis:	approx. 10 to 30 K
Nominal voltage:	AC max 250 V / DC max. 60 V
Current capacity with AC:	1.6 A at cos φ = 0.6 2.5 A at cos φ = 1.0
DC:	60 V = 1.0 A / 42 V = 1.2 A 6, 12, 24 V = 1.5 A
Type of contact:	Normally closed
Connection:	Terminal in terminal box

6. TABLES OF TECHNICAL SPECIFICATIONS

6.1 PUMP FLOW RATE

3-phase motor								
Flow rate l/min				Max. operating pressure (bar) for motor output				
50 Hz	60 Hz	Pump displ. ccm	Poles	0.55 kW	1.1 kW	1.5 kW	2.2 kW	3.0 kW
1.3	1.6	1.0	4	250				
2.4	2.9	2.0	4	170	250			
3.7	4.4	2.65	4	115	230			
5.0	6.0	3.75	4	85	170	230		
6.3	7.6	4.75	4	70	140	185	250	
7.4	8.9	2.65	2	60	120	155	210	
10.0	12.0	3.75	2	40	80	110	160	230
12.6	15.1	4.75	2	35	70	90	140	180

Minor differences in flow rate and nominal rpm are possible depending on the manufacture.
At p_{max} the pump flow rate can reduce to approx. 90 %.

Single-phase motor*			
Flow rate l/min	Max. operating pressure (bar) for motor output		
50 Hz	Poles	1.1 kW	1.5 kW
1.3	4	210	
2.4	4	210	
3.7	4	180	210
5.0	4	140	190
6.3	4	100	140
7.4	2	90	120
10.0	2	60	90
12.6	2	50	70

(*motor with 0.55/2.2/3.0 kW on request)

6.2 TANK SIZE

Tank size		Motor output (kW)			
		0.55 – 1.1 kW		1.5 – 3* kW	
	Tank length (mm)	V F (l)	V E (l)	V F (l)	V E (l)
R 05	312	4.2	3.0	4.0	2.5
R 07	440	6.8	5.4	6.3	4.5
R 09	550	9.0	7.2	8.6	6.3

V F = filling volume
V E = usable volume
* = combination of 2.2 und 3 kW motor not available with Tank 05

6.3 MOTOR SUPPLY VOLTAGE

Code	No. of phases	Voltage range	Frequency	
03	3	220 - 240 / 380 - 400 V	50 Hz	Standard
		254 - 277 / 440 - 460 V	60 Hz	Standard
04	3	290 - 300 / 500 - 520 V	50 Hz	Special*
		330 - 346 / 575 - 600 V	60 Hz	Special*
06	3	380 - 400 / 660 - 690 V	50 Hz	Special*
63	1	220 - 240 V	50 Hz	Standard
80		115 V	60 Hz	Special*
82		220 V	60 Hz	Special*

* All special voltages: minimum order quantity of 10 pieces, or on request

6.4 MECHANICAL SPECIFICATIONS

6.4.1 **Electrically-powered external gear pump, pressure-compensated with oil-immersed electric motor**

6.4.2 **Type of mounting**

Power unit flange must be fixed using screws M10 (min. 8.8) with torque 40 Nm, see point 4.1-4.4

6.4.3 **Weight (excluding oil and control)**

CA with 0.55 kW motor = 11 - 13 kg
CA with 1.1 - 1.5 kW motor (2-pole) = 13 - 14.5 kg
CA with 1.5 - 3 kW motor (4 = 15.5 - 19 kg

6.4.4 **Direction of rotation of the motor**

Connect motor for clockwise rotation, switch on - if the pump does not deliver any oil: reverse the direction of rotation.

6.4.5 **Installation position**

Horizontal, air breather filter at the top

7. NOTE

The information in this brochure relates to the operating conditions and applications described.

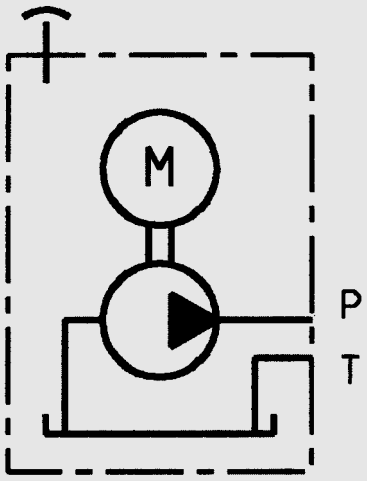
For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax.: 0 68 97 /509-598
E-Mail: flutec@hydac.com

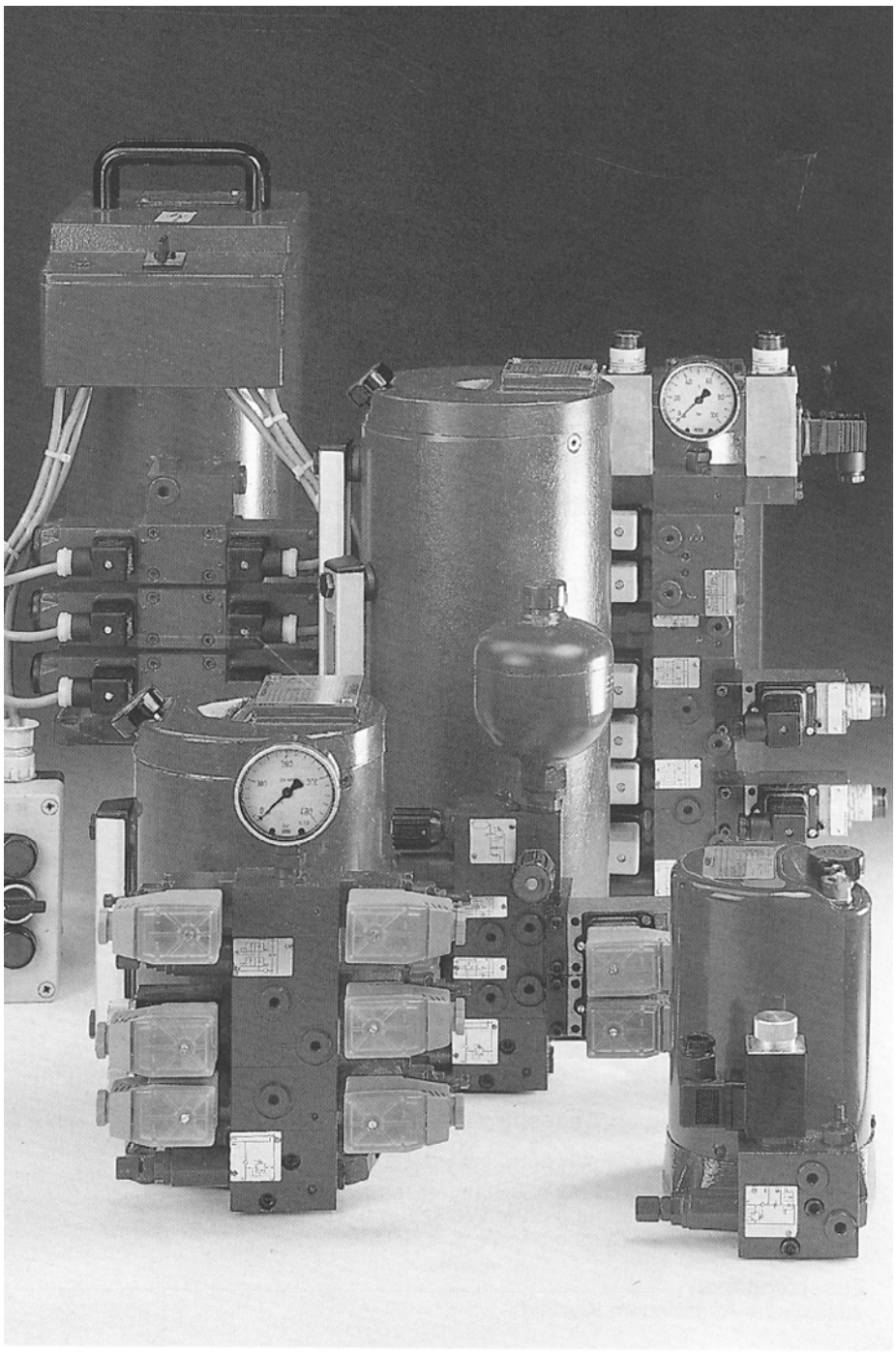
HYDAC INTERNATIONAL

High Pressure Power Unit HP



up to 500 bar
up to 5.25 l/min

suitable for:
short-term operation S 2
intermittent operation S 3



E 5.301.3/12.10

1. DESCRIPTION

1.1. GENERAL

HYDAC high pressure power units, type HP, are high performance hydraulic units of compact construction.
They are used to supply oil to hydraulic systems. The flow of the operating fluid is controlled by an extensive range of build-on controls.
The special design and the use of a noise-damping cast-iron housing result in a particularly low noise level.

1.2. FUNCTION

Three valve-controlled radial piston pump elements are operated, independent of the direction of rotation, by a cam, which is driven by an oil-immersed motor.

The HP power unit owes its special stability to the steel oil tank.

The four fixing holes in the foot bracket make for cost-saving, simple installation. The terminal box in the cover plate (HP 1 and HP 2) simplifies the electrical installation.

HP type units must only be used for short-term or intermittent operation because of their compact design, and the high specific performance due to the thermal load.

The switch-on time, dependent on the output and the operating and ambient conditions, must be selected to ensure that the max. permissible operating temperature (oil temperature in the unit) of 80 5C is not exceeded.
A temperature switch can be supplied for independent monitoring of the operating temperature.

1.3. APPLICATIONS

HP type units are particularly suitable for:

- tensioning, clamping, releasing, indexing on machine tools, presses and jigs
- operating lifting and swivel devices
- dock levellers and vehicle lifts
- auxiliary and off-line drives
- hydraulic tools as a drive unit
- pressure controls
- industrial and mobile braking systems
- cutting and shearing operations
- weight compensation
- valve drives

Not suitable for long-term operation!

Note!

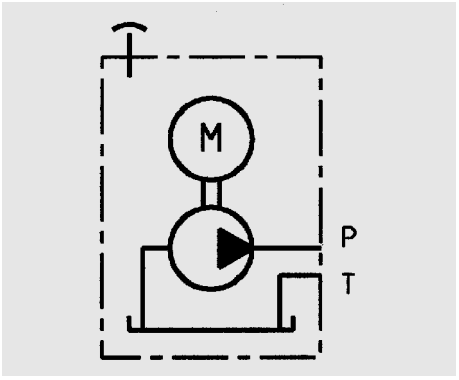
- do not use unit in applications for which it is not intended
- unit produces high pressure
- do not exceed max. permissible pressure
- tank can become hot during operation - risk of injury

2. TECHNICAL SPECIFICATIONS

2.1. GENERAL

2.1.1. Designation and symbol

Electro-hydraulic power unit



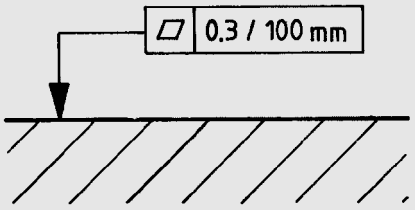
2.1.2. Type of construction

Valve-controlled hydraulic pump, radial piston type, with a constant displacement volume, driven by an oil-immersed electric motor.

2.1.3. Type of mounting

Mounting holes on the foot bracket for 4 screws
M 6 ... HP 0
M 8 ... HP 1, HP 2

Required surface finish of the mounting area:



or use flexible mounting elements.
Also see point 2.1.15.

2.1.4. Weights (dry units)

HP 0 . . . . 7.2 kg
HP 1 . . . . 16.5 kg
HP 1 H . . . . 18.3 kg
HP 2 . . . . 21.5 kg
HP 2 H. . . . 25.7 kg

2.1.5. Ambient temperature

- 20 °C to + 40 °C

2.1.6. Direction of rotation (motor)

Optional

2.1.7. Mounting position

Vertical, air breather and terminal box on the top.

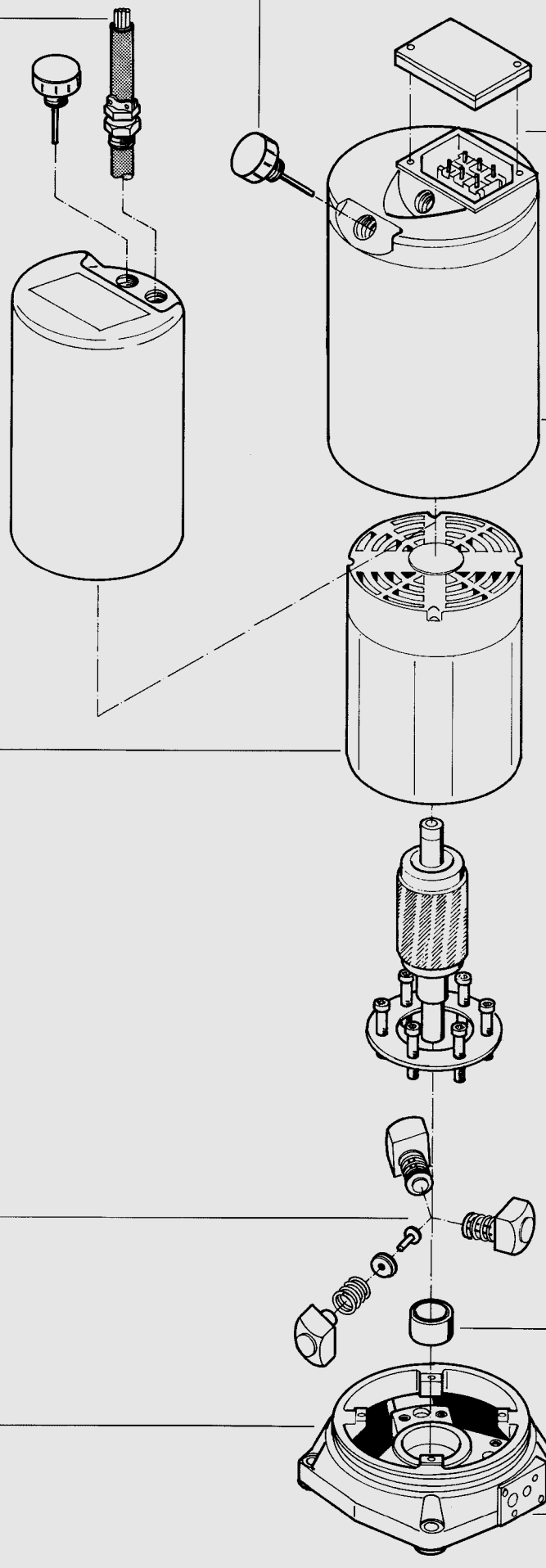
CONSTRUCTION OF THE HP POWER UNIT

HP 0
with approx. 3 m
flying leads, incl.
tension-free PG
gland

Air breather
with dipstick
optionally BF 4 -10 µm

HP 1, HP 2
built-in terminal box
with terminal strip
for motor and
temperature switch

Tank
inherently stable
various tank sizes
steel



Oil-immersed motor
squirrel-cage motor
low-noise
oil-cooled

Triple cylinder radial piston pump
valve-controlled
independent of direction of rotation
for high pressure
narrow flow rate gradation

Pump bearing
friction bearing
low-noise

Unit flange
spherical cast iron
inherently stable
noise-damping
through bores for simple mounting

Connection flange
for build-on controls

2.1.8. **Model code**
(also order example)

Power unit														Addit. units		Build-on control			Suppl. details
HP	1	H	F	Z5L	-	0.82	-	05	-	X	1	TS	T	+	. . . . .	+	. . . .	+G24	- Z4	-N	+	. . . . .

High pressure power unit

Size
For selection criteria see point 2.1.9. and 2.1.11.
0
1
2

Tank size
no details ... standard tank
H ... tall tank
for usable volume see point 2.1.11.

Fluid level gauge
no details ... no fluid level gauge
F ... FSA
0 ... FSK, N/C contact
00 ... FSK, 2 off, at different heights (HP 1, HP 2)
(see point 2.1.11. and 2.1.12.)

Electrical connection for FSK
no details ... small connector (standard)
Z5L ... large connector with light

Flow rate code
see point 2.1.9.

Motor code
see point 2.1.10.

Modification number

Air breather
no details ... standard air breather
1 ... BF4, filtration rating 10 µm (see point 2.1.13.)

Temperature switch
no details ... no temperature switch
TS ... temperature switch, actuating temperature 80 °C ±2.5 K (see point 2.1.14.)

Carrying handle
no details ... no carrying handle
T ... carrying handle (see point 4.)

Additional units
(see point 3.1.)
no details ... no additional units

Build-on control
(see point 5.)

Nominal voltage for actuating solenoid
(only for build-on control)
G 24 ... 24 V DC
W 230 ... 230 V 50/60 Hz AC
other voltages on request

Electrical connection for actuating solenoid
no details ... socket to DIN 43650 without connector
Z4 ... connector to DIN 43650-AF2-PG11
Z5L ... large connector with light
For AC voltage the connector is supplied with a bridge rectifier insert.

Emergency manual override on directional seat valves
(see point 6.2.)
no details ... no emergency manual override
N ... pin type operation
NG ... thumb pressure operation for symbols V, W, Y, YR, only

Supplementary details
Please quote supplementary details in full

2.1.9. **Flow rate code table**

	Flow rate code		Three phase (3~) motor			Single phase motor (1~)		
			Nom. press.	Motor output P (kW)		Nom. press.	Motor output P (kW)	
	50 Hz	60 Hz	(bar)	50 Hz	60 Hz	(bar)	50 Hz	60 Hz
HP 0	**0.30**	0.36	**500**	0.28	0.33	**500**	0.24	0.28
	0.52	0.62	**390**	0.28	0.33	**330**	0.24	0.28
	0.82	0.95	**240**	0.28	0.33	**210**	0.24	0.28
	1.05	–	**230**	0.33	–	**200**	0.28	–
	1.25	1.50	**160**	0.28	0.33	**135**	0.24	0.28
	1.65	–	**150**	0.33	–	**125**	0.28	–
	1.70	1.95	**120**	0.28	0.33	**100**	0.24	0.28
	2.50	–	**100**	0.33	–	**80**	0.28	–
	3.35	–	**75**	0.33	–	**60**	0.28	–
HP 1	**0.49**	0.60	**500**	0.7	0.8	**500**	0.6	0.7
	0.82	1.00	**500**	0.7	0.8	**450**	0.6	0.7
	1.00	1.20	**500**	1.05	1.2	**500**	0.9	1.05
	1.25	1.50	**380**	0.7	0.8	**300**	0.6	0.7
	1.70	–	**420**	1.05	–	**350**	0.9	–
	1.95	2.40	**250**	0.7	0.8	**190**	0.6	0.7
	2.55	–	**270**	1.05	–	**220**	0.9	–
	2.60	3.15	**180**	0.7	0.8	**130**	0.6	0.7
	4.00	–	**170**	1.05	–	**140**	0.9	–
	5.25	–	**120**	1.05	–	**100**	0.9	–
HP 2	**0.49**	0.60	**500**	0.95	1.1	**500**	0.95	1.1
	0.82	1.00	**500**	0.95	1.1	**500**	0.95	1.1
	1.00	1.20	**500**	1.60	1.85	**500**	1.40	1.6
	1.25	1.50	**450**	0.95	1.1	**450**	0.95	1.1
	1.70	–	**500**	1.60	–	**500**	1.40	–
	1.95	2.40	**350**	0.95	1.1	**300**	0.95	1.1
	2.55	–	**450**	1.60	–	**340**	1.40	–
	2.60	3.15	**250**	0.95	1.1	**230**	0.95	1.1
	4.00	–	**300**	1.60	–	**220**	1.40	–
	5.25	–	**200**	1.60	–	**150**	1.40	–

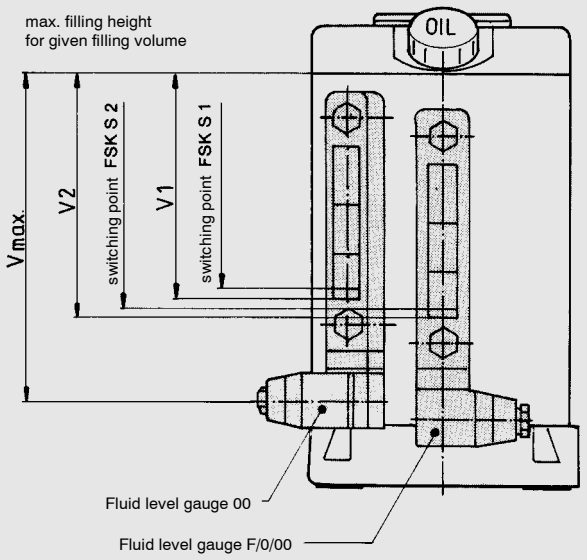
Note! The nominal pressure of the build-on control must be taken into account.
The flow rate code is approximately equivalent to the flow rate (l/min) at nominal rpm.
At nominal pressure the flow rate is 0.8 to 0.92 x flow rate code.
Model recommended due to its particularly low noise level.

2.1.10. **Motor code table**

	HP 0	**HP1/HP2**
05...3-phase	400 V - 50 Hz	230/400 V - 50 Hz
06...3-phase	415 V - 50 Hz	240/415 V - 50 Hz
08...3-phase	500 V - 50 Hz	290/500 V - 50 Hz
09...3-phase	660 V - 50 Hz	380/660 V - 50 Hz
34...3-phase	400 V - 60 Hz	230/400 V - 60 Hz
36...3-phase	460 V - 60 Hz	266/460 V - 60 Hz

	HP 0 / HP 1 / HP 2
61...single phase	230 V - 50 Hz
62...single phase	240 V - 50 Hz
80...single phase	115 V - 60 Hz

2.1.11. **Oil volume (l)**



Approximate values, component-related deviations are possible.

	Filling volume (l)	Usable volume (l) V_{max}	V_1	V_2
HP 0	1.1	0.7	-	-
HP 1	2.4	1.6	1.15	1.3
HP 1 H	4.0	3.2	2.75	2.9
HP 2	4.0	2.8	2.0	2.2
HP 2 H	7.0	5.8	4.6	4.7

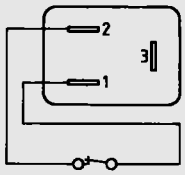
S1: early warning point
(on model 00 = 2 x FSK)
S2: min. switching point

2.1.12. **Fluid level gauge**

FSA ...
visual fluid level gauge
FSK ...
visual fluid level gauge
with additional electrical contact before the minimum fluid level is reached

Electrical function FSK

0 = N/C contact



Contact load: max. 8 W
Switching voltage:
max. 50 V AC/DC
Switching current: max. 0.2 A
Terminal 3 not connected
Electrical connection:
small connector (standard)
Z5L ... large connector with light (24-50 V AC/DC)

2.1.13. **Air breather BF4**

Filtration rating 10 µm,
without dipstick,
for use in highly contaminated environments.

2.1.14. **Temperature switch TS**

To protect the unit from overheating.
Actuating temperature:
80 °C ±2.5 K
Switch-back hysteresis:
approx. 10 K - 30 K
Nominal voltage:
AC max. 250 V
DC max. 60 V
Current capacity with AC:
1.6 A at cos φ = 0.6
2.5 A at cos φ = 1.0
DC:
60 V = 1.0 A
42 V = 1.2 A
6/12/24 V = 1.5 A
Type of contact: N/C
Connection: terminal in terminal box (HP1 and HP2), flying leads, approx. 400 mm long (HP0)

2.1.15. **Noise generation**

Due to their design, HP power units are extremely quiet. The noise generation is determined mainly by the installation site and the type of mounting. We recommend that the unit is mounted on vibration mounts and that pressure hoses are used.
Noise levels:
44-70 dBA for those units in table 2.1.9. which are designated as being especially low-noise.
Max. 80 dBA for all other units.

2.2. HYDRAULIC DETAILS

2.2.1. **Nominal pressure**

p_N = 500 bar max.
see point 2.1.9.
When using build-on controls, the nominal pressure of these units must be taken into account.

2.2.2. **Flow rate**

Q = 0.30 to 5.25 l/min
see point 2.1.9.

2.2.3. **Operating fluid**

Hydraulic oil to DIN 51524 part 2

2.2.4. **Fluid temperature range**

Min. - 20 °C
Max. + 80 °C

2.2.5. **Viscosity range**

Min. 10 mm^2/s
Max. 380 mm^2/s
Optimum viscosity range 12 to 200 mm^2/s.
Max. initial viscosity 800 mm^2/s

2.2.6. **Filtration**

Max. permissible contamination level of the operating fluid

- **At operating pressure up to 350 bar**
  to NAS 1638, class 10.
  We recommend a filter with a minimum retention rate of $b_{20} \geq 100$.
- **At operating pressure up to 500 bar**
  to NAS 1638, class 9.
  We recommend a filter with a minimum retention rate of $b_{10} \geq 100$.

The fitting of filters and regular replacement of elements guarantees correct functioning, reduces wear and tear and increases the service life.
Only filtered oil must be used!
Filtration and filling can be carried out simply and quickly in one operation using a filtration unit, the OF type for example. If the unit is used in a highly contaminated environment, the use of an air breather, type BF 4, is recommended.

2.3. ELECTRICAL DETAILS

2.3.1. **Type of construction**

Three-phase squirrel-cage motor or single phase motor (supplied with continuous operation condenser), oil-cooled.

2.3.2. **Nominal voltage**

3 ~ 230 / 400 V - 50 Hz
Standard model
other voltages available on request (see point 2.1.10.)

2.3.3. **Type of operation**

Short-term operation S 2
Intermittent operation S 3
to VDE 0530
The switch-on time, dependent on the output, the operating and ambient conditions, must be selected to ensure that the maximum permissible operating temperature (that of the oil in the unit) of 80 °C is not exceeded.
If necessary, fit a temperature switch (see point 2.1.14.)

2.3.4. **Safety type**

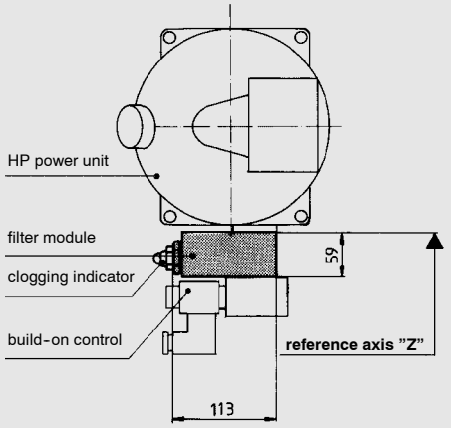
DIN 40050 - IP 54 for a completely assembled unit with correct electrical connection.

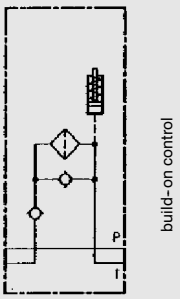
2.3.5. **Type of connection**

HP 1 / HP 2 ...
Terminal box with terminal strip
HP 0 ...
approx. 3 m long flying leads

3. ADDITIONAL UNITS

3.1. RETURN LINE FILTER MODULE





Return line filter module between HP power unit and build-on control including check valve (prevents the tank from emptying when the filter element is changed).

