

HYDAC

INTERNATIONAL

Compact Hydraulics Product Catalogue





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.

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Compact Hydraulik

Compact Hydraulics

Hydraulique Compacte

Produktübersicht

Product Overview

Gamme de Produits



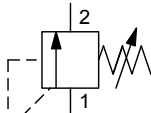
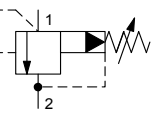
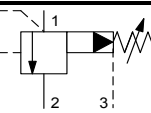
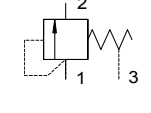
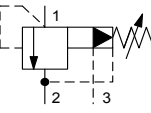
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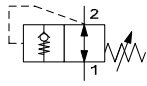
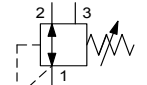
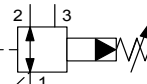
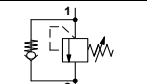
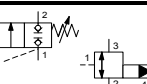
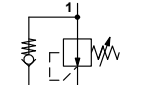
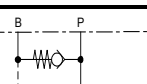
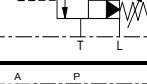
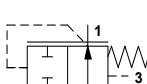

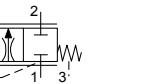
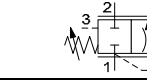
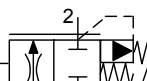
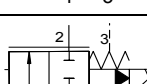
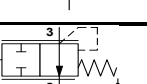

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c) Druck-, Strom-, Sperrventile Zwischenplatte Pressure, flow, check valves sandwich plate Valves de pression, de débit, clapets, à montage sandwich	
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Compact Hydraulik Compact Hydraulics Hydraulique 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. pression réglé où max pression à port x


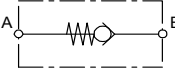
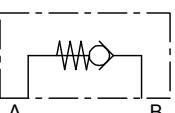

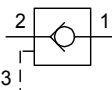
Bezeichnung Description Désignation	Symbol Symbol Symbole	Typ Type Type	Q _{max} [l/min]	p _{max} [bar]	Einbauraum Cavity Implantation	Prospekt Nr. Brochure no. Fiche technique n°	Seite page	
Druckventile Pressure valves Valves de pression								
Druckbegrenzungs- ventil direkt gesteuert Pressure relief 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 Pressure relief valve pilot operated - external vented Limiteur de pression piloté avec drainage des fuites externe		DB10SPE	120	350	U	FC10-S3	5.994.1	114
		DB12121PE	200	350	M	12121	5.996	116
	DB16121PE	300	350	M	16221	cf	-	-
		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

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
Druckregelventil direkt gesteuert Pressure reducing valve direct operated Régulateur de pression à pilotage direct		DMM10121	30	450	M	10121	5.169.9	124
		DR08-01	15	420 (207)	U	FC08-3	5.920	126
		DR10-01	60	420 (131)	U	FC10-3	5.950	128
		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 Pressure sequence valve Valve de séquence		DZ5E	20	350 (350)	M	06020	5.166	140
		DZM06020-01	30	350 (210)	M	06020	5.950.2	144
		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 Pressure Compensator upstream Balance de pression primeur		DW05830V-01	10	250	M	5830	5.195	156
		DW10V	57	350	U	FC10-S3	cf	-
		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 Pressure compensator balance de pression de mise à vide		DWM08130Z	40	250	M	05830	5.196	158
		DWM12130Z	90	250	M	12130	5.191.0	160
		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 Pressure compensator downstream Balance de pression secondaire		DWM12130Y	130	250	M	12130	5.192	162
		DWM10130R	60	250	M	10130	cf	-
		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 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
		DVE	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		5.119.1	190	
		DV-20	300	350				
		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				

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				
		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	-

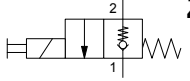
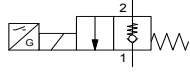
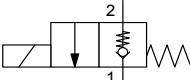
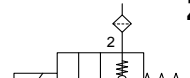
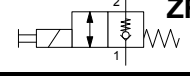
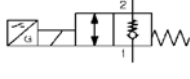
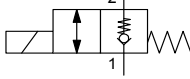
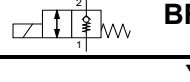
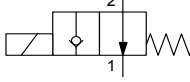
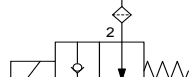
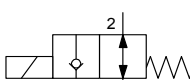
Einschraubventile								
Cartridge valves								
Valves à cartouche								
Bezeichnung Description Désignation	Symbol Symbol Symbole	Typ Type Type	Q _{max} [l/min]	p _{max} [bar]	Einbauraum Cavity Implantation	Prospekt Nr. Brochure no. Fiche technique n°	Seite page	
Sperrventile								
Shut-off valves								
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	Rohrleitungs- montage 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

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

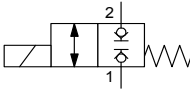
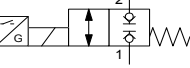
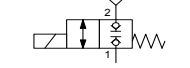
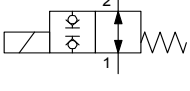
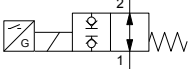
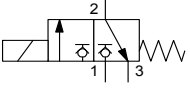
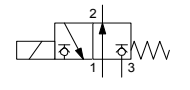
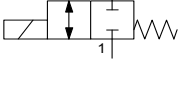
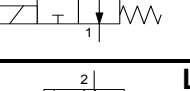
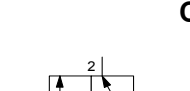
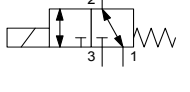
Einschraubventile							
Cartridge valves							
Valves à cartouche							
Bezeichnung Description Désignation	Symbol Symbol Symbole	Typ Type Type	Q _{max} [l/min]	p _{max} [bar]	Einbauraum Cavity Implantation		Prospekt Nr. Brochure no. Fiche technique n°
Rückschlagventil hydraulisch entsperrb. mit Leckölanschluss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

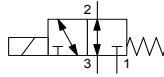
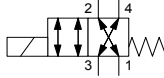
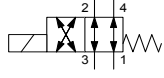
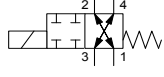
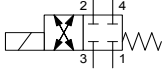
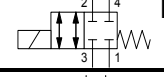

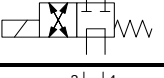
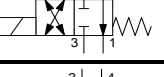

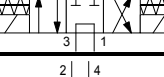
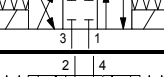
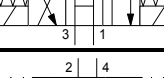

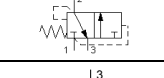

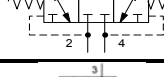
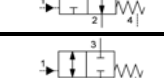

Einschraubventile Cartridge valves Valves à cartouche									
Bezeichnung Description Désignation	Symbol Symbol Symbole	Type Type Type	Q _{max} [l/min]	p _{max} [bar]	Einbauraum Cavity Implantation	Prospekt Nr. Brochure no. Fiche technique n°	Seite page		
Wegeventile - magnetbetätigt Directional valves - 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		Z	WS06Z-01	20	350	U	FC06-2	5.146	618
normally closed			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
Valve à clapet 2/2 NF			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
normallement fermé			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
2/2-Sitzventil normal offen		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
2/2-Poppet valve normally open			WS12Y-01	110	350	U	FC12-2	5.998.2	342
			WS16Y-01	150	350	U	FC16-2	5.940	344
Valve à clapet 2/2 normallement ouvert			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

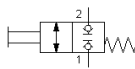
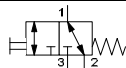
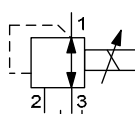
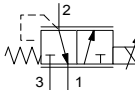
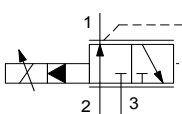
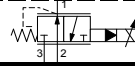
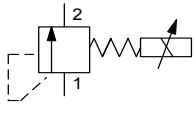
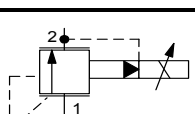
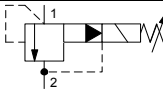
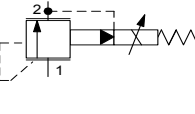
Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung

Products with hydraulic datas in italic letters are in preparation

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

Einschraubventile								
Cartridge valves								
Valves à cartouche								
Bezeichnung Description Désignation	Symbol Symbol Symbole	Type Type Type	Q _{max} [l/min]	p _{max} [bar]	Einbauraum Cavity Implantation		Prospekt Nr. Brochure no. Fiche technique n°	Seite page
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
		WK08130D-01	25	350	M	08130	5.977	430
		WK08130D-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
		WK08140Y	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
		WK08140X	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 WK08140EB	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

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	
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

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
Proportional Druckbegrenzungsventil 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 Druckbegrenzungsventil fernsteuerbar Proportional pressure relief valve remote controlled 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

Spulen 40 mm lang, Ø36 für Schaltventile

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40-1836

Coils 40 mm long, Ø36 for solenoid valves

Bobines 40 mm longue, Ø36 pour électrovalves

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						
Anschlusstecker Typ G Connector type G Connecteur type G	12DG-40-1836 24DG-40-1836 115AG-40-1836 230AG-40-1836	12 VDC 24 VDC 115 VAC 230 VAC	Anschlusstecker 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
Anschlusstecker Typ T Connector type T Connecteur type T	12DT-40-1836 24DT-40-1836	12 VDC 24 VDC	Anschluss Junior Timer 2 polig, radial, Connector Junior Timer 2 poles, radial Connecteur Junior Timer, 2 pôles, radial			
Anschlusstecker Typ K Connector type K Connecteur type K	12DK-40-1836 24DK-40-1836	12 VDC 24 VDC	Kostal- Schraubanschluss, Kostal screwed Connector Connecteur Kostal			
Anschlusstecker Typ L Connector type L Connecteur type L	12DL-40-1836 24DL-40-1836	12 VDC 24 VDC	Spule mit 2 freien Litzen, 0,75mm², Connector 2 free cables 0,75mm² Bobine avec 2 conducteurs 0,75mm²			
Anschlusstecker Typ N Connector type N Connecteur type N	12DN-40-1836 24DN-40-1836	12 VDC 24 VDC	Deutsch-Stecker, Connector "Deutsch" Connecteur "Deutsch"			

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						
Anschlusstecker Typ G Connector type G Connecteur type G	12DG-50-1836	12 VDC	Anschlusstecker 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				
Anschlusstecker 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				
Anschlusstecker 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				
Anschlusstecker 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				
Anschlusstecker 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 proportionnelles

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.						
Anschlusstecker Typ G Connector type G Connecteur type G	12PG-2.2-40-1836	12 VDC	Anschlusstecker nach EN 175301, Connector EN 175301 Connecteur EN 175301	5.215	PDR08P-01...	568
	24PG-8.8-40-1836	24 VDC			PDR10P-01... PDB08-01... PDB08P-01... PDB10P-01... /SPE...	
Anschlusstecker 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..	
	24PT-40-1836	24 VDC			PDB16P-01... PDB08PZ-01.. PDB10PZ-01.. PDB12PZ-01... PDB16PZ-01... PDBM10120AP...	
Anschlusstecker 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		PDB12121PE... PF... PDB16221PE...	
	24PL-8.8-40-1836	24 VDC			PDR08-01 / -02 / -50 PDR08-02T... PWK12120WP...	
Anschlusstecker Typ N Connector type N Connecteur type N Connecteur type N	12PN-2.2-40-1836	12 VDC	Deutsch-Stecker, Connector "Deutsch" Connecteur "Deutsch"			
	24PN-8.8-40-1836	24 VDC				

Spulen 50 mm lang, Ø36 für Proportionalventile

Coils 50 mm long, Ø36 for proportional valves

Bobines 50 mm longue, Ø36 pour valves proportionnelles

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 proportionnelles						
Anschlusstecker Typ G Connector type G Connecteur type G	12PG-4.1-50-1836	12 VDC	Anschlusstecker 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				
Anschlusstecker 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				
Anschlusstecker 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				
Anschlusstecker 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						
Anschlusstecker Typ G Connector type G Connecteur type G *Leitungsdose mit Gleichrichter *Connector with rectifier diode *Connecteur avec diode	2610160 2610161 2610156 2610159 2610156 + 2600582* 2610159 + 2600582*	12 VDC 24 VDC 105 VDC 205 VDC 120 VAC 230 VAC	Anschlusstecker nach EN 175301-803 Connector EN 175301-803 Connecteur EN 17530-803	5.155.0	für Miniventile WS06... Wk06... for Minivalves pour programme Minivalves	638
Anschlusstecker Typ N Connector type N Connecteur type N	2610149 2610150	12 VDC 24 VDC	Deutsch-Stecker, Connector "Deutsch" Connecteur "Deutsch"			
Anschlusstecker 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			
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

 Products with hydraulic datas in italic letters are in preparation
 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. Catalogue/ 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	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	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	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

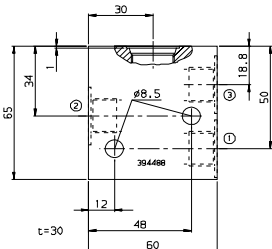
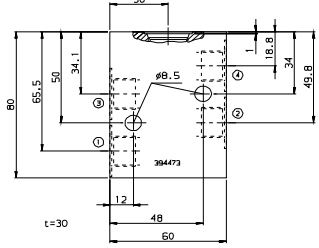
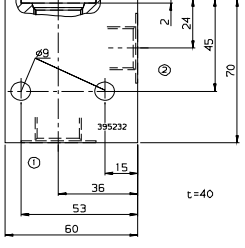
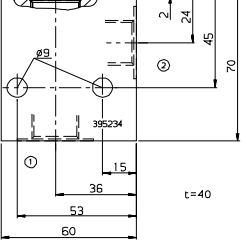
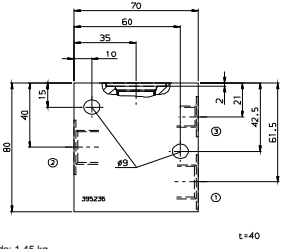
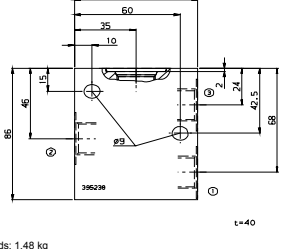
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Anschlussgehäuse ISO/metrisch

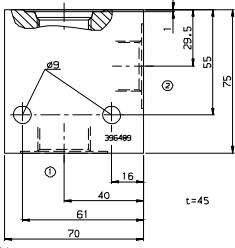
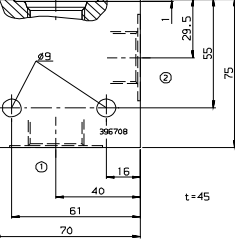
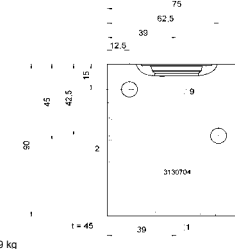
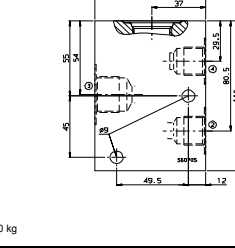
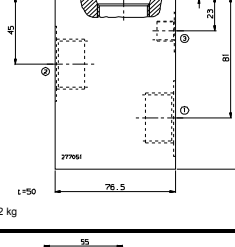
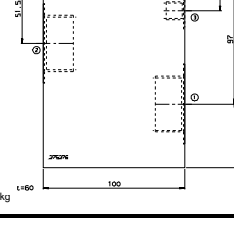
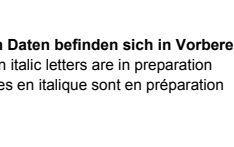
Connection Housings ISO/metric
Blocs de Raccordement ISO métrique

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

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Anschlussgehäuse ISO/metrisch

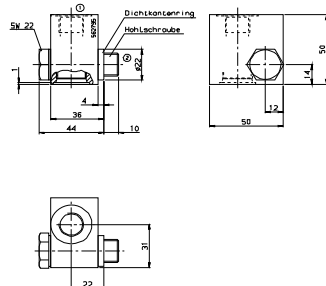
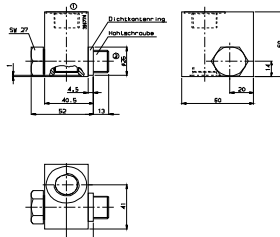
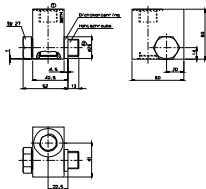
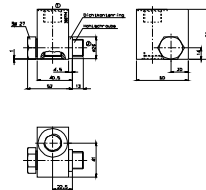
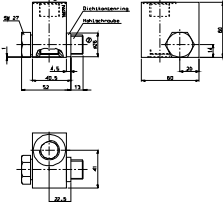
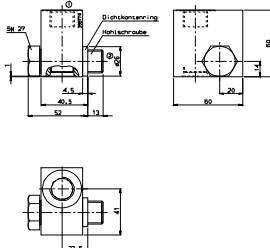
Connection Housings ISO/metric
Blocs de Raccordement ISO métrique

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		DB12120A PDBM12120APZ PWK12120W PWK12120WP	5.169.1 5.169.2 5.991.9 5.991.8	576
396708	R12120-10X-01	① G 3/4 ② G 3/4		WSM12120Z WSM12120ZR WSM12120Y WSM12120YR WSM12120W (01E) WSM12120V (01E) PWK12120 V W	5.948.3 5.948.5 5.948.2 5.948.4 5.948.7 5.948.6	577
396707	R12120-10X-02	① M 27 x 2 ② M 27 x 2				
3130704	R12121-01X-01	① G 3/4 ② G 3/4 ③ G 3/8		DB12121PE DB12121PF PDB12121PE PDB12121PF DWM12121Z B/H DWM12121ZD DWM12121Z MD... RSM12121	5.996 5.997 5.191.2 5.191.1 5.933	577
560705	R12230-01X-01	② G 1/2 ③ G 3/4 ④ G 1/2		ST12230	5.122	578
277051	R16021-01X-01	① G 1 ② G 1 ③ G 1/4		ERVE16021 SBVE-R1	5.172 5.177	578 578
275276	R20021-01X-01	① G 1 1/4 ② G 1 1/4 ③ G 1/4		ERVE20021	5.172	578

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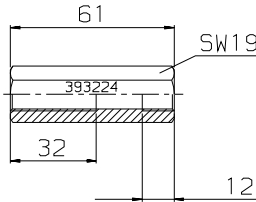
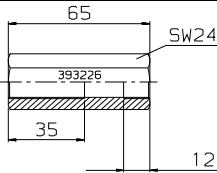
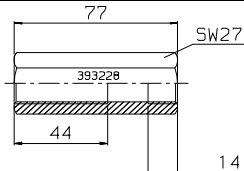
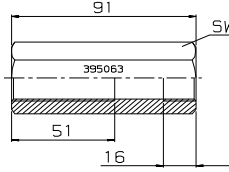
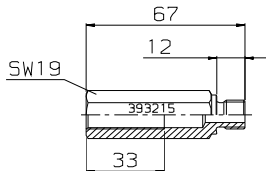
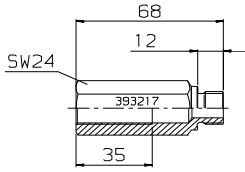
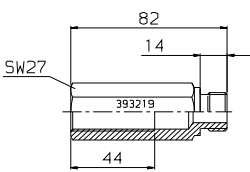
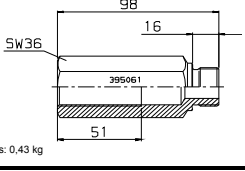
Connection Housings ISO/metric
Blocs de Raccordement ISO métrique

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. Catalogue/ 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 Hohlsschraube 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	
3013989	ASR082-01X-01-5 Q=5,0-7,5 l/min Baugruppe ohne Schaltventil	M14 x 1,5		WS08Y	5.917	-
				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. Catalogue/ Fiche technique n°	Seite page
Leitungsgehäuse Internal valve housing Bloc de raccordement						
393224	XX05520-01X	G 1/4	 <p>Masse, weight, poids: 0,09 kg</p>	SRE1	5.118	580
	Auf Anfrage On request Sur demande	M 14x1,5		RBE-R 1/4	5.174	
393226	XX08520-01X	G 3/8	 <p>Masse, weight, poids: 0,15 kg</p>	SRE2	5.118	580
	Auf Anfrage On request Sur demande	M 18x1,5		RBE-R 3/8	5.174	
393228	XX10520-01X	G 1/2	 <p>Masse, weight, poids: 0,19 kg</p>	SRE3	5.118	580
	Auf Anfrage On request Sur demande	M 22x1,5		RBE-R 1/2	5.174	
395063	XX12520-01X	G 3/4	 <p>Masse, weight, poids: 0,44 kg</p>	SRE4	5.118	580
	Auf Anfrage On request Sur demande	M 27x2		RBE-R 3/4	5.174	
393215	XB05520-01X	G 1/4	 <p>Masse, weight, poids: 0,09 kg</p>	SRE1	5.118	580
	Auf Anfrage On request Sur demande	M 14x1,5		RBE-R 1/4	5.174	
393217	XB08520-01X	G 3/8	 <p>Masse, weight, poids: 0,14 kg</p>	SRE2	5.118	580
	Auf Anfrage On request Sur demande	M 18x1,5		RBE-R 3/8	5.174	
393219	XB10520-01X	G 1/2	 <p>Masse, weight, poids: 0,20 kg</p>	SRE3	5.118	580
	Auf Anfrage On request Sur demande	M 22x1,5		RBE-R 1/2	5.174	
395061	XB12520-01X	G 3/4	 <p>Masse, weight, poids: 0,43 kg</p>	SRE4	5.118	580
	Auf Anfrage On request Sur demande	M 27x2		RBE-R 3/4	5.174	

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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. Catalogue/ 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	
560919	FH082-SB3			DB08A DB08P	5.922 5.922.1		
				RV08A	5.912		
				SD08 SR08	5.928 5.930		
				WS08Z (-01E)	5.907 5.907.2		
				WS08ZR (-01E)	5.911 5.994.1		
				WS08Y (-30)	5.917 5.992		
				WS08YR (BR)	5.908 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)	5.906 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		
				PDR08-50			
				WS08C WK08C 5.906		
				PDR08-02	5.990.3		
3116230	FH083-SM14F	① M14x1,5 ② M14x1,5 ③ M14x1,5					
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			

Anschlussgehäuse ISO/metrisch

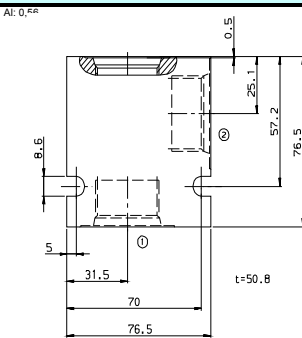
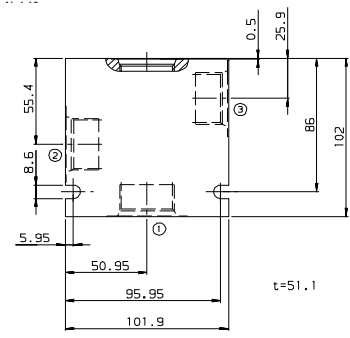
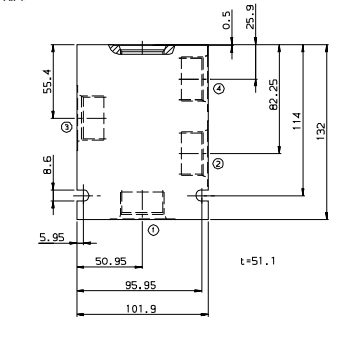
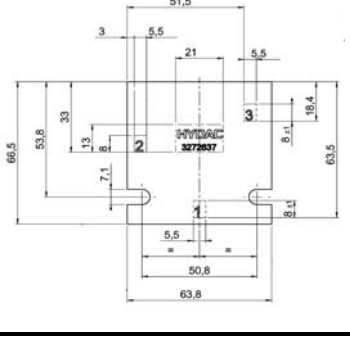
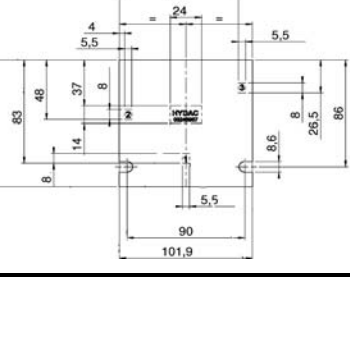
Connection Housings ISO/metric
Blocs de Raccordement ISO métrique

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. Catalogue/ 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					

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

Anschlussgehäuse ISO/metrisch

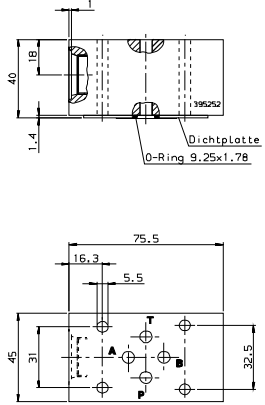
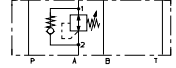
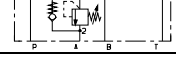
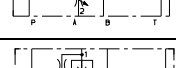
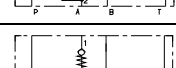
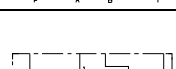
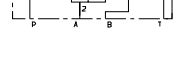
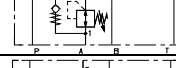
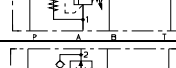
Connection Housings ISO/metric
Blocs de Raccordement ISO métrique

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		

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

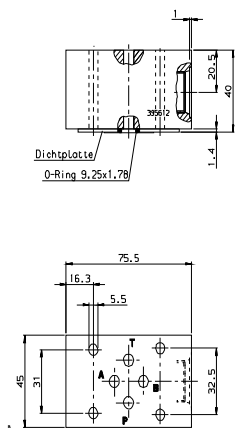
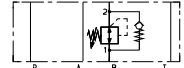
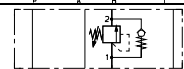
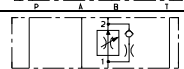
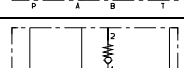

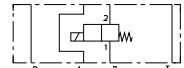
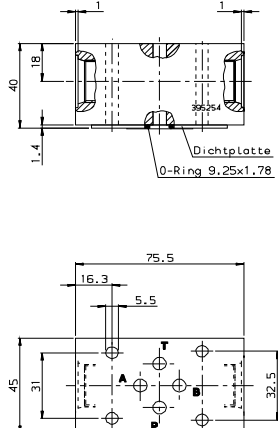
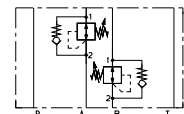
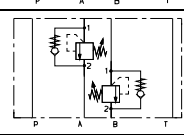
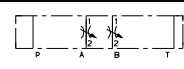
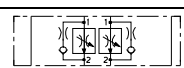
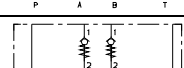

Stand 01-2013

Best.-Nr. Order-No. Code article	Typ Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Catalogue/ 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	5.169.8		587
			DZ5E	5.166		
			DZM06020	5.950.2		
			DV5E	5.113		
			DV5E	5.113		
			SR5E	5.117		
			RVM06020	5.193		
			WSM06020W-61	5.949.3		
			WSM06020Z	5.943		
			WSM06020ZR (-J)	5.946		
			WSM06020Y	5.947		
			WSM06020YR	5.948		
			WSM06020W	5.949		
			WSM06020V	5.949.1		
			WSM06020W M	5.949.2 5.943.3		

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. Catalogue/ Fiche technique no.	Symbol 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		
			WSM06020W-61	5.949.3		
			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		DSR5E	5.169.8		589
			DZ5E	5.166		
			DZM06020	5.950.2		
			WSM06020W-61	5.949.3		
			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		

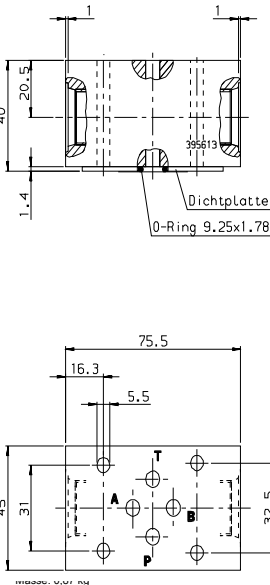
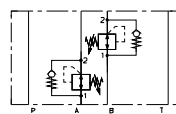
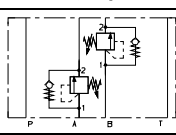
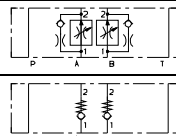
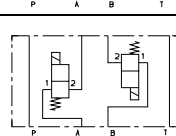
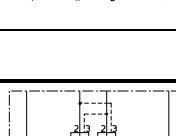
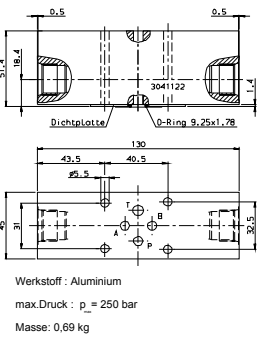
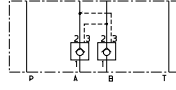
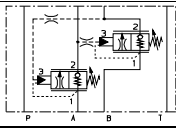
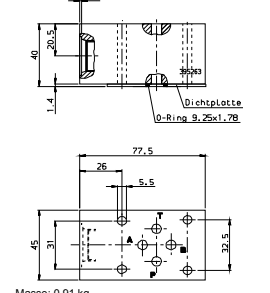
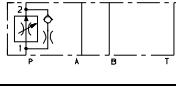
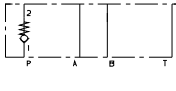
Masse: 0,87 kg

Masse: 0.87 kg

Zwischenplattengehäuse

Sandwich Plate Housings

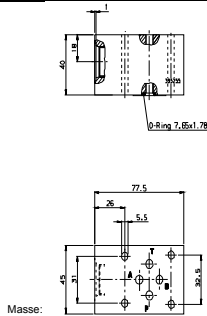
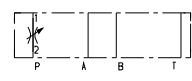
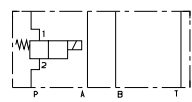
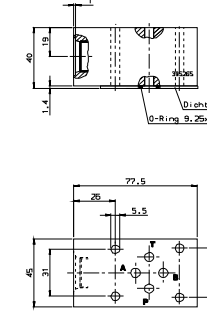
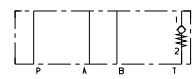
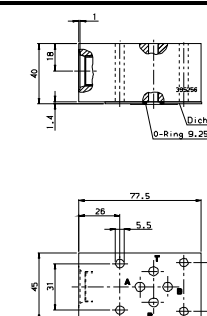
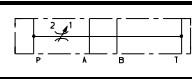

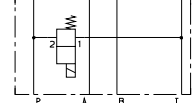
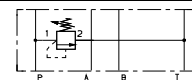
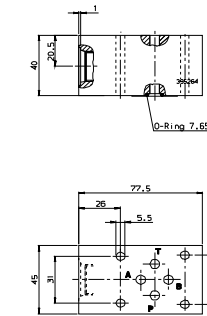
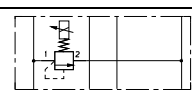
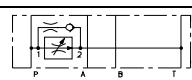
Plaques pour montage sandwich

Best.-Nr. Order-No. Code article	Typ Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Catalogue/ 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	 <p>Werkstoff : Aluminium max.Druck : $p_n = 250$ bar Masse: 0,69 kg</p>	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	 <p>Masse: 0,91 kg</p>	SR5E	5.117		590
			RVM06020 /-06	5.193		

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. Catalogue/ Fiche technique no.	Symbol Symbol Symbole	Seite page
395255	ZP06020-10X Einschraubventil in Leitung P Cartridge valve in line P Valve à visser sur P	 Masse: 0,91 kg	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 utilisation du DB4E seulement 350 bar!	 Masse: 0,91 kg				591
			PDBM06020	5.978		
			SR5E	5.117		

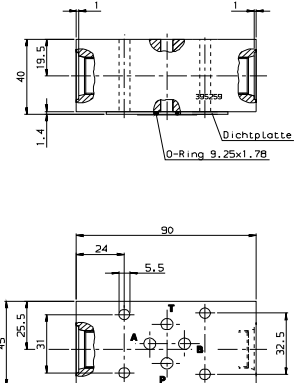
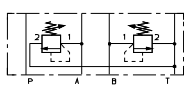
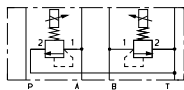
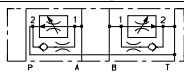
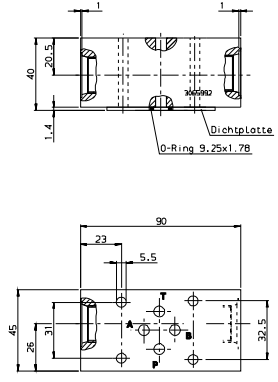
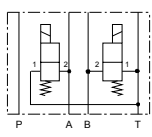
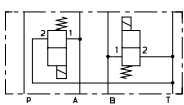
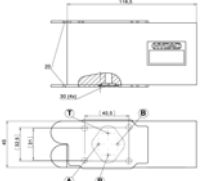
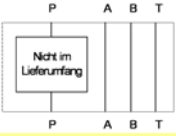
Plaques pour montage sandwich

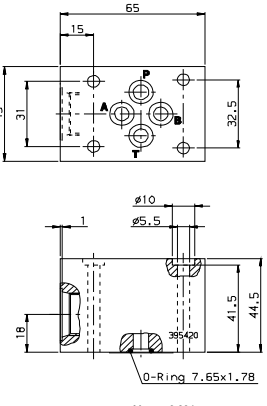
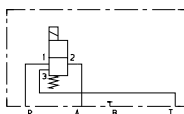
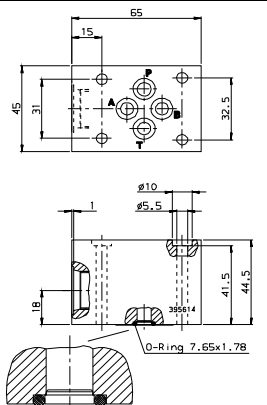
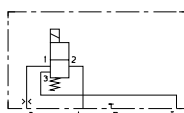
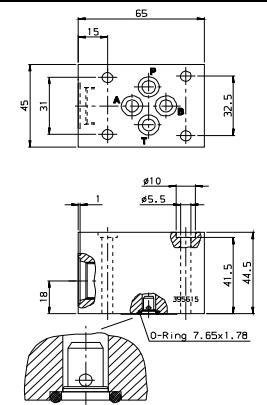
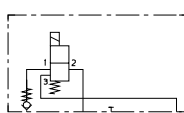
Best.-Nr.	Type	Abmessungen	Ventile	Datenblatt-Nr.	Symbol	Seite page
Order-No.	Type	Dimensions	Valves	Brochure/ Data Sheet-No.	Symbol	
Code article	Type	Dimensions	Valves	Catalogue/ Fiche technique no.	Symbole	

Zwischenplattengehäuse

Sandwich Plate Housings

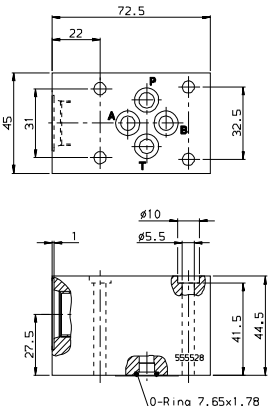
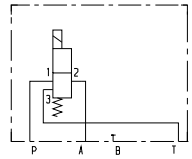
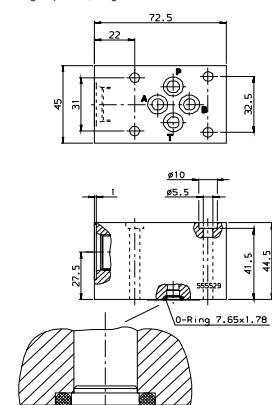
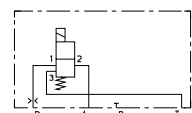
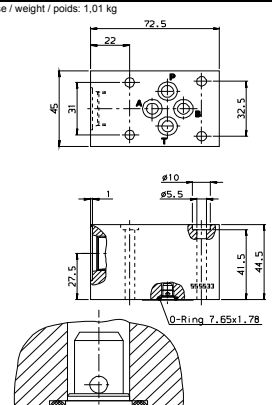
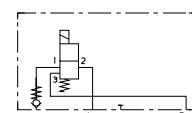
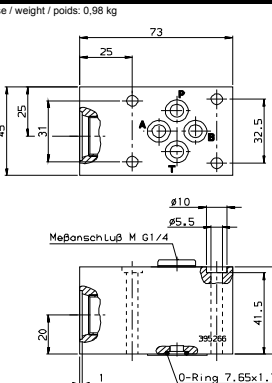
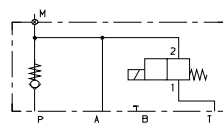
Plaques pour montage sandwich

Best.-Nr. Order-No. Code article	Type Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Catalogue/ 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 utilisation 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		
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	

Best.-Nr. Order-No. Code article	Typ Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Catalogue/ Fiche technique no.	Symbol Symbol Symbole	Seite page
395420	D03230-01X	 <p>Masse: 0.89 kg</p>	WSM03230	5.203		596
		<p>*= bei Einsatz des WSE3 nur bis 350 bar! * 350 bar only by using WSE3 * par utilisation du WSE3 seulement 350 bar!</p>				
395614	D03230-11X	 <p>Masse: 0.89 kg</p>	WSM03230	5.203		596
	<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 perçage doit être < 6,5mm!</p>	<p>mit Blende with orifice avec jigsaw</p>	<p>*= bei Einsatz des WSE3 nur bis 350 bar! * 350 bar only by using WSE3 * par utilisation du WSE3 seulement 350 bar!</p>			
395615	D03230-30X	 <p>Masse: 0.90 kg</p>	WSM03230	5.203		596
	<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 perçage doit être < 6,5mm!</p>	<p>mit Rückschlagventil with check valve avec clapet anti-retour</p>	<p>*= bei Einsatz des WSE3 nur bis 350 bar! * 350 bar only by using WSE3 * par utilisation du WSE3 seulement 350 bar!</p>			

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. Catalogue/ 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	Masse / weight / poids: 1,00 kg  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 perçage doit être < 6,5mm! Einsteckbohrung	WSM08130C WKM08130C WKM08130D WSM08130D /-13	5.935 5.976 5.977 5.977.1		597
555533	D08130-30X	Masse / weight / poids: 1,01 kg  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 perçage doit être < 6,5mm! Einsteckrückschlagventil	WSM08130C WKM08130C WKM08130D WSM08130D /-13	5.935 5.976 5.977 5.977.1		597
395266	DA06020-01X	Masse / weight / poids: 0,98 kg  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	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

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	Type Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Catalogue/ 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	<p>Masse / weight / poids: 0,98 kg</p>	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 utilisation du DB4E seulement 350 bar!	<p>Masse, weight, poids: 0,69 kg</p>	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		

Plattenaufbaugehäuse

Subplate bodies

Blocs flasquables

Best.-Nr. Order-No. Code article	Type Type Type	Abmessungen Dimensions Dimensions	Ventile Valves Valves	Prospekt/ Datenblatt-Nr. Brochure/ Data Sheet-No. Catalogue/ 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		DB4E*	5.161		600
			DB4E (-25X)			
			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		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 perçage doit être < 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		

Industrieventile

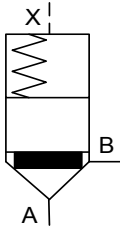
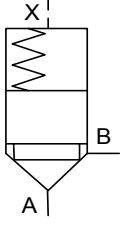
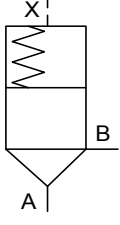
Industrial valves
Valve industrielles

Bezeichnung Description Désignation	Symbol Symbol Symbole	Typ Type Type	Q _{max} [l/min]	p _{max} [bar]	Verwen- dung Use Usage	Strömungs- richtung Flow direction Direction du débit	Prospekt Nr. Brochure no. Fiche technique no▪	Seite page
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2-Wege Einbauventile und Deckel

2-port slip-in cartridge valves with covers

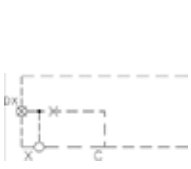
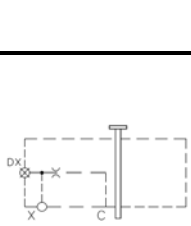
Éléments logiques avec plaque de fermeture

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

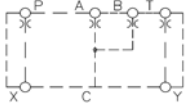
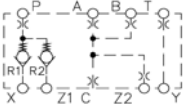
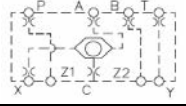
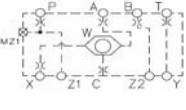
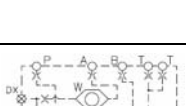
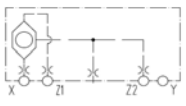
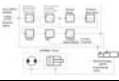
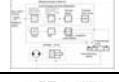
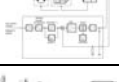
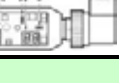
Covers for 2-port slip-in cartridge valves

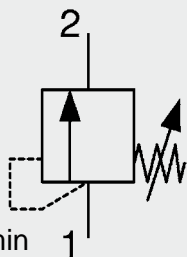
Couvercles pour valves logiques

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		

Produkte mit kursiven hydraulischen Daten befinden sich in Vorbereitung

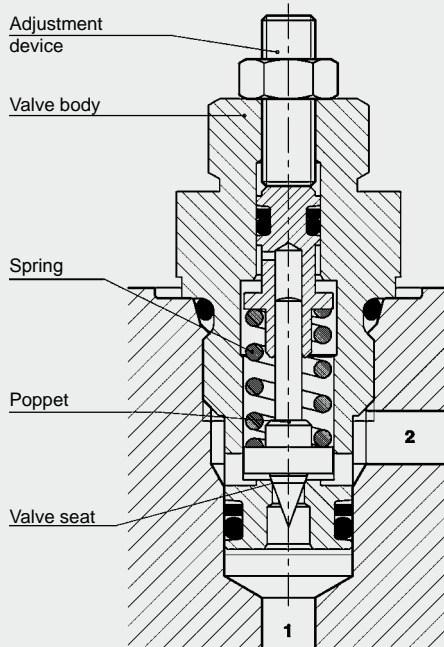
Products with hydraulic datas in italic letters are in preparation
Les produits avec caractéristiques en italique sont en préparation

Industrieventile								
Industrial valves								
Valve industrielles								
Bezeichnung Description Désignation	Symbol Symbol Symbole	Typ Type Type		P _{max} [bar]	Verwen- dung Use Usage	Strömungs- richtung 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 électroniques pour valve proportionnelles								
			Volt	Watt				
Ansteuerelektronik für Proportionalventile		PEK-SRA	22-30 VDC	20-45 W	Europakartenformat	5.249.4.1	1054	
Electronic control for proportional valves		PEK-WAR	22-30 VDC	45 W	Europakartenformat	5.249.1	1058	
Contrôle électronique pour valve proportionnelles		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							5.249.19	858
Accessories for industrial valves								
Accessoires pour valves industrielles								



Up to 15 l/min
Up to 350 bar

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.

Pressure Relief Valve Poppet Type, Direct-Acting Metric Cartridge – 350 bar DB3E

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 mm ² /s to max. 420 mm ² /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

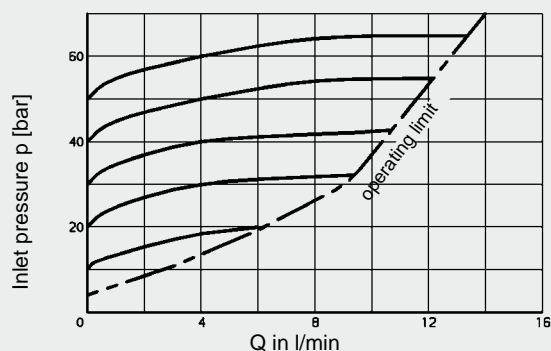
Other line bodies on request

Seal kits

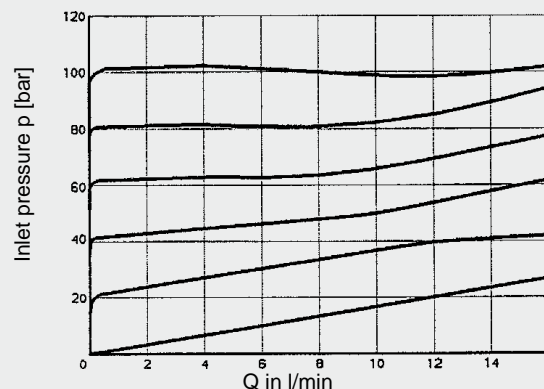
Code	Part No.
SEAL KIT DB3E...FKM	715797

PERFORMANCE

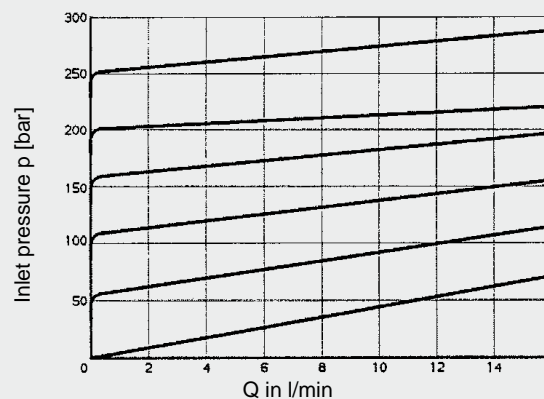
Pressure range ... 50 bar



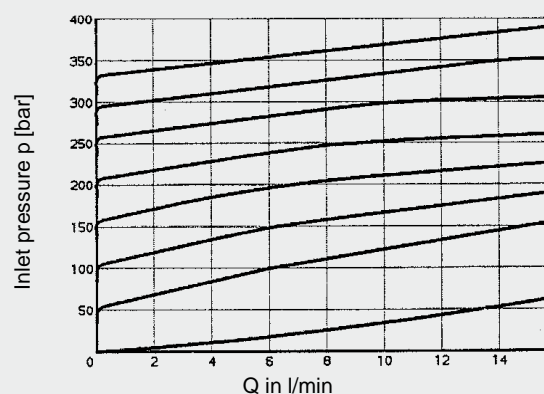
Pressure range ... 100 bar

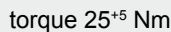


Pressure range ... 250 bar

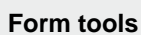


Pressure range ... 350 bar



Type of adjustment **F**

05220



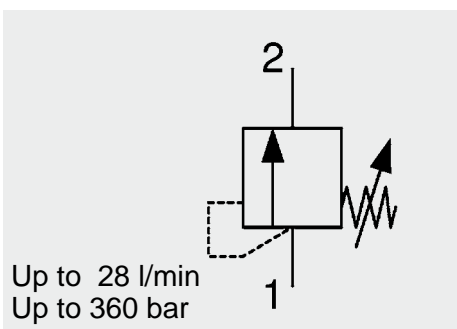
Tool	Part No.
Countersink	170040
Reamer	1014203
Tap	1002605
Plug gauge	172827

NOTE

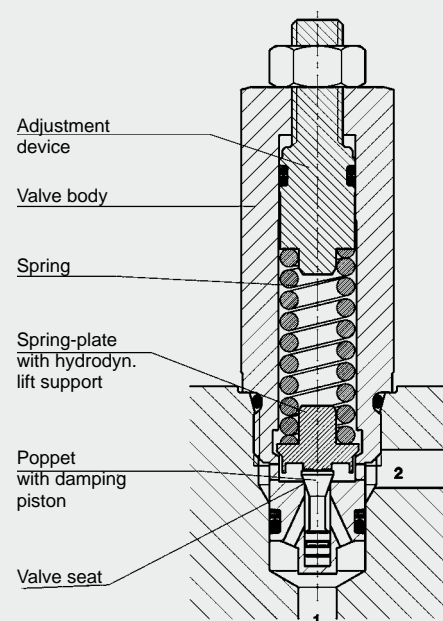
NOTE The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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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 $p_{2, \max} = 0 \text{ bar!}$
- 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!

Pressure Relief Valve Poppet Type, Direct-Acting Metric Cartridge – 360 bar DB4E-CE + TÜV Type Approved

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 $\approx 0,25 \text{ cm}^3/\text{min}$ 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 mm ² /s to max. 420 mm ² /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

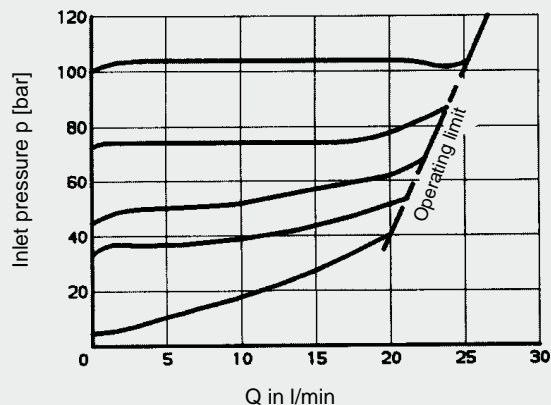
Code	Part No.
SEAL KIT 06020-FKM	3262477

DOCUMENTATION

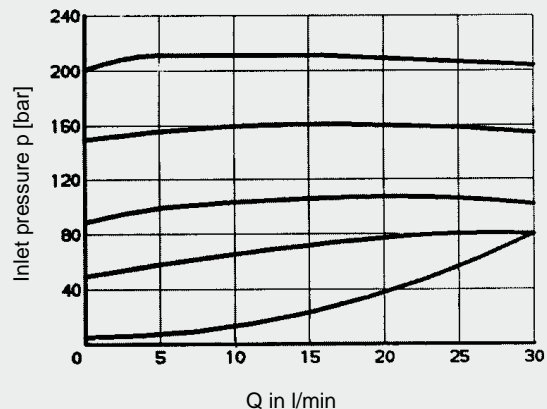
Each valve is supplied with an Operating Manual in accordance with the Pressure Equipment Directive.

PERFORMANCE

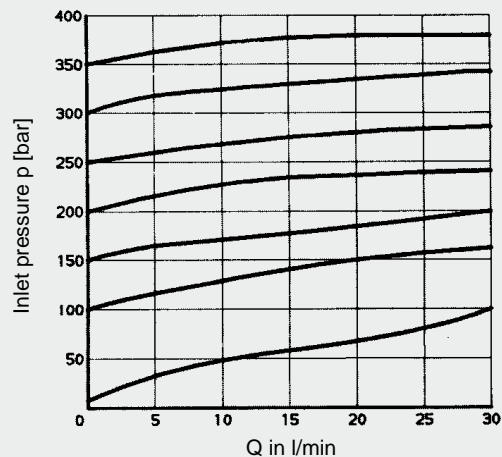
Pressure range ... 100 bar



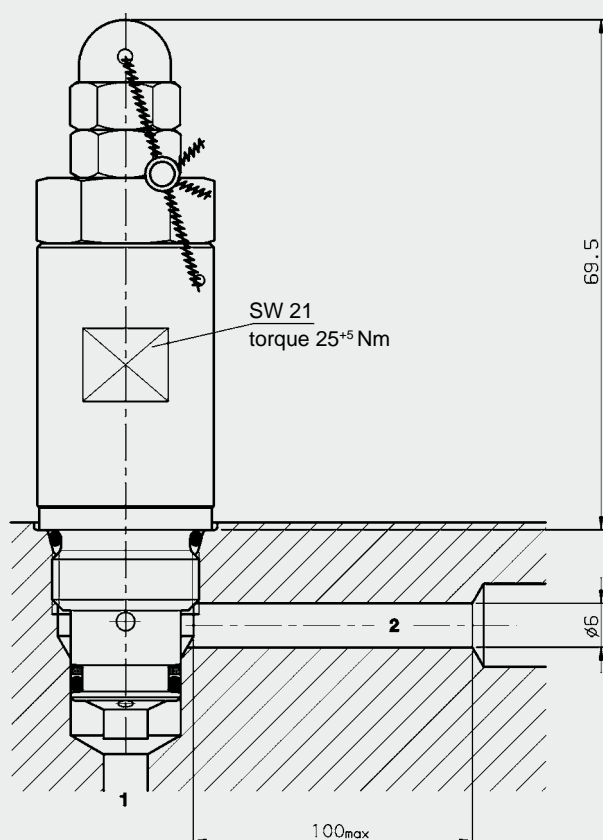
Pressure range ... 200 bar



Pressure range ... 360 bar

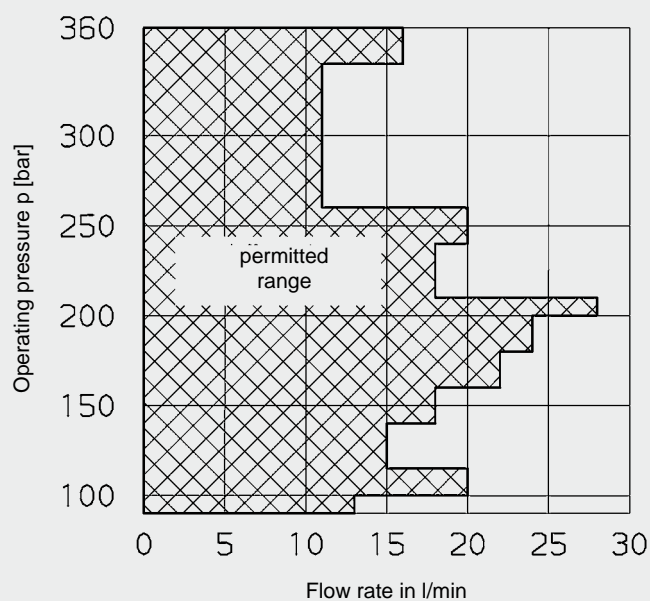


DIMENSIONS

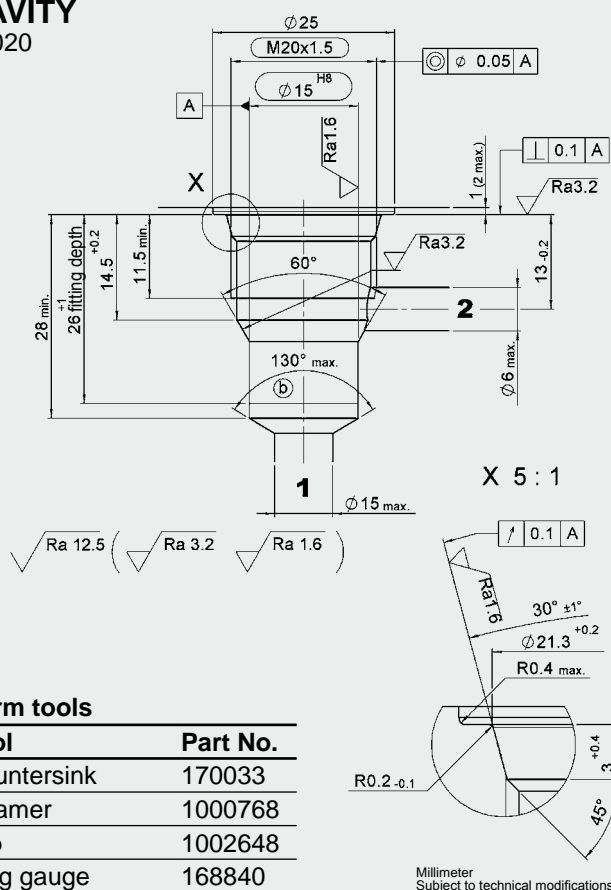


Millimeter
Subject to technical modifications

APPLICATION RANGE



CAVITY
06020



Form tools

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

NOTE

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Subject to technical modifications.

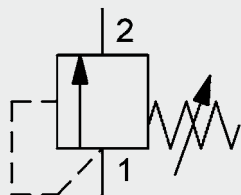
HYDAC Fluidtechnik GmbH

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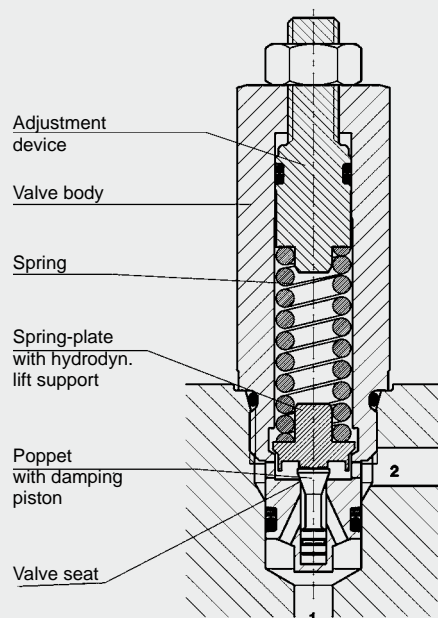
Tel: 0 68 97 /509-01

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



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.

Pressure Relief Valve Poppet Type, Direct-Acting Metric Cartridge – 630 bar DB4E

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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

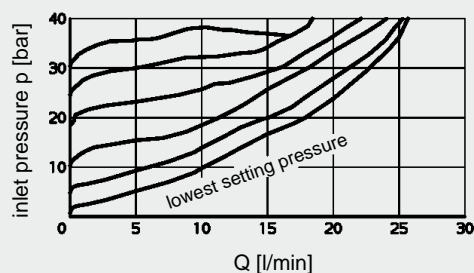
Other line bodies on request

Seal kits

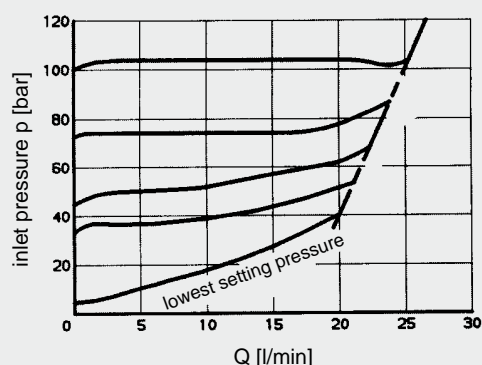
Code	Part No.
SEAL KIT 06020-FKM	3262477
SEAL KIT 06020-NBR	3119017

PERFORMANCE

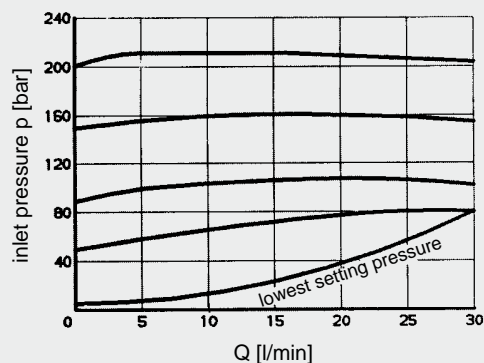
Pressure range ... 30 bar



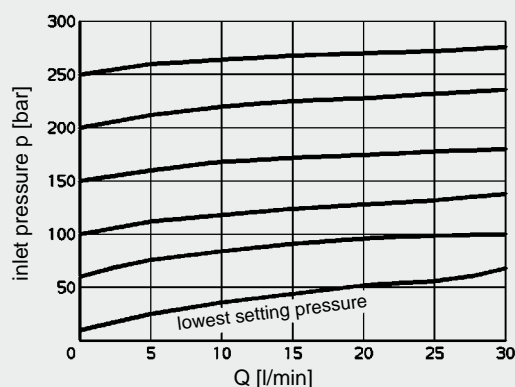
Pressure range ... 100 bar



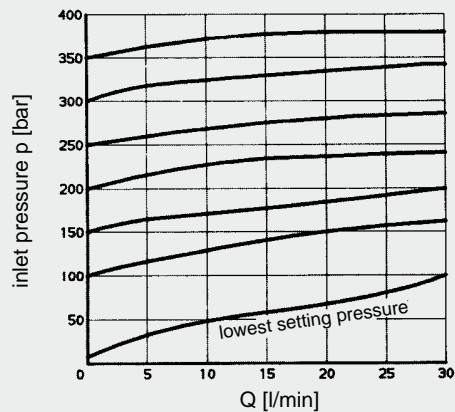
Pressure range ... 200 bar



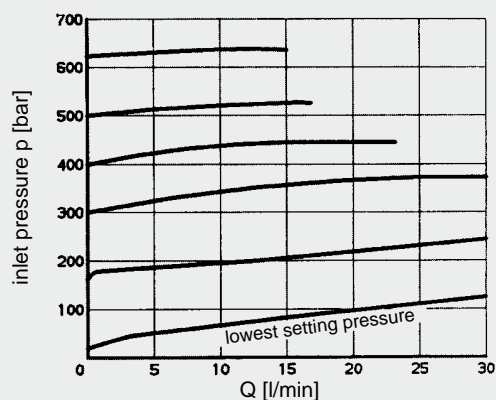
Pressure range ... 250 bar



Pressure range ... 350 bar

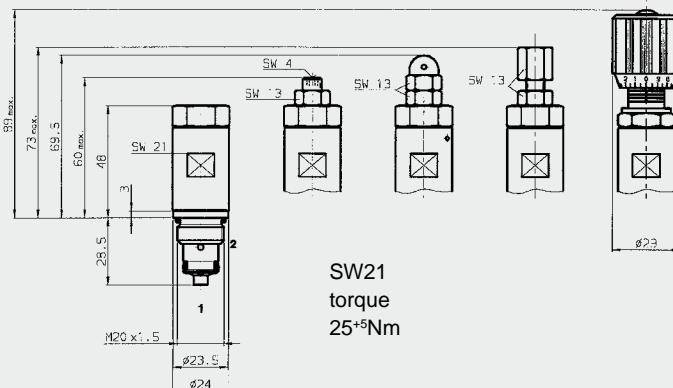


Pressure range ... 630 bar



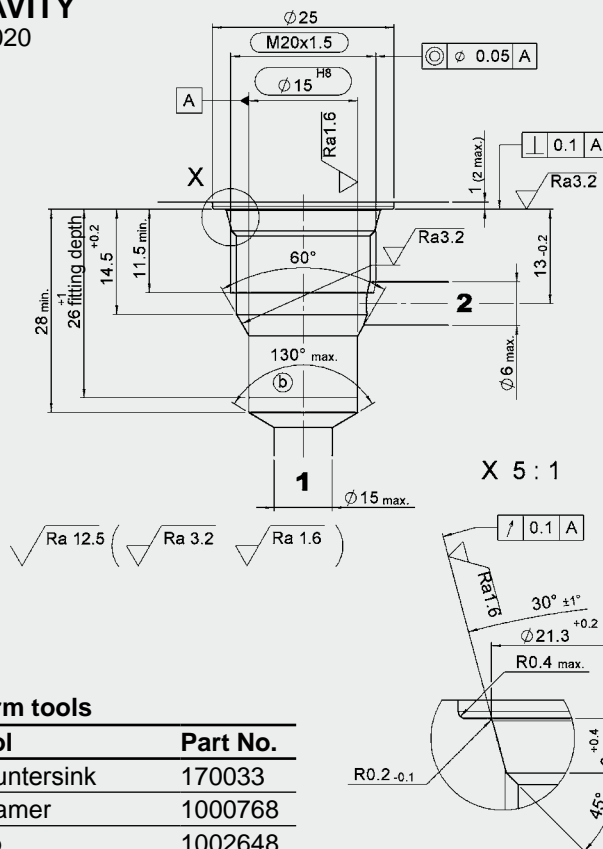
DIMENSIONS

Type of adjustment



Millimeter
Subject to technical modifications

CAVITY 06020



Form tools

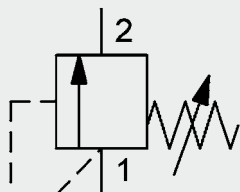
Tool	Part No.
Countersink	170033
Reamer	1000768
Tap	1002648
Plug gauge	168840

Millimeter
Subject to technical modifications

NOTE

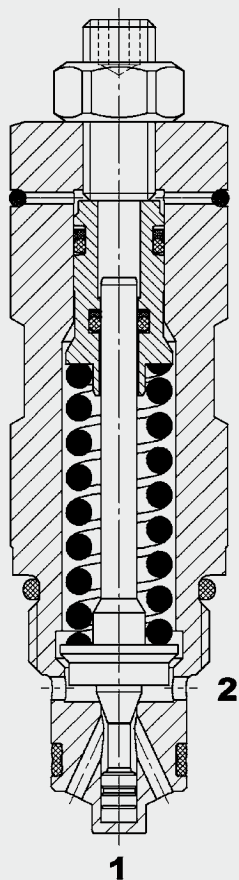
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Subject to technical modifications.

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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.

Pressure Relief Valve Poppet Type, Direct-Acting with Atmospheric Relief Metric Cartridge – 350 bar DB4E-25X

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 $\hat{=}$ 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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

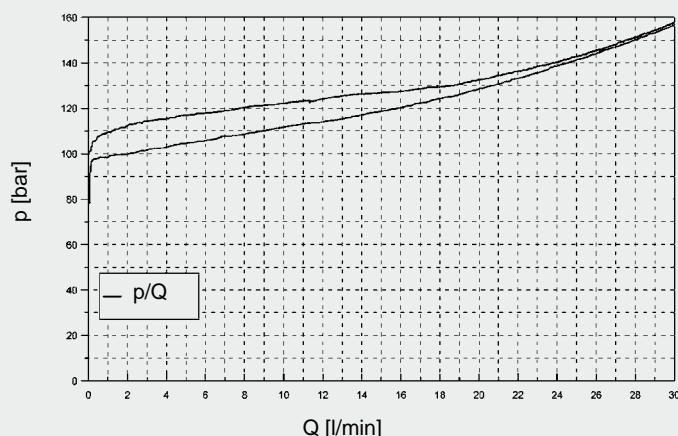
Standard in-line bodies

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

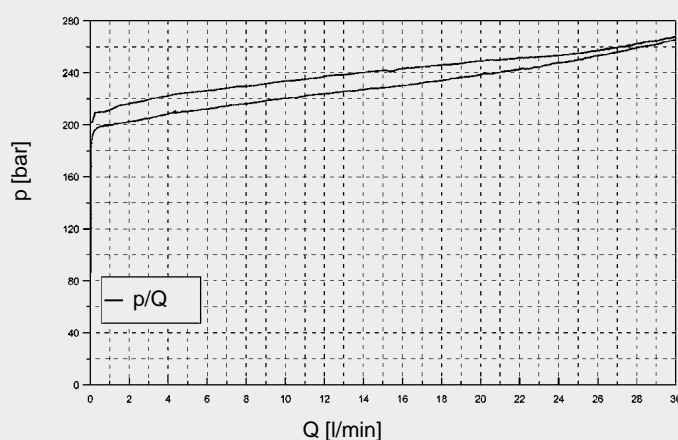
Other line bodies on request

PERFORMANCE

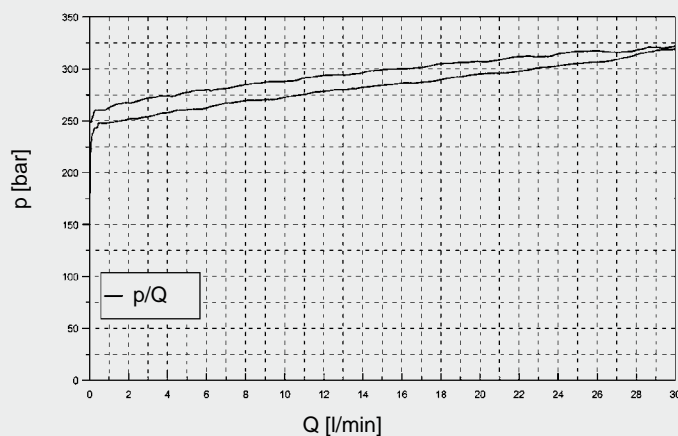
$p_o = 100$ bar, tank pressure = 100 bar, $v = 33$ mm²/s



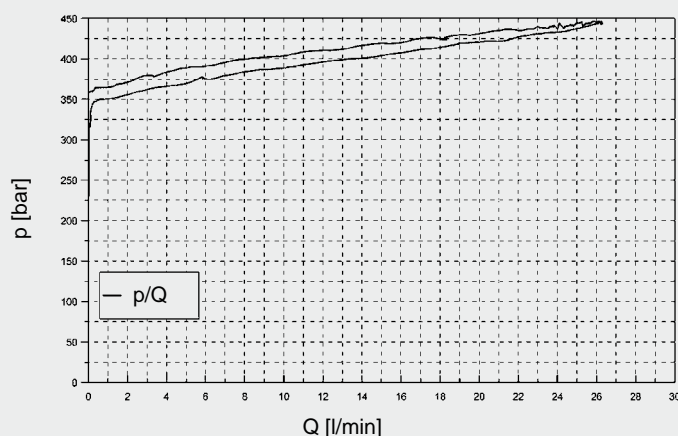
$p_o = 200$ bar, tank pressure = 200 bar, $v = 33$ mm²/s



$p_o = 250$ bar, tank pressure = 250 bar, $v = 33$ mm²/s



$p_o = 350$ bar, tank pressure = 350 bar, $v = 33$ mm²/s



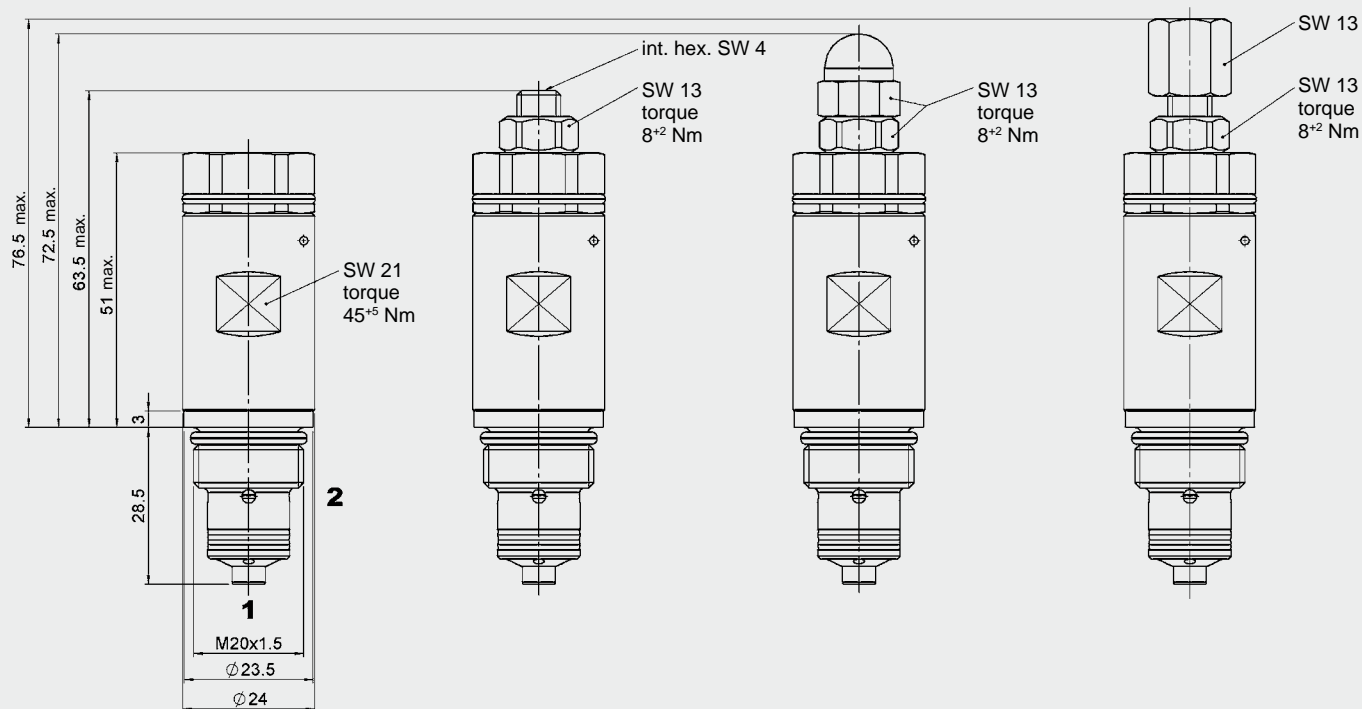
DIMENSIONS

Adjustment type F

Adjustment type V

Adjustment type P

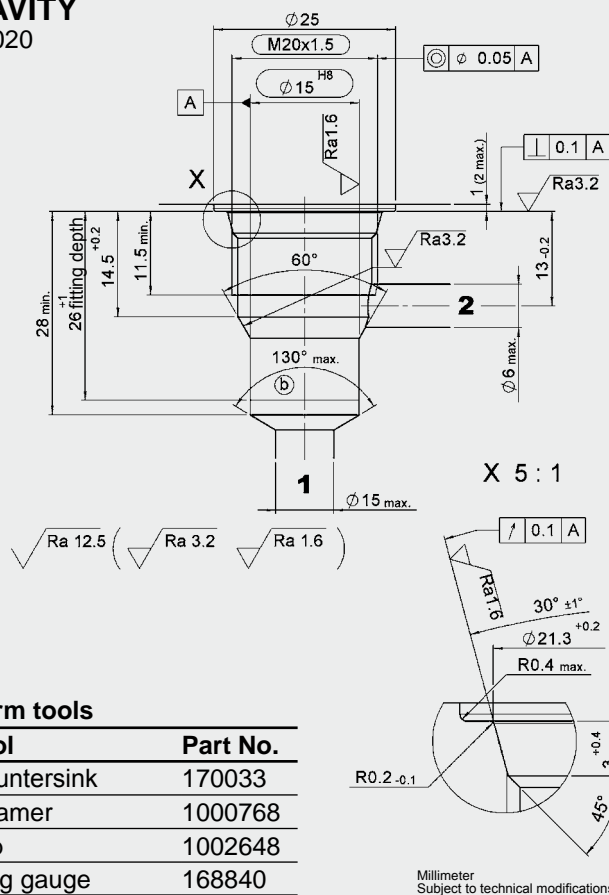
Adjustment type M



Millimeter
Subject to technical modifications

CAVITY

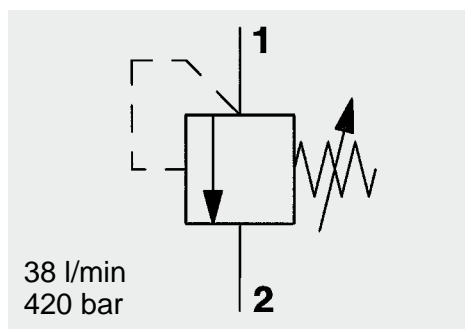
06020



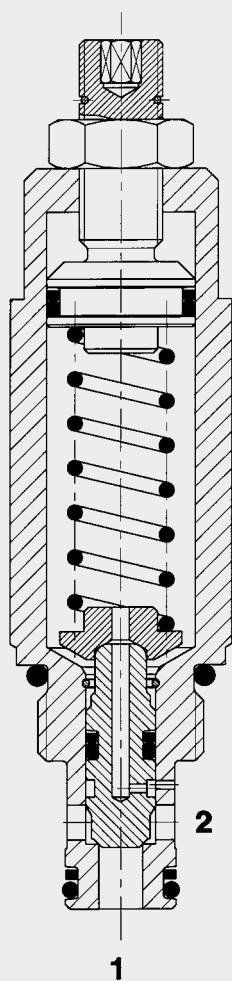
NOTE

NOTE
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For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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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!