Model code

F T R 20 B . X

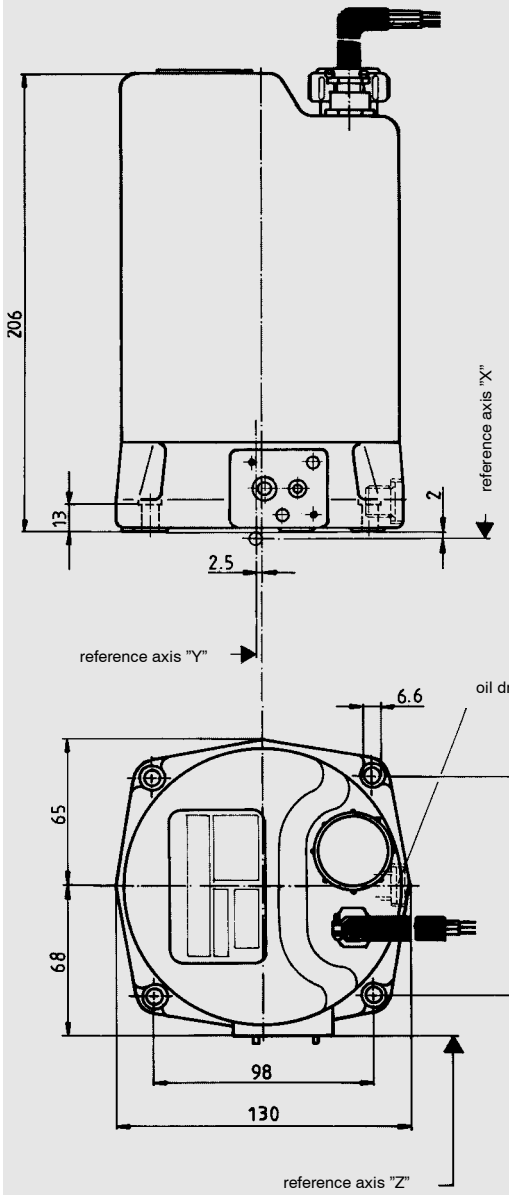
Filter module
Filter in the T line
Bypass valve RV
no details . . . no bypass
R . . with bypass valve
p_o = 4.5 bar
Filtration rating
20 . . . 20 mm (standard)
10 . . . 10 mm
5 . . . 5 mm
Clogging indicator
B visual indicator
C electrical indicator
D 24 comb. vis./elec. indicator
D 24 (15 - 30 V DC/AC)
D 48 (30 - 60 V DC/AC)
D 110 (100 - 130 V DC/AC)
D 230 (150 - 230 V DC/AC)
For further details, see the Clogging Indicators for Filters brochure, no. E 7.050
Modification number

4. DIMENSIONS

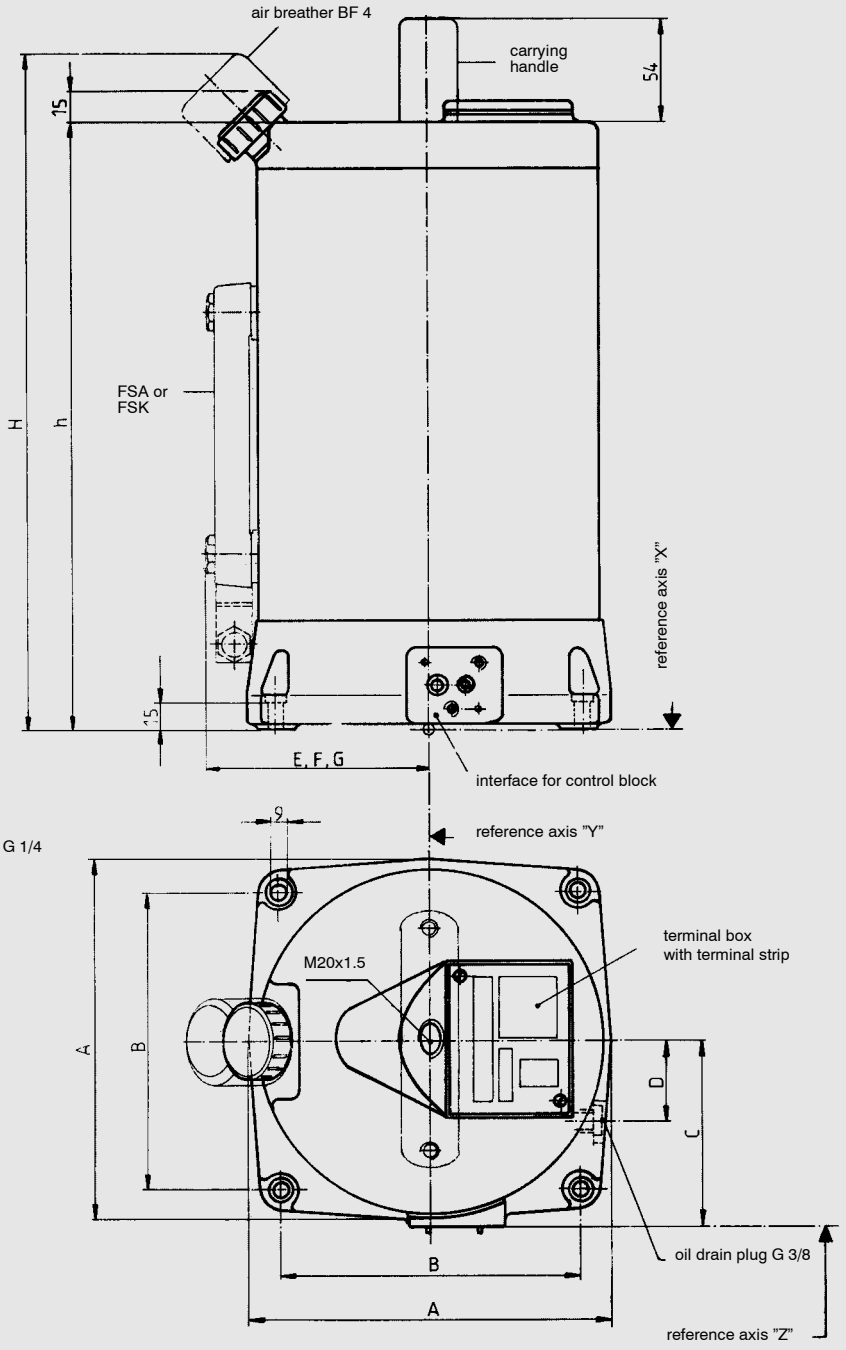
Power unit

The axes X, Y and Z are reference axes for calculating the installation dimensions when adding modules as per point 5. (Build-on controls).

HP 0



HP 1/HP 2



Type	A	B	C	D	E	F	G	H	h
HP 1	164	125	85	40	107	115	143	315	281
HP 2	190	156	98	50	117	125	153	350	316
HP 1 H	164	125	85	40	107	115	143	424	390
HP 2 H	190	156	98	50	117	125	153	484	450

E... clearance for FSA
F... clearance for FSK, small connector
G...clearance for FSK, Z5L - large connector with lamp

All measurements in mm. For dimensions of build-on controls, see point 5.

5. BUILD-ON CONTROLS

5.1. OVERVIEW

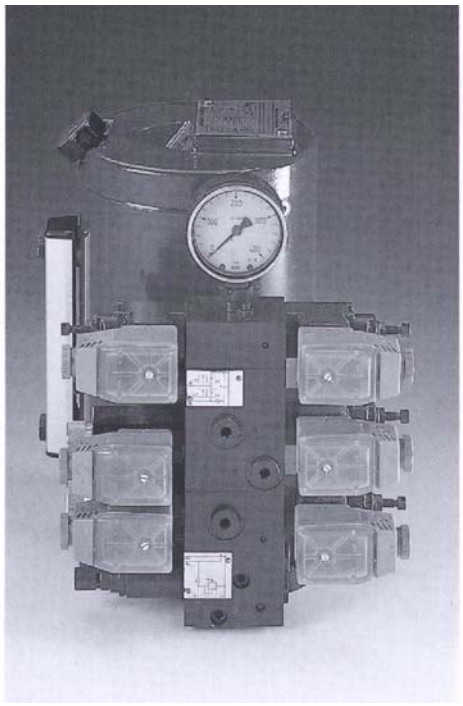
Build-on controls and high pressure power units, type HP, combine to make a unit ready for installation.
The build-on controls can be arranged to suit individual applications.
Three types of build-on control systems are available.

Build-on modules

(see point 5.2.)

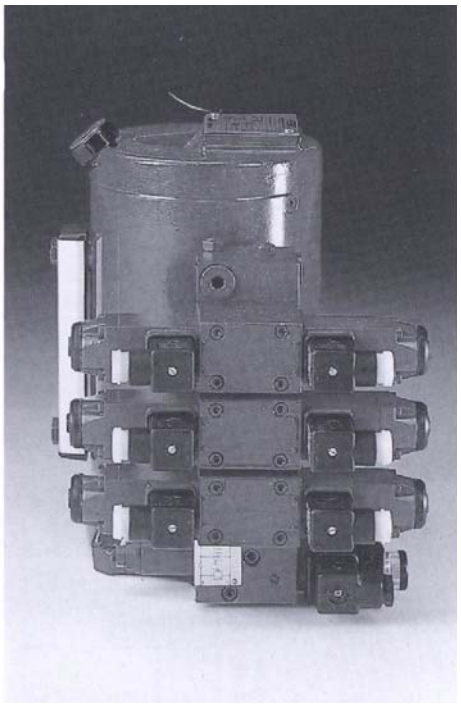
Build-on control module
Build-on modules are flanged directly onto the connection flange of the HP unit. They consist of various different types of valves as well as all connections necessary for operation.

Modular valve stacking system
(see brochure no. E5.304.)



Valve stacking system L
Modules with directional seat valves, pressure and check valves as well as pressure switches can be combined on a base module in any order, depending on the control task.
It is always finished off with an end module.
For model codes and dimensions, see brochure no. E5.304.
”Valve stacking system L”.

Valve stacking modules for valves with A6 interface to DIN 24340 (see point 5.3.)



Valve stacking modules CL
Up to six horizontal stacking modules can be mounted onto a base module. A vertical stacking system consisting of directional valves or sandwich plate valves with A6 interface to DIN 24340 is fitted onto the valve stacking modules. It is always finished off with an end module.

Note:
Build-on module controls and modules of control types L and CL cannot be combined.

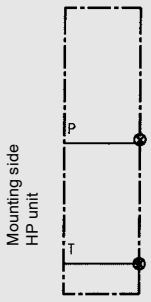
Special controls:
For control tasks which cannot be solved with standard controls, special control blocks can be fitted to the unit according to customers’ specifications.

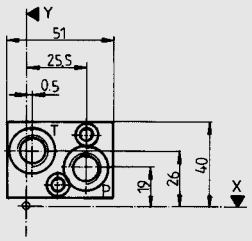
Designation and symbol

Dimensions

Model code

Connecting module Inline mounting





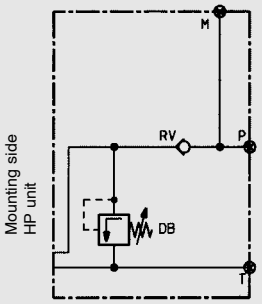
Installation dimension Z: 25 max.

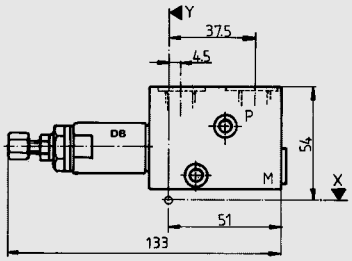
G 1/4

Type

P_N = 500 bar

Base module





Installation dimension Z: 30 max.

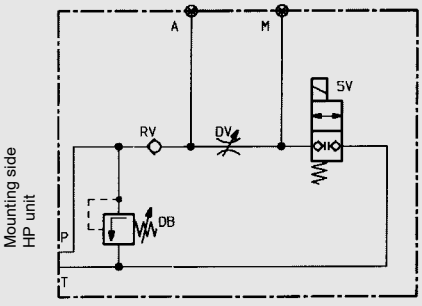
GRD 350 M

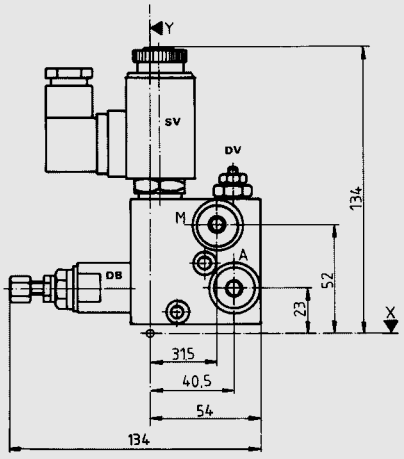
Type
GD no check valve RV
GRD with check valve RV

Pressure relief valve DB
Pressure range
and type of adjustment
see point 6.4.

P_N = 500 bar

Lift/lower module





Installation dimension Z: 43 max.

G...
SW 3 Z 200 M + W...

Type

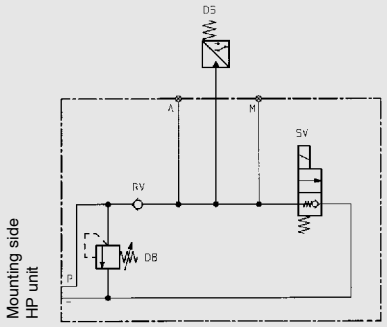
Directional
seat valve SV
possible symbols
V, W, Y, Z
see point 6.5.

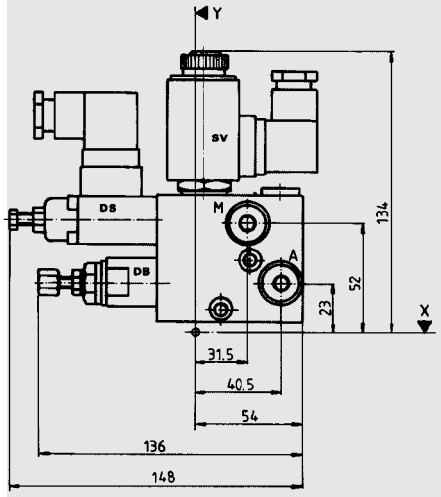
Pressure
relief valve DB
Pressure range
and type of adjustment
see point 6.4.

see point 2.1.8.
(build-on control)

P_N = 350 bar

Pressure control module





Installation dimension Z: 43 max.

G...
SB 3 Z -5 / 350 M + W...

Type

Directional seat valve SV
possible symbols
V, W, Y, Z
see point 6.5.

Pressure switch DS
see point 6.3.

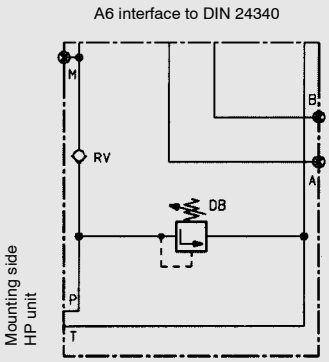
Pressure relief valve DB
Pressure range and type of adjustment
see point 6.4.

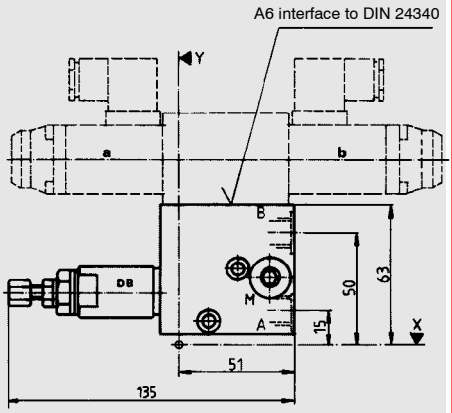
see point 2.1.8.
(build-on control)

p_N = 350 bar

Build-on module for valves with A6 interface to DIN 24340

Directional valve and sandwich plate valve construction possible





Installation dimension Z: 53 max.

CE R D 350 M - ...

Type

Check valve RV
no details ... no RV
R ... with RV

Pressure relief valve DB
D ... with DB

DB pressure range and type of adjustment
see point 6.4.

p_N = 350 bar
(or max. pressure of the built-on valves)

5.3. VALVE STACKING MODULES

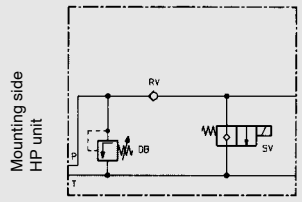
For valves with A6 interface to DIN 24340 (p_N = 350 bar), ports A, B, P, T ... G 3/8

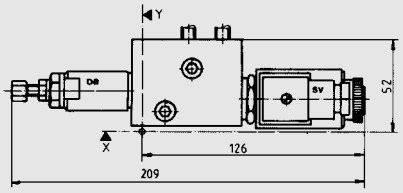
Designation and symbol

Dimensions

Model code

Base module





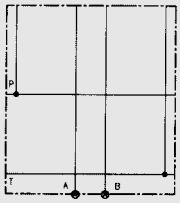
Installation dimension Z: 88 max.

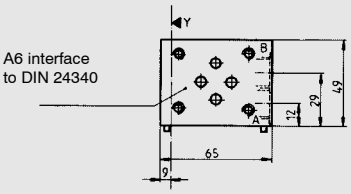
CL ... R D 350 M Z - ... +

Type
No. of valve stacking modules
(max. 6)
Check valve RV
no details ... no RV
R ... with RV
Pressure relief valve DB
D ... with DB
DB pressure range and type of adjustment
see point 6.4.
Directional seat valve SV
no details ... no SV
possible symbols V, W, Y, Z
see point 6.5.
Directional valves and sandwich plate valves
with standardised interface
(see point 6.1.3.)

Valve stacking module

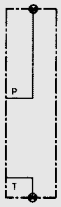
A6 interface to DIN 24340

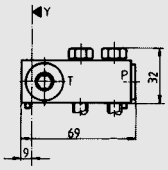




Installation dimension Z: 50 max.

Standard end module



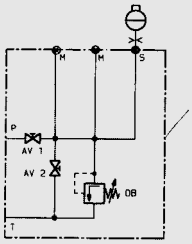


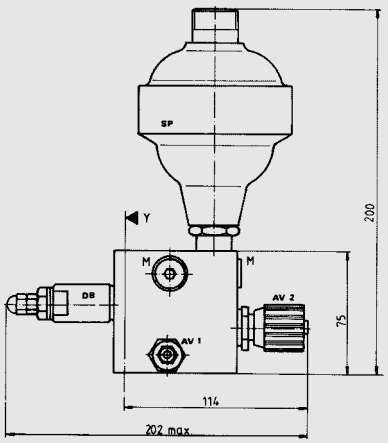
Installation dimension Z: 52 max.

+ PL

Typ

Accumulator safety end module





Port M ... G 1/4

+ PT 350 P 350 TÜV - ...

Type
DB pressure range
(see point 6.4.)
DB type of adjustment
P ... can be lead-sealed, on TÜV version lead-sealed
Pre-set cracking pressure DB
TÜV ... with TÜV approval for DB
no details ... no TÜV approval for DB
Details for pressure accumulator SP
Please quote in full
(see point 6.1.2.)

6. DESIGN RECOMMENDATIONS

6.1. DOCUMENTATION

6.1.1. Valves and units

DB - Pressure relief valves DB 4E
Brochure No. E 5.161

- Pressure relief valves DB 4E pressure-set and lead-sealed
Brochure No. E 5.163

DMV - Pressure reducing valves
Brochure No. E 5.162

DV - Flow control valves DV 5E
Brochure No. E 5.113

RV - Check valves RVE
Brochure No. E 5.176

SV - 2/2 directional seat valves 2 SVE
Brochure No. E 5.204

DS - Pressure switches Series 5 - 8

6.1.2. Hydraulic accumulators

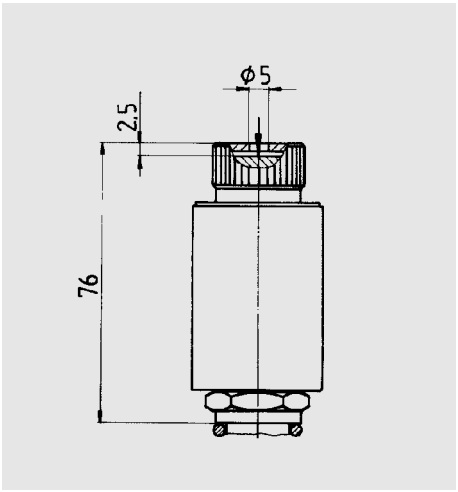
The following hydraulic accumulators can be fitted (when ordering, please state type in full):
Diaphragm accumulators, weld or screw version, type: SBO
Brochure No. E 3.100
Bladder accumulators type: SB
Brochure No. E 3.201

6.1.3. Valves with A6 interface to DIN 24340

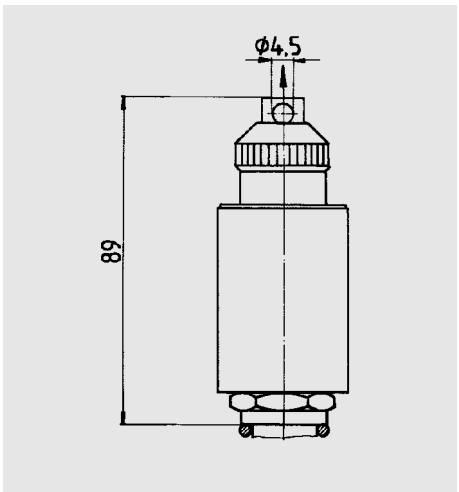
All directional valves with A6 interface to DIN 24340 or CETOP R35H-42-4-03 can be fitted to the CE build-on module and the CL horizontal stacking modules.
For example: HYDAC directional seat valves WSE 3 D as per brochure No. E 5.203 or directional spool valves.
Directional valves and sandwich plate valves can be supplied, if required. Please give symbols in full or specify circuit diagram.

6.2. EMERGENCY MANUAL OVERRIDE FOR DIRECTIONAL SEAT VALVES SV

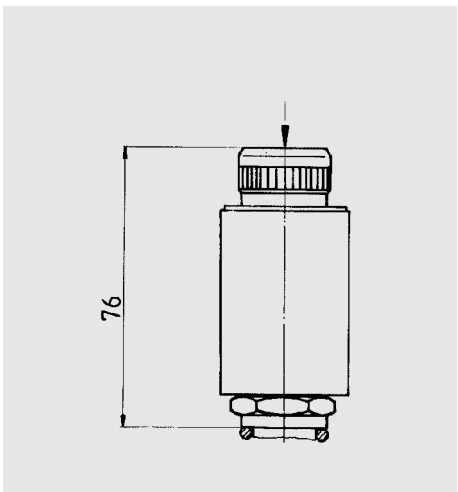
N ... pin type operation
Available for symbols V, W, Y, YR,
Mechanical operation is only possible with a pin.
The opening has a diameter of 5 mm. The pin is countersunk by 2.5 mm. The operating stroke is 1.5 mm.
The valve is switched as pressure is applied to the actuating mechanism by means of an appropriate pin.



N ... pin type operation
Available for symbols Z, ZR
The valve is switched as the actuating mechanism is pulled out using an appropriate tool.
The operating stroke is 1.5 mm.



NG ... thumb pressure operation (rubber cap)
Available for symbols V, W, Y, YR,
Manual operation is possible without tool (thumb pressure).

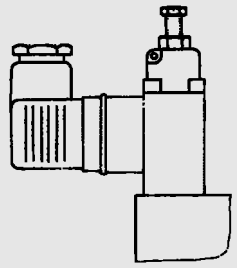


6.3. PRESSURE SWITCH DS

Series 5 - 8

Order code	Pressure range
5	50 bar
6	200 bar
7	350 bar
8	630 bar

- with adjustment screw
- compact construction



If solenoid valves with Z4 connectors are ordered, pressure switches with Z14 connectors are supplied (standard).
If solenoid valves with Z5L connectors are ordered, pressure switches with Z15L connectors are supplied.

6.4. ORDER DETAILS FOR PRESSURE RELIEF VALVE DB

350 M 315 - 300

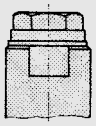
Pressure range
100 (... 100 bar)
200 (... 200 bar)
350 (... 350 bar)
630 (... 630 bar)

Type of adjustment
F ... fixed setting
M ... adjustable, advise pressure setting limit (standard)
SM ... scaled knob, advise pressure setting limit
P ... can be lead-sealed
A ... lockable, 2H lock

Max. pressure setting
Must be specified for M and SM
not required for A, F and P

Pre-set cracking pressure
Must be specified for F
Optional for M, SM, A, P
(no details: spring not set)

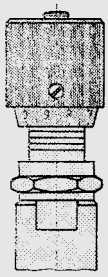
F



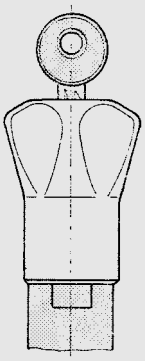
P

M (standard)

SM



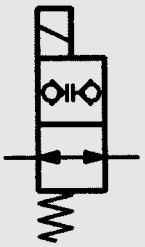
A



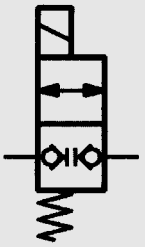
6.5. 2/2 DIRECTIONAL SEAT VALVES SV

Symbols
(For nominal voltage, electrical connection and emergency manual override of actuating solenoids, see point 2.1.8. Build-on control)

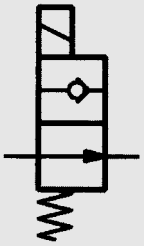
V



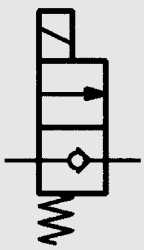
W



Y



Z



7. NOTE

The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

HYDAC INTERNATIONAL

Einschraubventil-Zubehör
Cartridge Valve Accessories
Accessoires pour valves cartouches

Werkzeuge und Verschlußstopfen für Einbauräume, Einschraubventile.

Tools and blanking plugs for cartridge valve cavities.

Outillages et bouchons d'obturation pour implantations valves cartouches.

1. BESCHREIBUNG

1.1 ALLGEMEINES

EINBAURAUM

Als Einbauraum wird die Aufnahmebohrung für HYDAC Einschraubventile bezeichnet. Durch Standardisierung der Einbauräume können HYDAC Einschraubventile gleicher Nennweite und Anschlußbelegung mit unterschiedlichen Funktionen in gleiche Einbauräume eingeschraubt werden.

FORMBOHRWERKZEUG

Zur einfachen Herstellung der Einbauräume stehen HYDAC Formbohrwerkzeuge zur Verfügung. Durch Einsatz der HYDAC Formbohrwerkzeuge sind beste Voraussetzungen gegeben für:

- **Form- und Maßgenauigkeit des Einbauraumes**
- **Senkung der Herstellkosten durch Reduzierung der Zerspanungszeit**

Die Werkzeuge bestehen aus HSS Schnellarbeitsstahl. Damit ist eine hohe Standzeit gesichert; bei Bedarf können die Werkzeuge nachgeschliffen werden.

VERSCHLUSSSTOPFEN

Zum Verschließen von vorübergehend nicht benötigten Einbauräumen in Multifunktionsblöcken oder zum Spülen und/oder für Dichtheitsprüfungen in Hydrauliksystemen können Verschlußstopfen eingeschraubt werden.

EINSCHRAUBWERKZEUGE

Zur einfachen Montage der Rohrbruchsicherungen stehen angepaßte Einschraub-werkzeuge zu Verfügung.

1. DESCRIPTION

1.1 GENERAL

CAVITIES

The cartridge port is designated as the cavity for HYDAC cartridge valves. Standardisation of the cavity means that HYDAC cartridge valves with the same nominal width and port connections but with different functions can be fitted into the same port.

Cartridge form tool

HYDAC cartridge form tools are available for cutting the cavities easily. HYDAC cartridge form tools are the best means of ensuring:

- accuracy of form and dimensions of the port
- reduction of production costs by reducing the machining time.

The tools are made of HSS high-speed steel. Long life is therefore guaranteed; the tools can be reground if necessary.

Blanking plugs

Blanking plugs can be fitted to seal off ports temporarily not in use in multifunction blocks or for flushing and/or for sealing tests in hydraulic systems.

Cartridge tools

For easy fitting of hose break valves, suitable cartridge tools are available.

1. DESCRIPTION

1.1 GÉNÉRALITÉS

Implantations

Par implantation, on définit le perçage de positionnement de la valve cartouche. Grâce à la standardisation des implantations, toutes les valves cartouches HYDAC de taille identique et ayant les mêmes orifices de raccordement, mais des fonctions différentes, peuvent être vissées dans une même implantation.

Forets étagés

HYDAC propose des forets étagés, qui vous permettront de réaliser rapidement vos implantations. L'utilisation des forets HYDAC vous garantit le respect des cotes et de la forme de l'implantation, ainsi qu'une baisse des coûts de fabrication générée par la réduction de temps d'usinage.

Les outils sont en acier à coupe rapide, matériau assurant une longue durée de fonctionnement. Ils peuvent, au besoin, être réaffûtés.

Bouchons d'obturation

Les bouchons d'obturation peuvent être vissés dans les implantations et permettent :

- *l'obturation des implantations non utilisées des blocs multi-fonctions*
- *le rinçage et/ou le contrôle de l'étanchéité des systèmes hydrauliques*

OUTILS de montage

Des outils adaptés sont mis à disposition pour faciliter le montage des soupapes parachutes.

1.2 AUSWAHLTABELLE

Mit Hilfe der Auswahltabelle (siehe Seiten 7, 13, Auswahltabellen) ist eine schnelle Zuordnung von Ventil zum Einbauraum möglich.

Über den Einbauraum können die benötigten Werkzeuge und Verschlußstopfen mit ihren Materialnummern schnell und einfach aufgefunden werden.

Die Tabelle ist gegliedert in Druck-, Strom-, Sperr- und Wegeventile.

Die Ventiltypen sind alphabetisch geordnet mit Angabe der Seite, auf der die dazugehörigen Werkzeuge und Verschlußstopfen zu finden sind.

1.2 SELECTION TABLE

By using the selection table (see pages 7 and 18 for selection tables) it is possible to quickly match the valve to the cavity.

The required tools and blanking plugs with their part numbers can be found quickly and simply via the cavity.

The table is divided into pressure, flow control, shut-off and directional valves.

The valves are listed alphabetically, giving the page number on which the appropriate tools and blanking plugs can be found.

1.2 TABLEAU DE SÉLECTION

Le tableau de sélection (voir tableau page 7, 18) regroupe toutes les valves HYDAC et les associe à l'implantation qui s'y rapporte.

En connaissant l'implantation, vous retrouvez facilement et rapidement les outils et les bouchons d'obturation correspondants, ainsi que leur code article.

Le tableau est divisé en quatre parties : les valves de pression, d'arrêt, de débit et les distributeurs.

Les valves sont classées par ordre alphabétique et le numéro de page indiqué renvoie à la page à consulter pour trouver les outils et les bouchons d'obturation adéquats.

2. EINBAURÄUME METRISCH

METRIC CAVITIES

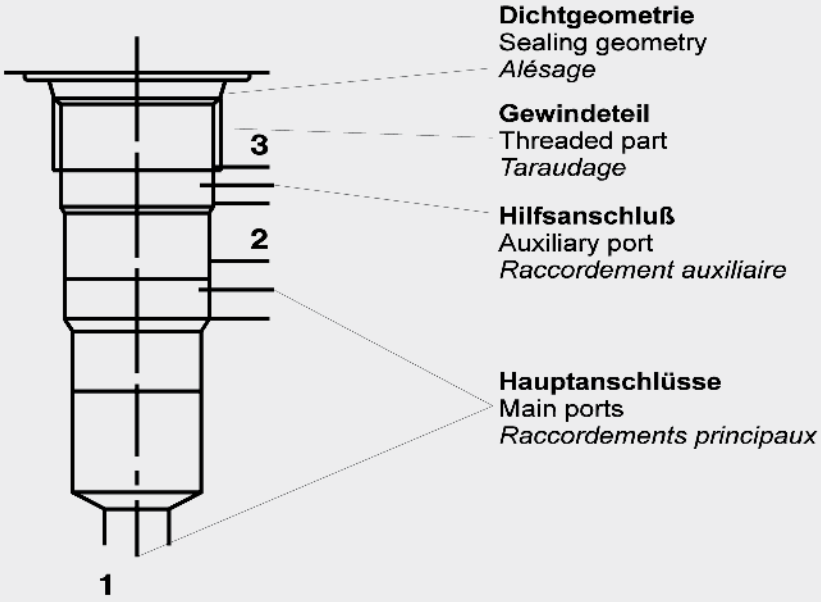
IMPLANTATIONS METRIQUES

2.1 AUFBAU DER EINBAURAUM-TYPISIERUNG

STRUCTURE OF THE CAVITY MODEL CODE

CODIFICATION DE L'IMPLANTATION

Einbauraum 08021
Cavity 08021
Implantation 08021



Beispiel: Example: *Exemple:*

08 0 2 1

Nennweite
Nominal width
Diamètre nominal

Bauform: Dichtgeometrie und Gewinde nach Ventilprospekt
Construction: sealing geometry and threads as per valve brochure
Construction: alésage et taraudage selon notice des valves

Anzahl Hauptanschlüsse
Number of main ports
Nombre de raccordements principaux

Anzahl Hilfsanschlüsse
Number of auxiliary ports
Nombre de raccordements auxiliaires

2.2 EINBAURAUMFERTIGUNG UND VENTILMONTAGE

Nur durch sachgemäße Fertigung des Einbauraums und sorgfältige Montage des Einschraubventiles wird die störungsfreie Funktion des Ventiles gewährleistet:

2.2.1 Empfohlene Einbauraumfertigung

Die sachgemäße Fertigung wird gewährleistet durch:

- **Verwendung gültiger HYDAC Unterlagen**
- **Verwendung von HYDAC Formbohrwerkzeugen**
- **Fertigung in einer Aufspannung**
- **Anfahren des gleichen Bohrungsmittelpunktes bei jedem Arbeitsgang**
- **Arbeitsfolge so festlegen, daß die Formbohrwerkzeuge und die Bohrer für die Anschlüsse 1, 2, 3 nicht verlaufen können**
- **Sorgfältiges Entgraten und gründliches Spülen zur Erzielung eines grat-, span- und schmutzfreien Einbauraumes**

Arbeitsfolge bei der Einbauraumfertigung:

a) Vorbohren (mit handelsüblichem Spiralbohrer)

Der Bohrerdurchmesser sollte ca. 2 mm kleiner sein als der kleinste Einbauraum-Durchmesser.

b) Senken (mit Senker)

An den Einbauräumen wird die innere Kontur und die Dichtgeometrie mit einem Senker in einem Arbeitsgang hergestellt. Eine Ausnahme bilden die Einbauräume für die DVE und der Einbauraum 12120, an denen die innere Kontur mit Vorsenker und in einem weiteren Arbeitsgang die Dichtgeometrie mit einem Fertigsenker hergestellt wird.

c) Nur bei DVE-Einbauräumen und Einbauraum 12120 erforderlich: Senken der Dichtgeometrie mit Fertigsenker

d) Reiben (mit handelsüblicher zylindrischer Reibahle oder mit HYDAC Stufenreibahle)

e) Gewindeschneiden (mit handelsüblichem Gewindebohrer)

f) Entgraten

g) Spülen

2.2 CUTTING THE CAVITIES AND FITTING THE VALVE

The cavities must be cut properly and the cartridge valve must be fitted carefully to guarantee faultless valve performance.

2.2.1 Recommendations for cutting the cavities

Correct cutting is ensured by:

- using valid HYDAC documentation
- using HYDAC cartridge form tools
- cutting in one setting
- starting at the same centre point for each operation
- establishing a working procedure such that the form tools and the drill bits for cavities 1, 2 and 3 cannot run off-centre.
- careful deburring and thorough flushing to produce burr, swarf and contamination-free cavities.

Working procedure for cutting the cavities:

a) Pre-drilling (using a commercial twist drill)

The drill diameter should be approx. 2 mm smaller than the smallest installation diameter.

b) Countersinking (using a countersink and forming tool ①, see point 2.2.2)

The inner contour and the external sealing geometry are produced in one single operation using a countersink and forming tool ①. One exception to this are the cavities for the DVE and the 12120, on which the inner contour is produced with pre-forming tool ④ and in a further operation the sealing geometry is produced with forming tool ⑤.

c) The following is necessary on DVE and 12120 cavities only: Countersinking the sealing geometry using forming tool ⑤.

d) Reaming (using a commercial reamer or HYDAC step reamer ②)

e) Thread cutting (using a commercial tap ③)

f) Deburring

g) Flushing

2.2 RÉALISATION DE L'IMPLANTATION ET MONTAGE DE LA VALVE

Seuls une implantation et un montage corrects de la valve garantissent un fonctionnement parfait de la valve.

2.2.1 Consignes à respecter lors de la réalisation de l'implantation

Une fabrication correcte est assurée dès lors que :

- *vous utilisez la documentation en vigueur HYDAC*
- *vous vous servez des forets étagés HYDAC*
- *vous usinez votre implantation sans débrider la pièce*
- *vous positionnez précisément l'outillage à chaque phase d'usinage*
- *Définir la procédure de travail de façon à ce que les outils de perçage et les forets pour les raccords 1, 2, 3 ne puissent être égarés.*
- *vous ébavurez avec soin, rinçez méticuleusement afin d'obtenir une implantation libre de toutes bavures, copeaux et pollutions.*

Procédure à suivre pour la réalisation de l'implantation :

a) Prépercer (foret hélicoïdal standard)

Le diamètre du foret doit être inférieur d'environ 2 mm au diamètre de la plus petite implantation.

b) Percer (foret étagé)

Le contour intérieur et le chanfrein d'entrée de l'implantation sont réalisés en une seule opération au moyen d'un foret étagé. Par contre, pour les DVE, cette opération s'effectuera en deux temps : le contour interne à l'aide du foret étagé d'ébauche et le chanfrein d'entrée au moyen d'un foret étagé final.

c) Sur les DVE et pour l'implantation 12120, le chanfrein d'entrée est effectué au moyen d'un foret étagé final.

d) Aléser (alésoir cylindrique standard ou alésoir étagé HYDAC)

e) Tarauder (taraud standard)

f) Ebavurer

g) Rincer

2.2.2 Formbohrwerkzeuge
Form tools
Outils de perçage

① **Senker**
Countersink
and forming tool
Foret hélicoïdal

② **Reibahle**
Reamer
Alésoir

③ **Gewindebohrer**
Tap
Taraud

④ **Vorsenker**
Pre-forming tool
Foret étagé d'ébauche

⑤ **Fertigsenker**
Forming tool
Foret étagé final

⑥ **Prüfdorn**
Plug gauge
Outil de contrôle

2.2.3 Vorgehensweise bei der Ventilmontage:

- **Prüfen, ob der Ventilkörper, die O-Ringe und die Stützringe unbeschädigt sind.**
- **O-Ringe und Gewinde mit Öl benetzen.**
- **Zuerst das Ventil mit der Hand soweit eindrehen bis die Gewindegänge sicher inneinander greifen. Danach kann das Ventil mit einem geeigneten Werkzeug weiter eingeschraubt werden.**
- **Ventil mit dem vorgeschriebenen Drehmoment anziehen (siehe Angaben im Ventilprospekt).**

2.2.3 Procedure for fitting the valve:

- Check that the valve body, the O-rings and the back-up rings are undamaged.
- Lubricate O-rings and thread with oil.
- First screw in the valve by hand until the threads engage firmly. Then the valve can be screwed in further using a suitable tool.
- Tighten the valve to the specified torque rating (see details given in valve brochure).

2.2.3 Procédure de montage de la valve

- *Vérifier que le corps de valve, les joints toriques et les bagues anti-extrusion ne soient pas endommagés*
- *Lubrifier les joints toriques et les taraudages*
- *Visser d'abord la valve à la main jusqu'à ce que les pas de vis soient bien emboîtés. Vous pouvez vous servir ensuite d'un outil adapté pour serrer la valve*
- *Resserrer la valve au couple de serrage prescrit (voir indications dans la notice)*

2.2.4 Verschlußstopfen
Blanking plugs
Bouchons d'obturation

3. ANMERKUNG

Die Angaben in diesem Prospekt beziehen sich auf die beschriebenen Betriebsbedingungen und Einsatzfälle.

Bei abweichenden Einsatzfällen und/oder Betriebsbedingungen wenden Sie sich bitte an die entsprechende Fachabteilung.

Technische Änderungen sind vorbehalten.

3. NOTE

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

3. REMARQUE

Les données de ce prospectus se réfèrent aux conditions de fonctionnement et d'utilisation décrites.

Pour des conditions d'utilisation et de fonctionnement différentes, veuillez vous adresser au service technique compétent.

Sous réserve de modifications techniques.

4. AUSWAHLTABELLE
SELECTION TABLE
TABLEAUX DE SELECTION

4.1 DRUCKVENTILE
PRESSURE VALVES
VALVES DE PRESSION

Einschraub-ventil Cartridge valve *Valves cartouches*	**Einbauraum** Cavity *Implantation*	**Seite** Page *Page*
DB3E…	05220	1038
DB4E…	06020	1038
DB10120A…	10120A	1041
DB12120A…	12120A	1043
DB12121...	12121	1043
DB16221…	16221	1044
DB16621...	16621	1044
DMVE-G1/2	08030	1039
DMM10121	10121	1042
DRM10130	10130	1042
DSR5E	06020	1038
DZ5E	06020	1038
DW...05830	05830	1038
DW...08130	08130	1040
DW…10130	10130	1042
DW...12121	12121	1043
DW...12130	12130	1043
DZ12131	12131	1043

4.2 STROMVENTILE
FLOW CONTROL VALVES
VALVES DE DEBIT

Einschraub-ventil Cartridge valve *Valves cartouches*	**Einbauraum** Cavity *Implantation*	**Seite** Page *Page*
DV5E	06020	1038
DVE-08920	08920	1041
DVE-10920	10920	1042
DVE-12920	12920	1044
DVE-16920	16920	1045
SD10120	10120	1041
SR5E	06020	1038
SRA 10130	10130	1042
SRE 1-G1/4	05520	1038
SRE 2-G3/8	08520	1040
SRE 3-G1/2	10520	1042
SRE 4-G3/4	12520	1044
SDH05330	05330	1038
ST12230	12230	1043

4.3 SPERRVENTILE
SHUT-OFF VALVES
VALVES D'ARRET

Einschraub-ventil Cartridge valve *Valves cartouches*	**Einbauraum** Cavity *Implantation*	**Seite** Page *Page*
ERVE-08021	08021	1039
ERVE-16021	16021	1044
ERVE-20021	20021	1045
ERVM	08021	1039
ERVM-G1/2	08721	1041
RBE-R1/4	05520	1038
RBE-R3/8	08520	1040
RBE-R1/2	10520	1042
RBE-R3/4	12520	1044
RP10121	10121	1042
RPL10121	10121	1042
RPR08021	08021	1039
RSM10121	10121	1042
RVM06020…	06020	1038
RVM10120…	10120	1041
RVE-R1/8	04020	1037
RVE-R1/4	04220	1037
RVE-R3/8	06320	1038
RVE-R1/2	08220	1040
SBVE-R1/2	08021	1039
SBVE-R1	16021	1044
WVE-R1/8	03030	1037
WVE-R1/4	05030	1037

4.4 WEGEVENTILE
DIRECTIONAL VALVES
DISTRIBUTEURS

Einschraub-ventil Cartridge valve *Valves cartouches*	**Einbauraum** Cavity *Implantation*	**Seite** Page *Page*
WSM03230	03230	1037
WSM06020…	06020	1038
WSM08120...	08120	1039
WSM08130...	08130	1040
WSM10120...	10120	1041
WSM12120...	12120	1042
WSM16520...	16520	1044
WK06430C	06430	1039
WKH05330	05330	1038
WKM08120...	08120	1039
WKM08130...	08130	1040
WKM08140...	08140	1040
WKM10130...	10130	1042
WKM12130...	12130	1043

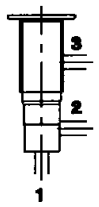
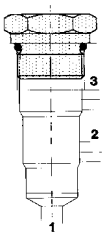
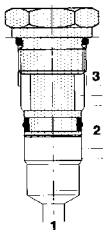
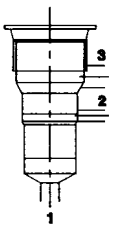
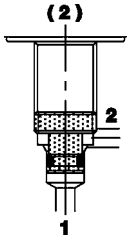
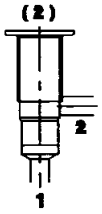
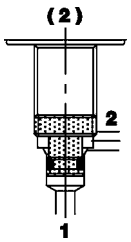
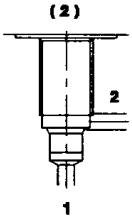
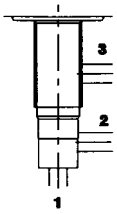
4.5 PROPORTIONALVENTILE
PROPORTIONAL VALVES
VALVES PROPORTIONNELLES

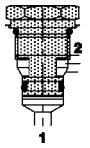
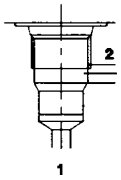
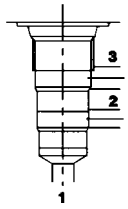
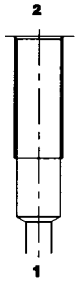
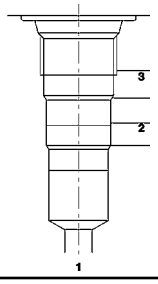
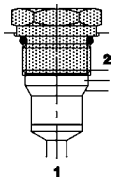
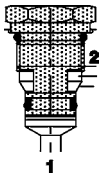
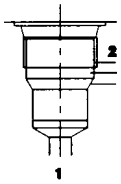
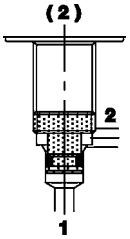
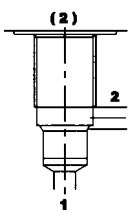
Einschraub-ventil Cartridge valve *Valves cartouches*	**Einbauraum** Cavity *Implantation*	**Seite** Page *Page*
PWS06020	06020	1038
PDBM06020	06020	1038
PDBM08130	08130	1040
PWKD08120	08120	1039
PWK06020	06020	1038
PWK10120	10120	1041
PWK12120	12120	1042
PDBM10120A	10120A	1043
PDB12121	12121	1043
PDB16221	16221	1044

4.6 COMPACTVENTILE
COMPACT VALVES
VALVES COMPACTES

Einschraub-ventil Cartridge valve *Valves cartouches*	**Einbauraum** Cavity *Implantation*	**Seite** Page *Page*
PDMC04S30	04S30	
PDMC05S30	05S30	
PDMC08S20	08S20	
PDMC10S30	10S30	
PDMC12S30	12S30	

in Vorbereitung / in preparation / *en préparation*

Einbauraum Cavity *Implantation* — **Gewinde** / Thread/ *Taraudage* Mat.-Nr.	**Einschraubventile** Cartridge valve *Valves cartouches* — **Typen** Models *Modèles*	**Prospekt Nr.** Brochure no. *Notice N°*	**Formbohrwerkzeuge** Form tools *Outils de perçage* — **Werkzeug** Tool *Outil* / **Schaft** Shank *Mandrin*	**Mat.-Nr.** Stock no. *Code article*	**Verschlußstopfen / Symbol** Blanking plug / symbol *Bouchons d'obturation / Symbole* — **Bild** Drawing *Schéma*	**Mat.-Nr.** Stock no. *Code article*	**Einbauraum-Darstellung** Cavity drawing *Représentation de l'implantation*
03030 G 1/8 395206	**WVE-R1/8**	**5.173**	**Senker** MK2 Countersink *Foret hélicoïdal* **Reibahle** MK1 Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**171 856** **1000747** **1002671** –		–	
03230 M20x1,5 395212	**WSM03230** **WSEC03230** **WSED03230**	**5.203** – –	**Senker** MK3 Countersink *Foret hélicoïdal* **Reibahle** MK2 Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**170 044** **169 983** **1002648** **165 120**	 	**277 643** **552 417**	
04020 G1/8 395208	**RVE-R1/8**	**5.176**	**Senker** MK1 Countersink *Foret hélicoïdal* **Reibahle** MK1 Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**169 549** **1000747** **1002671** **174 850**		**396 307**	
04220 G1/4 395209	**RVE-R1/4**	**5.176**	**Senker** MK1 Countersink *Foret hélicoïdal* **Reibahle** MK1 Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**169 563** **1000747** **1002670** **172 742**		**396 308**	
05030 G1/4 395207	**WVE-R1/4**	**5.173**	**Senker** MK1 Countersink *Foret hélicoïdal* **Reibahle** MK1 Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**171 857** **1000754** **1002670** **159 565**		–	

Einbauraum Cavity *Implantation* — **Gewinde** / Thread/ *Taraudage* Mat.-Nr.	**Einschraubventile** Cartridge valve *Valves cartouches* — **Typen** Models *Modèles*	**Prospekt Nr.** Brochure no. *Notice N°*	**Formbohrwerkzeuge** Form tools *Outils de perçage* — **Werkzeug** Tool *Outil* / **Schaft** Shank *Mandrin*	**Mat.-Nr.** Stock no. *Code article*	**Verschlußstopfen / Symbol** Blanking plug / symbol *Bouchons d'obturation / Symbole* — **Bild** Drawing *Schéma*	**Mat.-Nr.** Stock no. *Code article*	**Einbauraum-Darstellung** Cavity drawing *Représentation de l'implantation*
05220 M16x1,5 395203	**DB3E**	**5.165**	**Senker** **MK3** Countersink *Foret hélicoïdal* **Reibahle** **MK1** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**170 040** **1014203** **1002605** **172 827**		**715 614**	
05330 G3/8 395217	**WKH05330** **SDH05330**	**284 876 0305** **1248**	**Senker** **MK3** Countersink *Foret hélicoïdal* **Reibahle** **MK1** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**168 309** **161 079** **1002668** **169 990**		–	
05520 G1/4 395868	**SRE1-G1/4** **RBE -R1/4**	**5.118** **5.174**	**Gewindebohrer** Tap *Foret à tarauder*	**1002670**		–	
05830 G3/8 3123590	**DWV05830**	**5.195**	**in Vorbereitung** in preparation *en préparation*	–		–	
06020 M20x1,5 395204	**WSM06020…** **DB4E** **DB4ECE** **DSR5E** **DV5E** **DZ5E** **RVM06020** **SR5E** **PWS06020…** **PDBM06020** **PWK06020…**	– **5.161** **5.163** **393 400** **5.113** **5.166** **5.193** **5.117** **563 298** –	**Senker** **MK3** Countersink *Foret hélicoïdal* **Reibahle** **MK2** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**170 033** **1000768** **1002648** **168 840**	 	**277 643** **277 645** **397 260**	
06320 G3/8 395210	**RVE-R3/8**	**5.176**	**Senker** **MK2** Countersink *Foret hélicoïdal* **Reibahle** **MK1** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**169 550** **1014203** **1002668** **172 826**		**396 309** **277 013**	

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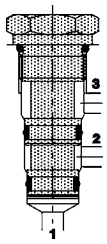
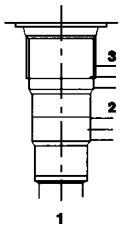
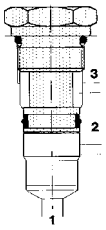
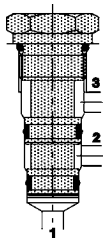
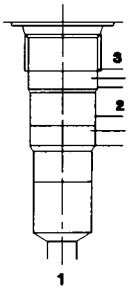
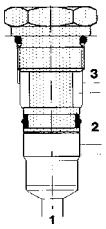
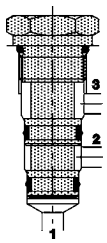
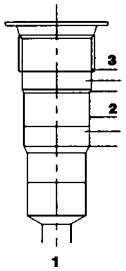
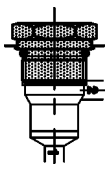
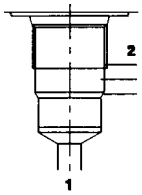
Einbauraum Cavity *Implantation* — **Gewinde** / Thread/ *Taraudage* Mat.-Nr.	**Einschraubventile** Cartridge valve *Valves cartouches* — **Typen** Models *Modèles*	**Prospekt Nr.** Brochure no. *Notice N°*	**Formbohrwerkzeuge** Form tools *Outils de perçage* — **Werkzeug** Tool *Outil* / **Schaft** Shank *Mandrin*	**Mat.-Nr.** Stock no. *Code article*	**Verschlußstopfen / Symbol** Blanking plug / symbol *Bouchons d'obturation / Symbole* — **Bild** Drawing *Schéma*	**Mat.-Nr.** Stock no. *Code article*	**Einbauraum-Darstellung** Cavity drawing *Représentation de l'implantation*
06430 3/4-16 UNF-2B 396819	**WK06430C**	**398 976**	**Senker** **HE20** Countersink *Foret hélicoïdal* **Reibahle** **HE16** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**174 468** **174 469** **1002729** –		**557 886**	
08021 G1/2 395193	**ERVE-08021** **SBVE-R1/2** **ERVM**	**5.172** **5.177** **283 843**	**Senker** **MK3** Countersink *Foret hélicoïdal* **Reibahle** **MK2** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**170 031** **169 962** **1002667** **169 939**	 	**552 436** **552 437**	
08030 G1/2 395194	**DMVE-G1/2**	**5.162**	**Senker** **MK3** Countersink *Foret hélicoïdal* **Reibahle** **MK2** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**170 031** **169 962** **1002667** **169 939**	 	**552 436** **552 437**	
08120 M20x1,5 ISO 397048	**WKM08120…** **WSM08120…** **PWKD08120**	– – – –	**Senker** **MK3** Countersink *Foret hélicoïdal* **Reibahle** **MK2** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder*	**174 983** **1014204** **1002648**		**3244444**	