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

UNF

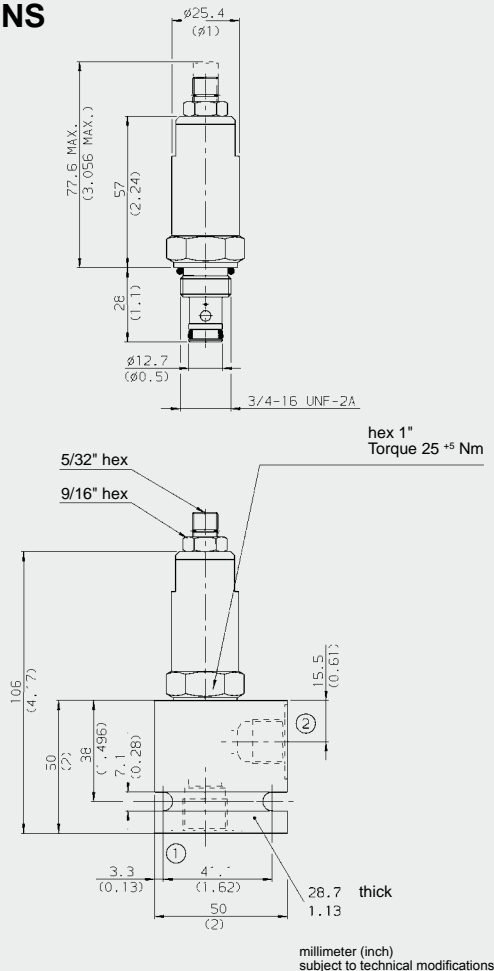
FEATURES

- 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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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



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

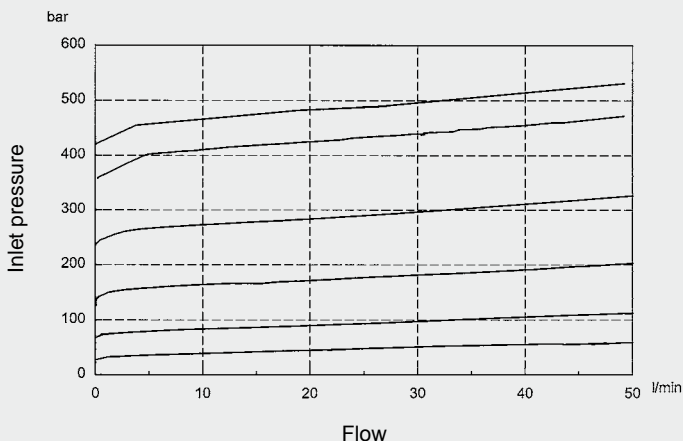
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



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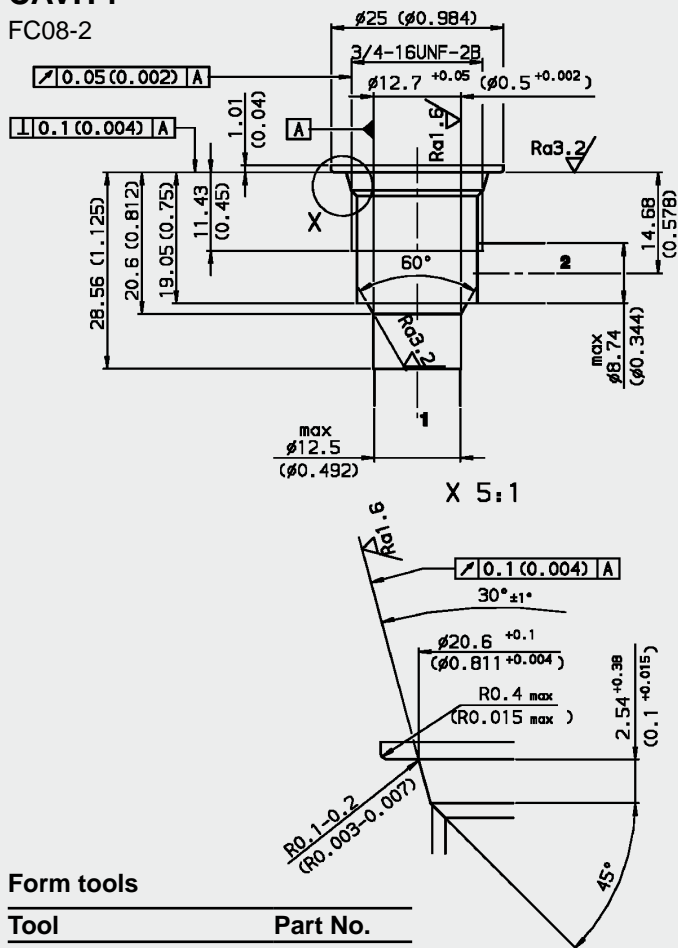
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E-Mail: flutec@hydac.com

CAVITY

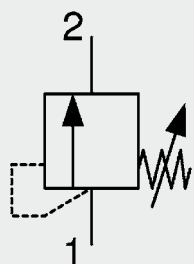
FC08-2



Form tools

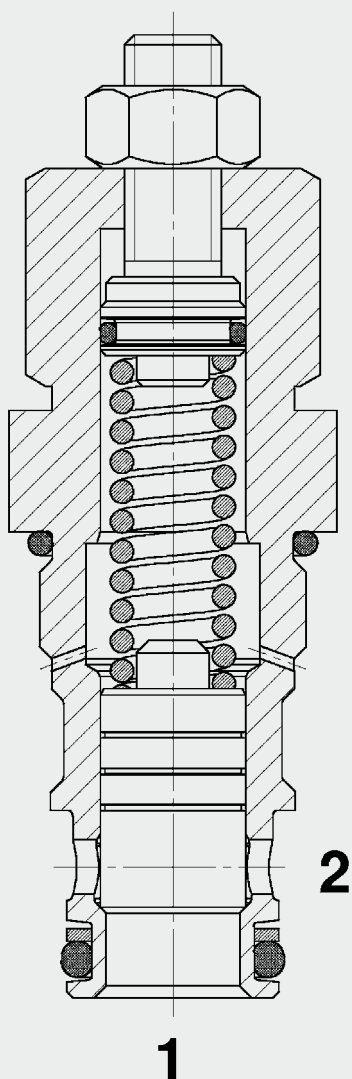
Tool	Part No.
Rougher FC08-2	175473
Reamer FC08-2	175474

millimeter (inch)
subject to technical modifications



60 l/min
48 bar

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

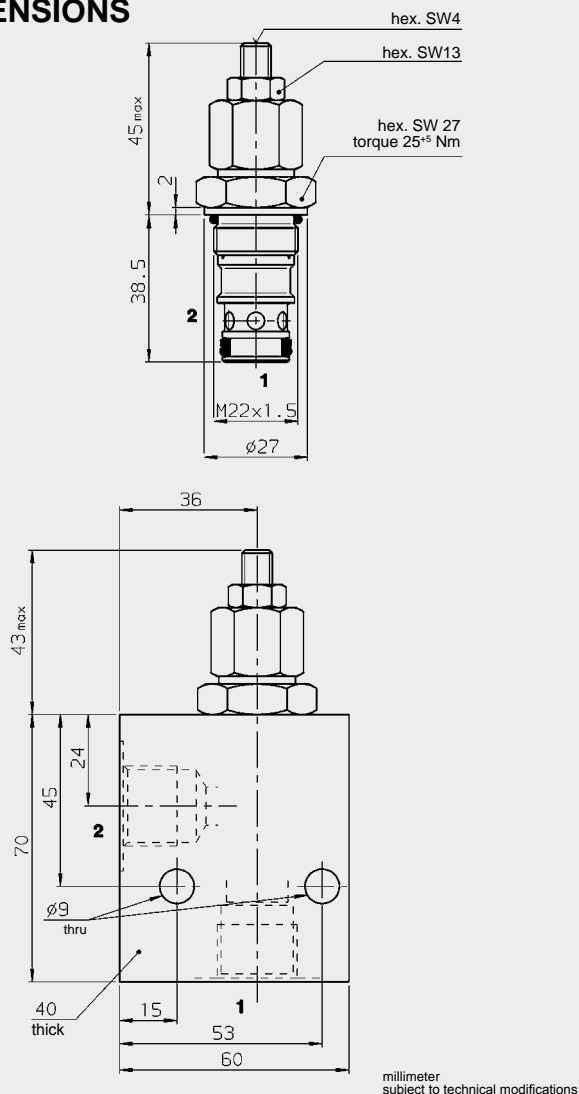
FEATURES

- 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

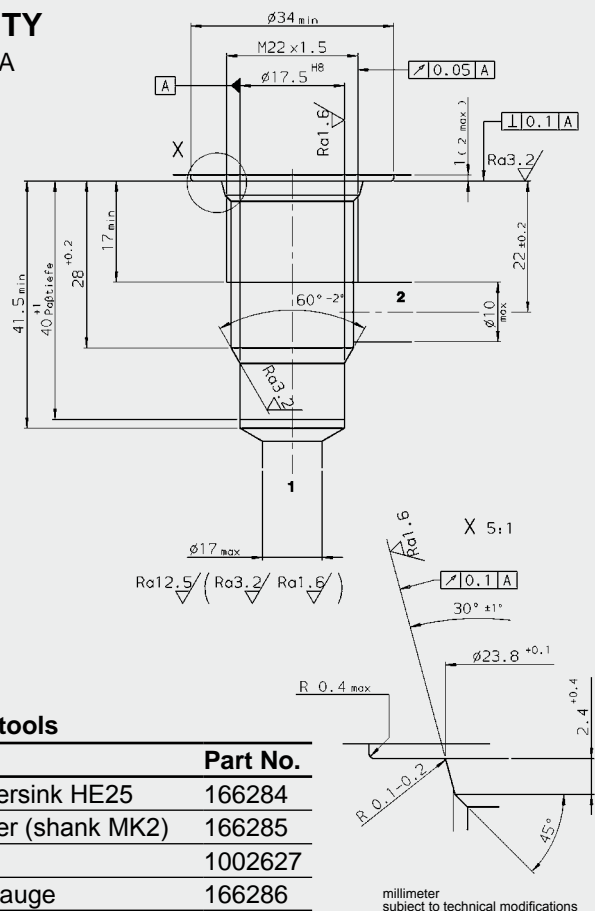
SPECIFICATIONS

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 mm ² /s to max. 380 mm ² /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



CAVITY
10120A



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	

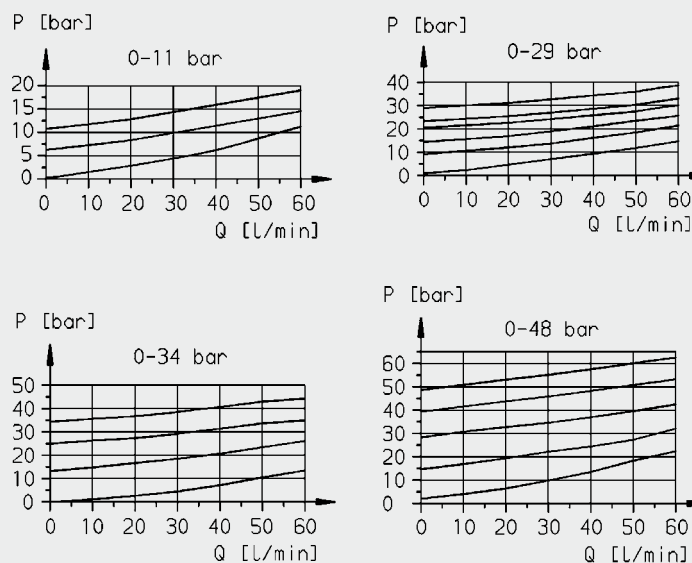
Standard in-line bodies

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

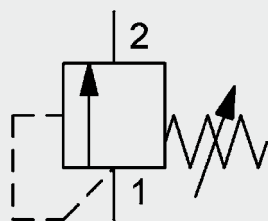
PERFORMANCE



Note

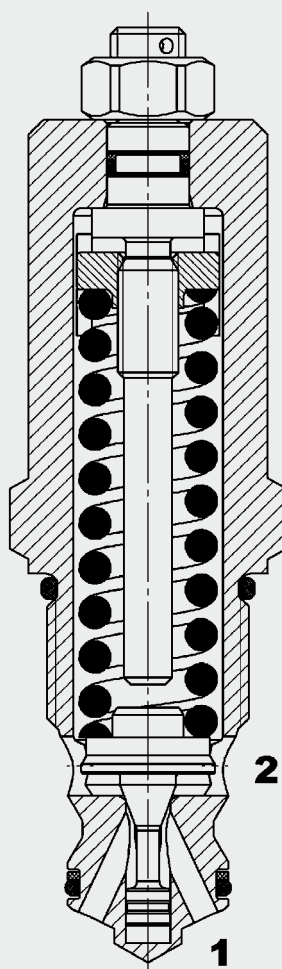
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Up to 120 l/min
Up to 420 bar

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 mm ² /s to max. 420 mm ² /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

int. hex.
SW 5
SW 16

62 max.

53 max.

$\phi 21.5$

M27x2

$\phi 32$

74.5 max.

79.5 max.

hex. SW 32
torque 50⁺¹⁰Nm

61 max.

29.5 ± 0.2

75

55

Ø9 thru

16

40

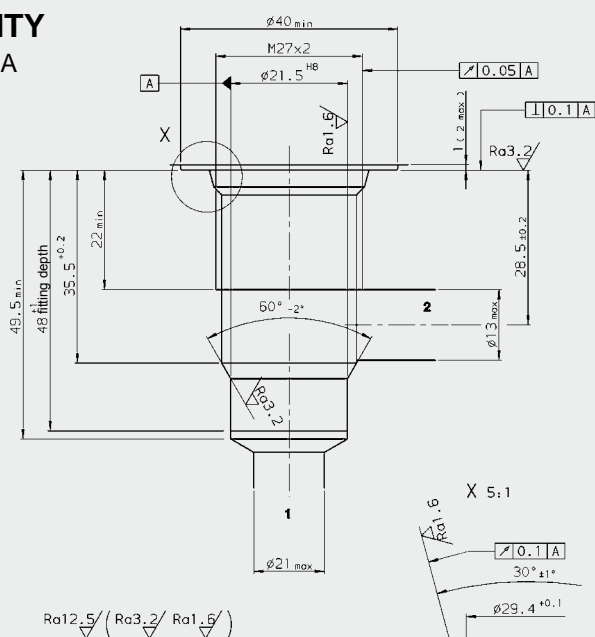
61 ± 0.2

70

45 thick

Millimeter
Subject to technical modifications

12120A



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

Millimeter
Subject to technical modifications

MODEL CODE

DB 12120A – 01 X – 250 V 210

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

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

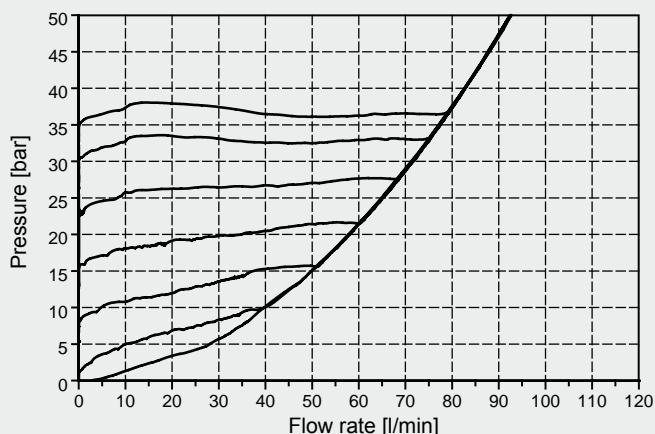
Code	Part No.	Material	Ports	Pressure
R12120A-01X-01	396489	Steel, zinc-plated	G 3/4	420 bar
Other line bodies on request				

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

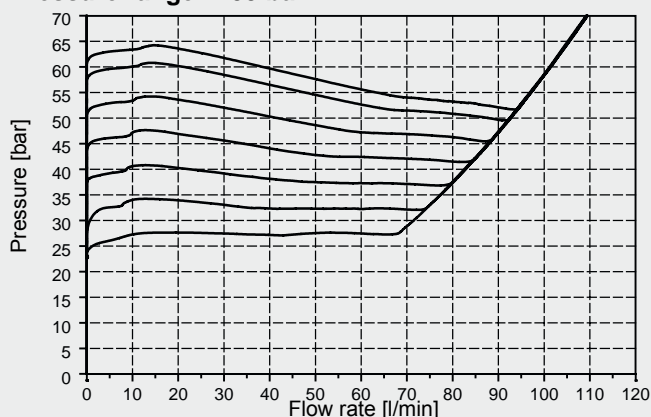
PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$

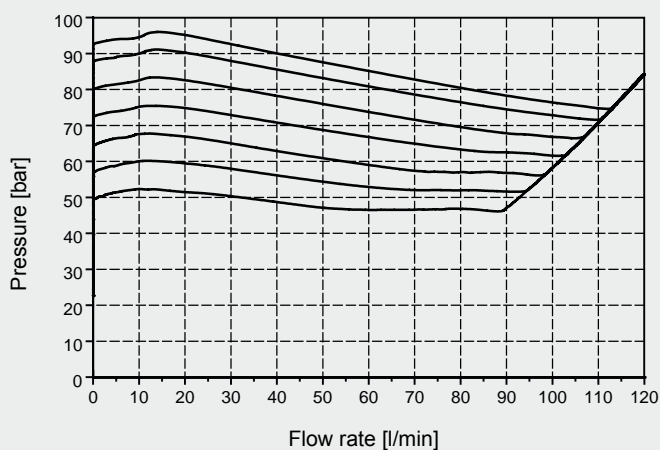
Pressure range ... 30 bar



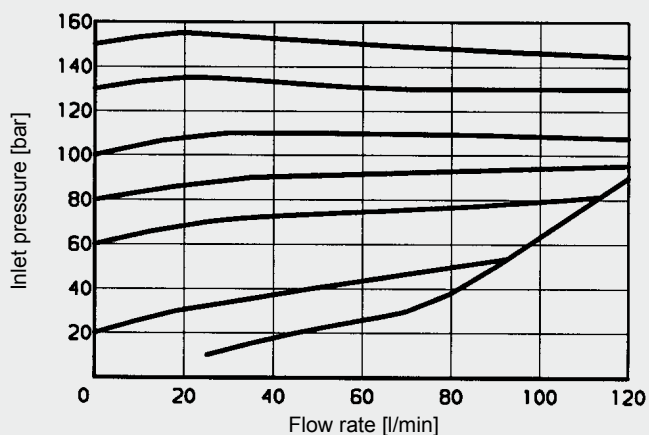
Pressure range ... 55 bar



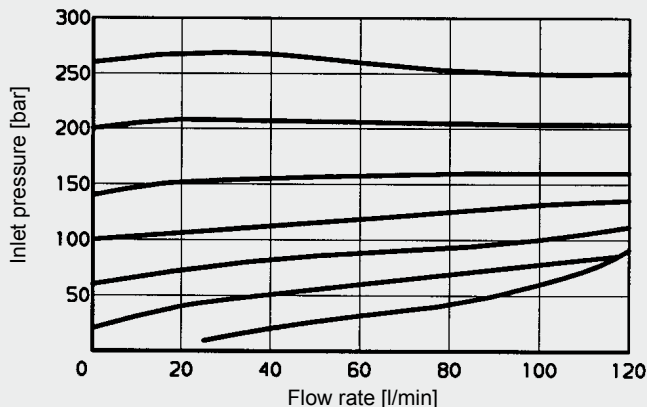
Pressure range ... 90 bar



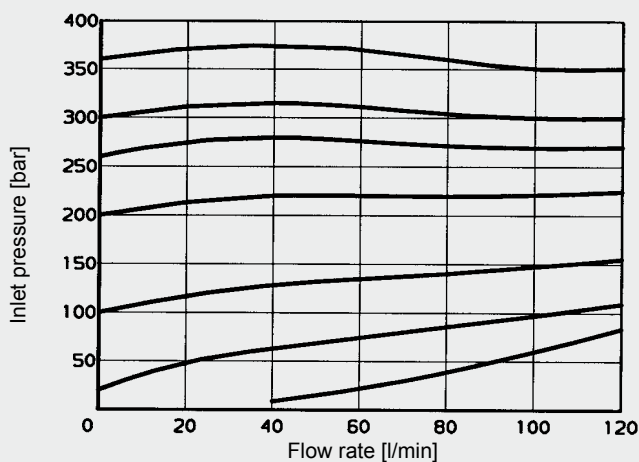
Pressure range ... 150 bar



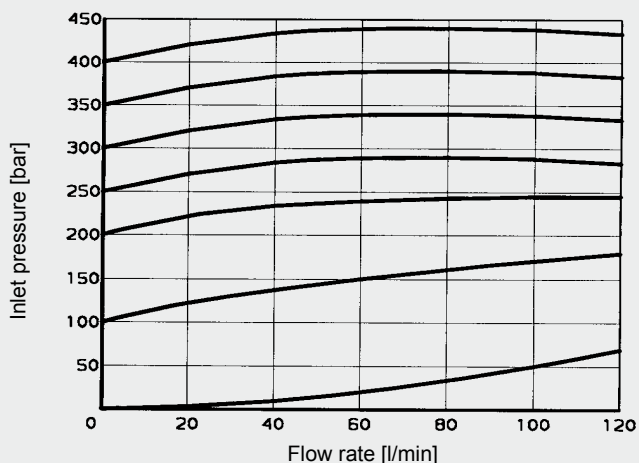
Pressure range ... 250 bar



Pressure range ... 350 bar



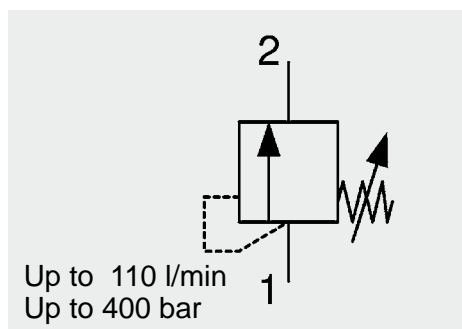
Pressure range ... 420 bar



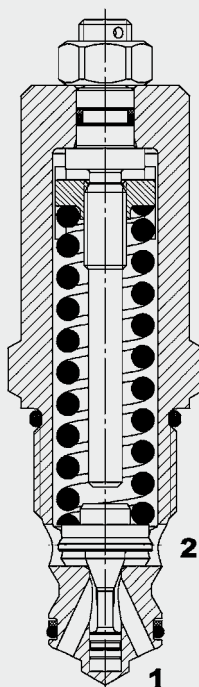
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FUNCTION



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 $p_{2 \max} = 0 \text{ bar!}$
- 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!

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

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 $\hat{=}$ 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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

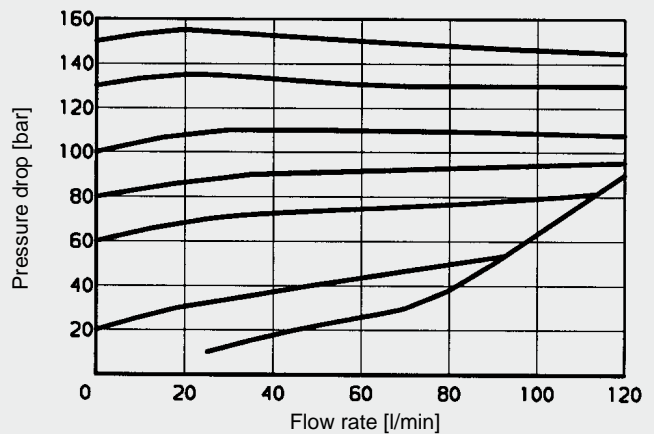
Code	Material	Part No.
SEAL KIT DB12120A-01X-...V	FKM	557399

DOCUMENTATION

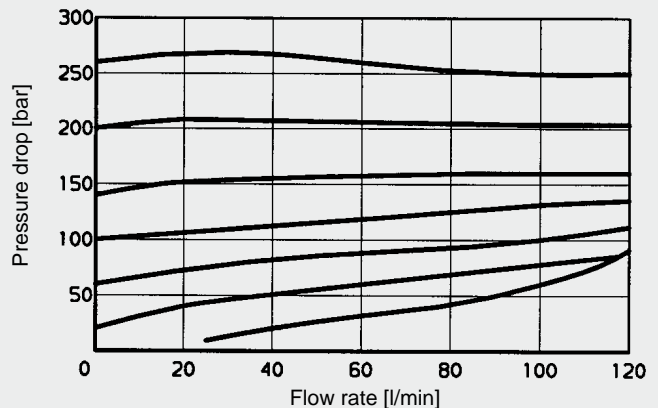
Each valve is supplied with an Operating Manual in accordance with the Pressure Equipment Directive.

PERFORMANCE

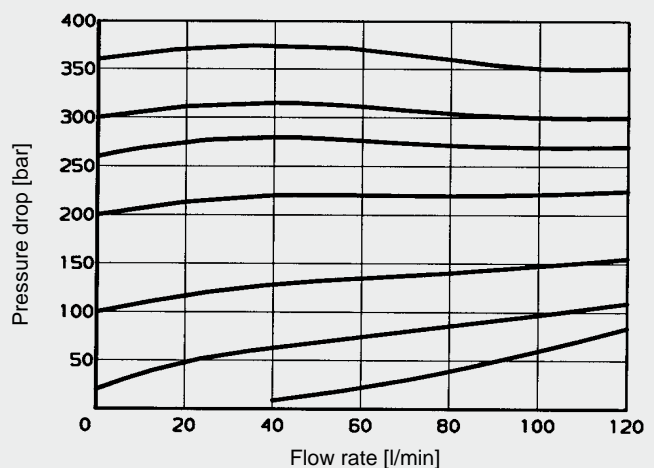
Pressure range ... 150 bar



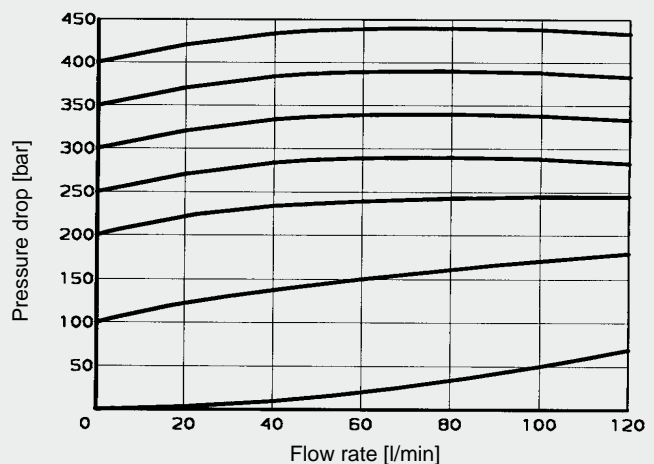
Pressure range ... 250 bar



Pressure range ... 350 bar



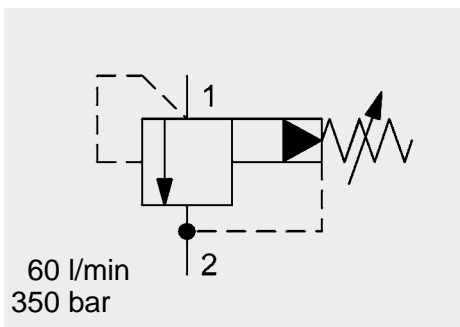
Pressure range ... 400 bar



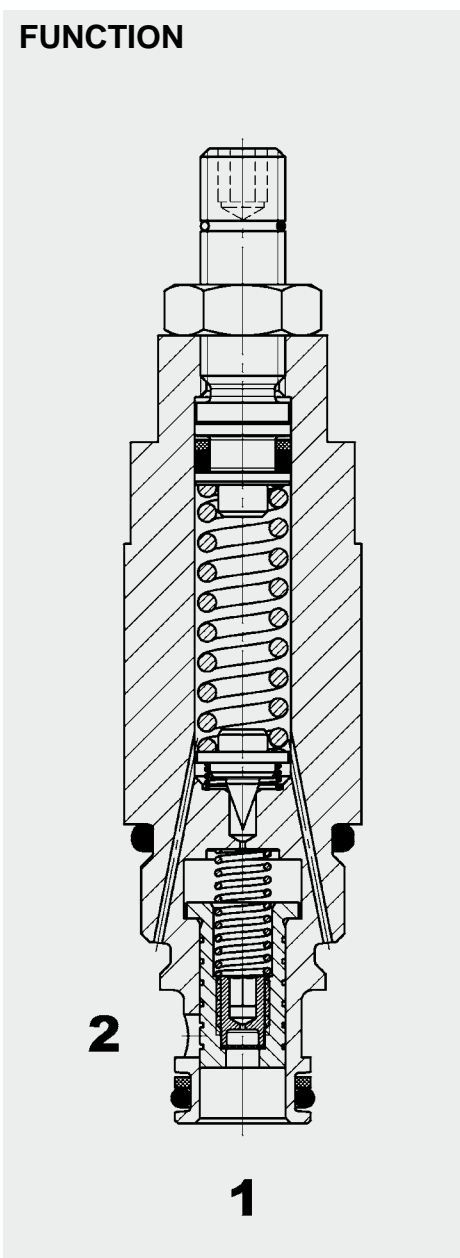
The operating range diagram shows the permitted range for the pump. The y-axis represents operating pressure p in bar, ranging from 30 to 400. The x-axis represents flow rate Q in l/min, ranging from 0 to 120. The permitted range is indicated by a cross-hatched area. The boundary of the permitted range starts at approximately 68 l/min and 30 bar, rises to 70 l/min and 40 bar, then to 80 l/min and 80 bar, and continues as a curve up to 110 l/min and 110 bar. The area above and to the left of this boundary is cross-hatched, indicating the permitted operating range.

[illegible][illegible]

Tool	Part No.
Countersink	173958
Reamer	174874
Tap	1002625



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.

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

UNF

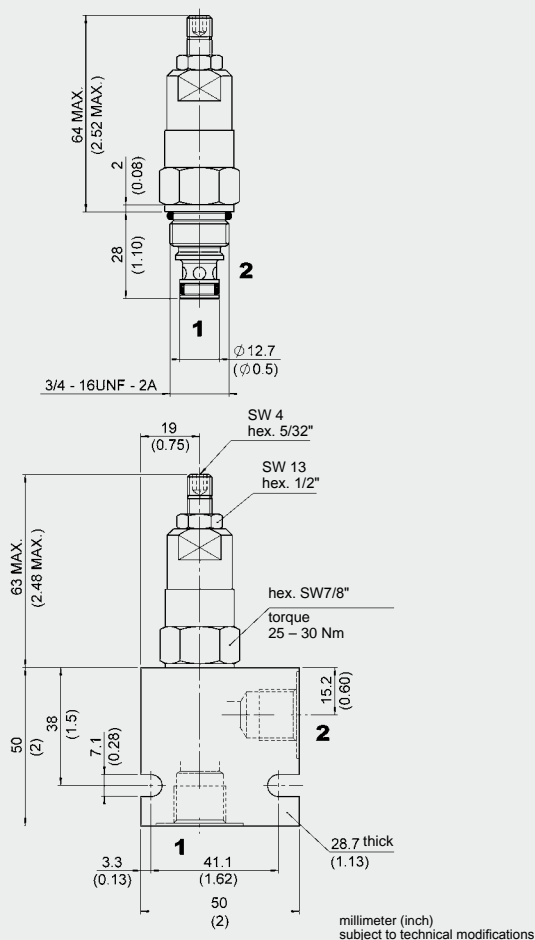
FEATURES

- 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 mm ² /s to max. 420 mm ² /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



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

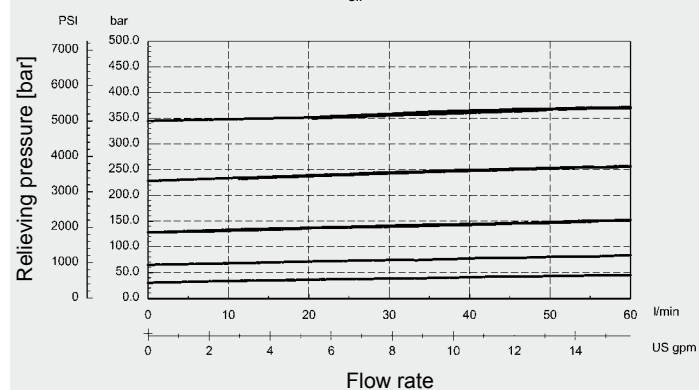
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, anodized	G3/8	210 bar

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



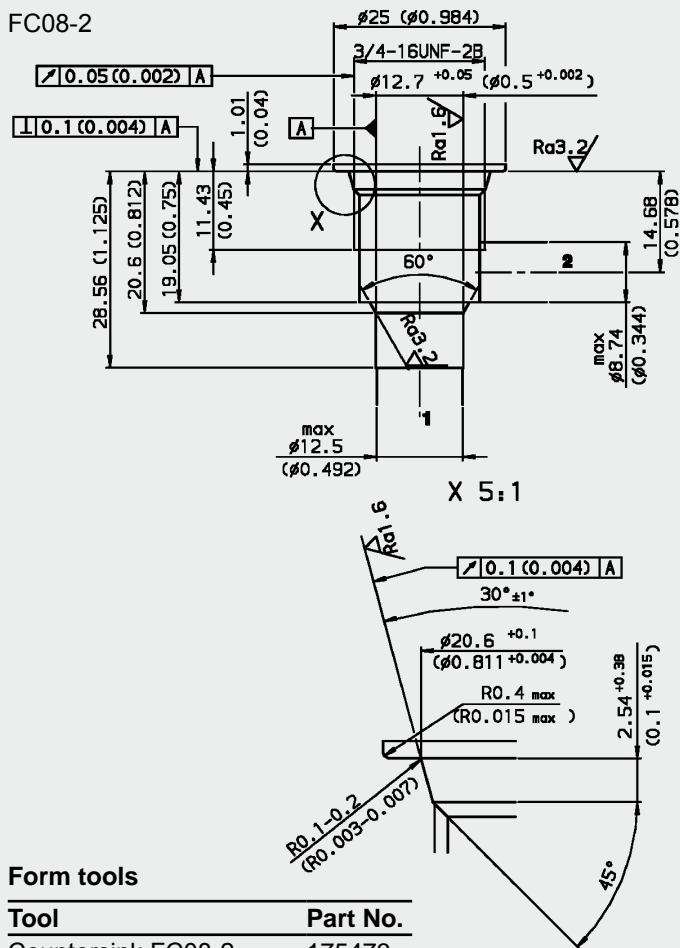
Note

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CAVITY

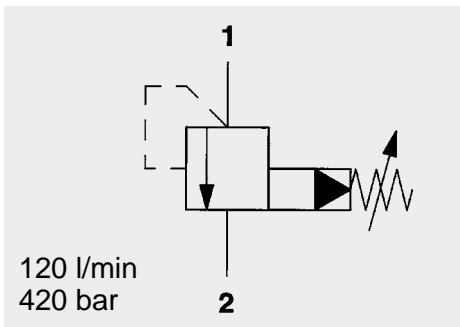
FC08-2



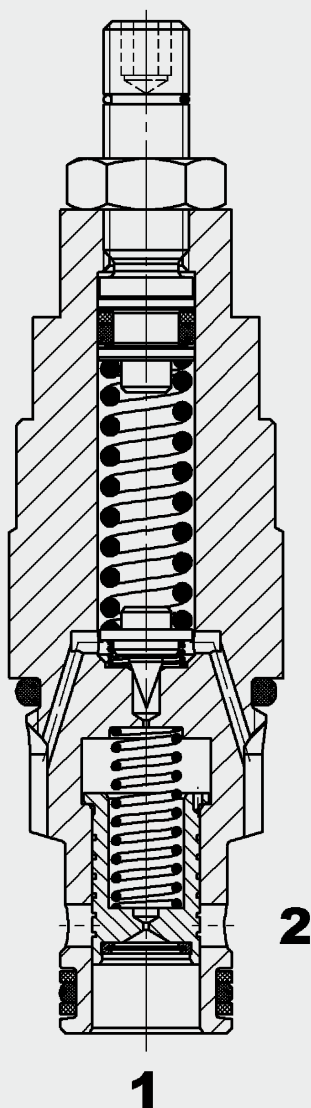
Form tools

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

millimeter (inch)
subject to technical modifications



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.

Pressure Relief Valve Spool Type Pilot-Operated SAE-10 Cartridge – 420 bar DB10P

UNF

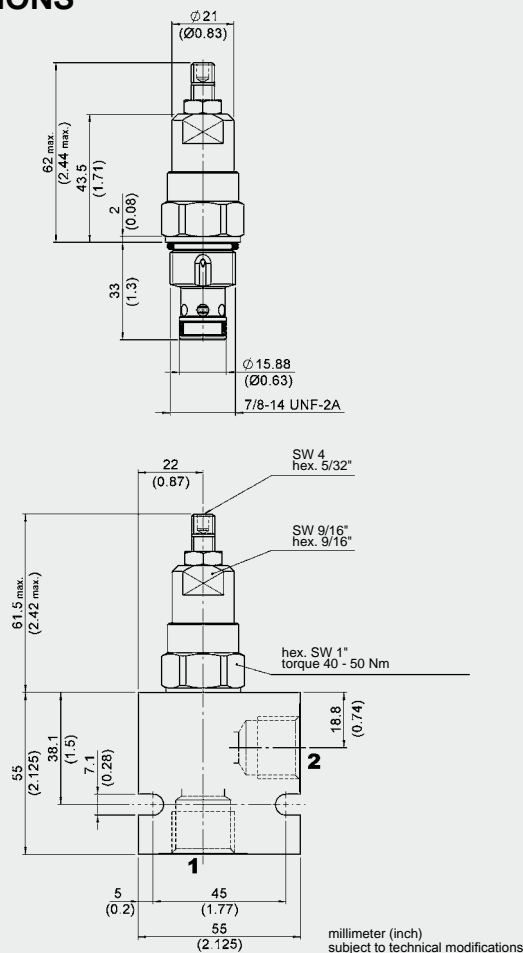
FEATURES

- 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

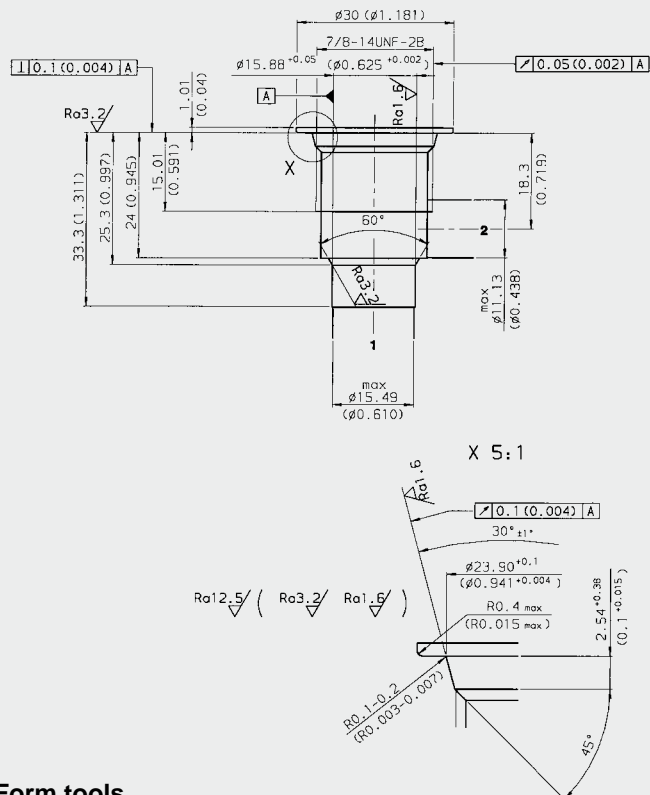
Operating pressure:	max. 420 bar
Nominal flow:	max. 120 l/min
Operating pressure ranges:	5 to 35 bar 5 to 62 bar 5 to 124 bar 5 to 228 bar 5 to 345 bar 5 to 420 bar
Internal leakage:	< 500 ml/min from 1 to 2 at 80% of p_{nom}
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +100 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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



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**

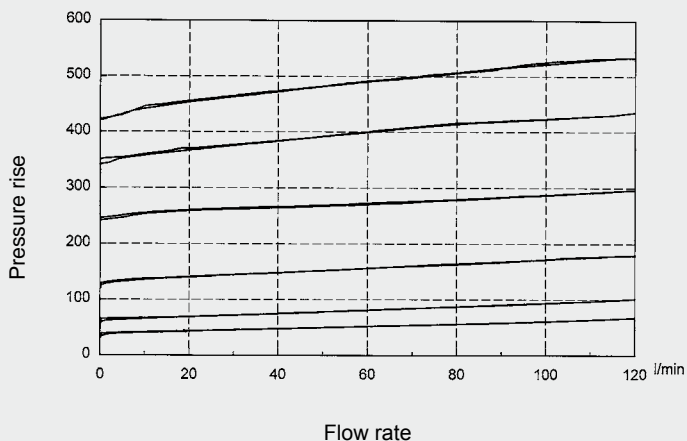
Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, anodized	G1/2	210 bar

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$

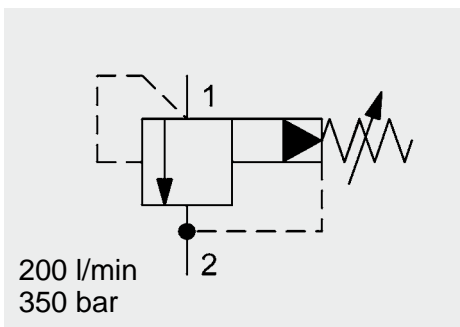
$$T_{\text{Öl}} = 46 \text{ }^{\circ}\text{C}$$


NOTE

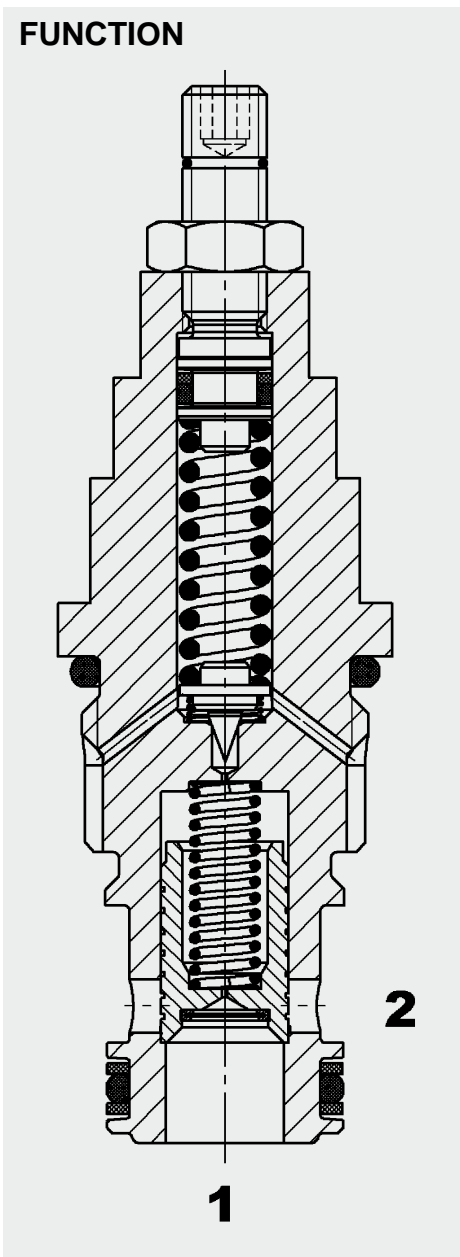
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Pressure Relief Valve Spool Type, Pilot-Operated SAE-12 Cartridge – 350 bar DB12P



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.

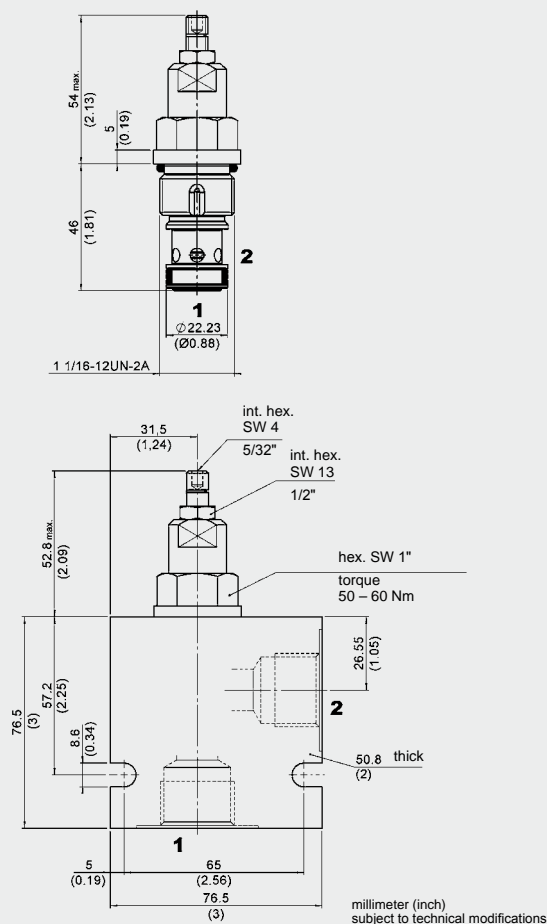
FEATURES

- 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 mm ² /s to max. 420 mm ² /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



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

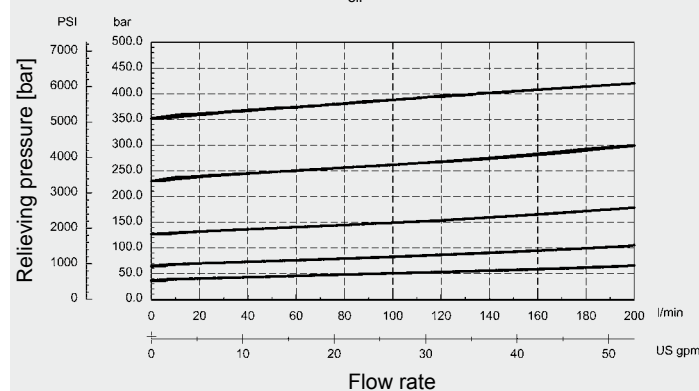
Code	Part No.	Material	Ports	Pressure
FH122-SB6	3053782	Steel, zinc-plated	G3/4	420 bar
FH122-AB6	3053843	Aluminium, anodized	G3/4	210 bar

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



NOTE

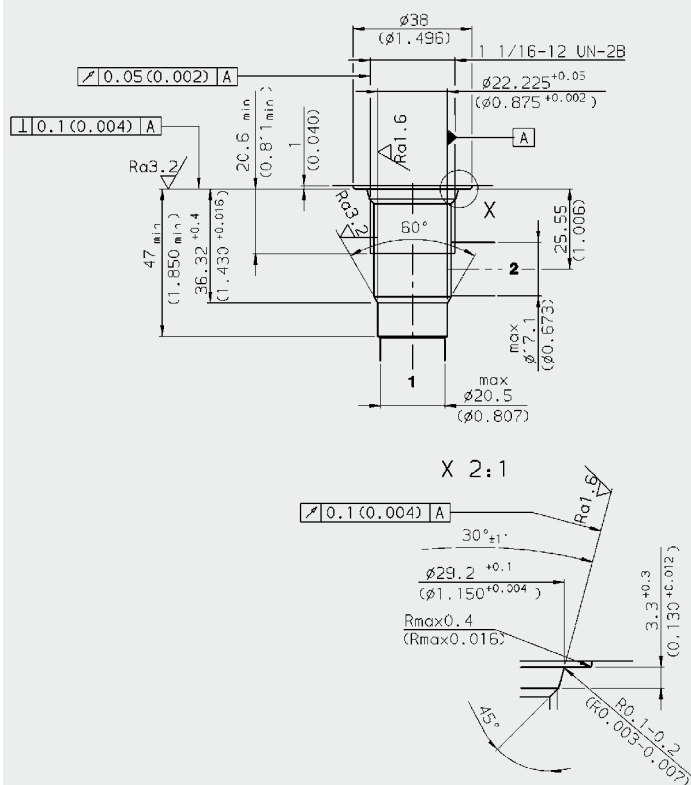
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CAVITY

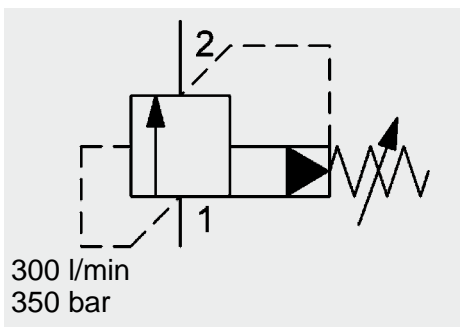
FC12-2



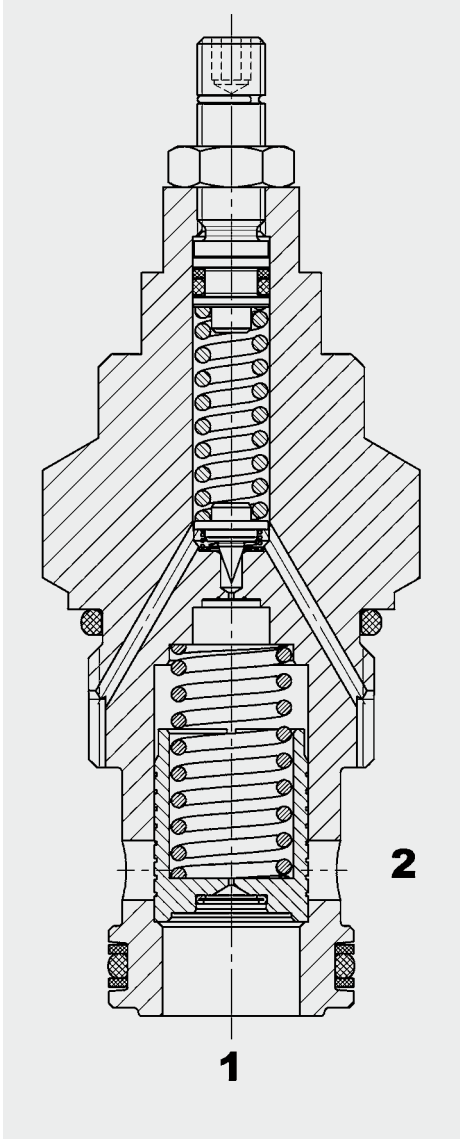
Form tools

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

millimeter (inch)
subject to technical modifications



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.

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

UNF

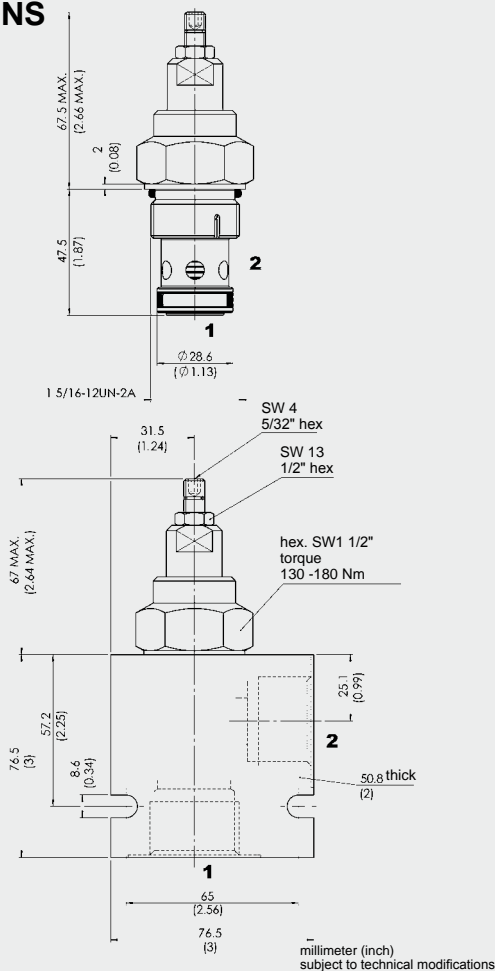
FEATURES

- 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 mm ² /s to max. 420 mm ² /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



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

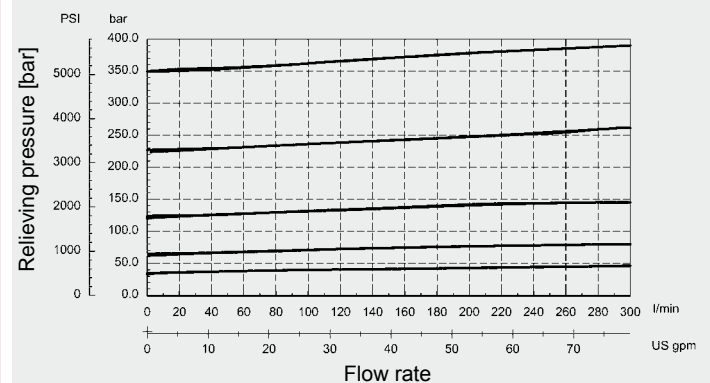
Code	Part No.	Material	Ports	Pressure
FH162-SB8	3032496	Steel, zinc-plated	G1	420 bar
FH162-AB8	3037193	Aluminium, anodized	G1	210 bar

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{Oil}} = 46^\circ\text{C}$



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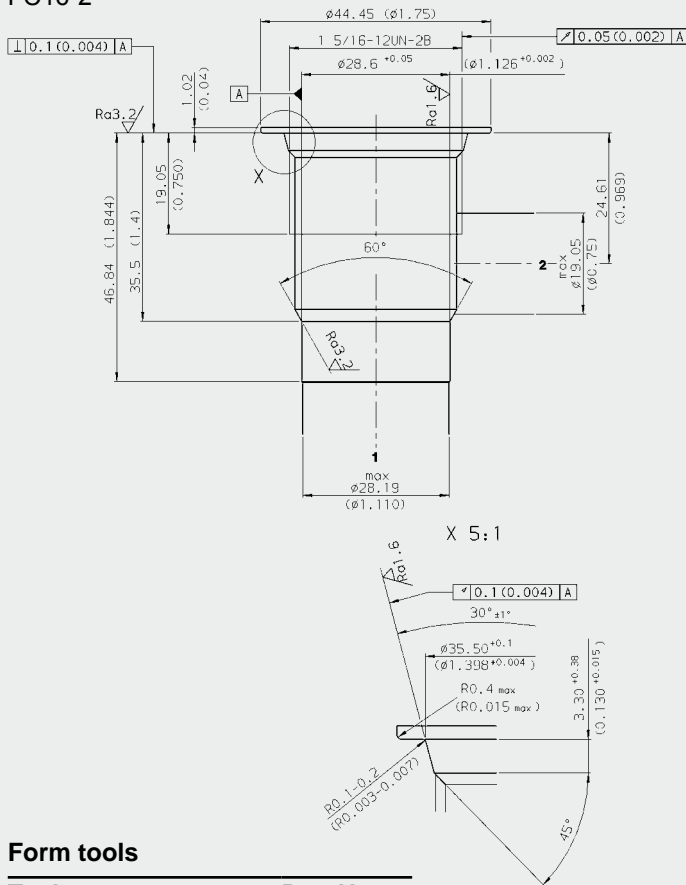
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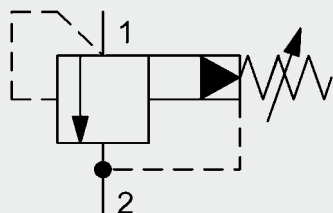
CAVITY

FC16-2



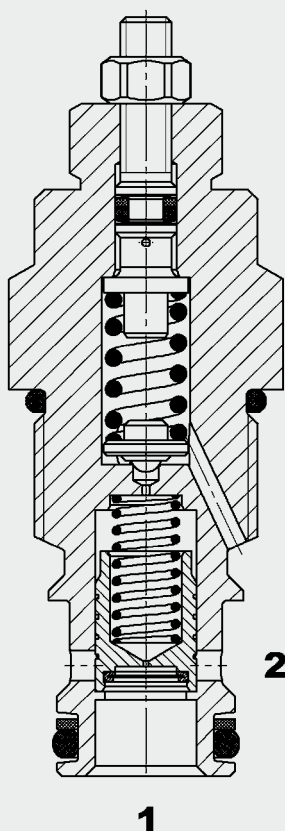
Form tools

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



Up to 100 l/min
Up to 350 bar

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 mm ² /s to max. 420 mm ² /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

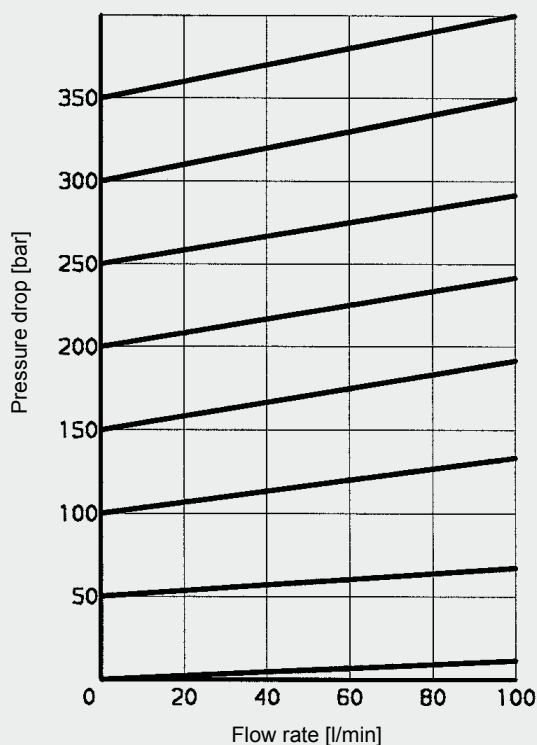
Seal kits

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

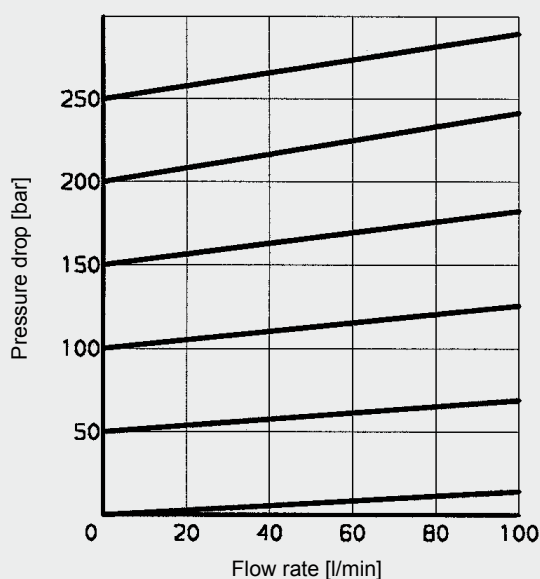
PERFORMANCE

Measured at $v = 36 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 50^\circ\text{C}$

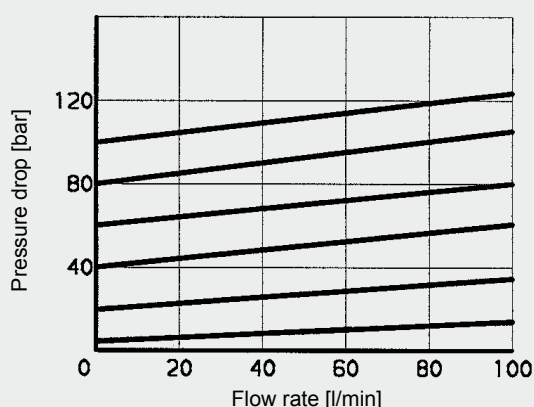
350 V



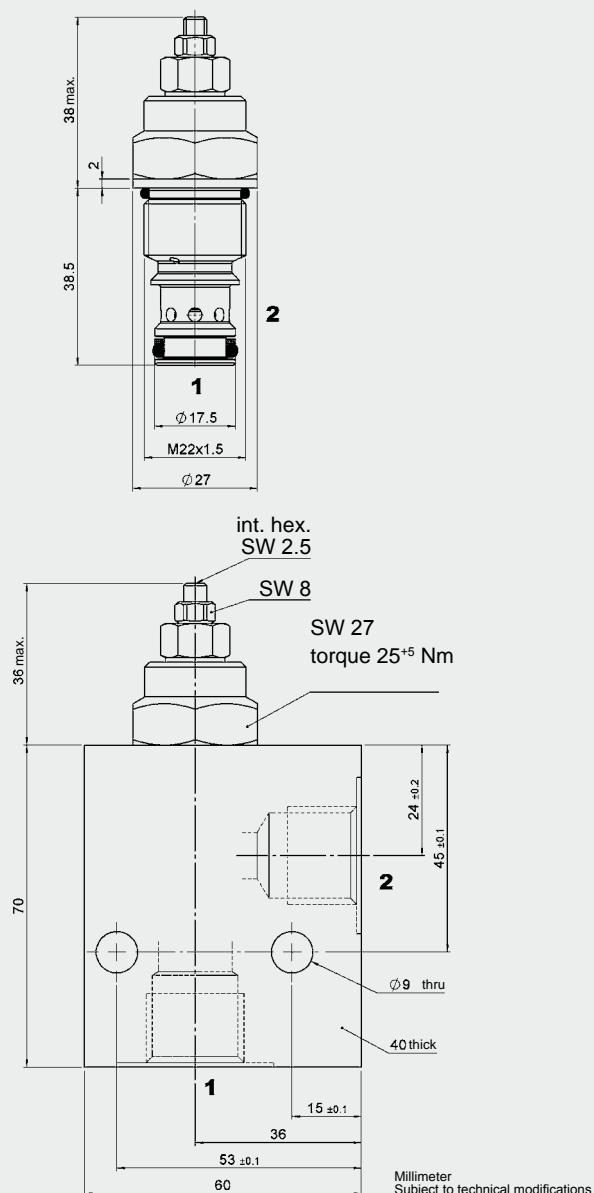
250 V



100 V

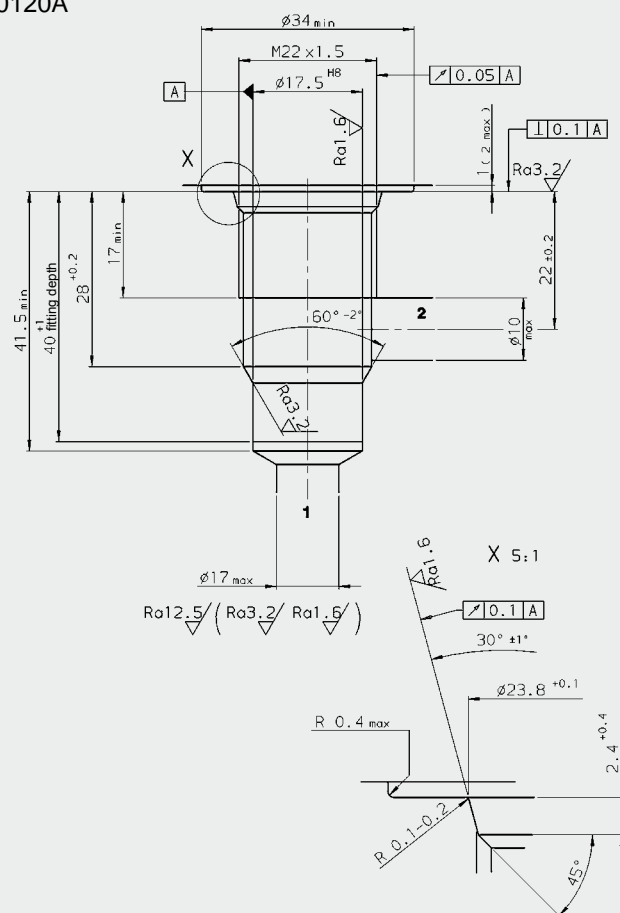


DIMENSIONS



CAVITY

10120A



Form tools

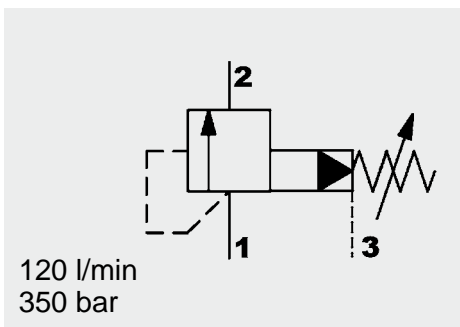
Tool	Part No.
Countersink HE25	166284
Reamer MK2	166285
Tap	1002627
Plug gauge	166286

Millimeter
Subject to technical modifications

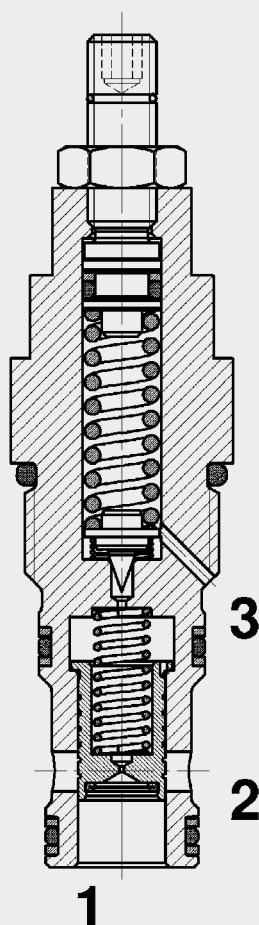
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FUNCTION



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.

Pressure Relief Valve Spool Type, Pilot-Operated With Pilot Drain SAE-10 Cartridge – 350 bar DB10SPE

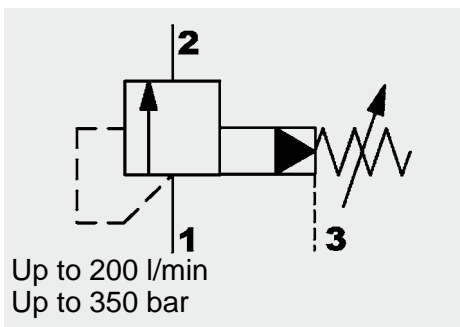
UNF

FEATURES

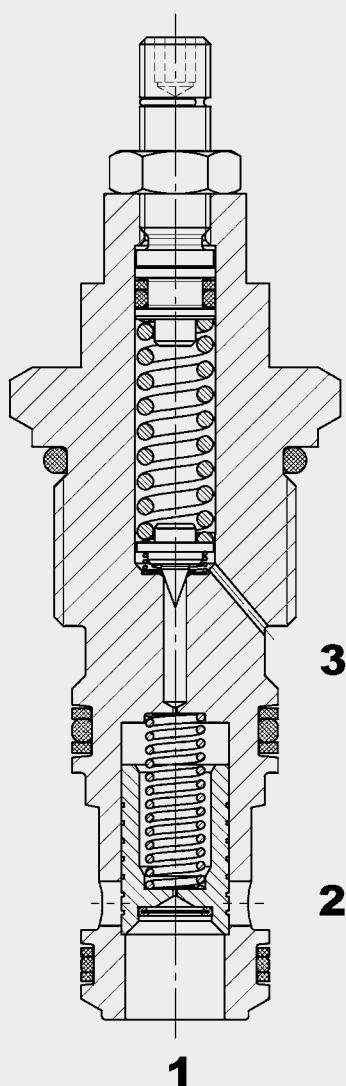
- Additional tank connection to drain the pilot stage
- Additional use as a pilot operated pressure compensator
- Quick response
- Good stability across the whole pressure and flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground control piston to ensure minimal wear and 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 mm ² /s to max. 420 mm ² /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



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.

Pressure Relief Valve Spool Type, Pilot-Operated With Pilot Drain Metric Cartridge – 350 bar DB12121PE-01

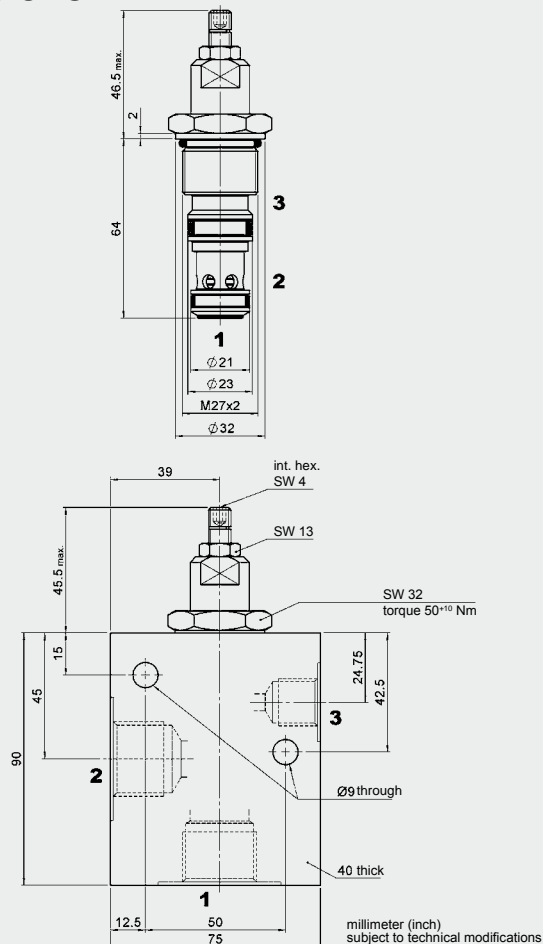
FEATURES

- 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

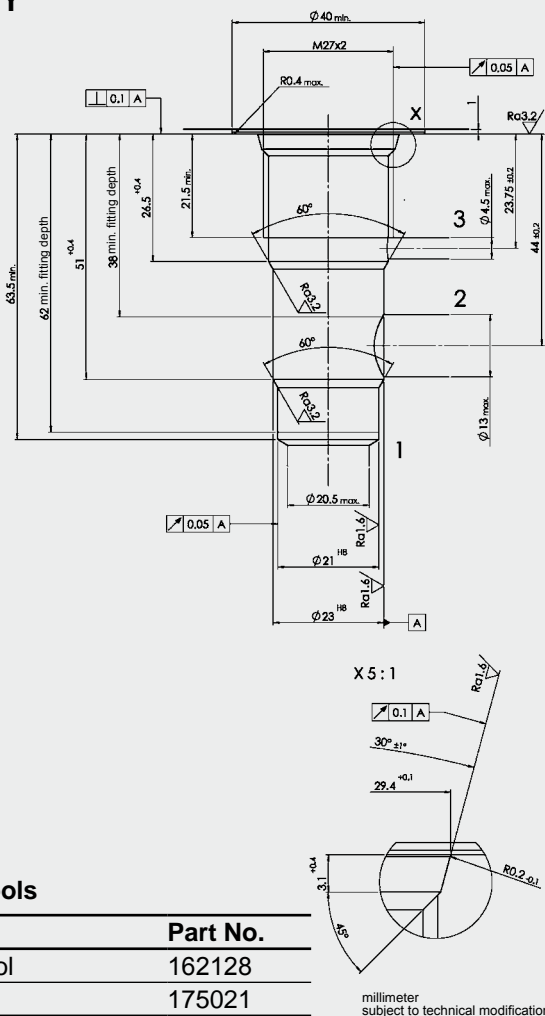
Operating pressure:	max. 350 bar	
Nominal flow:	max. 200 l/min	
Operating pressure ranges:	5 to 35 bar	
	5 to 60 bar	
	5 to 125 bar	
	5 to 230 bar	
	5 to 350 bar	
Internal leakage:	max. 320 cm ³ /min at 350 bar	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 10 mm ² /s to max. 420 mm ² /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

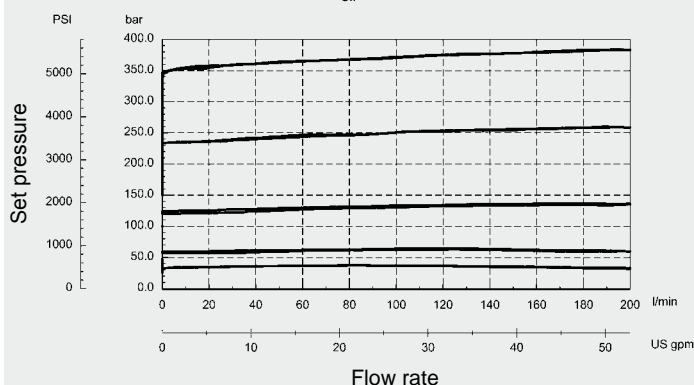
Code	Part No.	Material	Ports	Pressure
R12121-01X-01	3130704	Steel, zinc-plated	G3/4, G3/8	420 bar

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$

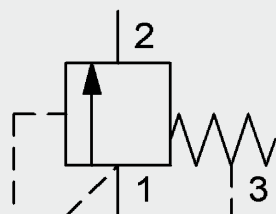


NOTE

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Subject to technical modifications.

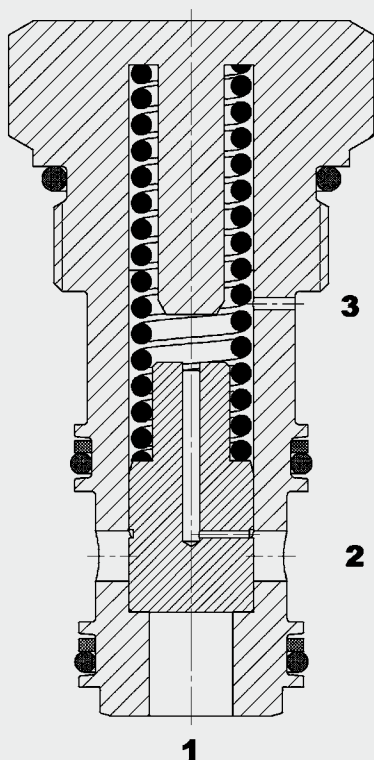
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E-Mail: flutec@hydac.com



Up to 300 l/min
Up to 350 bar

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.

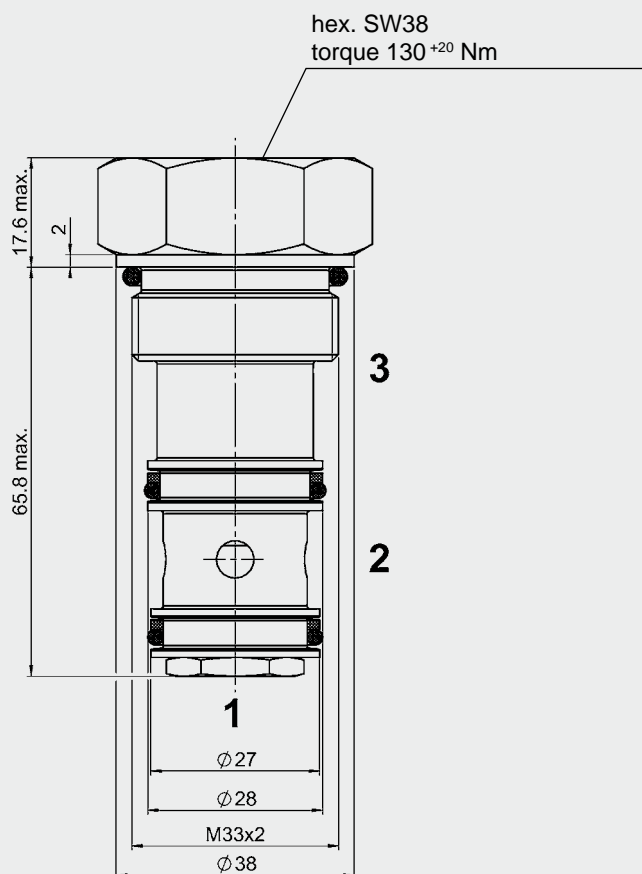
FEATURES

- 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

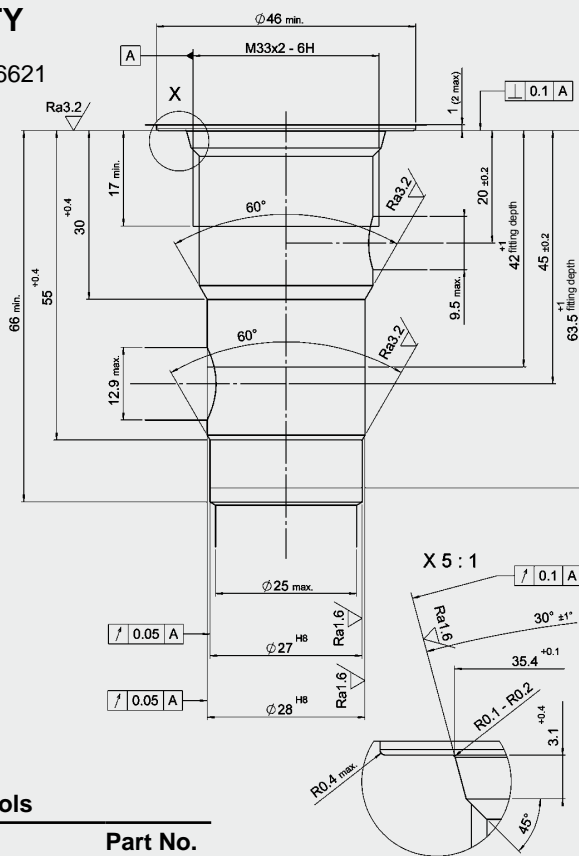
Code	Part No.	Material	Ports	Pressure
R16621-01X-01	3477778	Steel	G1, G1/4	420 bar

Seal kits

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

CAVITY

Metric 16621



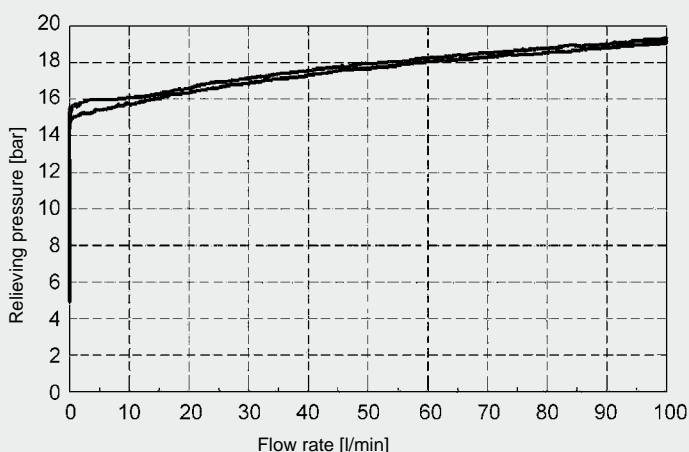
Millimeter
Subject to technical modifications

Form tools

Tool	Part No.
In preparation	

PERFORMANCE

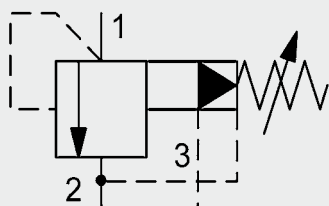
Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ °C}$



NOTE

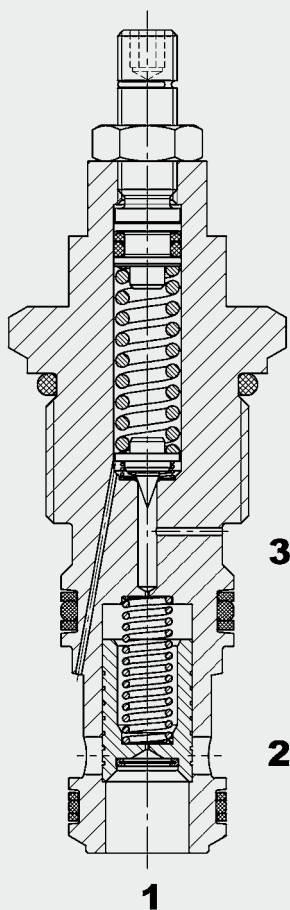
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Up to 200 l/min
Up to 350 bar

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.

Pressure Relief Valve Spool Type, Pilot-Operated With Remote Control Option Metric Cartridge – 350 bar DB12121PF-01

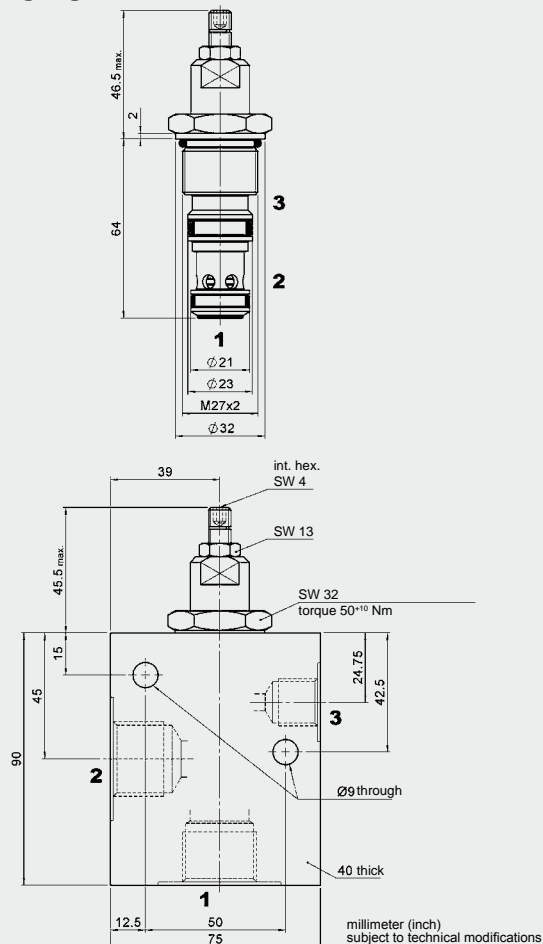
FEATURES

- 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

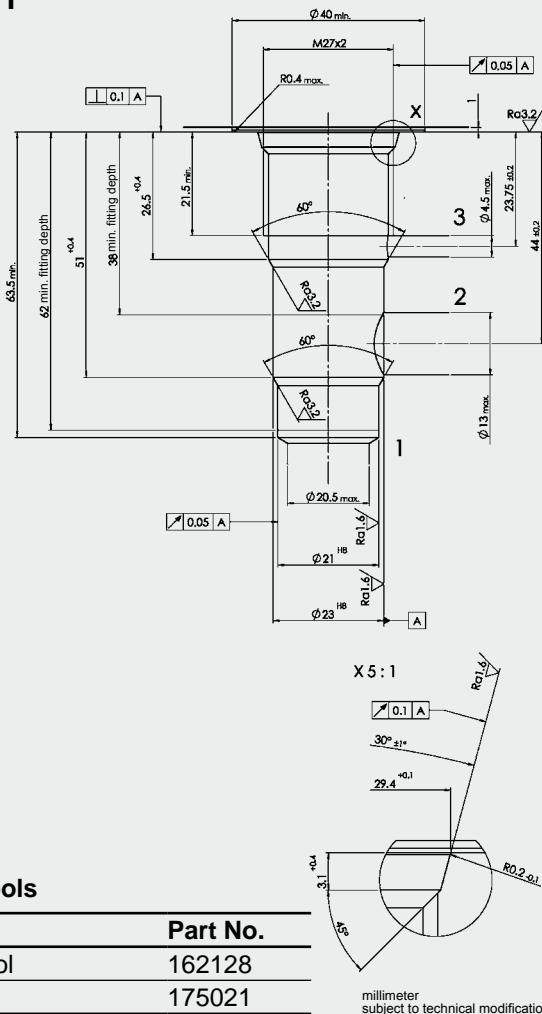
Operating pressure:	max. 350 bar
Nominal flow:	max. 200 l/min
Operating pressure ranges:	up to 35 bar up to 60 bar up to 125 bar up to 230 bar up to 345 bar
Required remote control flow rate:	0.2 l/min to 0.6 l/min (depending on pressure and flow rate)
Internal leakage:	320 cm ³ /min at 350 bar
Media 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 mm ² /s to max. 420 mm ² /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



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

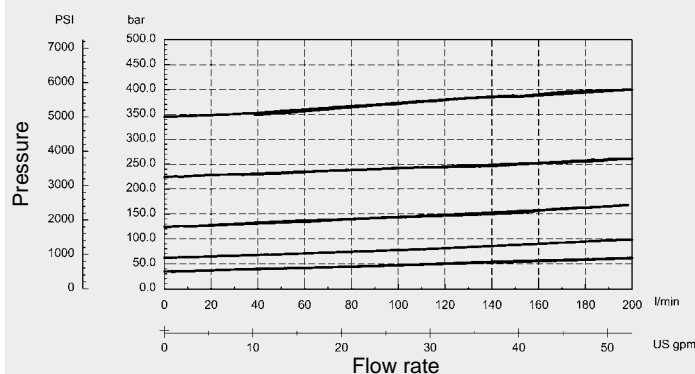
Code	Part No.	Material	Ports	Pressure
R12121-01X-01	3130704	Steel, zinc-plated	G3/4, G3/8	420 bar

Seal kits

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

PERFORMANCE

Measured at
 $v = 34 \text{ mm}^2/\text{s}$,
Toll = 46 °C

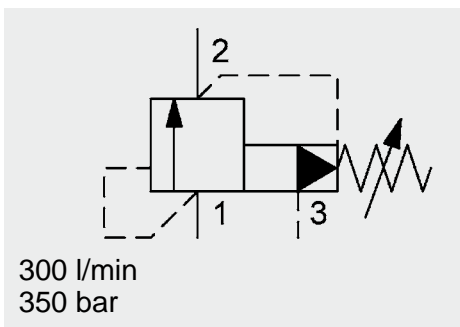


NOTE

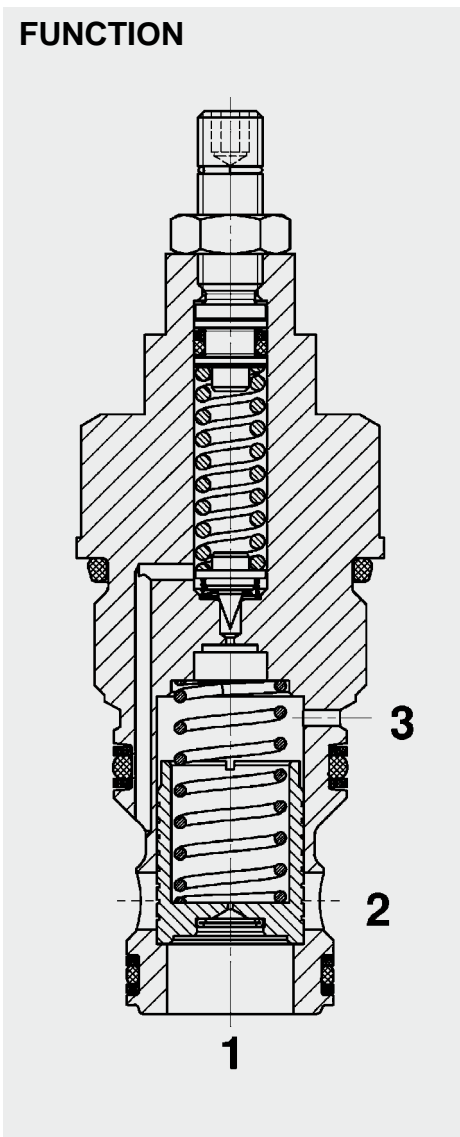
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FUNCTION



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.

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

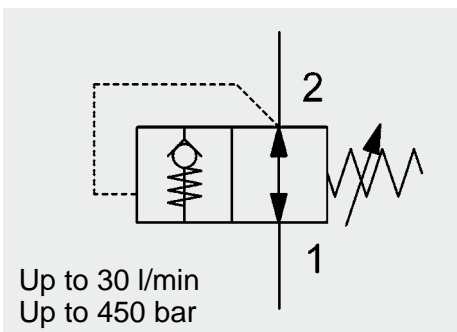
UNF

FEATURES

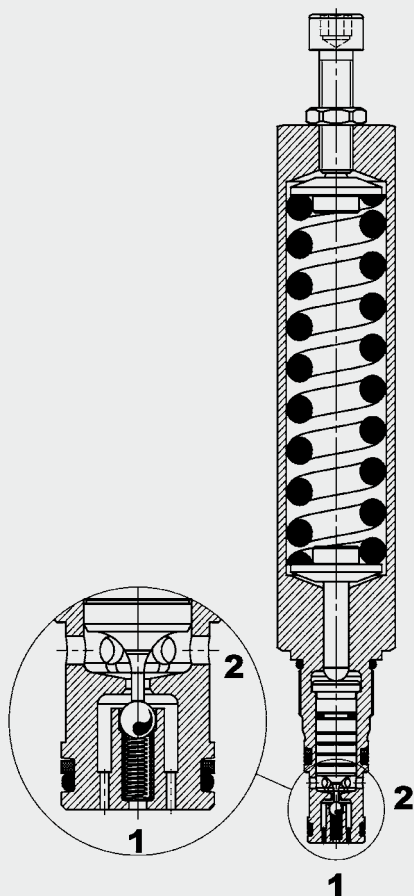
- Additional port for remote control option, e.g. in combination with a solenoid valve the system may be switched to unloaded flow
- Quick response
- Good stability across the whole pressure and flow range
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground control piston to ensure 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 mm ² /s to max. 420 mm ² /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	



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.

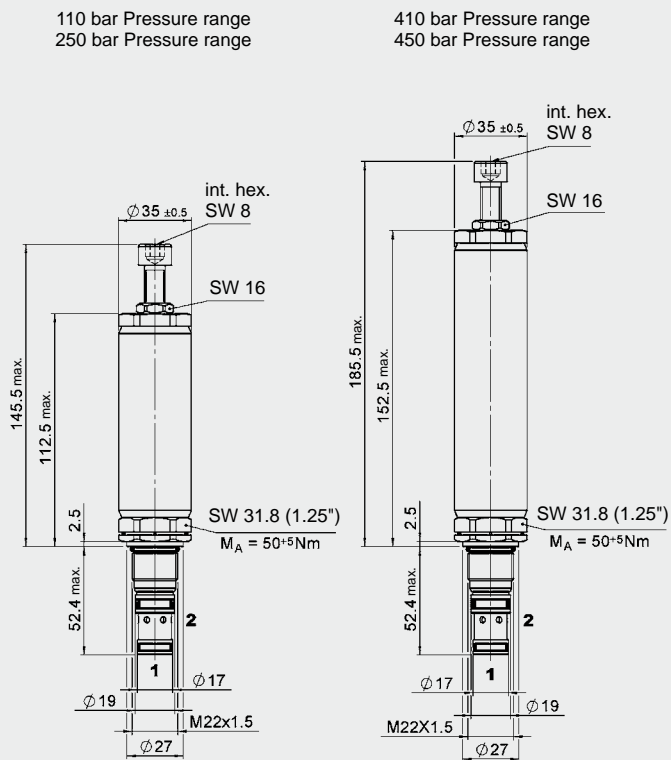
FEATURES

- 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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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



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

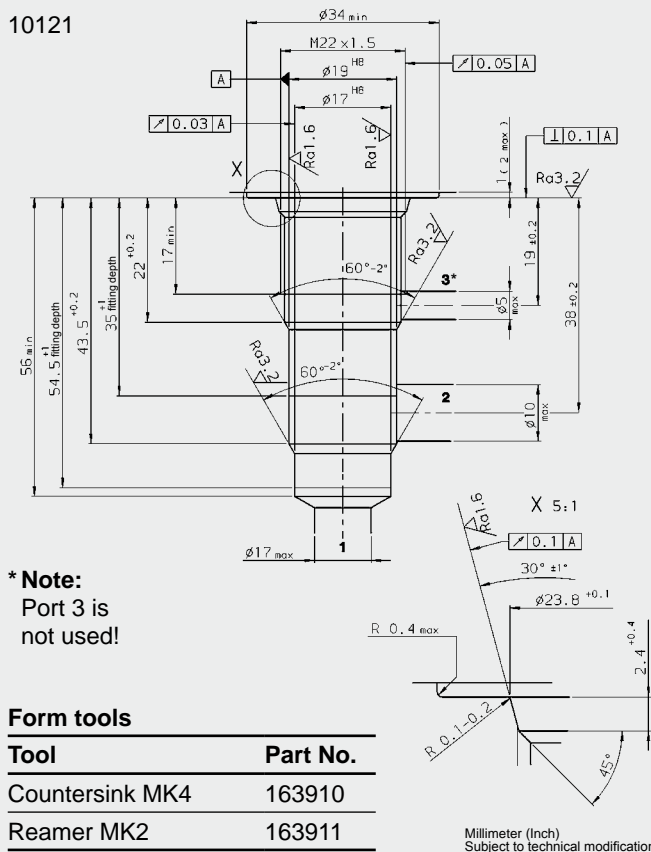
Code	Part No.	Material	Ports	Pressure
R10121	395236	Steel	G1/2	420 bar

Seal kits

Code	Part No.
In preparation	

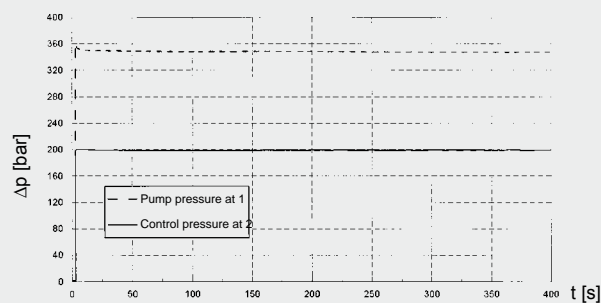
CAVITY

10121

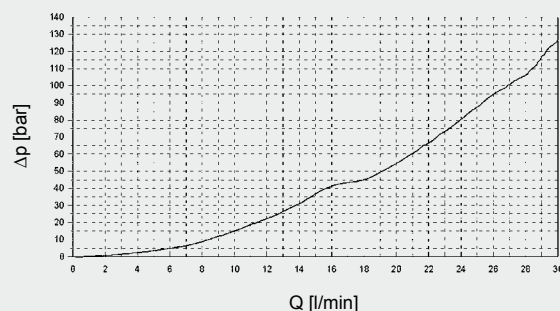


PERFORMANCE

$v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



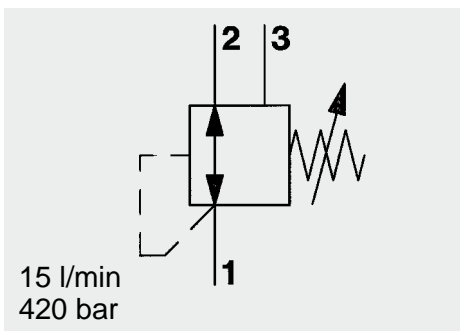
$v = 44 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 40^\circ \text{C}$



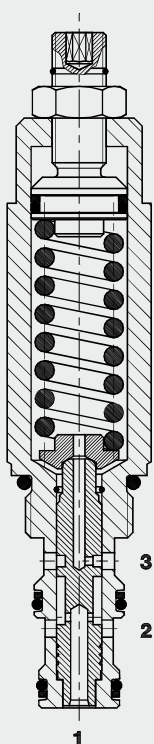
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FUNCTION



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.

Pressure Reducing Valve Spool Type, Direct Acting SAE-8 Cartridge – 420 bar DR08-01

UNF

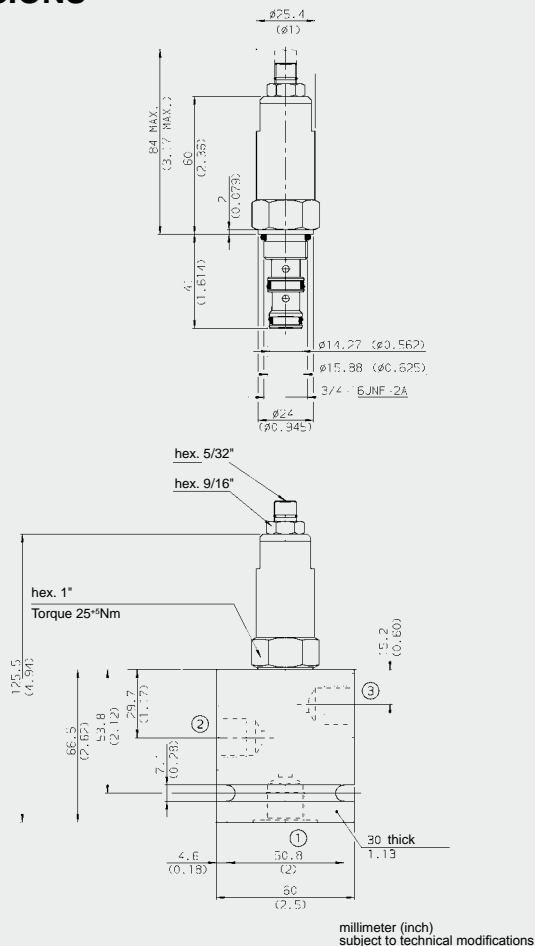
FEATURES

- 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 mm ² /s to max. 420 mm ² /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



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

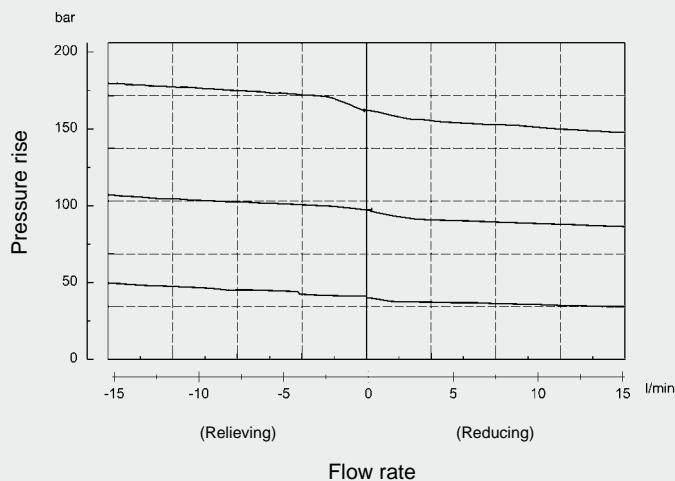
Code	Part No.	Material	Ports	Pressure
FH083-SB3	560922	Steel, zinc-plated	G3/8	420 bar
FH083-AB3	3011427	Aluminium, clear anodized	G3/8	210 bar

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



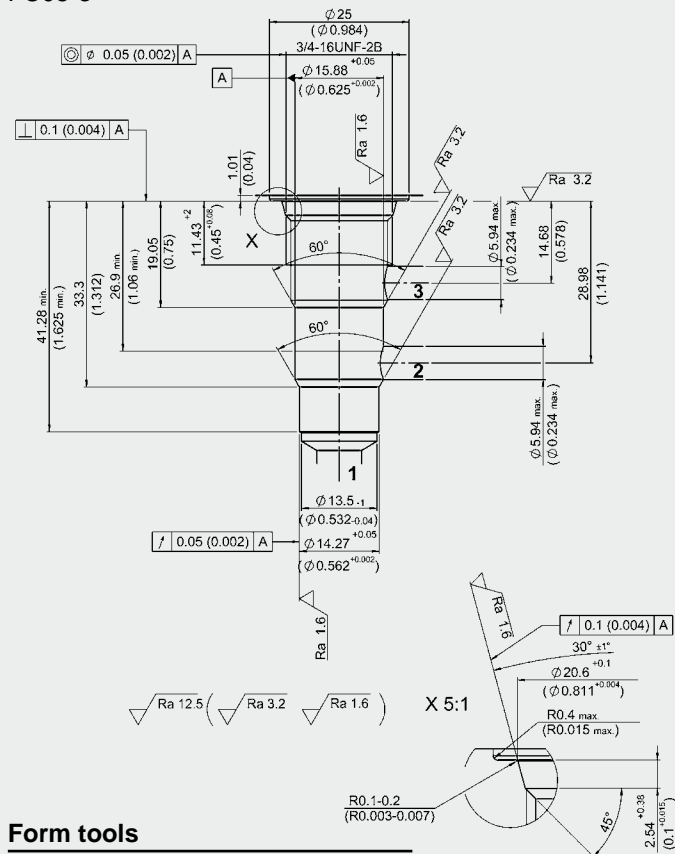
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CAVITY

FC08-3

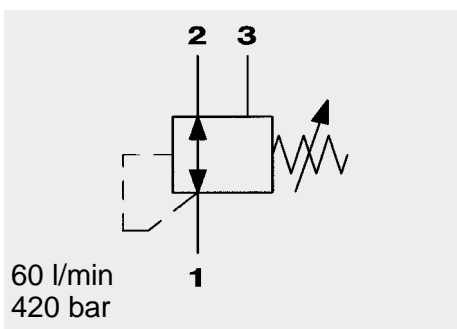


Form tools

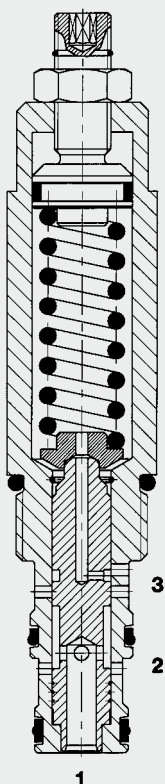
Tool	Part No.
Countersink FC08-3	175644
Reamer FC08-3	175645

millimeter (inch)
subject to technical modifications

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

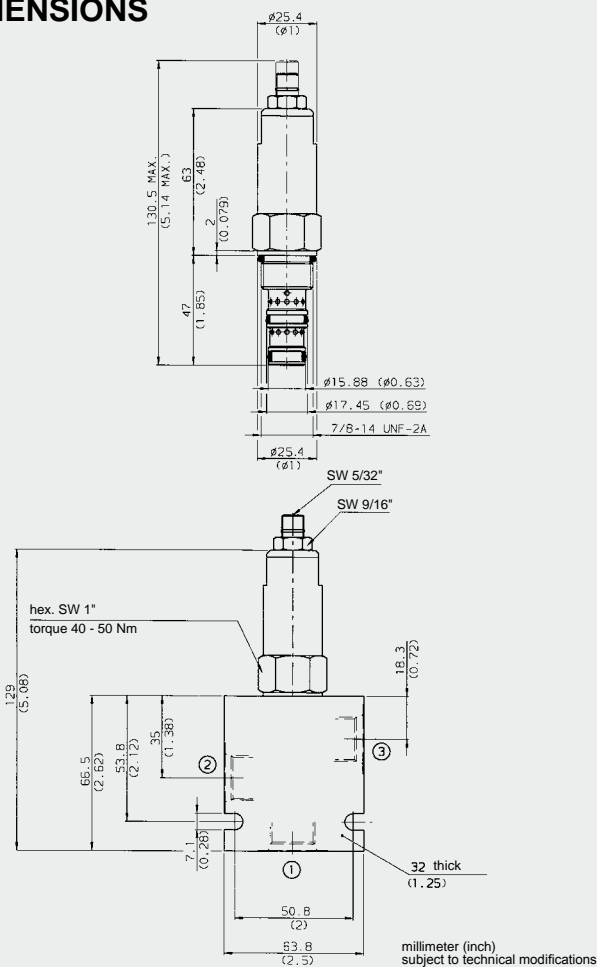
FEATURES

- 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

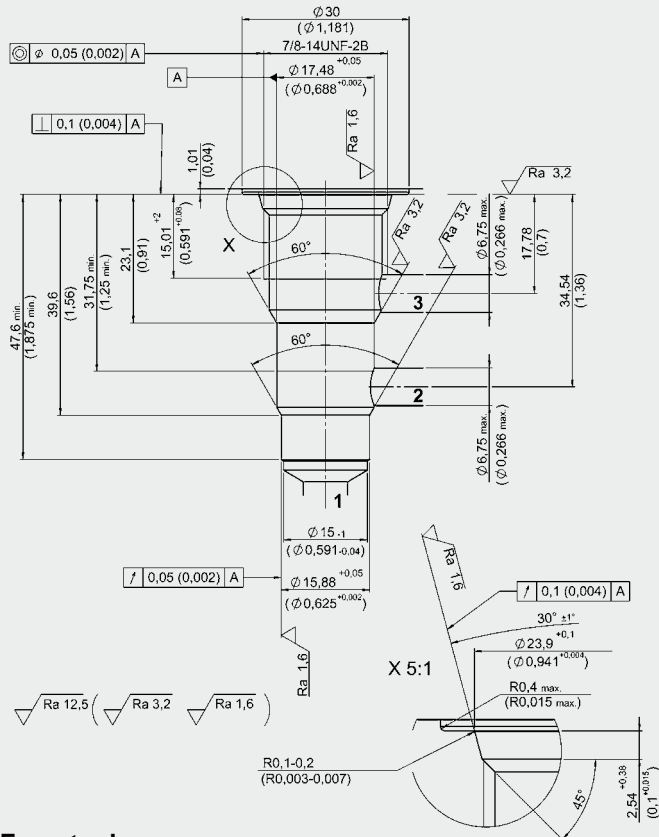
Operating pressure:	max. 420 bar
Nominal flow:	max. 60 l/min
Operating pressure ranges:	Up to 20 bar Up to 48 bar Up to 96 bar Up to 131 bar
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +100 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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

millimeter (inch)
subject to technical modifications

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

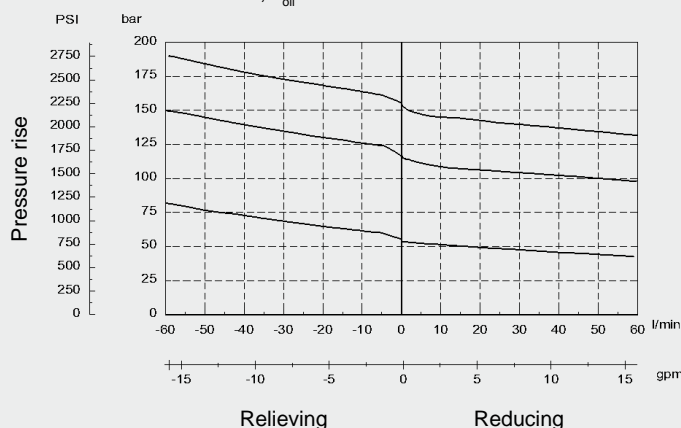
Code	Part No.	Material	Ports	Pressure
FH103-SB4	3037697	Steel, zinc-plated	G1/2	420 bar
FH103-AB4	3038092	Aluminium, anodized	G1/2	210 bar

Seal kits

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

PERFORMANCE

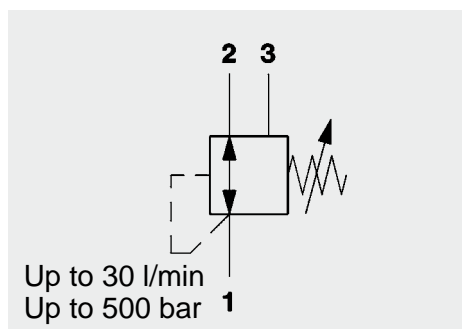
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



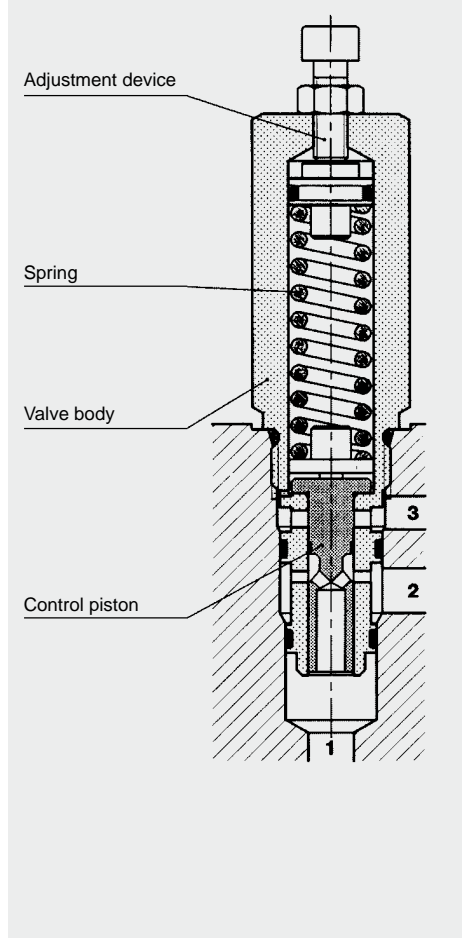
NOTE

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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 mm ² /s to max. 380 mm ² /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

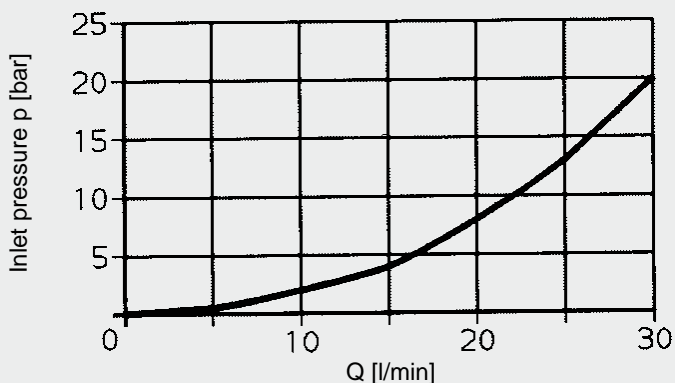
Code	Part No.	Material	Ports	Pressure
R08030-01X-01	283025	Steel, zinc-plated	G3/8	420 bar

Seal kits

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

PERFORMANCE

Pressure drop, dependent on flow rate



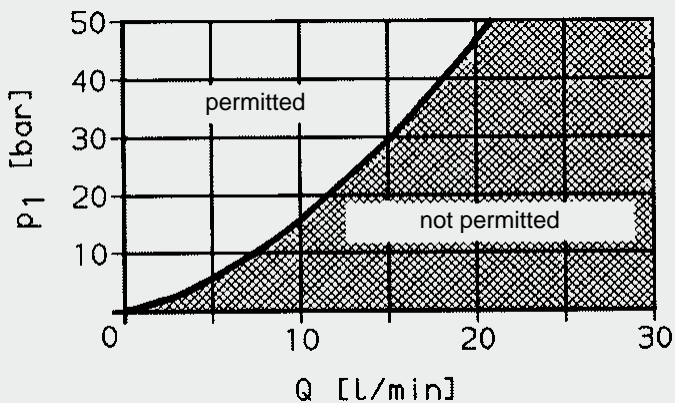
Permitted flow rate from 1 to 2
(free return flow)

p1 = outlet pressure setting

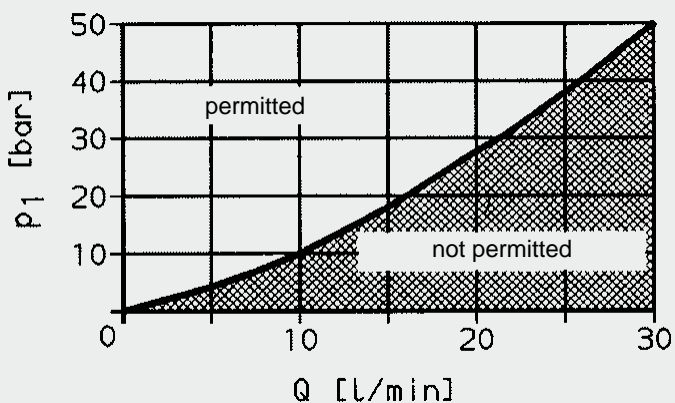
p1 > 50 bar... 30 l/min

p1 ≤ 50 bar... see curve

DMVE-G1/2-01X-50



DMVE-G1/2-01X-140



The graph illustrates the pressure drop in the flow direction. The y-axis represents pressure p_1 in bar, ranging from 0 to 200. The x-axis represents flow rate Q in l/min, ranging from 30 to 0 on the left (relieving) and 0 to 30 on the right (reducing). The graph shows several lines representing different pressure levels, with a sharp drop in pressure at $Q=0$.

SW 1

SW 2

A

3

SW 24

torque
20⁺⁵ Nm

44

3

2

1

G1/2

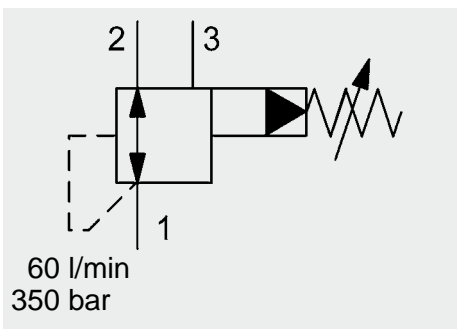
Ø24

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

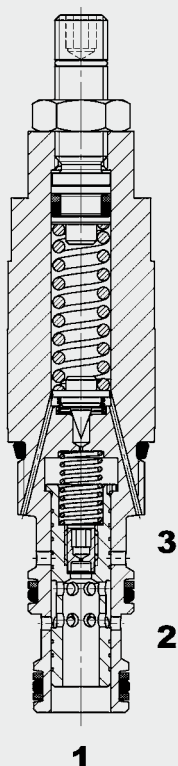
[illegible]

Tool	Part No.
Countersink	174665
Reamer	169962
Tap	1002667

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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.

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

UNF

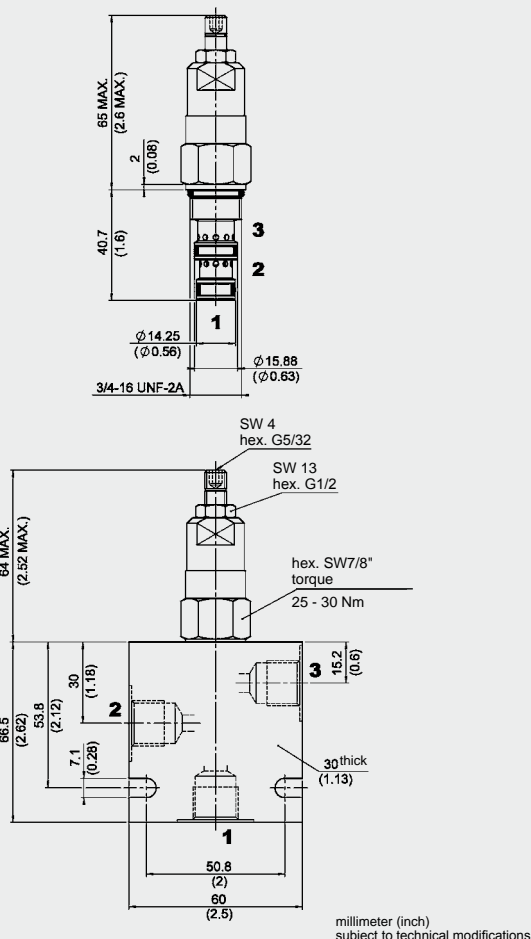
FEATURES

- 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

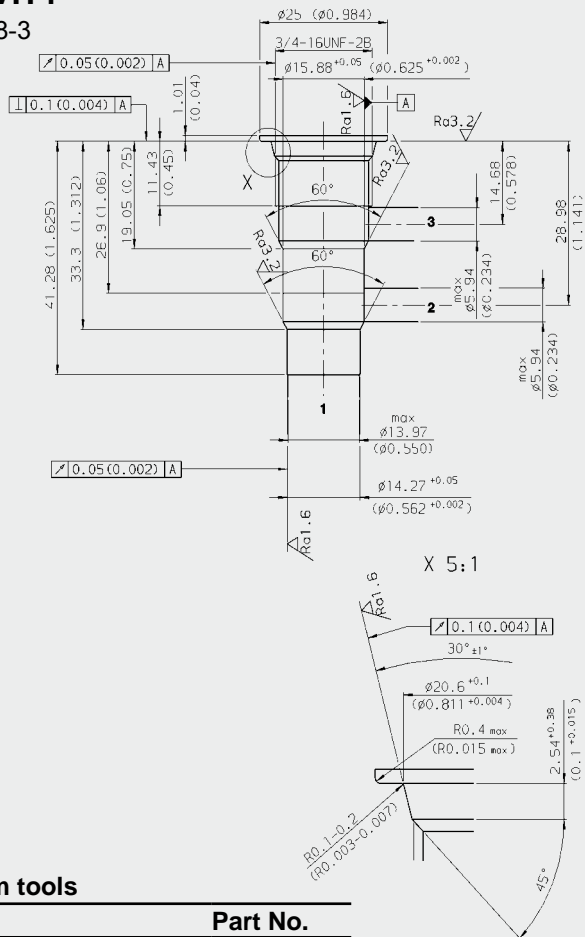
Operating pressure:	max. 350 bar
Nominal flow:	max. 60 l/min
Operating pressure ranges:	up to 35 bar up to 60 bar up to 125 bar up to 230 bar up to 345 bar
Internal leakage:	< 0.5 l/min at 350 bar
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +100 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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



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

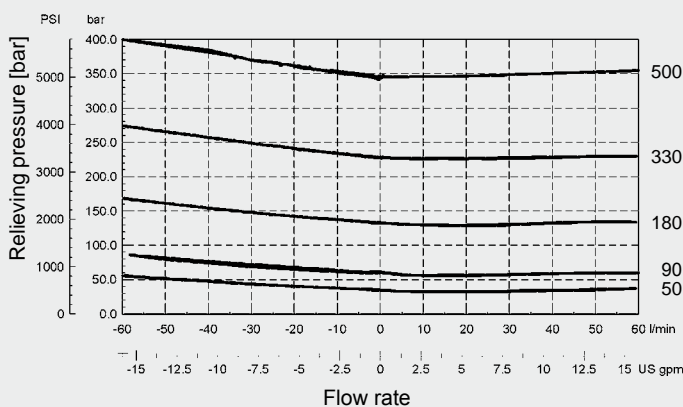
Code	Part No.	Material	Ports	Pressure
FH083-SB3	560922	Steel, zinc-plated	G3/8	420 bar
FH083-AB3	3011427	Aluminium, anodized	G3/8	210 bar

Seal kits

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

PERFORMANCE

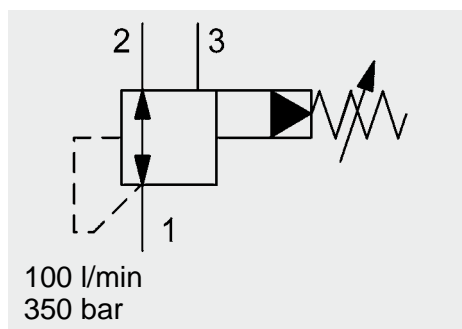
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



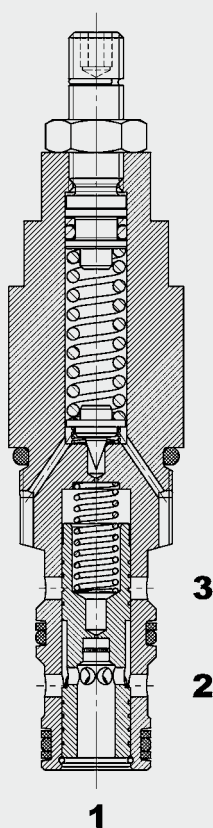
NOTE

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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.

Pressure Reducing Valve Spool Type, Pilot-Operated SAE-10 Cartridge – 350 bar DR10P-01

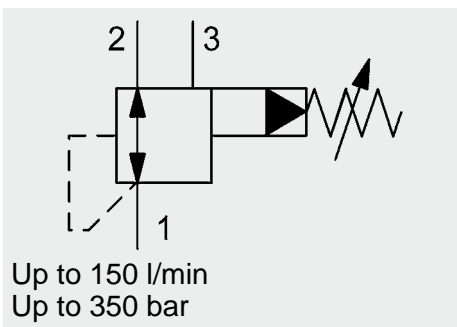
UNF

FEATURES

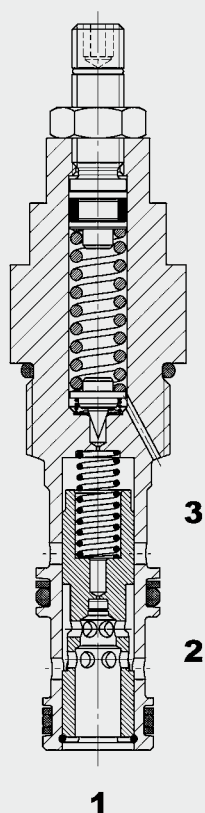
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Excellent stability across the whole flow range
- Screen-protected metering orifice enhances safety
- Optional pressure ranges up to 345 bar
- Quick response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



FUNCTION



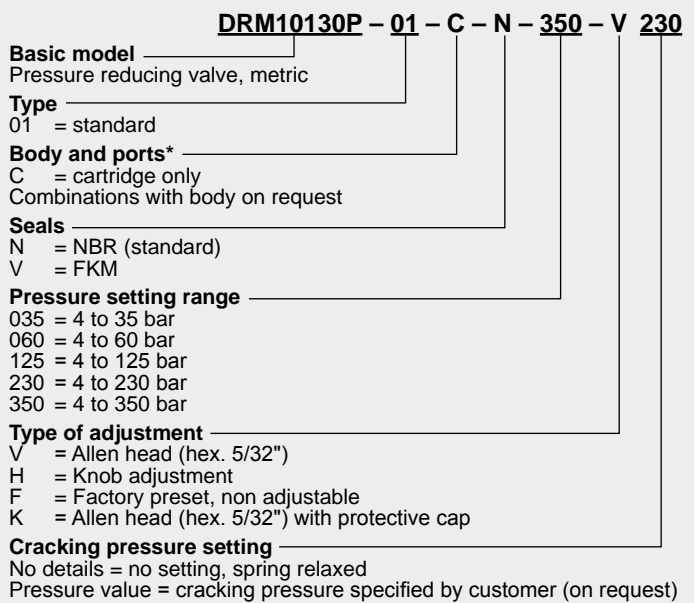
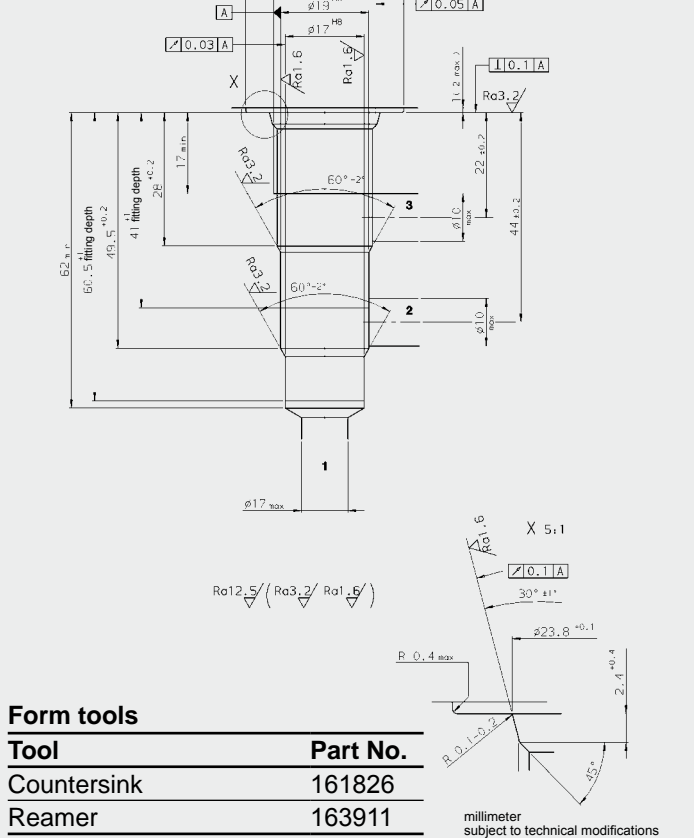
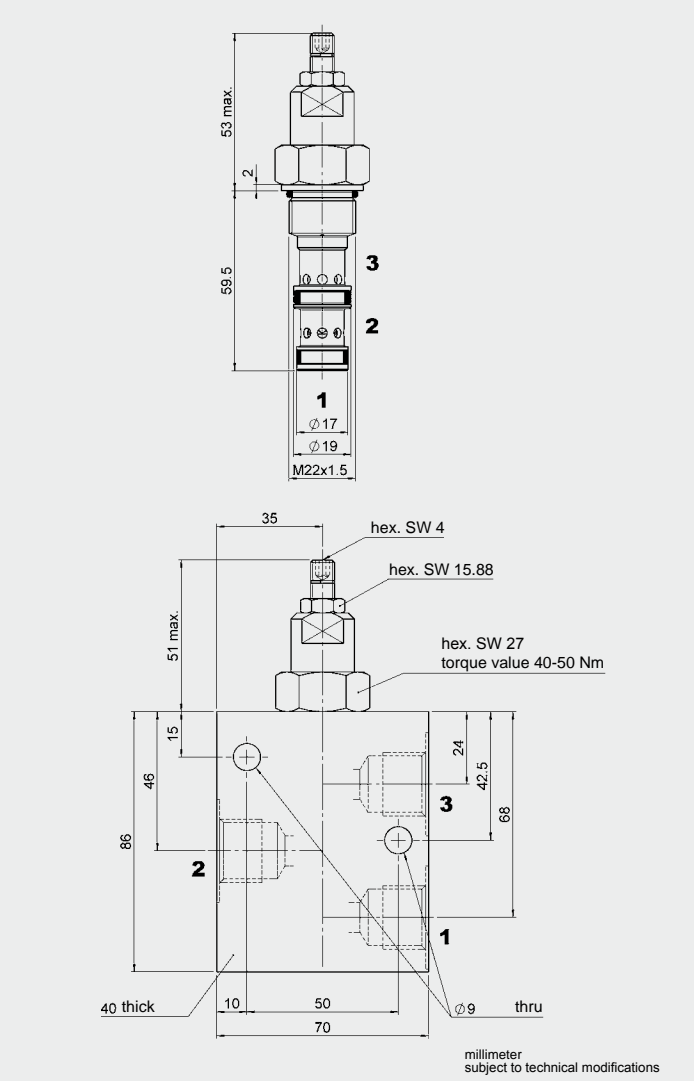
The pressure reducing valve DRM10130P is a pilot-operated, 3-way spool-type valve. If the pressure across port 1 exceeds the pre-set value, the pilot-stage opens and oil flows from behind the main spool to the tank port 3. The resulting pressure differential causes the main spool to move against the 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

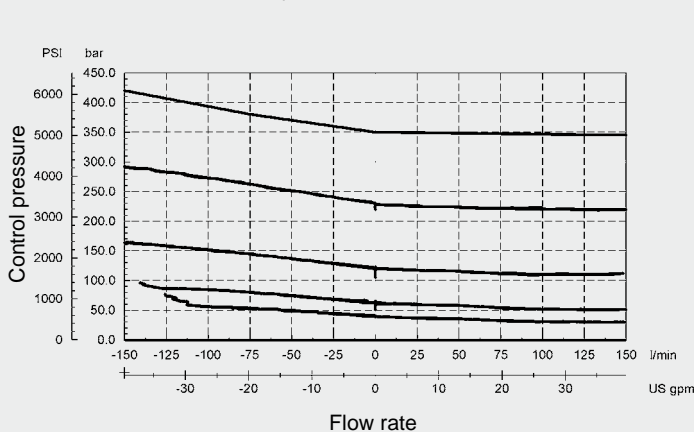
Operating pressure:	max. 350 bar
Nominal flow:	max. 150 l/min
Operating pressure ranges:	4 to 35 bar 4 to 60 bar 4 to 125 bar 4 to 230 bar 4 to 350 bar
Pilot flow:	< 500 cm³/min at 350 bar
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +100 °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



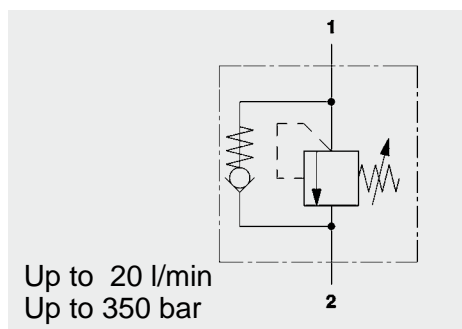
Model code	Part No.
DRM10130P-01-C-N-060V	3124335
DRM10130P-01-C-N-230V	3124337
DRM10130P-01-C-N-350V	3124348

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

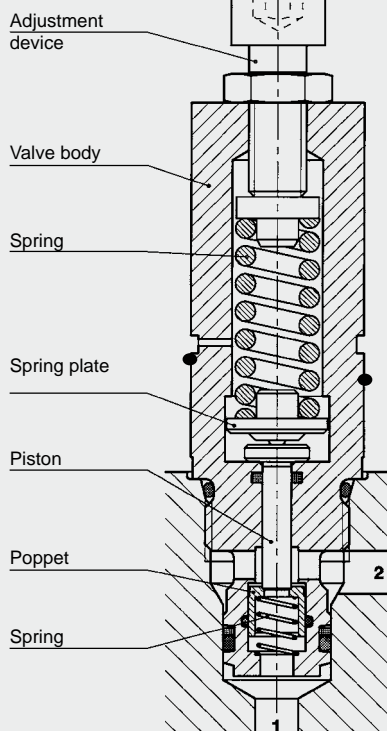
Code	Material	Part No.
Seal kit 10130	NBR	3231327
Seal kit 10130	FKM	3506050



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.



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 $\hat{=}$ 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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

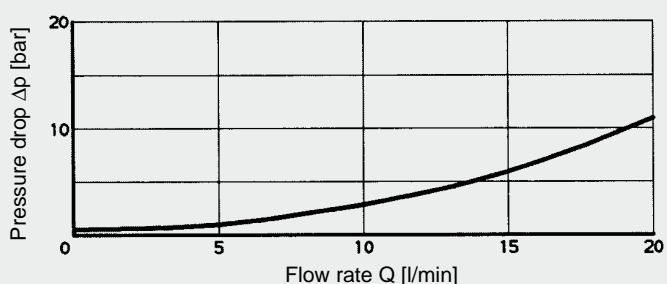
Seal kits

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

PERFORMANCE

Pressure drop, dependent on flow rate

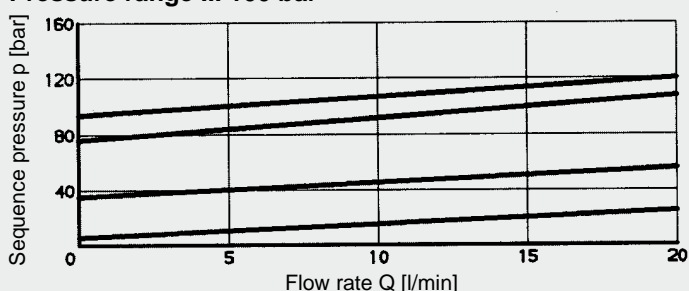
Measured at $v = 36 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 50^\circ\text{C}$,
Flow direction 2→1



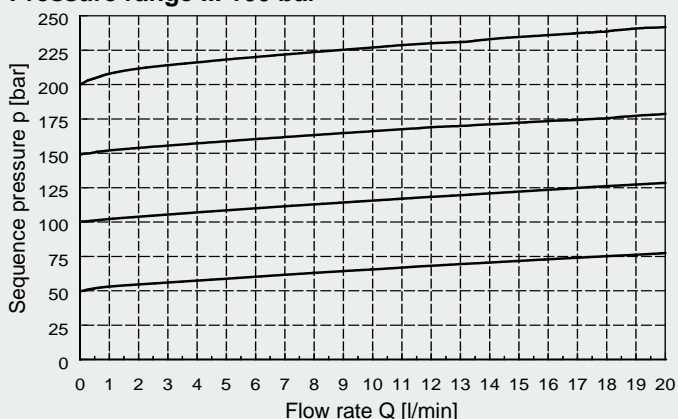
Sequence pressure, dependent on flow rate

Measured at $v = 36 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 50^\circ\text{C}$,
Flow direction 1→2

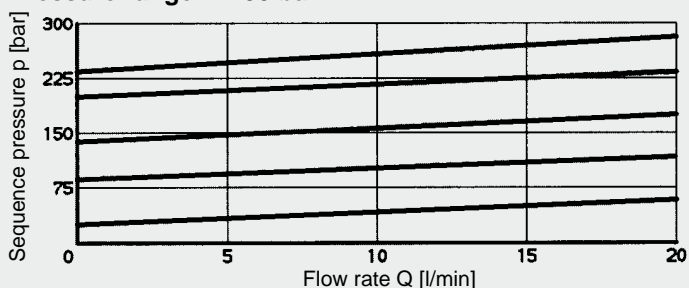
Pressure range ... 100 bar



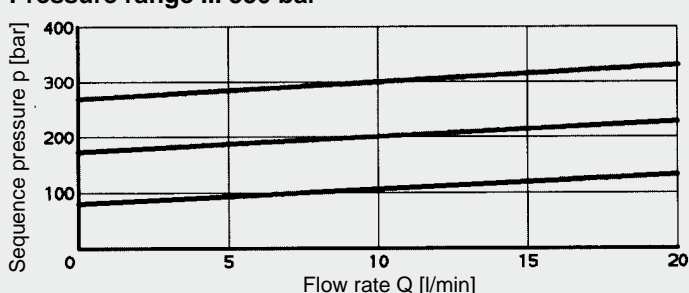
Pressure range ... 100 bar



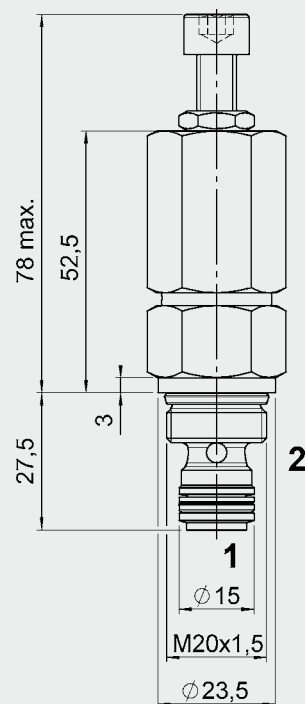
Pressure range ... 250 bar



Pressure range ... 350 bar

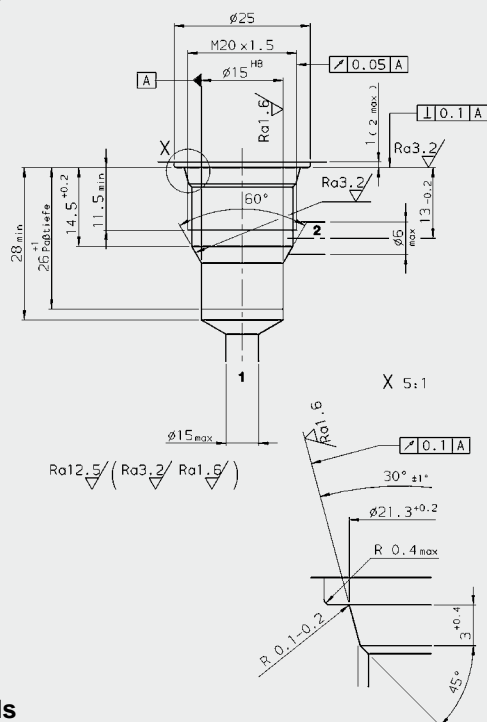


Type of adjustment



Millimeter
Subject to technical modifications

06020

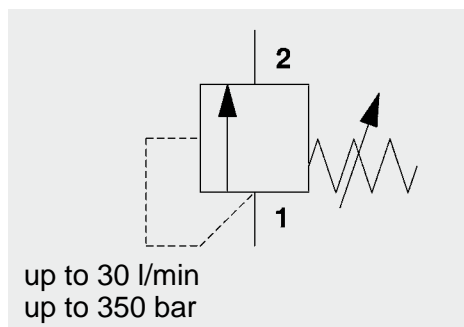


Tool	Part No.
Countersink	170033
Reamer	1000768
Tap	1002648
Plug gauge	168840

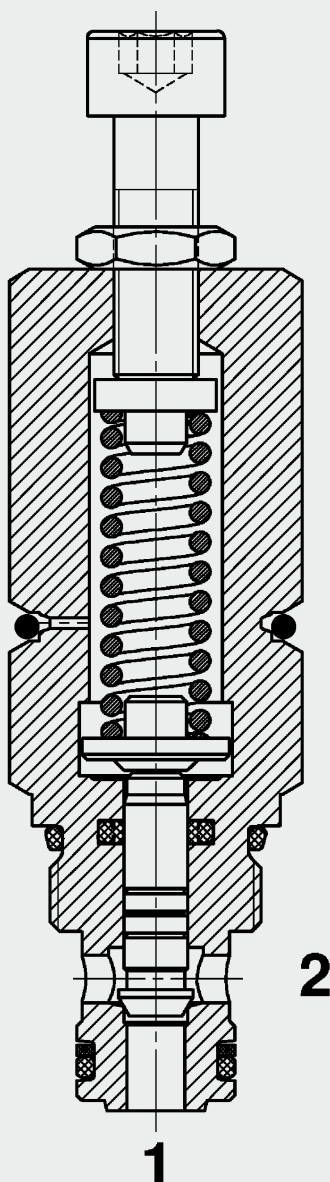
Millimeter
Subject to technical modifications

NOTE
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Subject to technical modifications.

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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.

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

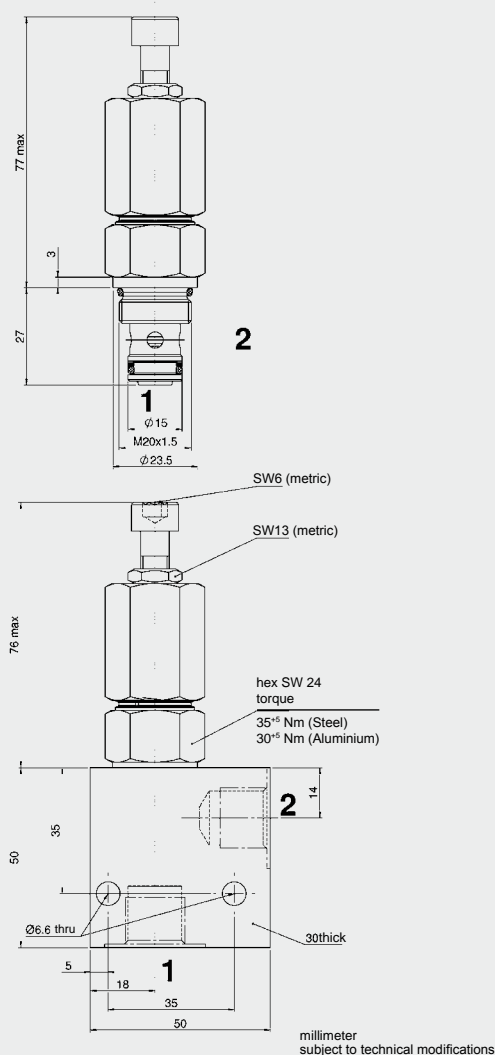
FEATURES

- 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

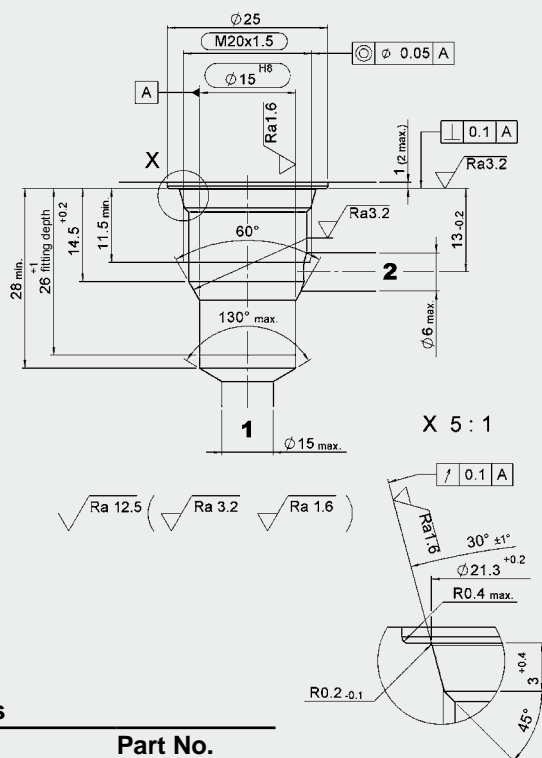
Operating pressure:	max. 350 bar, can be set up to 210 bar	
Nominal flow:	max. 30 l/min	
Internal leakage:	leakage-free (max. 5 drops $\hat{=}$ 0,25 cm ³ /min at 350 bar)	
Setting pressure ranges:	min. 10 bar - 100 / 210 bar	
Sequence pressure tolerance:	+/- 5 bar	
Media operating temperature range:	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 mm ² /s to max. 800 mm ² /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



CAVITY

06020



Form tools

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

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

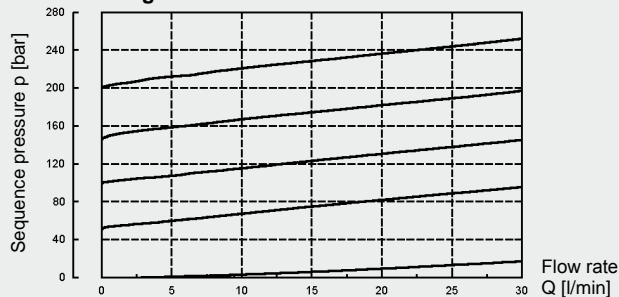
Seal kits

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

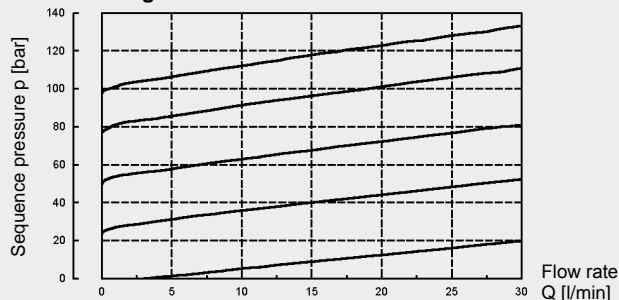
PERFORMANCE

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

Pressure range... 210 bar



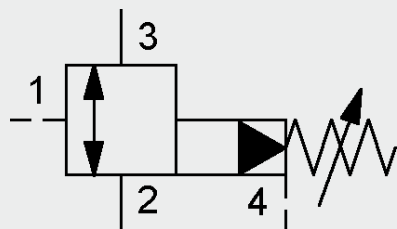
Pressure range... 100 bar



NOTE

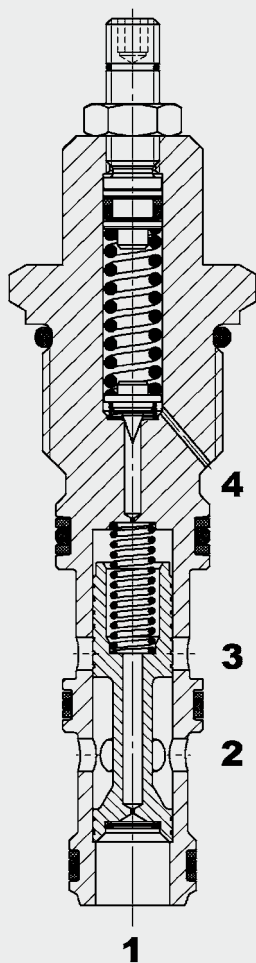
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Up to 200 l/min
Up to 350 bar

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

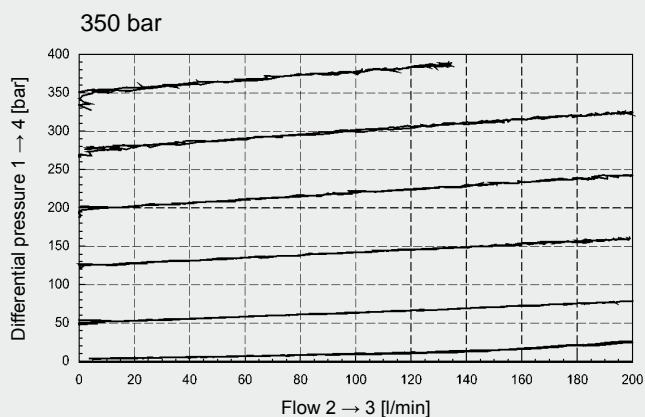
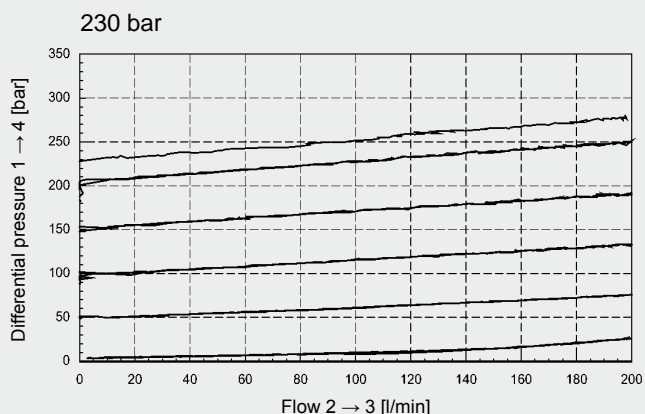
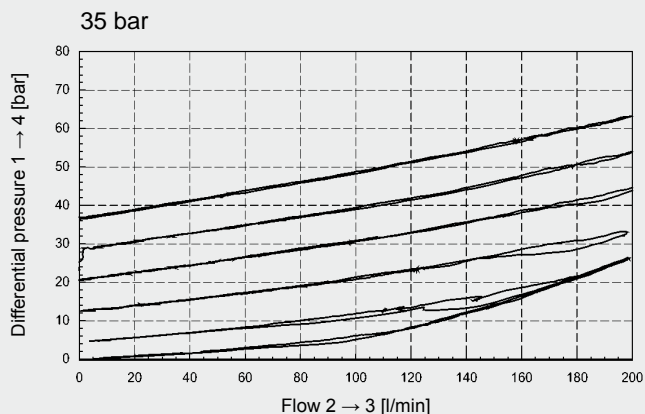
Other bodies on request

Seal kits

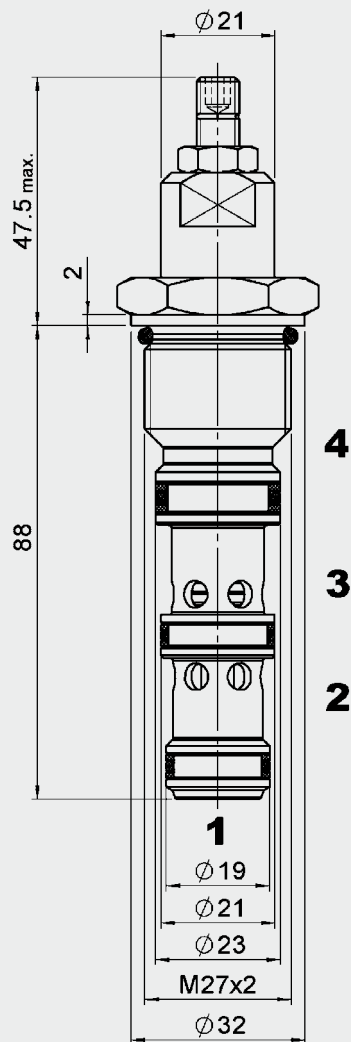
Code	Part No.
On request	

PERFORMANCE

Measured at $T_{oil} = 46\text{ °C}$, $\nu = 34\text{ mm}^2/\text{s}$



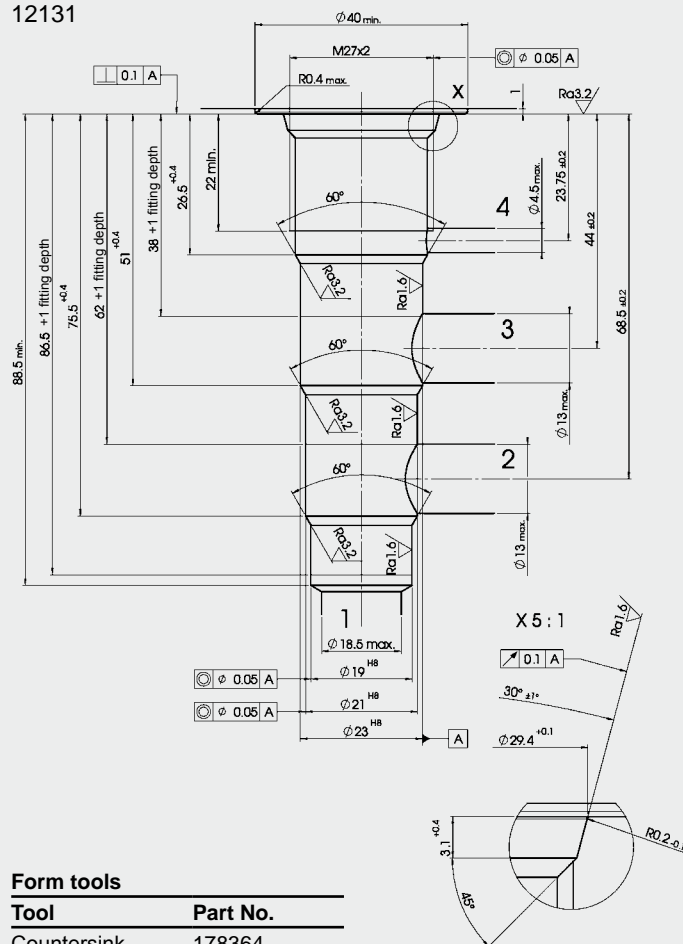
DIMENSIONS



Millimeter
Subject to technical modifications.

CAVITY

12131



Form tools

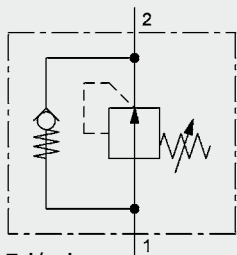
Tool	Part No.
Countersink	178364
Reamer	In preparation
Tap	In preparation
Plug gauge	In preparation

Millimeter
Subject to technical modifications.

NOTE

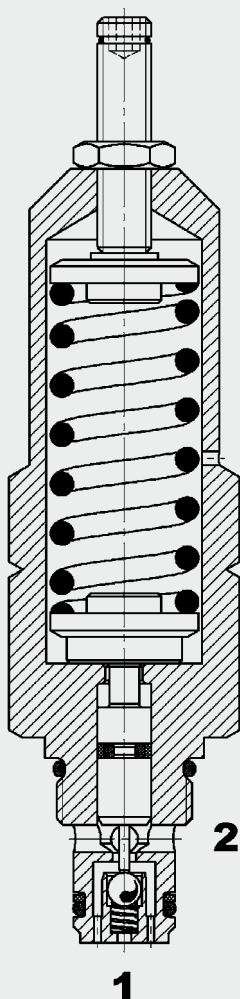
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Up to 15 l/min
Up to 500 bar

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.

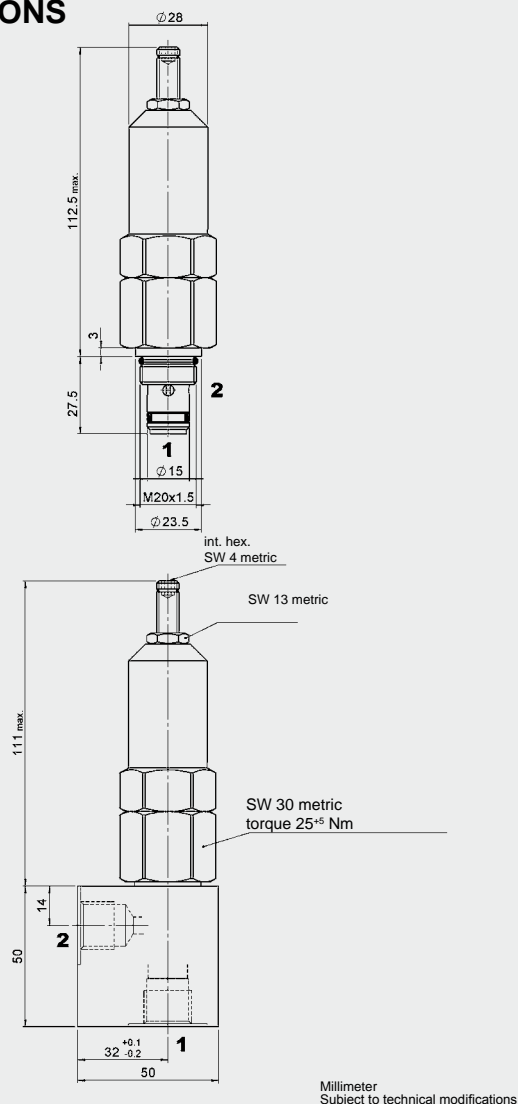
FEATURES

- 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 $\hat{=}$ 0,25 cm ³ /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 mm ² /s to max. 800 mm ² /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



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

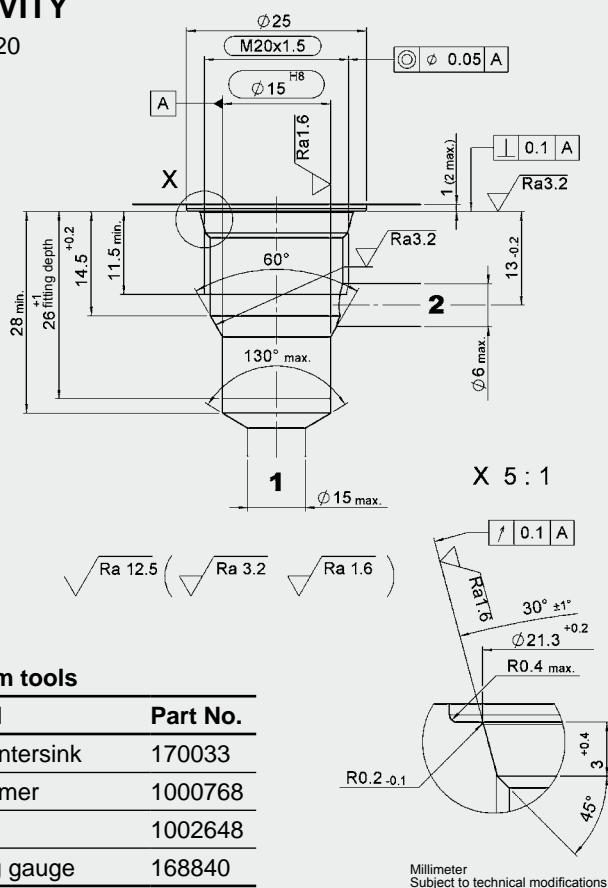
Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G3/8	350 bar
R06020-10X-01	276842	Steel, zinc-plated	G3/8	350 bar

Seal kits

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

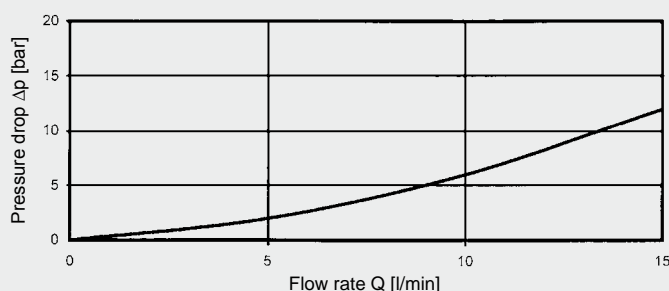
CAVITY

06020



Δp-Q GRAPH

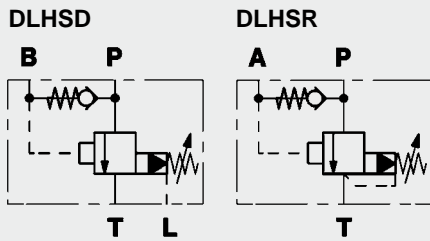
Measured at $v = 38 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 43 \text{ }^\circ\text{C}$



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Up to 30 l/min
Up to 350 bar

FUNCTION



The accumulator charging valve DLHSD / 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!

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

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 mm ² /s to max. 320 mm ² /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

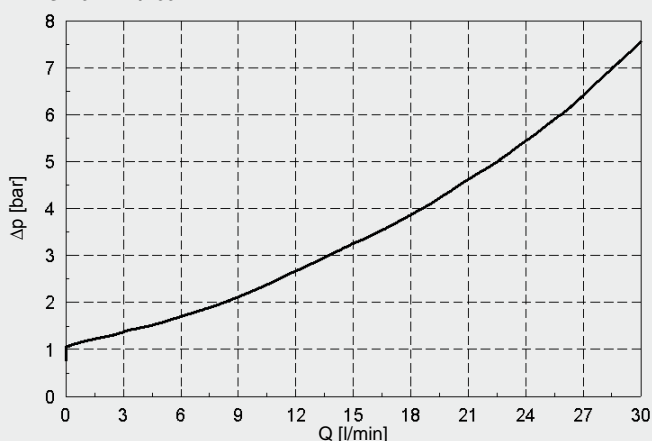
PERFORMANCE

Measured at:

$v = 46 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 40^\circ\text{C}$

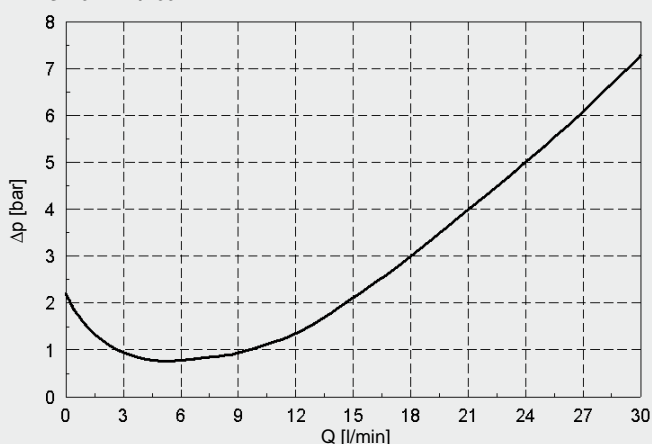
DLHSD-01X-12/100

P→B



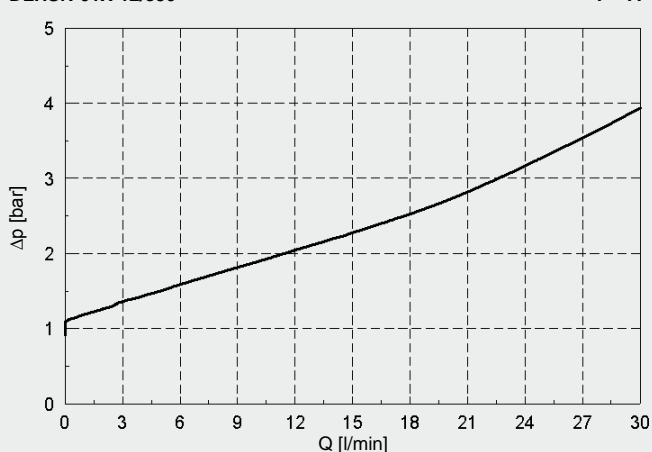
DLHSD-01X-12/100

P→T



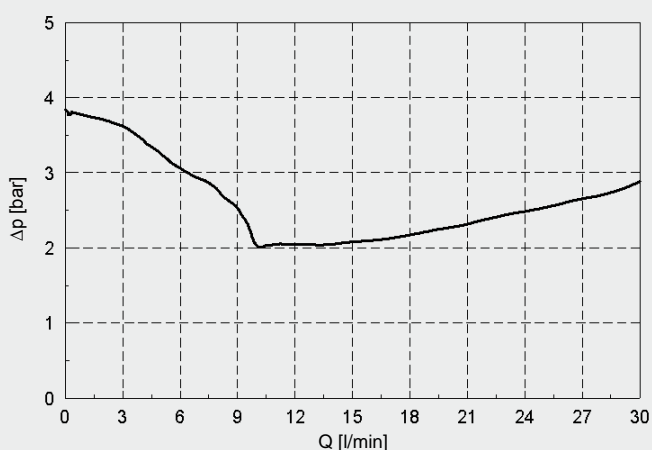
DLHSR-01X-12/350

P→A



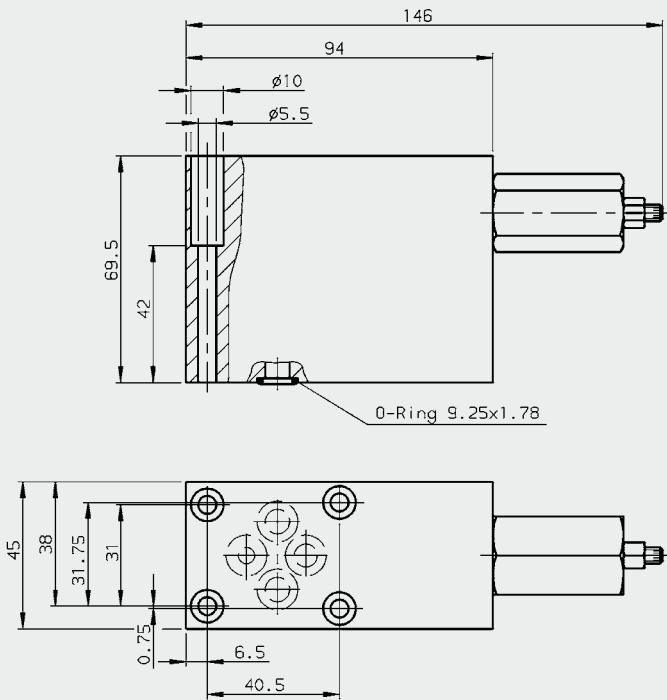
DLHSR-01X-12/350

P→T



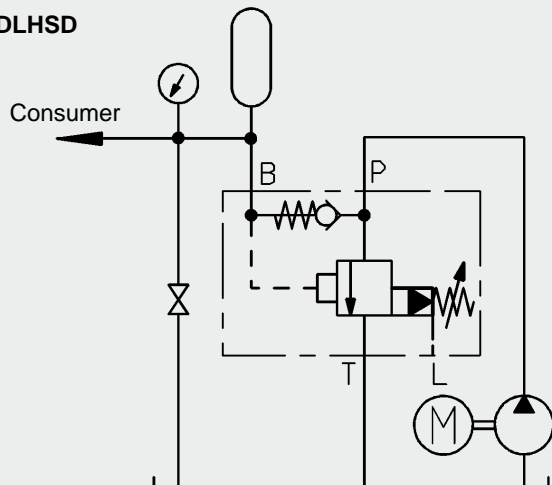
DIMENSIONS

DLHSD

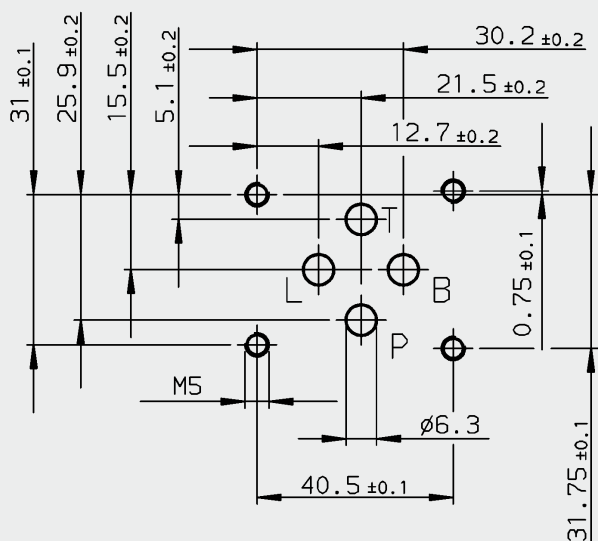


CIRCUIT DIAGRAM EXAMPLE

DLHSD



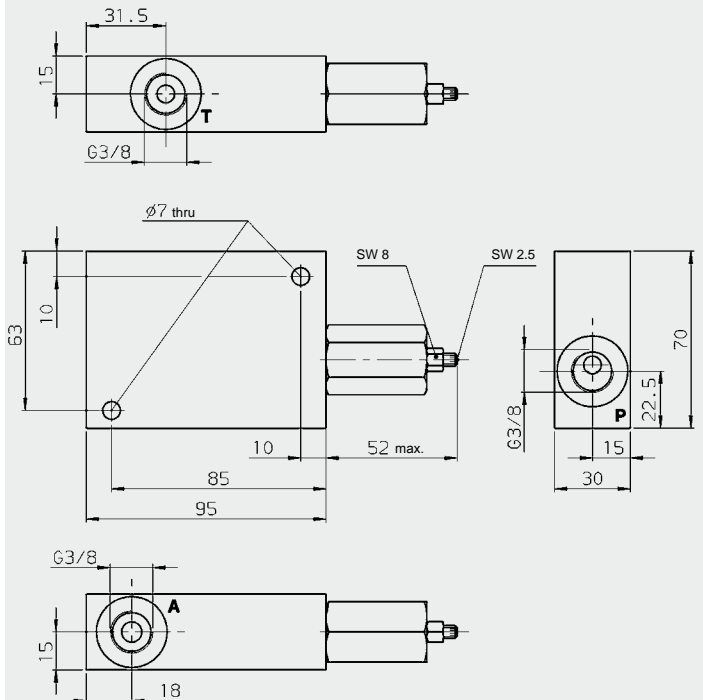
Interface A6 DIN 24340 and CETOP R 35 H-4.2-4-03



Millimeter (Inch)
Subject to technical modifications

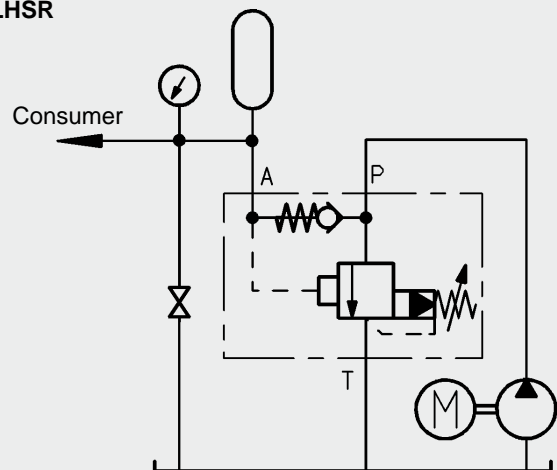
DIMENSIONS

DLHSR



CIRCUIT DIAGRAM EXAMPLE

DLHSR

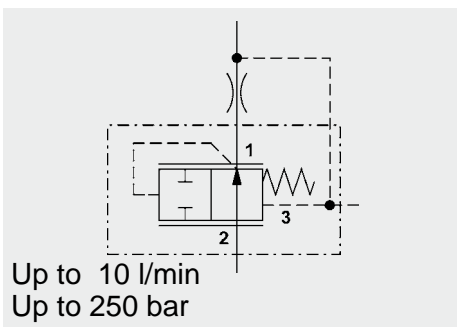


Millimeter (Inch)
Subject to technical modifications

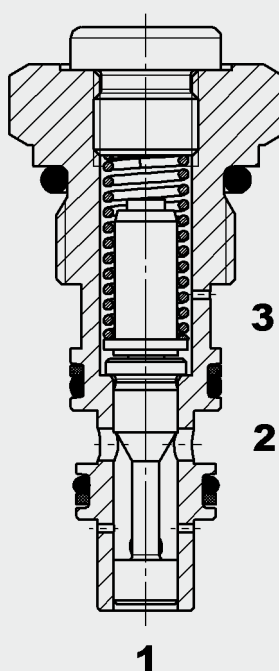
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FUNCTION



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.