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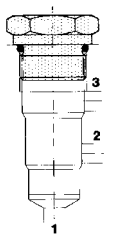
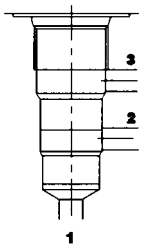
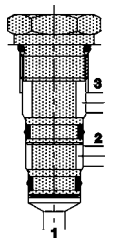
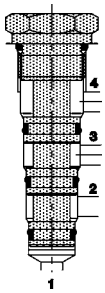
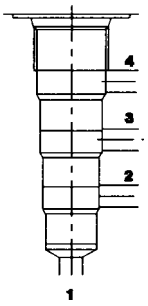
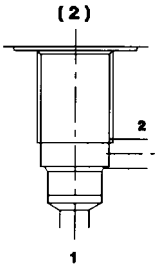
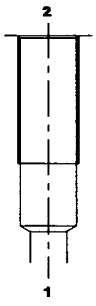
Einbauraum Cavity *Implantation* — **Gewinde** / Thread/ *Taraudage* Mat.-Nr.	**Einschraubventile** Cartridge valve *Valves cartouches* — **Typen** Models *Modèles*	**Prospekt Nr.** Brochure no. *Notice N°*	**Formbohrwerkzeuge** Form tools *Outils de perçage* — **Werkzeug** Tool *Outil*	**Schaft** Shank *Mandrin*	**Mat.-Nr.** Stock no. *Code article*	**Verschlußstopfen / Symbol** Blanking plug / symbol *Bouchons d'obturation / Symbole* — **Bild** Drawing *Schéma*	**Mat.-Nr.** Stock no. *Code article*	**Einbauraum-Darstellung** Cavity drawing *Représentation de l'implantation*
08130 M20x1,5 ISO 395201	**PDM08130** **DW...08130** **WSM08130...** **WKM08130...**	**5.168** – – –	**Senker** Countersink *Foret hélicoïdal*	**MK3**	**169 265**		**277 643**	
			Reibahle Reamer *Alésoir*	**MK2**	**163 639**			
			Gewindebohrer Tap *Foret à tarauder*		**1002648**			
			Prüfdorn Plug gauge *Outil de contrôle*		**163 641**		**398 251**	
08140 M20x1,5 ISO 395202	**WKM08140...**	**5.942** **5.981** **5.985**	**Senker** Countersink *Foret hélicoïdal*	**HE25**	**163 463**		**398 254**	
			Reibahle Reamer *Alésoir*	**MK2**	**163 464**			
			Gewindebohrer Tap *Foret à tarauder*		**1002648**			
			Prüfdorn Plug gauge *Outil de contrôle*		**164 287**			
08220 G1/2 395211	**RVE-R1/2**	**5.176**	**Senker** Countersink *Foret hélicoïdal*	**MK2**	**158 735**		–	
			Reibahle Reamer *Alésoir*	**MK2**	**1000768**			
			Gewindebohrer Tap *Foret à tarauder*		**1002667**			
			Prüfdorn Plug gauge *Outil de contrôle*		**158 736**			
08520 G3/8 395870	**SRE2-G3/8** **RBE -R3/8**	**5.118** **5.174**	**Gewindebohrer** Tap *Foret à tarauder*		**1002668**		–	

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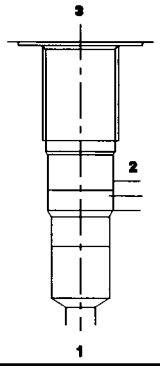
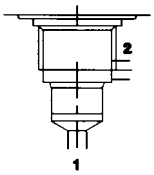
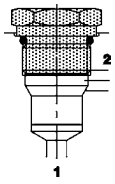
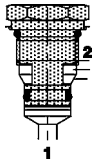
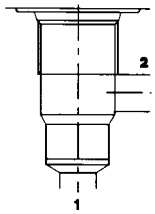
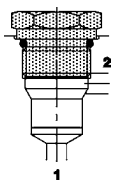
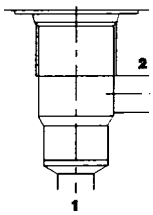
Einbauraum Cavity *Implantation*	**Einschraubventile** Cartridge valve *Valves cartouches*		**Formbohrwerkzeuge** Form tools *Outils de perçage*		**Verschlußstopfen / Symbol** Blanking plug / symbol *Bouchons d'obturation / Symbole*		**Einbauraum-Darstellung** Cavity drawing *Représentation de l'implantation*
Gewinde / Thread/ *Taraudage* Mat.-Nr.	**Typen** Models *Modèles*	**Prospekt Nr.** Brochure no. *Notice N°*	**Werkzeug** Tool *Outil* / **Schaft** Shank *Mandrin*	**Mat.-Nr.** Stock no. *Code article*	**Bild** Drawing *Schéma*	**Mat.-Nr.** Stock no. *Code article*	
08721 G1/2 395993	**ERVM G1/2**	**283 843**	**in Vorbereitung** in preparation *en préparation*			–	
08730 G1/2 3463779	**WVE R1/2**		**Senker** Countersink *Foret hélicoïdal*	**179 632**		–	
08920 G1/2 552305	**DVE-08**	**5.115**	**Vorsenker** **MK3** Pre-forming tool *Foret étagé d'ébauche* **Fertigsenker** **KKA4** Forming tool *Foret étagé final* **Reibahle** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**170 854** **169 169** **1014205** **1002667** **173 839**		–	
10120 M22x1,5 ISO 395197	**RVM10120** **SD10120** **PWK10120…** **WSM10120...**	**5.999** **5.114** **–** **5.943.1** **5.946.1** **5.947.1** **5.948.1**	**Senker** **MK3** Countersink *Foret hélicoïdal* **Reibahle** **MK2** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**170 418** **1014206** **1002627** **169 394**	 	**636 349** **552 413**	
10120A M22x1,5 ISO 395198	**DB10120A** **PDBM10120A...**	**5.167** **5.978**	**Senker** **HE25** Countersink *Foret hélicoïdal* **Reibahle** **MK2** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**166 284** **166 285** **1002627** **166 286**		**636 349**	

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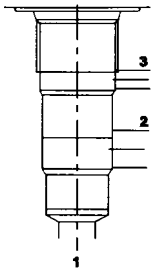
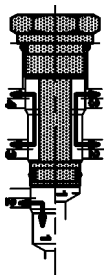
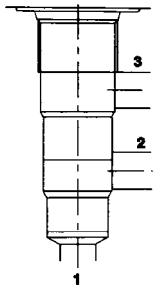
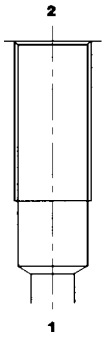
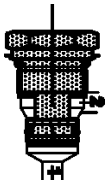
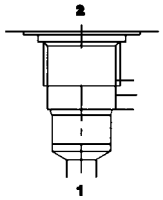
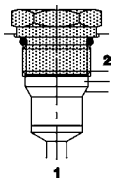
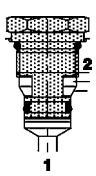
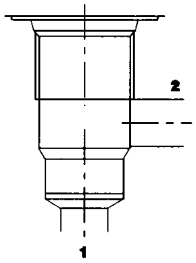
Einbauraum Cavity *Implantation*	**Einschraubventile** Cartridge valve *Valves cartouches*		**Formbohrwerkzeuge** Form tools *Outils de perçage*		**Verschlußstopfen / Symbol** Blanking plug / symbol *Bouchons d'obturation / Symbole*		**Einbauraum-Darstellung** Cavity drawing *Représentation de l'implantation*
Gewinde / Thread/ *Taraudage* Mat.-Nr.	**Typen** Models *Modèles*	**Prospekt Nr.** Brochure no. *Notice N°*	**Werkzeug** Tool *Outil* / **Schaft** Shank *Mandrin*	**Mat.-Nr.** Stock no. *Code article*	**Bild** Drawing *Schéma*	**Mat.-Nr.** Stock no. *Code article*	
10121 M22x1,5 ISO 395199	**RP 10121** **RPL 10121**	**284 115** **395 294**	**Senker MK4** Countersink *Foret hélicoïdal* **Reibahle MK2** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**163 910** **163 911** **1002627** **169 466**		–	
10130 M22x1,5 ISO 395200	**DRM10130…** **SRA 10130** **DWM…10130**	**5.950.1** **284 857** **284 196**	**Senker MK4** Countersink *Foret hélicoïdal* **Reibahle MK2** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**161 826** **163 911** **1002627** **169 466**		**557 885**	
10520 G1/2 395872	**SRE3-G1/2** **RBE-R1/2**	**5.118** **5.174**	**Gewindebohrer** Tap *Foret à tarauder* **Einschraubwerkzeug** Cartridge tool *Outil de montage*	**1002667** **160 560**		–	
10920 G1/2 552306	**DVE-10**	**5.115**	**Vorsenker MK2** Pre-forming tool *Foret étagé d'ébauche* **Fertigsenker KKA4** Forming tool *Foret étagé final* **Reibahle** Reamer *Alesoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**170 863** **169 169** **1000772** **1002667** **173 840**		**3057980**	
12120 M27x2 ISO 396315	**WSM12120…** **PWK12120…**	**5.948**	**Vorsenker MK3** Pre-forming tool *Foret étagé d'ébauche* **Fertigsenker KKA5** Forming tool *Foret étagé final* **Reibahle** Reamer *Alesoir* **Gewindebohrer** Tap *Foret à tarauder*	**172 880** **162 128** **1014207** **1002625**	 	**636 350** **552 415**	

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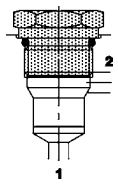
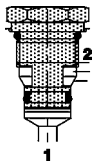
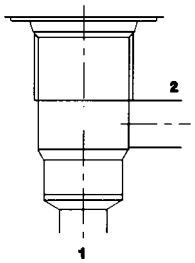
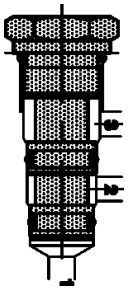
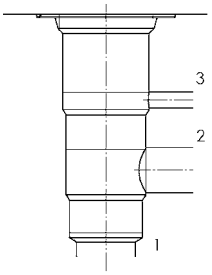
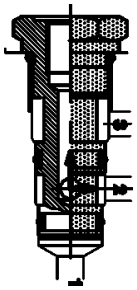
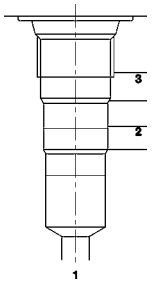
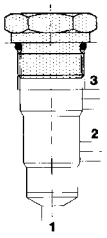
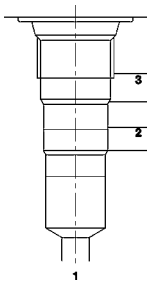
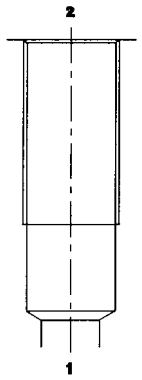
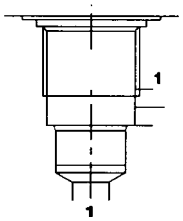
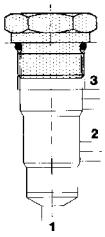
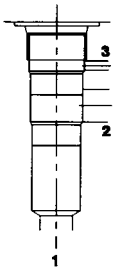
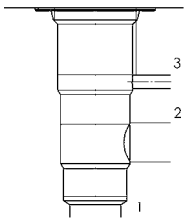
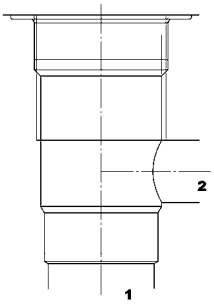
Einbauraum Cavity *Implantation* **Gewinde** / Thread/ *Taraudage* Mat.-Nr.	**Einschraubventile** Cartridge valve *Valves cartouches* **Typen** Models *Modèles*	**Prospekt Nr.** Brochure no. *Notice N°*	**Formbohrwerkzeuge** Form tools *Outils de perçage* **Werkzeug** **Schaft** Tool Shank *Outil* *Mandrin*	**Mat.-Nr.** Stock no. *Code article*	**Verschlußstopfen / Symbol** Blanking plug / symbol *Bouchons d'obturation / Symbole* **Bild** Drawing *Schéma*	**Mat.-Nr.** Stock no. *Code article*	**Einbauraum-Darstellung** Cavity drawing *Représentation de l'implantation*
12120A M27x2 ISO 396316	**DB12120A...**	**5.169**	**Vorsenker** **MK3** Pre-forming tool *Foret étagé d'ébauche* **Fertigsenker** **KKA5** Forming tool *Foret étagé final* **Reibahle** **MK2** Reamer *Alesoir* **Gewindebohrer** Tap *Foret à tarauder*	**175 002** **162 128** **174 874** **1002625**	 	**636 350** **3084140**	
12121 M27x2 ISO 3126203	**PDB12121** **DW...12121** **DB12121...**	**–** **–** **5.996** **5.997**	**Senker** Countersink *Foret hélicoïdal* **KK-Senker** KK-Countersink *Foret hélicoïdal KK* **Reibahle** Reamer *Alésoir*	**177 317** **162 128** **175 021**		**3150400**	
12130 M27x2 554864	**DW...12130** **WKM12130**	**–** **–**	**Vorsenker** **MK3** Pre-forming tool *Foret étagé d'ébauche* **Fertigsenker** **KKA5** Forming tool *Foret étagé final* **Reibahle** **MK2** Reamer *Alesoir* **Gewindebohrer** Tap *Foret à tarauder*	**175 019** **162 128** **175 021** **1002625**		**557615**	
12131 M27x2 ISO 3195135	**DZ12131**	**–** **–**	**in Vorbereitung** in preparation *en préparation*	**–**		**–**	
12230 M27x2 560632	**ST12230**	**560637**	**in Vorbereitung** in preparation *en préparation*	**–**		**560 631**	

Einbauraum Cavity *Implantation*	**Einschraubventile** Cartridge valve *Valves cartouches*		**Formbohrwerkzeuge** Form tools *Outils de perçage*		**Verschlußstopfen / Symbol** Blanking plug / symbol *Bouchons d'obturation / Symbole*		**Einbauraum-Darstellung** Cavity drawing *Représentation de l'implantation*
Gewinde / Thread/ *Taraudage* Mat.-Nr.	**Typen** Models *Modèles*	**Prospekt Nr.** Brochure no. *Notice N°*	**Werkzeug** Tool *Outil*	**Schaft** Shank *Mandrin*	**Mat.-Nr.** Stock no. *Code article*	**Bild** Drawing *Schéma*	**Mat.-Nr.** Stock no. *Code article*	
12520 G3/4 395873	**SRE4-G3/4** **RBE-R3/4**	**5.118** **5.174**	**Gewindebohrer** Tap *Foret à tarauder* **Einschraubwerkzeug** Cartridge tool *Outil de montage*		**1002663** **164 108**		–	
12920 G3/4 552307	**DVE-12**	**5.115**	**Vorsenker** **MK3** Pre-forming tool *Foret étagé d'ébauche* **Fertigsenker** **KKA5** Forming tool *Foret étagé final* **Reibahle** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*		**170 862** **170 844** **1000778** **1002663** **173 841**		–	
16021 G1 395195	**ERVE-16021** **SBVE-R1**	**5.172** **5.177**	**Senker** **MK3** Countersink *Foret hélicoïdal* **Reibahle** **MK3** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*		**170 035** **169 965** **1002661** **174 879**		**396 306**	
16221 M33x2 ISO 3100682	**DB16221** **PDB16221**	–	**in Vorbereitung** in preparation *en préparation*		–		–	
16520 M33x2 3132489	**WSM16520...**	–	**in Vorbereitung** in preparation *en préparation*		–		–	

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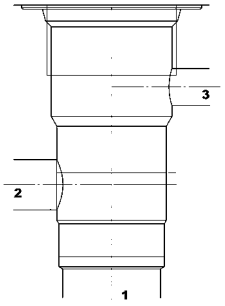
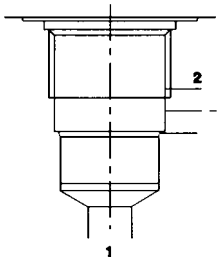
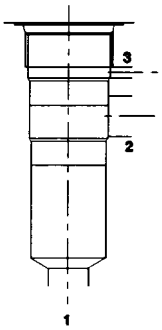
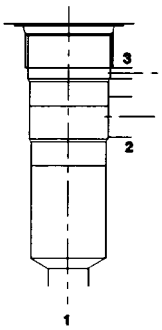
Einbauraum Cavity *Implantation*	**Einschraubventile** Cartridge valve *Valves cartouches*		**Formbohrwerkzeuge** Form tools *Outils de perçage*		**Verschlußstopfen / Symbol** Blanking plug / symbol *Bouchons d'obturation / Symbole*		**Einbauraum-Darstellung** Cavity drawing *Représentation de l'implantation*
Gewinde / Thread/ *Taraudage* Mat.-Nr.	**Typen** Models *Modèles*	**Prospekt Nr.** Brochure no. *Notice N°*	**Werkzeug** Tool *Outil* / **Schaft** Shank *Mandrin*	**Mat.-Nr.** Stock no. *Code article*	**Bild** Drawing *Schéma*	**Mat.-Nr.** Stock no. *Code article*	
16621 M33x2 3147493	**DB16621...**	–	**in Vorbereitung** in preparation *en préparation*	–		–	
16920 G1 552308	**DVE-16**	**5.115**	**Vorsenker MK3** Pre-forming tool *Foret étagé d'ébauche* **Fertigsenker KKA5,5** Forming tool *Foret étagé final* **Reibahle** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**170 861** **170 843** **1014208** **1002661** **173 842**		–	
20021 G1 1/2 395196	**ERVE-20021**	**5.172**	**Senker MK3** Countersink *Foret hélicoïdal* **Reibahle MK3** Reamer *Alésoir* **Gewindebohrer** Tap *Foret à tarauder* **Prüfdorn** Plug gauge *Outil de contrôle*	**170 034** **169 966** **1002524** **174 880**		–	
20121 M42x2 ISO –	**WSM20121**	–	**in Vorbereitung** in preparation *en préparation*	–		–	

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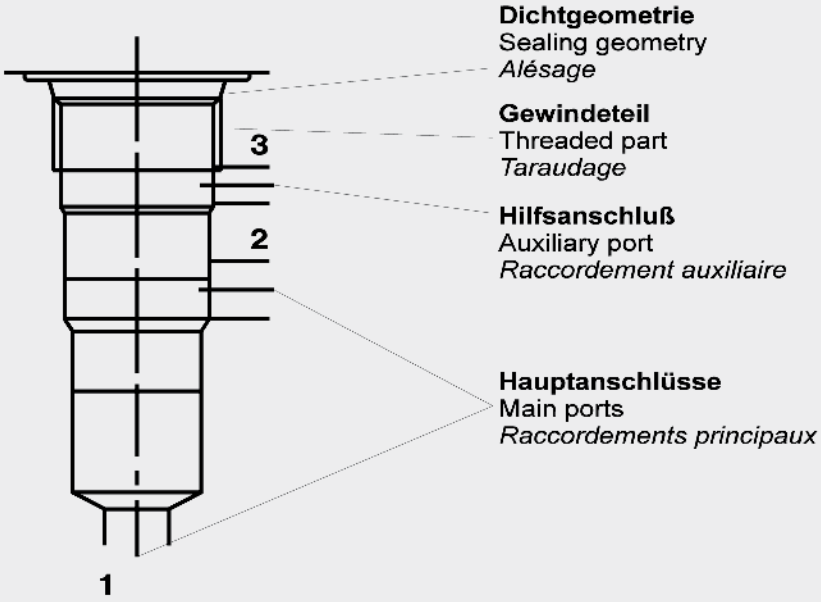
Subject to modifications at any time. / *La liste des outils est actuelle au moment de l'impression. Elle peut être modifiée à tout moment.*

5. EINBAURÄUME UNF
UNF CAVITIES
IMPLANTATIONS UNF

5.1 AUFBAU DER EINBAURAUM-TYPISIERUNG
STRUCTURE OF THE CAVITY MODEL CODE
CODIFICATION DE L'IMPLANTATION

Einbauraum FC 08-2
Cavity FC 08-2
Implantation FC 08-2



Beispiel: Example: *Exemple:*

FC 08 – 2

Flutec Cavity

Nennweite
Nominal width
Diamètre nominal

Anzahl Hauptanschlüsse
Number of main ports
Nombre de raccordements principaux

6. AUSWAHLTABELLE

SELECTION TABLE

TABLEAUX DE SELECTION

6.1 DRUCKVENTILE

PRESSURE VALVES

VALVES DE PRESSION

Einschraub-ventil	**Einbauraum**	**Seite**
Cartridge valve	Cavity	Page
Valves cartouches	*Implantation*	*Page*
DB06A	06-2	1049
DB06C	06-2	1049
DB08A	08-2	1049
DB08P	08-2	1049
DR08	08-3	1049
DR08P	08-3	1049
DB10P	10-2	1050
DR10	10-3	1050
DR10P	10-3	1050
DB10SPE	10-S3	
DB10SE	10-3	1050
DB16SPF	16-S3	
DB12P	12-2	1050
DB16P	16-2	1051

6.2 STROMVENTILE

FLOW CONTROL VALVES

VALVES DE DEBIT

Einschraub-ventil	**Einbauraum**	**Seite**
Cartridge valve	Cavity	Page
Valves cartouches	*Implantation*	*Page*
SR06	06-2	1049
SR08	08-2	1049
SD08	08-2	1049
SRP08	08-3	1049
SD10	10-2	1050
SDR10A…	10-2	1050
SR10	10-2	1050
ST10	10-4	1050
SRP12	12-3	1050
SD16	16-2	1051
ST16	16-4	1051

6.3 SPERRVENTILE

SHUT-OFF VALVES

VALVES D'ARRET

Einschraub-ventil	**Einbauraum**	**Seite**
Cartridge valve	Cavity	Page
Valves cartouches	*Implantation*	*Page*
RV06A	06-2	1049
RV06B/C	06-3	1049
RV08A…	08-2	1049
RP08A	08-3	1049
RS08…	08-3	1049
RV10A…	10-2	1050
RP10A	10-3	1050
RV12A	12-2	1050
RV16A	16-2	1051
RP16A	16-3	1051

6.4 WEGEVENTILE

DIRECTIONAL VALVES

DISTRIBUTEURS

Einschraub-ventil	**Einbauraum**	**Seite**
Cartridge valve	Cavity	Page
Valves cartouches	*Implantation*	*Page*
WS06	06-2	1049
WK06	06-2/3/4	1049
WK07L	07-3	1049
WS08...	08-2	1049
WK08...	08-2/3/4	1049
WK081...	081-2	1049
WS08C/D	08-3	1049
WS10...	10-2	1050
WK10...	10-2/3/4	1050
WKH10…	10-4	1050
WS12...	12-2	1050
WK12...	12-2/3/4	1050
WS16...	16-2	1051

6.5 PROPORTIONALVENTILE

PROPORTIONAL VALVES

VALVES PROPORTIONNELLES

Einschraub-ventil	**Einbauraum**	**Seite**
Cartridge valve	Cavity	Page
Valves cartouches	*Implantation*	*Page*
PDB08P...	08-2	1049
PDR08...	08-3	1049
PDR08P...	08-3	1049
PDB10P.../PZ	10-2	1050
PDR10P...	10-3	1050
PWS10...	10-2	1050
PDB12P...	12-2	1050
PDB16P...	16-2	1051
PWS08…	08-2	1049
PWS10…	10-2	1050
PWS16…	16-2	1051

7. VERSCHLUSSSTOPFEN

CAVITY PLUGS

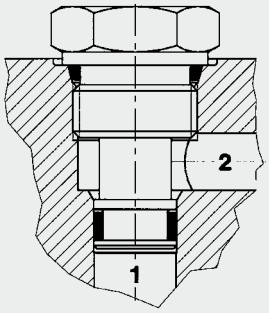
BOUCHONS D'OBTURATION

Material:
Stahl, verzinkt

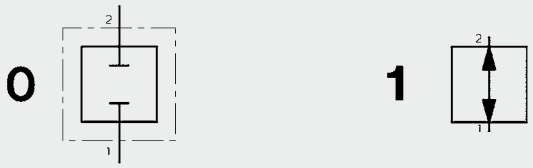
Material:
Steel, zinc-plated

Matériau:
Acier, zingué

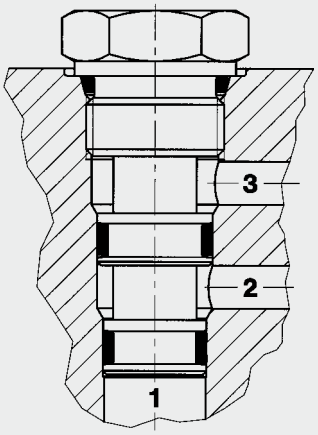
2-Wege-Einbauraum
2-way Cavity
Implantation 2 voies



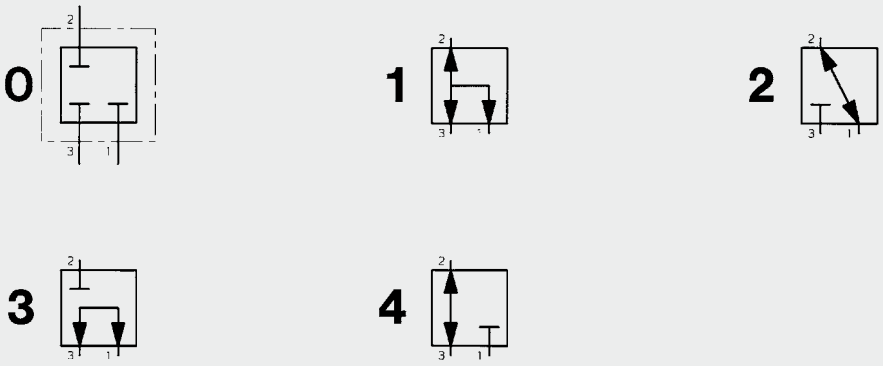
Symbole
Symbols
Symboles



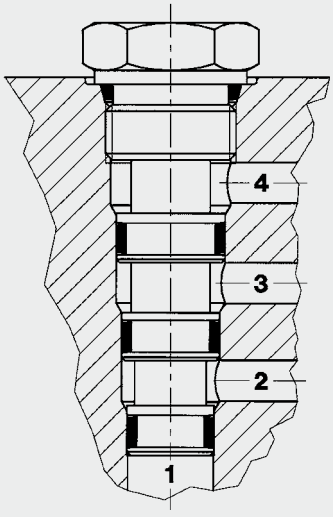
3-Wege-Einbauraum
3-way Cavity
Implantation 3 voies



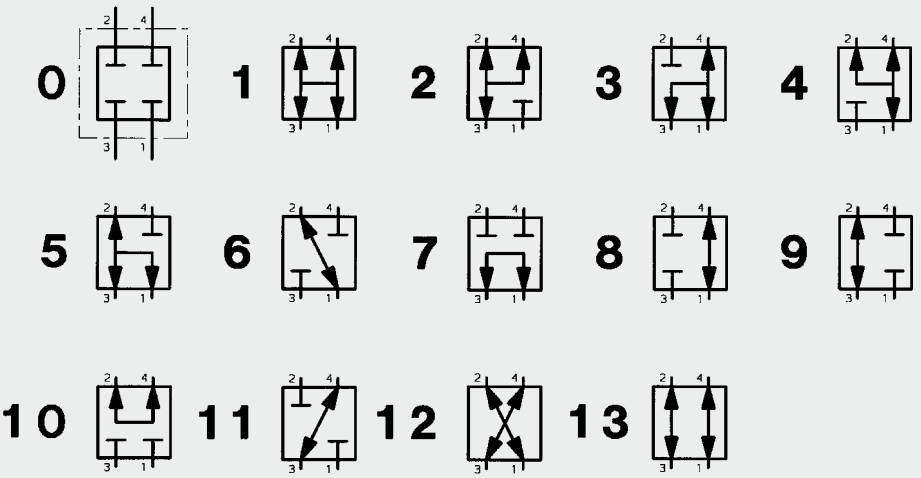
Symbole
Symbols
Symboles

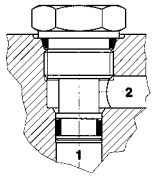
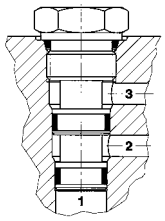
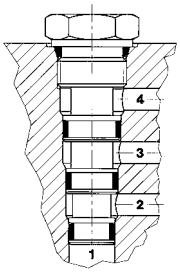
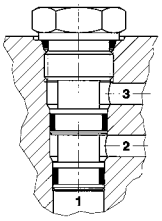
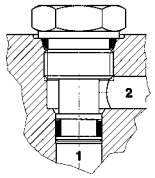
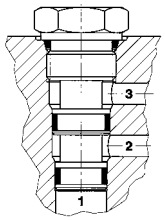
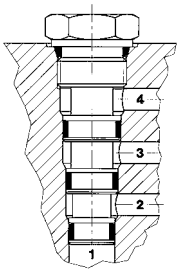