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

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 mm ² /s to max. 420 mm ² /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

torque 25^{±5} Nm

13

9,5

2

Ø 14

41,5

3

2

1

Ø 9

Ø 13

Ø 14

G3/8

Ø 21

millimeter
subject to technical modifications

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

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

Line bodies and seal kits on request

05830

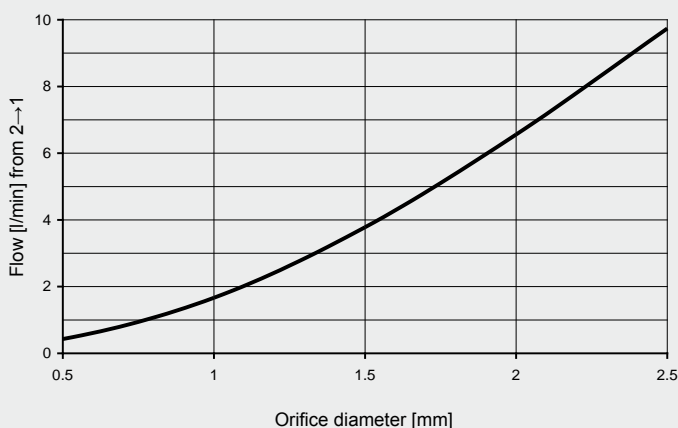
Technical drawing of a shaft with a countersink and reamer. The drawing shows a shaft with a diameter of 25 mm at the top, a countersink with a 60-degree angle, and a reamer with a 30-degree angle. The shaft has a total length of 44 mm. The countersink has a depth of 33 mm and a diameter of 14 mm. The reamer has a depth of 23 mm and a diameter of 13 mm. The shaft has a diameter of 12 mm at the bottom. The drawing includes surface texture symbols (Ra 1.6, Ra 3.2, Ra 0.1) and a detail view of the reamer tip.

Form tools

Tool	Part No.
Countersink	In preparation
Reamer	In preparation

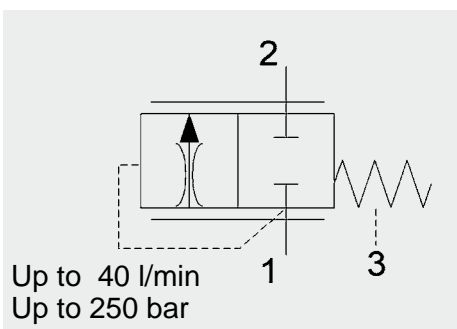
millimeter
subject to technical modifications

Measured at $\nu = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$

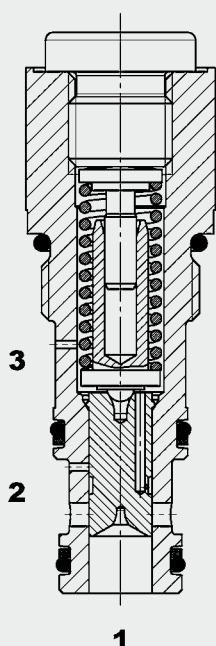


NOTE The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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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.

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

DWM08130Z

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

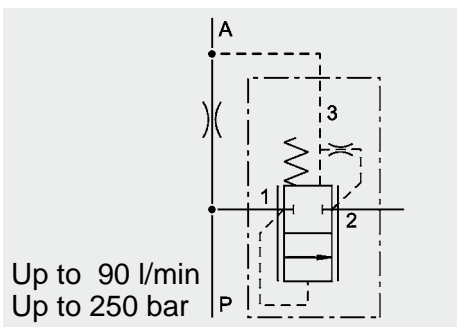
Operating pressure:	max. 250 bar
Nominal flow:	max. 40 l/min
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +100 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 10 mm ² /s to max. 420 mm ² /s
Filtration:	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

hex. SW 24
torque 25^{±5} Nm

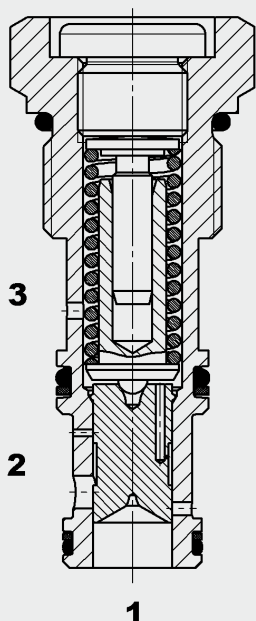
Technical drawing of a hexagonal bolt with the following dimensions and labels:

- Top hexagonal head diameter: $\varnothing 19$
- Head height: 25.5
- Head to first thread start distance: 21
- Thread pitch: 3
- Shank length: 45.5
- Shank diameter: $\varnothing 15.5$
- Threaded section diameter: $\varnothing 17$
- Thread specification: M20x1.5
- Total length: $\varnothing 23.6$
- Labels 1, 2, and 3 indicate specific components or sections of the bolt.

millimeter
subject to technical modifications



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.

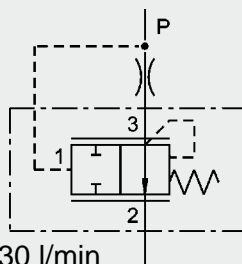
Pressure Compensator Bypass Spool Type, Direct-Acting, Normally Closed Metric Cartridge – 250 bar DWM12130Z

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

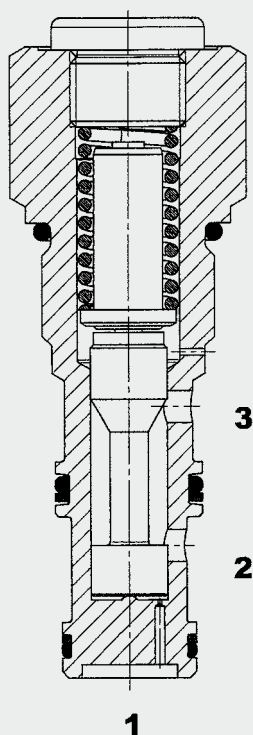
SPECIFICATIONS

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 mm ² /s to max. 420 mm ² /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



Up to 130 l/min
Up to 250 bar

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 mm ² /s to max. 420 mm ² /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

hex. SW 32
torque 70*10 NM

32
27,5
2,5
70,5
3
2
1
23,9
21
23
M27x2
32

Technical drawing of a 3D part with dimensions and tolerances. The part has a total length of 75 ±1 mm. It features a central section with a 60° ±2° taper and a 50° ±2° taper. The top section has a 22 mm length and a 28.5 ±0.2 mm length. The bottom section has a 3.1 mm length. The drawing includes various surface finish symbols (Ra 1.6, Ra 3.2, Ra 0.1) and geometric tolerances (0.05 A, 0.1 A). A detail view 'X' shows a 30° ±1° angle and a 0.1 mm radius. A table at the bottom lists form tools and part numbers.

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

Millimeter
Subject to technical modifications

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

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

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

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

A line graph showing the relationship between flow rate Q in l/min and orifice diameter in mm for a 3-2 valve. The x-axis represents the orifice diameter from 1 to 8 mm, and the y-axis represents the flow rate Q from 0 to 100 l/min. The curve starts at approximately (1, 2) and rises to approximately (8, 85).

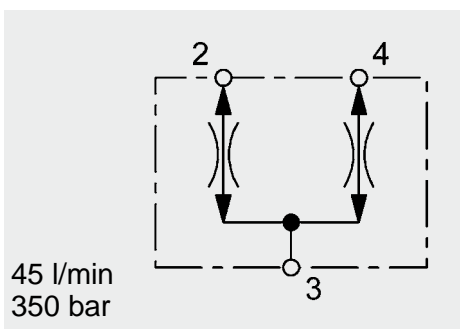
Orifice diameter [mm]	Flow rate Q [l/min]
1	2
2	8
3	18
4	30
5	42
6	55
7	68
8	85

A line graph showing the relationship between orifice diameter and flow rate for a 3 to 2 valve. The x-axis is labeled 'Orifice diameter [mm]' and ranges from 1 to 9. The y-axis is labeled 'Q [l/min] from 3 to 2' and ranges from 0 to 140. The curve starts at approximately (1, 2) and rises to approximately (9, 125).

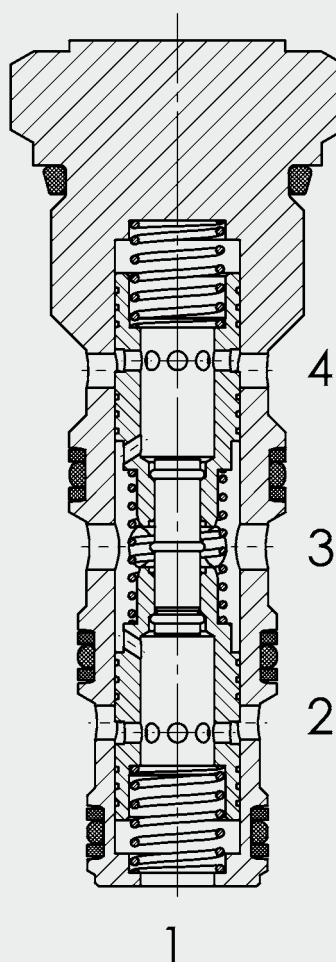
Orifice diameter [mm]	Flow rate Q [l/min]
1	2
2	10
3	20
4	35
5	50
6	68
7	85
8	105
9	125

NOTE
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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.

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

UNF

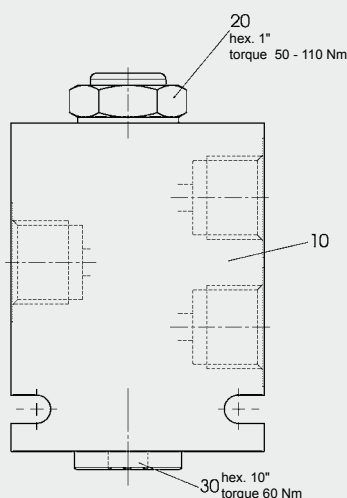
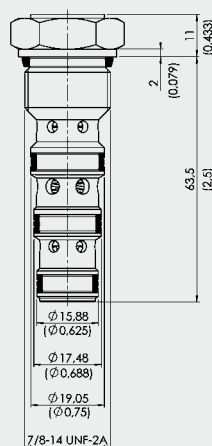
FEATURES

- 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	Code 11
	15.2 l/min	Code 22
	22.8 l/min	Code 33
	30.4 l/min	Code 44
	37.8 l/min	Code 55
	45.6 l/min	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 mm ² /s to max. 420 mm ² /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:	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 (port 1 not used)	
Weight:	0.122 kg	

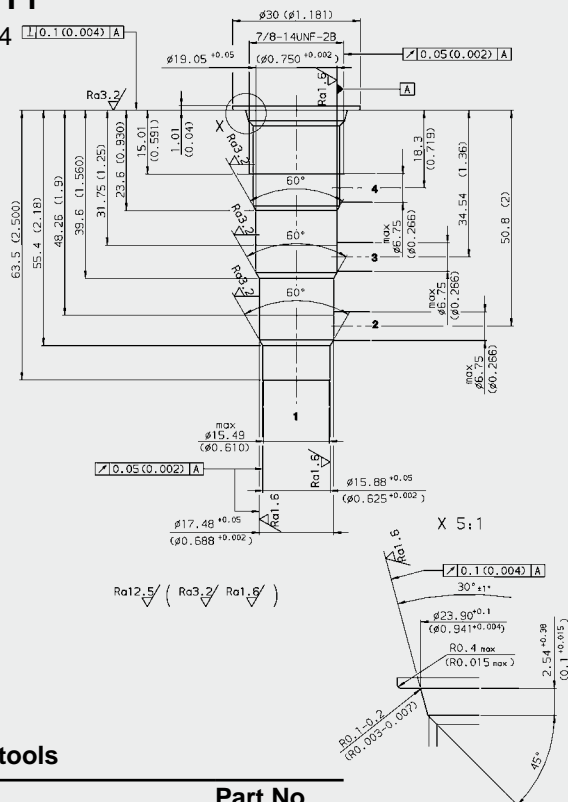
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC10-4



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**

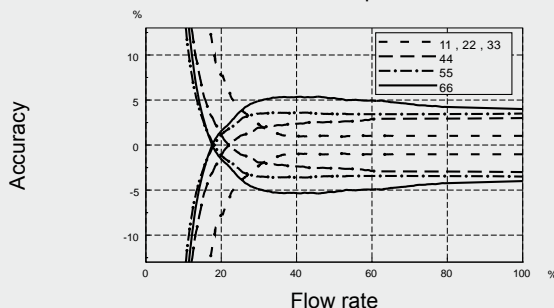
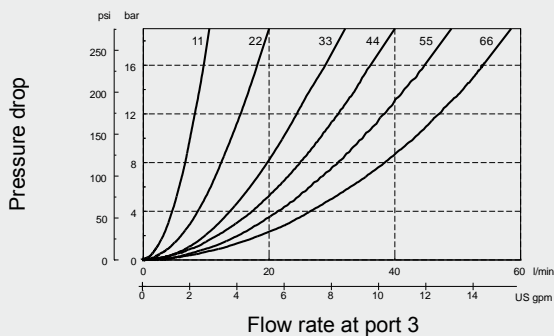
Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB4	3038097	Aluminium, anodized	G1/2	210 bar

Seal kits

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

PERFORMANCE

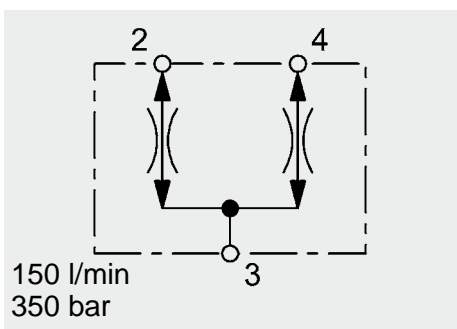
Measured at $\nu = 34 \text{ mm}^2/\text{s}$ $T_{\text{Oil}} = 46^\circ\text{C}$



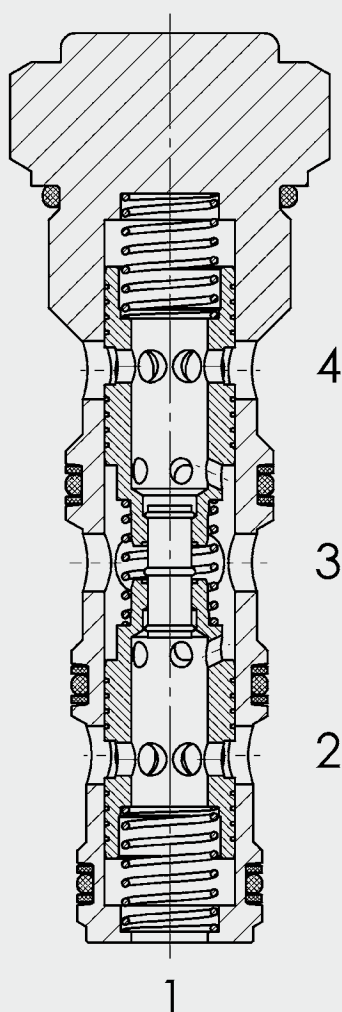
NOTE

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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.

Flow Divider / Combiner SAE-16 Cartridge – 350 bar ST16-01

UNF

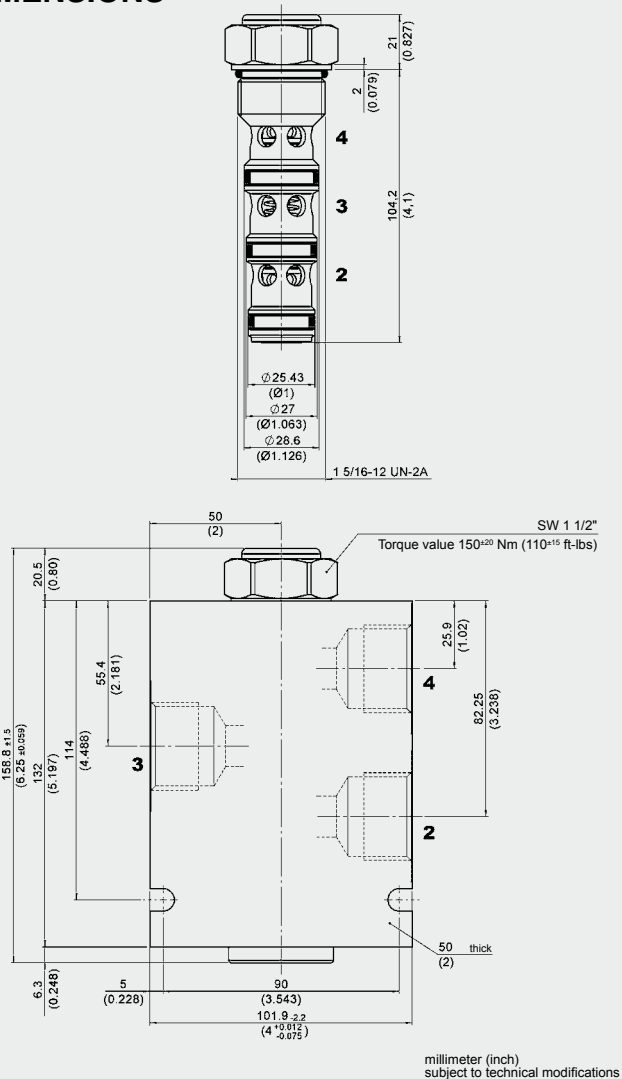
FEATURES

- 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	Code 1212
	max. 115 l/min	Code 1515
	max. 150 l/min	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 mm ² /s to max. 420 mm ² /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



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

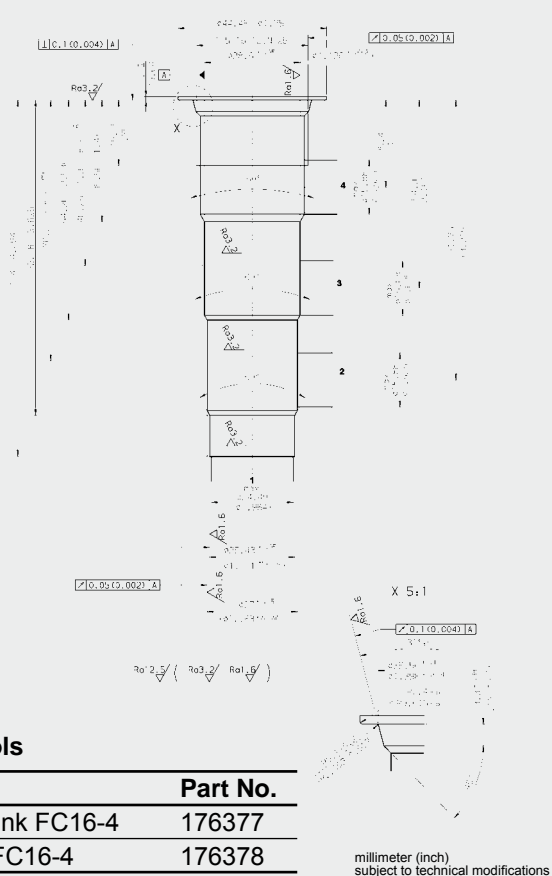
Seal kits

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

CAVITY

FC16-4



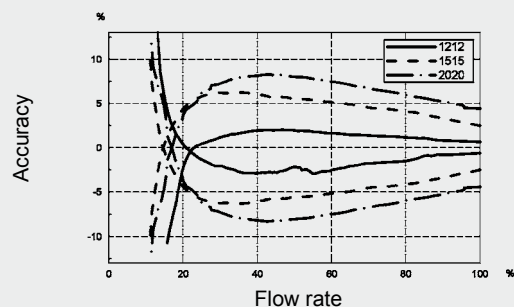
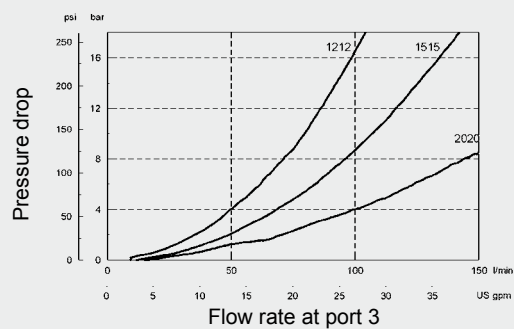
Form tools

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

millimeter (inch)
subject to technical modifications

PERFORMANCE

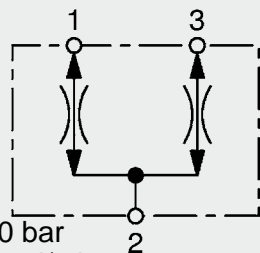
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



NOTE

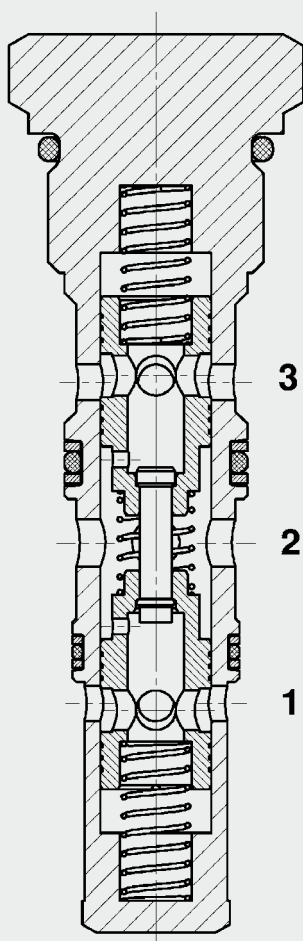
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Subject to technical modifications.

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Up to 60 bar
Up to 350 l/min

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.

Flow Divider /Combiner Spool Type Metric Cartridge – 350 bar ST12230

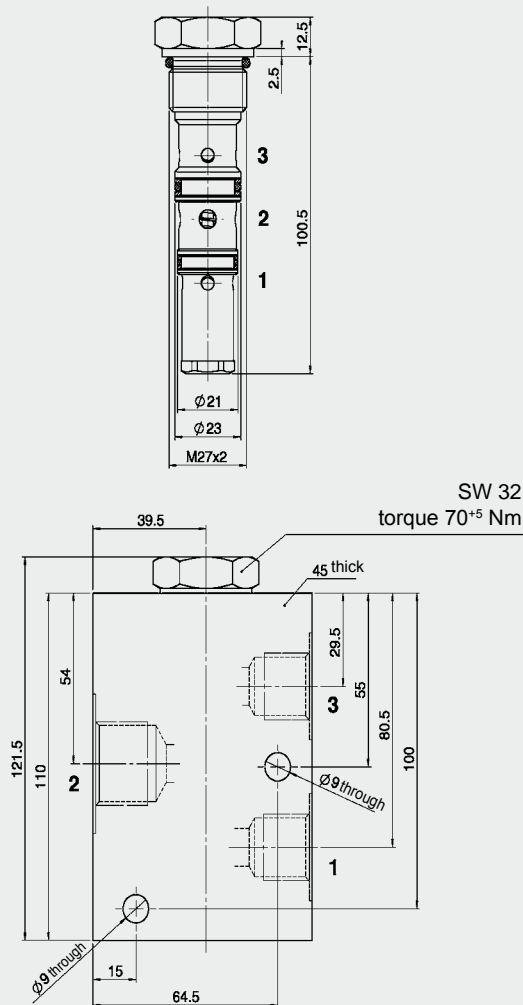
FEATURES

- 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	Model code 20
	60 l/min	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

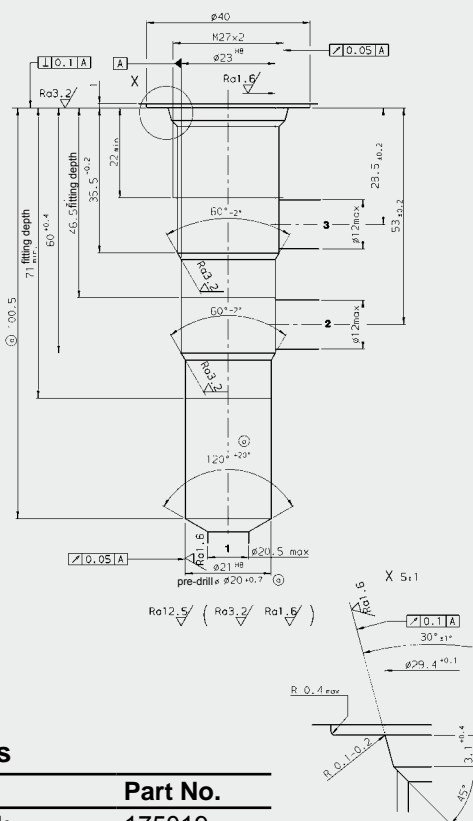


SW 32
torque 70⁺⁵ Nm

Millimeter
Subject to technical modifications

CAVITY

12230



Millimeter
Subject to technical modifications

Form tools

Tool	Part No.
Countersink	175019
Reamer	175021

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

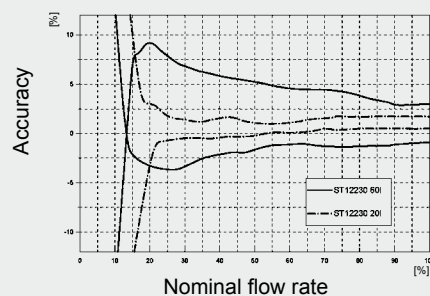
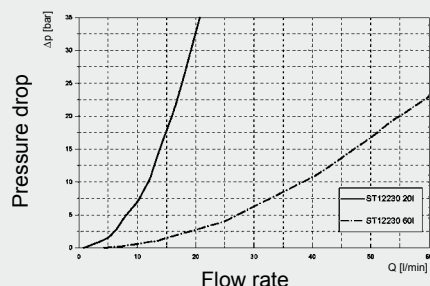
Seal kits

Code	Material	Part No.
Seal kit ST12230	FKM	3419571

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$

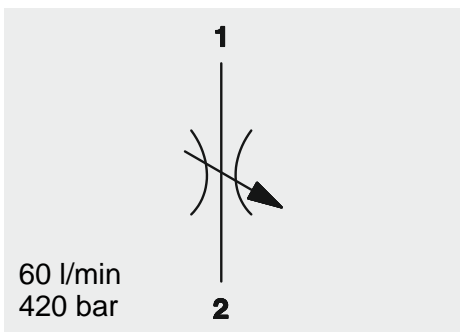
T Oil = 46 °C



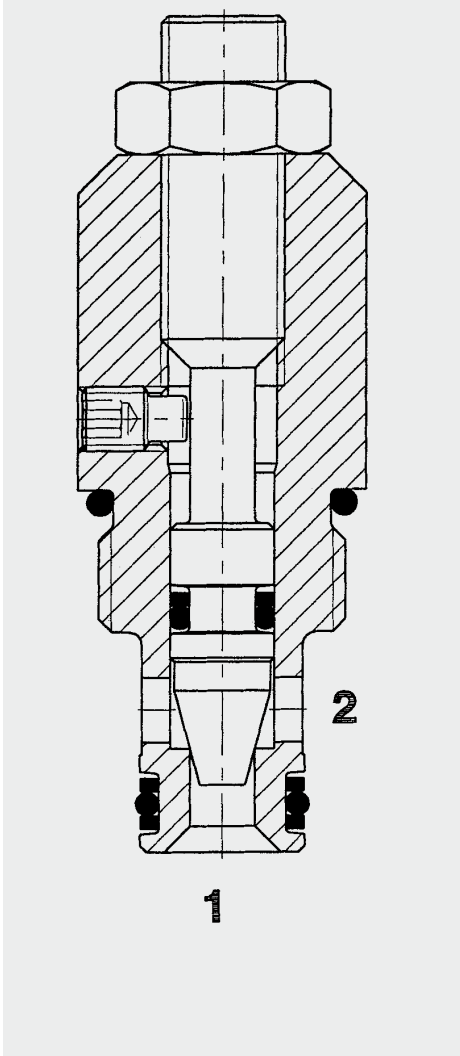
NOTE

NOTE
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Subject to technical modifications.

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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.

Needle Valve SAE-8 Cartridge – 420 bar SD08-01

UNF

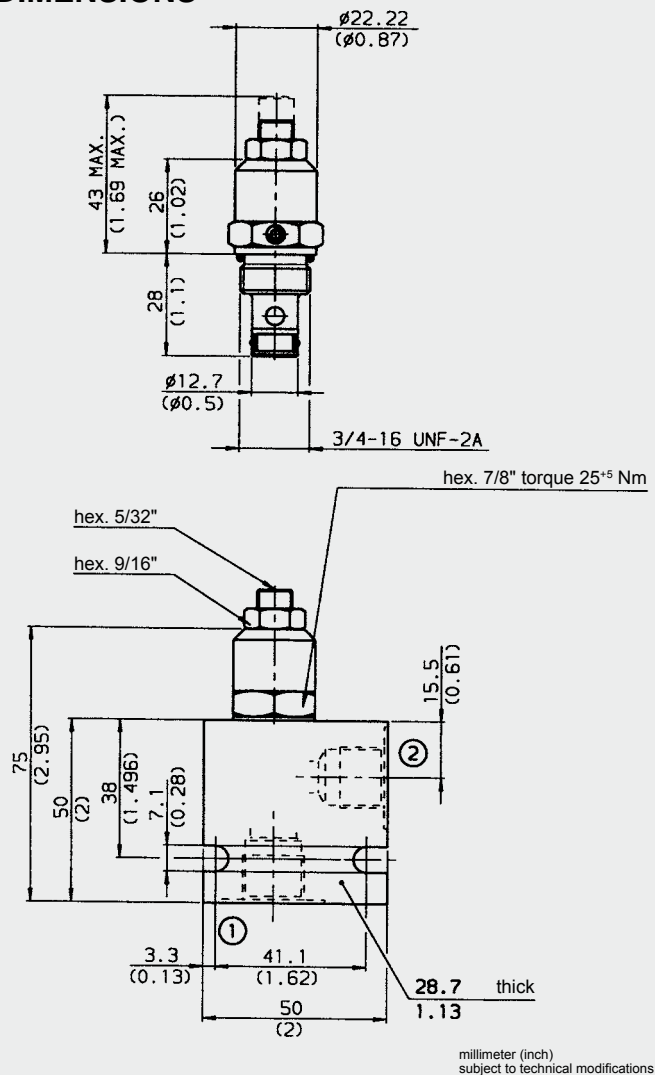
FEATURES

- 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 mm ² /s to max. 420 mm ² /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



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

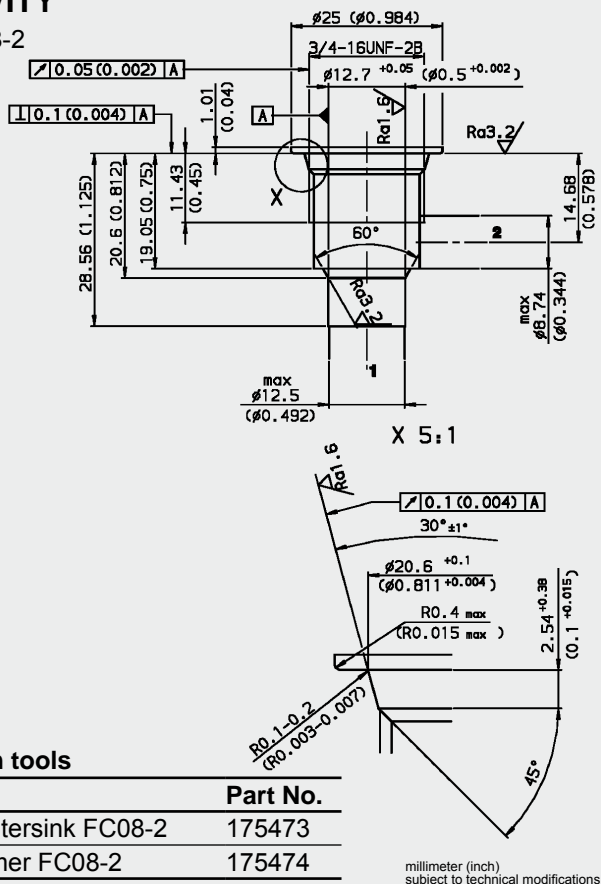
Model code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

Seal kits

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

CAVITY

FC08-2

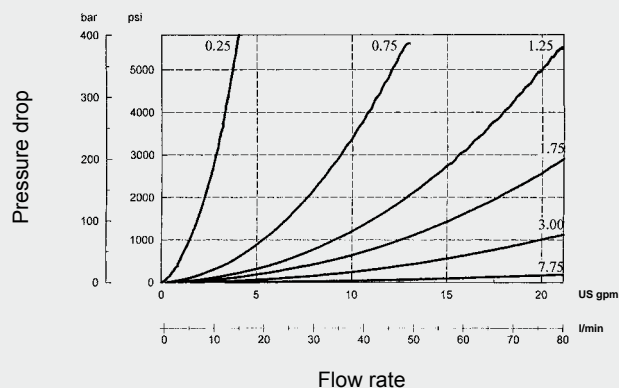


Form tools

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

PERFORMANCE

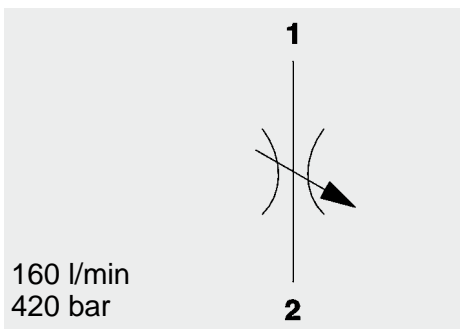
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



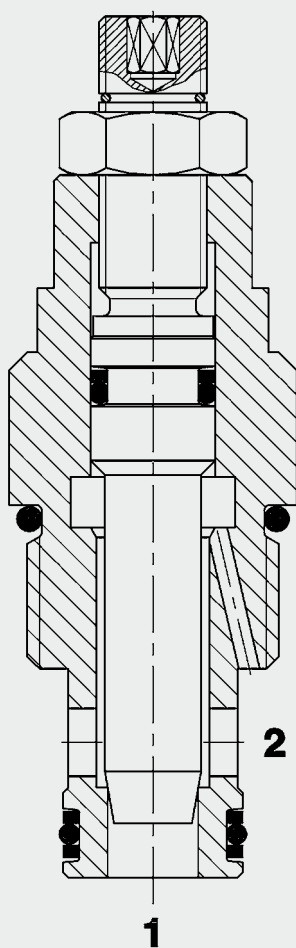
NOTE

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FUNCTION



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.

Needle Valve SAE-10 Cartridge – 420 bar SD10-01

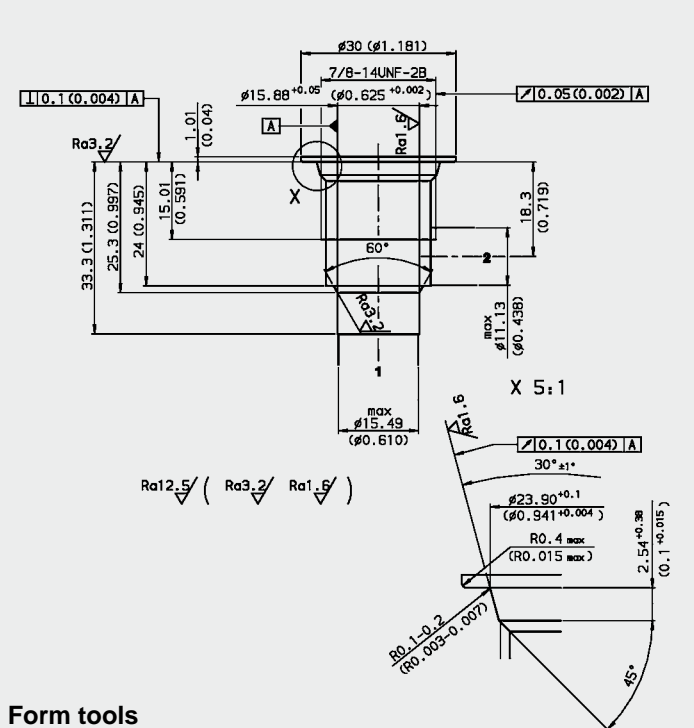
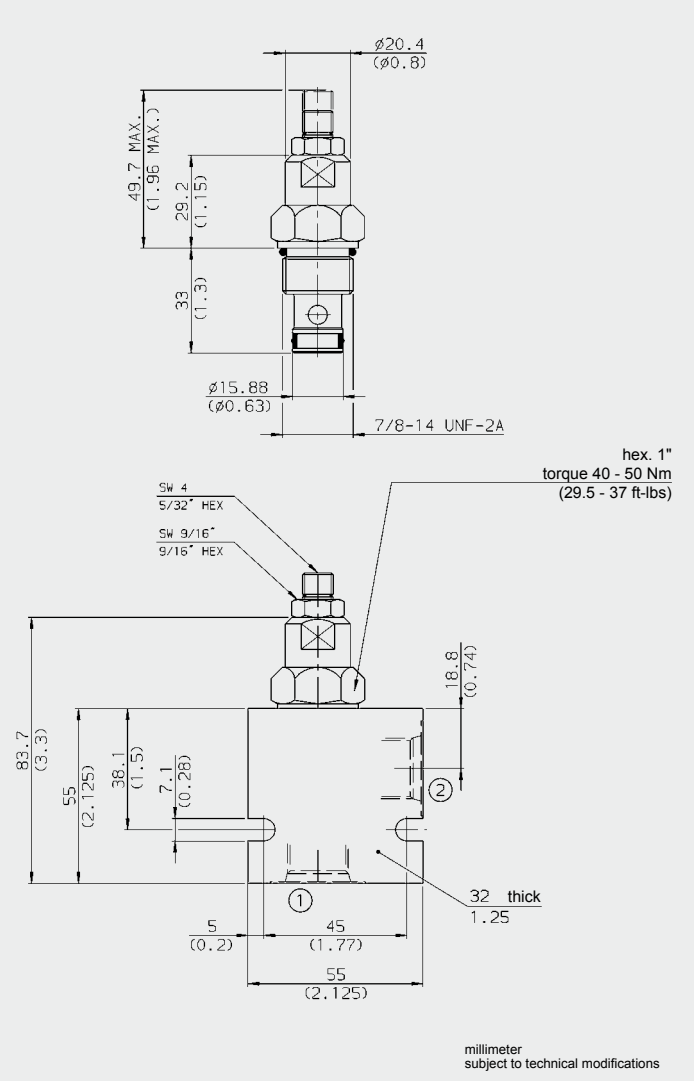
UNF

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 mm ² /s to max. 420 mm ² /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	

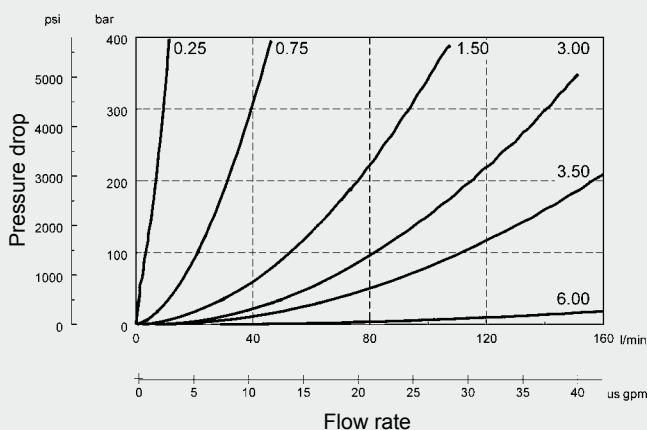


Tool	Part No.
Countersink FC10-2	176379
Reamer FC10-2	165706

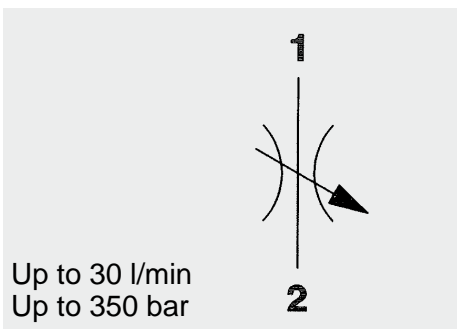
Model code	Part No.
SD10-01-C-N-V	3017145
SD10-01-C-N-H	3054472

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

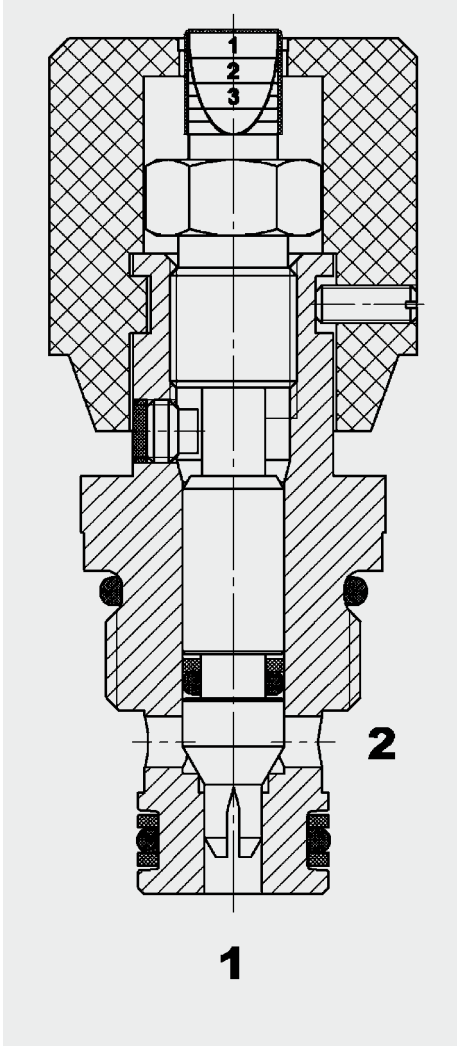
Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757



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Subject to technical modifications.



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.

Needle Valve Direct-Acting Metric Cartridge – 350 bar DV5E

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 mm ² /s to max. 380 mm ² /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)

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

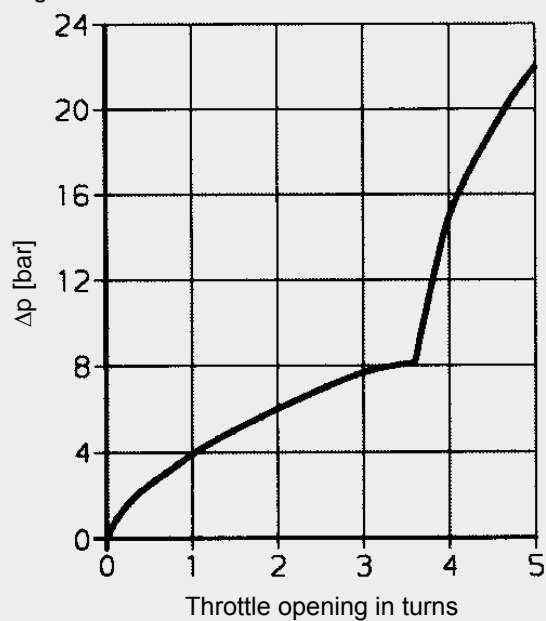
Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G3/8	350 bar
R06020-10X-01	276842	Steel, zinc-plated	G3/8	350 bar

Seal kits

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

PERFORMANCE

Opening characteristics



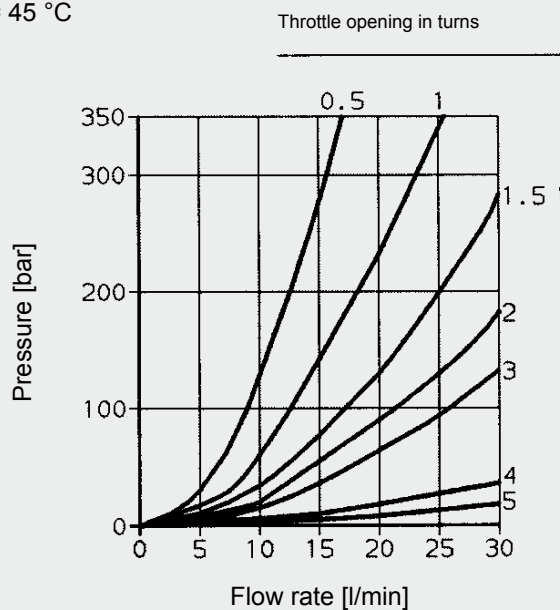
Δp = 10 bar = constant

Pressure drop, dependent on flow rate

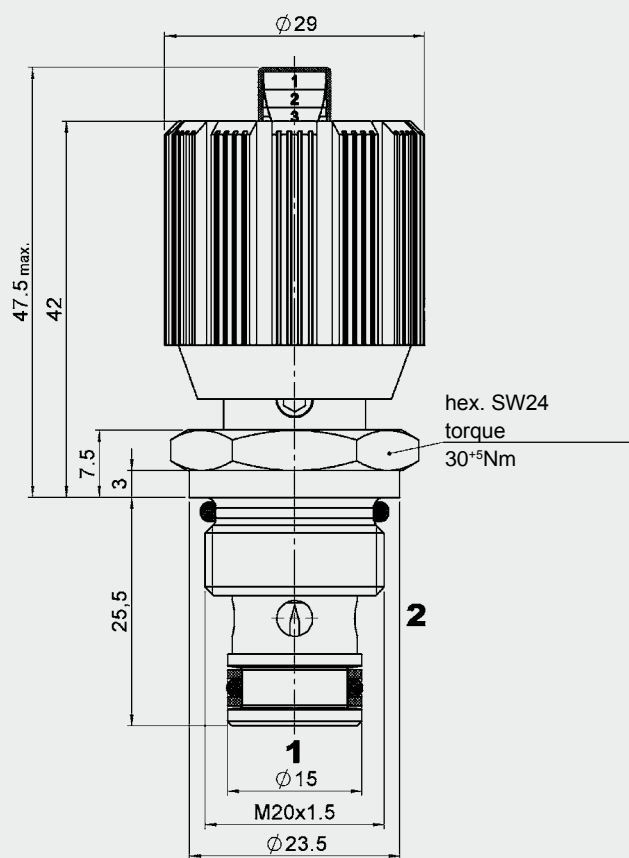
DV5E-01X

Measured at $v = 36 \text{ mm}^2/\text{s}$

$T_{\text{oil}} = 45^\circ\text{C}$



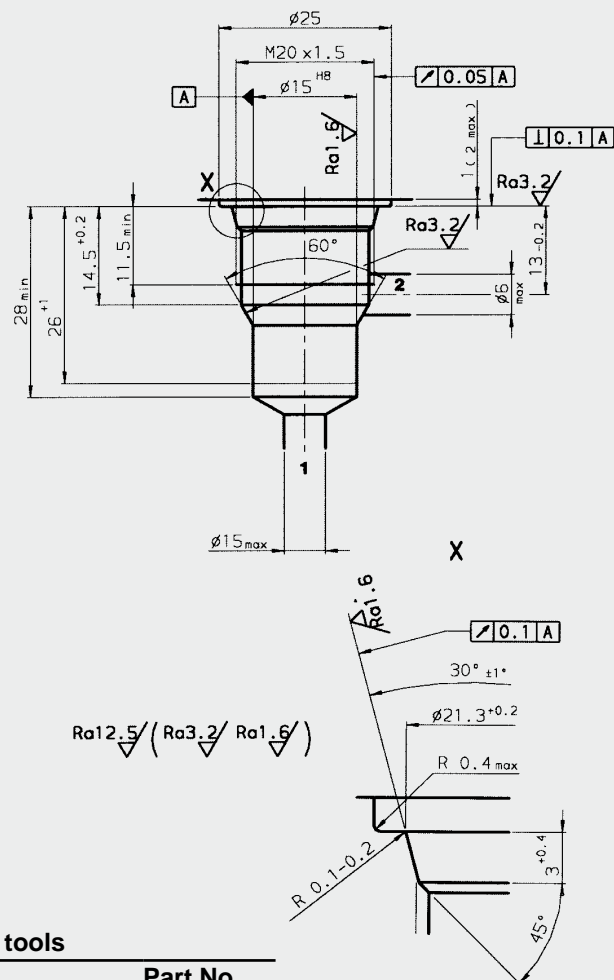
DIMENSIONS



Millimeter
Subject to technical modifications

CAVITY

06020



Form tools

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

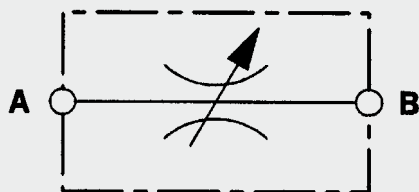
Millimeter
Subject to technical modifications

NOTE

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Subject to technical modifications.

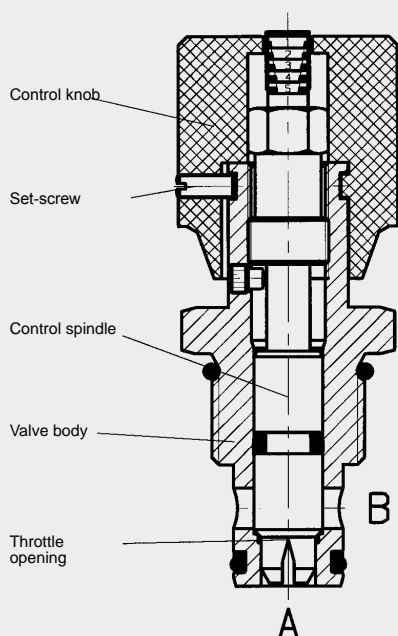
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Up to 160 l/min
Up to 350 bar

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.

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

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 mm ² /s to max. 800 mm ² /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 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

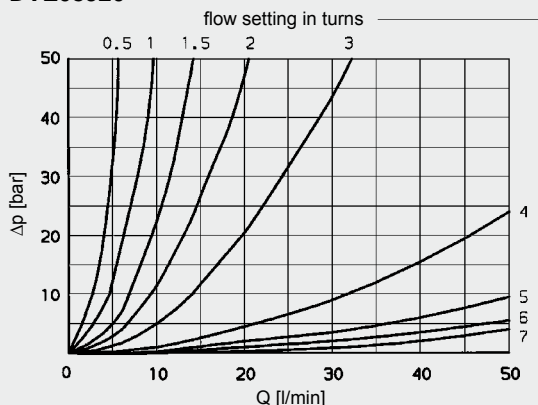
Code	Part No.
SEAL KIT 08FKM DV/P DRV/P DVE RVP SRVR/P	555090
SEAL KIT 10FKM DV/P DRV/P DVE RVP SRVR/P	555091
SEAL KIT 12FKM DV/P DRV/P DVE RVP SRVR/P	555092
SEAL KIT 16FKM DV/P DRV/P DVE RVP SRVR/P	555093

PERFORMANCE

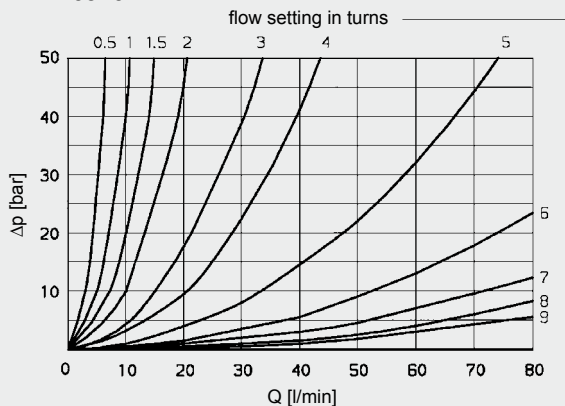
Pressure drop, dependent on flow rate

Pressure differential Δp measured against flow rate Q , measured at constant flow setting, $v = 34 \text{ mm}^2/\text{s}$ and $T_{oil} = 46 \text{ }^\circ\text{C}$

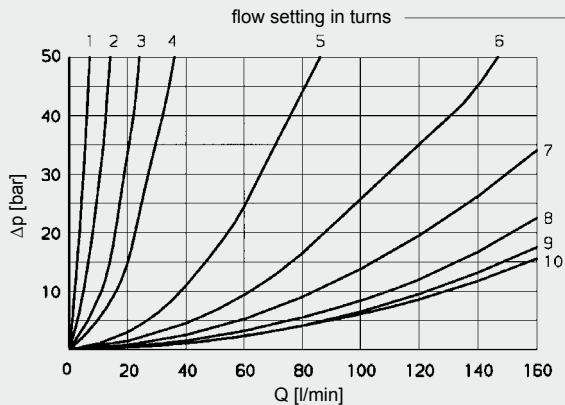
DVE08920



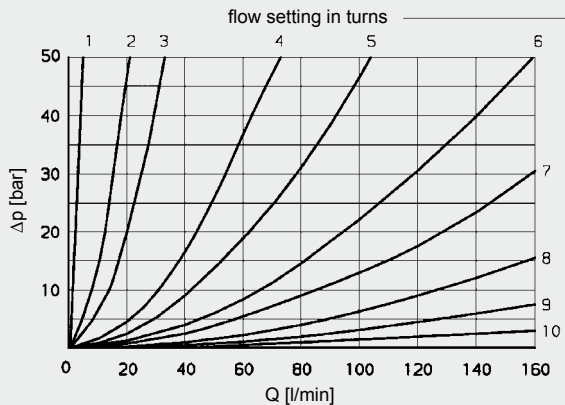
DVE10920



DVE12920

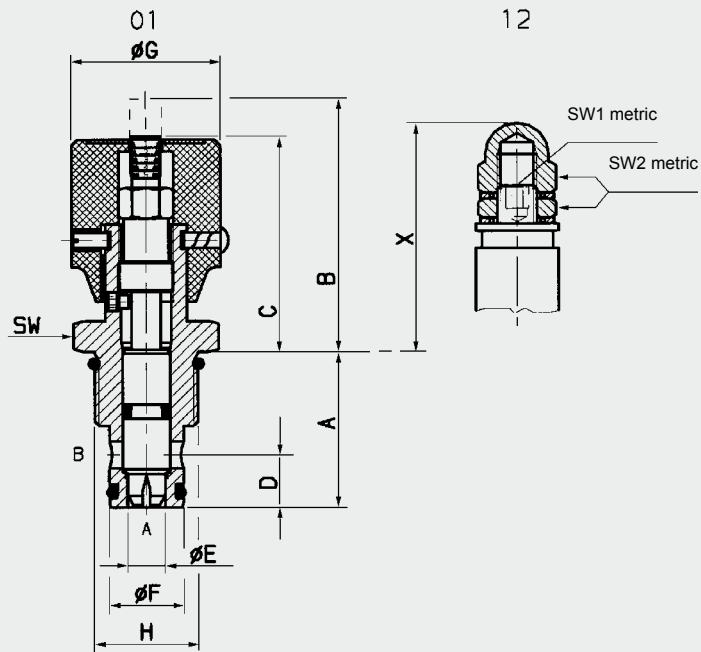


DVE16920



DIMENSIONS

Type:

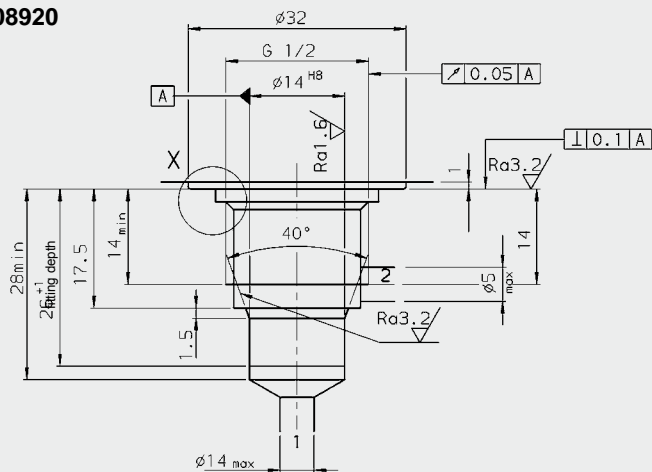


millimeter
subject to technical modifications

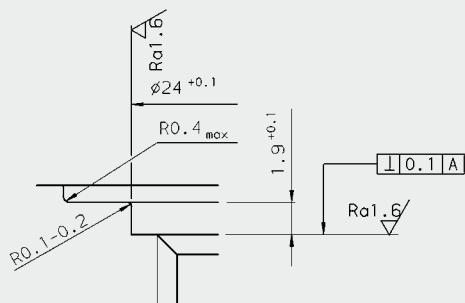
A	B	C	D	E	F	G	H	SW	SW1	SW2	X	Torque
26	47	40	12	5	14	29	G ½ A	27	4	13	44	30 + 5
30	64	54	12.5	8	16	38	G ½ A	27	5	17	58	40 + 5
40	65	54	13.5	9.5	19	38	G ¾ A	32	6	19	64	50 + 5
43.5	65	55	17.5	11	27	38	G 1 A	41	6	19	64.5	75 + 5

CAVITY

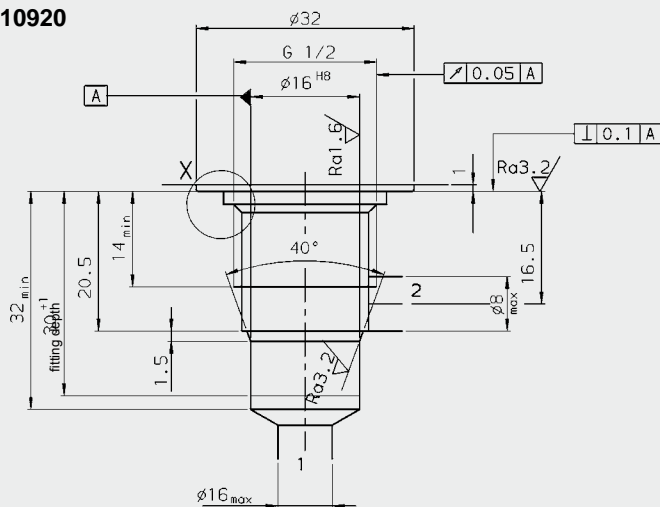
08920



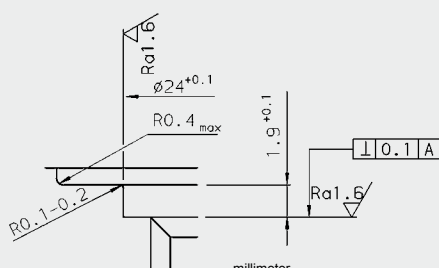
X 5:1



10920

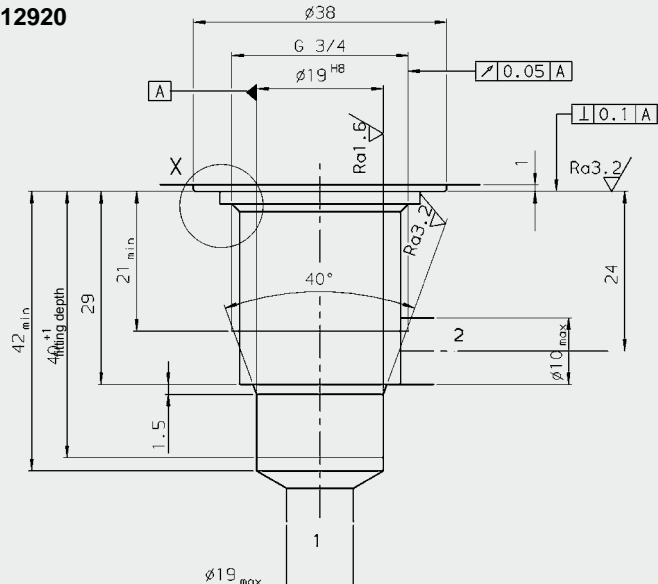


X 5:1

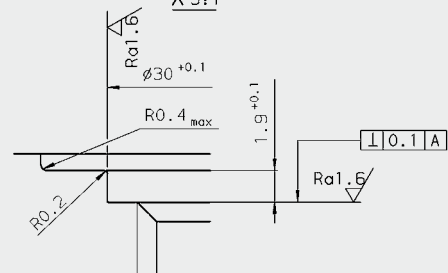


millimeter
subject to technical modifications

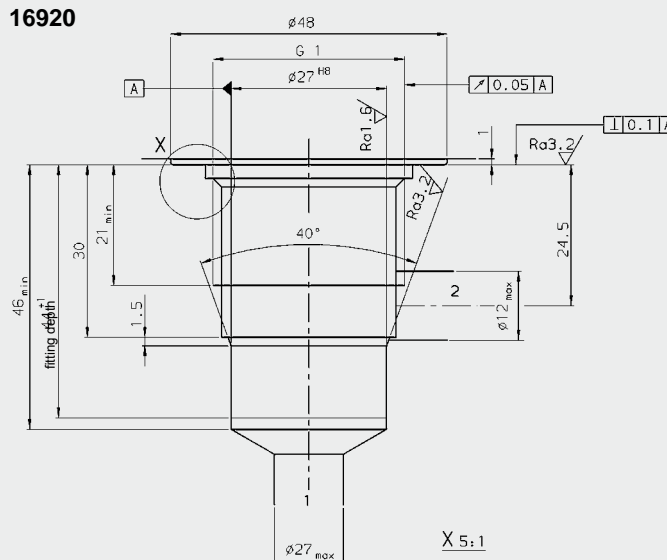
12920



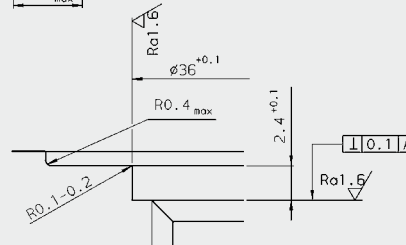
X 5:1



16920



X 5:1



millimeter
subject to technical modifications

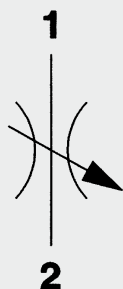
Form tools

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	—

NOTE

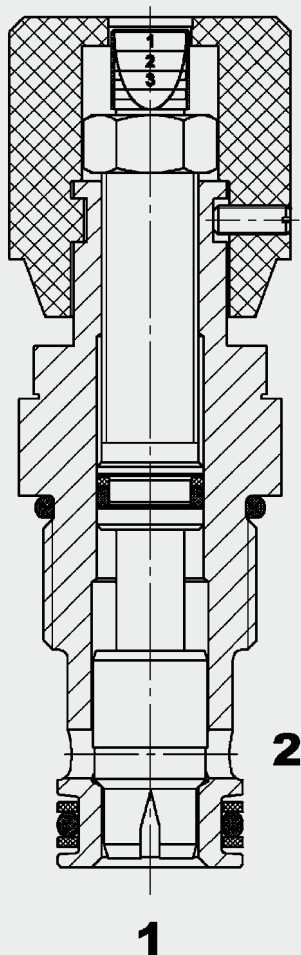
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Subject to technical modifications.

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Up to 80 l/min
Up to 350 bar

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.

Needle Valve Direct-Acting Metric Cartridge – 350 bar

SD10120

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 mm ² /s to max. 800 mm ² /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)

Standard models

Model code	Part No.
SD10120-01X	710390

Other models on request

Standard in-line bodies

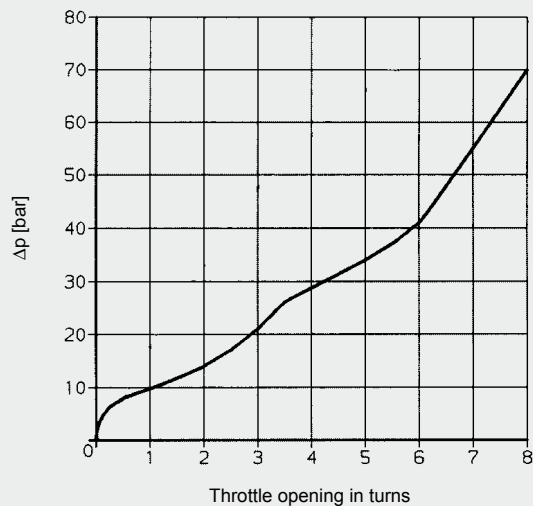
Code	Part No.	Material	Ports	Pressure
R10120-01X-01	395234	Steel, zinc-plated	G1/2	420 bar
R10120-01X-02	395235	Steel, zinc-plated	M22 x 1.5	420 bar

Seal kits

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

PERFORMANCE

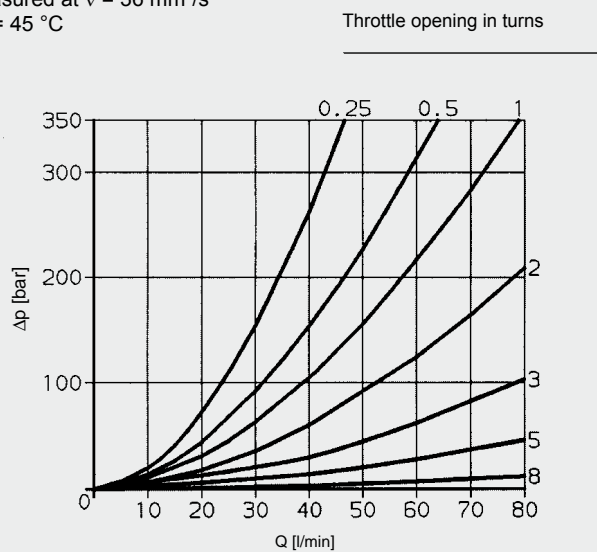
Opening characteristics



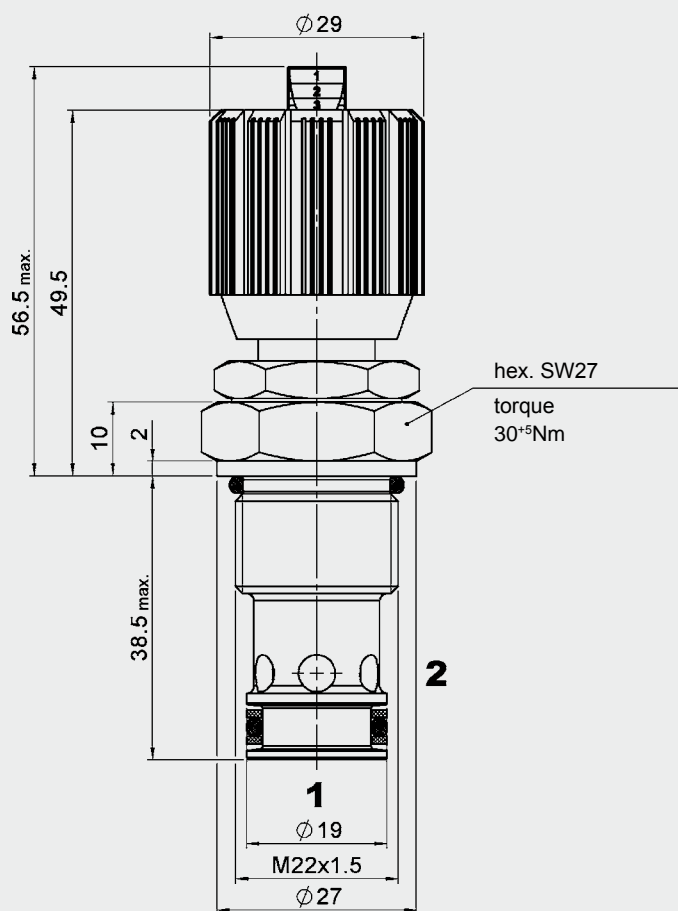
Δp = 10 bar = constant

PRESSURE DROP, DEPENDENT ON FLOW RATE

Measured at $v = 36 \text{ mm}^2/\text{s}$
 $T_{\text{oi}} = 45 \text{ }^\circ\text{C}$



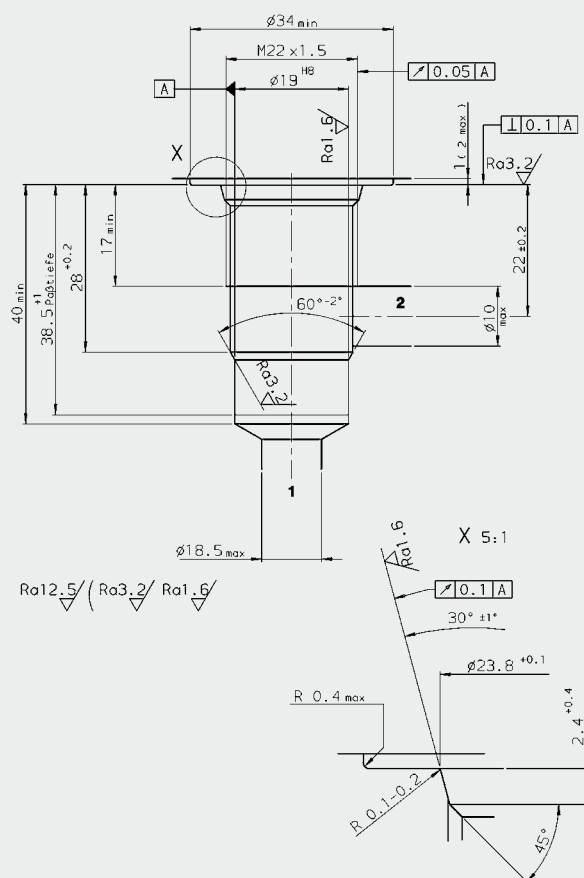
DIMENSIONS



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

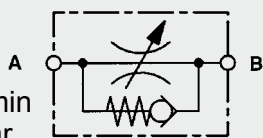
NOTE

NOTE
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Subject to technical modifications.

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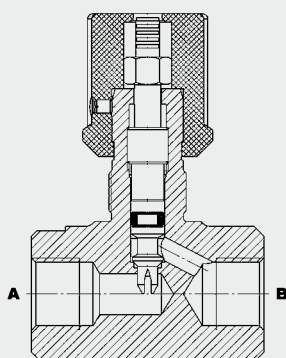


Up to 180 l/min
Up to 350 bar

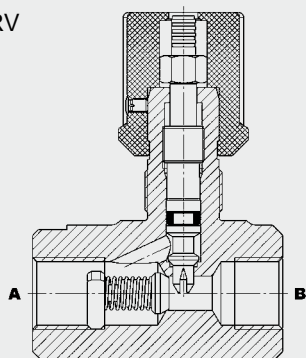


FUNCTION

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).