4-Wege-Einbauraum
4-way Cavity
Implantation 4 voies



Symbole
Symbols
Symboles



Einbauraum Cavity *Implantation* **Gewinde** / Thread/ *Taraudage* Mat.-Nr.	**Einschraubventile** Cartridge valve *Valves cartouches* **Typen** Models *Modèles*	**Prospekt Nr.** Brochure no. *Notice N°*	**Formbohrwerkzeuge** Form tools *Outils de perçage* **Werkzeug** / Tool / *Outil* **Schaft** / Shank / *Mandrin*	**Mat.-Nr.** Stock no. *Code article*	**Verschlußstopfen / Symbol** Blanking plug / symbol *Bouchons d'obturation / Symbole* **Bild** Drawing *Schéma*	**Mat.-Nr.** Stock no. *Code article*	**Einbauraum-Darstellung** Cavity drawing *Représentation de l'implantation*
FC06-2 2582031	**DB06A** **DB06C** **SR06** **RV06A** **WS06…** **WK06…**	**51.400**	**Stufensenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**2582046** **2582047**	**FP062** 0	**2610219**	
FC06-3 2582045	**RV06B/C** **WK06…**	**51.400**	**Stufensenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**2582050** **2582051**	**FP063** 0	**2610220**	
FC06-4 2581970	**WK06…**	**51.400**	**Stufensenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**2582057** **2582058**	**FP084-0-N** 0	**2610221**	
FC07-3 5/8-18 UNF 3057972	**WK07L**	**5.955**	**Stufensenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**175 537** **176 538**	**FP073-0-N** 0	**3073460**	
FC08-2 3/4-16 UNF 555686	**DB08A** **DB08P** **SR08** **SD08** **RV08A** **WS08...** **WS081...** **WK08...** **WK081...** **PDB08P...** **PWS08…**	**5.922** **5.922.1** **5.930** **5.928** **5.912** **5.907...** **5.986...** **5.925...** **5.956...** **5.991.1** **5.127...**	**Stufensenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**175 473** **175 474**	**FP082-0-N** 0 **FP082-1-N** 1	**3012753** **3012752**	
FC08-3 3/4-16 UNF 555691	**DR08** **DR08P** **SRP08** **RP08A** **RS08…** **WS08C** **WS08D** **WK08...** **PDR08...** **PDR08P...**	**5.920** **5.920.1** **5.929** **5.923** **5.933** **–** **5.907** **5.913...** **5.990.2...** **5.990.1...**	**Stufensenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**175 644** **175 645**	**FP083-0-N** 0	**3012754**	
FC08-4 3/4-16 UNF 555693	**WK08**	**5.905...**	**Stufensenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**175 646** **175 647**	**FP084-0-N** 0	**3012756**	

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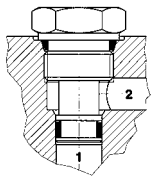
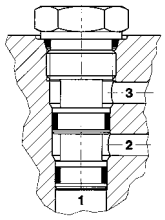
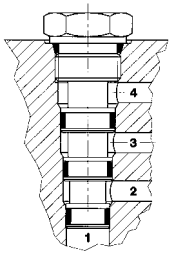
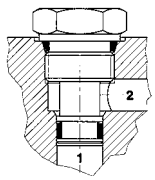
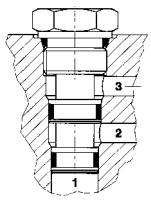
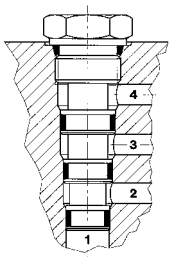
Einbauraum Cavity *Implantation* **Gewinde** / Thread/ *Taraudage* Mat.-Nr.	**Einschraubventile** Cartridge valve *Valves cartouches* **Typen** Models *Modèles*	**Prospekt Nr.** Brochure no. *Notice N°*	**Formbohrwerkzeuge** Form tools *Outils de perçage* **Werkzeug** / Tool / *Outil* **Schaft** / Shank / *Mandrin*	**Mat.-Nr.** Stock no. *Code article*	**Verschlußstopfen / Symbol** Blanking plug / symbol *Bouchons d'obturation / Symbole* **Bild** Drawing *Schéma*	**Mat.-Nr.** Stock no. *Code article*	**Einbauraum-Darstellung** Cavity drawing *Représentation de l'implantation*
FC10-2 7/8-14 UNF 555692	**DB10P / SPE** **SD10** **SDR10A** **SR10** **RV10A…** **WS10...** **WK10...** **PDB10P...** **PWS10...**	**5.954** **6.989** **5.988** **5.958** **5.953** **5.926...** **5.969...** **5.991** –	**Stufensenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**176 379** **165 706**	**FP102-0-N** 0 **FP101-1-N** 1	**3014157** **3014156**	
FC10-3 7/8-14 UNF 555692	**DB10SE** **DR10** **DR10P** **SRP10** **RP10A** **RS10** **WK10...** **PDR10P...**	– **5.950** **5.982** – **5.932** – **5.959...** **5.990**	**Stufensenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**176 282** **176 283**	**FP103-0-N** 0	**3014158**	
FC10-4 7/8-14 UNF 555694	**ST10** **WK10...** **WKH10…**	**5.967** **5.971...** **5.995...**	**Spiralsenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**176 174** **176 175**	**FP104-0-N** 0	**3014159**	
FC12-2 1 1/16-12 UNF 3046486	**DB12P** **RV12A** **WS12...** **WK12...** **PDB12P...**	**5.922.2** **5.952** **5.998...** – **5.991.2...**	**Spiralsenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**176 951** **176 952**	**FP122-0-N** 0 **FP121-1-N** 1	**3064028** **3064381**	
FC12-3 1 1/6-12 UNF 3046629	**WK12...** **SRP12**	–	**Spiralsenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**177 807** **177 810**	**FP123-0-N** 0	**3082862**	
FC12-4 1 1/16-12 UNF 3046634	**WK12...** **DW12P**	–	**Stufensenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**178 068** **178 069**	**FP124-0-N** 0	**3082863**	

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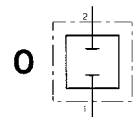
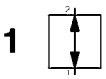
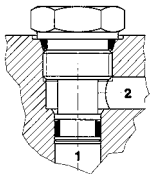
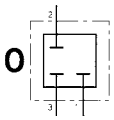
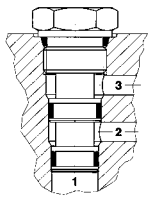
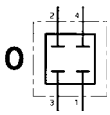
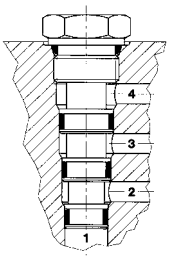
Subject to modifications at any time. / *La liste des outils est actuelle au moment de l'impression. Elle peut être modifiée à tout moment.*

Einbauraum Cavity *Implantation* **Gewinde** / Thread/ *Taraudage* Mat.-Nr.	**Einschraubventile** Cartridge valve *Valves cartouches* **Typen** Models *Modèles*	**Prospekt Nr.** Brochure no. *Notice N°*	**Formbohrwerkzeuge** Form tools *Outils de perçage* **Werkzeug** / Tool / *Outil* **Schaft** / Shank / *Mandrin*	**Mat.-Nr.** Stock no. *Code article*	**Verschlußstopfen / Symbol** Blanking plug / symbol *Bouchons d'obturation / Symbole* **Bild** Drawing *Schéma*	**Mat.-Nr.** Stock no. *Code article*	**Einbauraum-Darstellung** Cavity drawing *Représentation de l'implantation*
FC16-2 1 5/16-12 UNF 555690	**DB16P** **SD16** **RV16A** **WS16...** **PDB16P...** **PWS16…**	**5.922.3** **–** **5.951** **5.945...** **5.991.3** **5.125**	**Stufensenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**176 218** **176 219**	**FP162-0-N**  **FP161-1-N** 	**3056431** **3056429**	
FC16-3 1 5/16-12 UNF 561755	**RP16A** **RS16**	**5.931** **–**	**Stufensenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir* **Senker** **KK** Countersink *Foret hélicoïdal*	**176 375** **176 374** **176 376**	**FP163-0-N** 	**3056433**	
FC16-4 1 5/16-12 UNF 3237531	**ST16**	**5.967.1**	**Stufensenker** Countersink *Foret hélicoïdal* **Reibahle** Reamer *Alésoir*	**176 377** **176 378**	**FP164-0-N** 	**3062864**	

Werkzeugaufnahme ist aktueller Stand zur Zeit der Drucklegung. Änderung jederzeit möglich. / Tool list correct at time of printing.
Subject to modifications at any time. / *La liste des outils est actuelle au moment de l'impression. Elle peut être modifiée à tout moment.*

HYDAC INTERNATIONAL

Amplifiers and Controllers for proportional valves

HYDAC INTERNATIONAL

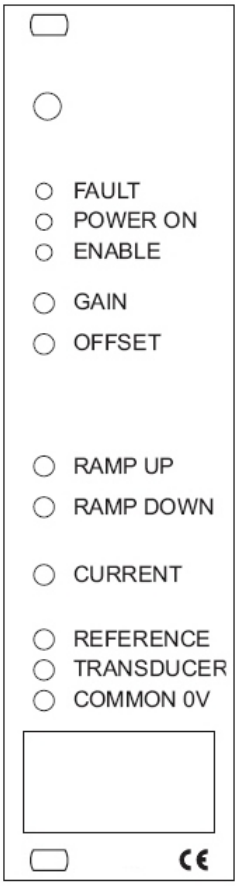
Amplifier
for proportional valves
PEK SRA

FEATURES

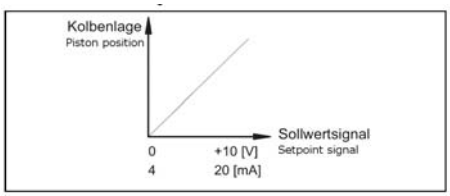
- Amplifier in Euroboard format
- Control of proportional valves with 1 coil in closed loop
- Linear control with minimal hysteresis

SPECIFICATIONS

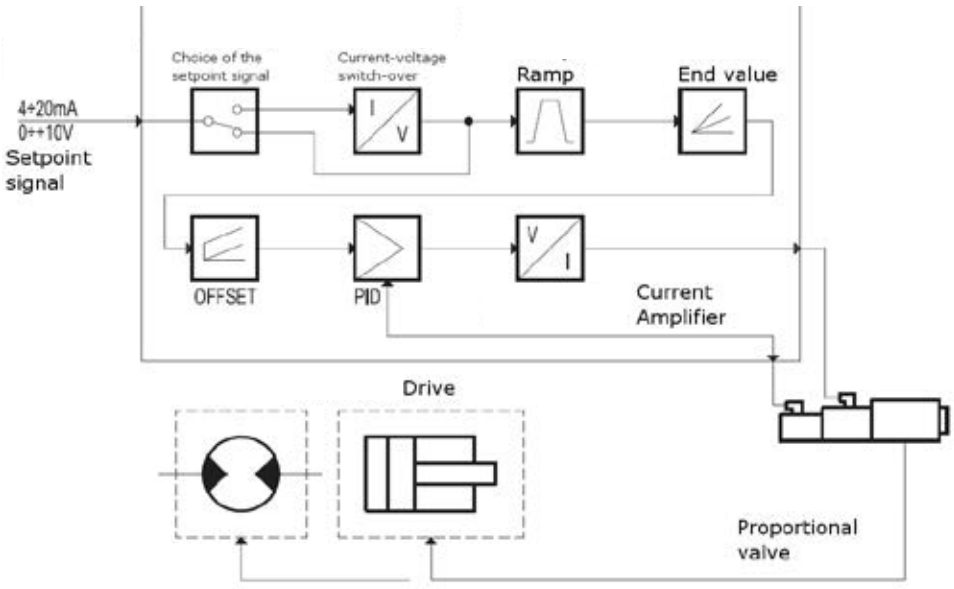
Electric supply:	DC 22 - 30 VDC (rectified and filtered, small ripple)
Power:	20 - 45 W (terminals 2a/2c - 4a/4c)
Output:	max. 1 A
Setpoint signal:	
– Voltage	0 - 10 V
– Current	4 up to 20 mA (by using a potentiometer R > 200 Ω!)
Input impedance of the Setpoint signal:	
– Voltage	10 kΩ
– Current	250 Ω
Board format:	Euroboard 100 x 160 x 35
Board connector:	DIN 41612-D 32
Ambient temperature:	0 up to 50° C
Electro-magnetic capability (EMC):	
- Output	according to CEI EN 61000-6-4
- capability	according to CEI EN 61000-6-2 according to standards 2004/108/CEE
Protection:	Over-voltage and inverse polarity protection fuse (3,15 A)
Weight:	0,20 kg



The diagram shows the curve of the position of the piston in function of the setpoint signal.



Block diagram



E 5.249.4.0 /01.13

The amplifier PEK SRA is an electronic control unit in Euroboard format and is used to control proportional valves with one coil and transducer.
It carries out the control of the position of the valve piston as a function of the input setpoint signal, so it allows a linear control and a minimal hysteresis.
On the front panel are LED's to indicate the operating status of the drive electronics and a potentiometer resp. sockets to adjust the amplifier to the valve application.

1. CONTROLS AND INDICATORS
1.1 - FAULT (fault display)
The red LED indicates the operational status of the transducer:
OFF - Normal
ON - failures in the transducer or cable failure.
In the "FAULT" mode, the amplifier is disabled, so that the solenoids are de-energized and the valve is spring-centered in the normal position. The green LED "ENABLE" disappears and the loop (via relay on amplifier) between the terminals 6a and 6c is interrupted.

1.2 - POWER ON (power supply)
The yellow LED provides feedback on the power supply of the trigger electronics:
ON - Supply voltage ok
OFF - no or inadequate power supply or fuse has tripped

1.3 - ENABLE (enable)
A signal voltage (22-30 VDC) at terminal 24c releases the final stage. The output stage release is confirmed by the illumination of the green LED "ENABLE" and closing of the loop (via relay on amplifier) between 6a and 6c.
The green LED indicates:
ON - amplifier released
OFF - amplifier not released

1.4 - GAIN (gain setting for solenoid current)
The potentiometer "GAIN" determines the ratio between solenoid input setpoint and solenoid current of the power amplifier. The maximum current of the amplifier is limited to 1A. Standard setting, see Item 4.
By turning clockwise the solenoid current and thereby the flow rate is increased within the hydraulic limitations.

1.5 - OFFSET (Setting of offset for the solenoid current)
The potentiometer "OFFSET" allows the setting of an offset current e.g. to minimize the valve coverage. If the input signal exceeds a threshold of 150mV (or 4.24 mA), the amplifier puts out the adjusted offset current. If the input signal is in the range of 150 mV (.4,24 or 4 mA) the solenoid current is 25mA.
The setting range is from 0 to 0.5 A.
By turning clockwise, the current value is increased.
A change in the OFFSET setting affects the GAIN setting.

1.6 - RAMP UP / RAMP DOWN (ramp module)
The potentiometers "RAMP UP" and "RAMP DOWN" determine the rise and fall times of the setpoint signal of a setpoint change at the entry of the ramp module.
The adjustment range is between 0.03 to 7 seconds.
The ramp function can be disabled via a signal voltage (22-30 VDC) at terminal 16a. In this case, the ramp time is generally 10 ms.
By turning clockwise the ramp time is increased.

2 - SIGNAL MEASUREMENT
2.1 - CURRENT (test socket for solenoid current)
This is a voltage signal with reference point "COMMON 0V.
The conversion factor is 1VCC = 1A.

2.2 - REFERENCE (test point for controller input)
Inverted setpoint after the ramp module. Following is valid when using a current input signal : 4mA and 20mA = 0 V =-10V

2.3 - TRANSDUCER (test point for signal of the transducer)
Direct readout of the transducer-signal with voltage range of + / -4.8 V (tolerance 200mV)

2.4 - COMMON 0 V (reference potential)
Reference potential for test sockets 2.1 - 2.3

3 - INSTALLATION
The amplifier is suitable for rack mounting or for mounting in a PCB holder with an interface type DIN 41 612 - Form D 32.
Wiring recommendation: supply of the amplifier and connection to the solenoid coil with cable cross section of 1 to 2.5 mm ². The cross section depends on the length of the cable. For signal lines use shielded, grounded cables at the drive electronics.

NOTE 1
To meet the EMC requirements, it is important that the electrical wiring is conform to the block diagram.
In general, the valve and the connecting cable to the amplifier are to be operated far from interference sources such as power lines, electric motors, inverters and electrical switching equipment.
In rooms with special electromagnetic interference sources, a complete shielding of the cable may be needed.

3.1 - Supply
The amplifier requires a supply voltage of 22-30 VDC and has a power consumption of up to 45 W (terminals 2a/2c - 4a/4c).

3.2 - Electrical protection devices
The amplifier is equipped with an over-voltage and inverse polarity protection.
The power circuits are protected by a quick fuse of 3.15 A F.
Position on printed board, see Dimensions, page 4

3.3 - Setpoint signal
The amplifier is designed for input setpoint values in the form of voltage signals (0 .. +10 V) or current signals (4 .. 20mA). Details on WIRING DIAGRAM see page 4. Assignment of setpoint values, see page 1

If the setpoint signal is transferred by a potentiometer, verify that its resistance value is bigger than 200Ω.

4 - STANDARD SETTING
The amplifier is preset:
- "GAIN" value signal +10 V (or 20 mA) corresponds to the maximum opening of the valve and approximately-5V at test point "TRANSDUCER".
In the open control circuit the GAIN settings are corresponding a solenoid current of about 1A at max. setpoint.
- "OFFSET": zero.
- "RAMP UP" and "RAMP DOWN" means, at minimum.
- SW1 in position V
- SW2 in position S
- SW3 in position AC
- S1 in position N
- Dither (PWM) = 230 Hz

5 - ADJUSTMENTS TO FRONT PANEL
The following adjustments can be made via the front panel:

a) Setting the OFFSET
- Set the potentiometer "GAIN A" and "GAIN B" to the minimum value.
- Set the setpoint to +10 V (or 20 mA)
-Turn the potentiometer "OFFSET" so that the valve is set to the desired initial value (see valve description).

b) Setting the GAIN
- Set the setpoint signal to +10 V (or 20 mA)
- Turn the potentiometer "GAIN" to the desired maximum value to adjust the controlled variable (hydraulic parameter).

c) Setting the ramp of the RAMP module
- Turn the potentiometer "RAMP UP" and "RAMP DOWN" so that with a change of the setpoint signal the desired delay in the response of the valve is achieved.

6 - ADJUSTMENTS TO AMPLIFIER
In the dimensional drawing (see page 4) four different switch groups are named: SW 1 - SW 2 - SW 3 and S1. These serve to parameterize the amplifier.

Before using the switches the amplifier has to be unplugged from the power supply. All switches of a group must have the same switching position.

SELECTION
of voltage or current signal as input setpoint value:
(Group SW1, three separate switches)
- For the voltage signal adjust to V
- For the current signal adjust to I

SELECTION OF THE SINGLE POLE OR DIFFERENTIAL
setpoint signal (Group SW 2, only one switch)
- for the single-phase setpoint signal (terminal 12c connected to ground) please adjust S. The position of S is used when the setpoint signal is generated by the amplifier via a potentiometer (wiper at 12a). See page 4
- For the differential setpoint signal please adjust D. This is used when the setpoint signal comes from an analogue output module of a PLC or CNC.

CHOICE OPEN OR CLOSED LOOP
(SW group 3, two single switch)
- For the closed-loop set AC
- For open-loop (controlled use), set AA

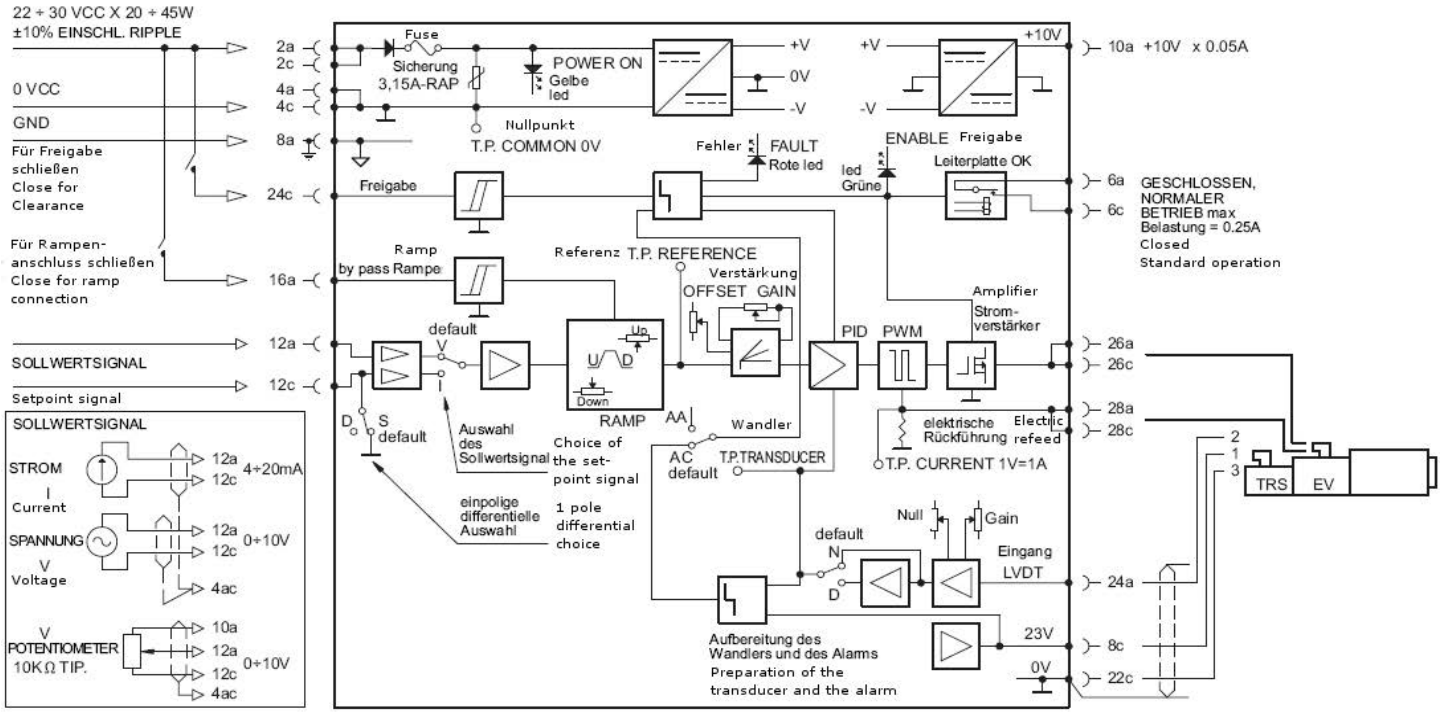
SELECTION inversion of the actual-value-signal
(Group S1, only one switch)
- For direct acting valves type SRA please choose N
- For Pilot operated valves please choose D

In case of transducer failures, it is possible to run an operation with an open control chain – please choose AA at SW 3. In this state, the LED ENABLE is illuminated, the loop (via relay on amplifier) between the terminals 6a and 6c is interrupted and the FAULT LED is illuminated to indicate an error.

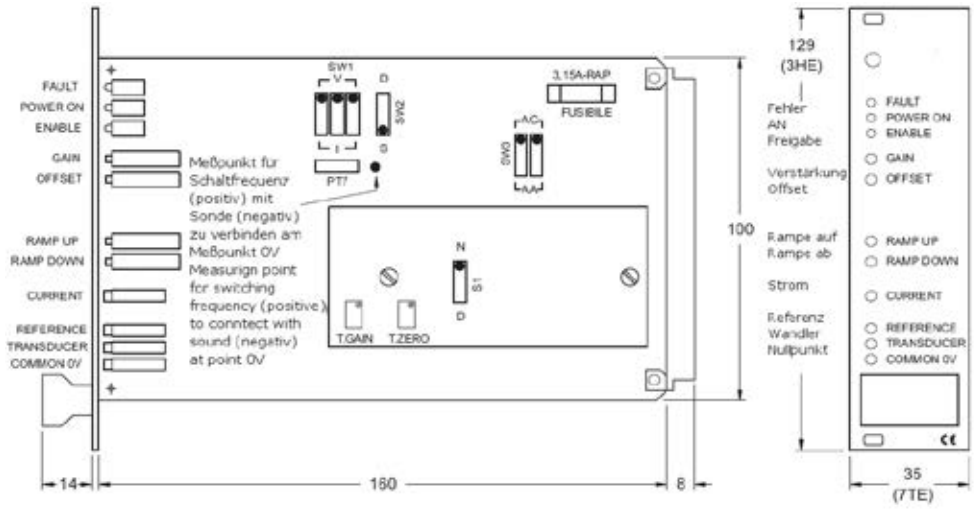
CONTROL OF THE FREQUENCY DITHER
Over the potentiometer PT7 the dither frequency can be specified. The setting range lies between 80 and 1600Hz. The dither signal is used to minimize the valve hysteresis and hast to be optimized during setting in motion.
By turning clockwise, the frequency is increased.

Standard models	**Part No.**
PEK-SRA-D1XX	3493287
Other types on request	

Block DIAGRAM



DIMENSIONS



Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

Amplifier
for proportional valves
PEK WAR

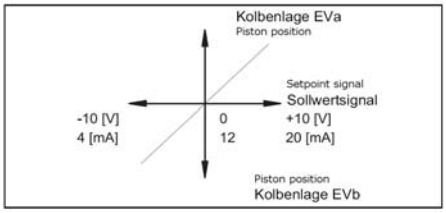
FEATURES

- Amplifier in Euroboard format
- Control of proportional valves with up to 2 coils in closed loop
- Linear control with minimal hysteresis

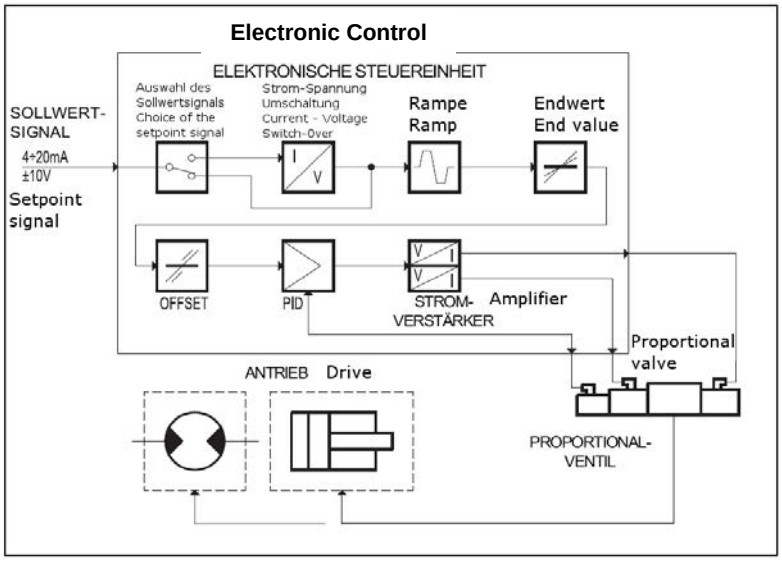
SPECIFICATIONS

Electric supply:	DC 22 - 30 VDC (rectified and filtered, small ripple)
Power:	45 W (terminals 2a/2c - 4a/4c)
Output:	max. 1,8 A
Setpoint signal:	
– Voltage	+/- 10 V
– Current	4 up to 20 mA (by using a potentiometer R > 200 Ω!)
Input impedance of the Setpoint signal:	
– Voltage	10 kΩ
– Current	250 Ω
Board format:	Euro board 100 x 160 x 35
Board connector:	DIN 41612-D 32 drill
Ambient temperature:	0 up to 50° C
Electro-magnetic capability (EMC):	
- Output	according to CEI EN 61000-6-4
- capability	according to CEI EN 61000-6-2 according to standards 2004/108/CEE
Protection:	Over-voltage and inverse polarity protection fuse (3,15 A)
Weight:	0,27 kg

The diagram shows the curve of the position of the piston in function of the setpoint signal.



Block diagram



The amplifier PEK WAR is an electronic control unit in Euroboard format and is used to control proportional valves with two inductors and transducer.
It carries out the control of the position of the valve piston as a function of the input setpoint signal, so it allows a linear control and a minimal hysteresis.
On the front panel are LED's to indicate the operating status of the amplifier and a potentiometer resp. sockets to adjust the amplifier to the valve application.

1. CONTROLS AND INDICATORS
1.1 - FAULT (fault display)
The red LED indicates the operational status of the transducer:
OFF - Normal
ON - failures in the transducer or cable failure.
In "FAULT" mode, the amplifier is disabled, so that the solenoids are de-energized and the valve is spring-centered in the normal position. The green LED "ENABLE" disappears and the loop (via relay on amplifier) between the terminals 6a and 6c is interrupted.

1.2 - POWER ON (power supply)
The yellow LED provides feedback on the power supply of the trigger electronics:
ON - Supply voltage ok
OFF - no or inadequate power supply or fuse has tripped.

1.3 - ENABLE (release)
A signal voltage (22-30 VDC) at terminal 24c releases the final stage. The output stage release is confirmed by the illumination of the green LED "ENABLE" and a closing of the loop (via relay on amplifier) between 6a and 6c.
The green LED indicates:
ON - amplifier released
OFF - amplifier not released

1.4 - GAIN A / B GAIN
(gain setting for solenoid current A and B)
The potentiometer "GAIN", determines the ratio between solenoid input setpoint and solenoid current of the amplifier.
The maximum current of the amplifier is limited to 1.8A.
Standard setting, see Item 4.
By turning clockwise the solenoid current and thereby the flow rate is increased within the hydraulic limitations.

1.5 - OFFSET A / B OFFSET
(Adjust offset for solenoid current A and B)
The potentiometer "OFFSET A" and "OFFSET B" allows the setting of an offset current e.g. to minimize coverage in the valve.If the input signal exceeds a threshold value of + resp. - 150mV (12mA or + / -0.12 mA), the amplifier puts out the adjusted offset current. This is done - depending on the polarity of the input signal - for solenoids A OR B. If the input signal lies in the range of 150mV 0V .. .. +150 mV (11.88 mA 12.12 mA .. .. 12mA) the solenoid current for solenoid A AND B is 25mA.
The adjustment range is 0 to 0.9 A.
By turning clockwise, the current value is increased.
A change in the OFFSET setting affects the GAIN setting.

1.6 - RAMP UP / RAMP DOWN (ramp module)
The potentiometers "RAMP UP" and "RAMP DOWN" determine the rise and fall times of the setpoint signal of a setpoint change at the entry of the ramp module. The ramp times are effective for solenoids A and B.
The adjustment range lies between 0.03 to 7 seconds.
The ramp function can be disabled via a signal voltage (22-30 VDC) to terminal 16a. In this case, the ramp time is generally 10 ms.
By turning clockwise the ramp time is increased.

2 - SIGNAL MEASUREMENT
2.1 - CURRENT A / CURRENT B
(Test point for solenoids current A and B)
This is the voltage signal reference point "COMMON 0V. The conversion factor is 1VCC = 1A.

2.2 - REFERENCE (test point for controller input)
Inverted reference signal after the ramp module. The following is valid when using a current input signal: 4mA = +10 V and-10V = 20mA

2.3 - TRANSDUCER (test point for signal of the transducer)
Direct readout of signal of the transducer signal with voltage of + / -4.8 V (tolerance 200mV)

2.4 - COMMON 0 V (reference potential)
Reference potential for test sockets 2.1 - 2.3

3 - INSTALLATION
The amplifier is suitable for rack mounting or for mounting in a PCB holder with an interface type DIN 41 612 - Form D 32nd
Wiring recommendation: supply of the amplifier and connection to the solenoid coil with cable cross section of 1 to 2.5 mm ² run. The cross section depends on the length of the cable. For signal lines use shielded, grounded cables at the drive electronics.

NOTE 1
To meet the EMC requirements, it is important that the electrical wiring is conform to the block diagram .
In general, the valve and the connecting cable to the amplifier are to be operated far from interference sources such as power lines, electric motors, inverters and electrical switching equipment.
In rooms with special electromagnetic interference sources, a complete shielding of the cable may be needed.

3.1 - Supply
The amplifier requires a supply voltage of 22-30 VDC and has a power consumption of up to 45 W (terminals 2a/2c - 4a/4c).

3.2 - Electrical protection devices
The amplifier is equipped with an over-voltage and inverse polarity protection.
The power circuits are protected by a quick fuse of 3.15 A F.
Position on printed board, see Dimensions, page 4.

3.3 - Setpoint signal
The amplifier is designed for input setpoint values in the form of voltage signals (-10V ... +10 V) or current signals (4 .. 20mA). Details on WIRING DIAGRAM see page 4
Assignment of setpoint values, see page 1

If the setpoint signal is transferred by a potentiometer, please verify that its resistance value is bigger than 200Ω.

4 - STANDARD SETTING
The amplifier is preset:
- "GAIN A": setpoint signal +10 V (or 20 mA) corresponds to the maximum opening of the valve and approximately-5V at test point "TRANSDUCER".
- "GAIN B": setpoint signal-10V (or 4 mA) corresponds to the maximum opening of the valve and +5 V at test point "TRANSDUCER".
The open circuit controlling the GAIN A and B corresponds to setting of a magnetic current of approximately 1A at max. setpoint signal.
- "OFFSET A" and "OFFSET B": zero.
- "RAMP UP" and "RAMP DOWN" means, at minimum.
- SW1 in position V
- SW2 in position S
- SW3 in position AC
- S1 in position N
- Dither (PWM) = 200 Hz

5 - ADJUSTMENTS TO FRONT PANEL
The following adjustments can be made via the front panel:

a) Setting the OFFSET
(Note: the procedure is the same for the solenoids A and B)
- Set the potentiometer "GAIN A" and "GAIN B" to the minimum value.
- Set the setpoint to:
  +10 V (or 20 mA) for solenoid A or
  -10V (or 4 mA) for solenoid B
- Turn the potentiometer on "OFFSET A" and "OFFSET B", that the valve is adjusted to the desired initial value (See valve description).

b) Setting the GAIN
(Note: the procedure is the same for the solenoids A and B)
- Put the setpoint signal to:
  +10 V (or 20 mA) for solenoid A or
  -10V (or 4 mA) for solenoid B
- Turn the corresponding potentiometer "GAIN A" or "GAIN B" to the desired maximum value to adjust the controlled variable (hydraulic parameter).

c) Setting of the ramp of the RAMP module
- Turn the potentiometer "RAMP UP" and "RAMP DOWN" so that with a change of the setpoint signal the desired delay in the response of the valve is achieved.

6 - ADJUSTMENTS TO BOARD
In the dimensional drawing (see page 4) four different switch groups are named: SW 1 - SW 2 - SW 3 and S1. These serve to parameterize the amplifier.

Before using the switches the amplifier has to be unplugged from the power supply. All switches of a group must have the same switching position.

SELECTION of voltage or current signal as input setpoint value:
(Group SW1, three separate switches)
- For the voltage signal please set V
- For the current signal please set I

SELECTION OF THE SINGLE POLE OR DIFFERENTIAL setpoint signal (Group SW 2, only one switch)
- for the single-phase setpoint signal (terminal 12c connected to ground) please adjust S. The position of S is used when the setpoint signal is generated by the amplifier via a potentiometer (wiper at 12a). See page 4
- For the differential setpoint signal please adjust D. This is used when the setpoint signal comes from an analogue output module of a PLC or CNC.

CHOICE OPEN OR CLOSED LOOP
(SW group 3, two single switches)
- For the closed-loop set AC
- For open-loop (controlled use), set AA

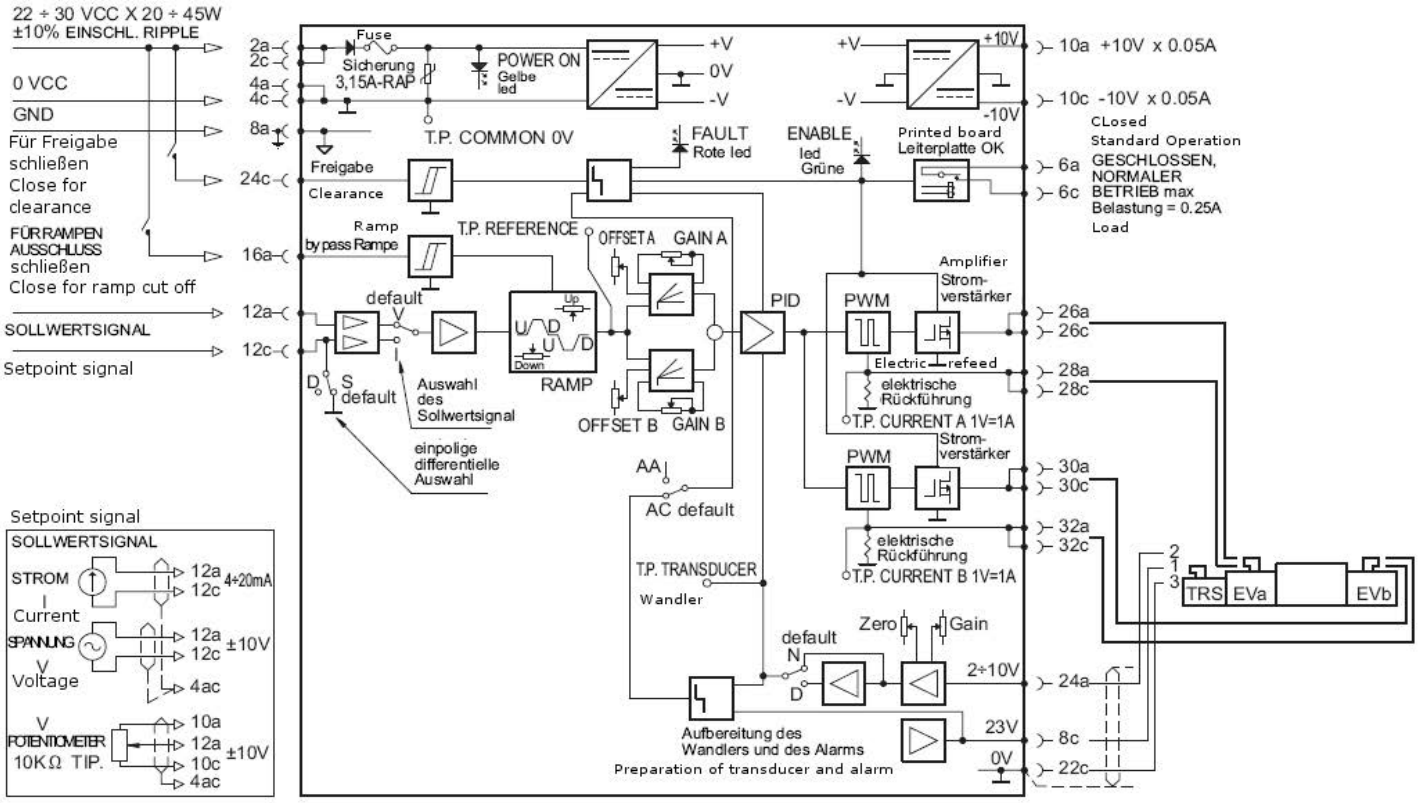
SELECTION INVERSION
of the actual-value-signal
(Group S1, only one switch)
- For direct acting valves type P4WR please choose N
- For pilot operated valves please choose D

In case of transducer failures, it is possible to run an operation with an open control chain – please choose AA at SW 3. In this state, the LED ENABLE is illuminated, the loop (via relay on amplifier) between the terminals 6a and 6c is interrupted and the FAULT LED is illuminated to indicate an error.

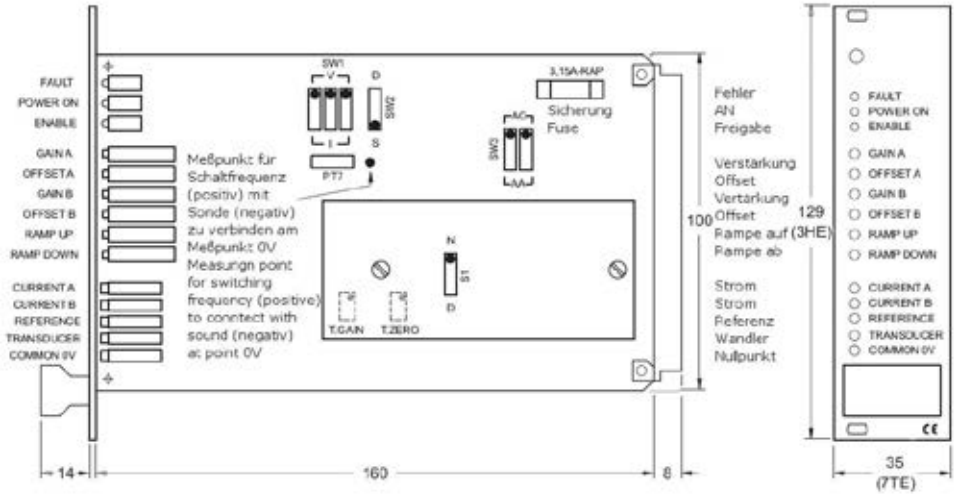
CONTROL OF THE FREQUENCY DITHER
Over the potentiometer PT7 the dither frequency can be specified. The setting range lies between 80 and 1600Hz. The dither signal is used to minimize the valve hysteresis and hast to be optimized during setting in motion.
By turning clockwise, the frequency is increased.

Standard models	**Part No.**
PEK-WAR-D1XX	3493264
Other types on request	

BLOCK DIAGRAM



DIMENSIONS

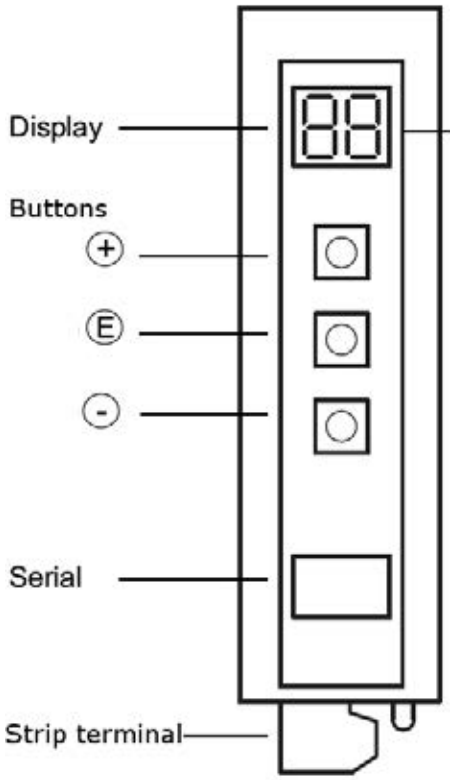


Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

Digital amplifier for proportional valves PEM XD



FEATURES

- Amplifier for cap rail mounting according to DIN EN 50022
- Control of 2 coils in open loop, or 2 proportional valves with 1 coil in open loop
- Linear control with minimal hysteresis

SPECIFICATIONS

Electric supply*:	DC 10 - 30 VDC (rectified and filtered, small ripple) * shall be > than voltage of coils
Power:	20 up to max. 40 W
Output:	860 mA – 2600 mA
Setpoint signal:	
- tension	±10V Input impedance 10-100 kΩ
- current	4 up to 20 mA Input impedance max 500 Ω
Card connector:	DIN 41612-D 32 drill
Ambient temperature:	-20 up to 70° C
Electro-magnetic capability (EMC):	
- Output	according to CEI EN 61000-6-4
- capability	according to CEI EN 61000-6-2 according to standards 2004/108/CEE
Protection:	Supply: Over-voltage- and Inverse polarity protection Signal entry: (> 33 V) inverse polarity protect. Coil output: over-voltage protection
Weight:	0,15 kg
Measures:	120 x 93 x 23 mm
Fixation:	cap rail DIN 50022, terminal strip 15 poles

Signals

A1 Setpoint 1 < 3,5A

A2 Setpoint 2 < 3,5A

A3 Short circuit at port 1

A4 Short circuit at port 2

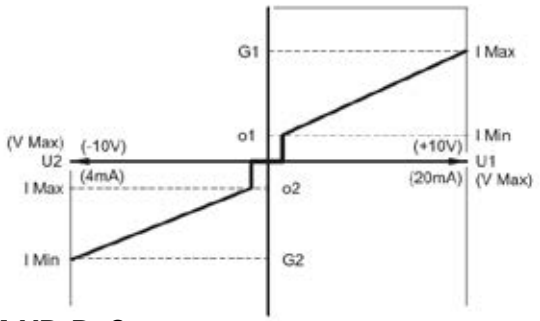
A5 Disconnection at port 1

A6 Disconnection at port 2

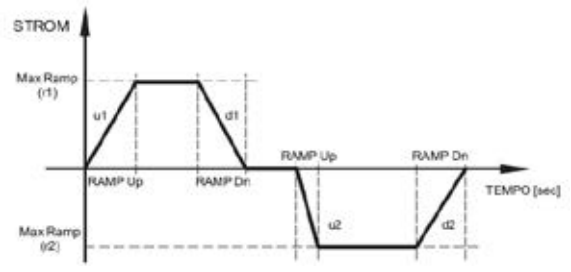
A7 Supply voltage < 10V

Annotation: if the reason for the failure is corrected the display is automatically deleted

Block diagram



Parameters for PEM-XD-Dx2x



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1 - FEATURES
1.1 - Supply
The amplifier requires a power supply of 10 to 30 VDC (terminals 1 and 2).
Note: The supply voltage of the amplifier may not be lower than the operating voltage of the controlled solenoids.
The voltage must be rectified and filtered, and the max. allowable ripple must be above the voltage range. The performance of the amplifier depends on the supply voltage and the value of the highest current. In general, a safe value for estimating the required performance results from the product of V x I.
For example, an amplifier with maximum solenoid current = 800 mA and a supply voltage of 24 Vdc has a power consumption of 20W.

1.2 - Electrical protection devices
The input power of the amplifier is equipped with an over-voltage and reverse polarity protection. The outputs have a short circuit protection.

1.3 - Setpoint signal
The amplifier is designed for input setpoint values in the form of voltage signals 0 and 10 V and ± 10V and current signals of 20 mA. The setpoint values come from an exterior generator (PLC, CNC) or from an external potentiometer, which is supplied with the amplifier.

2 - STATUSMELDUNGEN
2.1 - Power ON
The two-character display issues a confirmation of the power supply to the amplifier:
ON - Supply ok.
OFF - no or insufficient supply
FLASHING - error message (see table 1)

4.2 - Card OK OUTPUT
If no error is present, there is voltage at Pin 9. The output voltage signal corresponds to the supply voltage, if not even detected as defective (<10V). As a reference point, the ground pin 15 may be used. In case of failures the output it set to 0V.
The following failures are recognized:
- Supply voltage <10V
- Short circuit
- No coil connected
In the case of a failure the output amplifier ports are disabled. After eliminating the interference the output ports are automatically reset.
The output current shall not exceed 100mA.

3 - Settings
Two modes of operation have to be distinguished: display of variables and modification of parameters.
The display of variables allows a real-time control of the setpoint and actual point state of the current and voltage values. The second mode enables editing and adjustment of various operating parameters.

3.1 - Variable display
After switching-on the amplifier starts in the variable display mode and shows the value of the first variable, i.e. U1 = setpoint signal of Channel 1. By the buttons (+) and (-) it is possible to select another variable for display. After the choice, the name of the variable is displayed for about 1 second and then automatically replaced by the value of this variable. By a short press of the button (E) the name of the displayed value will be shown for about 1second.

The number of the displayed variables is depending on the version of the amplifier (see model code):

U1: setpoint of Channel 1:
..0V 9.9 V at version D01x
4mA to 20mA version D11x ..
- 9.9 V. V. .0. +9.9 V for version D02x
..4mA 12mA 20mA at version D12x

C1: Nominal current for channel 1. Calculated from the setpoint signal. Displayed in amperes in the range of 0A to 3.0 A.

E1: Actual current for channel 1. Measured actual current value. Displayed in amperes in the range of 0A to 3.0 A.

U2: Setpoint signal of channel 2:
0V .. 9.9 V at version D03x
4mA to 20mA version D13x ..
- 9.9 V. V. .0. +9.9 V for version D02x
. 4mA 12mA 20mA at version D12x

C1: Nominal current for channel 2. Calculated from the setpoint. Displayed in amperes in the range of 0A to 3.0 A.

E1: Actual current for channel 2. Measured actual current value. Displayed in amperes in 0A to 3.0 A.

In version Dx1x, only the variables U1, C1 and E1 are foreseen for display.

The indicated value should be interpreted as described below. E.g. version D12x.

Setpoint signal

REFERENCE (V)	REFERENCE (mA)	VAR. U1 (V)	VAR. C1/E1	VAR. U2 (V)	VAR. C2/E2
+10	20	10.	1.8. (A)		
+5	16	5.0	1.0 (A)		
0	12	0.0	400 (mA)		
0	12			0.0	400 (mA)
-5	8			5.0	1.0 (A)
-10	4			10.	1.8 (A)

4 – CHANGE OF PARAMETERS
If the button (-) is pressed longer than 1.5 seconds the display changes from display mode to the mode to change the parameters - and vice versa.
The change of the parameters is done via the buttons (+) and (-) – its name appears after each selection for about 1 second in the display. By a short press of the button (E) the name of the displayed value will be shown for about 1second.
If the button (E) is pressed more than 1.5 seconds the parameter name will flash for about 1 second. Change of the parameter value using the buttons (+) and (-) is possible. At each time the buttons are pressed, the parameter value is increased or decreased by one unit. If the button is hold, the parameter value changes with increasing speed. After selecting the desired parameter value is stored

by pressing the button (E) in the EEPROM.
By the buttons (+) and (-) the selection of the parameters is again possible. After pressing the button (+) for more than 2-seconds the displayed value begins to flash. The parameter values are stored in EEPROM.

List of parameters

G1: "I, Max" in amperes
Corresponds to the maximum current of the solenoid coil (channel 1) at maximum setpoint voltage +10 V (or 20mA).
Used e.g. to limit the hydr. parameters.
Default: 860mA at Dxx1 and Dxx2
Area: 50% from .100 Imax

o1: "I min" in amperes
Corresponds to the offset streamed to the solenoid coil (channel 1) if the setpoint signal exceeds the threshold of 0.1 V (or 0.1 mA). E.g. used to reduce the zero coverage.
Default: 200mA
Range: 0 .50% of Imax.

r1: "Max. ramp time in seconds
Determines the time in which the current to the solenoid coil (channel 1)rises from 0 to 100%, triggered by a setpoint signal from 0 to 100%. Also valid for inverse signal course.
Range: 0 .20 sec

u1: "Ramp Up" rise time as a percentage of r1
Determines the rise time with respect to a setpoint step response from 0 to 100%.
Default: 99%
Range: 0 .99%

d1: "Ramp Down" fall-time as a percentage of r1
Determines the rise time with respect to a setpoint step response from 100 to 0%.
Default: 99%
Range: 0...99%

G2: "I, Max" in amperes
Corresponds to the maximum current to the solenoid coil (channel 2) at maximum value +10 V (or 20mA).
Used e.g. to limit the hydr. parameter.
Default: 860mA at Dxx1 and Dxx2
Area: 50 .100% of Imax

o2: "I min" in amperes
Corresponds to the offset streamed to the solenoid coil (channel 2) if the setpoint signal exceeds the threshold of 0.1 V (or 0.1 mA). E.g. used to reduce the zero coverage.
Default: 200mA
Range: 0 .50% of Imax.

r2: "Max ramp time in seconds
Determines the time in which the current to the solenoids coil (channel 2) rises from 0 to 100%, triggered by a setpoint signal from 0 to 100%. Also valid for inverse signal course.
Range = 0 .20 sec

u2: "Ramp Up" rise time as a percentage of r2
Determines the rise time with respect to a setpoint on 0 to 100%.
Default: 99%
Range: 0 .99%

d2: "Ramp Down" fall-time as a percentage of r2
Determines the rise time with respect to a setpoint response time on 100 to 0%.
Default: 99% Range: 0 .99%

Fr: dither frequency in Hertz
Determines the PWM frequency of the amplifier, thus indirectly the dither frequency of the solenoid current. This is used to minimize the hysteresis of hydraulic valves. An optimization has to be done to the hydraulic system.
Default: 100Hz at Dxx1 and 200Hz for Dxx2
Area: 50 .400 Hz

U1 and U2: "V max"
Factor for the validation of the setpoint input without loss of resolution. Example: at default mode and 10V setpoint signal, the output current is 1200mA. If Ux changed to now 500, is the amp at 10V only 600mA from.
Default: 1000
Range: 0 .1000

In version Dx1x only the parameters for channel 1are displayed.

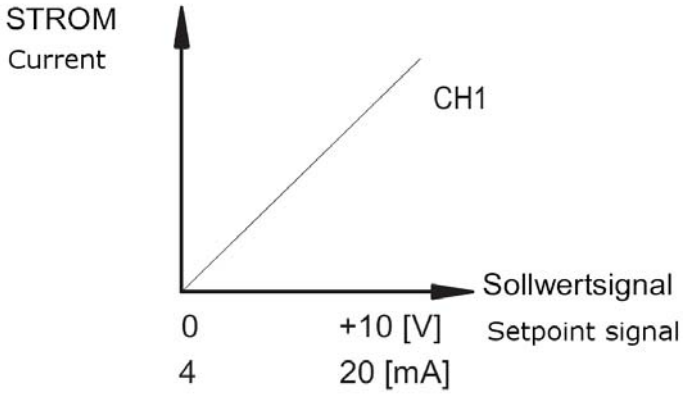
5 - INSTALLATION

The amplifier is foreseen for the installation on rails to DIN EN suitable 50022. The cabling is conducted over a 15-pin terminal block. For the connection of power supply and solenoids please choose cables with a diameter of 0.75 mm² for distances up to 20m and 1.00 mm ² for distances up to 40m.
The cross section depends on the length of the cable. For signal lines use shielded, grounded cables at the drive electronics.