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

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 mm ² /s to max. 800 mm ² /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	DRV 06 = 0.10 kg
	DV 08 = 0.26 kg	DRV 08 = 0.28 kg
	DV 10 = 0.38 kg	DRV 10 = 0.41 kg
	DV 12 = 0.62 kg	DRV 12 = 0.65 kg
	DV 16 = 1.04 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

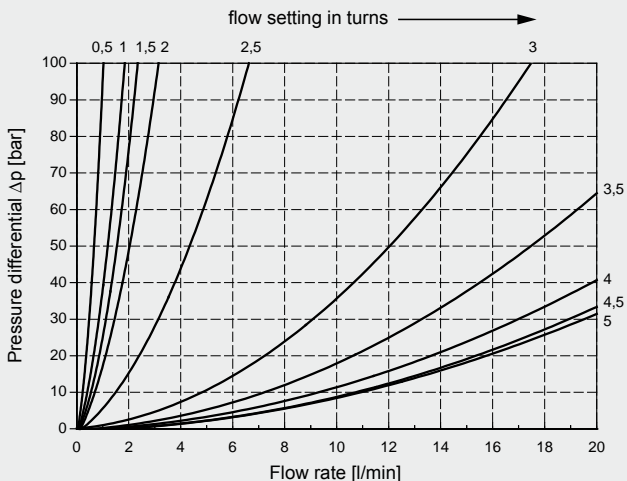
Pressure drop, dependent on flow rate

DV→→flow direction A → B and B → A

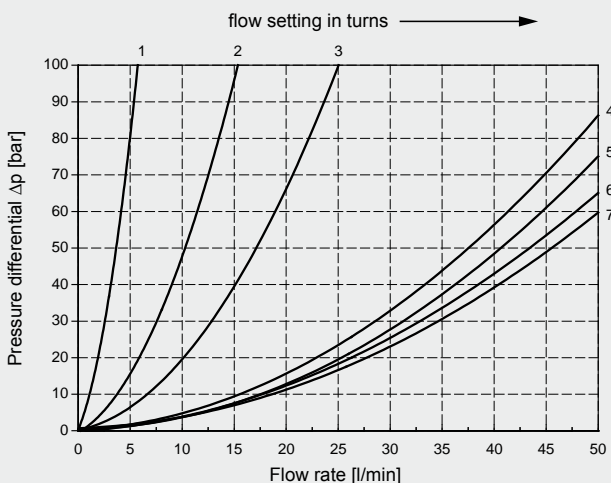
DRV→→flow direction A → B

Pressure differential Δp measured against flow rate Q ,
measured at constant flow setting, $v = 53 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 36 \text{ }^\circ\text{C}$

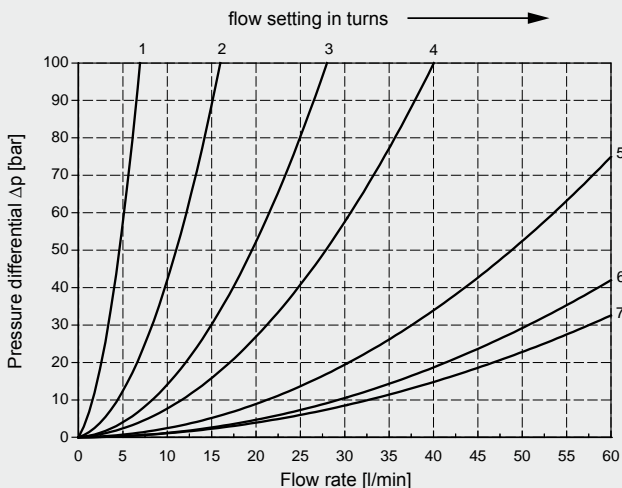
DV-06-01.3/0 A → B



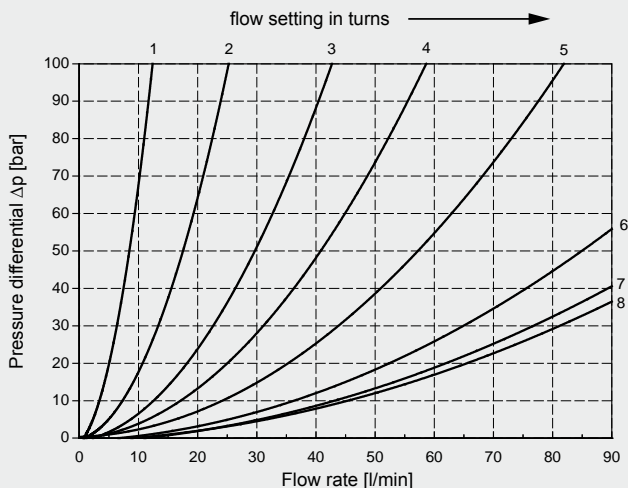
DV-08-01.3/0 A → B



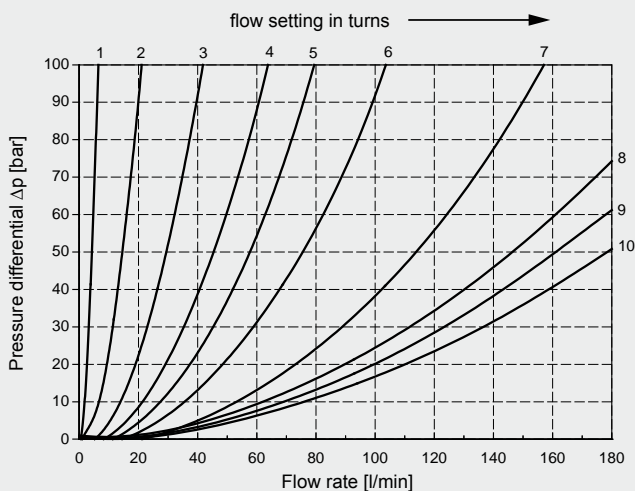
DV-10-01.3/0 A → B



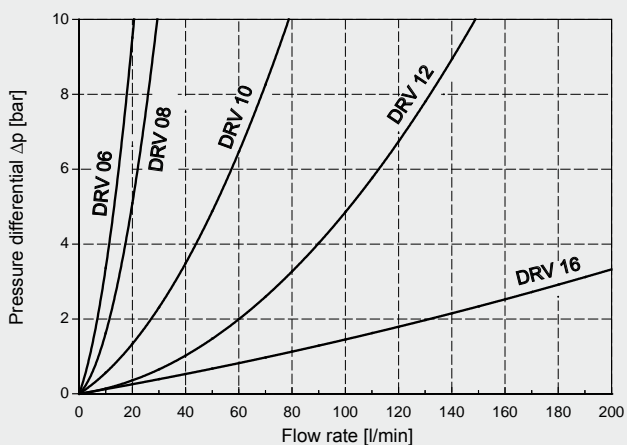
DV-12-01.3/0 A → B



DV-16-01.3/0 A → B



DRV-06-16 B → A

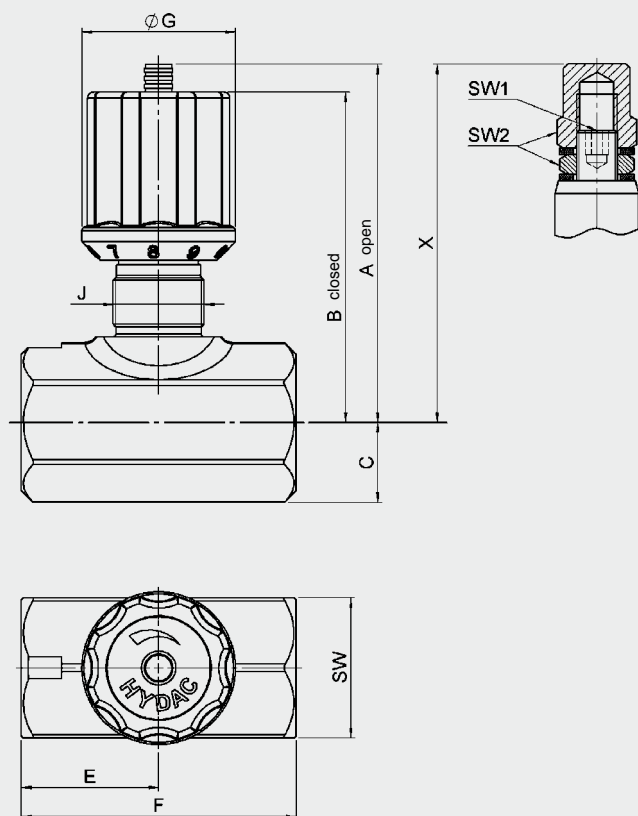


DIMENSIONS

DV

Type 01 30 11

12



millimeter
subject to technical modifications

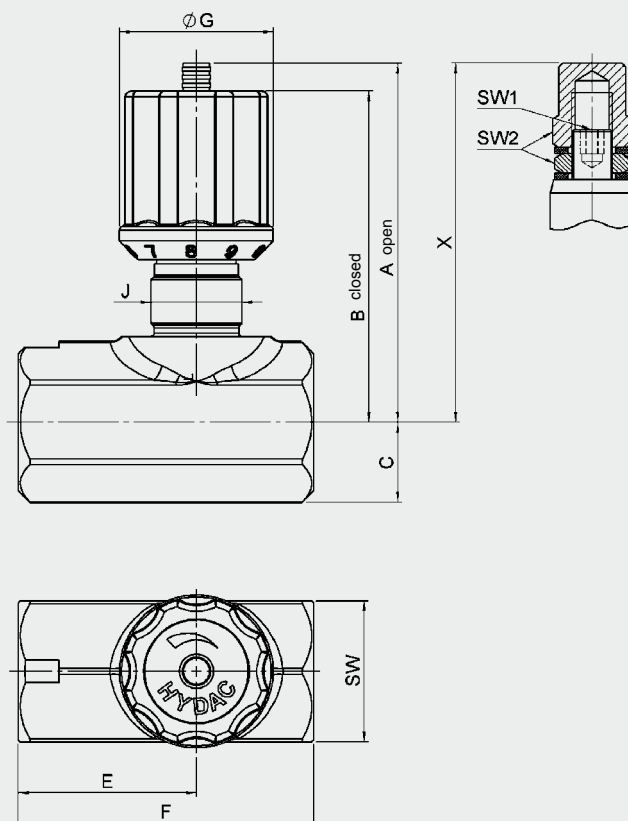
Size	Threaded connection	A	B	C	SW	E
06	G $\frac{1}{8}$	57	52.9	9	16	19
08	G $\frac{1}{4}$	70.4	64.3	14.2	25	24
10	G $\frac{3}{8}$	76.6	70.8	17.7	30	29
12	G $\frac{1}{2}$	89.2	82.3	20	35	34
16	G $\frac{3}{4}$	106.2	97.3	25.7	45	39

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	G $\frac{1}{8}$	57	52.9	9	16	28.8
08	G $\frac{1}{4}$	70.4	64.3	14.2	25	34
10	G $\frac{3}{8}$	76.6	70.8	17.7	30	42
12	G $\frac{1}{2}$	89.2	82.3	20	35	44
16	G $\frac{3}{4}$	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

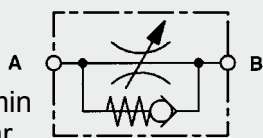
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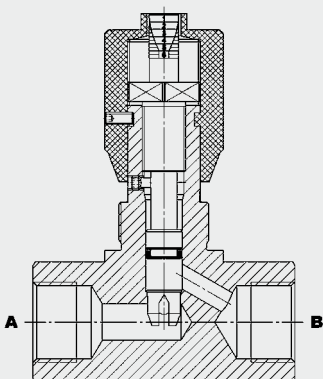


Up to 300 l/min
Up to 350 bar

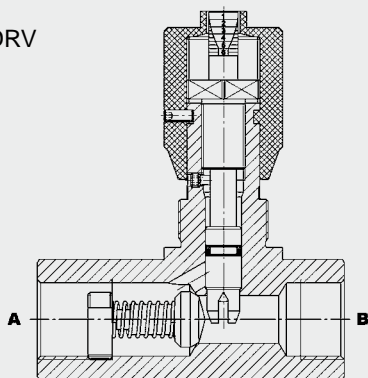


FUNCTION

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).

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

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 mm ² /s to max. 800 mm ² /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	DRV 20 = 2.4 kg
	DV 25 = 2.8 kg	DRV 25 = 3.5 kg
	DV 30 = 3.5 kg	DRV 30 = 4.6 kg
	DV 40 = 5.5 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

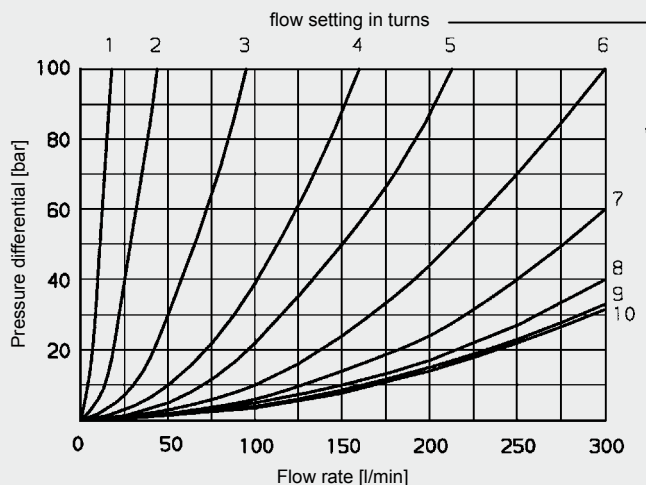
PERFORMANCE

Pressure drop, dependent on flow rate

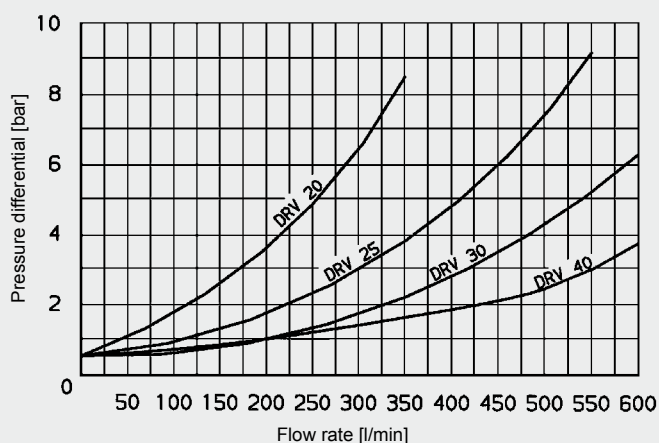
DV = flow direction A → B and B → A

DRV = flow direction A → B

Pressure differential Δp measured against flow rate Q ,
measured at constant flow setting, $v = 54 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 36 \text{ }^\circ\text{C}$



DRV Flow direction B → A

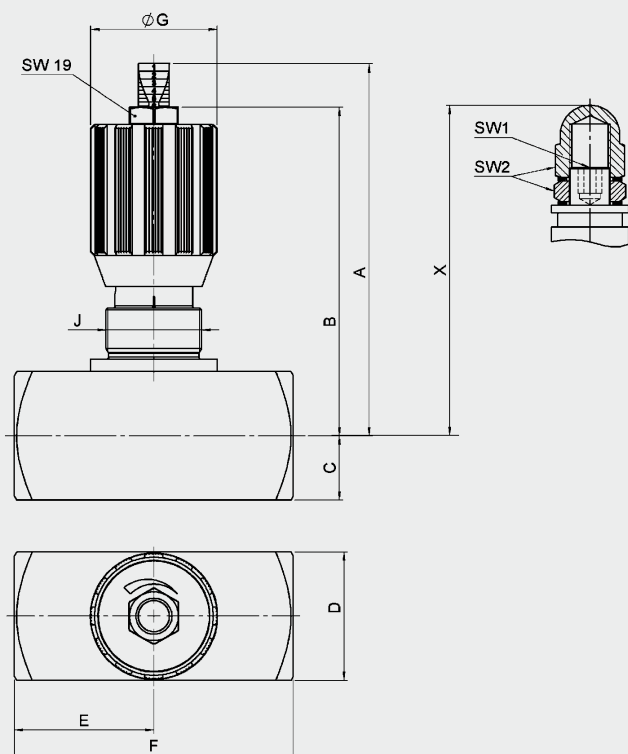


DIMENSIONS

DV

Type 01 30 11

12



millimeter (inch)
subject to technical modifications

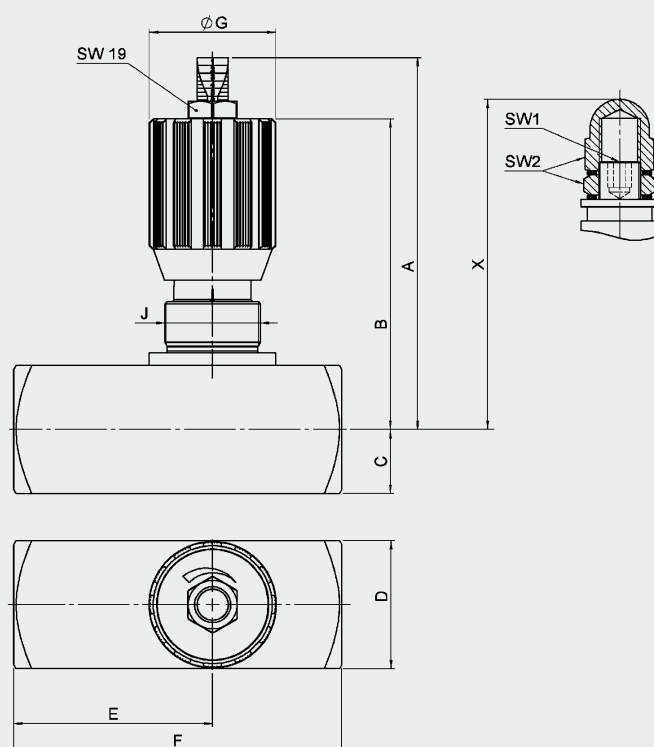
Nominal size	Threaded connection	A	B	C	D	E
20	G1	145	128	25	50	54
25	G1½	150	133	30	60	54
30	G1½	155	138	35	70	54
40	G2	165	148	45	90	65

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

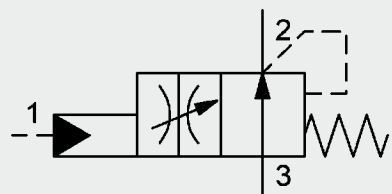
Nominal size	Threaded connection	A	B	C	D	E
20	G1	145	128	25	50	77
25	G1½	150	133	30	60	93
30	G1½	155	138	35	70	108
40	G2	165	148	45	90	130

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

NOTE

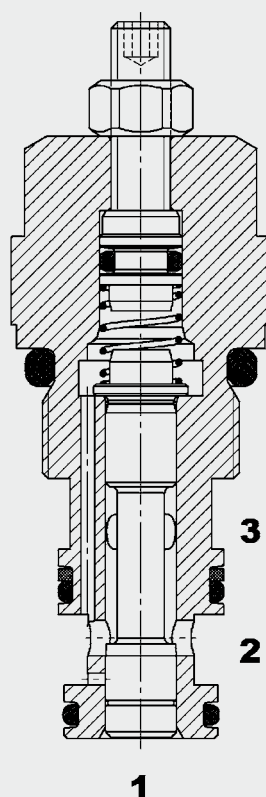
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Up to 20 l/min
Up to 250 bar

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.

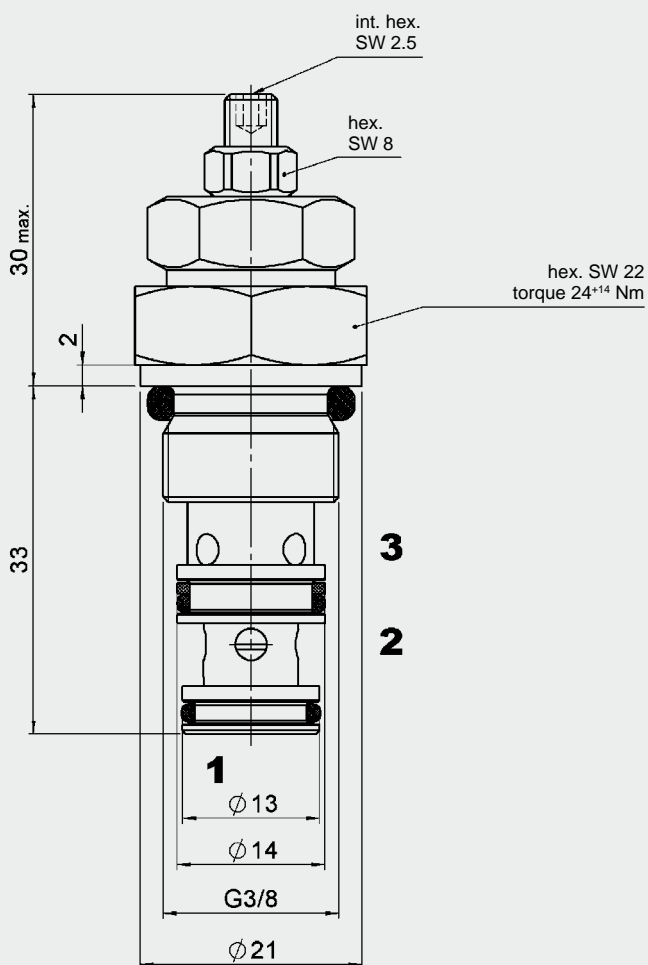
FEATURES

- 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 mm ² /s to max. 380 mm ² /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

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

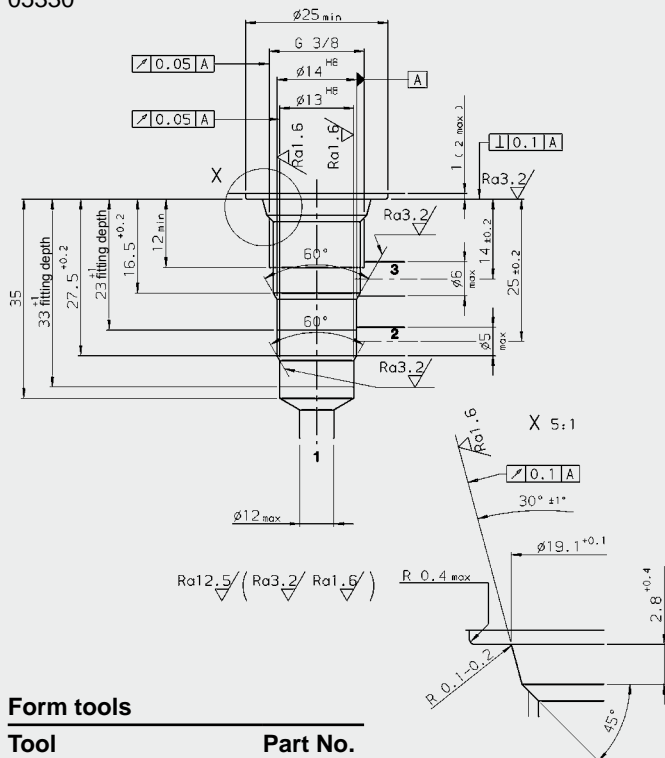
Other models on request

Seal kits

Code	Part No.
SEAL KIT WKH05330-XXX FKM	3006592

CAVITY

05330

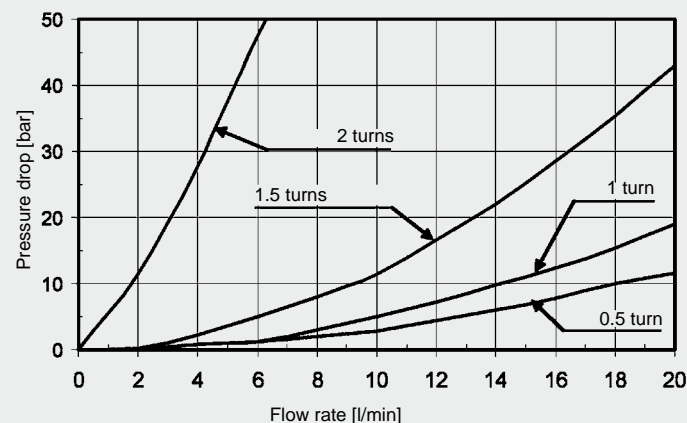


Millimeter
Subject to technical modifications

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$
 $T_{\text{Oil}} = 46^\circ\text{C}$

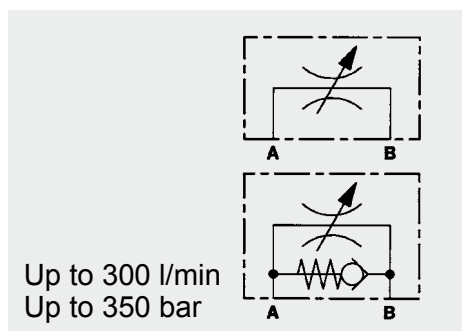
Set screw turned clockwise as far as stop.
Number of turns indicated, counter-clockwise,
starting from this setting



NOTE

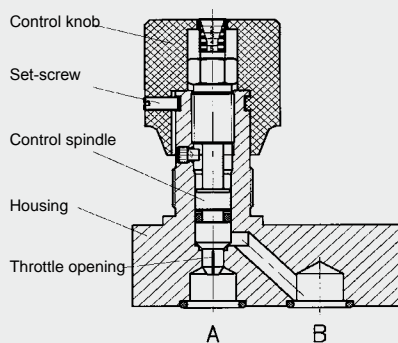
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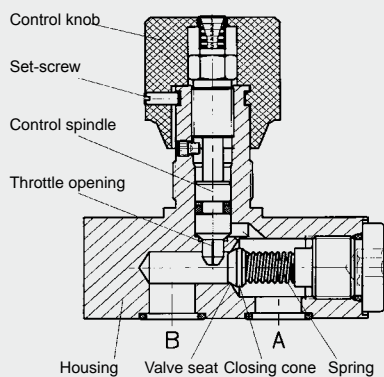


FUNCTION

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).

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

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 mm ² /s to max. 800 mm ² /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	DRVP 06 = 0.3 kg
	DVP 08 = 0.4 kg	DRVP 10 = 0.8 kg
	DVP 10 = 0.6 kg	DRVP 12 = 1.1 kg
	DVP 12 = 1.0 kg	DRVP 16 = 2.5 kg
	DVP 16 = 1.7 kg	DRVP 25 = 6.7 kg
	DVP 20 = 3.6 kg	DRVP 30 = 3.9 kg
	DVP 25 = 5.5 kg	DRVP 40 = 17.5 kg
	DVP 30 = 7.5 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

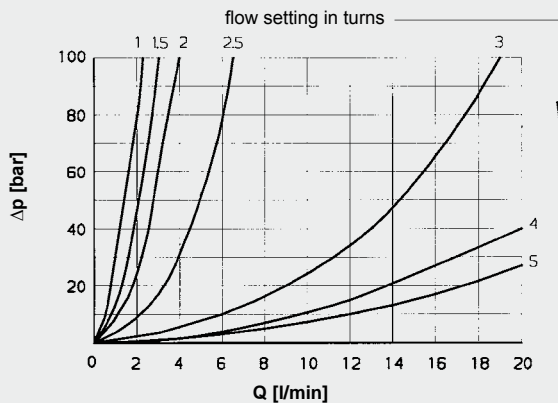
DRVP = flow direction A → B

Pressure differential Δp measured against flow rate

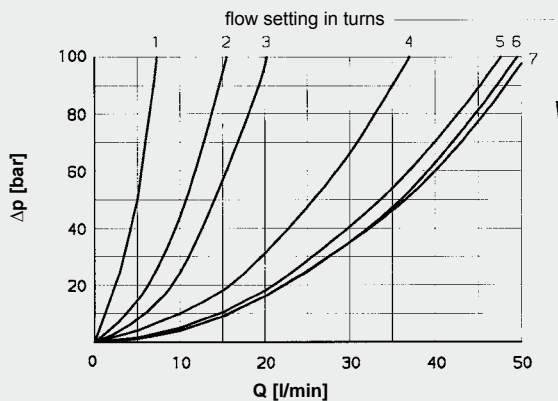
Measured at constant flow setting, $v = 54 \text{ mm}^2/\text{s}$

and $T_{\text{oil}} = 36^\circ\text{C}$

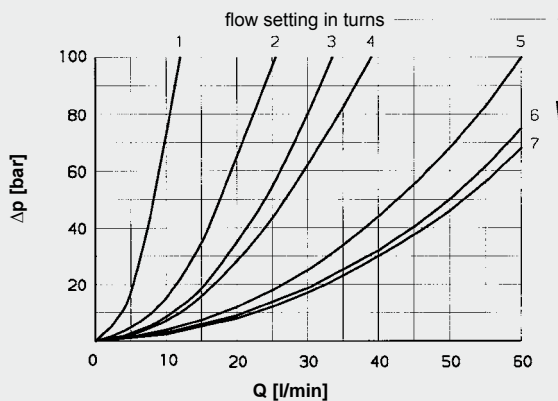
DVP/DRVP-06-01.X



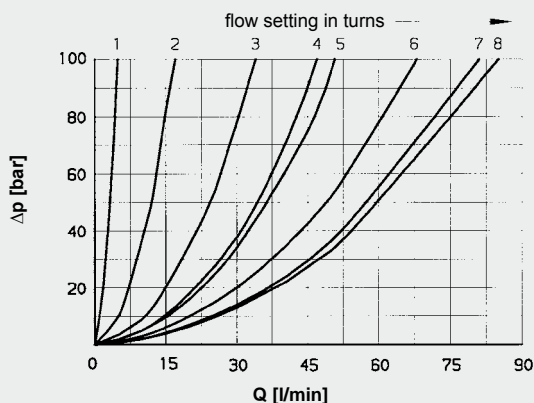
DVP-DRVP-08-01.X



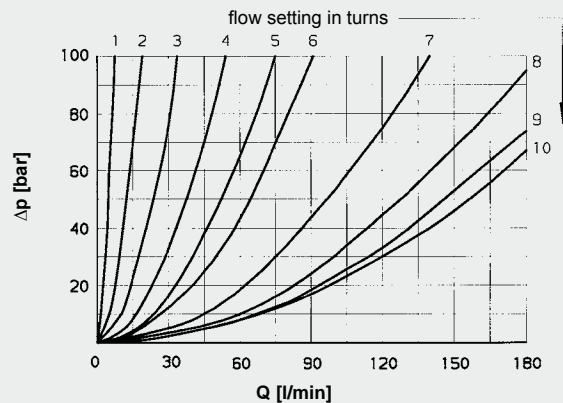
DVP/DRVP-10-01.X



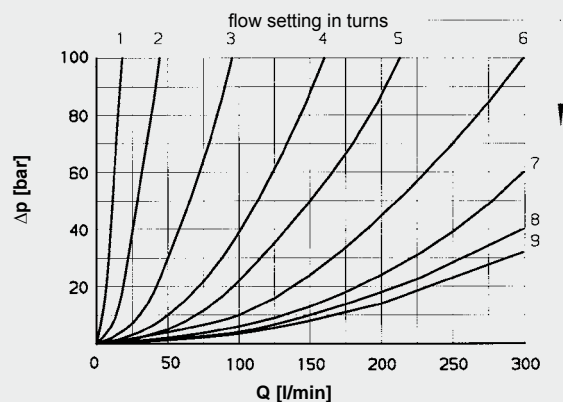
DVP/DRVP-12-01.X



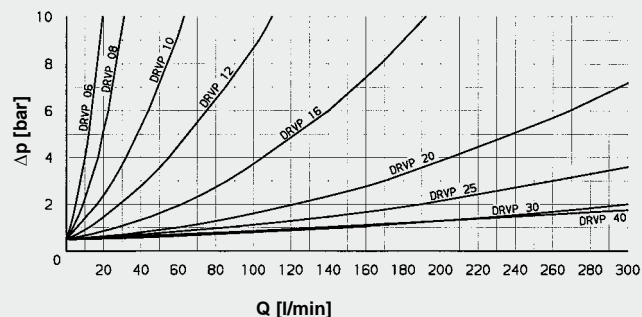
DVP/DRVP-16-01.X



DVP/DRVP-20 to 40-01.X

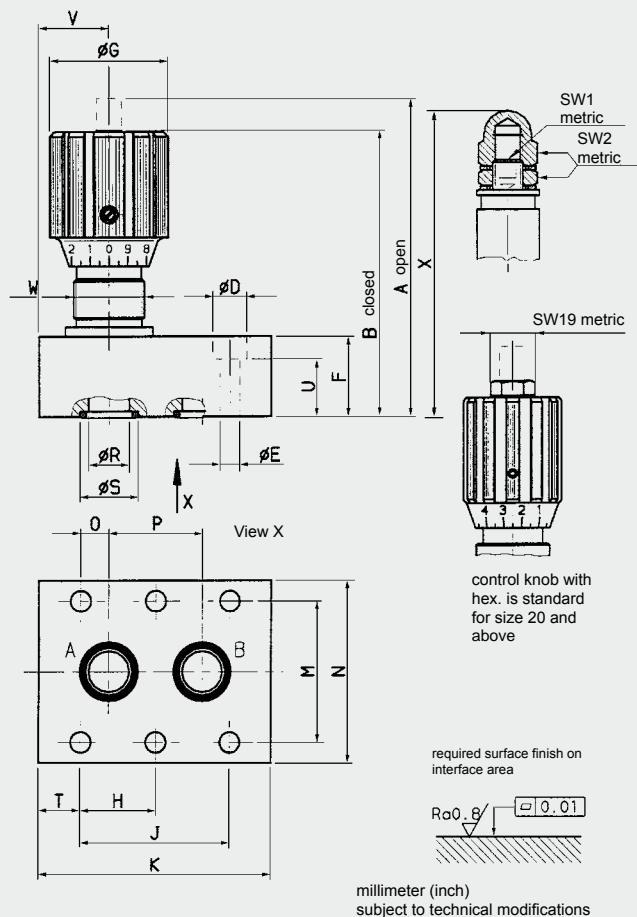


DRVP-06 to DRVP-40-01.X



DIMENSIONS

DVP

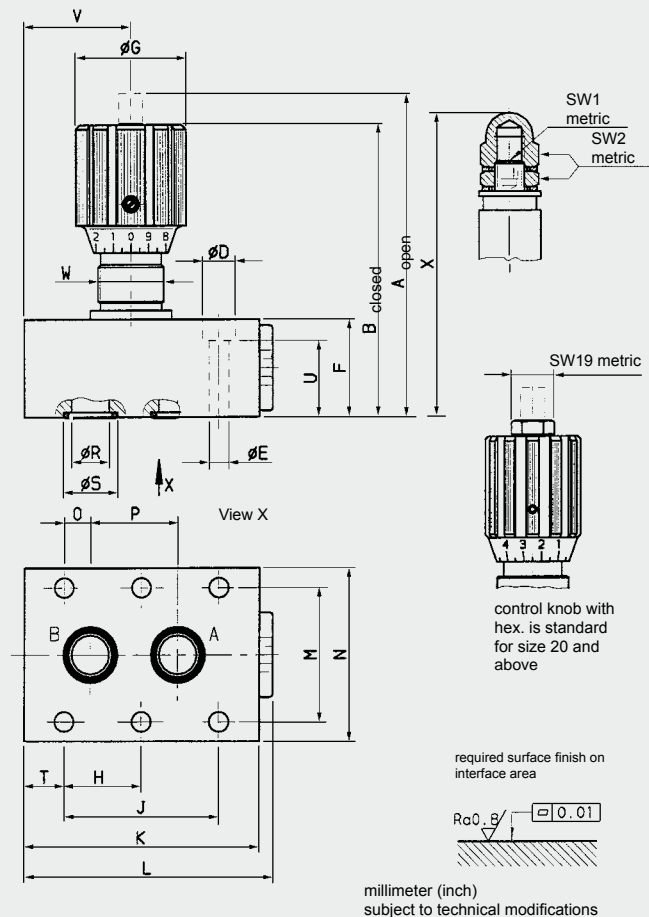


Size	A	B	D	E	F	G	H	J	K	M
06	63	58	11	6.6	16	24	—	19.0	35.0	28.5
08	79	72	11	6.6	20	29	—	35.0	47.5	33.5
10	84	77	11	6.6	25	29	—	33.5	51.0	38.0
12	99	89	11	6.6	25	38	—	38.0	75.0	44.5
16	113	103	14	9.0	30	38	38.0	76.0	93.5	54.0
20	165	148	14	9.0	45	49	47.5	95.0	111.0	60.0
25	165	148	18	11.5	45	49	60.0	120.5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

DRV P



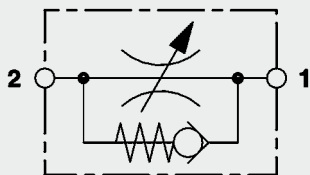
Size	A	B	D	E	F	G	H	J	K	L	M	N
06	63	58	11	6.6	16	24	—	19.0	41.5	46.0	28.5	41.5
08	79	72	11	6.6	20	29	—	35.0	63.5	67.0	33.5	46.0
10	84	77	11	6.6	25	29	—	33.5	70.0	74.0	38.0	51.0
12	106	96	11	6.6	32	38	—	38.0	80.0	84.5	44.5	57.5
16	128	118	14	9.0	45	38	38.0	76.0	104.0	109.5	54.0	70.0
20	170	153	14	9.0	50	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

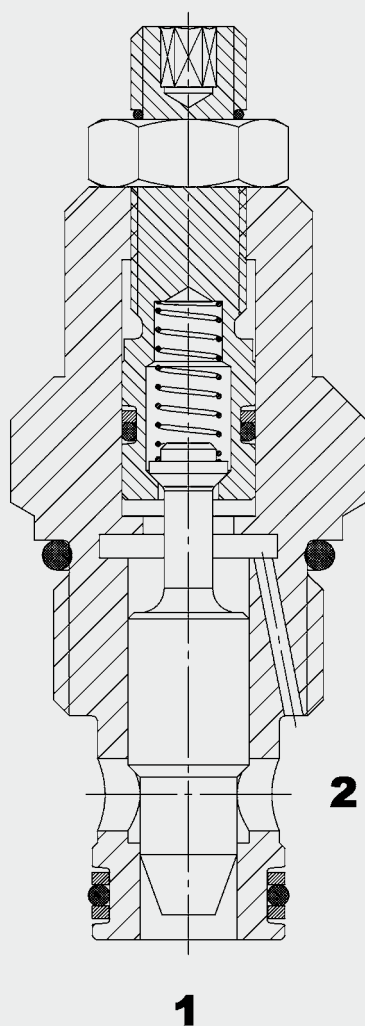
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Up to 100 l/min
Up to 350 bar

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.

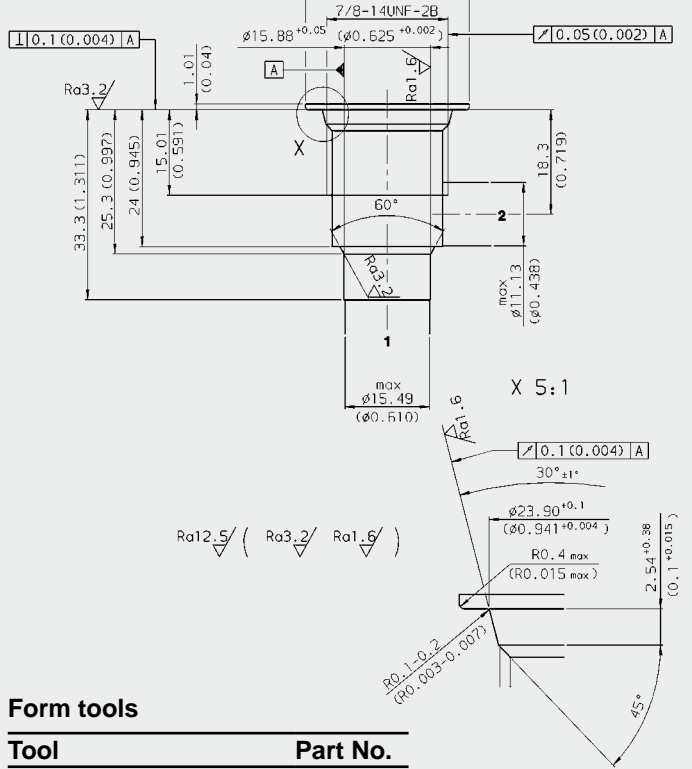
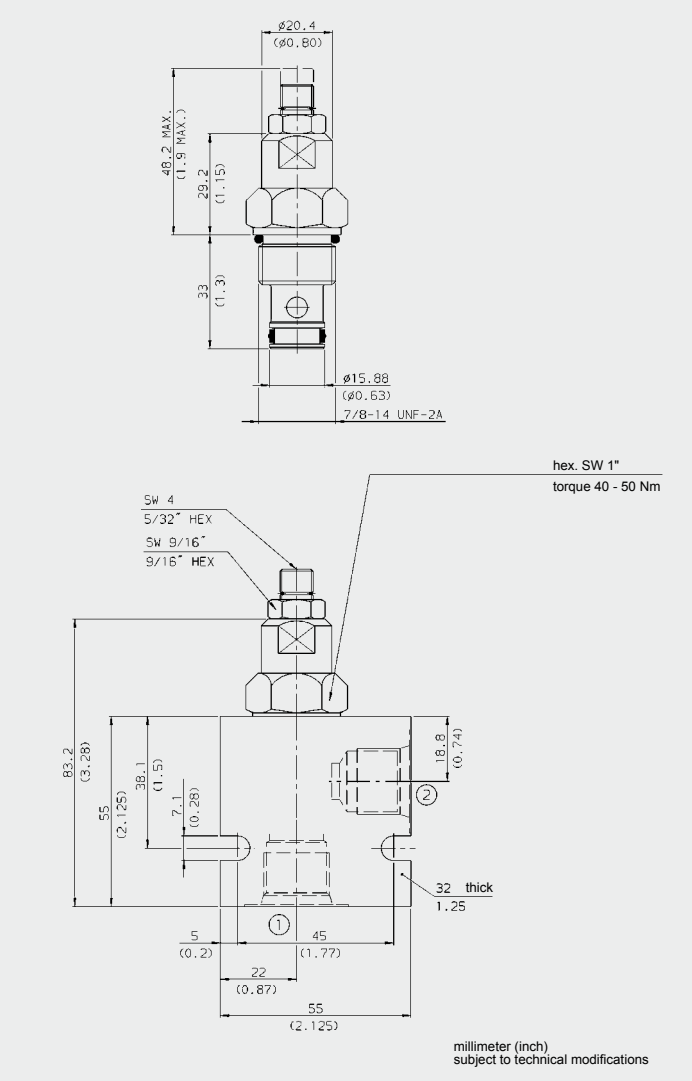
The valve is used for precision flow control from 0 to 40 l/min.

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 mm ² /s to max. 420 mm ² /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



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

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)

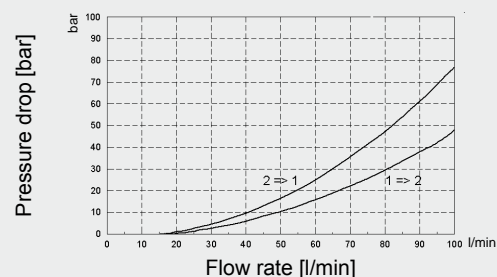
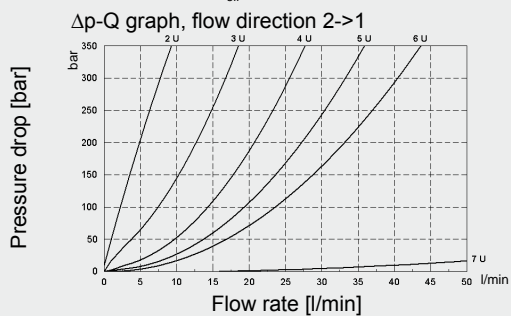
Pressure setting _____
15 = 1 bar (15 PSI)

Type of adjustment _____
V = Allen head

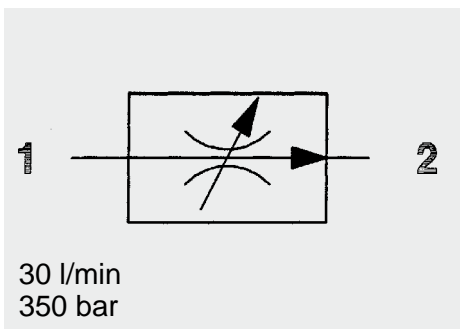
Model code	Part No.
SDR10A-11-C-N-15V	3360939

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

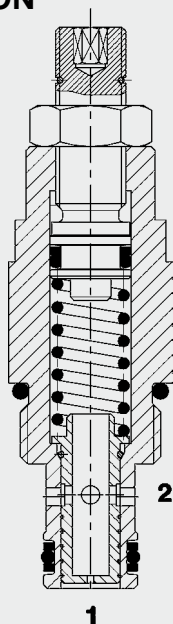
Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757



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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.

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

UNF

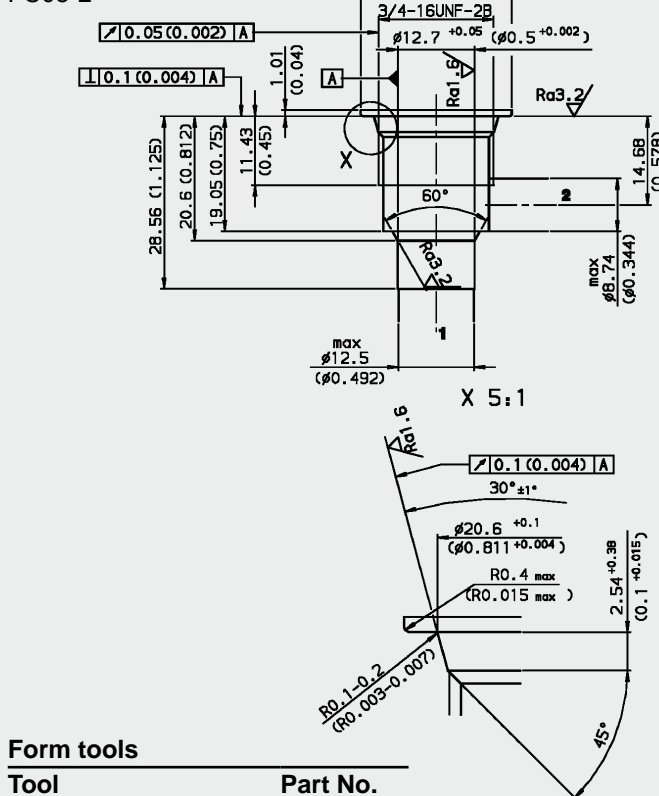
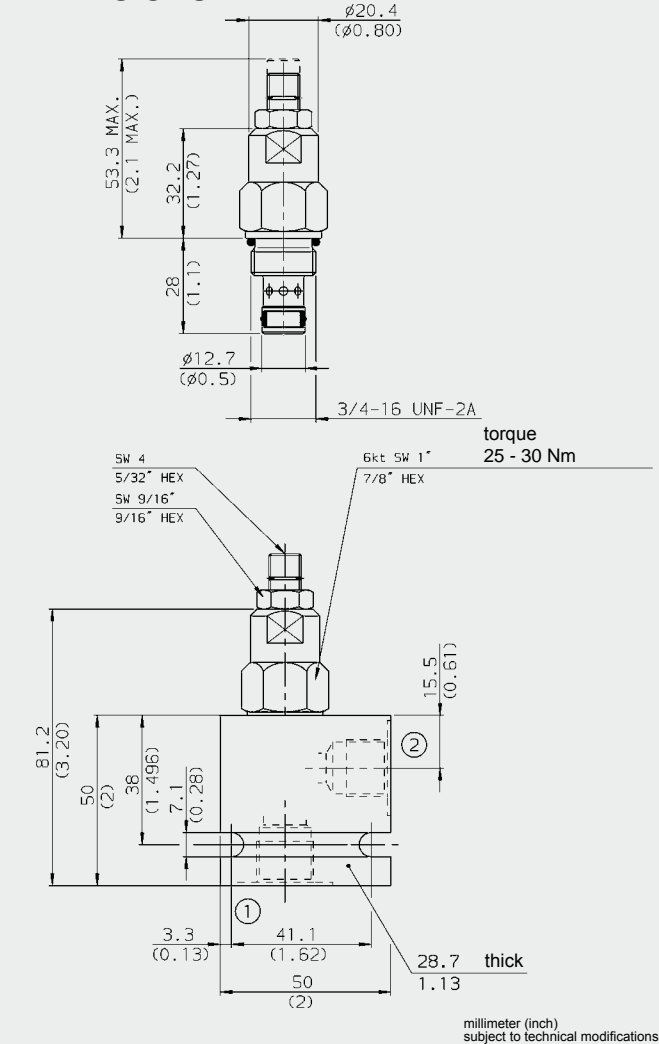
SR08-01

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 mm ² /s to max. 420 mm ² /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



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

millimeter (inch)
subject to technical modifications

	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						

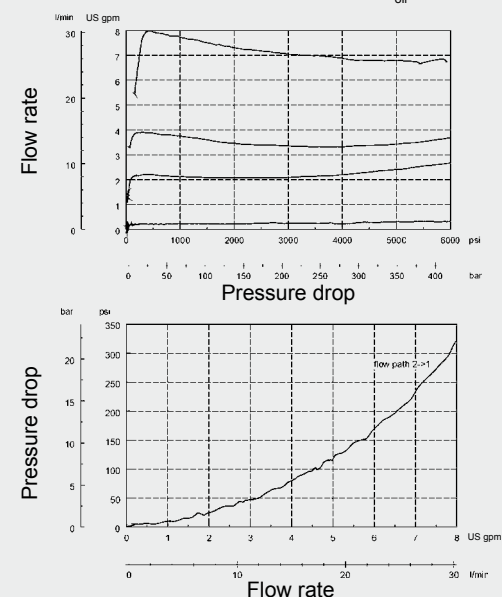
Model code	Part No.
SR08-01-C-N-0.5V	3009246
SR08-01-C-N-1.0V	3015411
SR08-01-C-N-1.8V	3015412
SR08-01-C-N-4.8V	3015474
SR08-01-C-N-7.9V	3015475

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

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

Measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



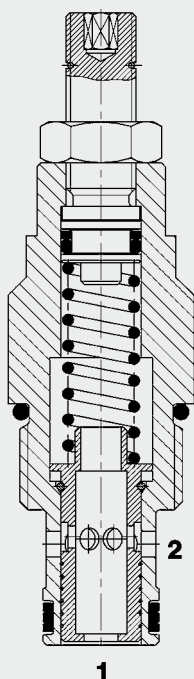
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38 l/min
350 bar

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.

2-Way Flow Regulator Pressure Compensated Restrictive Style, SAE-10 Cartridge – 350 bar SR10-01

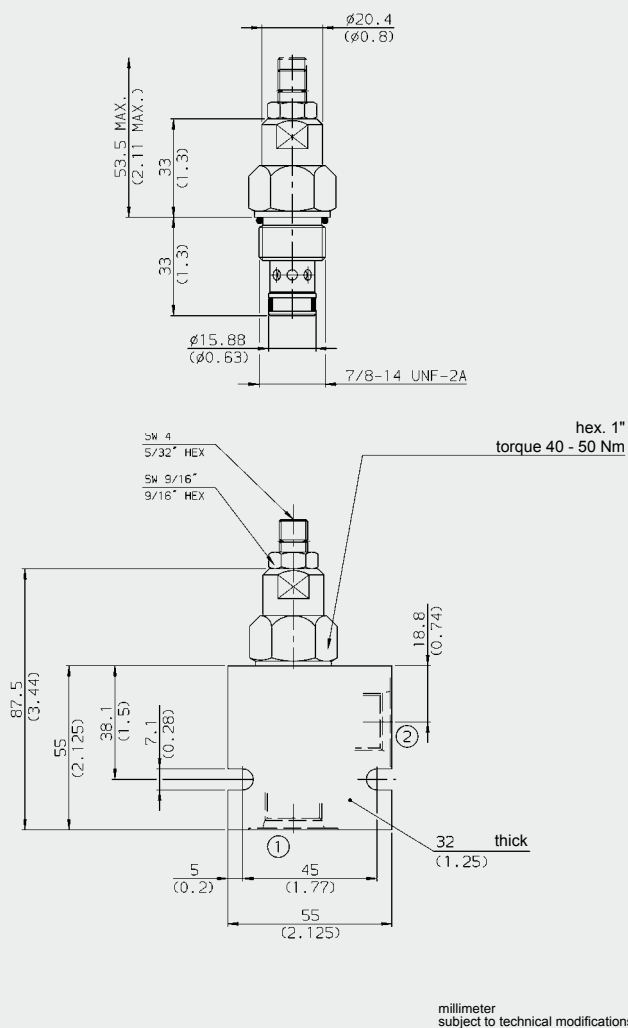
FEATURES

- 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 $\pm 10\%$ 13.0 – 38.0 l/min $\pm 10\%$
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 mm ² /s to max. 420 mm ² /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



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 $\pm 10\%$
10.5 = 13.0 - 38.0 l/min $\pm 10\%$

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

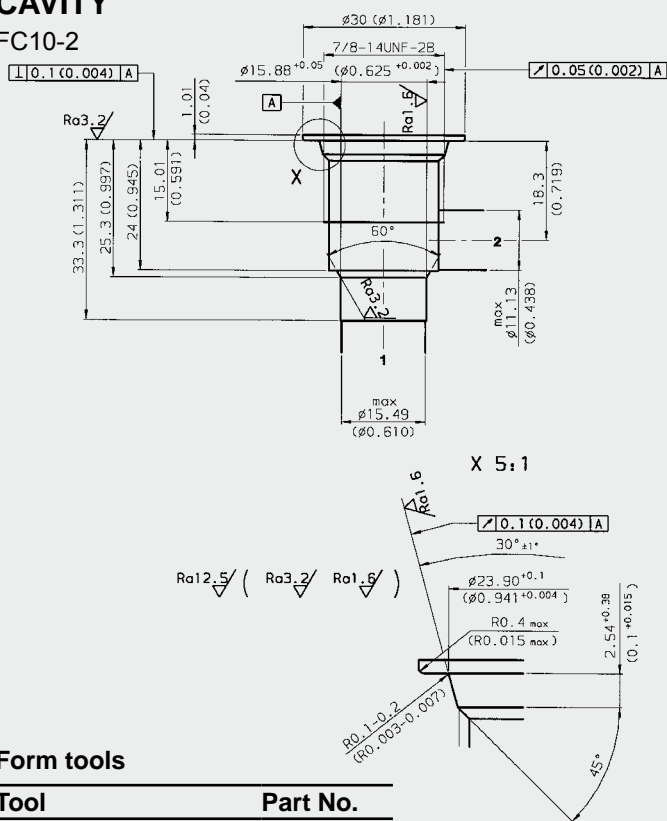
Model code	Part No.
SR10-01-C-N-3.5V	3053635
SR10-01-C-N-10.5V	3053636

*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

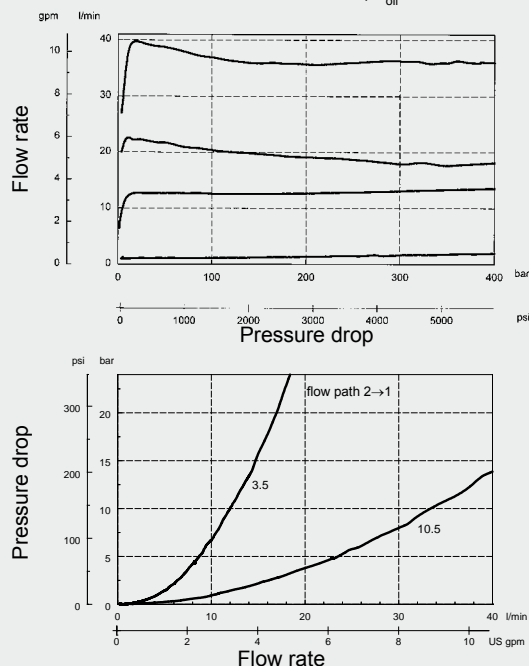
CAVITY

FC10-2



PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



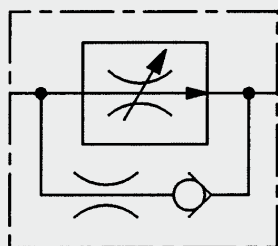
Form tools

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

NOTE

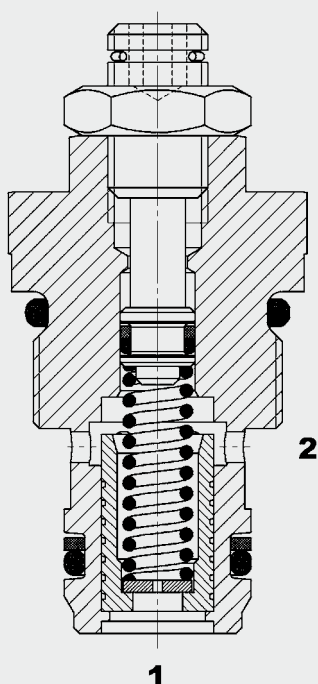
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Up to 20 l/min
Up to 350 bar

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 mm ² /s to max. 380 mm ² /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 $\Delta p = p_1 - p_2$ (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 $\Delta p = 100$ bar)

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

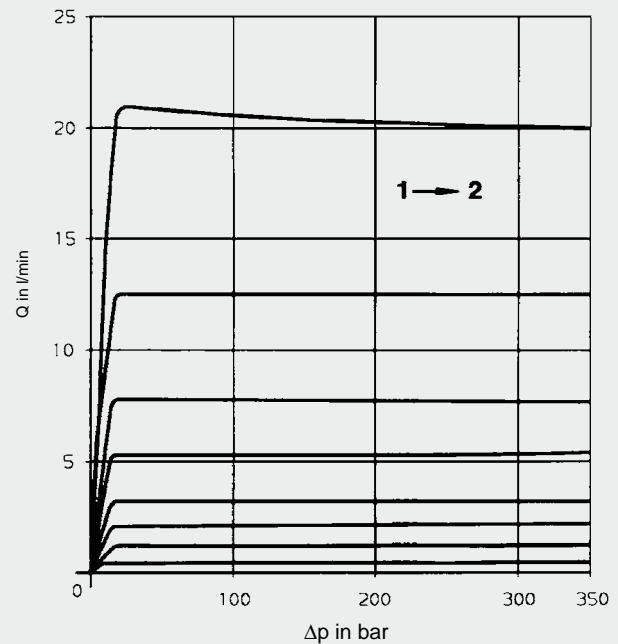
Seal kits

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

FLOW RATE CURVES

Flow rate, pressure-dependent

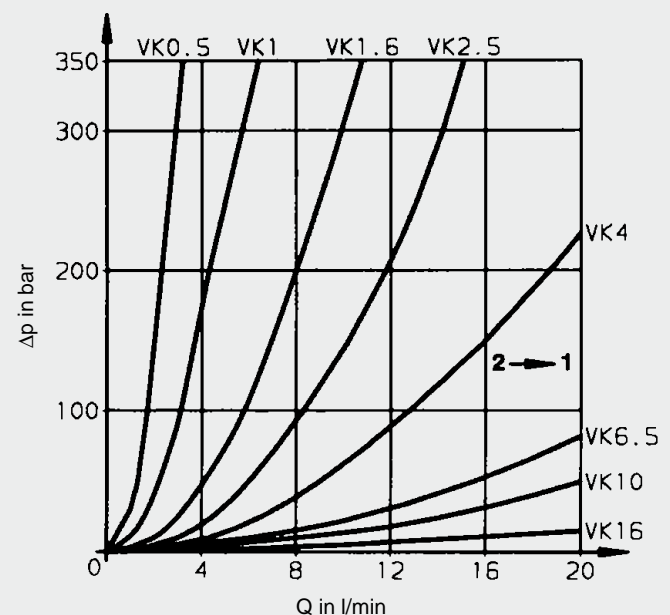
Q- Δp curve,
measured at $n = 72 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 30^\circ\text{C}$



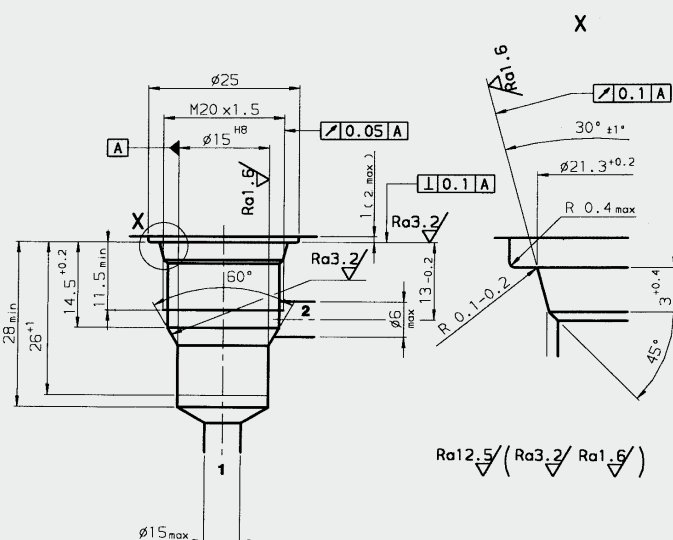
Q- Δp curve

Pressure differential Δp against flow rate Q,
measured at $v = 72 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 30^\circ\text{C}$

VK = Flow rate code



06020



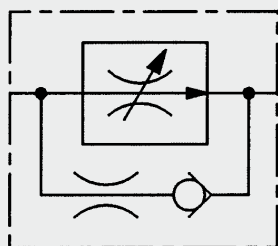
Millimeter
Subject to technical modifications

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

Millimeter
Subject to technical modifications

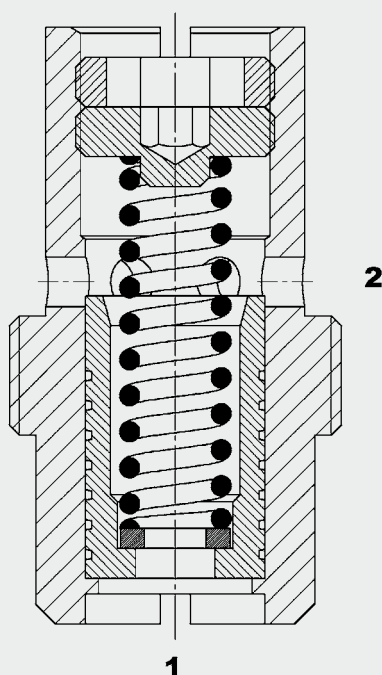
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E-Mail: flutec@hydac.com



Up to 97 l/min
Up to 350 bar

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.

2-Way Flow Regulator Pressure Compensated Direct-Acting Cartridge – 350 bar SRE 1 to 4

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	SRE 2
1	1.0 – 1.5	8 – 15	
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	SRE 3
15	15.0 – 23.0	12 – 18	
1.7	1.7 – 2.1	8 – 12	
2.8	2.8 – 3.8	8 – 12	
4.5	4.5 – 5.5	8 – 15	
7	7.0 – 9.2	8 – 15	SRE 4
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	SRE 4
27	27.0 – 29.4	12 – 15	
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:

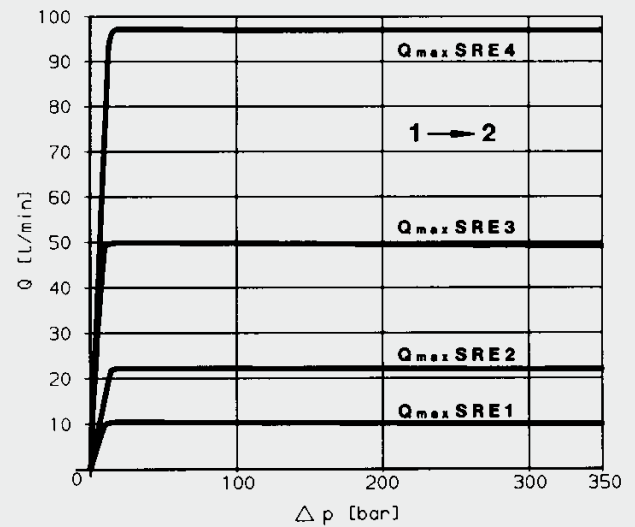
- if the required control pressure differential is not reached, the valve operates as a non-compensated throttle valve.
- different settings are available as an option (standard manufacturer's setting at $\Delta p = 100$ bar)

FLOW RATE CURVES

Q- Δp curve

Pressure differential Δp against flow rate Q,
measured at $v = 72 \text{ mm}^2/\text{s}$ and $T_{01} = 30^\circ\text{C}$

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

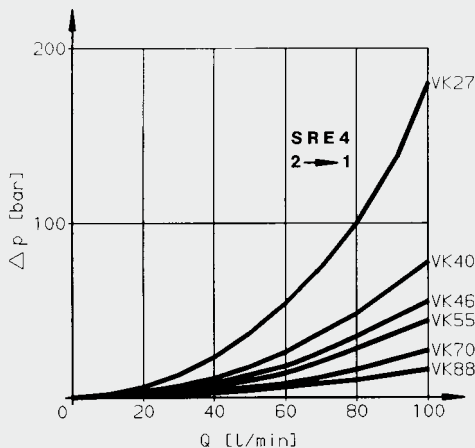
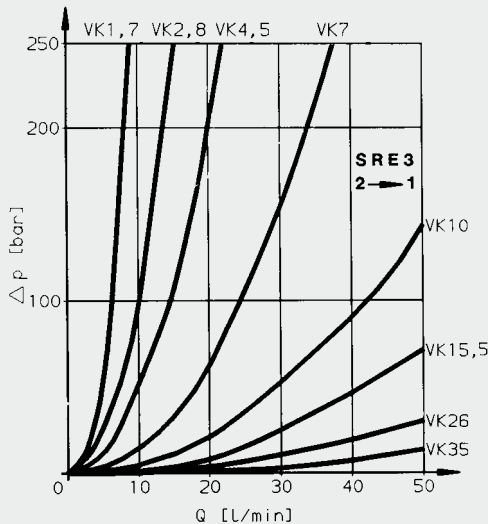
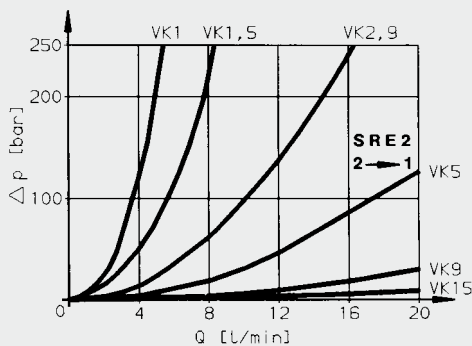
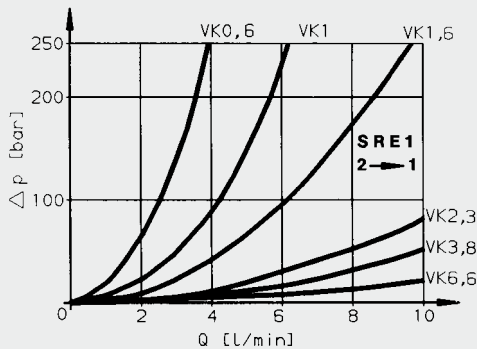
Other models on request

Standard in-line bodies

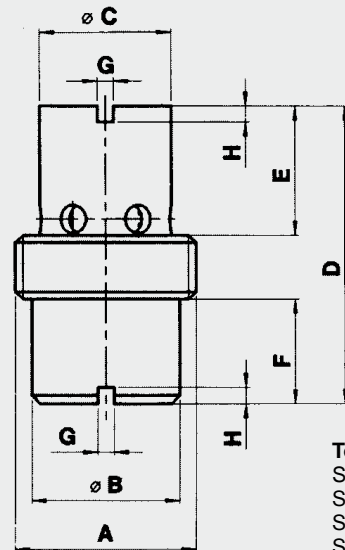
Code	Part No.	Material	Ports	Pressure
Port: 1x female thread, 1x male thread				
XB05520-01X	393215	Steel	G1/4	350 bar
XB08520-01X	393217	Steel	G3/8	350 bar
XB10520-01X	393219	Steel	G1/2	350 bar
XB12520-01X	395061	Steel	G3/4	350 bar
Port: 2x female thread				
XX05520-01X	393224	Steel	G1/4	350 bar
XX08520-01X	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 $v = 72\text{mm}^2/\text{s}$ and $T_{\text{öl}} = 30^\circ\text{C}$
 $\Delta p_{\text{max}} \rightarrow$: 250 bar



DIMENSIONS



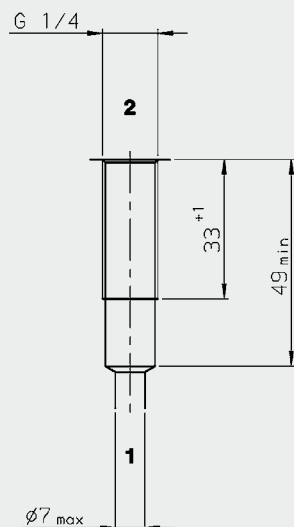
Torque

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

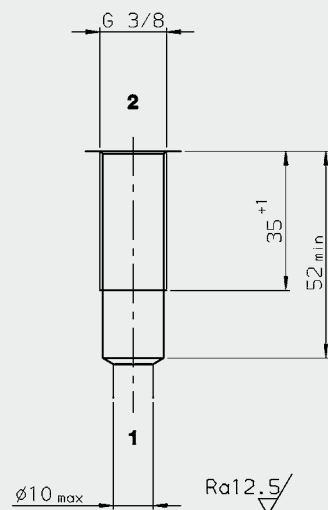
CAVITY

05520



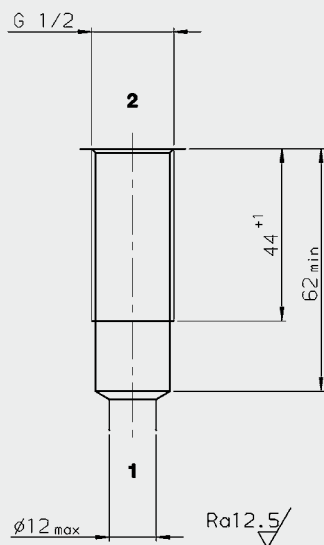
CAVITY

08520



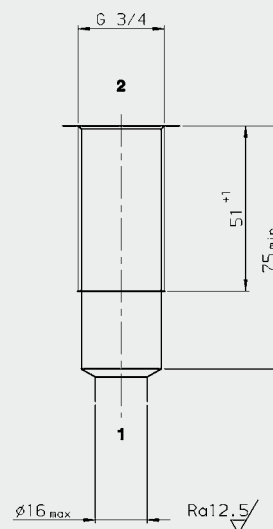
CAVITY

10520



CAVITY

12520



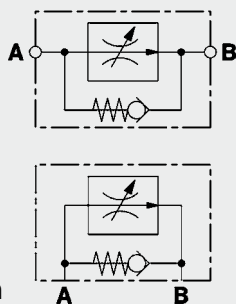
Form tools

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

NOTE

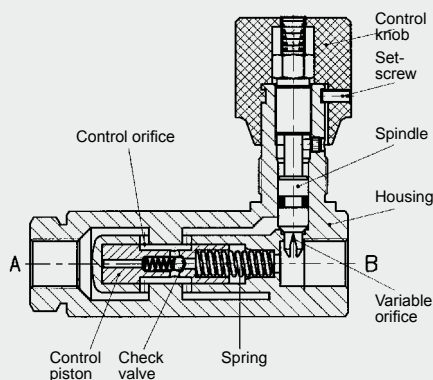
The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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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 mm ² /s to max. 800 mm ² /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

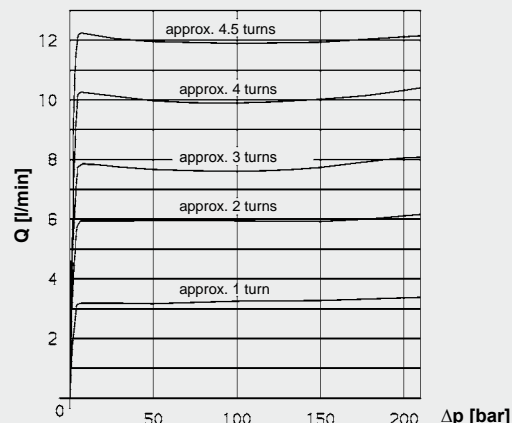
PERFORMANCE

Flow rate, pressure-dependent

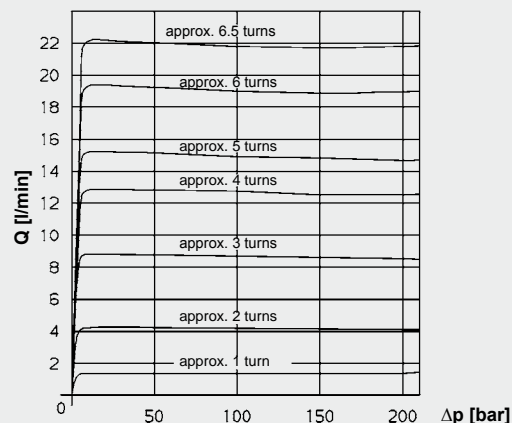
Flow direction A to B

Q-Δp curve measured at $v = 34 \text{ mm}^2/\text{s}$ and $t_{oil} = 46^\circ\text{C}$

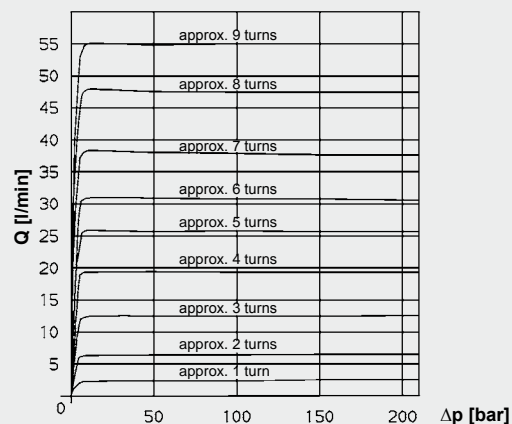
SRVR / SRVRP-08-01.X



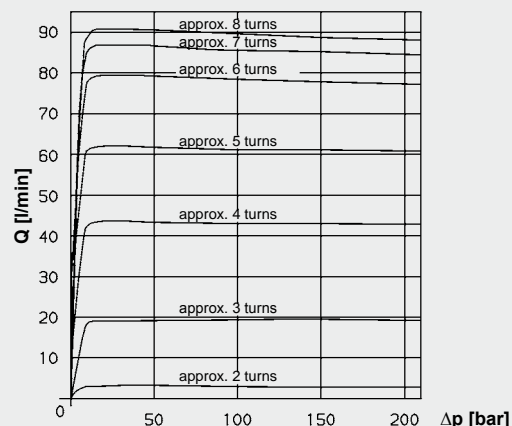
SRVR / SRVRP-10-01.X



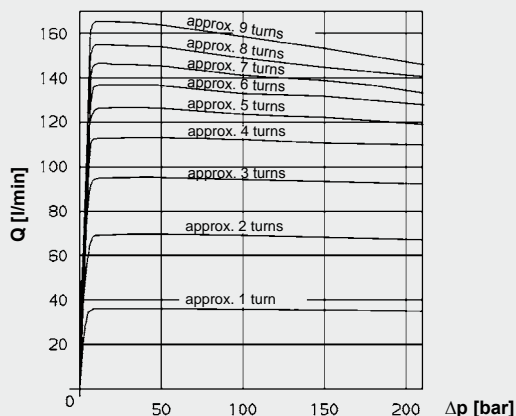
SRVR / SRVRP-12-01.X



SRVR / SRVRP-16-01.X



SRVR-20-01.X



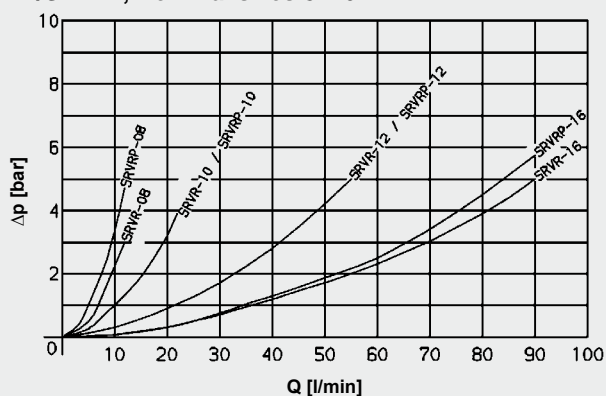
Pressure drops, dependent on flow rate

Flow direction from B to A

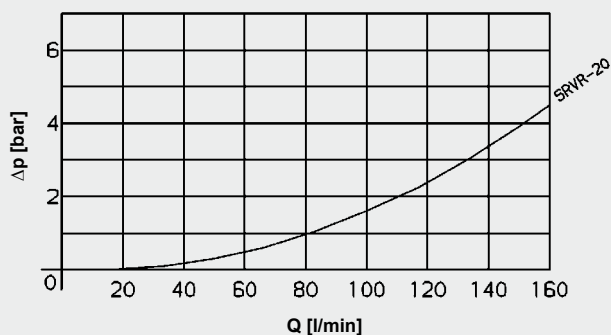
Pressure differential Δp dependent on flow rate Q via variable orifice and check valve (SRVR / SRVRP) with fully open spindle

measured at $v = 34 \text{ mm}^2/\text{s}$ and $t_{oil} = 46 \text{ }^\circ\text{C}$

SRVR/SRVRP, Nominal sizes 8–16



SRVR, Nominal size 20

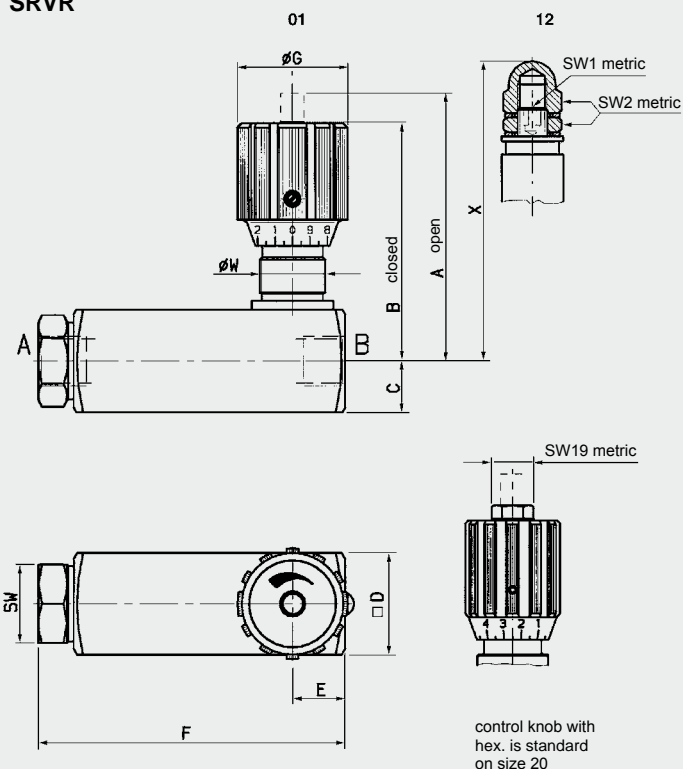


Flow rate / Operating pressure ranges

Nominal size	Flow rate (l/min)	Required control pressure differential $\Delta p = p_1 - p_2$ (bar)
08	12	7
10	22	7
12	55	7
16	90	7
20	160	12

DIMENSIONS

SRVR

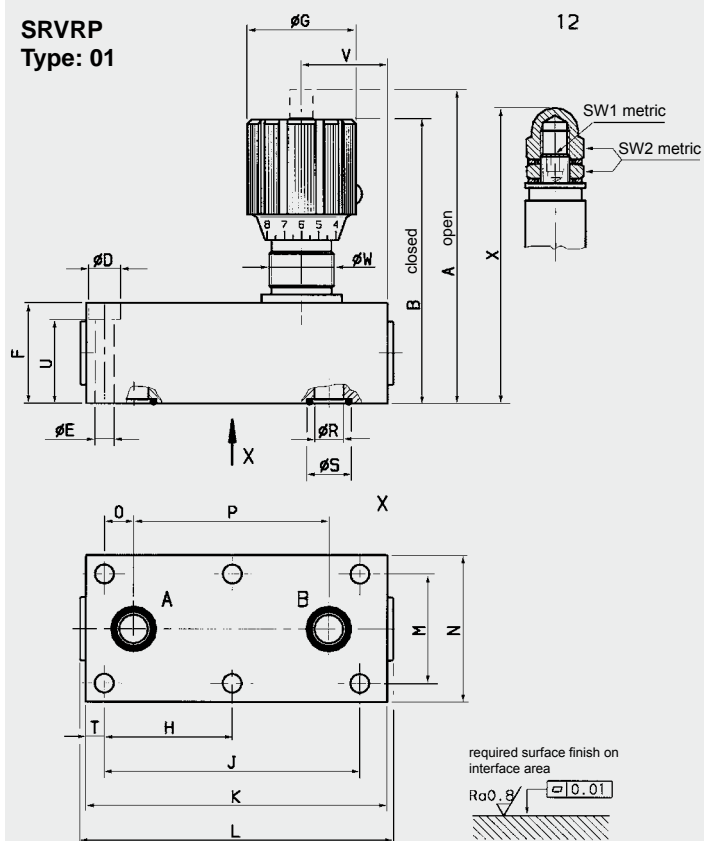


Size	Threaded connection	A	B	C	D	E	F	G
08	G 1/4	76	68	15	30	17.5	92	29
10	G 3/8	91	81.5	17.5	35	18	105	38
12	G 1/2	106.5	96.5	22.5	45	21	125	38
16	G 3/4	109	100	25	50	26	140	38
20	G 1	150	134	30	60	33	175	49

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

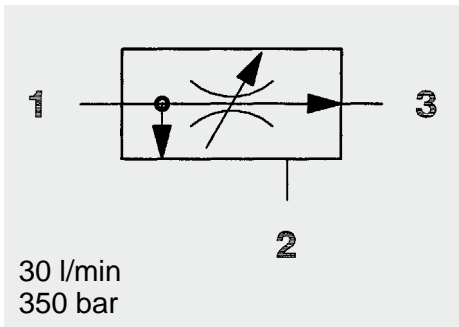


NOTE

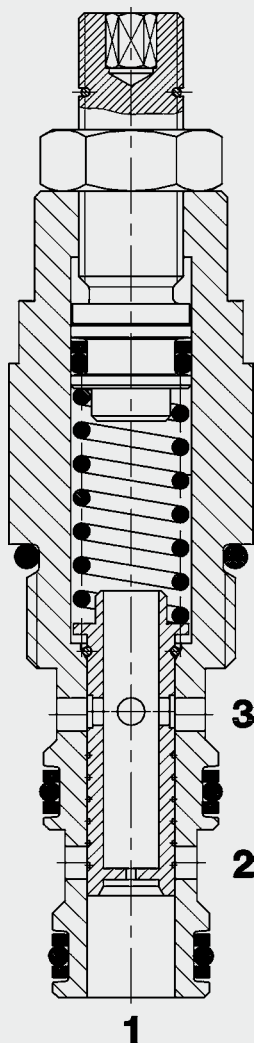
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Size	A	B	D	E	F	G	H	J	K	L
08	91	83	11	6.6	30	29	—	73	86	89
10	108.5	99	11	6.6	35	38	—	89	105	107.5
12	129	119	11	6.6	45	38	—	105	118	121.5
16	134	125	15	9	50	38	62	124	145	145.5

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



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.