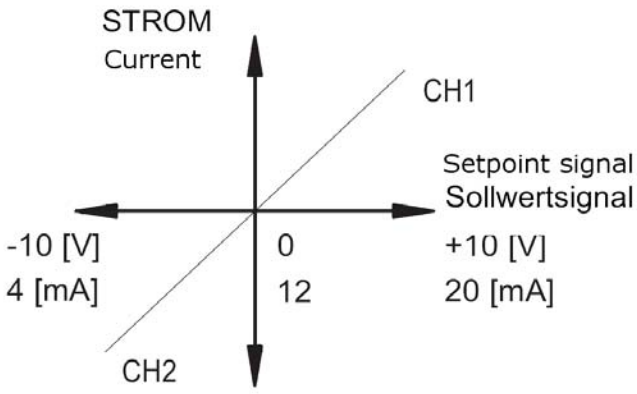
NOTE 1
To observe EMC requirements it's important that the control unit electrical connection is in compliance with the wiring diagram of chapter 7. As a general rule, the valve and the electronic unit connection wires must be kept as far as possible from interference sources (e.g. power wires, electrical motors, inverters and electrical switches).
In environments where there are critical electromagnetic interferences, a complete protection of the connection wires can be requested.

The diagram shows the curve of the current output in function of the setpoint signal

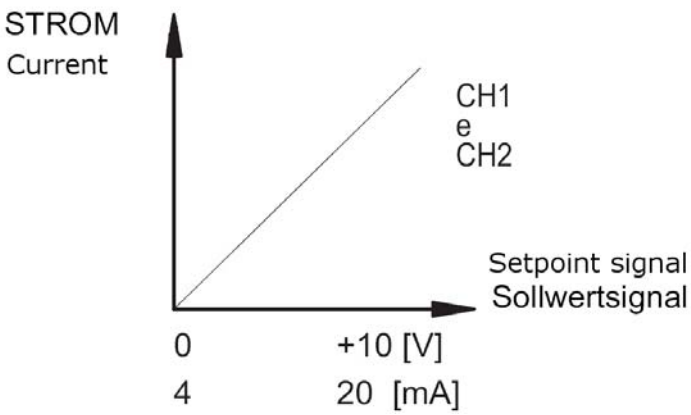
PEM-XD-Dx1x



PEM-XD-Dx2x

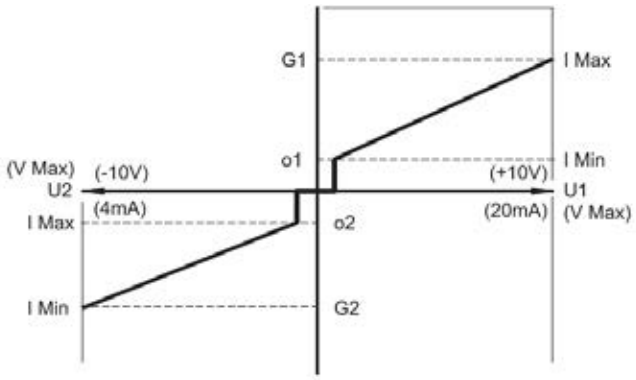


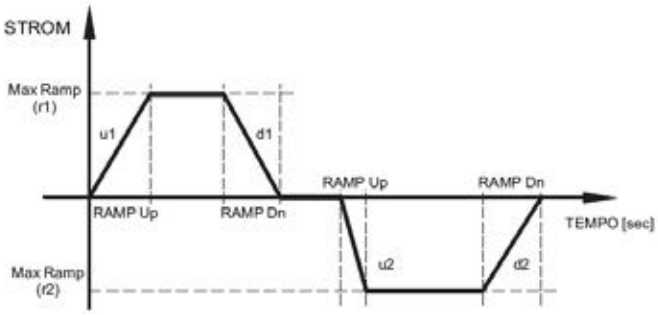
PEM-XD-Dx3x



5.2 FUNCTION of the ramps

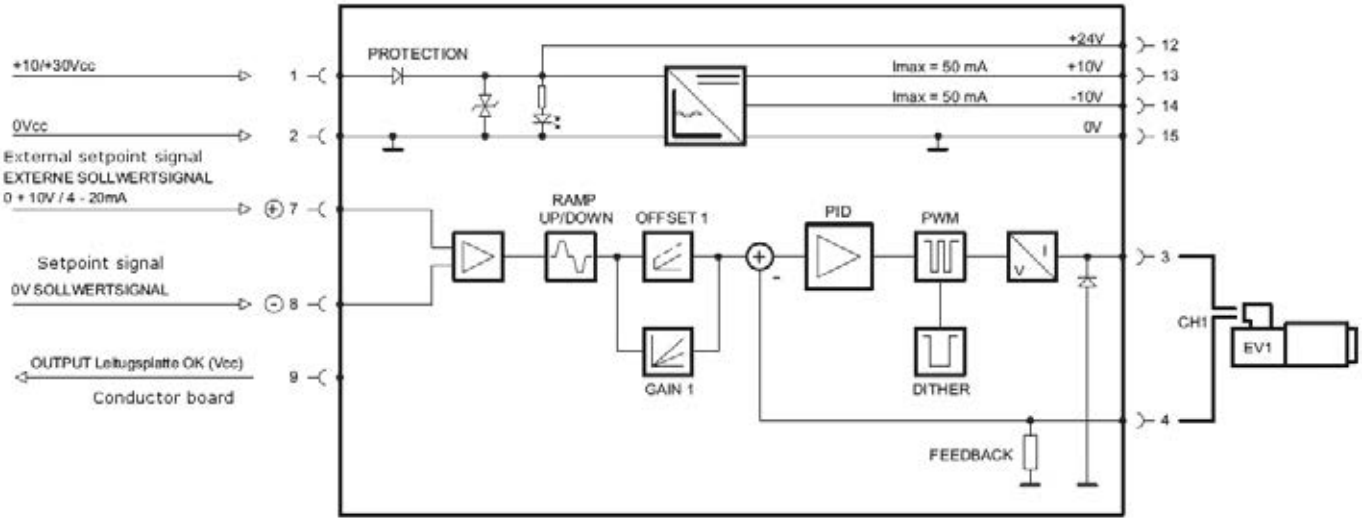
Example: parameters for PEM-XD-Dx2x



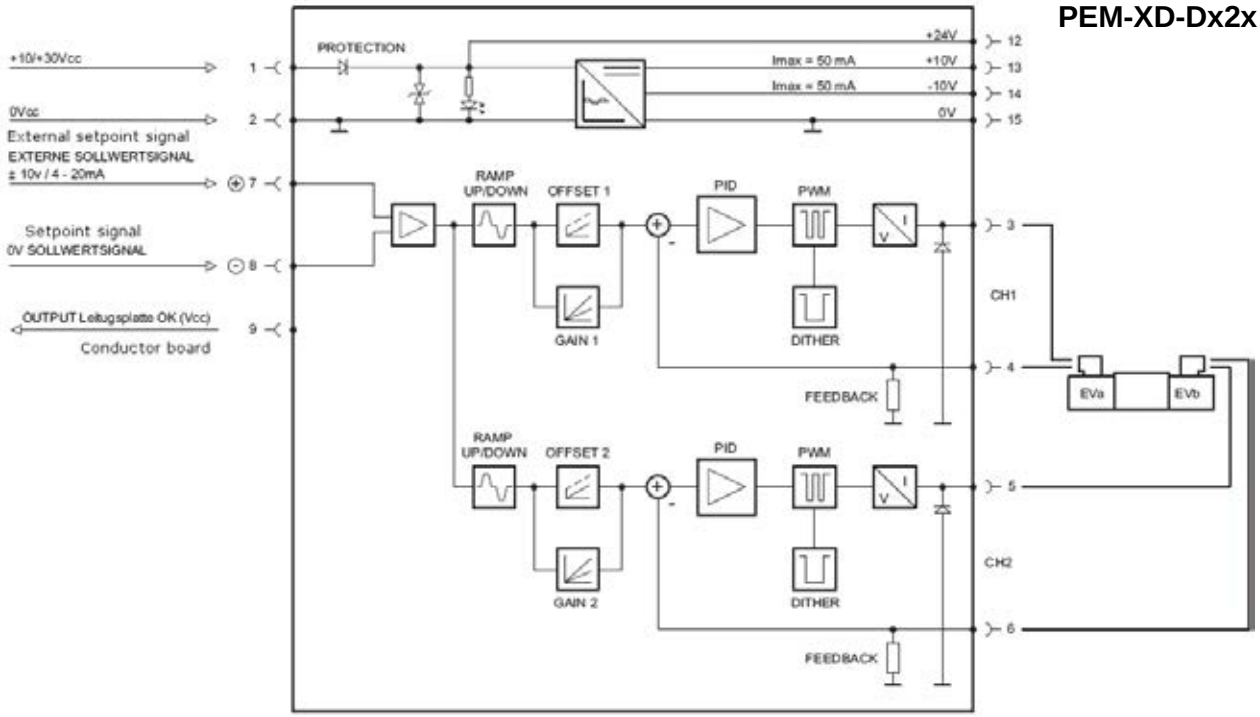


BLOCK DIAGRAMS

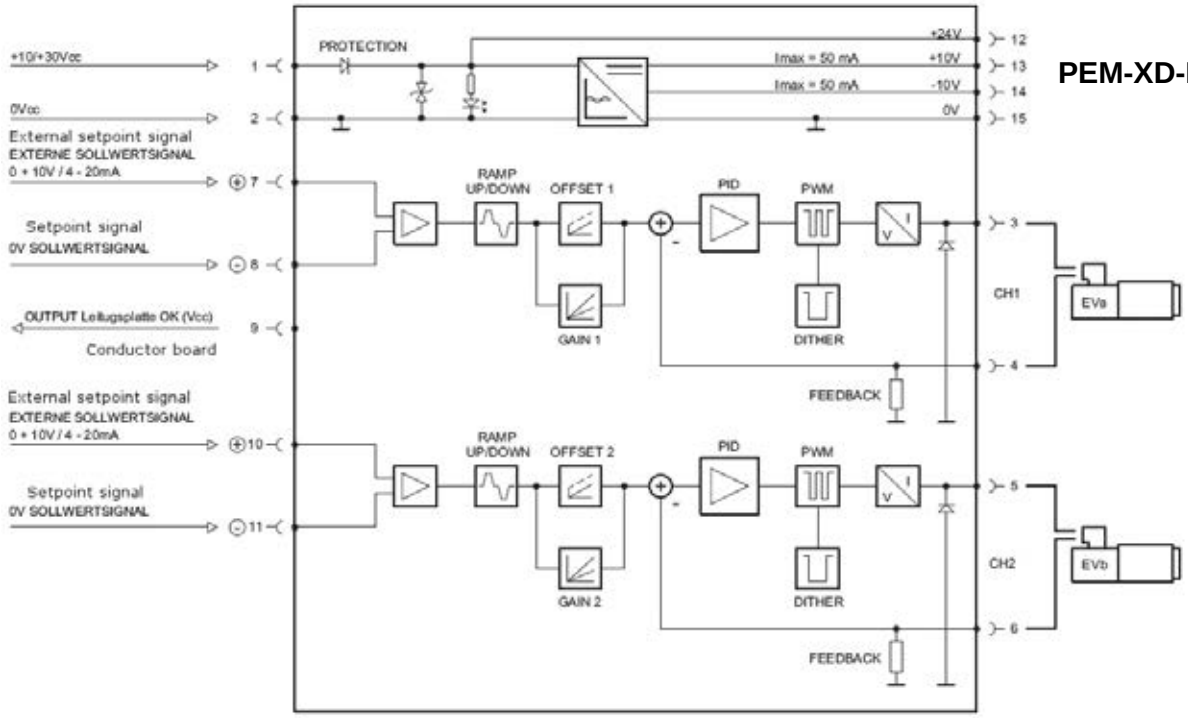
PEM-XD-Dx1x



PEM-XD-Dx2x



PEM-XD-Dx3x



STANDARD MODEL	Part No.
PEM-XD-D021	3493285
PEM-XD-D022	3532186
PEM-XD-D031	3530881
PEM-XD-D032	3530882

Other types on request

TYPECODE

PEM-XD – D 0 2 1

Name
Amplifier
For cap rail mounting

Parameterization
Digital parameterization
without control option

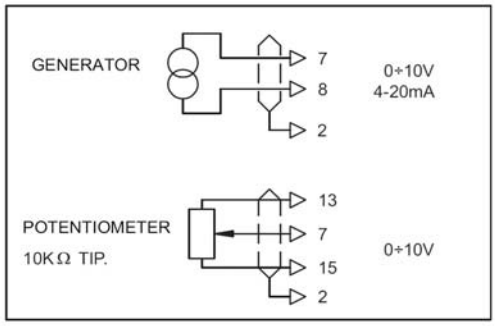
Setpoint signal
0 = voltage 0 to +/-10V
1 = current 4 - +/-20mA

Number of coils on valve
01 = with 1 coil
02 = with 2 coils
03 = with 2 coils – independent channels

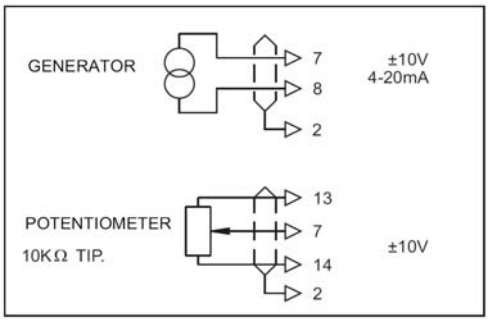
Pre-adjusted highest current
1 = 860 mA
2 = 1200 mA
3 = 1600 mA
4 = 1880 mA
5 = 2600 mA (only possible at 1 a. 2)

Cabling of the setpoint signal

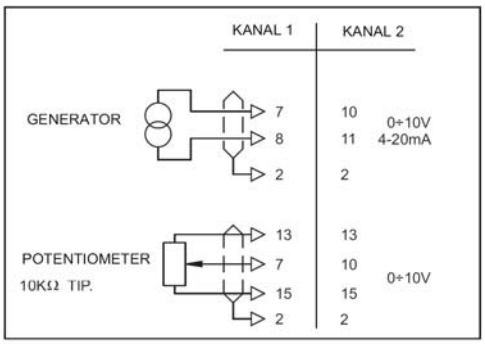
PEM-XD-Dx1x



PEM-XD-Dx2x

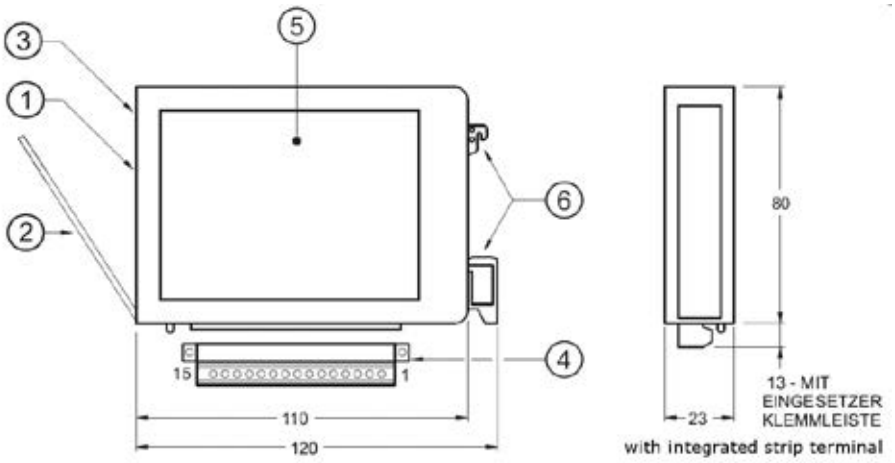


PEM-XD-Dx3x



Hint:
If the generator only contains a differential entry (not on ground), clamp 8 (11 for PEM-XD-X3X) Has to be connected with clamp 14

DIMENSIONS



1) Display- and mini USB side
2) Knob protections lock
3) Display for the signal of the card-supply and failures
4) Terminal strip with 15 poles, cable exit to bottom
5) Printout of the electric circuit of the PSB and port overview
6) Connector for guidances according to DIN EN 50022

Annotation
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HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

HYDAC INTERNATIONAL

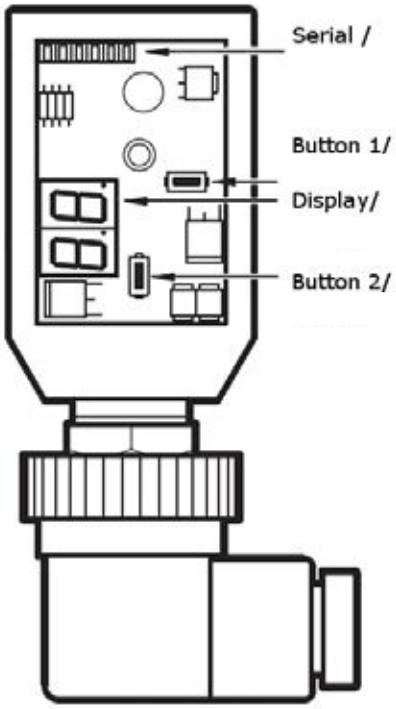
Digital plug amplifier for proportional valves PES-XD

GENERAL

- Digital amplifier in plug format
- Control of one proportional valve (open loop)
- Compact unit directly to mount at the solenoid group
- Simple and economic to mount
- Protection against reverse connection and short-circuit
- LED- display

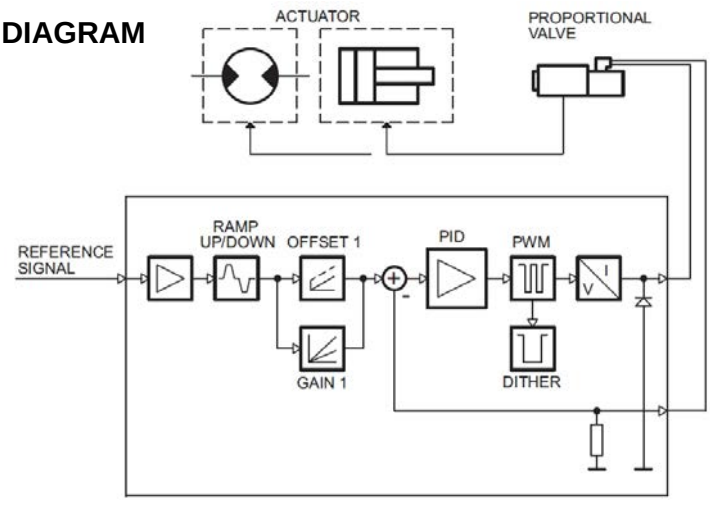
SPECIFICATIONS

Electrical supply*:	DC 10 - 30 VDC (rectified and filtered, small ripple) *must be > as voltage of the solenoids
Power:	min. 20 up to max. 40 W
Output current:	800 mA – 2600 mA
Setpoint signal:	
– Tension	+/- 10 V
– Current	4 up to 20 mA (By transmission of the setpoint signal by a potentiometer, the resistance of it shall not be smaller than 200 Ω!
Input Impedance of the setpoint signal:	0 to 10V Input Impedance max. 100 kΩ 0 to 5V Input Impedance max. 100 kΩ 4 to 20 mA Input Impedance max. 500 Ω
Ambient temperature:	-20°C to +70°C
Electro magnetic Capability (EMC):	
- Output	according to CEI EN 61000-6-4
- Capability	according to CEI EN 61000-6-2 according to 2004/108/CEE Standards
Protection:	Supply: Over-voltage and polarity protection Signal- in/output: reverse polarity protection to 33V Solenoid output: over-voltage protection
IP Rating:	IP65 IP67
Weight:	0,15 kg
Dimensions:	110 x 50 x 40 mm (L x B x H)
Fixation:	directly at proportional solenoid



The picture shows the open plug amplifier. Only in this mode it is possible to operate the buttons. The LED display is also visible with closed cover.

BLOCK DIAGRAM



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1 - DESCRIPTION

The PES-XD amplifier is a digital amplifier to control proportional valves. The unit supplies a variable current proportionally to the setpoint signal and independently of temperature variations or load impedance, with a resolution of 1% on 2600 mA (full scale value).
The PWM stage on the solenoid power supply makes it possible to reduce the valve hysteresis thus optimising control precision. The amplifier is customizable with different maximum current sizes and switching frequencies (PWM), optimized according to the valve to be controlled.
Setting is possible by buttons and display inside the case, or with a notebook by RS232 with the software for PES-XD, (see par. 6.2)

2 - FUNCTIONAL SPECIFICATIONS

2.1 Electric power supply

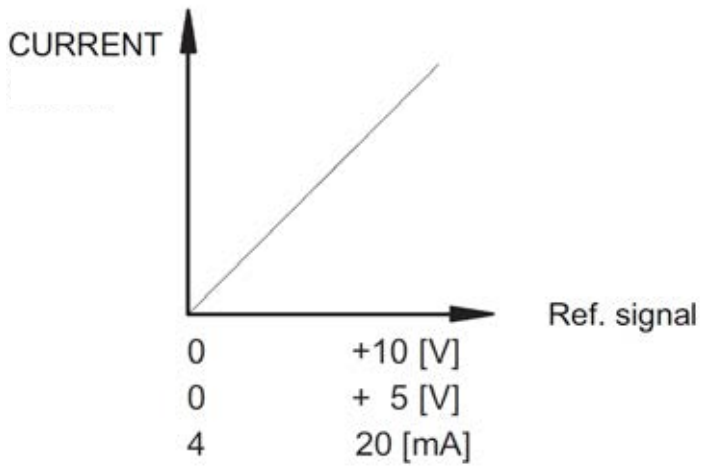
The amplifier requires a power supply of 10 to 30 V DC (terminals 1 and 2).
NOTE: The power supply voltage must be higher than the rated working voltage of the solenoid to be controlled.
The power supply voltage must be rectified and filtered, with maximum admissible ripple within the above voltage range.
The power required by the amplifier depends on the power supply voltage and on the maximum value of the supplied current (it is determined by the card version). In general a conservative value of the required power can be considered as the product of V x I. Example: an amplifier with a maximum current = 800 mA and a power supply voltage of 24 V DC requires a power of about 20W.

2.2 - Electrical protection

The connector is protected against over-voltage and polarity conversion.
On the output port a protection against any short circuit is foreseen.

2.3 - Setpoint signal

The connector accepts setpoint signals with 0 to 10V and 0 to 5V, in 4 to 20 mA current, from an external generator (PLC, CNC) or external potentiometer.
See paragraph 7 for electric connections referring to the different connector versions.



3 - SIGNALS

3.1 - POWER ON (Power supply)

Display indicates that the connector is ON and connected to +24V DC.

4 - ADJUSTMENTS

There are two ways of adjustment: variables view and parameters editing. The first one enables the real time monitoring of the control values, for both required and read current, on both channels. The second mode enables the operating parameters view and editing.

4.1 - Variables view

The amplifier is switched on at the variables view modality, and it shows the first variable value, that is the U1 parameter (setpoint signal).
Pushing button (1) the current of the solenoid is displayed.
By means of pressing (1) button, the different variables can be selected. Each time a variable is selected, its short name appears for approximately one second.
By briefly pressing the buttons, the current variable name appears for approximately one second.

The variables that can be selected are **U1** Setpoint signal:
0.0.. 10 at 0 … 10V
0.0.. 5.0 at 0 … 5V
02.. 10 at 4 to 20mA
C1: current required according to the applied setpoint signal, expressed in ampere, ranging between 0 and 2.6 A All the mentioned parameters can be viewed on the two digits display, located on the amplifiers front panel.
The selected value has to be read as follows (example for PES- XD-D*5* card):Imax = 2600mA.

REFERENCE (V)	REFERENCE (mA)	DISPLAY U1 (V)		DISPLAY C1 (Ampere)
0	4	0.0	2.0	40 (mA)
5	12	5.0	6.0	13 (A)
10	20	10.	10.	26 (A)

4.2 - PARAMETERS EDITING

To access the parameter editing, press the button (2) for at least 3 seconds.
The first parameter displayed is G1. To modify it, press the button (1) for two seconds, until the display starts blinking. Use the button (2) to increase the value and the button (1) to decrease it. To save the new value, press both buttons. The display stops blinking. Pressing the button (2) again is possible to scroll through all the parameters. To modify some parameters, repeat the steps above-mentioned for the G1 parameter. Following sequence is displayed G1 – o1 – u1 – d1 – Fr - return to basic mode and display of U1.

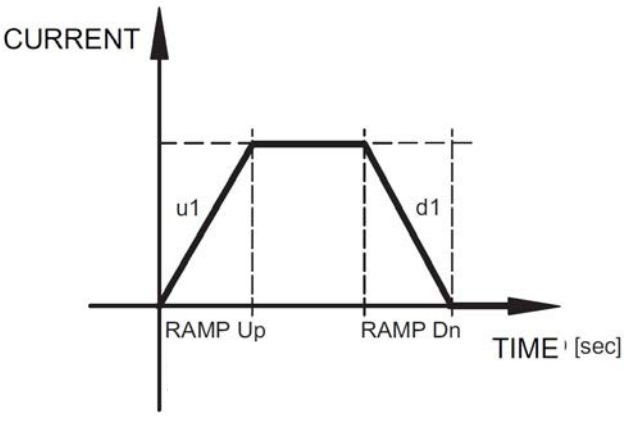
The parameters that can be selected are:
G1: “I Max” current, expressed in milliampere.
It sets the maximum current to the solenoid, when the setpoint signal is at the maximum value of +10 V (or 20 mA). It is used to limit the maximum value of the hydraulic size controlled by the valve.
Default value = Imax
Range = 50 ÷ 100% of Imax

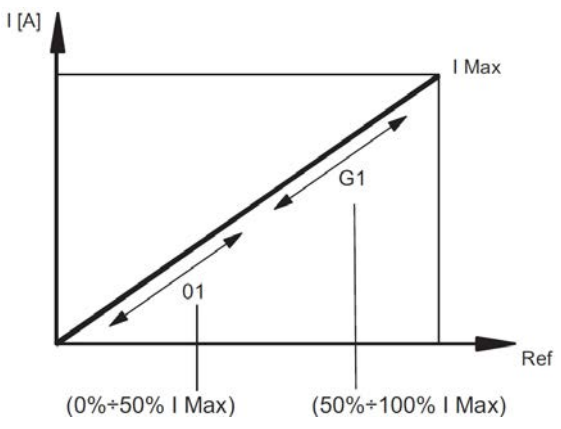
o1: “I Min” current, expressed in milliampere.
It sets the offset current to the solenoid, when the setpoint signal exceeds the limit of 0,1 V (or 0,1 mA). It is used to neutralize the insensitiveness area of the valve (dead band).
Default value = 0%
Range = 0 ÷ 50% of Imax

u1: “Ramp Up” increasing ramp time, expressed in seconds.
It sets the current ramp time, for a variation from 0 to 100% of the input reference. It is used to slow down the valve response time in the case of a sudden variation of the setpoint signal.
Default value = 00 sec.
Range = 00 ÷ 50 sec.

d1: “Ramp Dn” decreasing ramp time, expressed in seconds.
It sets the current ramp time, in a variation from 100% to 0 of the input reference. It is used to slow down the valve response time in the case of a sudden variation of the setpoint signal.
Default value = 00 sec.
Range = 00÷ 50 sec.