3-Way Flow Regulator, Pressure Compensated Priority Style, SAE-8 Cartridge – 350 bar SRP08

UNF

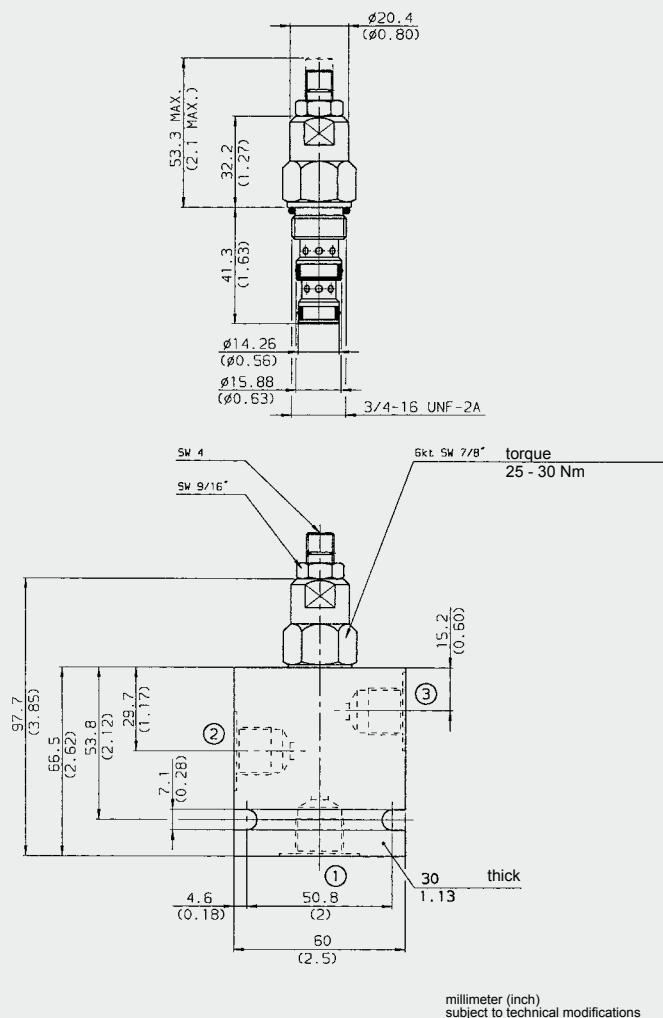
FEATURES

- 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 mm ² /s to max. 420 mm ² /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



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

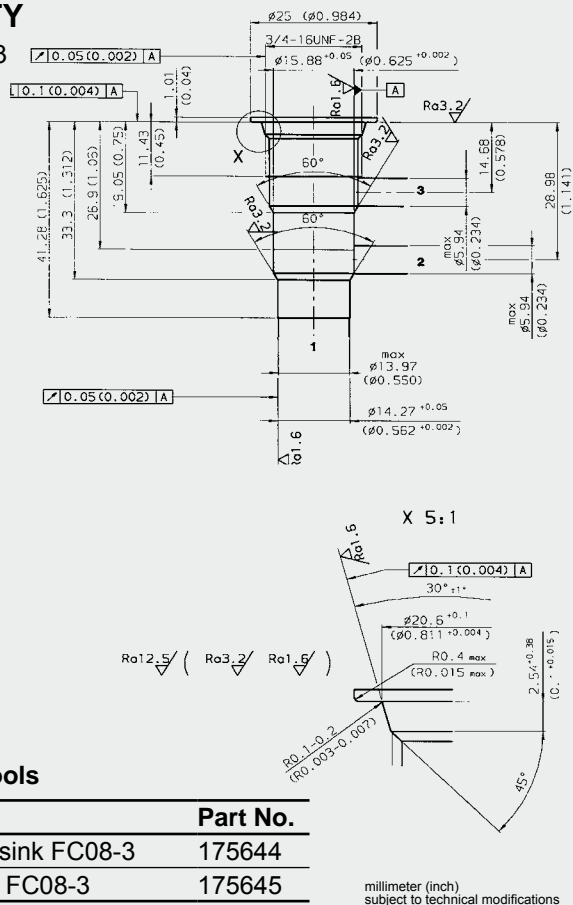
Other housings on request

Seal kits

Code	Material	Part No.
FH083-N	NBR	3054795
FH083-V	FKM	2591059

CAVITY

FC08-03

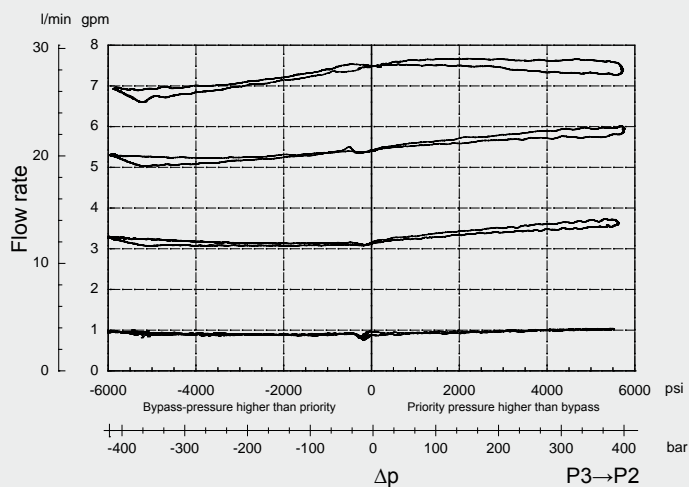


Form tools

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

PERFORMANCE

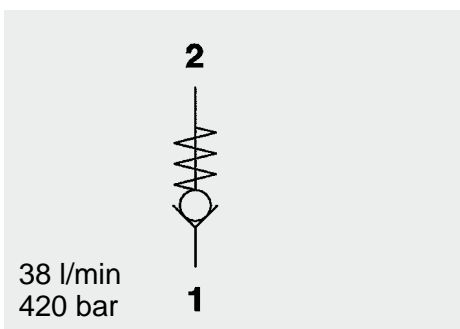
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



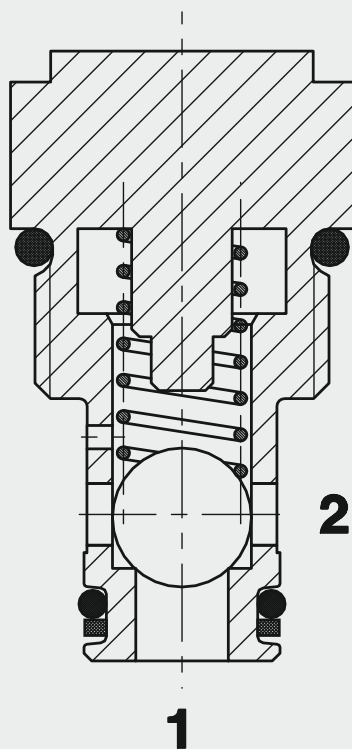
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Subject to technical modifications.

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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.

Check Valve UNF Ball Poppet Type, Direct Acting SAE-08 Cartridge – 420 bar RV08A-01

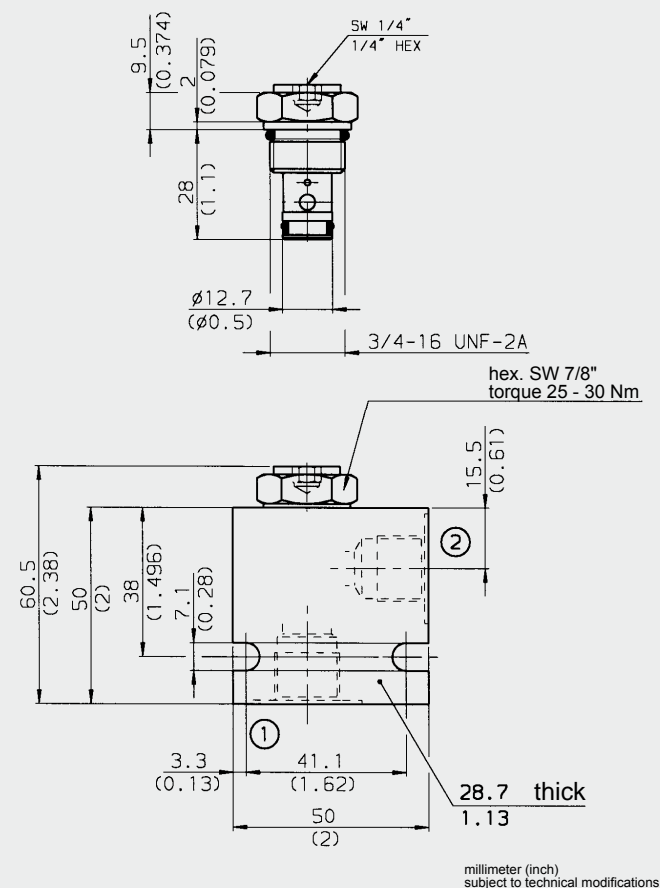
FEATURES

- 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

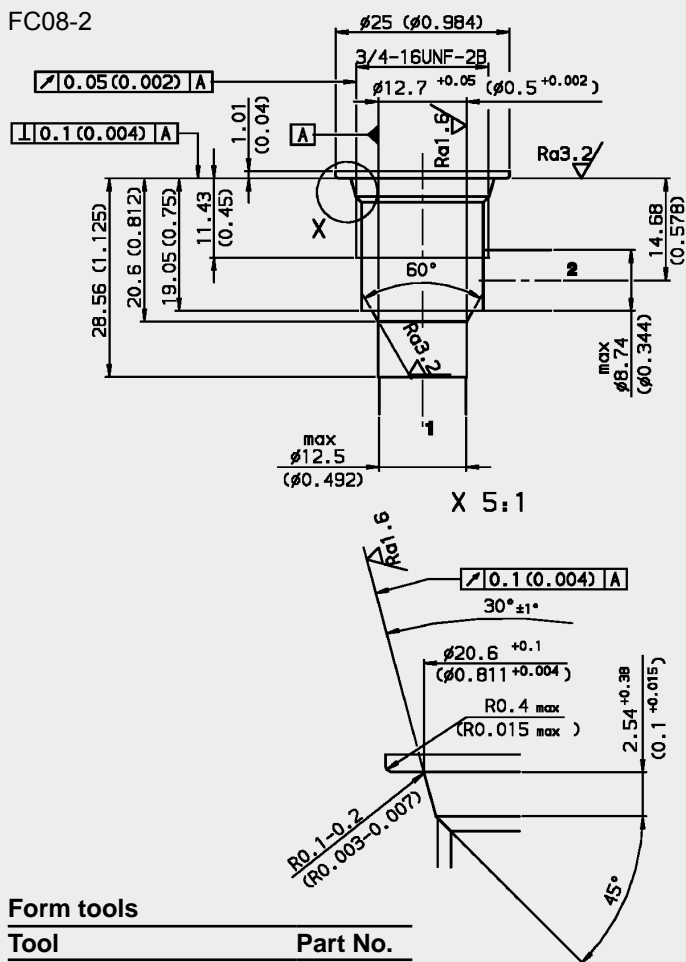
Operating pressure:	max. 420 bar
Nominal flow:	max. 38 l/min
Internal leakage:	0.1 cm ³ /min at 420 bar
Cracking pressure:	0.35 bar 1.00 bar 2.00 bar 5.00 bar
Ambient temperature range:	min. -30 °C to max. +100 °C
Media operating temperature range:	min. -30 °C to max. +100 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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

millimeter (inch)
subject to technical modifications

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**

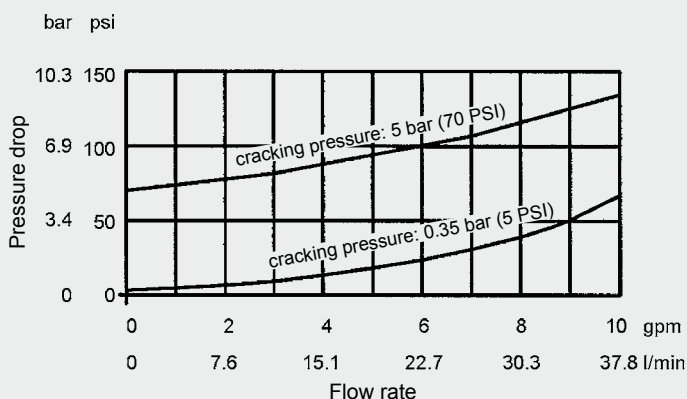
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, anodized	G3/8	210 bar

Seal kits

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

PERFORMANCE

Measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{cell}} = 46 \text{ }^\circ\text{C}$



Note

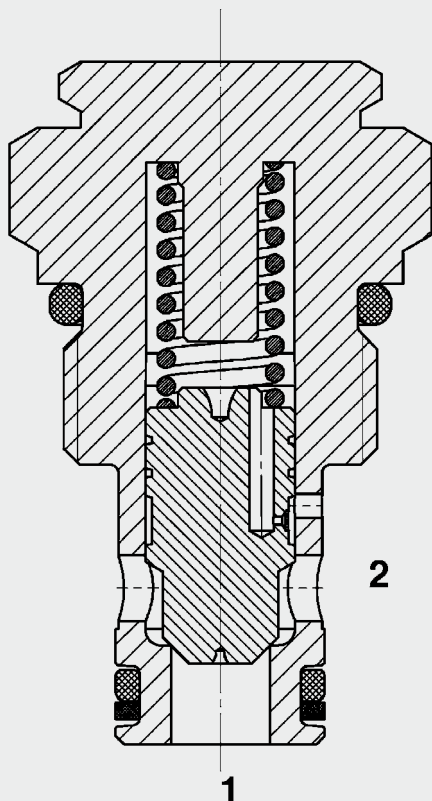
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Up to 38 l/min
Up to 350 bar

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.

Check Valve Cone Poppet Type Direct Acting SAE-08 Cartridge – 350 bar RV08A-51

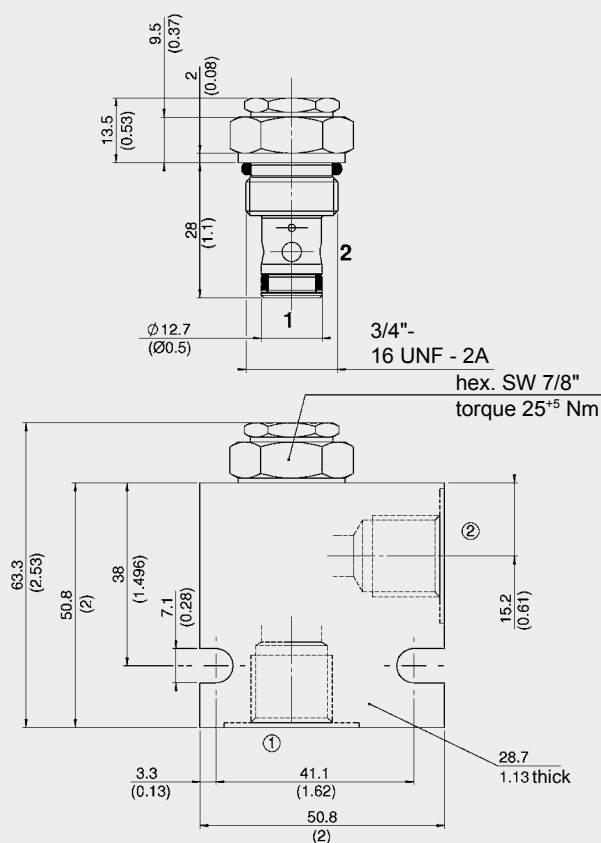
FEATURES

- 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 cm ³ 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 mm ² /s to max. 420 mm ² /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

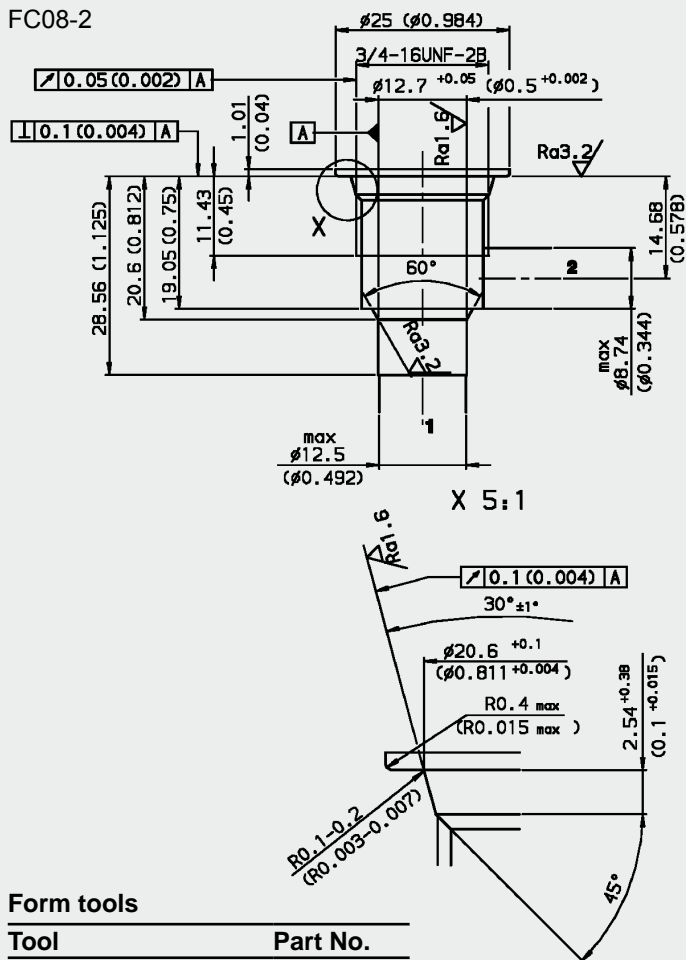
DIMENSIONS



millimeter (inch)
subject to technical modifications

CAVITY

FC08-2



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**

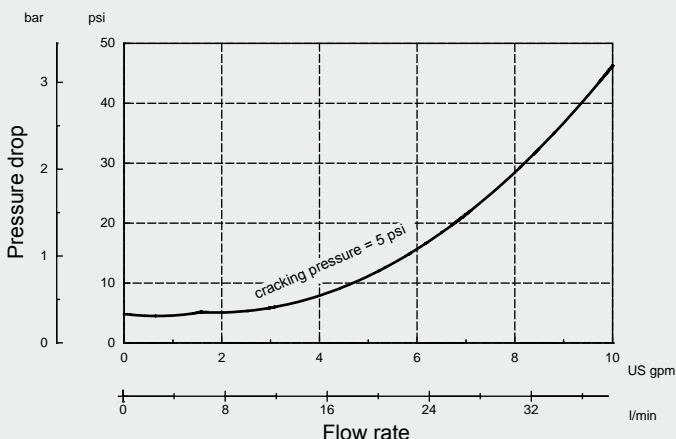
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium	G3/8	210 bar

Seal kits

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

PERFORMANCE

Measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



NOTE

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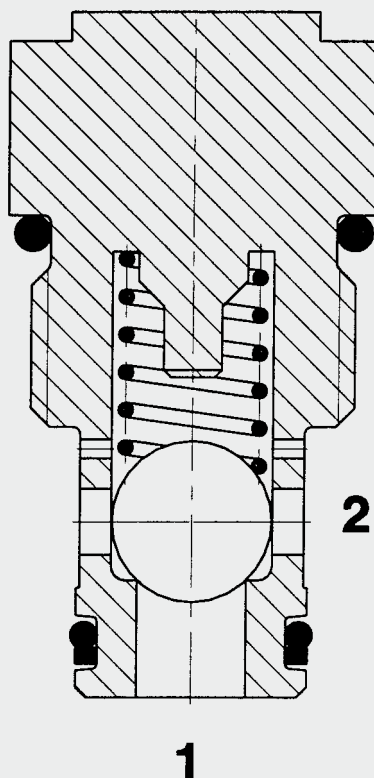
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Check Valve Ball Poppet Type Direct Acting SAE-10 Cartridge – 420 bar RV10A-01

80 l/min
420 bar



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.

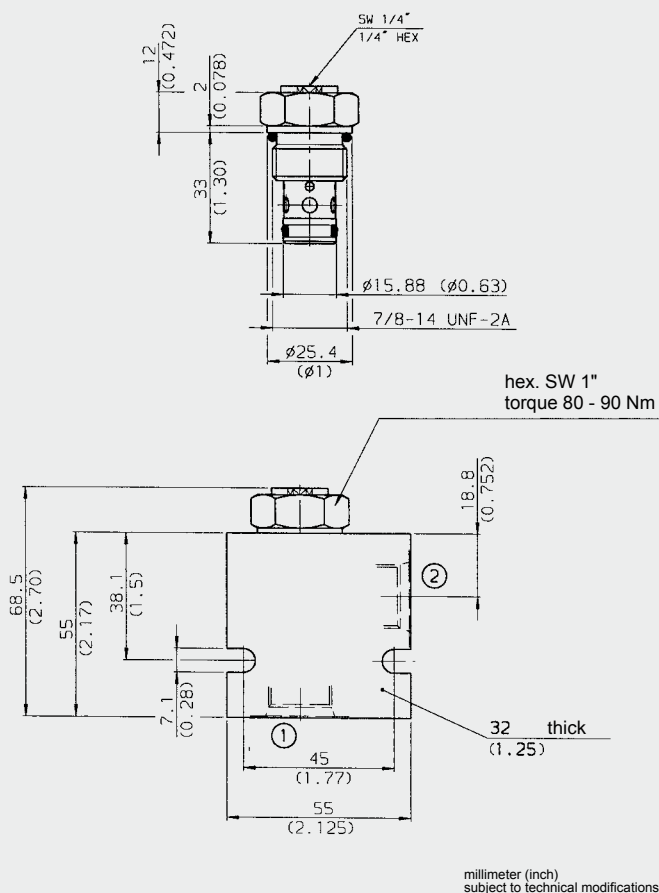
FEATURES

- External surfaces zinc-plated and corrosion-proof
- Hardened closing element
- Low leakage design
- Compact design

SPECIFICATIONS

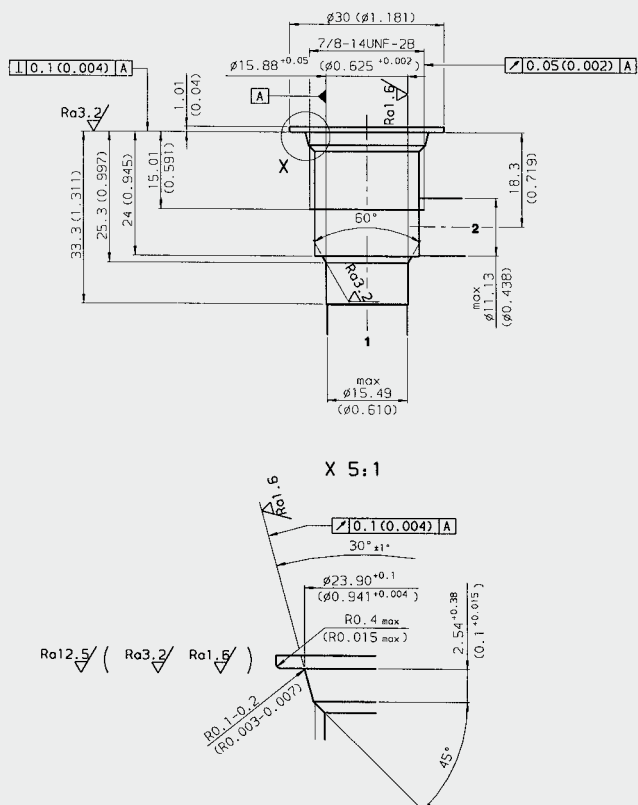
Operating pressure:	max. 420 bar
Nominal flow:	max. 80 l/min
Internal leakage:	max. 0.1 cm ³ /min at 420 bar
Cracking pressure:	0.35 bar 1.00 bar 2.00 bar 5.00 bar
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +100 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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



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

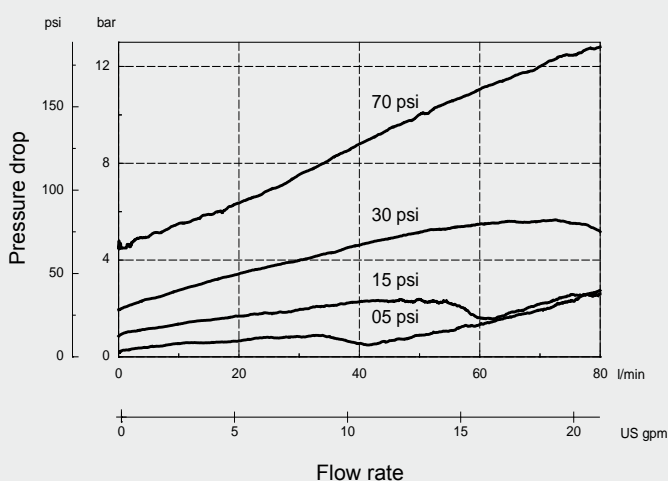
Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, anodized	G1/2	210 bar

Seal kits

Code	Material	Part No.
FH102-N Seal kit	NBR	3033872
FH102-V Seal kit	FKM	3051757

PERFORMANCE

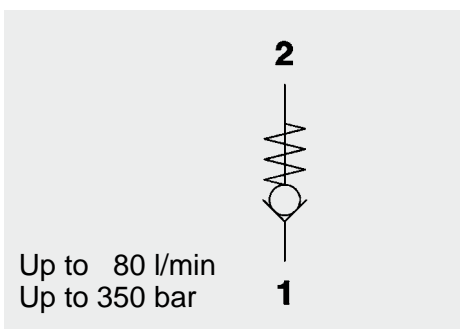
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



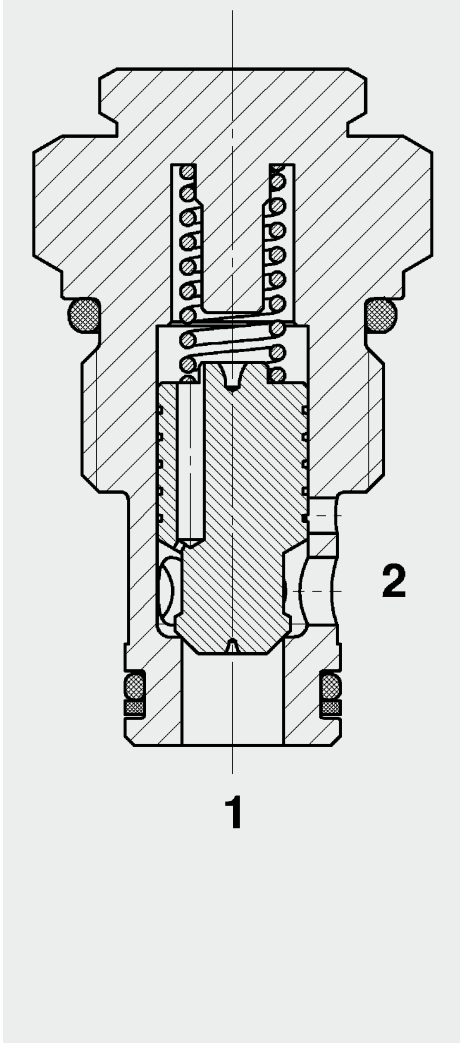
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FUNCTION



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.

Check valve Poppet Type SAE-10 Cartridge – 350 bar RV10A-51

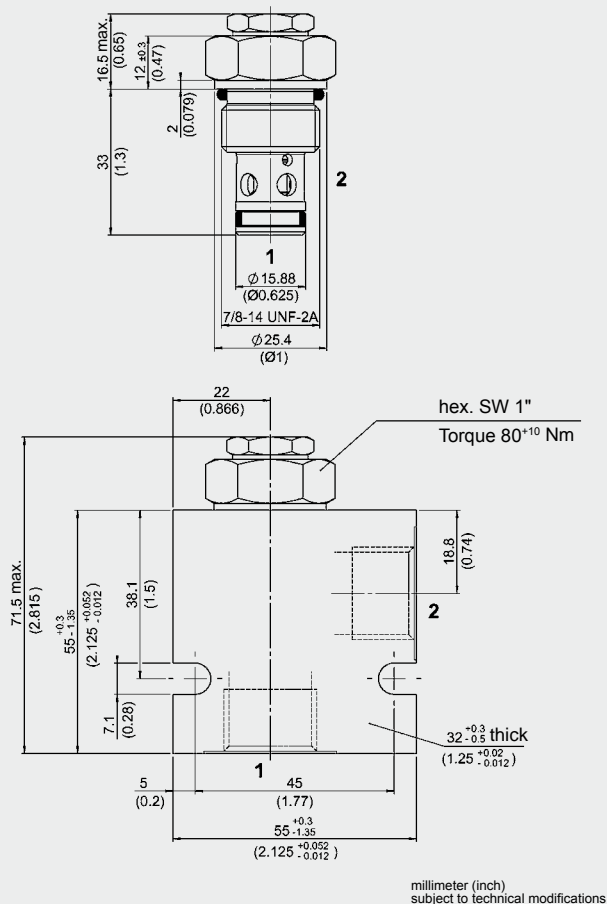
FEATURES

- 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

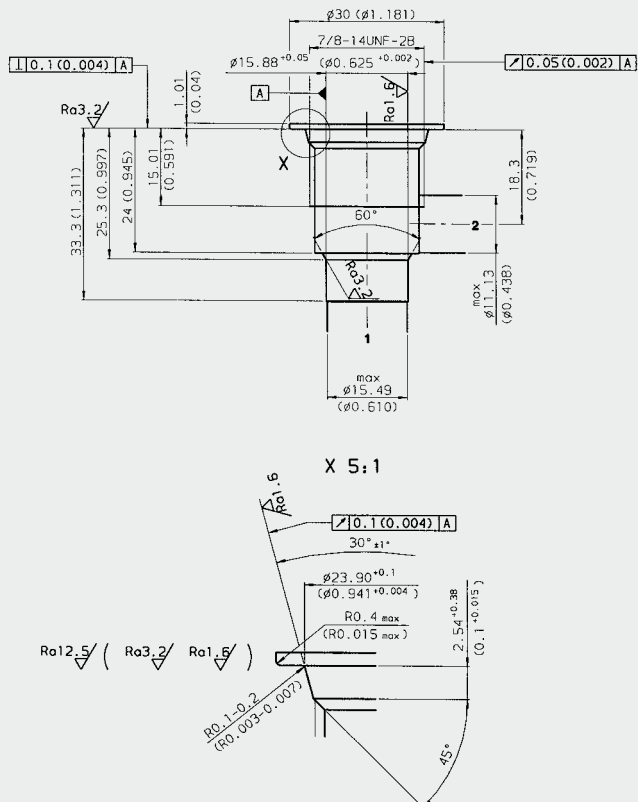
Operating pressure:	max. 350 bar
Nominal flow:	max. 80 l/min
Internal leakage:	0.1 cm ³ at 350 bar
Cracking pressure:	0.5 bar (others on request)
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +100 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 2.8 mm ² /s to max. 800 mm ² /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



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

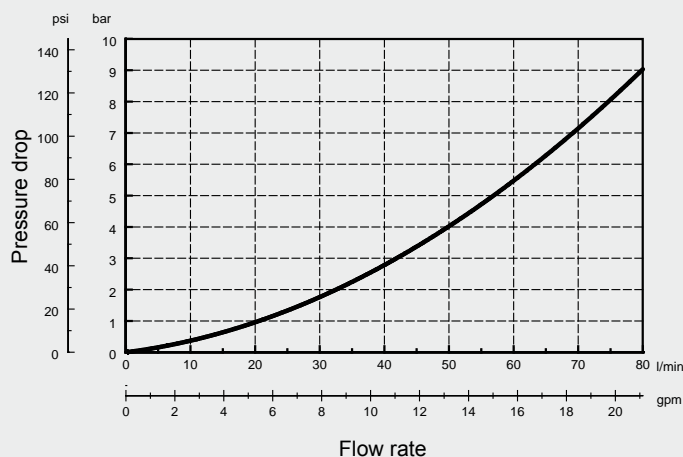
Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, anodized	G1/2	210 bar

Seal kits

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

PERFORMANCE

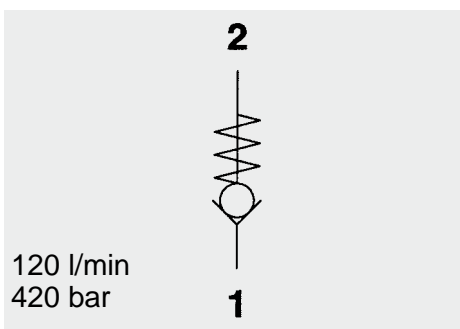
Measured at $v = 46 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 40 \text{ }^\circ\text{C}$



NOTE

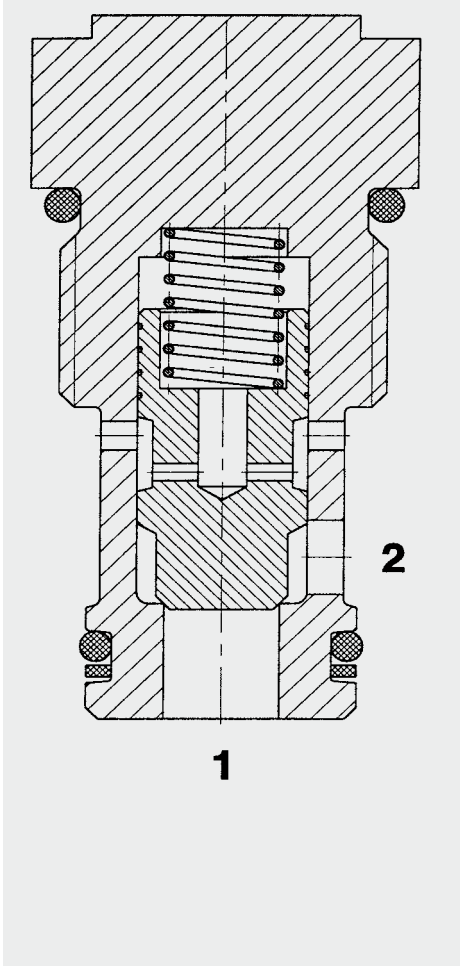
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Check Valve Poppet Type Direct Acting SAE-12 Cartridge – 420 bar RV12A-01

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.

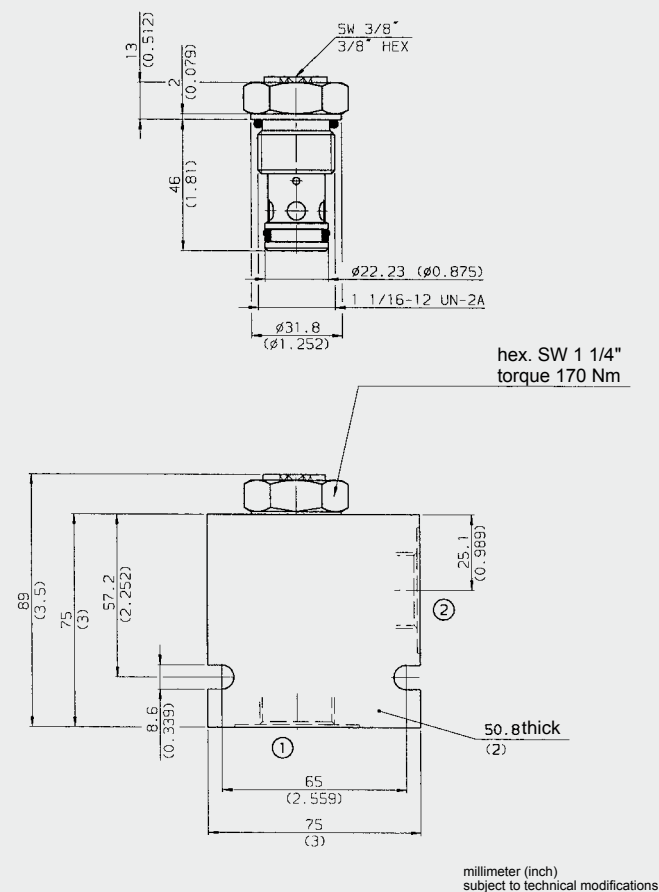
FEATURES

- 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

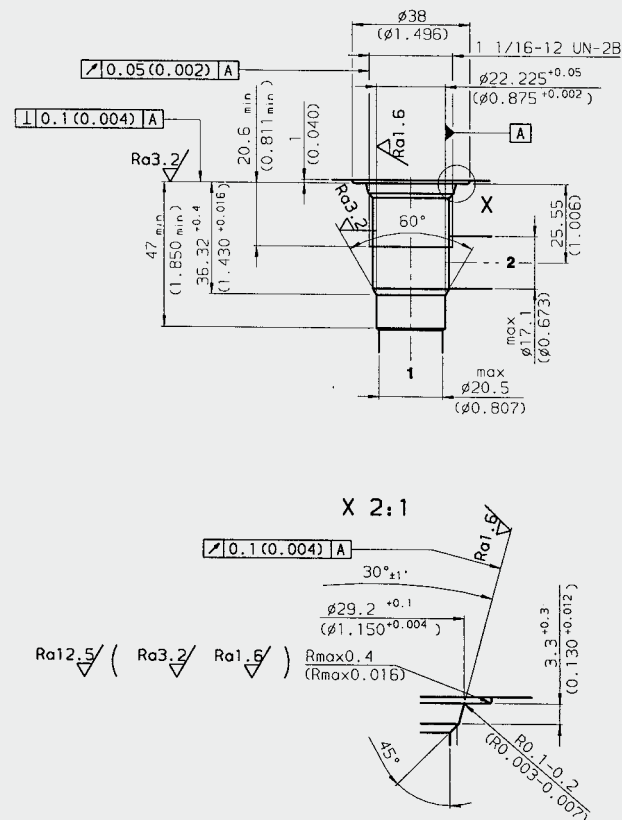
SPECIFICATIONS

Operating pressure:	max. 420 bar
Nominal flow:	max. 120 l/min
Internal leakage:	max. 0.1 cm ³ /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 mm ² /s to max. 420 mm ² /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



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**

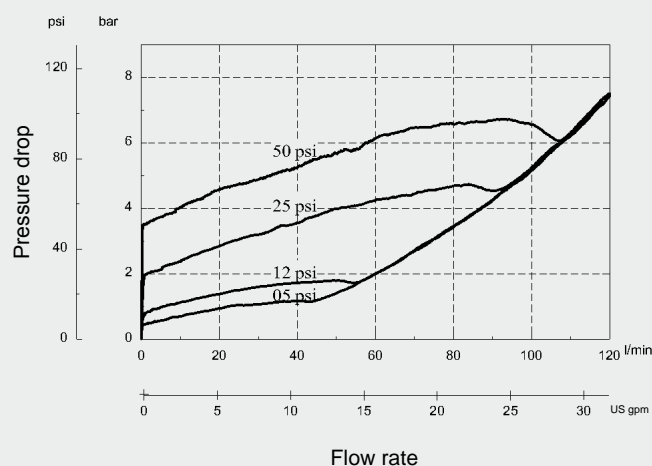
Code	Part No.	Material	Ports	Pressure
FH122-SB6	3053782	Steel, zinc-plated	G3/4	420 bar
FH122-AB6	3053843	Aluminium, anodized	G3/4	210 bar

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



NOTE

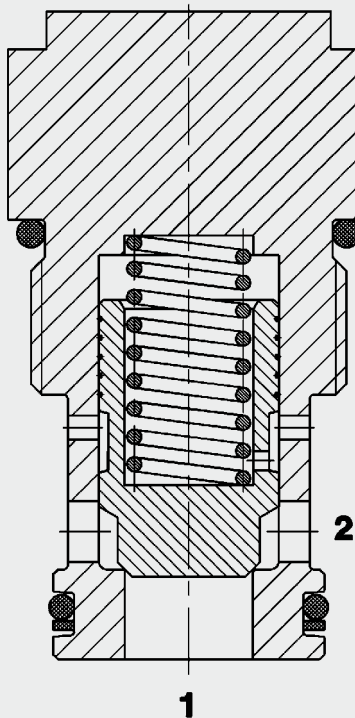
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E-Mail: flutec@hydac.com



Up to 165 l/min
Up to 420 bar

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.

Check Valve Poppet Type Direct Acting SAE-16 Cartridge – 420 bar RV16A-01

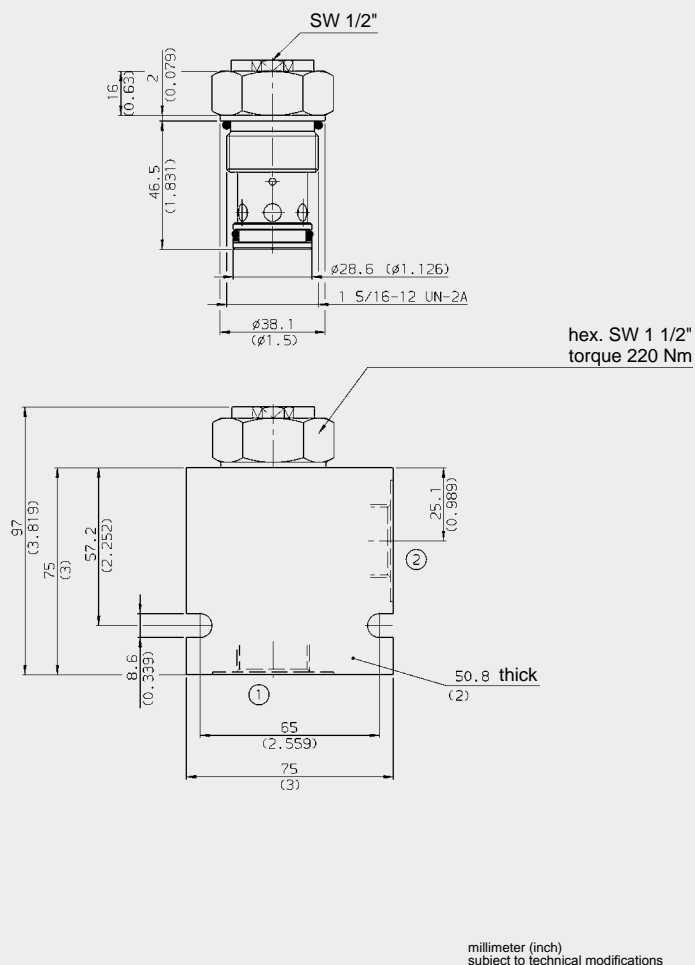
FEATURES

- 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

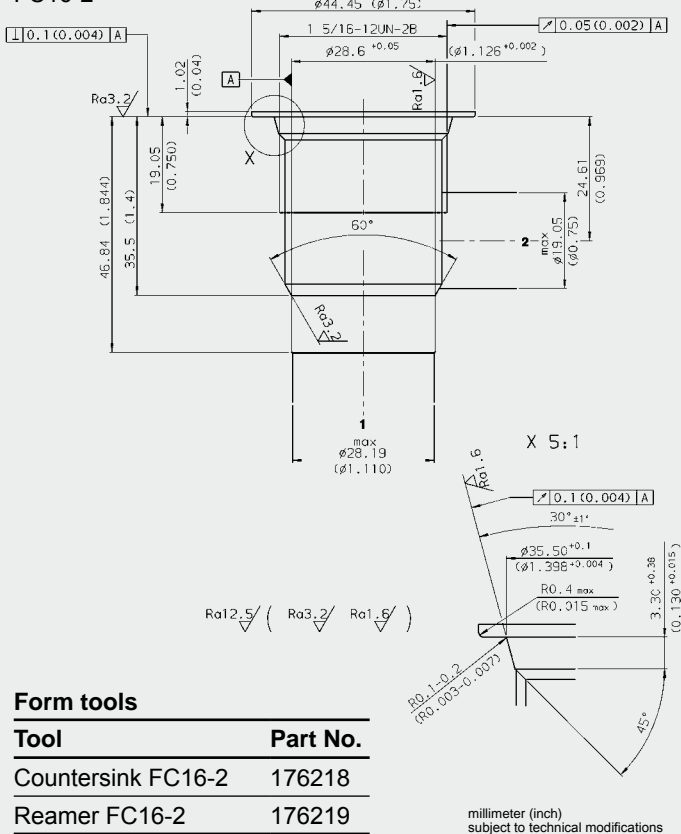
Operating pressure:	max. 420 bar
Nominal flow:	max. 165 l/min
Leakage:	max. 0.1 cm ³ /min at 420 bar
Standard cracking pressures:	05 = 0.35 bar 15 = 1.0 bar 30 = 2.0 bar 70 = 5.0 bar 100 = 7.0 bar
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +100 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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



CAVITY

FC16-2

**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

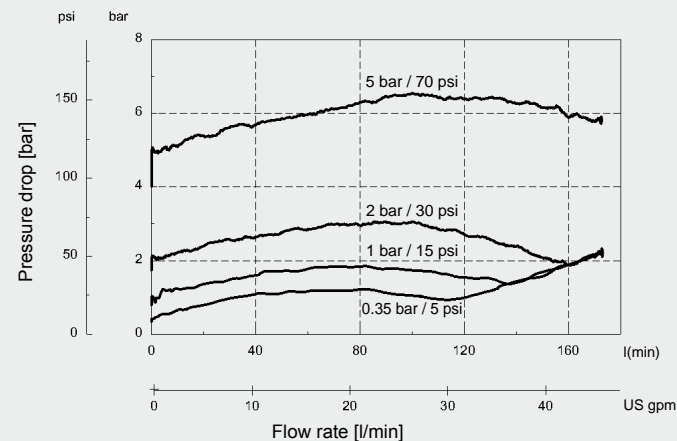
Other line bodies on request

Seal kits

Code	Material	Part No.
FS162-N SEAL KIT	NBR	3052427
FS162-V SEAL KIT	FKM	3051758

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



Note

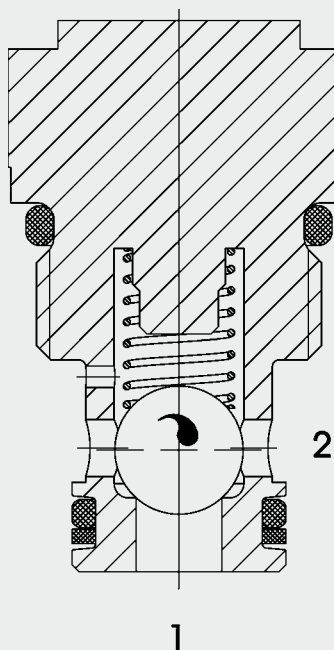
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Subject to technical modifications.

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Up to 38 l/min
Up to 350 bar

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.

Check Valve Ball Seat Type Metric Cartridge – 350 bar RVM06020

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 \approx 0,25 cm ³ /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 mm ² /s to max. 800 mm ² /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

Technical drawing of a mechanical assembly, showing two views with dimensions in millimeters.

Top View Dimensions:

- Overall width: 50
- Overall height: 11.3
- Distance from top edge to center of hole: 35
- Distance from center of hole to top edge of flange: 14
- Flange width: 32
- Distance from center of hole to center of mounting hole: 45
- Distance from center of hole to center of threaded hole: 10
- Flange thickness: 2.5
- Distance from top edge of flange to center of mounting hole: 10.8
- Distance from top edge of flange to center of threaded hole: 12.8
- Distance from center of mounting hole to center of threaded hole: 25.9
- Mounting hole diameter: $\varnothing 23.6$
- Threaded hole: M 20 X 1,5
- Central hole diameter: $\varnothing 15$

Bottom View Dimensions:

- Overall width: 50
- Overall height: 11.3
- Distance from top edge to center of hole: 35
- Distance from center of hole to top edge of flange: 14
- Flange width: 32
- Distance from center of hole to center of mounting hole: 45
- Distance from center of hole to center of threaded hole: 10
- Flange thickness: 2.5
- Distance from top edge of flange to center of mounting hole: 10.8
- Distance from top edge of flange to center of threaded hole: 12.8
- Distance from center of mounting hole to center of threaded hole: 25.9
- Mounting hole diameter: $\varnothing 23.6$
- Threaded hole: M 20 X 1,5
- Central hole diameter: $\varnothing 15$

Notes:

- hex. SW24 torque 30-65 Nm
- $\varnothing 6.6$ thru
- 30 thick

millimeter
subject to technical modifications

Form tools

Tool	Part No.
Countersink MK3	170033
Reamer MK2	1000768
Tap	1002648
Plug gauge	168840

millimeter
subject to technical modifications

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

Model code	Part No.
RVM06020-01-C-N-0.5	3196992
Other models on request	

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

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

The graph illustrates the relationship between pressure drop and flow rate for a 1/2 inch diameter pipe. The y-axis represents pressure drop in both psi (0 to 4) and bar (0 to 4). The x-axis represents flow rate in both l/min (0 to 10) and US gpm (0 to 10). A solid curve shows the pressure drop increasing with flow rate, starting at approximately 0.5 psi at 0 l/min and reaching about 4.2 psi at 10 l/min. A dashed horizontal line is drawn at 2 psi.

Flow rate (l/min)	Flow rate (US gpm)	Pressure drop (psi)	Pressure drop (bar)
0	0	0.5	0.03
5	2.1	1.5	0.10
10	4.2	2.5	0.17
15	6.3	3.2	0.22
20	8.4	3.8	0.26
25	10.5	4.0	0.27
30	12.6	4.2	0.29

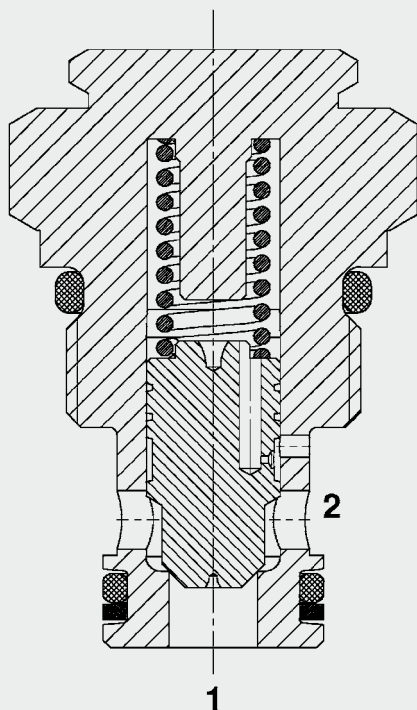
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38 l/min
350 bar

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.

Check Valve Poppet Type Metric Cartridge – 350 bar RVM06020-51

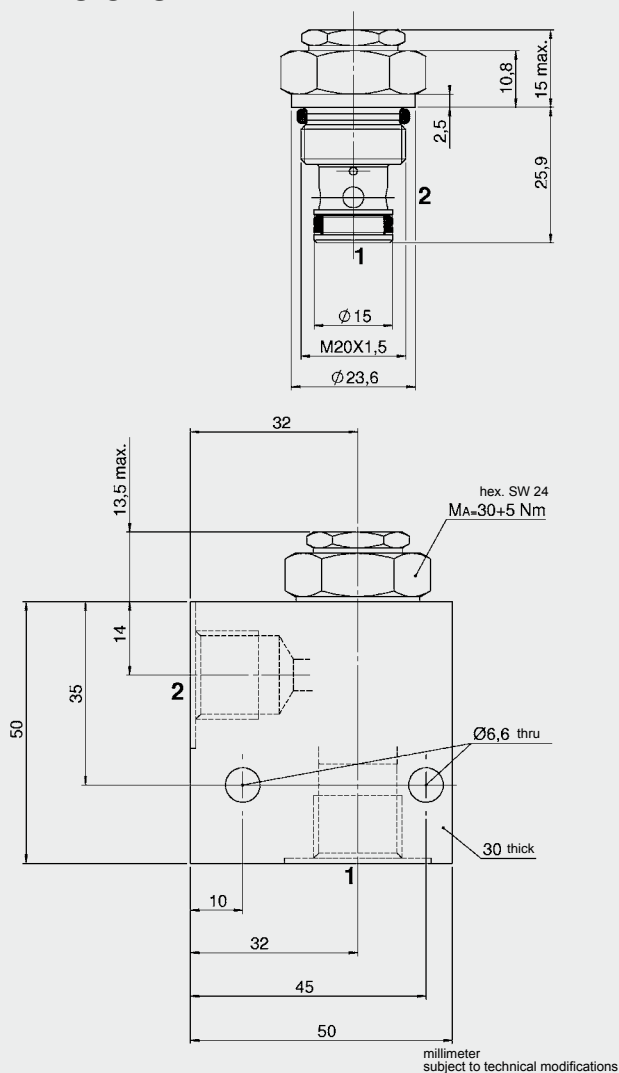
FEATURES

- 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 cm ³ 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 mm ² /s to max. 420 mm ² /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



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

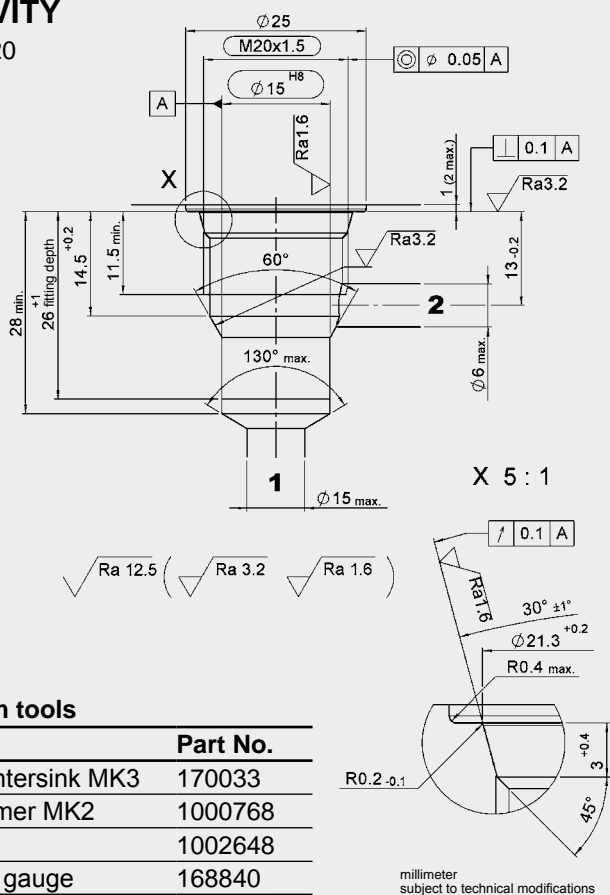
Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G 3/8	420 bar
Other line bodies on request				

Seal kits

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

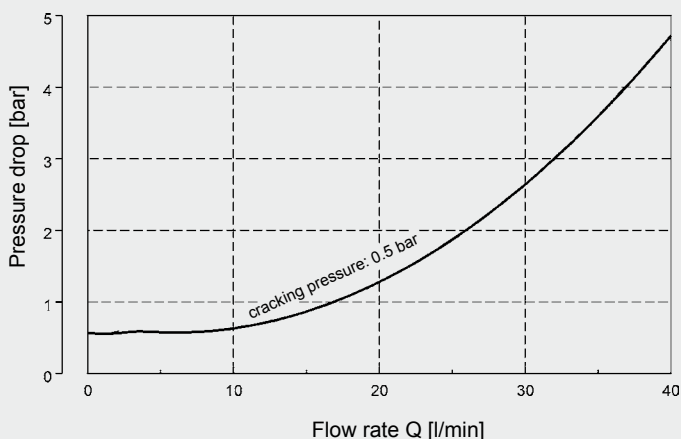
CAVITY

06020



PERFORMANCE

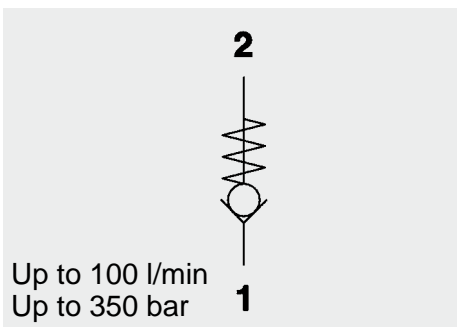
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



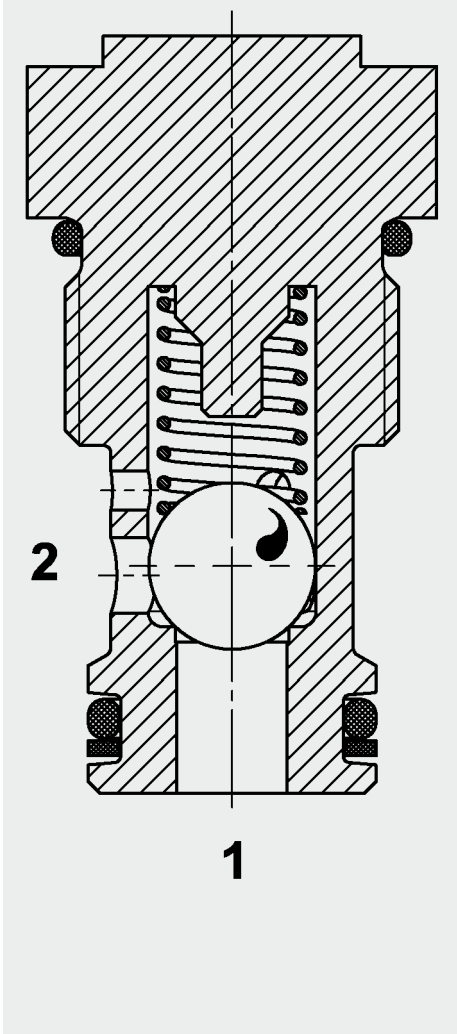
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FUNCTION



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.

Check Valve Ball Poppet Type Metric Cartridge – 350 bar

RVM10120-01

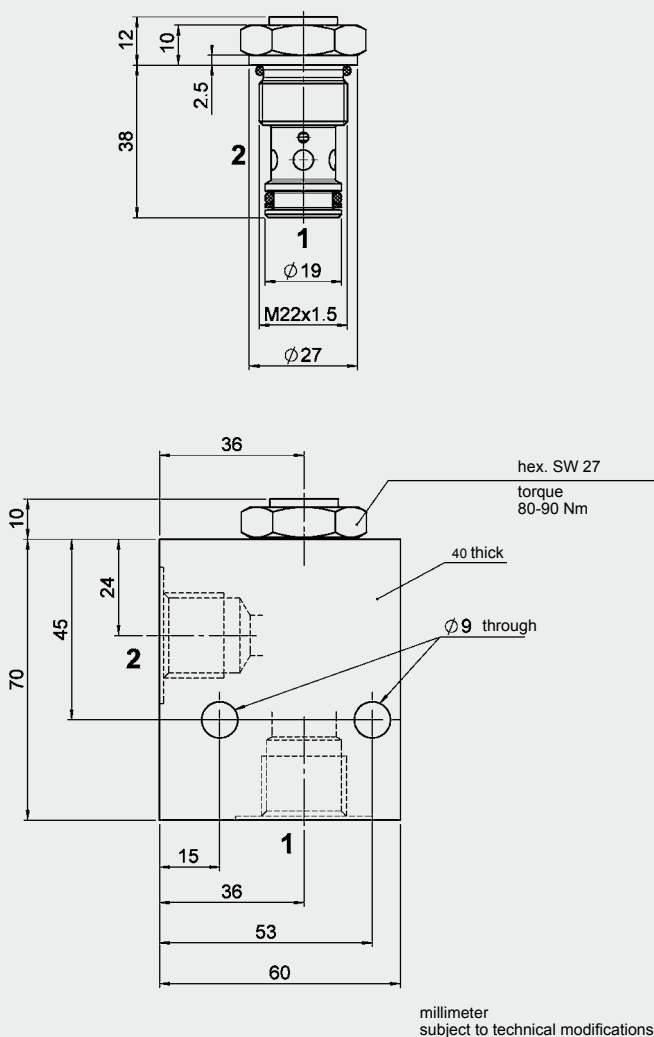
FEATURES

- 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 \approx 0,25 cm ³ /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 mm ² /s to max. 800 mm ² /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



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

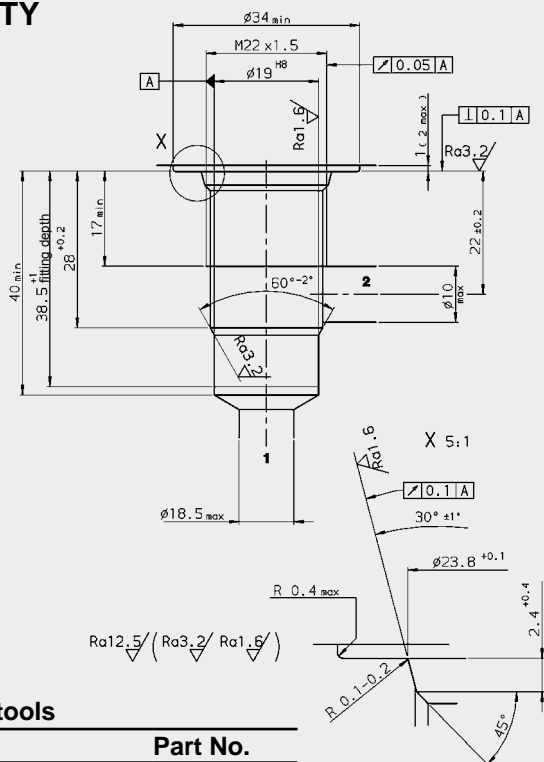
Code	Part No.	Material	Ports	Pressure
R10120-01X-01	395234	Steel, zinc-plated	G 1/2	420 bar
R10120A-01X-02	395235	Steel, zinc-plated	M 22 x 1.5	420 bar

Seal kits

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

CAVITY

10120



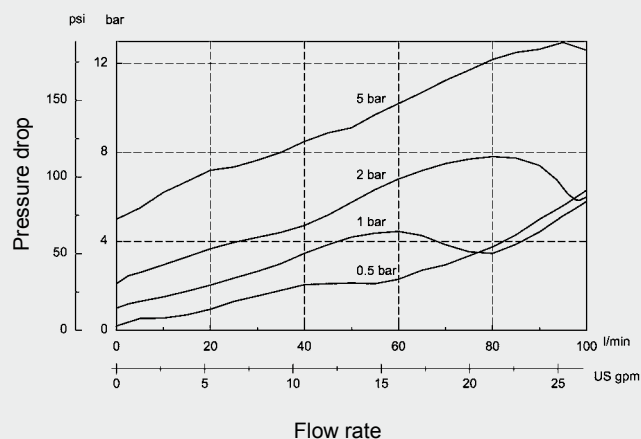
Form tools

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

millimeter
subject to technical modifications

PERFORMANCE

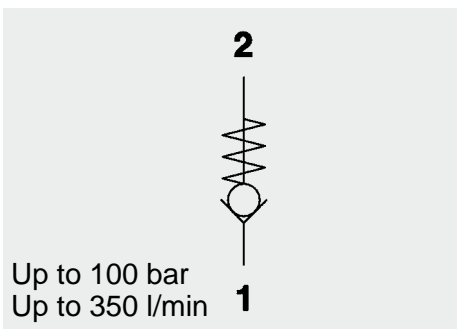
Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



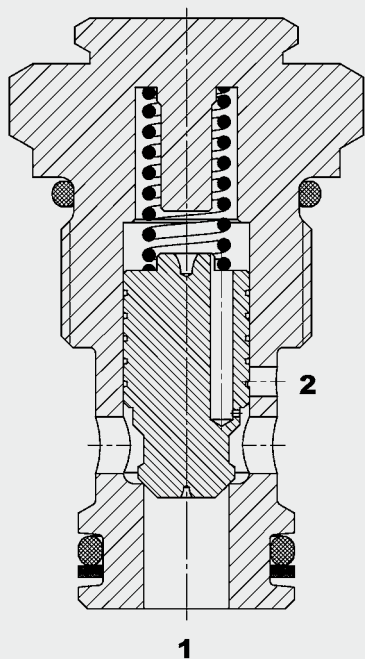
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FUNCTION



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.

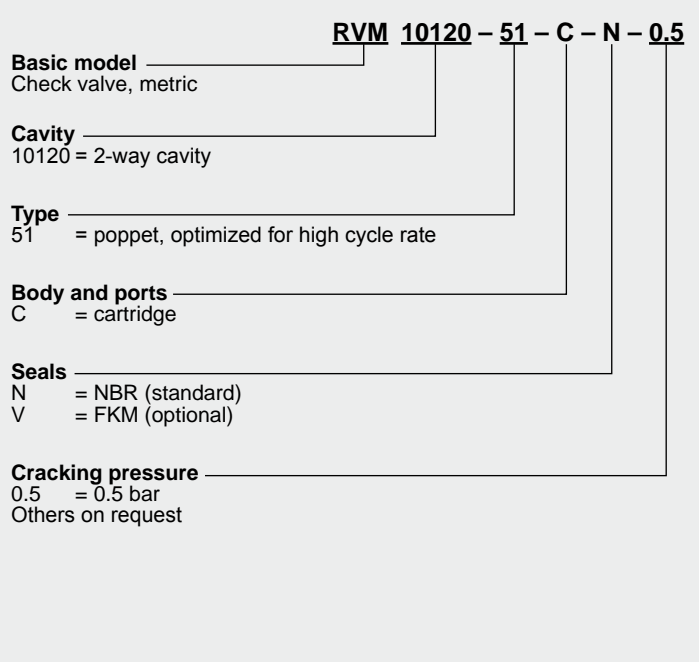
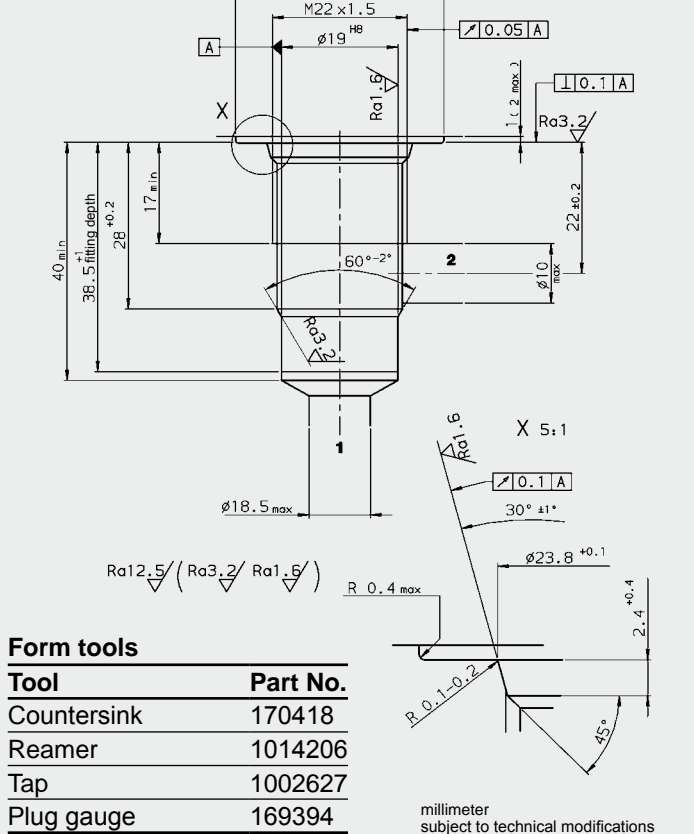
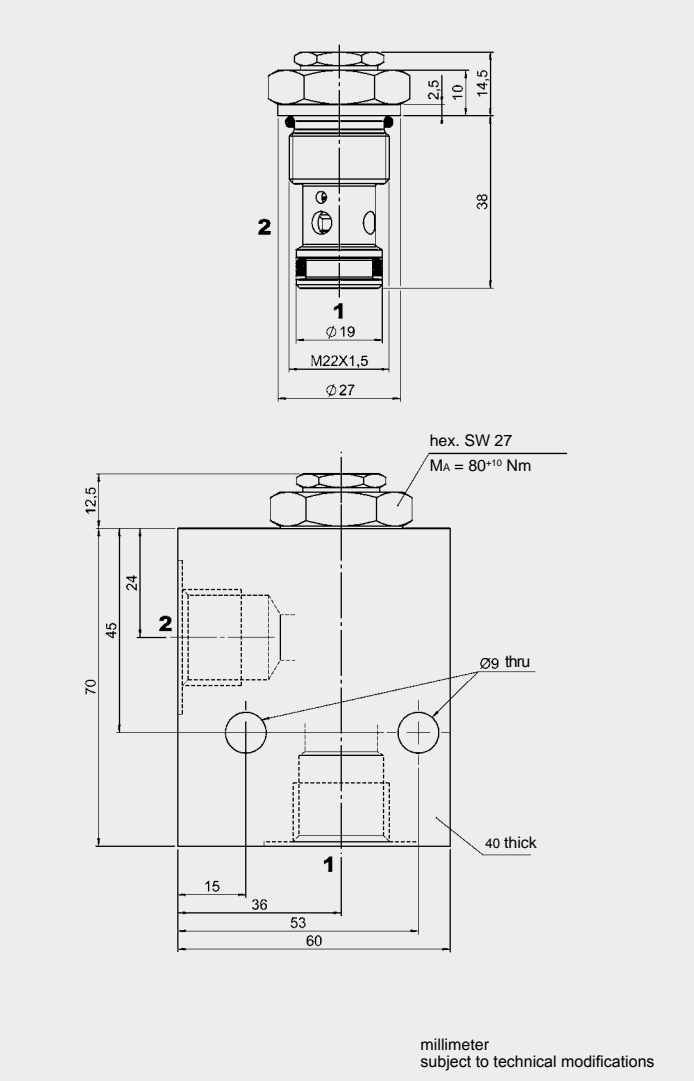
Check Valve Poppet Type Metric Cartridge – 350 bar RVM10120-51

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

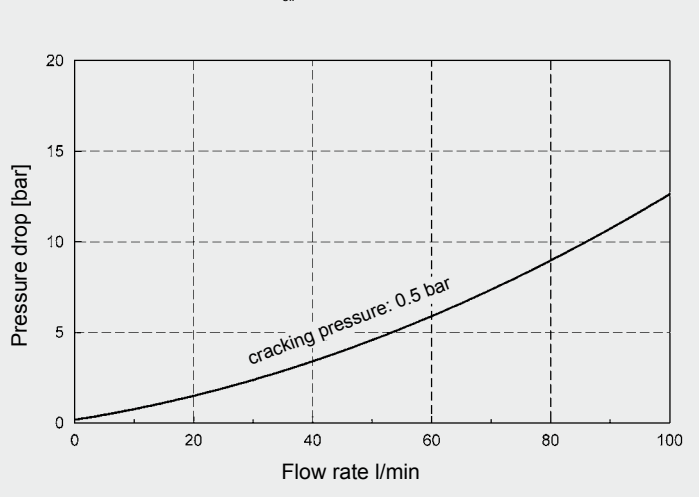
Operating pressure:	max. 350 bar	
Nominal flow:	max. 100 l/min	
Internal leakage:	leakage-free (max. 5 drops \approx 0,25 cm ³ /min at 350 bar)	
Cracking pressure:	0.5 bar (others on request)	
Media operating temperature range:	min. -30 °C to max. +100 °C	
Ambient temperature range:	min. -30 °C to max. +100 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 2.8 mm ² /s to max. 800 mm ² /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	



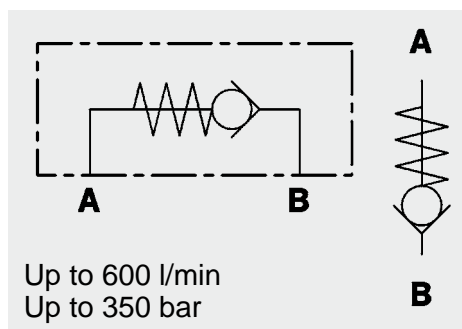
Model code	Part No.
RVM10120-51-C-N-0.5	3420466

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

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

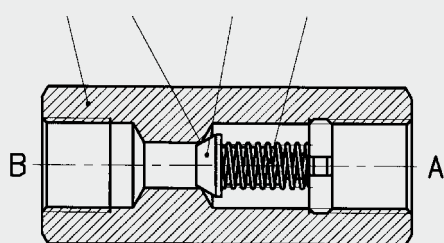


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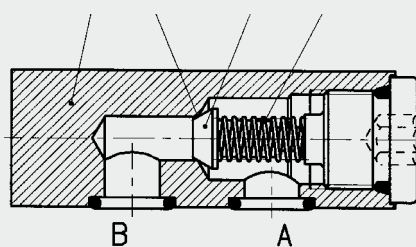


FUNCTION

Housing Valve seat Piston Spring



Housing Valve seat Piston Spring



Check Valves, Direct-Acting, Cone Poppet Valve for Inline and Manifold Mounting – 350 bar RV, RVP 06 - 40

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 mm ² /s to max. 800 mm ² /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

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.

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

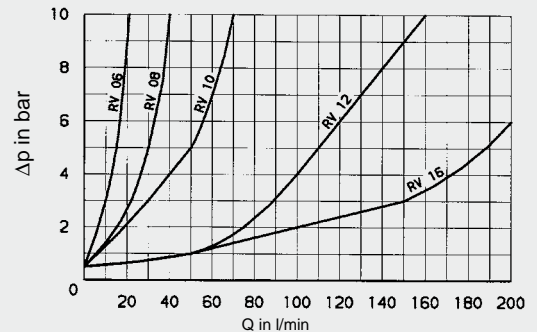
Pressure drops, dependent on flow rate

RV = Flow direction B → A, measured at
 $v = 72 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 30^\circ\text{C}$

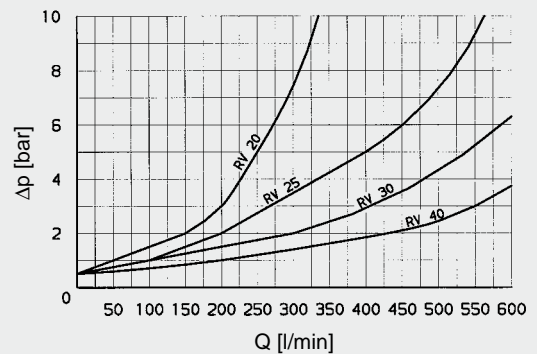
RVP = Flow direction B → A, measured at
 $v = 38 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 43^\circ\text{C}$

Pressure differential Δp against flow rate Q!

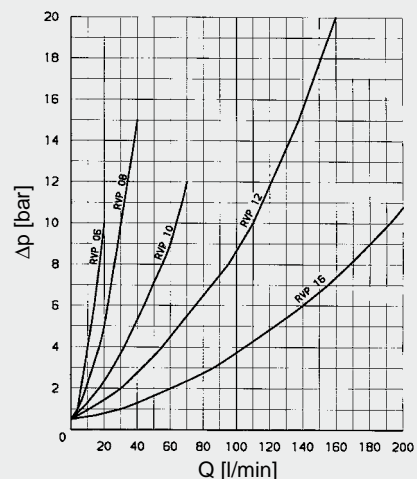
RV-06-01.X bis RV-16-01.X



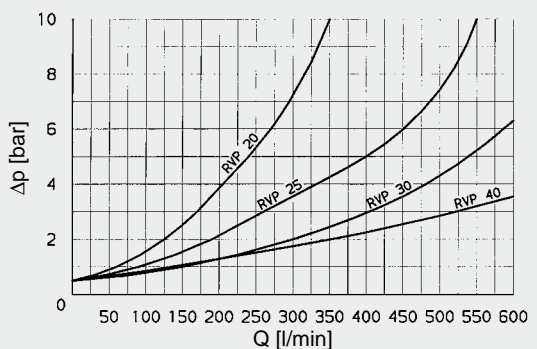
RV-20-01.X bis RV-40-01.X



RVP-06-01.X to RVP-16-01.X

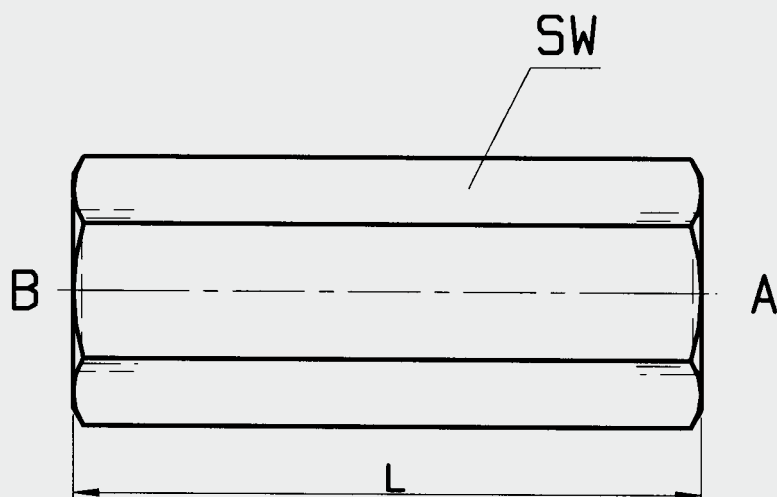


RVP-20-01.X to RVP-40-01.X



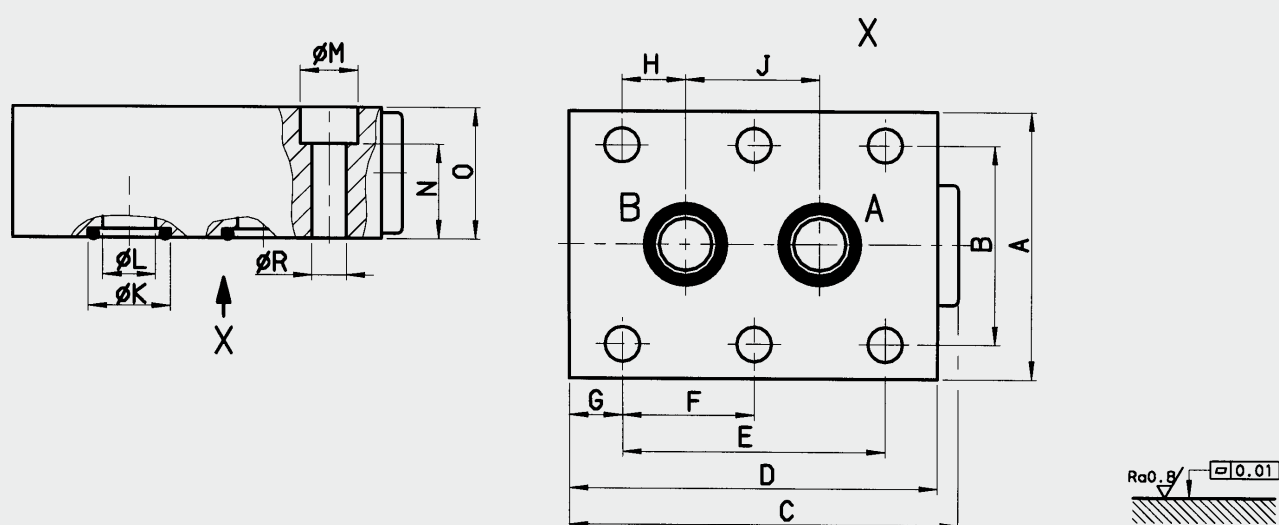
DIMENSIONS

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

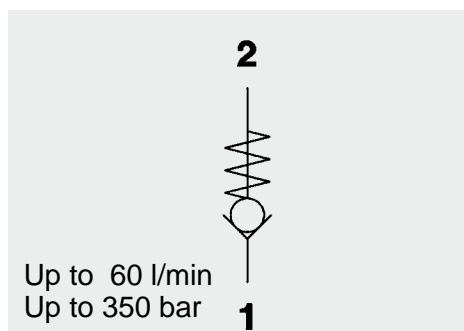


Size	A	B	C	D	E	F	G	H	J	K	L	M	N	O	R	Weight [kg]
06	41.5	28.5	46	41.5	19	—	6.4	1.6	16	9.7	5	11	9	16	6.6	0.2
08	46	33.5	67	63.5	35	—	14.2	4.8	25.5	12.7	7	11	13	20	6.6	0.4
10	51	38	74	70	33.5	—	18	4	25.5	15.6	10	11	18	25	6.6	0.5
12	57.5	44.5	84.5	80	38	—	21	4	30	18.6	13	11	25	32	6.6	1.0
16	70	54	109.5	104	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

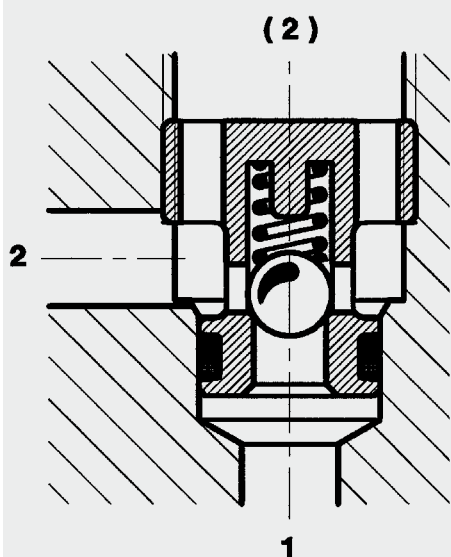
NOTE

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Subject to technical modifications.