Fr: PWM frequency, in Hertz.
It sets the PWM frequency, which is the pulsating frequency of the control current. A PWM decrease improves the valve accuracy, decreasing the regulating stability. A PWM increase improves the regulation stability, causing a higher hysteresis.
Default value = PWM (according to version card)
Range = 50 ÷ 500Hz





4.3 - ERROR SIGNAL
EE: breakdown cable error on 4 to 20 mA signal (threshold 3 mA). Reset the alarm turning off the +24 V DC cable.

5 - INSTALLATION
The amplifier is suitable for direct assembly on the solenoid of the corresponding proportional valve. The 4-core connection cable (0,5 mm2 individual wire section) is supplied prewired and in a standard length of 2.5 m (DIN 47100 standard).
NOTE 1
To observe EMC requirements it’s important that the electrical connection is in compliance with the block diagram. As a general rule, the valve and the amplifier’s wires must be kept as far as possible from interference sources (e.g. power wires, electrical motors, inverters and electrical switches).
In environments where there are critical electromagnetic interferences, a complete protection of the connection wires can be required.

6 - START UP, CONTROL SETTINGS AND SIGNAL MEASUREMENT
6.1 - Set up
Settings can be changed by either acting on the (1) and (2) buttons located on the card front panel, or using the PES-PC hardware and software kit.

6.2 - PES-XD PC Software
The relevant hardware and software kit (to be ordered separately) allows to read the values and to set the connector easily.
The software communicates, through a flat cable, to the relevant connector placed in the PES-XD panel, behind the protecting gate.
The PC software compatibility is guaranteed only on Windows 2000 and Windows XP operating systems.

STANDARD MODELS	Part-No.
PES-XD-D011	3573612
PES-XD-D021	3573614
PES-XD-D111	3573639

Other types on request

MODEL CODE

PES-XD – D 0 1 1

Name
Amplifier for proportional valves
in plug format

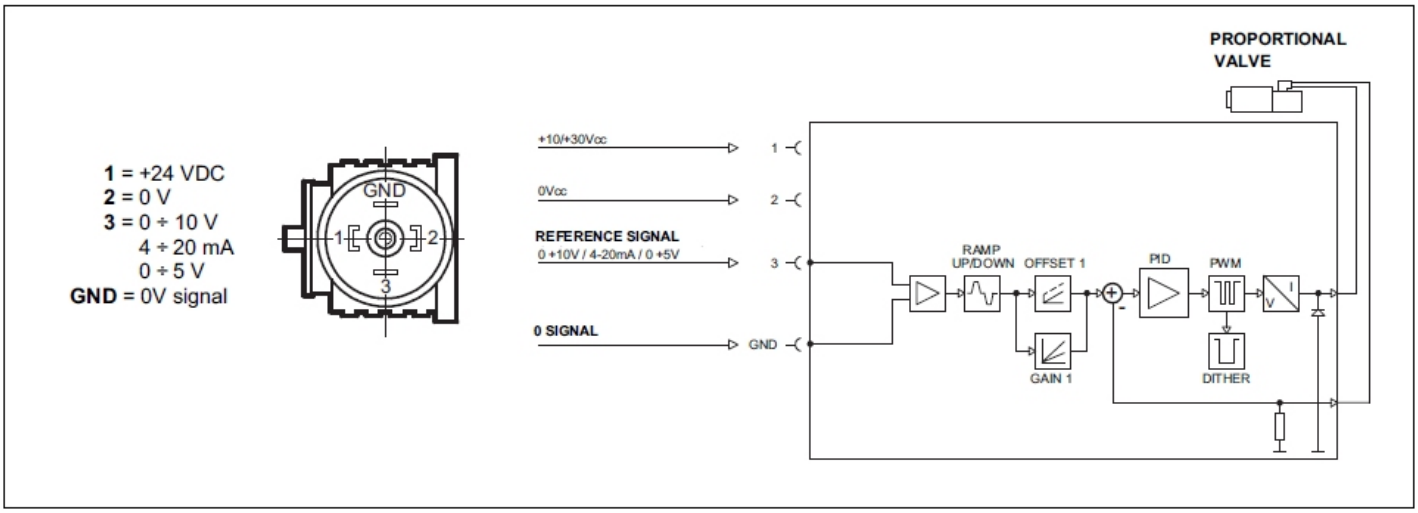
Parameterization
Digital to parameterize
without control option

Setpoint signal
0 = tension 0 up to +/-10V
1 = current 4 up to 20mA

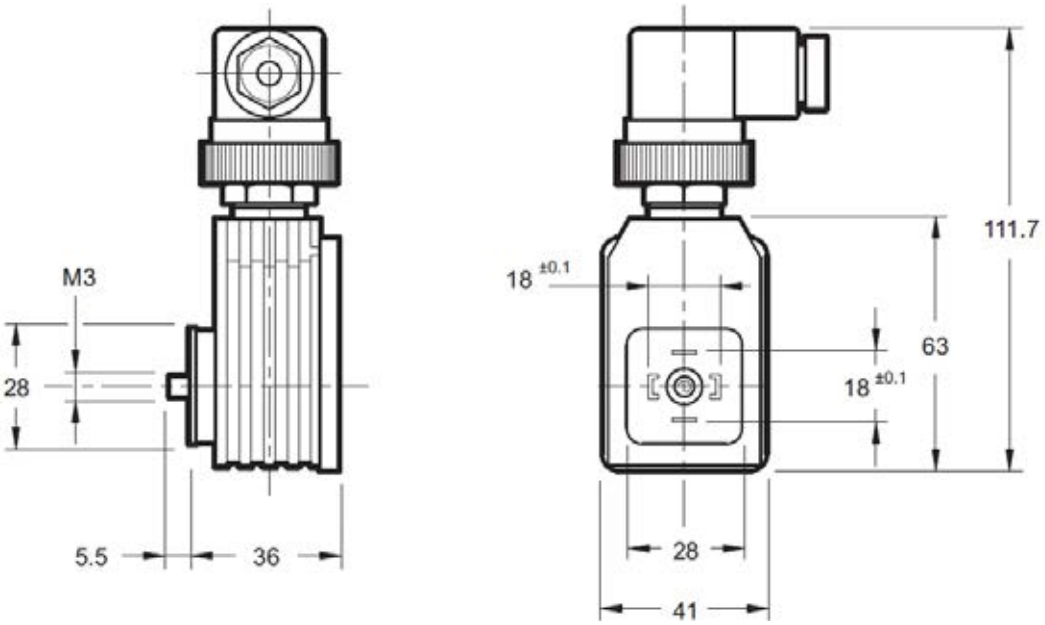
Max. current
1 = 860 mA
2 = 1200 mA
3 = 1600 mA
4 = 1880 mA
5 = 2600 mA

PWM frequency
01 = 100 Hz
02 = 200 Hz
03 = 300 Hz
04 = 400 Hz
05 = 500 Hz

BLOCK DIAGRAM



DIMENSIONS



Annotation
The technical information in this brochure are relating to the operating conditions and applications.
At deviant applications and/or operating conditions please contact the technical dept.
Technical information are subject to technical modifications.

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str. 5
66280 Sulzbach / Saar
Tel.: 06897 / 509 -0
Fax: 06897 / 509 -598
Email: flutec@hydac.com

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NOTES

A
ÖSTERREICH
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HYDAC Hydraulik Ges. m.b.H.
Industriestr. 3
A-4066 Pasching
Tel.: (0043) 72 29 / 6 18 11-0
Fax: (0043) 72 29 / 6 18 11-35
E-mail: info@hydac.at

AUS
AUSTRALIA
HYDAC Pty. Ltd.
111 Dohertys Road, Altona North.
AUS-Vic. 3025
postal address:
P.O. Box 224, Altona North.
AUS-Vic. 3025
Tel.: (0061) 3 / 92 72 89 00
Fax: (0061) 3 / 98 360 80 70
E-mail: info@hydac.com.au

B
BELGIQUE
HYDAC sprl
Overhaemlaan 33
B-3700 Tongeren
Tel.: (0032) 12 260 400
Fax: (0032) 12 260 409

BG
BULGARIA
HYDAC EOOD
Business Center Iskar Yug
München-Str. 14
BG-1528 Sofia
Tel.: (00359) 2 970 6000,
(00359) 2 970 6060
Fax: (00359) 2 970 6075
E-mail: office@hydac.bg
Internet: www.hydac.bg

BLR
BELARUS
HYDAC Belarus
Timirjazeva 65a, biura 504-505
BY 220035 Minsk Belarus
Tel.: (00375) 17 209 01 32-33
Fax: (00375) 17 209 01 35
E-Mail: info@hydac.com.by
Internet: www.hydac.com.by

BR
BRASIL
HYDAC Limitada
Rua Fukutaro Yida, 225
CEP 09852-060
BR-Sao Bernardo do Campo-SP
Tel. (0055) 11/43 93 66 00
Fax: (0055) 11/43 93 66 17
E-mail: hydac@hydac.com.br

CDN
CANADA
HYDAC Corporation
14 Federal Road
Welland, Ontario
L3B 3P2
Tel.: (001) 905 / 7149322
Fax: (001) 905 / 7144664
Internet: www.hydac.ca
E-mail: sales@hydac.ca

CH
SCHWEIZ
HYDAC Engineering AG
Allmendstr. 11
CH-6312 Steinhausen/Zug
Tel.: (0041) 41 / 747 03 20
Fax: (0041) 41 / 747 03 29
E-mail: hydac-engineering-AG@hydac.com
Internet: www.hydac.ch

HYDAC S.A.
Zona Industriale 3, Via Sceresa
CH-6805 Mezzovico
Tel.: (0041) 91 / 935 57 00
Fax: (0041) 91 / 935 57 01
E-mail: info.coolingsystems@hydac.ch
Internet: www.hydac.ch

CZ
ČESKÁ REPUBLIKA
HYDAC S.R.O.
Kanadska 794
CZ-39111 Planá nad Luznici
Tel.: (00420) 381/20 17 11
Fax: (00420) 381/29 12 70
E-mail: hydac@hydac.cz

D
DEUTSCHLAND
HYDAC-Büro Berlin
IBH Ingenieurbüro und
Handelsvertretung Hammer GmbH
Kaiser-Wilhelm-Str. 17
D-12247 Berlin
Tel.: 0 30 / 7 72 80 50
Fax: 0 30 / 7 73 80 80

HYDAC-Büro Südost
Wiesestr. 189
D-07551 Gera
Tel.: 03 65 / 73 97-320
Fax: 03 65 / 73 97-600

HYDAC-Büro Nordost
Pankstraße 8-10 (Gebäude H)
D-13127 Berlin
Tel.: 0 30 / 475 98 40
Fax: 0 30 / 475 98 4-29

HYDAC-Büro Bremen
Riedemannstraße 1
D-27572 Bremerhaven
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Fax: 04 71 / 70 05 72 - 42 42

HYDAC-Büro Hamburg
Mühlenweg 131-139
D-22844 Norderstedt
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Fax: 040 / 52 60 07-15

HYDAC-Büro Nord
Kirchhorster Str. 39
D-30659 Hannover
Tel.: 05 11 / 56 35 35-0
Fax: 05 11 / 56 35 35-56

HYDAC-Büro West
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Tel.: 02 01 / 3 20 89-0
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HYDAC-Büro Mitte
Dieselstr. 9
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Tel.: 0 61 51 / 81 45-0
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HYDAC-Büro Südwest
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HYDAC-Büro Süd
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Tel.: 0 71 91 / 34 51-0
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HYDAC-Büro München
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D-82194 Gröbenzell
Tel.: 0 81 42 / 6 52 77-0
Fax: 0 81 42 / 6 52 77-22

HYDAC-Büro Nürnberg
Bauhofstraße 4
D-90571 Schwaig
Tel.: 09 11 / 24 46 43-0
Fax: 09 11 / 24 46 43-4260

DK
DENMARK
HYDAC A/S
Havretoften 5
DK-5550 Langeskov
Tel.: (0045) 702 702 99
Fax: (0045) 63 13 25 40
E-Mail: hydac@hydac.dk

E
ESPAÑA
HYDAC TECHNOLOGY SL
Capcir 5, P.O. Box 162
E-08211 Castellar del Valles
Tel.: (0034) 93 / 747 36 09
Fax: (0034) 93 / 715 95 42

ET
EGYPT
Yasser Fahmy Hydraulic Eng.
65-66-68 Saudi Building, Kobba
P.O. Box 6550 Sawah 11813
ET-Cairo
Tel.: (0020) 2 / 45 20 192, 45 30 922
45 30 923, 45 01 970
Fax: (0020) 2 / 45 30 638
E-Mail: yasserf@yf-hydraulic.eg

F
FRANCE
HYDAC S.à.r.l.
Technopôle Forbach Sud
BP 30260
F-57604 Forbach Cedex
Tel.: (0033) 3 87 29 26 00
Fax: (0033) 3 87 85 90 81
E-Mail (siège):
hydac_france@hydac.com
E-Mail (agence Nord-Est):
ag_nest@hydac.com

AGENCE DE PARIS:
Tel.: (0033) 1 60 13 97 26
E-mail: ag_paris@hydac.com

AGENCE DE LYON:
Tel.: (0033) 4 78 87 83 02
E-mail: ag_lyon@hydac.com

AGENCE DE BORDEAUX:
Tel.: (0033) 5 57 54 25 20

AGENCE DE CHATEAUNEUF
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Tel.: (0033) 4 42 49 61 35

FI
FINLAND
(Estonia)
HYDAC OY
Kisällintie 5
FI-01730 Vantaa
Tel.: (00358) 10 773 7100
Fax: (00358) 10 773 7120
E-Mail: hydac@hydac.fi

GB
GREAT BRITAIN
HYDAC TECHNOLOGY Limited
De Havilland Way, Windrush Park
GB-Witney, Oxfordshire
OX29 0YG
Tel.: (0044) 1993 866366
Fax: (0044) 1993 866365
Internet: www.hydac.co.uk
E-Mail: info@hydac.co.uk

GR
GREECE
Delta-P Technologies Ltd.
2, Grevenon Str.
GR-11855 Athens
Tel.: (0030) 210 3410181
Fax: (0030) 210 3410183
E-Mail: delta_pi@otenet.gr

H
MAGYARORSZÁG
HYDAC Hidraulika
és Szüréstechnika Kft.
Jász u. 152/A
H-1131 Budapest
Tel.: (0036) 1 359 93 59
Fax: (0036) 1 239 73 02
E-mail: hydac@axelero.hu

HK
HONG KONG
Hydac Technology (Hongkong) Ltd.
Unit 02 E, 10/F
East Ocean Centre
No. 98 Granville Road
Tsim Sha Tsui, Kln. Hong Kong
Tel.: (00852) 23 69 35 68
Fax: (00852) 23 69 35 67

I
ITALIA
HYDAC S.p.A.
Via Archimede, 76
I-20041 Agrate Brianza
Tel.: (0039) 039 / 642211
Fax: (0039) 039 / 6899682
Internet: www.hydac.it
E-mail: hydac@hydac.it

IND
INDIA
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A-58 TTC Industrial Area
MIDC, Mahape
IND-Navi Mumbai-400 701
Tel. (0091) 22-41 11 88 88/12/79
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IRAN
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Tel.: (0098) 21 / 8 88 35 18
Fax: (0098) 21 / 8 88 90 89

J
JAPAN
HYDAC Co. Ltd.
KSK Bldg. Main-2F
3-25-7 Hatchobori, Chuo-ku
Tokyo, 104-0032 Japan
Tel.: (0081) 3 / 3537-3620
Fax: (0081) 3 / 3537-3622

L
LUXEMBURG
FRIEDERICH-HYDROPART S.A.R.L.
Route d'Esch, C.P. 38
L-3801 Schifflange
Tel.: (00352) 54 52 44
Fax: (00352) 54 52 48

MAL
MALAYSIA
HYDAC Technology Sdn. Bhd.
No. 16 Jalan Pengacara U1/48
Temasya Industrial Park
MAL-40150 Shah Alalm
Tel.: (0060) 3 - 55670250
Fax: (0060) 3 - 55670252
E-mail: common@hydac.com.my

MEX
MEXICO
HYDAC International SA de CV
Pirul, 212
54090 Los Reyes Ixtacala
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MEXICO
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Fax: (0052) 555 / 390 23 34

N
NORGE
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Postboks 657
N-1401 SKI
Tel.: (0047) 64 85 86 00
Fax: (0047) 64 85 86 01
E-mail: firmapost@hydac.no

NL
NETHERLANDS
HYDAC B.V.
Vossenbeemd 109
NL-5705 CL Helmond
Tel.: (0031) 492 / 597470
Fax: (0031) 492 / 597480
E-mail: info@hydac.nl

NZ
NEW ZEALAND
HYDAC Ltd.
Unit 14, 13 Highbrook Drive
East Tamaki
NZ-Auckland
Tel.: (0064) 9271 4120
Fax: (0064) 9271 4124

P
PORTUGAL
Gustavo Cudell Lda.
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Internet: www.movicontrol.pt
E-Mail: geral@movicontrol.pt

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POLSKA
(Lithuania, Latvia)
HYDAC Sp. z o.o.
ul. Reymonta 17
PL-43-190 Mikołów
Tel.: (0048) 32 226 26 55, 32 326 29 00
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PRC
CHINA
HYDAC Technology (Shanghai) Ltd.
28 Zhongpin Lu
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P.R.C.-Shanghai 200245
Tel.: (0086) 21 / 64633510
Fax: (0086) 21 / 64300257
E-mail: hydacsh@hydac.com.cn

RUS
RUSSIA
HYDAC International
ul. 4-ya Magistralnaya, 5, office 31
RUS 123007 Moscow
Tel.: (007) 495 980 80 01-03
Fax: (007) 495 980 70 20
E-Mail: info@hydac.com.ru
Internet: www.hydac.com.ru

Technical Office St. Petersburg
Obvodnyi chanel emb., 138,
blok 101, of 401
RUS 190020 St. Petersburg
Tel.: (007) 812 495 94 62
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Technical Office Novokuznetsk
ul. Nevskogo, 1, office 300
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Tel./Fax: (007) 3843 99 13 45
E-Mail: novokuz@hydac.com.ru

Technical Office Ulyanovsk
ul. Efremova, 29, office 418
RUS 432042 Ulyanovsk
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RA
ARGENTINA
HYDAC TECHNOLOGY
ARGENTINA S.R.L.
Av. Belgrano 2729
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Tel.:(0054) 11 4727-1155/0770/2323
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E-Mail: argentina@hydac.com

RCH
CHILE
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Las Araucarias # 9080 - 9110
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RCH-8720041 Santiago de Chile
Tel.: (0056) 2 / 5 84 67 54
Fax: (0056) 2 / 5 84 67 55
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MAURICIO HOCHSCHILD S.A .I.C.
Avenida Senador
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RCH-Renca-Santiago
Tel.: (0056) 2 / 6 41 44 91, 6 41 11 95
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RI
INDONESIA
Hydac Technology Pte Ltd
Rep Office Indonesia
Perwate Tower - CBD Pluit
6th Floor, Suite A
Jl. Pluit Selatan Raya
RI-14440 Jakarta
Tel.: (006221) 300 27505
Fax: (006221) 300 27506
E-mail: info@hydac.co.id
Internet: www.hydac.co.id

ROK
KOREA
HYDAC Duwon Co.
4th floor Wonwook Bldg.
768-12 Bangbae, Seocho
ROK-Seoul 137-069
Tel.: (0082) 2/591 09 31
Fax: (0082) 2/591 09 32
E-mail: johnkim@hydackorea.co.kr

ROM
ROMANIA
HYDAC SRL
Str. Vanatori Nr. 5 B
RO-100576 Ploiesti
Tel.: (0040) 244 57 57 78
Fax: (0040) 244 57 57 79
E-Mail: hydac@hydac.ro

S
SVERIGE
HYDAC Fluidteknik AB
Domnarvsgatan 29
S-16308 Spånga
Tel.: (0046) 8 / 4452970
Fax: (0046) 8 / 4452990
Internet: www.hydac.se
E-mail: hydac@hydac.se

SGP
SINGAPORE
Hydac Technology Pte Ltd.
2A Second Chin Bee Road
Singapore 618781
Tel.: (0065) 6741 7458
Fax: (0065) 6741 0434

SK
SLOVAKIA
HYDAC, s.r.o.
Schmidtova 14
SK-03601 Martin
Tel.: (00421)-43-4135893, 4237394
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Fax: (00421)-43-4220874
E-mail: hydac@hydac.sk

SL
SLOVENIA
HYDAC d.o.o. Slovenia
Zagrebska c. 20
SL-2000 Maribor
Tel.: (00386) 2 / 460 15 20
Fax: (00386) 2 / 460 15 22
E-mail: info@hydac.si

T
THAILAND
Aerofluid Co. Ltd.
169/4, 169/5 Moo 1
Rangsit-Nakhonnayok Rd.
Lampakkud, Thanyaburi
Patumthanee 12130
Tel.: (0066) 2577 2999 (30 lines)
Fax: (0066) 2577 2700
Email: info@aerofluid.com

TR
TURKEY
HYDAC Ltd. Şti.
Namık Kemal Mahallesi
Adile Naşit Bulvarı
174 Sok. No.9
TR-Esenyurt - İstanbul
Tel.: (0090) 212 / 428 25 25
Fax: (0090) 212 / 428 70 37
E-mail: info@hydac.com.tr

TW
TAIWAN
HYDAC Technology Ltd.
No. 18 Shude 1st Lane, South District
TW-Taichung City/Taiwan 40242
Tel.: (00886) 4 / 2260 22 78
Fax: (00886) 4 / 2260 23 52
E-Mail: sales@hydac.com.tw

UKR
UKRAINE
HYDAC Ukraine
Büro Kiev
ul. Novokonstantinovskaya, 9,
Korpus 13, 2 Etage
UA 04080 Kiev
Tel.: (0038) 044 495 33 96
(0038) 044 495 33 97
Fax: (0038) 044 495 33 98
E-mail: info@hydac.com.ua

USA
USA
HYDAC TECHNOLOGY CORPORATION
HYCON Division
2260 City Line Road
USA-Bethlehem, PA 18017
Tel.: (001) 610 266-0100
Fax: (001) 610 266-3540
Internet: www.hydacusa.com
E-mail: sales@hydacusa.com

VN
VIETNAM
HYDAC International
E-Town Building, Mezzanine Floor
Executive office, Room 7,
364, Cong Hoa Street,
Tan Binh District
VN-Ho Chi Minh City
Tel.: (00848) 812 0545 Etx: 215 & 214
Fax: (00848) 812 0546

ZA
SOUTH-AFRICA
(Namibia, Zimbabwe)
HYDAC Technology Pty Ltd.
165 Van der Bijl Street
Edenvale 1614
ZA-Johannesburg
Tel.: (0027) 11 723 90 80
Fax: (0027) 11 453 72 37
hydacza@hydac.com

Hytec S.A.
P.O. Box 538
113 Koornhof Str. Meadowdale
ZA-Edenvale 1610
Tel.: (0027) 11 / 573 5400
Fax: (0027) 11 / 573 5401
E-mail: olivern@hytec.co.za

HYDAC **INTERNATIONAL**
HYDACFluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

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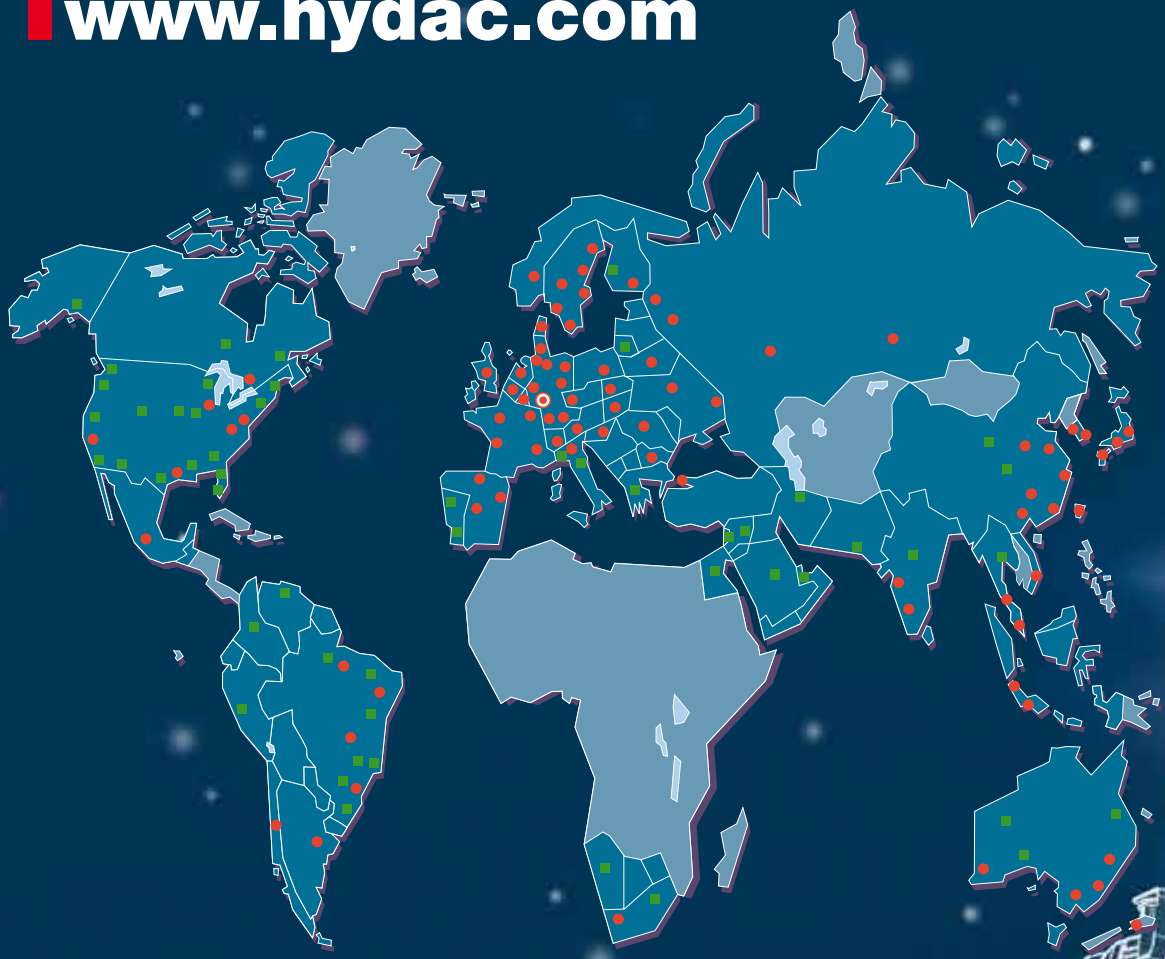

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HYDAC INTERNATIONAL

Head Office

HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Straße
66280 Sulzbach Germany

Tel: +49 (0)6897 - 509-01
Fax: +49 (0)6897 - 509-598

Internet: www.hydac.com
E-Mail: flutec@hydac.com

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