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FUNCTION



Check Valve Direct-Acting Cartridge – 350 bar RVE-R 1/8 to 1/2

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 mm ² /s to max. 800 mm ² /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

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.

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

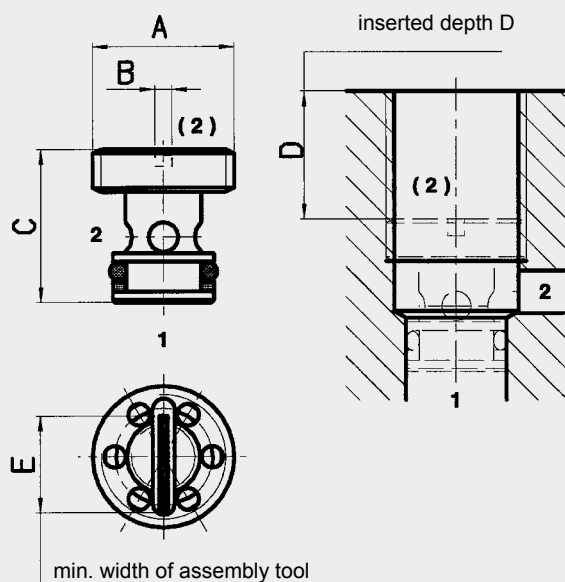
Model code	Part No.
RVE-R1/8-X-0.5	710150
RVE-R1/4-X-0.5	710151
RVE-R3/8-X-0.5	710152
RVE-R1/2-X-0.5	710153

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

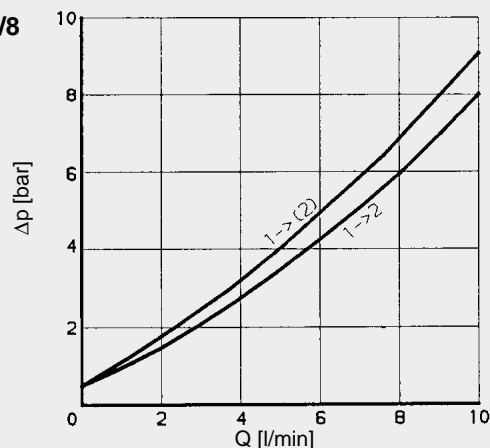
PERFORMANCE

Pressure drops, dependent on flow rate

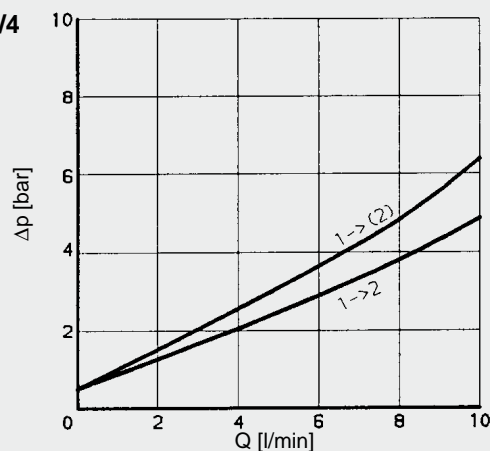
Measured at $v = 34 \text{ mm}^2/\text{s}$

and $T_{\text{oil}} = 46^\circ\text{C}$

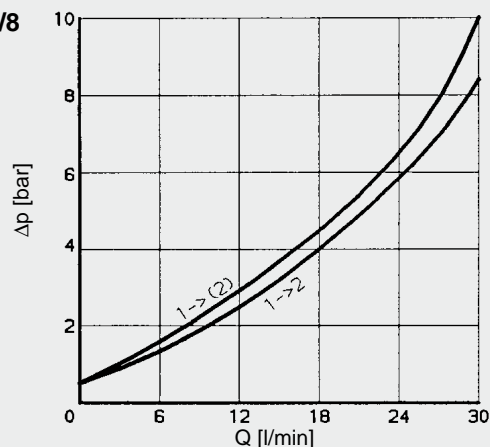
RVE - R 1/8



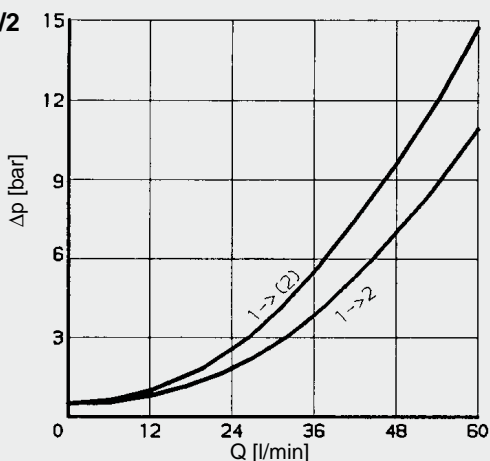
RVE - R 1/4



RVE - R 3/8

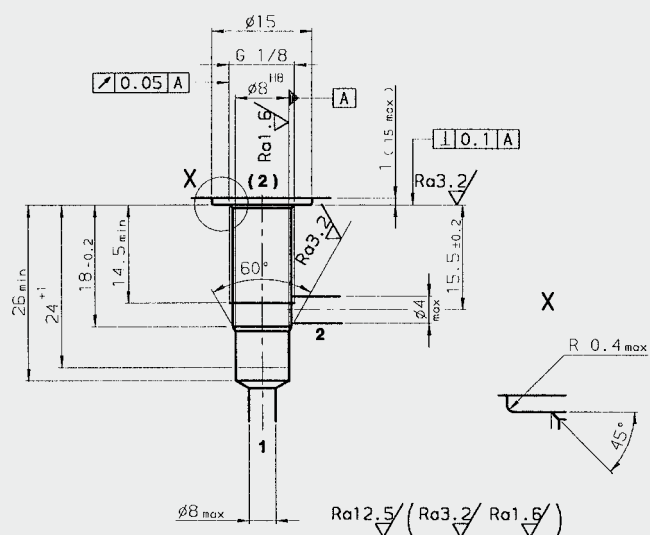


RVE - R 1/2



CAVITY

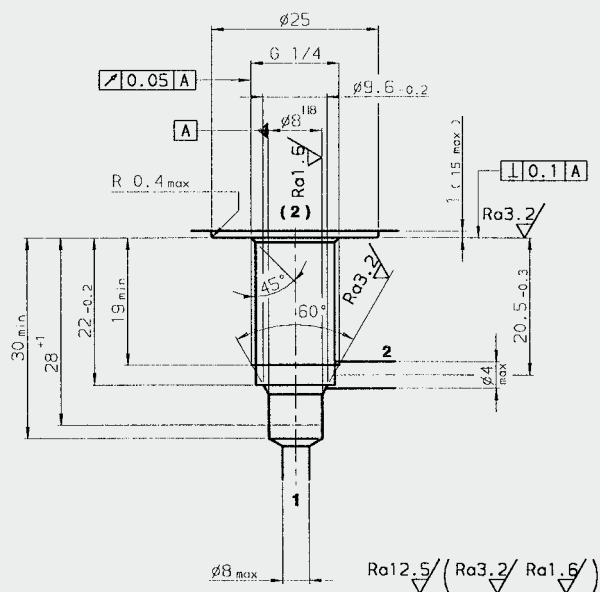
04020 (RVE-R 1/8)



Millimeter
Subject to technical modifications

CAVITY

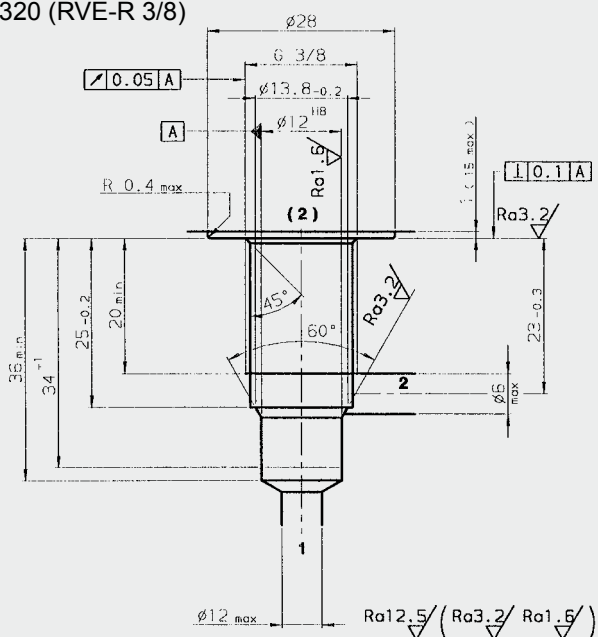
04220 (RVE-R 1/4)



Millimeter
Subject to technical modifications

CAVITY

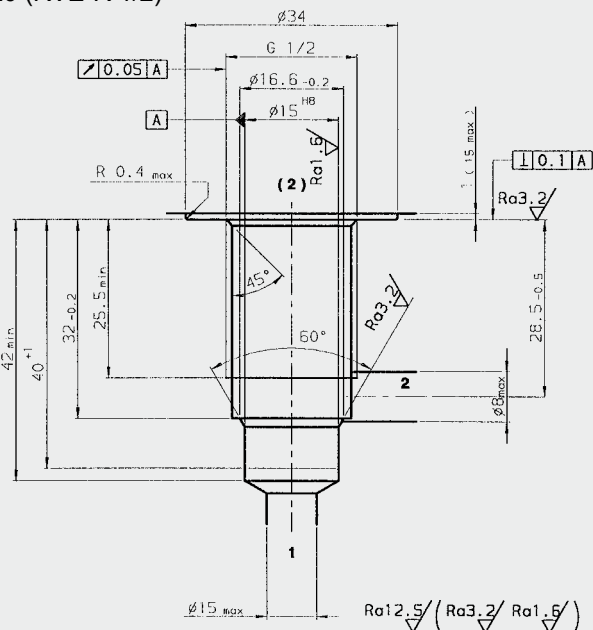
06320 (RVE-R 3/8)



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

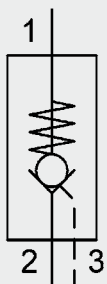
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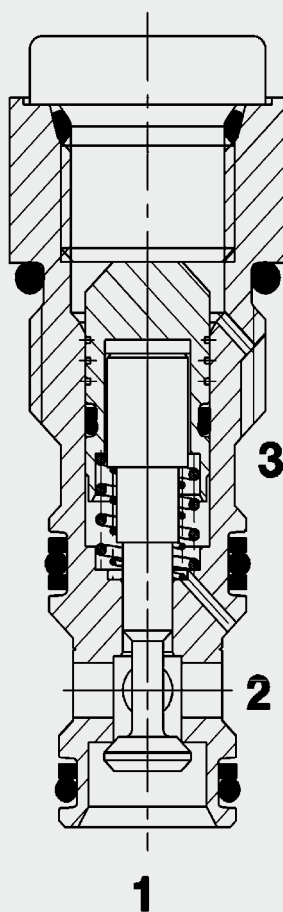
Check Valve Pilot-to-Open Poppet Type, Direct-Acting SAE-08 Cartridge – 420 bar

RP08A-01

38 l/min
420 bar



FUNCTION



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: $p_{\text{control}} = \frac{p_{\text{port 1}} - p_{\text{port 2}}}{\varphi} + p_{\text{port 2}}$

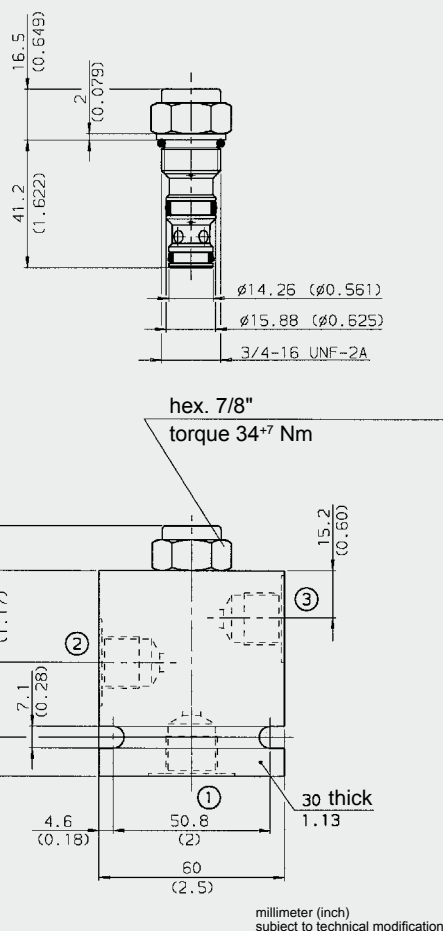
FEATURES

- 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

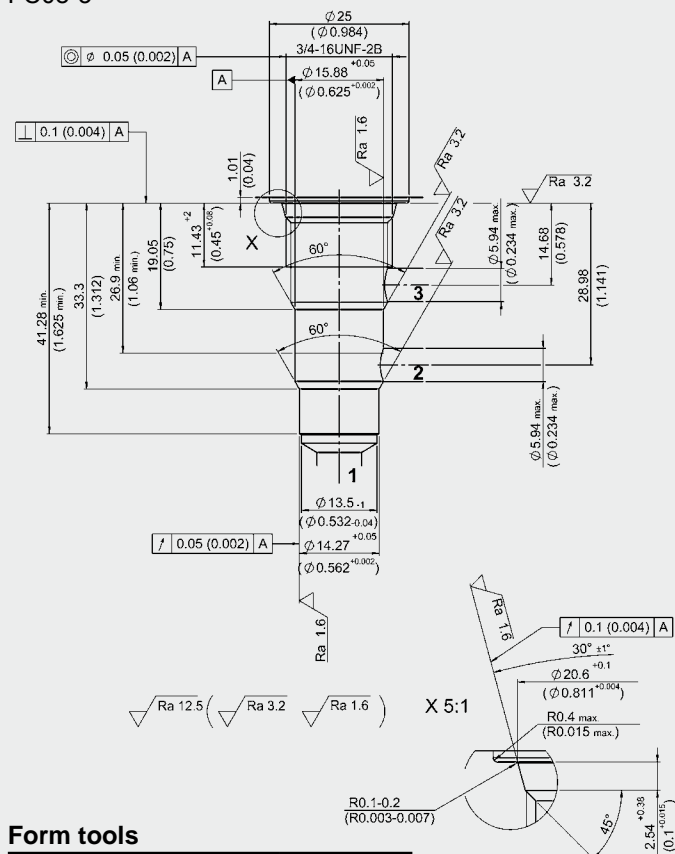
Operating pressure:	max. 420 bar
Nominal flow:	max. 38 l/min
Leakage:	leakage-free (max. 5 drops \approx 0,25 cm ³ /min at 350 bar)
Leakage 2→3:	< 5 l/min at 420 bar (40 °C HLP 46) For versions without O-ring on pilot piston
Cracking pressure	1.00 bar
Pilot ratio:	3:1 ; 4:1
Media operating temperature 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 mm ² /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

DIMENSIONS



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

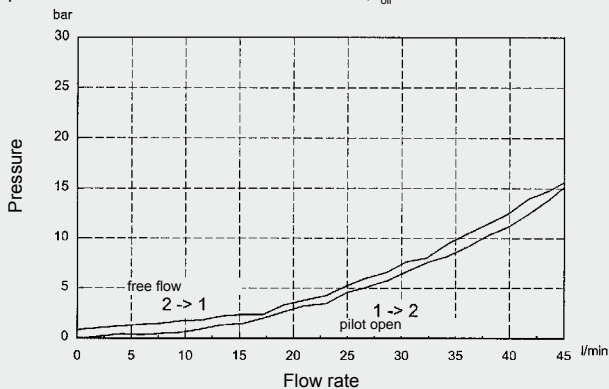
Other models on request

Seal kits

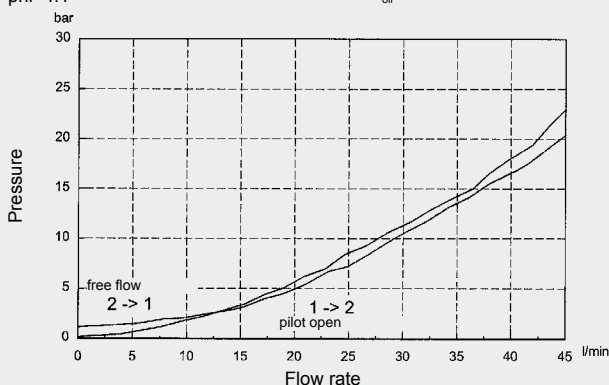
Code	Part No.
Seal kit FS083-N	3054795
Seal kit FS083-V	2591059

PERFORMANCE

phi=3:1 Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



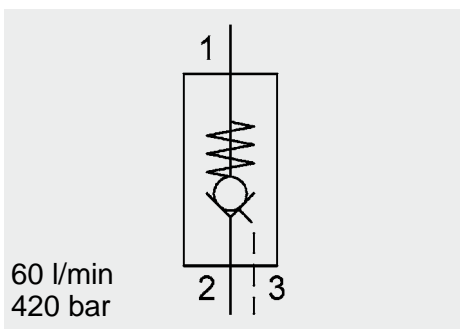
phi=4:1 Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



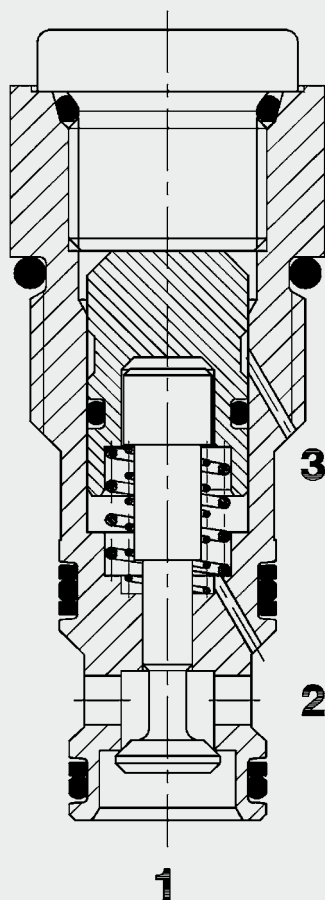
NOTE

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FUNCTION



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: $p_{\text{control}} = \frac{p_{\text{port 1}} - p_{\text{port 2}}}{\phi} + p_{\text{port 2}}$

Check Valve Poppet Type, Pilot-to-Open Direct-Acting SAE-10 Cartridge – 420 bar RP10A-01

UNF

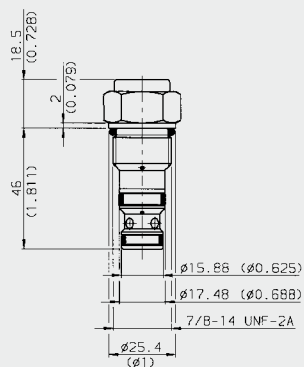
FEATURES

- 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

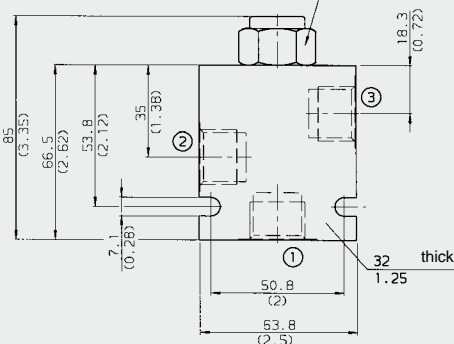
SPECIFICATIONS

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

DIMENSIONS



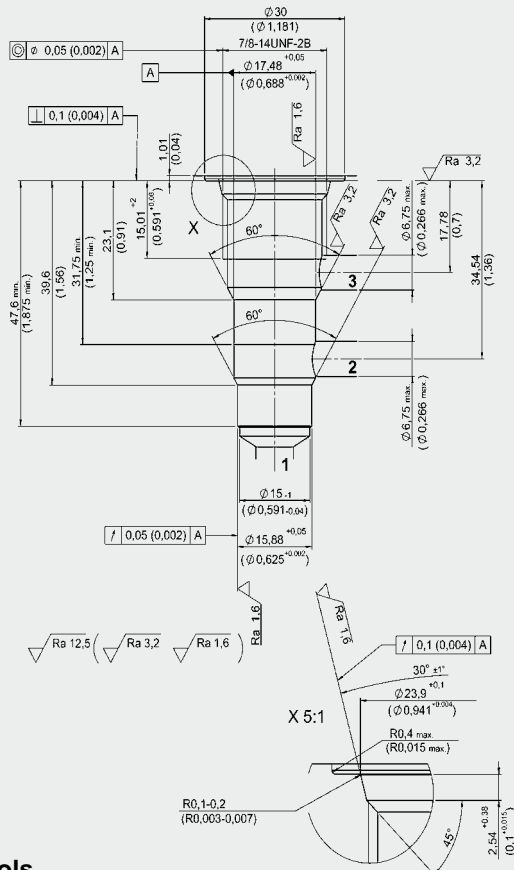
hex. 1"
torque
47 - 54 Nm



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

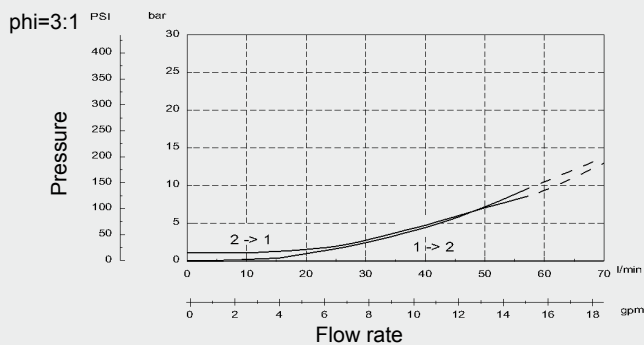
Code	Part No.	Material	Ports	Pressure
FH103-SB4	3037697	Steel, zinc-plated	G1/2	420 bar
FH103-AB4	3038092	Aluminium, clear anodized	G1/2	210 bar

Seal kits

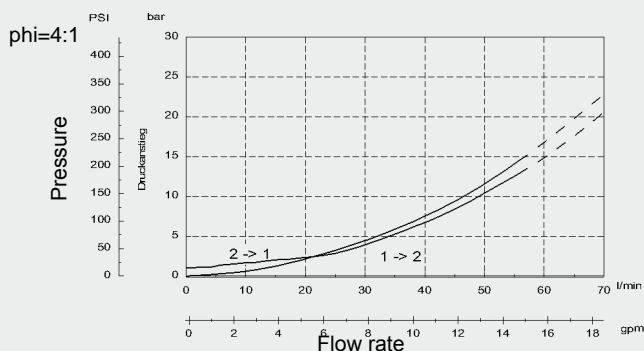
Code	Material	Part No.
FS103-N Seal kit	NBR	3071274
FS103-V Seal kit	FKM	3049443

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



NOTE

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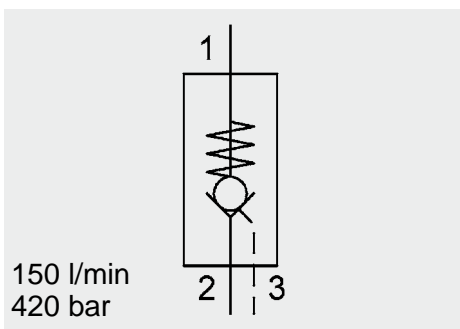
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D-66280 Sulzbach/Saar

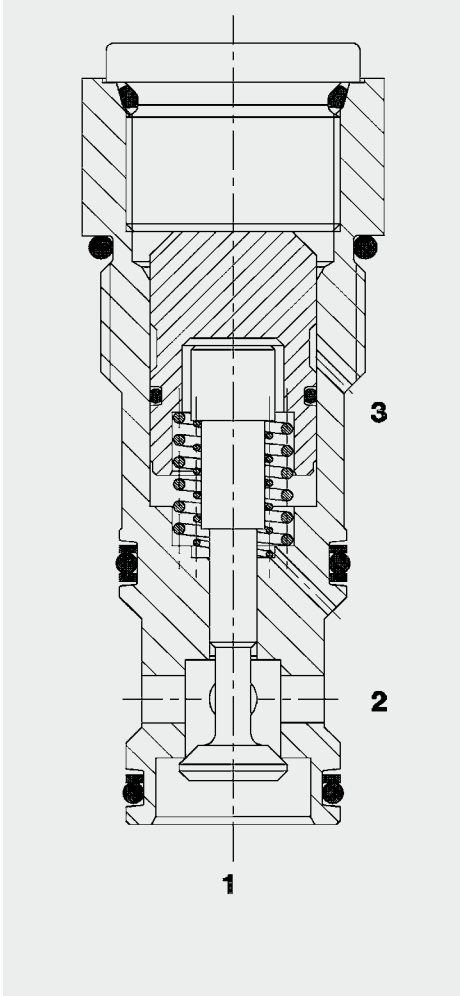
Tel: 0 68 97 / 509-01

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E-Mail: flutec@hydac.com



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: $p_{\text{control}} = \frac{p_{\text{port 1}} - p_{\text{port 2}}}{\phi} + p_{\text{port 2}}$

Check Valve Pilot-to-Open Poppet Type, Direct-Acting SAE-16 Cartridge – 420 bar RP16A-01

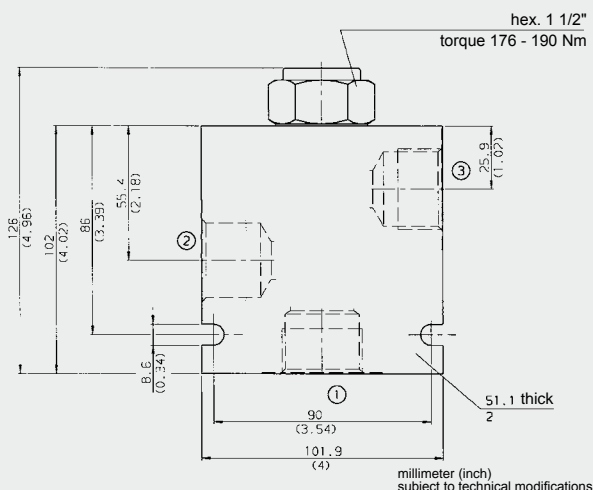
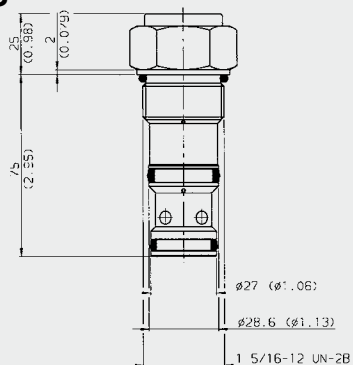
FEATURES

- 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

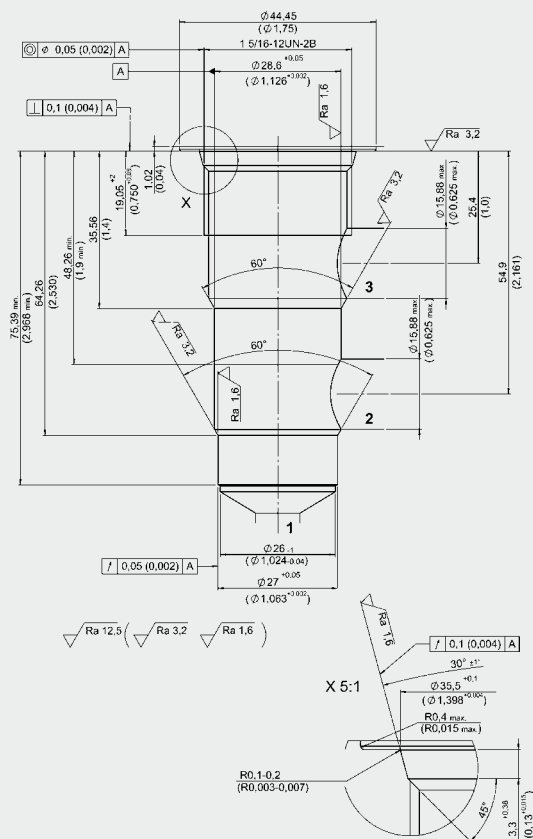
Operating pressure:	max. 420 bar
Nominal flow:	max. 150 l/min
Internal leakage:	max. 0.1 cm³/min at 420 bar (Version N/V)
Cracking pressure:	1.00 bar
Pilot ratio:	3 = 3:1 4 = 4:1
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +100 °C
Operating 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



CAVITY

FC16-3



Form tools

Tool	Part No.
Countersink FC16-3	176375
Reamer FC16-3	176376

millimeter (inch)
subject to technical modifications

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

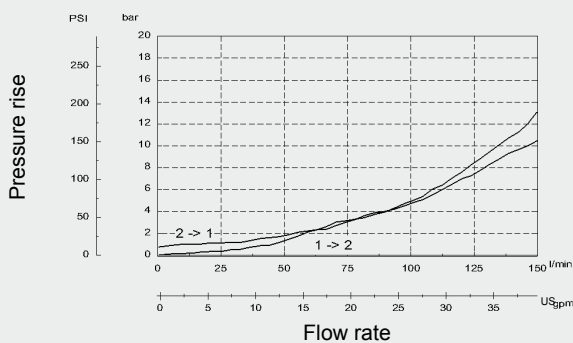
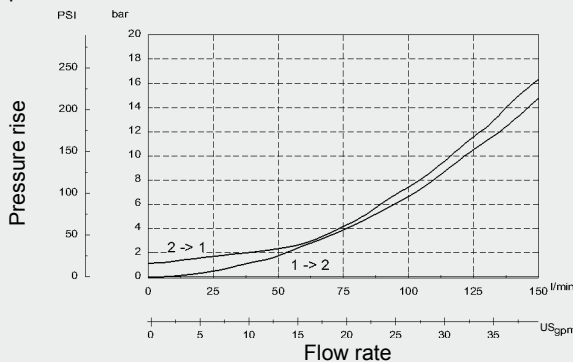
Seal kits

Code	Part No.
FS163-N seal kit	3071303
FS163-V seal kit	3071304

PERFORMANCE

Measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$

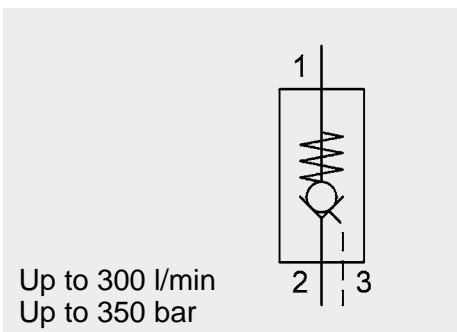
phi=3:1

 $\phi=4:1$ 

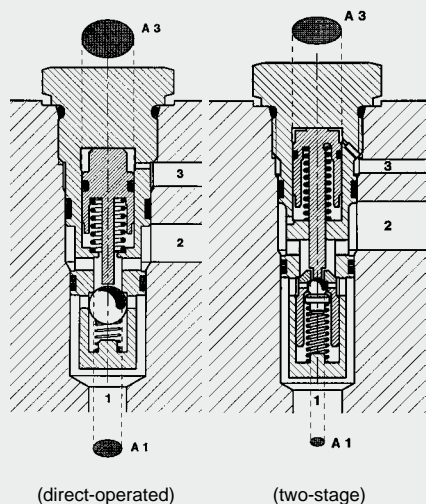
NOTE

NOTE
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Subject to technical modifications.

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FUNCTION



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.

Check valve Poppet Type, Pilot-to-Open Cartridge – 350 bar ERVE 08021, ERVE 16021 and ERVE 20021

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 $\hat{=}$ 0,25 cm ³ /min at 350 bar)	
Control volume:	ERVE 08021	0.3 cm ³
	ERVE 16021	1.55 cm ³
	ERVE 20021	3.3 cm ³
Pilot ratio φ :	$\varphi = \frac{A_3}{A_1}$	
	ERVE 08021-01X $\varphi = 3.4$	
	ERVE 16021-01X $\varphi = 13.0$	
	ERVE 20021-01X $\varphi = 13.4$	
	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	$p_{ctrl} = 0.3 \times p_1 + 2.5 \text{ bar}$	not available	$p_{ctrl} = p_2 + \Delta p + 4.5 \text{ bar}$
ERVE 16021-01X	$p_{ctrl} = 0.55 \times p_1 + 2.5 \text{ bar}$	$p_{ctrl} = 0.08 \times p_1 + 3 \text{ bar}$	$p_{ctrl} = p_2 + \Delta p + 5.0 \text{ bar}$
ERVE 20021 01X	$p_{ctrl} = p_1 + 3.5 \text{ bar}$	$p_{ctrl} = 0.08 \times p_1 + 4 \text{ bar}$	$p_{ctrl} = p_2 + \Delta p + 6.0 \text{ bar}$

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 mm ² /s to max. 380 mm ² /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 - R $\frac{1}{2}$ - 01 X

Basic model

Pilot-to-open check valve

Size

R $\frac{1}{2}$, R1 and R1 $\frac{1}{2}$

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	

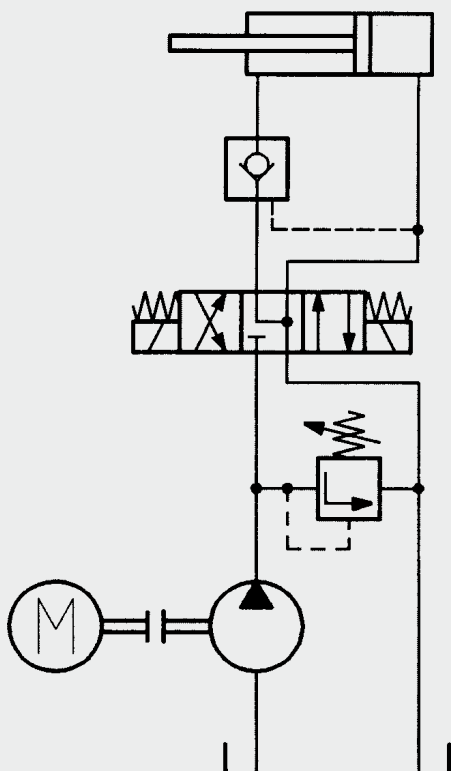
Standard in-line bodies

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

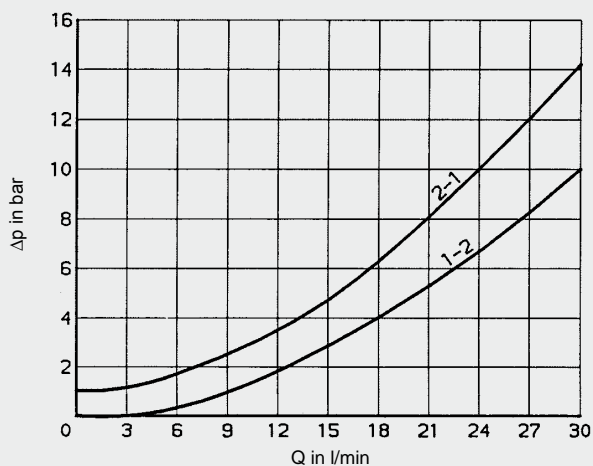
CIRCUIT DIAGRAM EXAMPLE



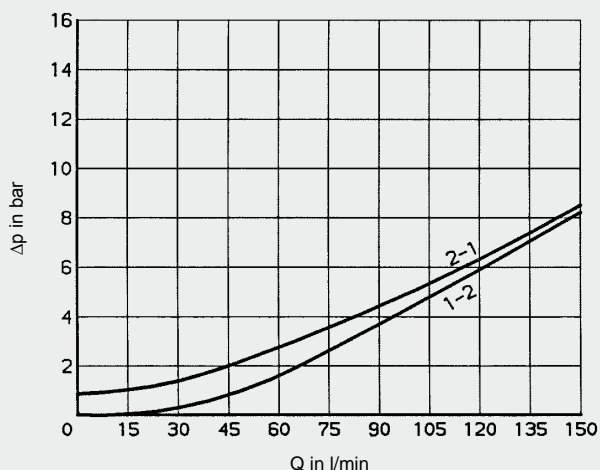
PERFORMANCE

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

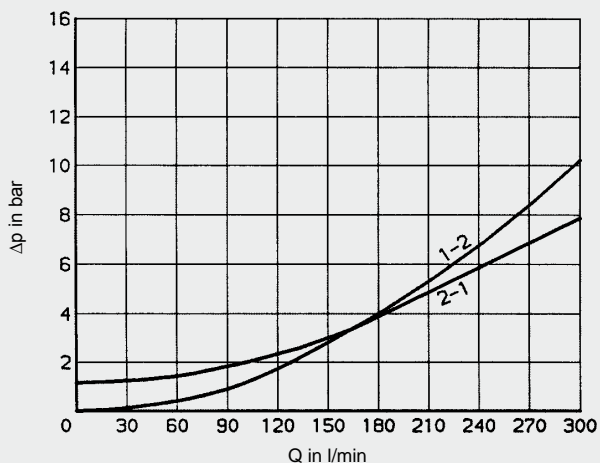
ERVE 08021



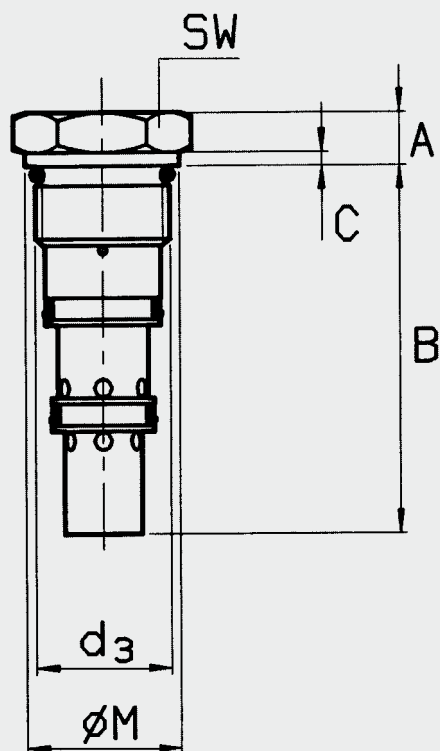
ERVE 16021



ERVE 20021



DIMENSIONS

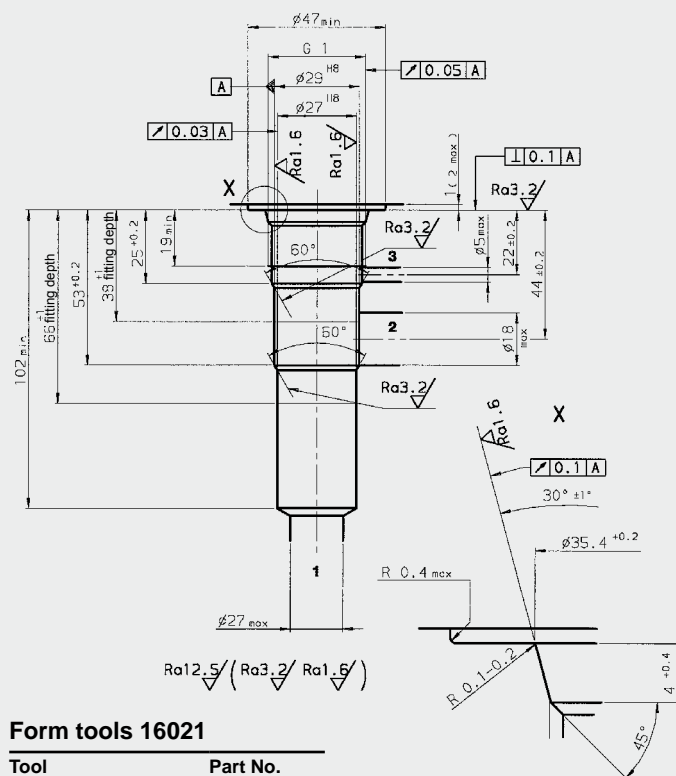


Millimeter
Subject to technical modifications

Nom. size	d3	A	B	C	ØM	SW	Torque
ERVE 08021	G 1/2	8	56	2	24	24	25 ⁺⁵ Nm
ERVE 16021	G 1	16	100	3	40	41	150 ⁺¹⁰ Nm
ERVE 20021	G 1 1/2	20	125	3	54	55	150 ⁺¹⁰ Nm

CAVITY

16021 (ERVE 16021)



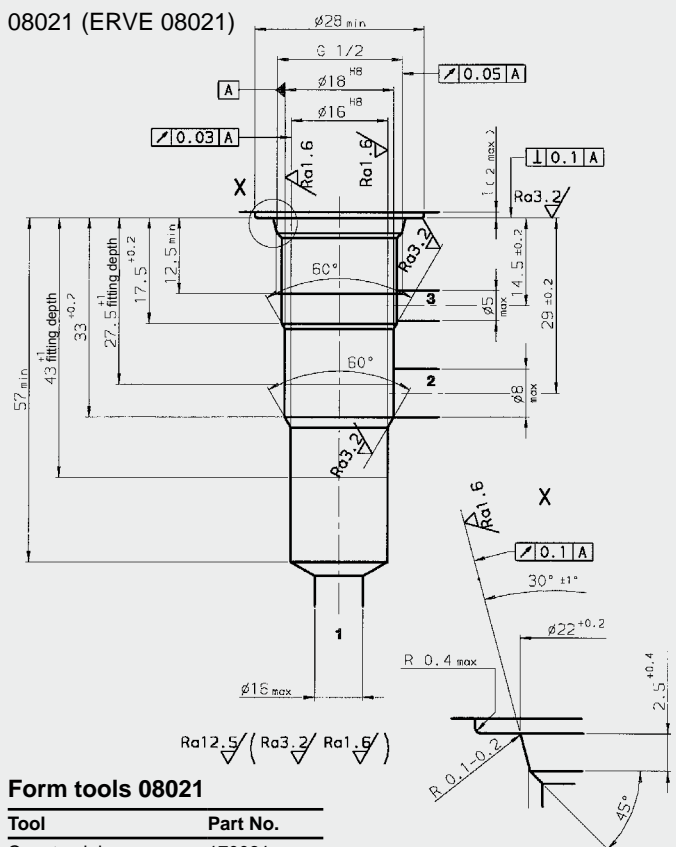
Form tools 16021

Tool	Part No.
Countersink	170035
Reamer	169965
Tap	1002661
Plug gauge	174879

Millimeter
Subject to technical modifications

CAVITY

08021 (ERVE 08021)



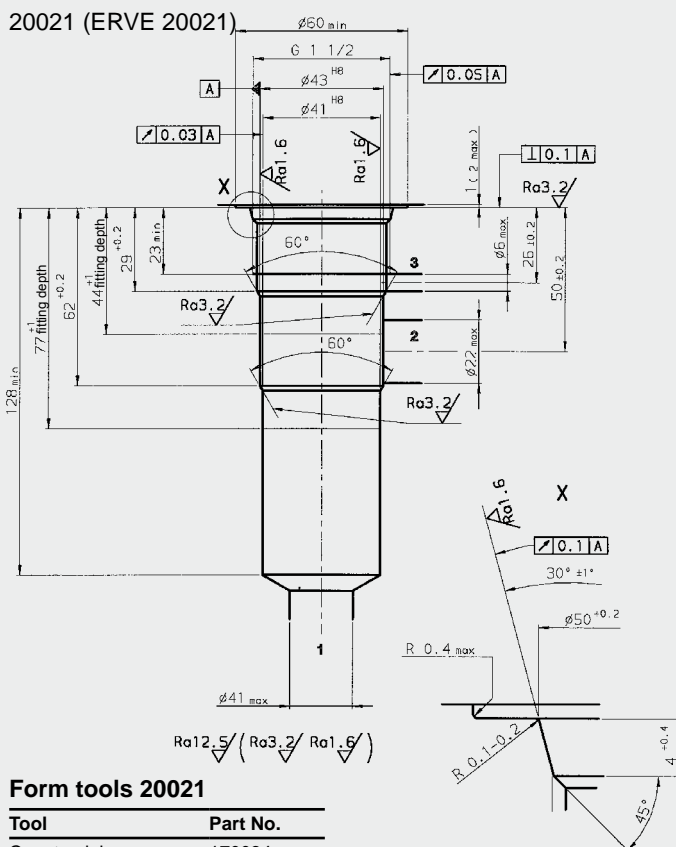
Form tools 08021

Tool	Part No.
Countersink	170031
Reamer	169962
Tap	1002667
Plug gauge	169939

Millimeter
Subject to technical modifications

CAVITY

20021 (ERVE 20021)



Form tools 20021

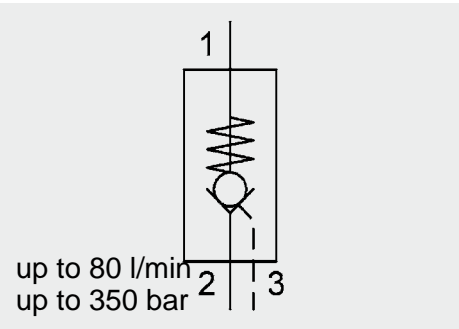
Tool	Part No.
Countersink	170034
Reamer	169966
Tap	1002524
Plug gauge	174880

Millimeter
Subject to technical modifications

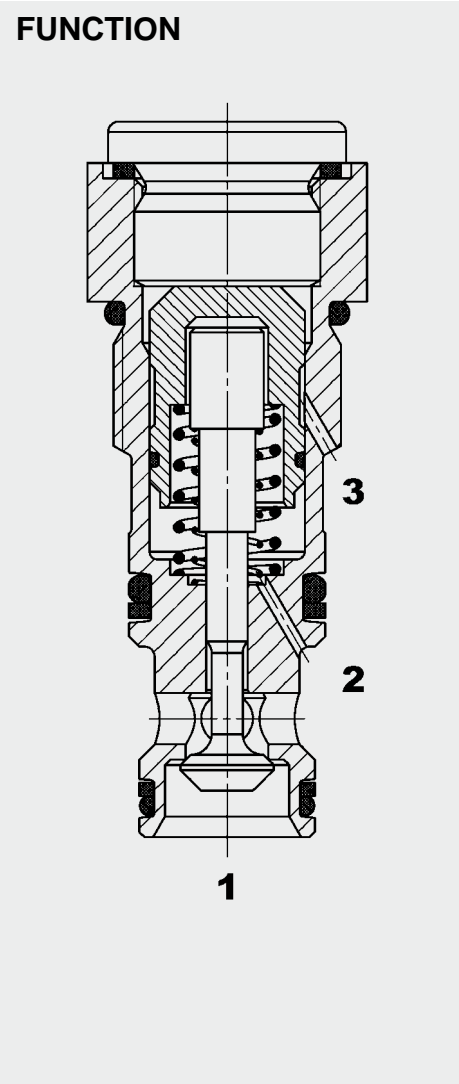
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FUNCTION



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:

$$P_{\text{pilot}} = \frac{P_{\text{port1}} - P_{\text{port2}}}{\phi} + P_{\text{port2}}$$

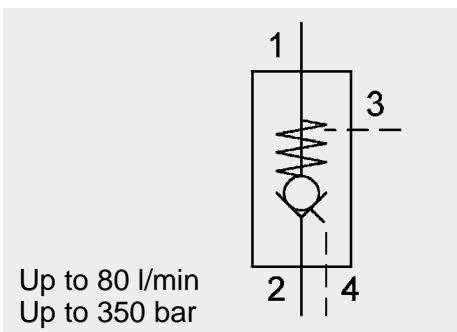
Check Valve, Pilot-to-Open Poppet Type, Direct-Acting Metric Cartridge – 350 bar RP10121

FEATURES

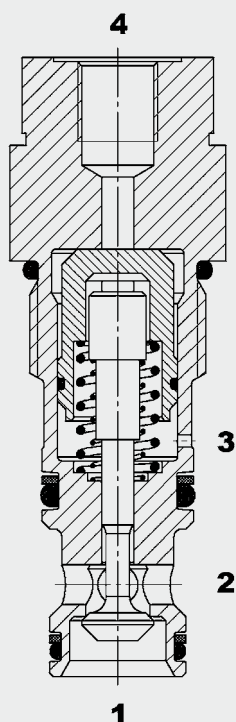
- Main application is to prevent uncontrolled movement or creeping of loaded cylinders and also to isolate sections of the system
- External surfaces zinc-plated and corrosion proof
- Hardened and ground internal valve components to ensure minimal wear and to extend service life
- Low pressure drop due 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:	$\phi = 3.5$
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 mm ² /s to max. 420 mm ² /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



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 P_3 and P_2 = atmospheric pressure

$$P_{\text{pilot}} = \frac{P_{\text{port 1}}}{\phi}$$

Check Valve, Pilot-to-Open Poppet Type, Direct-Acting with Drain Port Metric Cartridge - 350 bar RPL10121

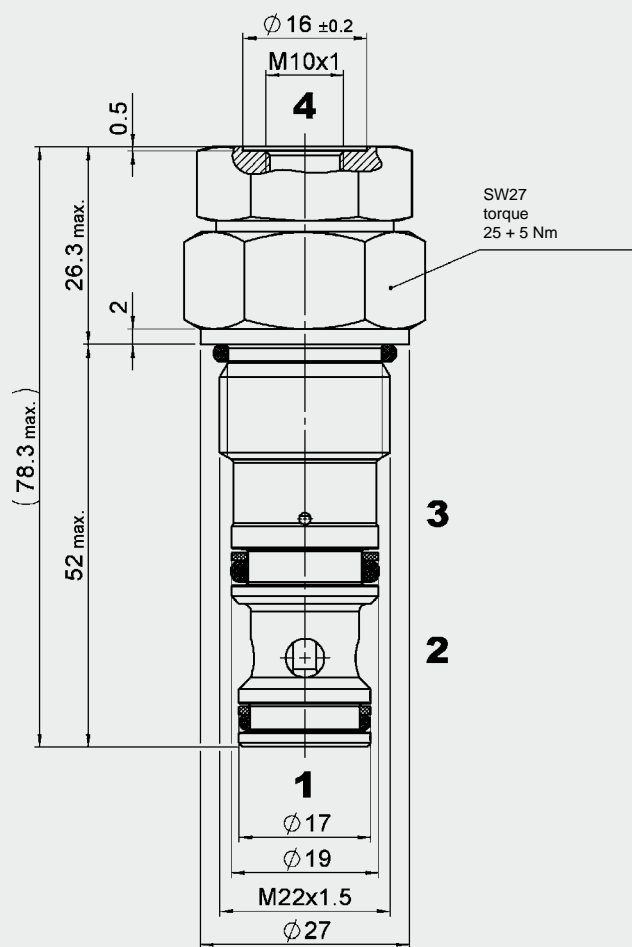
FEATURES

- 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 \approx 0,25 cm ³ /min at 350 bar)
Pilot ratio:	$\phi = 3.5$
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 mm ² /s to max. 380 mm ² /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:	<div> <div>Valve body:</div> <div>Piston:</div> <div>Seals:</div> </div> <div> <div>high tensile steel</div> <div>hardened and ground steel</div> <div>FKM (standard) NBR (optional, media temperature range -30 °C to +120 °C)</div> </div>
	Back-up rings: PTFE
Cavity:	10121
Weight:	0.175 kg

DIMENSIONS



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

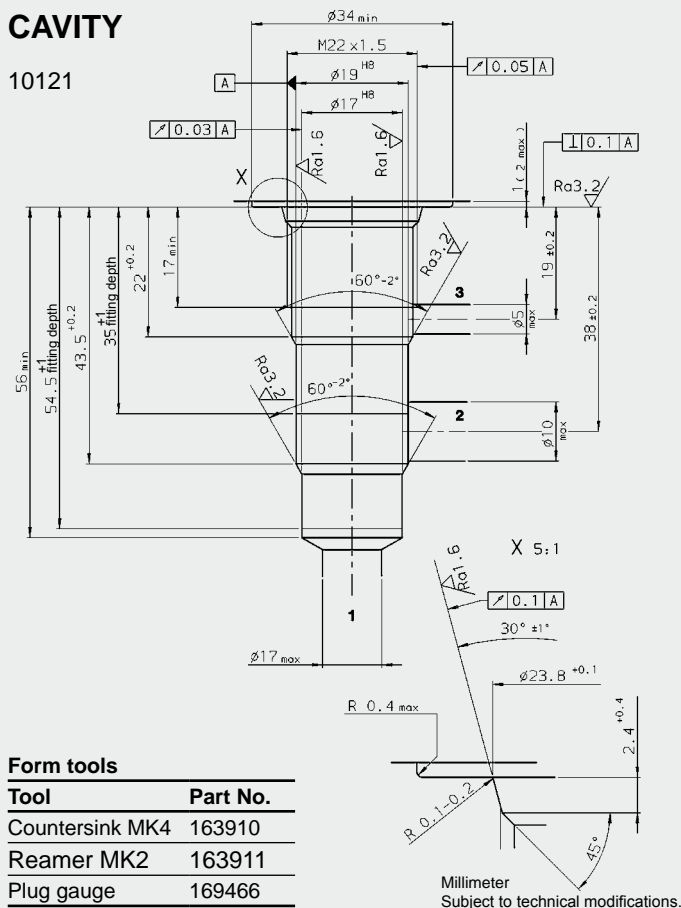
Other line bodies on request

Seal kits

Code	Part No.
SEAL KIT RP10121-XX0...FKM	560835

CAVITY

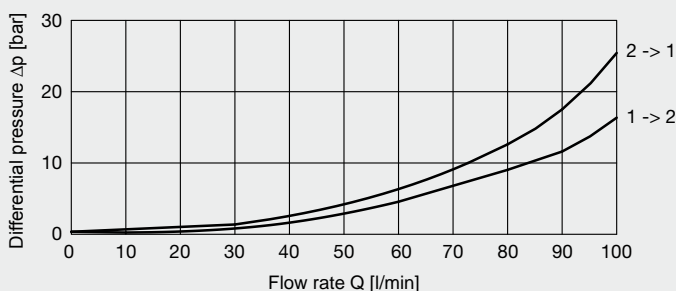
10121



Millimeter
Subject to technical modifications.

PERFORMANCE

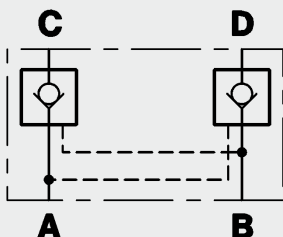
$T_{oil} = 30^\circ C$, $v = 72 \text{ mm}^2/s$



NOTE

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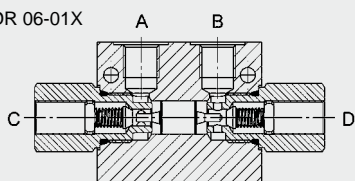
HYDAC Fluidtechnik GmbH
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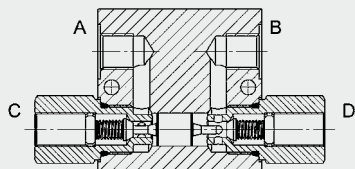
Up to 100 l/min
Up to 350 bar

FUNCTION

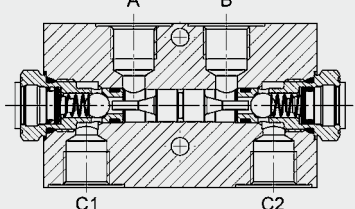
RPDR 06-01X



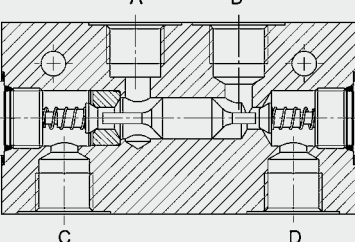
RPDR 06-03X



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.

Double Check Valve, Pilot-to-Open, Direct-Acting Inline Mounted RPDR 06 / 08 / 10

FEATURES

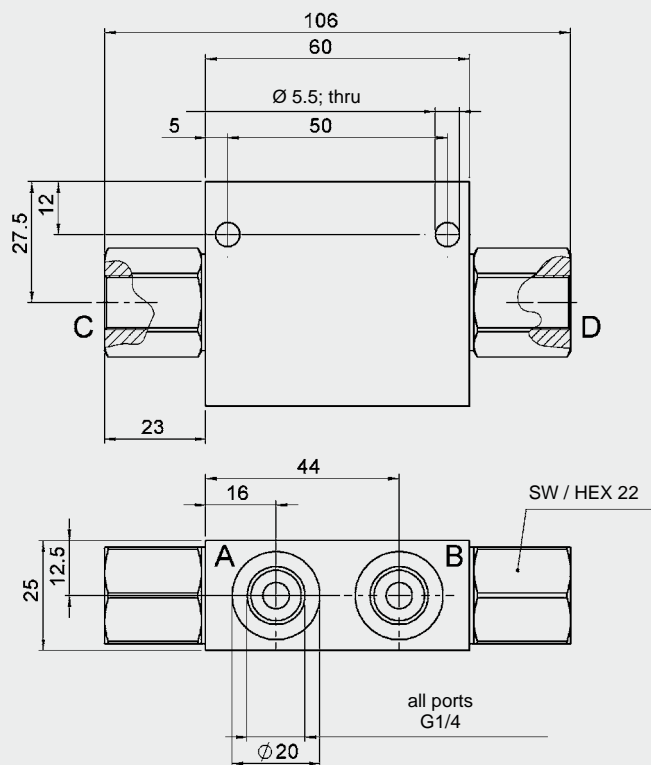
- Main application is to prevent uncontrolled movement or creeping of loaded cylinders, to isolate sections of the system and to control double-acting cylinders
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Consumer is held in position with minimum leakage (A and B must be vented to T)

SPECIFICATIONS

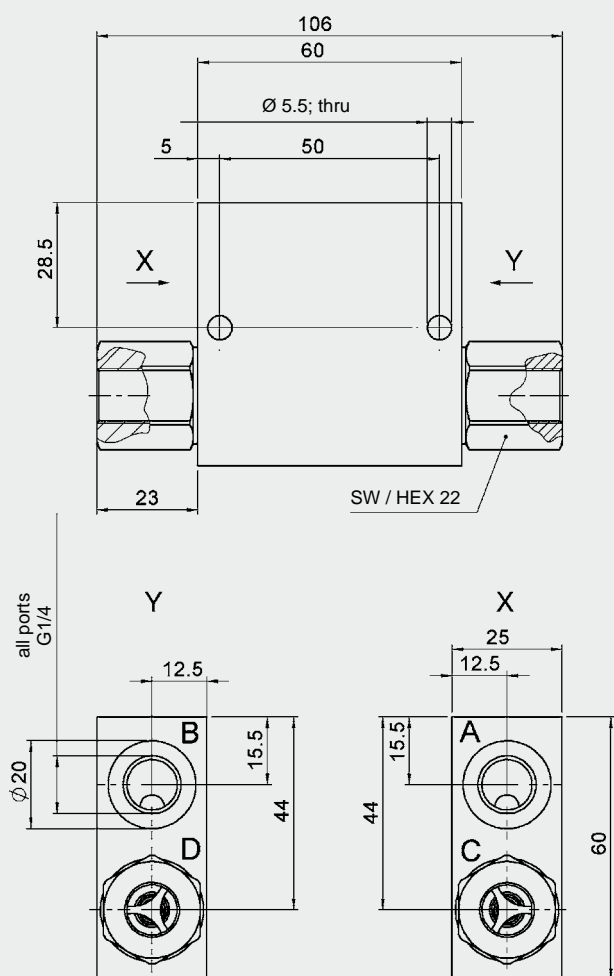
Operating pressure:	RPDR06 = max. 350 bar RPDR08 = max. 210 bar RPDR10 = max. 350 bar
Nominal flow:	RPDR06 = max. 30 l/min RPDR08 = max. 40 l/min RPDR10 = max. 100 l/min
Pilot ratio:	$\phi = 1 : 4$ for RPDR06 $\phi = 1 : 4$ for RPDR08 $\phi = 1 : 3.5$ for RPDR10
Leakage:	Leak-free (max. 5 drops $\approx 0,25 \text{ cm}^3/\text{min}$ at 350 bar)
Media operating temperature range:	min. -20°C to max. $+80^\circ\text{C}$
Ambient temperature range:	min. -20°C to max. $+80^\circ\text{C}$
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. $7.4 \text{ mm}^2/\text{s}$ to max. $420 \text{ mm}^2/\text{s}$
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

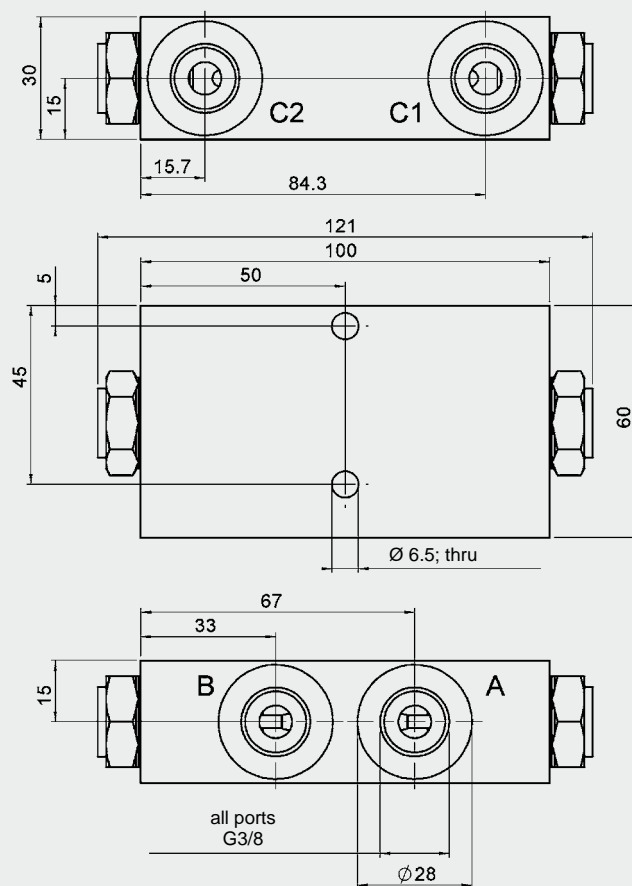


RPDR 06-03X

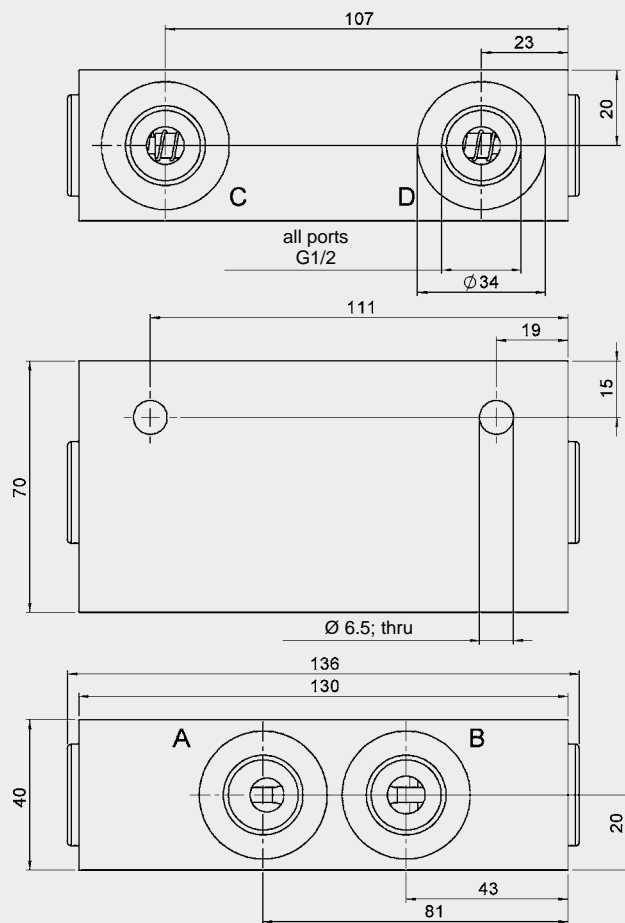


Millimeter
Subject to technical modifications.

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

Standard models

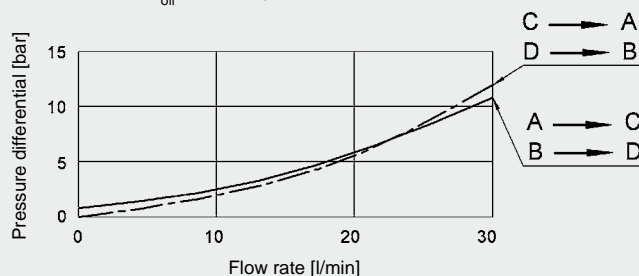
Model code	Part No.
RPDR06-01X-0.5	552421
RPDR06-01X-5	554094
RPDR06-03X-0.5	3059561
RPDR08-01X-0.5	3128981
RPDR10-01X-1	395769
RPDR10-02X-1	3081412
RPDR10-10X-1	557868

Other models on request

PERFORMANCE

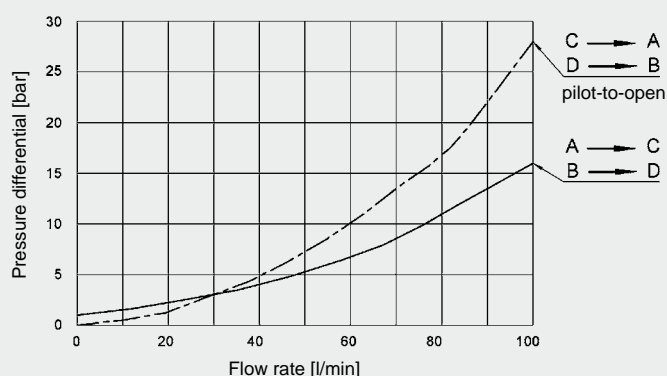
RPDR 06

Measured at $T_{oil} = 46\text{ °C}$, $v = 38\text{ mm}^2/\text{s}$



RPDR 10

Measured at $T_{oil} = 27\text{ °C}$, $v = 84\text{ mm}^2/\text{s}$



NOTE

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Subject to technical modifications.

HYDAC Fluidtechnik GmbH

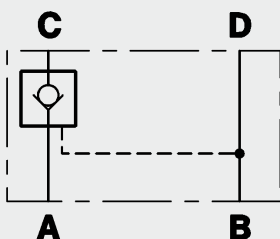
Justus-von-Liebig-Str.

D-66280 Sulzbach/Saar

Tel: 0 68 97 / 509-01

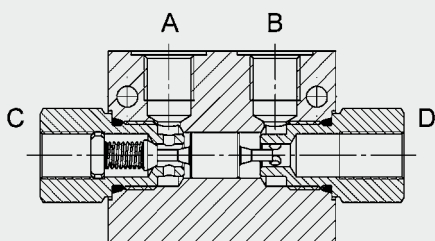
Fax: 0 68 97 / 509-598

E-Mail: flutec@hydac.com



Up to 30 l/min
Up to 350 bar

FUNCTION



The pilot-to-open check valve RPER is an inline mounted, direct-acting, spring-loaded poppet valve. 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.

Single Check Valve, Pilot-to-Open Direct-Acting Inline Mounted RPER 06

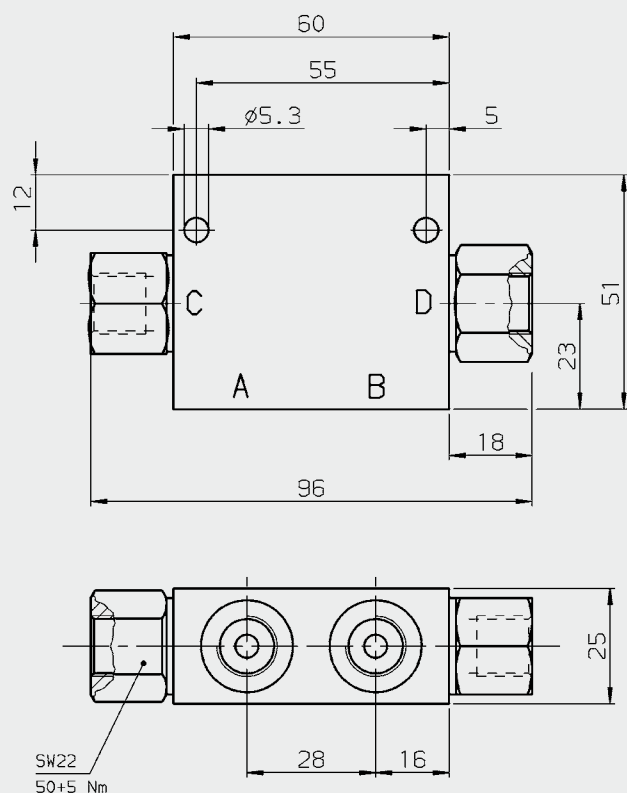
GENERAL

- 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:	$\phi = 1:4$
Leakage:	Leakage-free (max. 5 drops $\hat{=}$ 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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

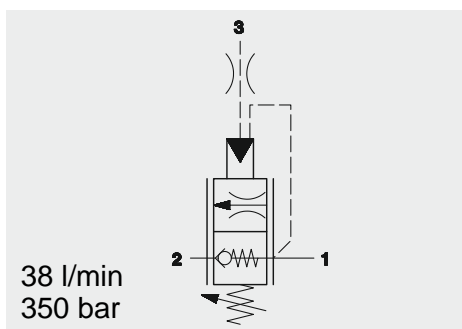
NOTE

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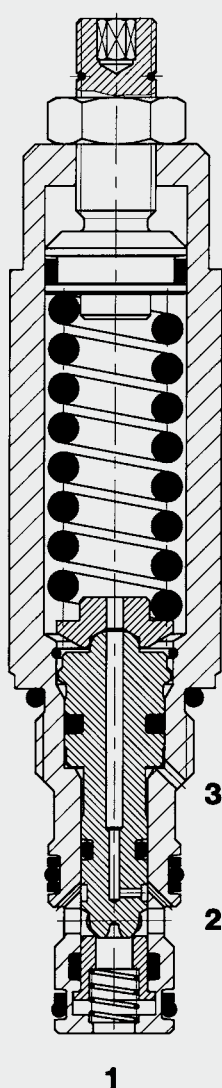
For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

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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.

Counterbalance Valve Poppet Type, Direct-Acting SAE-08 Cartridge – 350 bar

UNF

RS08-01

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 cm ³ /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 mm ² /s to max. 420 mm ² /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

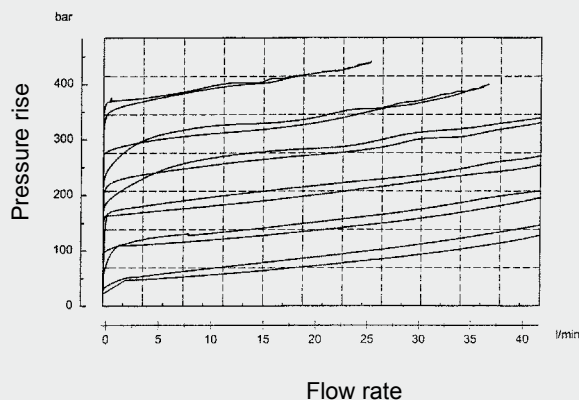
Seal kits

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

PERFORMANCE

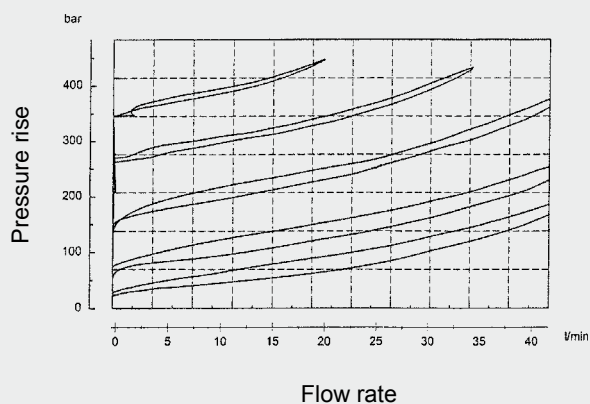
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$

$\phi = 3:1$



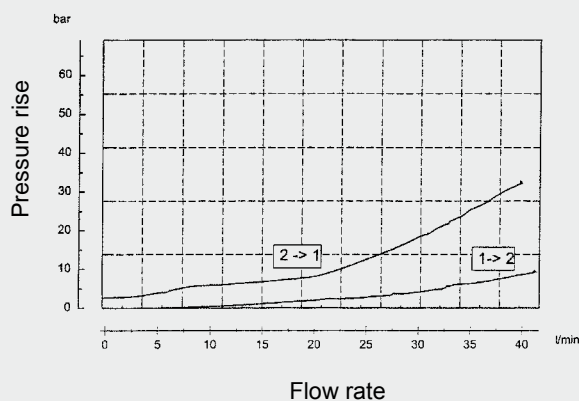
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$

$\phi = 4:1$



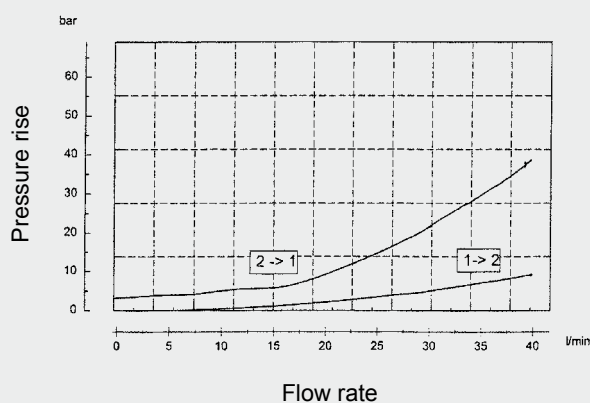
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$

$\phi = 3:1$

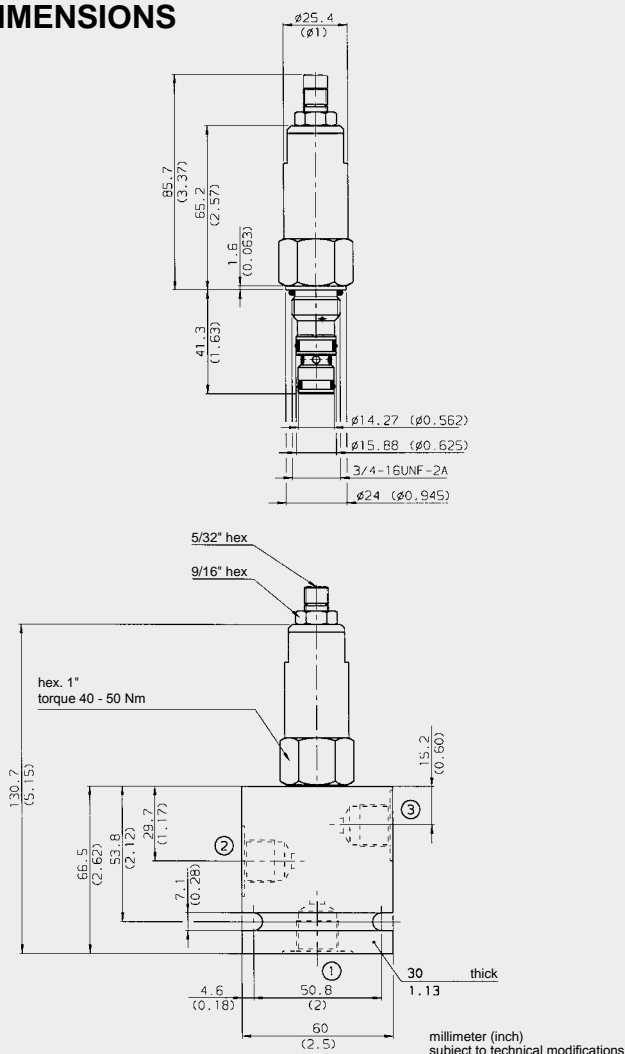


Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$

$\phi = 4:1$



DIMENSIONS



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!).

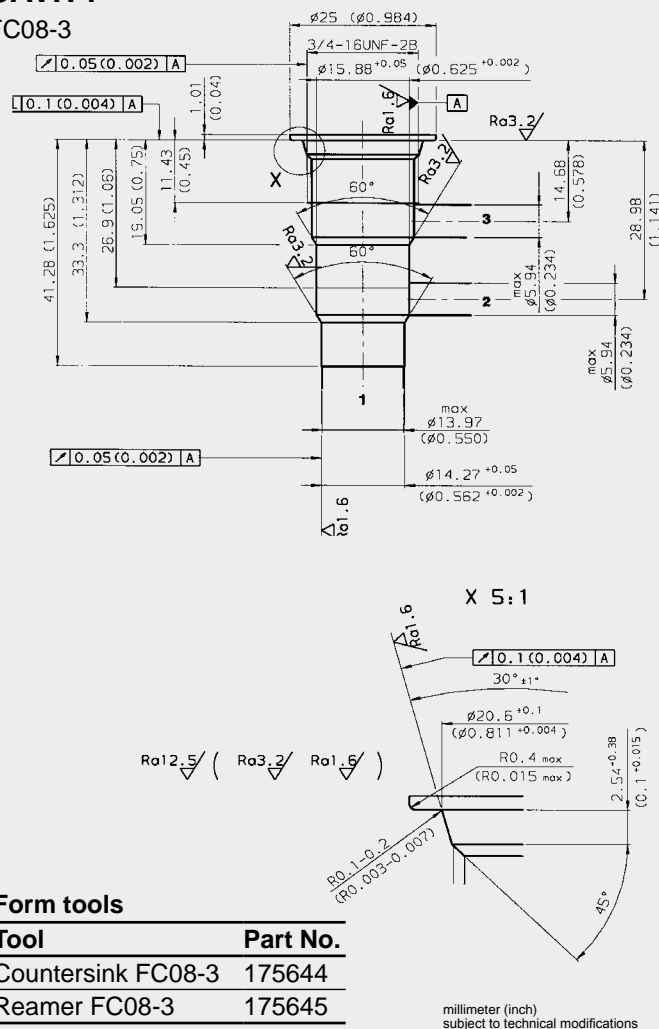
To lower the load, pressure is applied to control port 3 which controls the valve. Flow is now permitted from port 1 to port 2. The load cannot therefore overrun because the load flow rate is controlled at the metering edge of the control piston according to the consumer's inlet pressure.

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.

CAVITY

FC08-3



Form tools

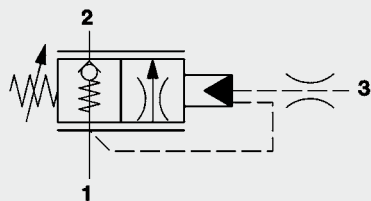
Tool	Part No.
Countersink FC08-3	175644
Reamer FC08-3	175645

Note

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Subject to technical modifications.

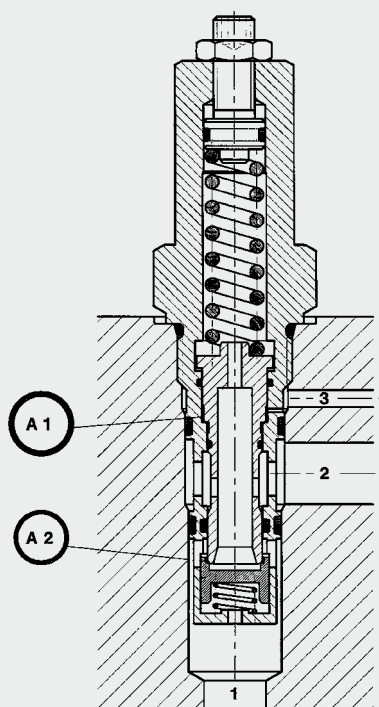
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E-Mail: flutec@hydac.com



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.

Counterbalance Valve Poppet Type, Direct-Acting Cartridge – 350 bar SBVE-R1 and SBVE-R1/2

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 \approx 0,25 cm ³ /min at 350 bar)	
Control volume:	SBVE-R1/2	0.05 cm ³
	SBVE-R1	0.20 cm ³
Pilot ratio:	$\varphi = \frac{A1}{A2}$	
	SBVE-R1/2-01X	$\varphi = 4.6$
	SBVE-R1/2-11X	$\varphi = 7.5$
	SBVE-R1/2-18X	$\varphi = 3.3$
	SBVE-R1-01X	$\varphi = 4.8$
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 mm ² /s to max. 380 mm ² /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 P_{se} :

The adjustment spring must be set to a value at least 1.2 times higher than the load pressure ($P_{se} > P_1 \times 1.2$)

P_1 = load pressure (max. pressure required to move the load)

max. 350 bar

P_{se} = setting pressure (max. 420 bar)

Control pressure P_{ctrl} :

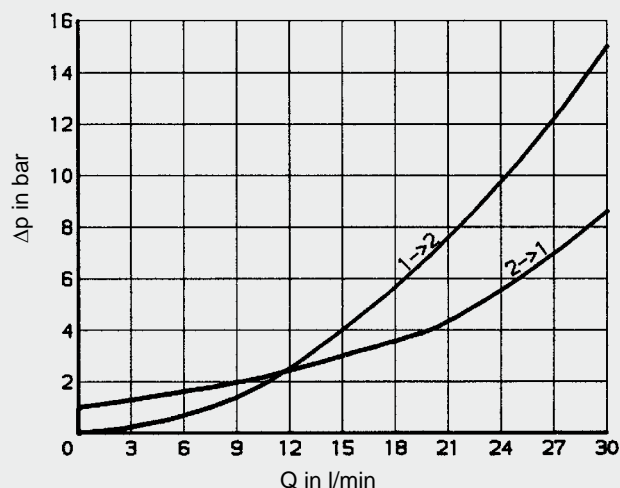
Control pressure across port 3 required to cancel the shut-off function of the valve (flow from 1 to 2)

P_2 = pressure across port 2

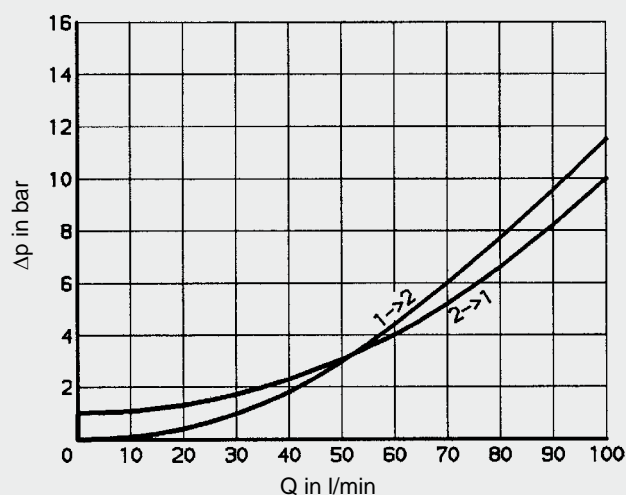
$$P_{ctrl} = \frac{P_{se} - P_1}{\phi} + P_2$$

PERFORMANCE

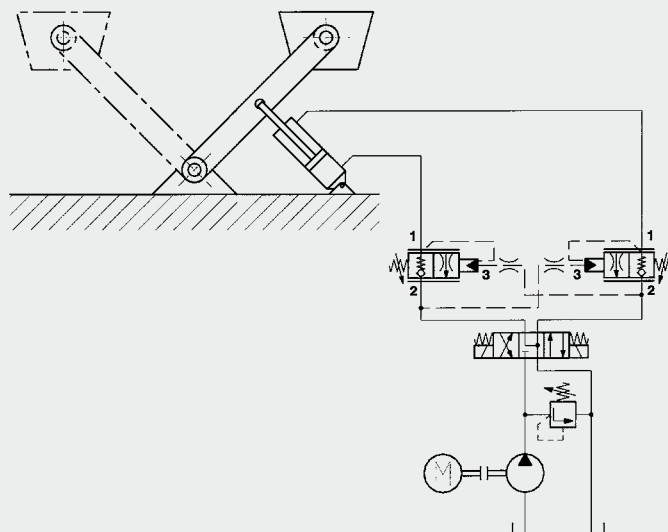
SBVE-R 1/2



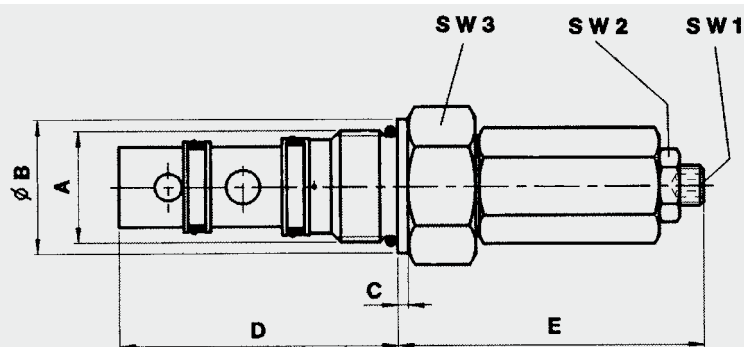
SBVE-R1



CIRCUIT DIAGRAM EXAMPLE



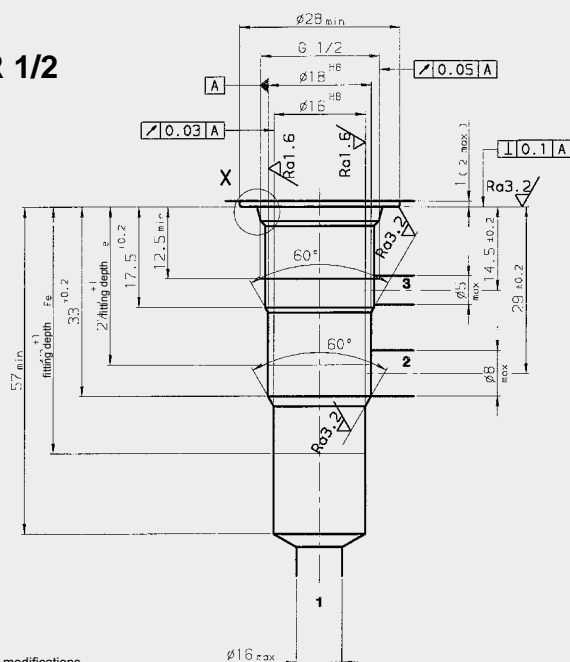
DIMENSIONS



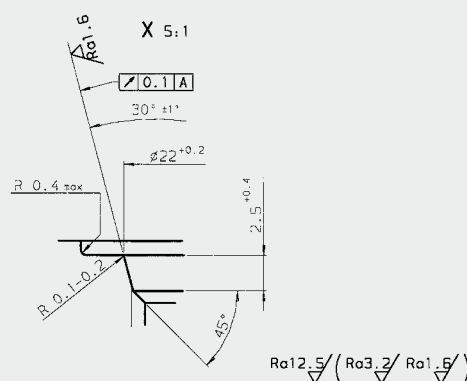
Nominal size	A (ISO 228) ØB		C	D	E _{max}	SW1	SW2	SW3	Torque
SBVE-R1/2	G 1/2	24	4	56.5	56	4	13	24	30 ⁺⁵ Nm
SBVE-R1	G 1	40	3	82	94	6	19	41	150 ⁺¹⁰ Nm

CAVITY
SBVE-R 1/2

08021



Millimeter
Subject to technical modifications

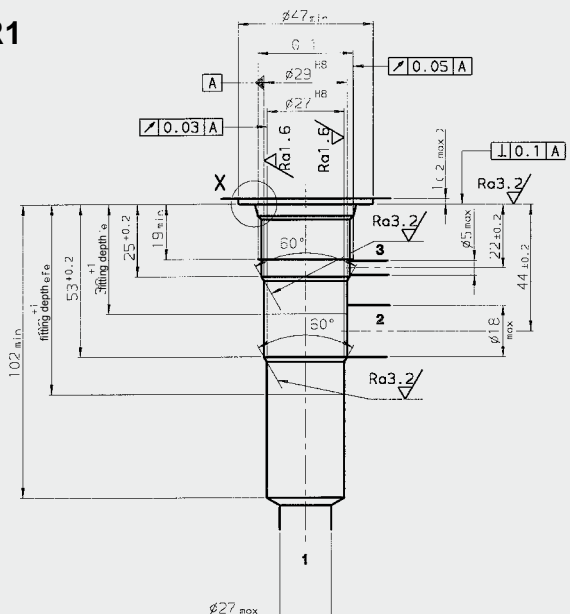


Form tools

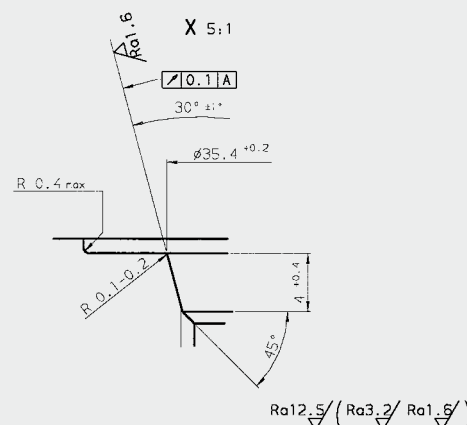
Tool	Part No.
Countersink	170031
Reamer	169962
Tap	1002667
Plug gauge	169939

SBVE-R1

16021



Millimeter
Subject to technical modifications



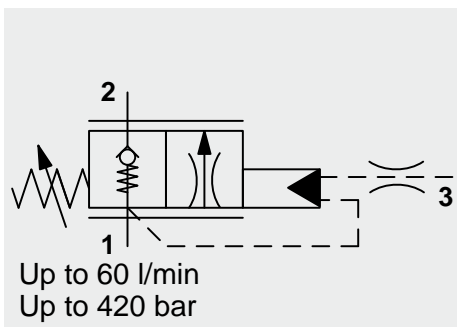
Form tools

Tool	Part No.
Countersink	170035
Reamer	169965
Tap	1002661
Plug gauge	174879

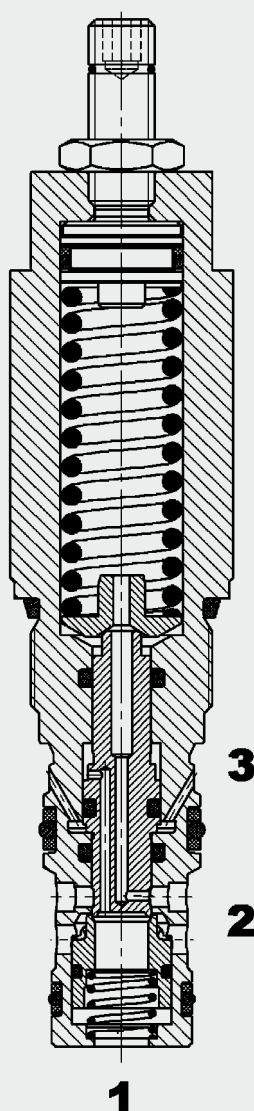
NOTE

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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.

Counterbalance Valve Poppet Type, Direct-Acting Metric Cartridge – 420 bar

RSM10121

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 - 350 bar 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 \approx 0,25 cm ³ /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 mm ² /s to max. 380 mm ² /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 $\Delta p = 30$ 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:

$$\text{standard: } p_{\text{ctrl}} = \frac{p_e - p_1}{\varphi} + K_f \times p_2$$

p_e = Setting pressure

p_{st} = Control pressure

p_1 = Load pressure

p_2 = Tank pressure

φ = Pilot ratio

$$\text{vented: } p_{\text{ctrl}} = \frac{p_e - p_1}{\varphi}$$

$K_f (\varphi = 1) = 2$

$K_f (\varphi = 2) = 1.5$

$K_f (\varphi = 3) = 1.3$

$K_f (\varphi = 5) = 1.2$

$K_f (\varphi = 10) = 1.1$

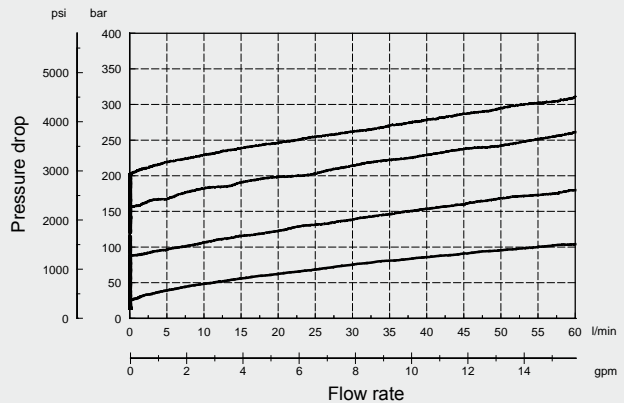
PERFORMANCE

Measured at $v = 36 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$, with sleeve, $\varphi = 3:1$

Pressure relief curve:

Pressure at port 1 against flow rate from port 1 to 2, $p_2 = 0$ bar

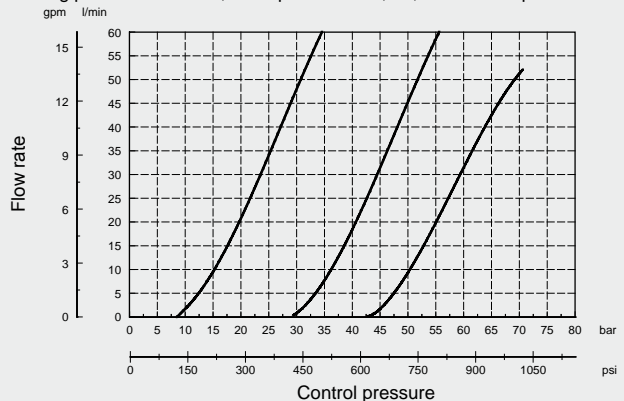
Pressure relief function protects the system in the event of overload on the consumer.



Control curve: (Pressure at port 3 against flow rate from port 1 to 2)

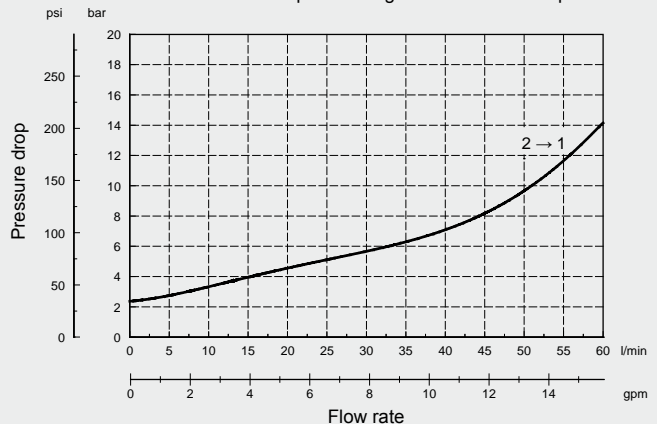
The control function shows the lowering speed against the control pressure.

Setting pressure: 200 bar; Load pressure: 25, 50, 85 % of set pressure



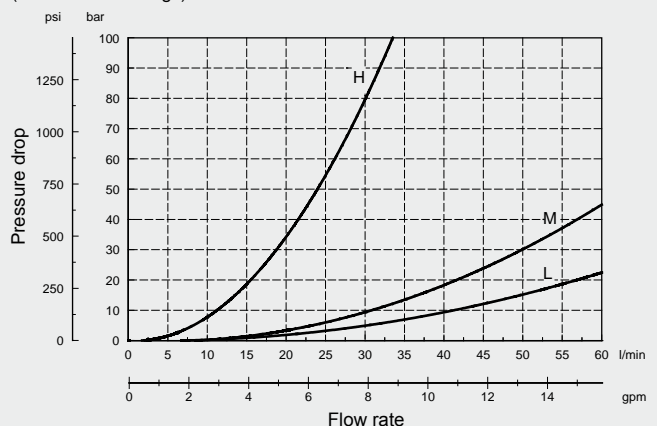
Throttle curve: Δp -Q from port 2→1

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!

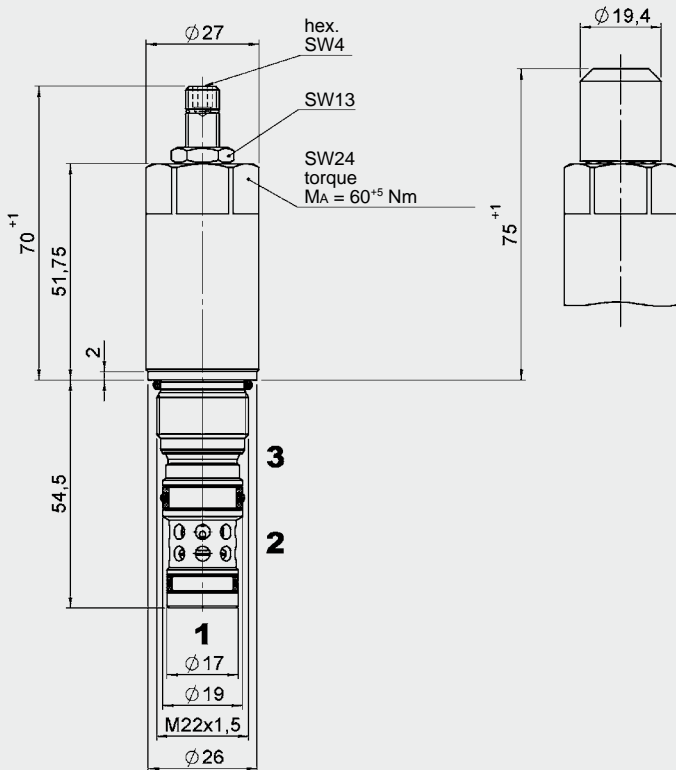
The differential pressure from port 1→2 on a fully controlled valve is dependent on the resolution of the fine control sleeve.

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.

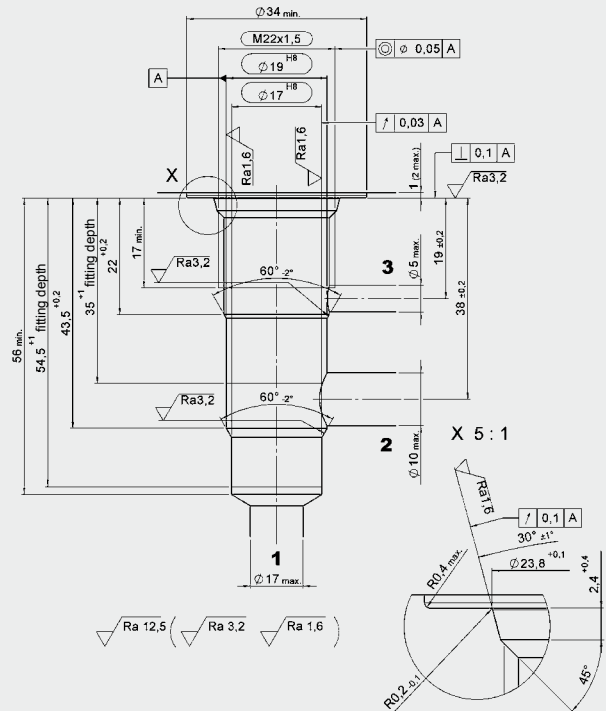
To hold the load, the check valve piston is pressed against its seat by the load pressure at port 1 and seals leakage-free (control port 3 must be released of pressure!).

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.

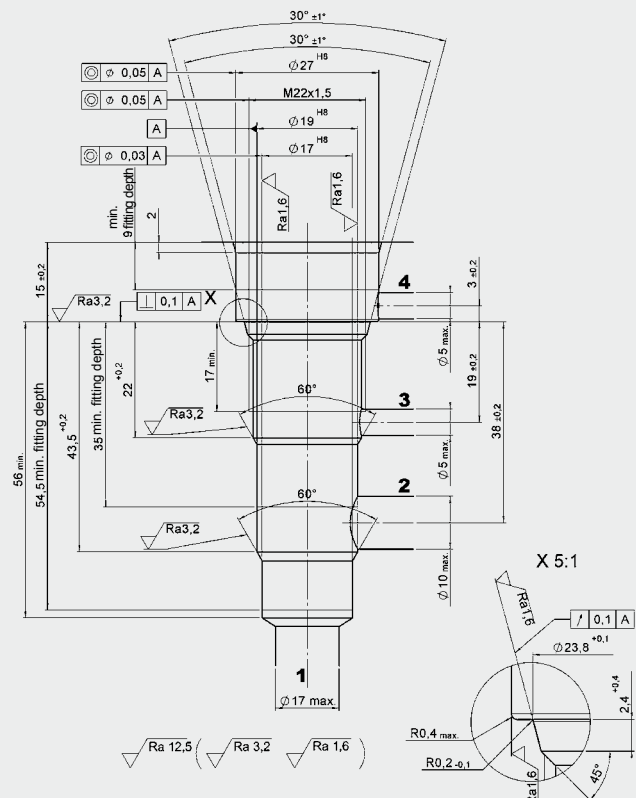
CAVITY

10121



Version E

10122



Form tools

Tool	Part No.
Countersink MK4	163910
Reamer MK2	163911

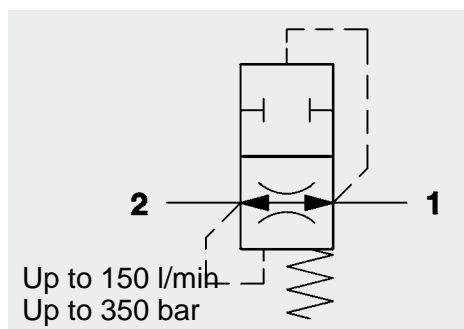
millimeter
subject to technical modifications

Note

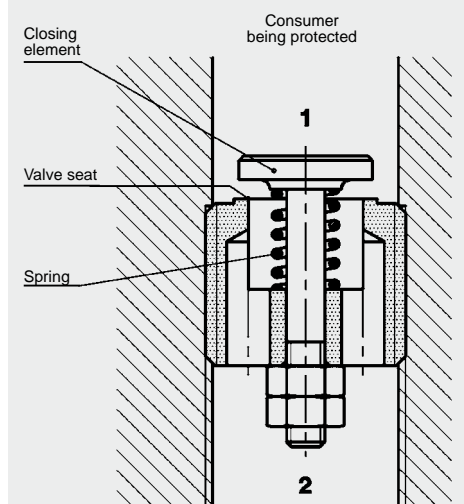
The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department. Subject to technical modifications.

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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.

Hose Burst Valve Direct-Acting Flat Seat Valve, Cartridge – 350 bar RBE 1/4 to 3/4

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

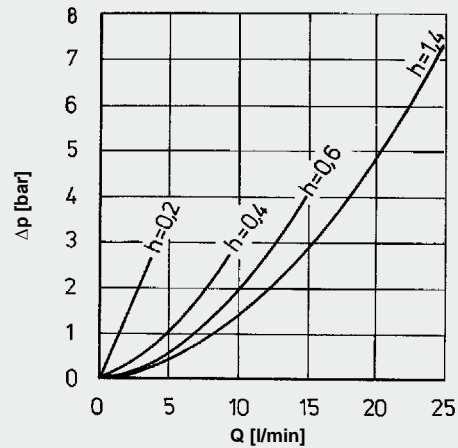
Standard in-line bodies

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

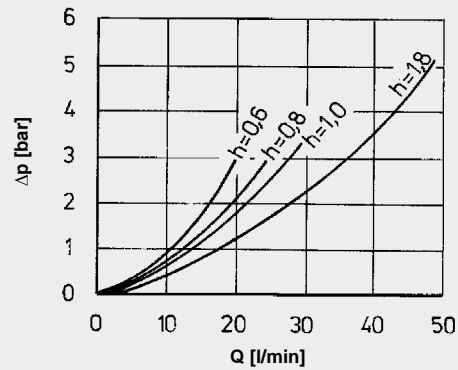
PERFORMANCE

Pressure drops, dependent on flow rate at various setting values, measured at $v = 34 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 46^\circ\text{C}$

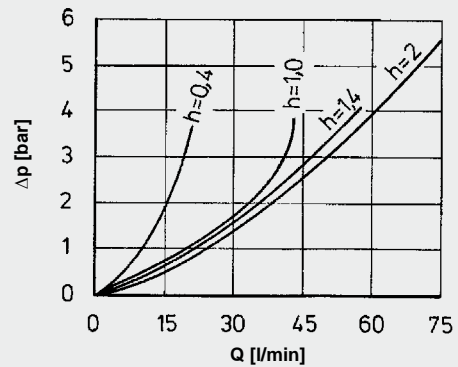
RBE-R1/4



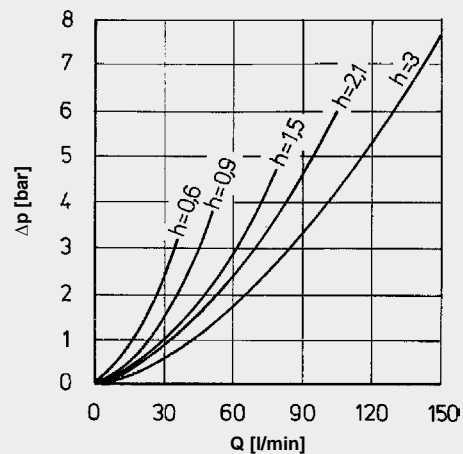
RBE-R3/8



RBE-R1/2

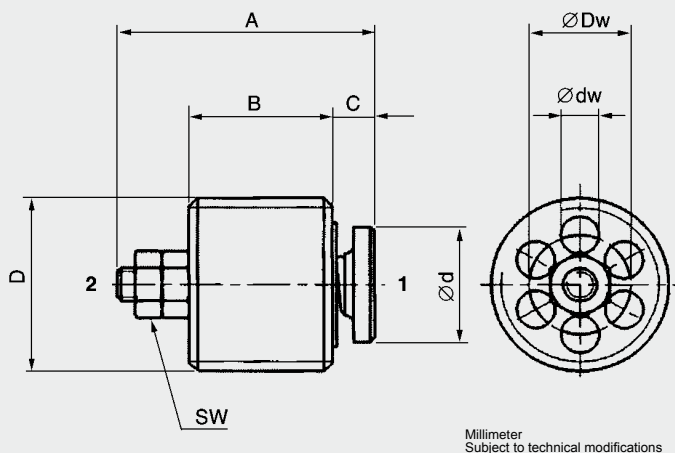


RBE-R3/4



DIMENSIONS

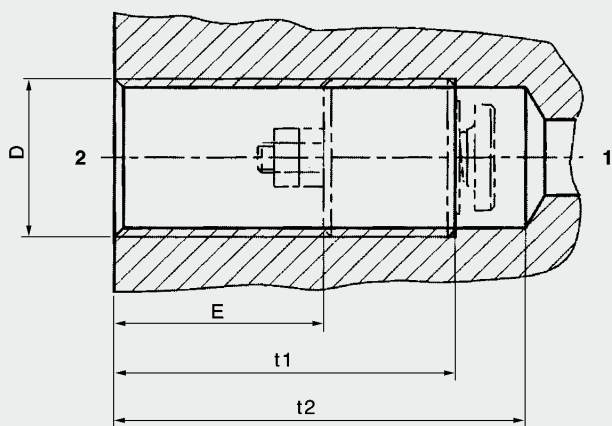
Cartridge



Millimeter
Subject to technical modifications

Type	D	A	B	C	Ød	SW	ØDw	Ødw
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



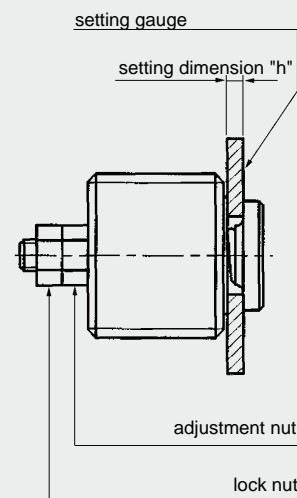
Millimeter
Subject to technical modifications

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).

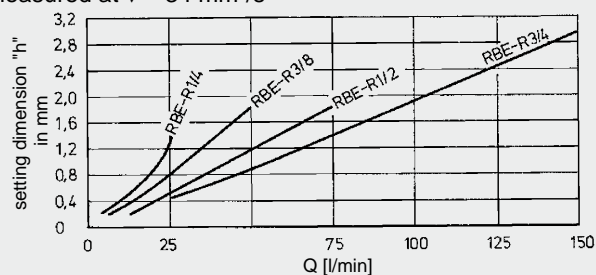


RBE-R1/4 and 3/8:
Torque 0.8 Nm
RBE-R1/2 and 3/4:
Torque 1.8 nNm

To change the setting, loosen the lock nut, measure the gap using setting gauges, or similar, and then re-tighten lock nut.

Setting curves

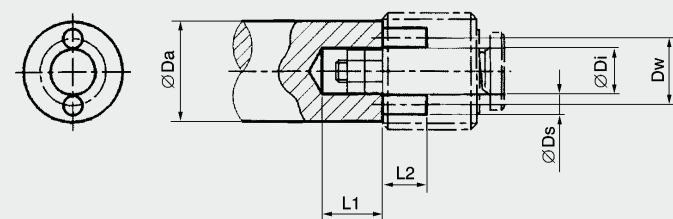
measured at $v = 34 \text{ mm}^2/\text{s}$



Form tools

Tool	Part No. / Cavity			
	05520	08520	10520	12520
Tap	1002670	1002668	1002667	1002663
Assembly tool	161421	160561	160560	164180

Assembly tool

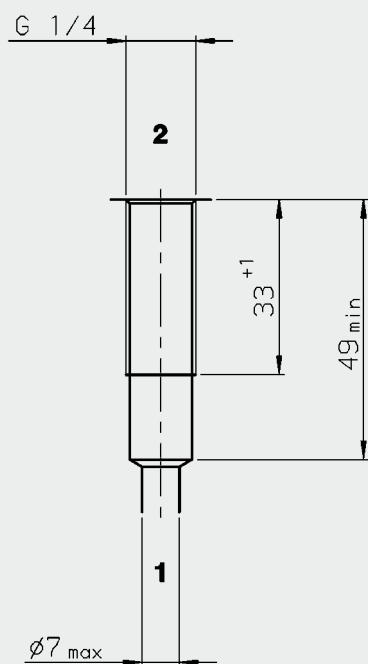


Type	Da max.	Dw	Di	Ds	L1 min.	L2 max.
RBE R1/4-X-...	11.5	8	5.8	2	9	5
RBE R3/8-X-...	15	10	6.5	3	9	6
RBE R1/2-X-...	18	12	8.2	3.5	11	8
RBE R3/4-X-...	24	16	8.5	6	12	8

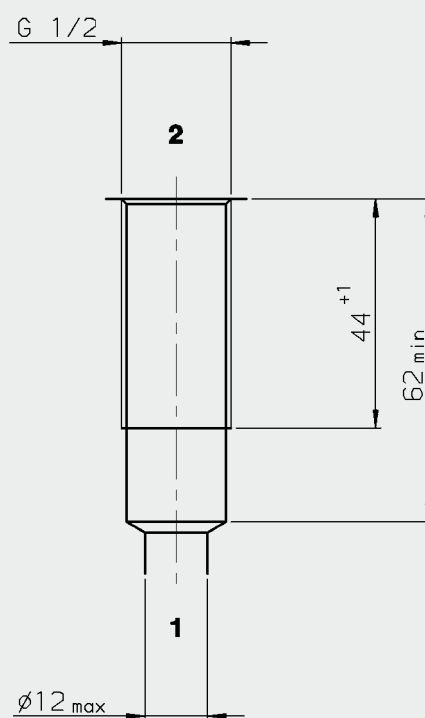
All dimensions in mm.

CAVITY

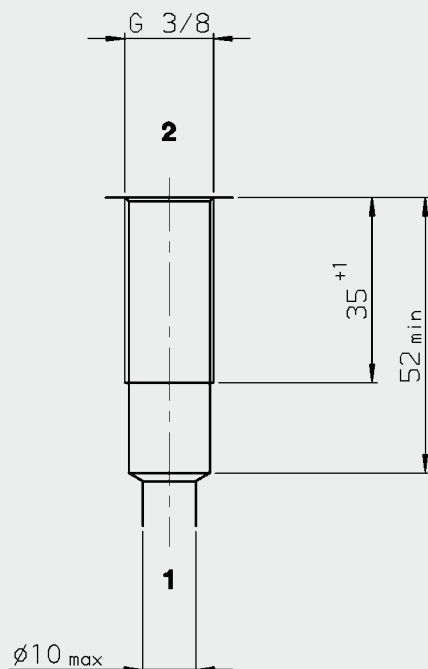
05520



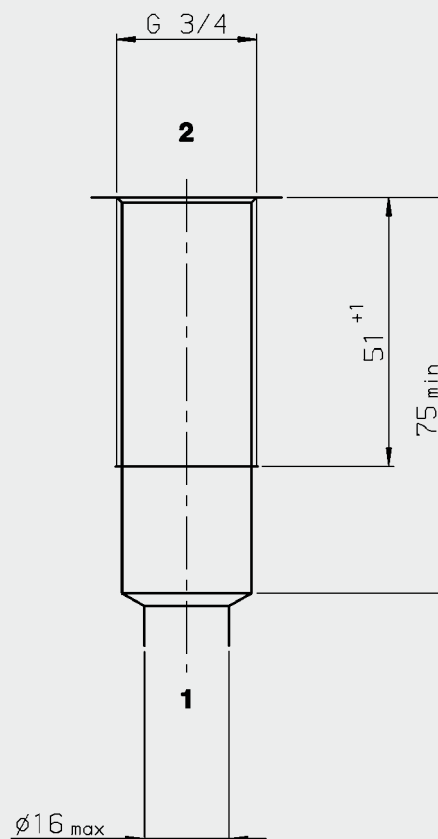
10520



08520



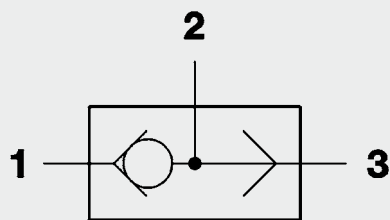
12520



NOTE

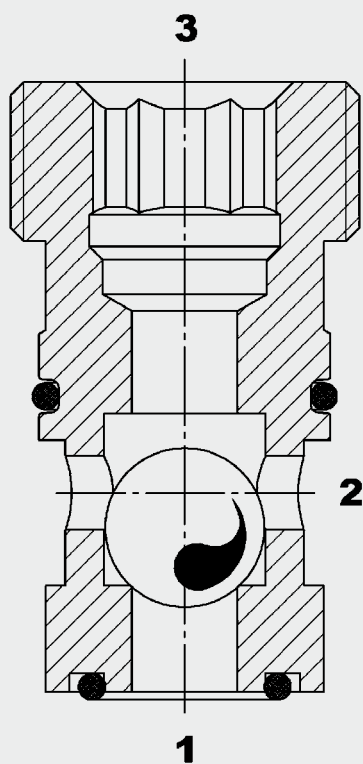
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Subject to technical modifications.

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Up to 70 l/min
Up to 350 bar

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.

Shuttle Valve 3-Way Cartridge – 350 bar WVE-R1/8 to R1/2

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

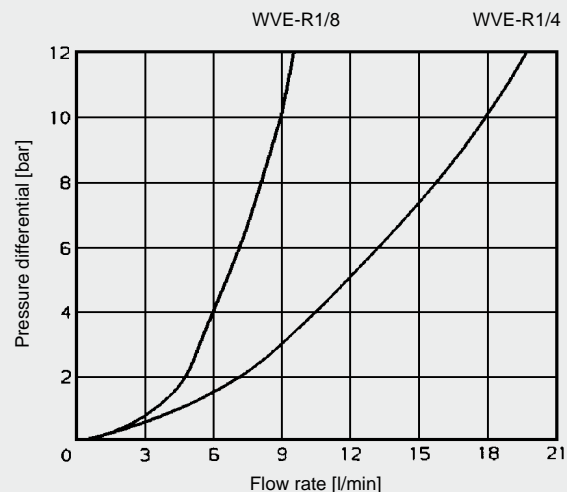
01 = standard (phosphated)

Series

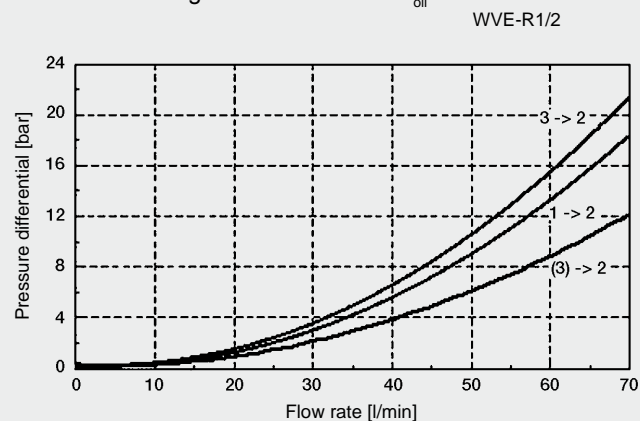
(determined by manufacturer)

PERFORMANCE

Pressure differential Δp against flow rate Q , measured at constant flow setting $v = 36 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 40 \text{ }^\circ\text{C}$



Pressure differential Δp against flow rate Q , measured at constant flow setting $v = 33 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



Standard models

Model code	Part No.
WVE-R1/8-010	710125
WVE-R1/4-010	710126
WVE-R1/2-010	3467544

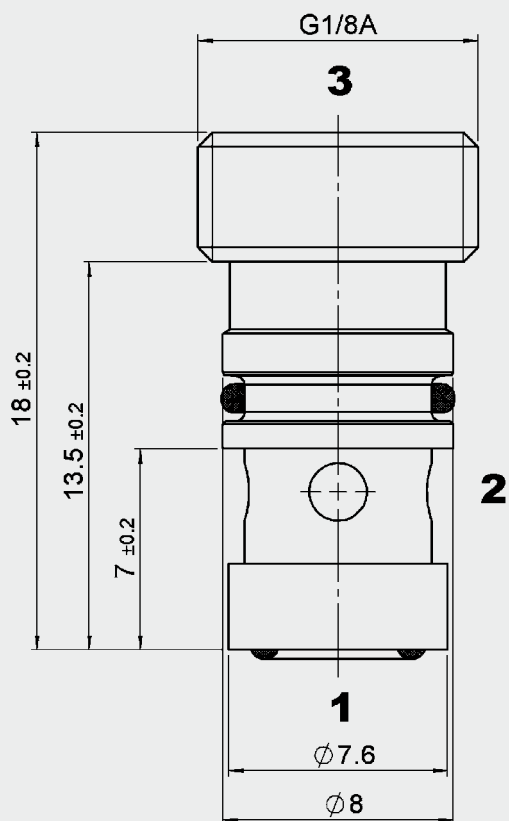
Other models on request

Seal kits

Code	Part No.
SEAL KIT FOR WVE-R1/8-VITON	715879
SEAL KIT FOR WVE-R1/4-VITON	715880

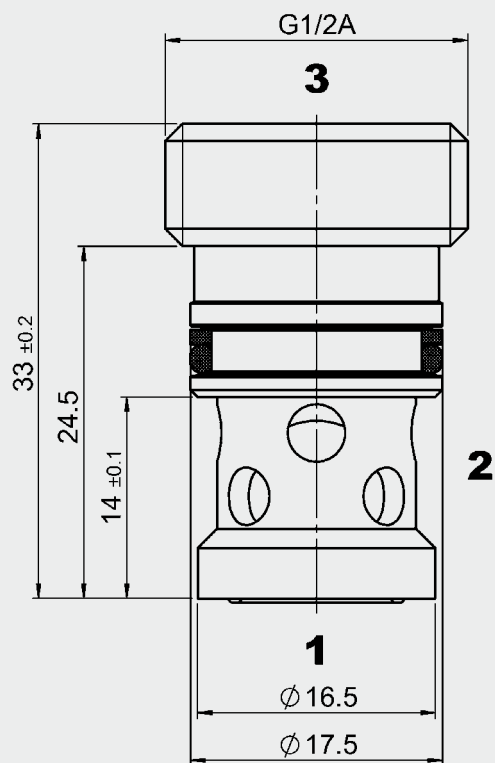
DIMENSIONS

WVE-R1/8



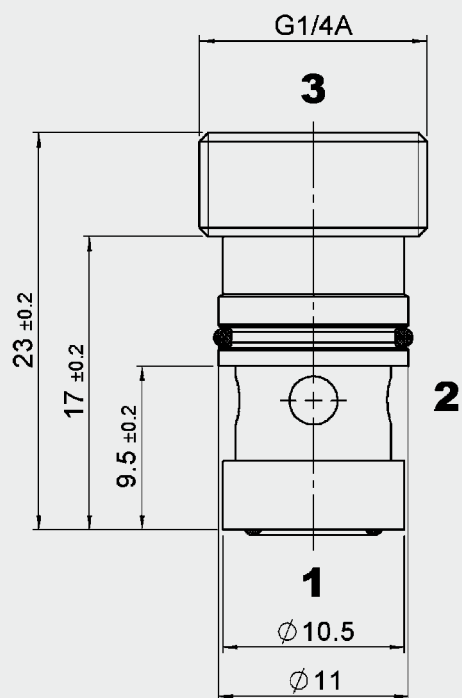
Millimeter
Subject to technical modifications

WVE-R1/2



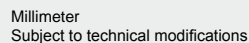
Millimeter
Subject to technical modifications

WVE-R1/4



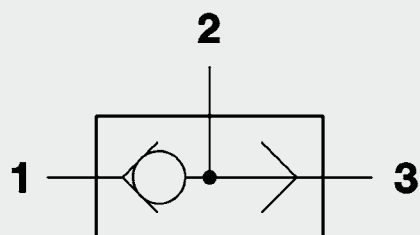
Millimeter
Subject to technical modifications

03030



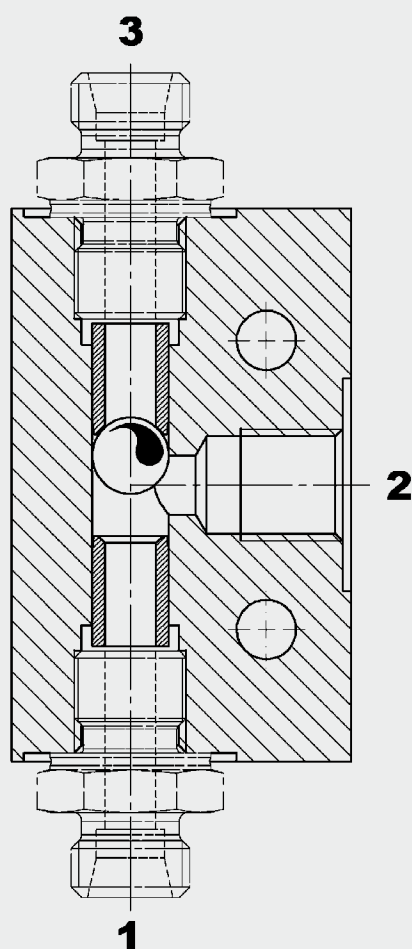
Tool	Cavity / Part No.		
	03030	05030	08730
Countersink	171856	171857	179632
Reamer	1000747	1000754	In preparation
Tap	1002671	1002670	In preparation
Plug gauge	—	159565	In preparation

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Up to 50 l/min
Up to 420 bar

FUNCTION



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.

Shuttle Valve 3-Way Manifold Mounted – 420 bar WVG-06

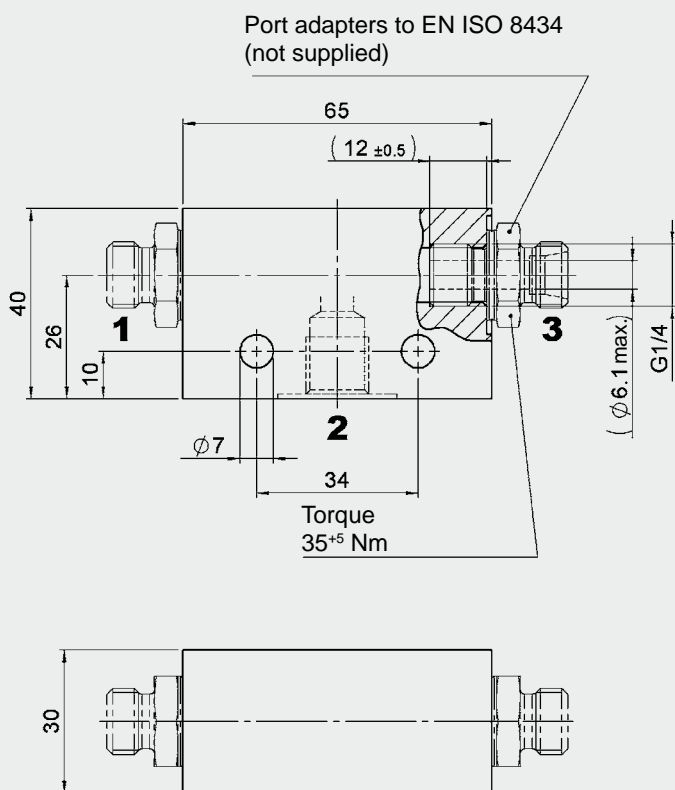
FEATURES

- 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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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

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)

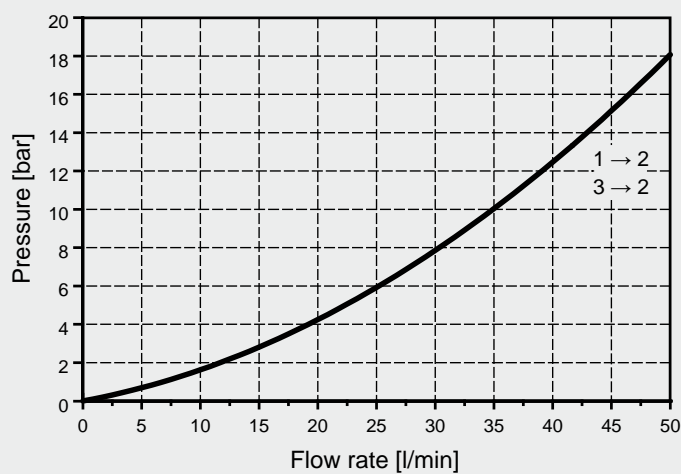
Standard models

Model code	Part No.
WVG-06-01	3520977

Other models on request

PERFORMANCE

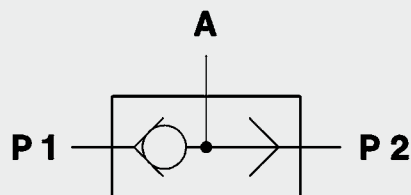
Measured at $v = 40 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 42 \text{ }^\circ\text{C}$



NOTE

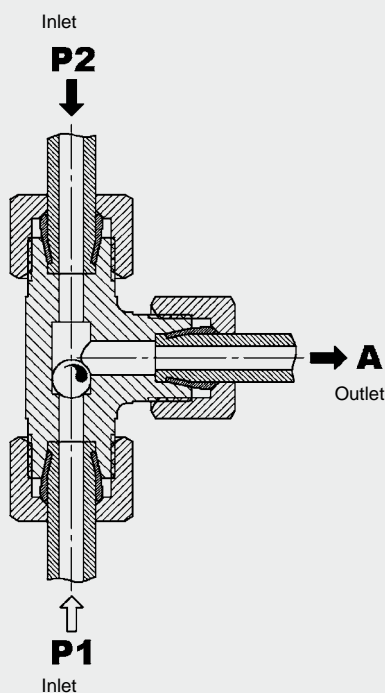
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Up to 80 l/min
Up to 350 bar

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.

Shuttle Valve 3-Way Inline Mounted – 350 bar WVT 6S / 8S / 10S / 12S

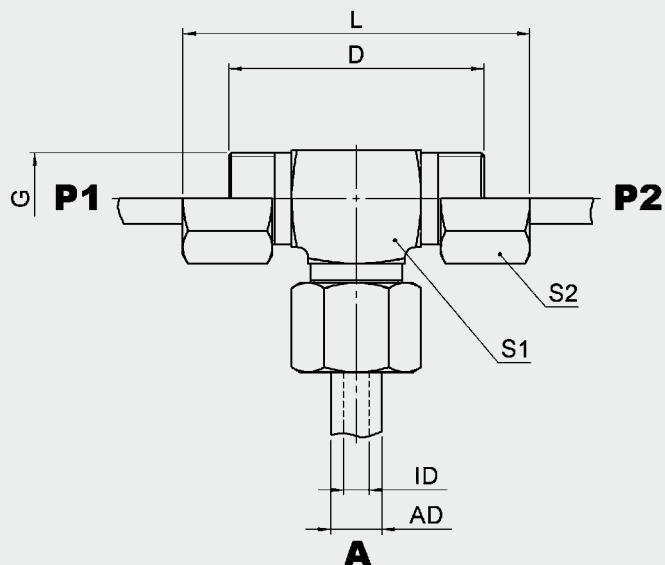
FEATURES

- 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)

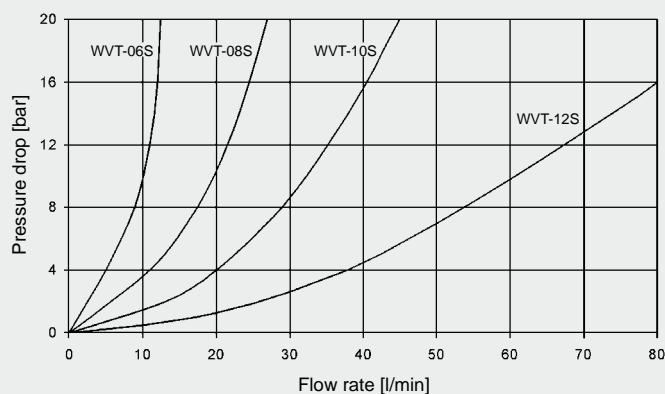
Standard models

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 $v = 40 \text{ mm}^2/\text{s}$ and $T_{\text{oil}} = 42 \text{ }^\circ\text{C}$



NOTE

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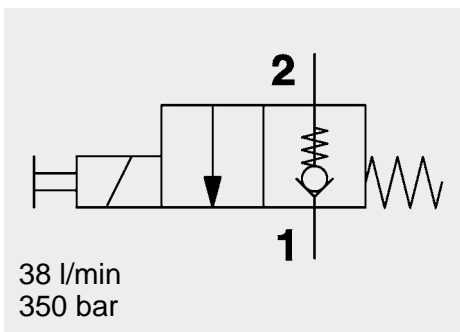
Justus-von-Liebig-Str.

D-66280 Sulzbach/Saar

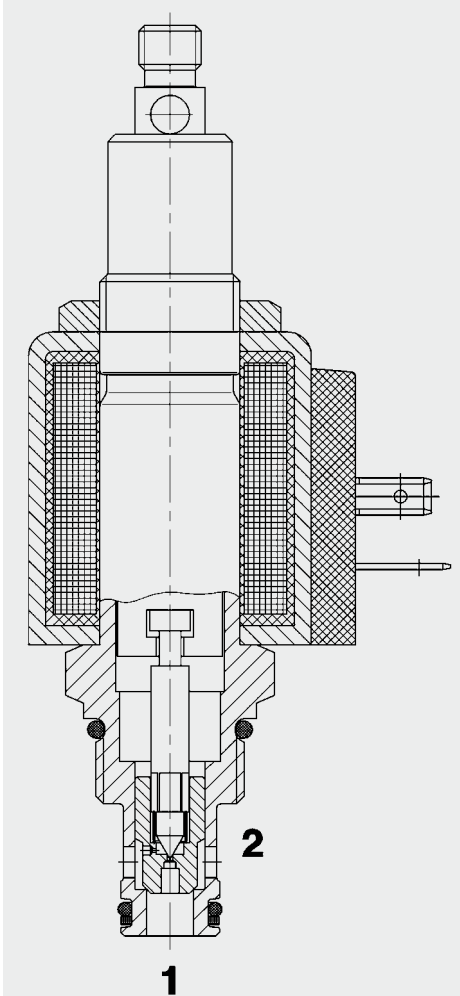
Tel: 0 68 97 /509-01

Fax: 0 68 97 /509-598

E-Mail: flutec@hydac.com



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.

2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Spring-Return Manual Override Normally Closed SAE-08 Cartridge – 350 bar WS08Z-01J

UNF

FEATURES

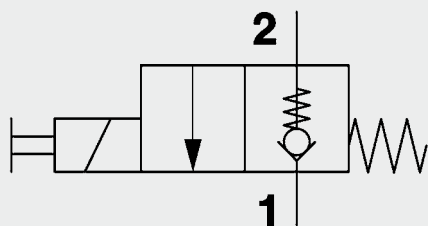
- Excellent switching performance by high power HYDAC solenoid
- Solenoid coil available with wide variety of connectors
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Low pressure drop due to CFD 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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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

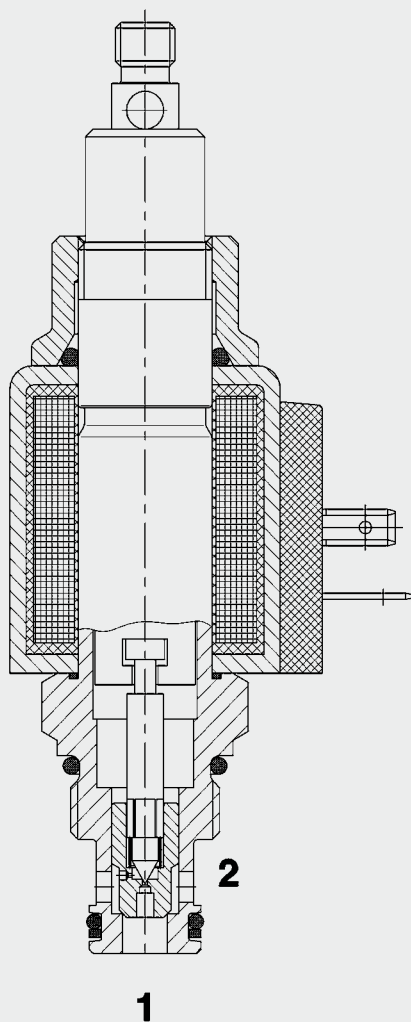
Electrical data:

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:	\pm 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- approx. 35 ms energized: approx. 50 ms
Coil type:	Coil...-40-1836



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. 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.

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Spring-Return Manual Override Normally Closed Metric Cartridge Valve – 350 bar

WSM06020Z-01J

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

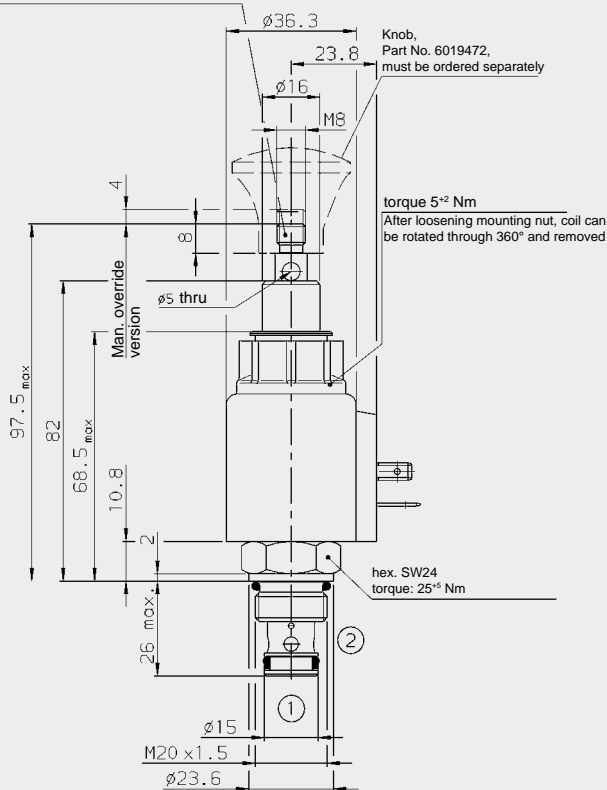
Operating pressure:	max. 350 bar
Nominal flow:	max. 40 l/min
Internal leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /min at 350 bar)
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 10 mm ² /s to max. 420 mm ² /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:	\pm -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

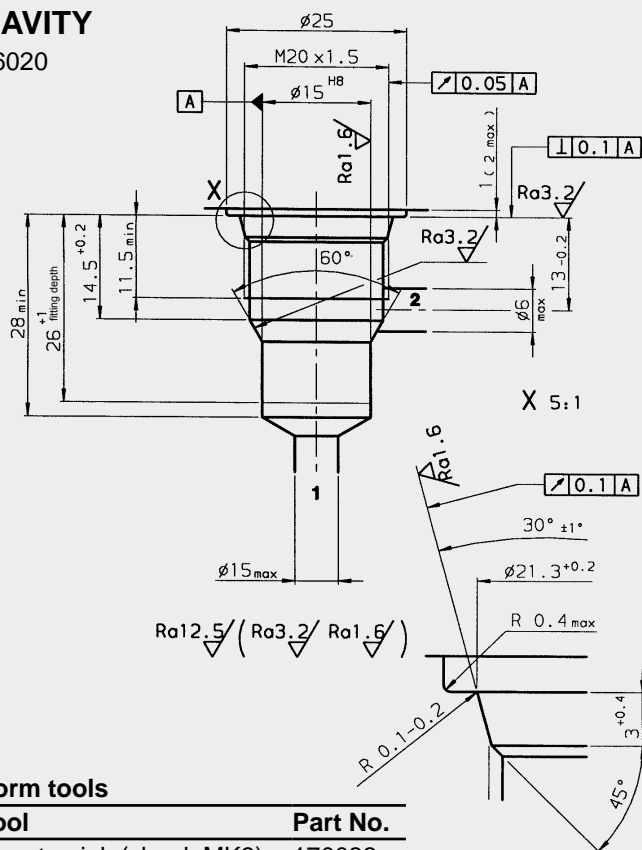
Manual override
spring-return
pull and hold to operate



millimeter
subject to technical modifications

CAVITY

06020



millimeter
subject to technical modifications

Form tools

Tool	Part No.
Countersink (shank MK3)	170033
Reamer (shank MK2)	1000768

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

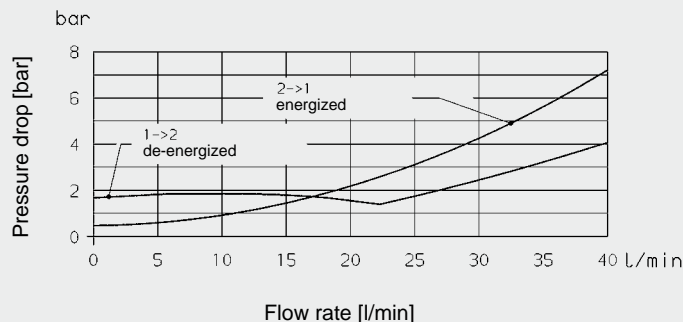
For other connection housings, see brochure no. E 5.252.

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$

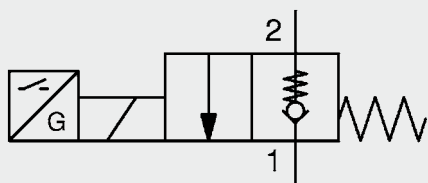


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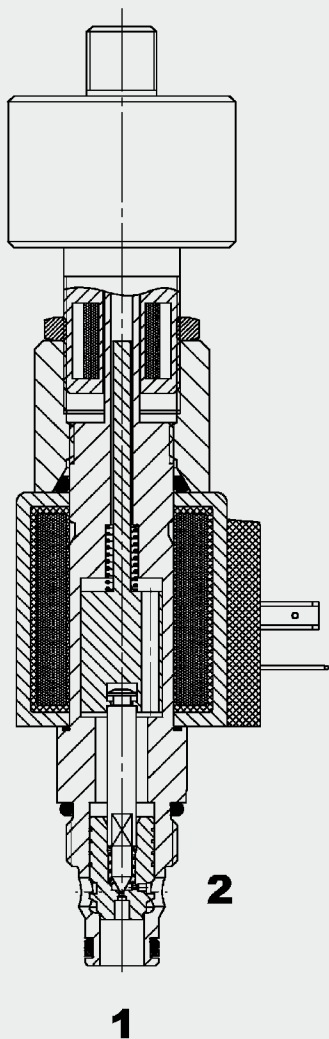
HYDAC Fluidtechnik GmbH

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



Up to 40 l/min
Up to 350 bar

FUNCTION



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.

2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Normally Closed With Electronic Switch Position Monitoring SAE-08 Cartridge – 350 bar WS08Z-01E

UNF

FEATURES

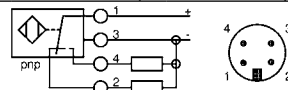
- With integrated electronic switch position monitoring
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components ensure minimal wear and extended service life
- Wide variety of connections available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

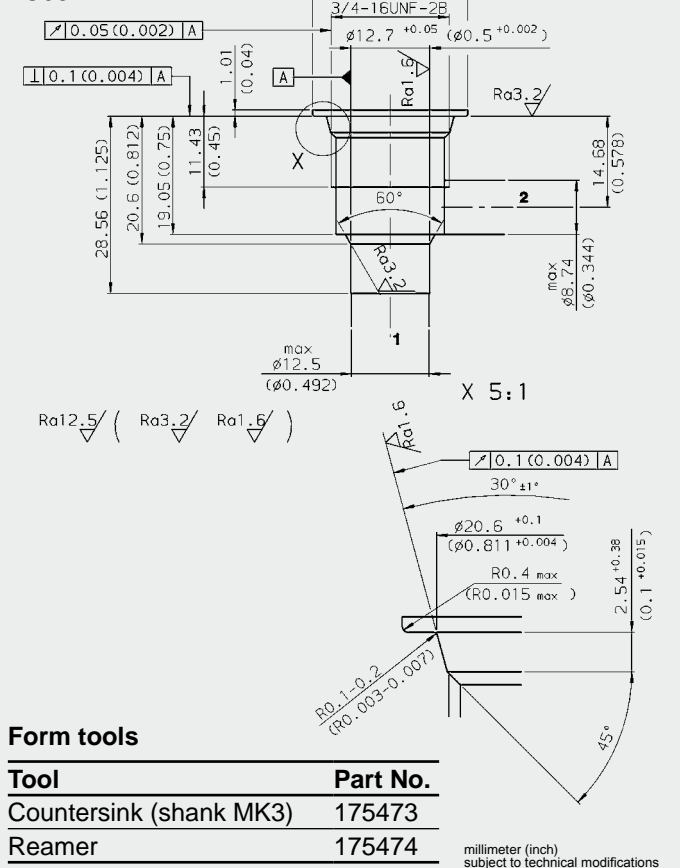
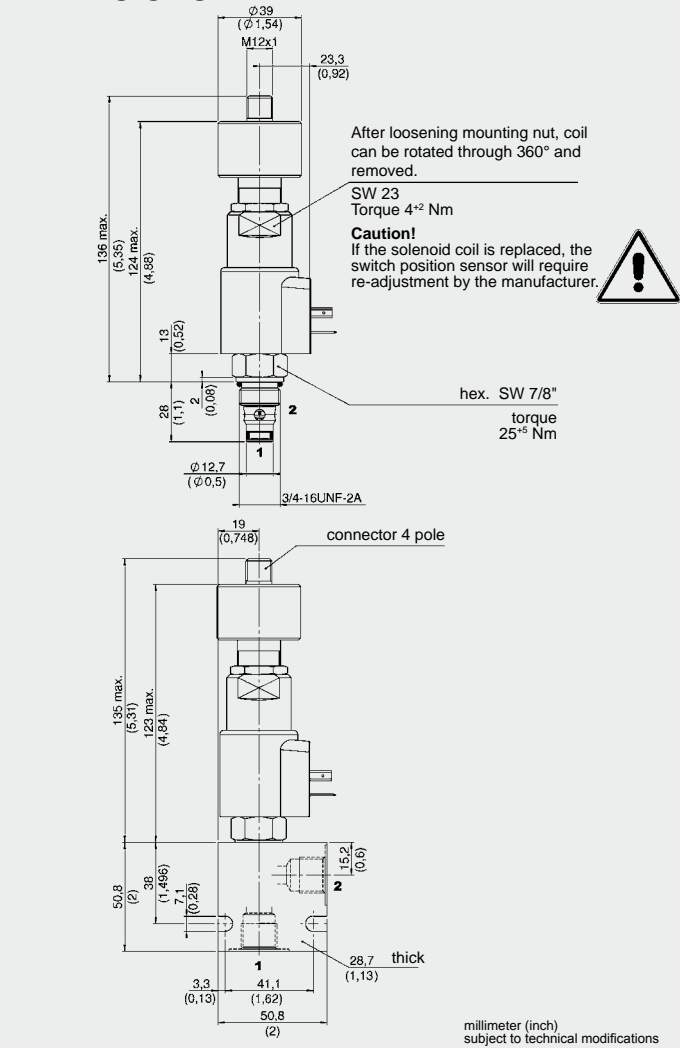
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 40 l/min
Leakage:	leakage-free (max. 5 drops \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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:	\leq 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:	





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 _____

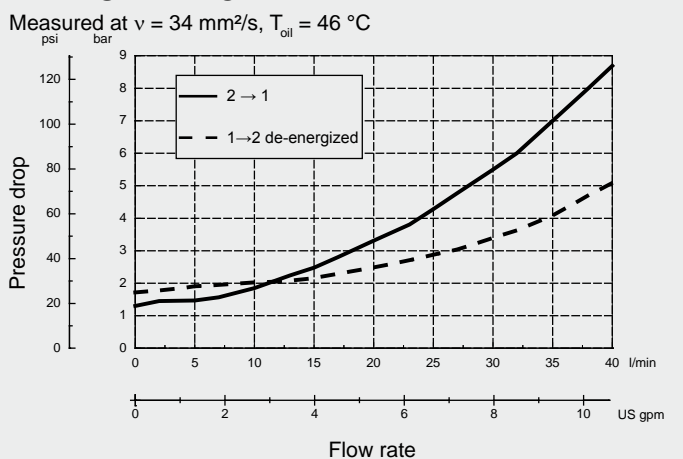
Coil connectors (type 40-1836) _____
DC: DG = DIN connector to EN175301-803
DK = Kostal threaded connection M27 x 1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial

AC: AG = DIN Connector (EN 175301-803)
other connectors on request

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	

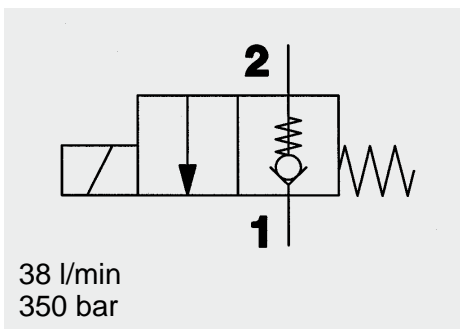
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar
Other models on request				

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

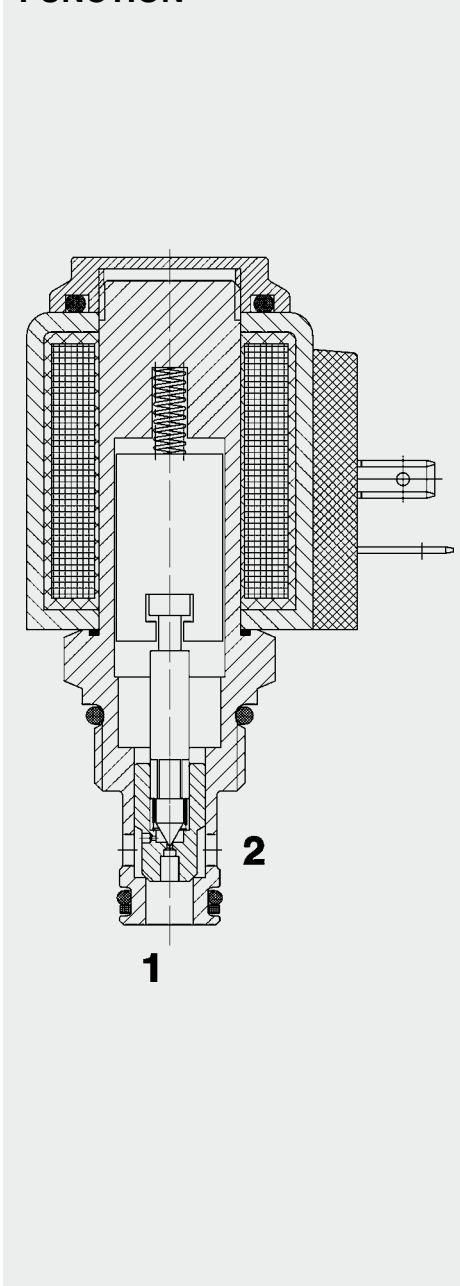


Note
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Subject to technical modifications.

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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.

2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Closed **SAE-08 Cartridge – 350 bar** WS08Z-01

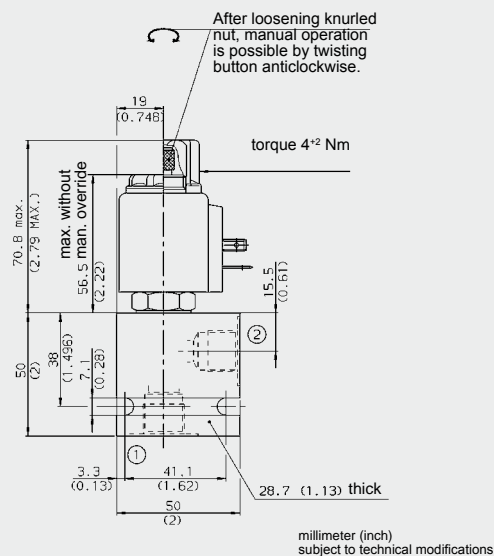
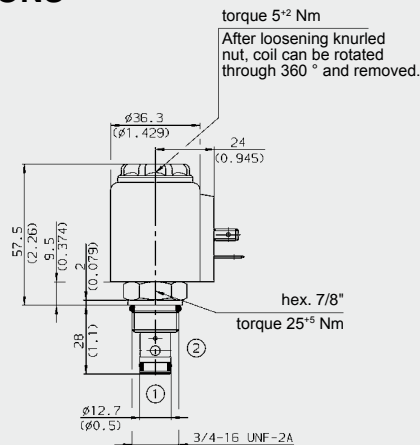
FEATURES

- 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

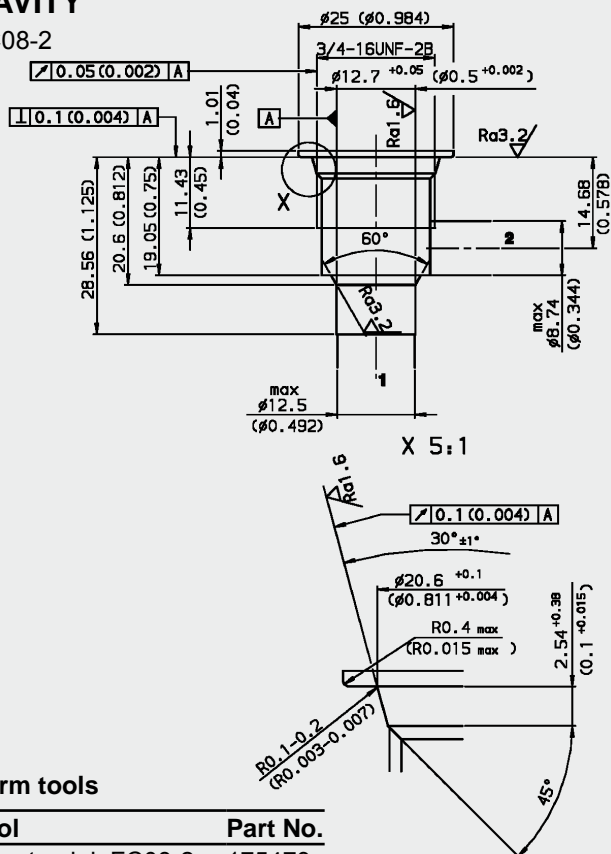
Operating pressure:	max. 350 bar	
Nominal flow:	max. 38 l/min	
Leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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:	\pm 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

millimeter (inch)
subject to technical modifications

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

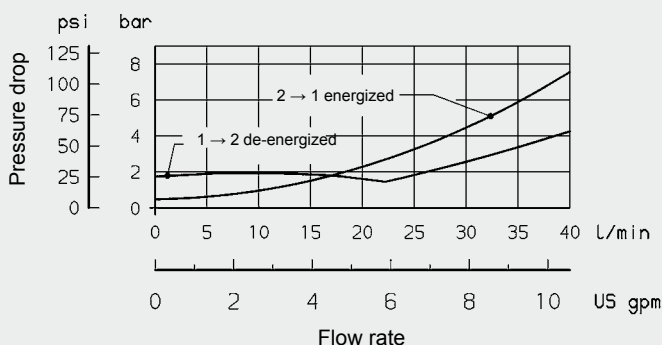
Other housings on request

Seal kits

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

PERFORMANCE

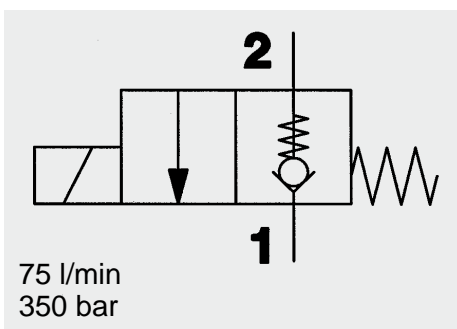
Measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



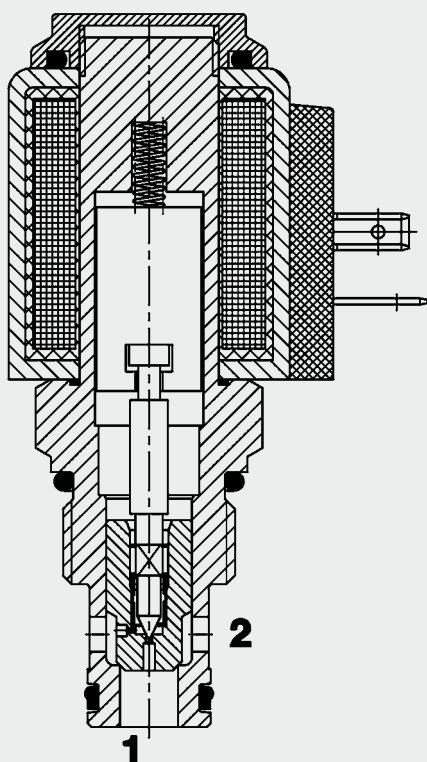
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FUNCTION



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.

2/2 Solenoid Directional Valve **UNF** Poppet Type - Pilot Operated, Normally Closed **SAE-10 Cartridge – 350 bar**

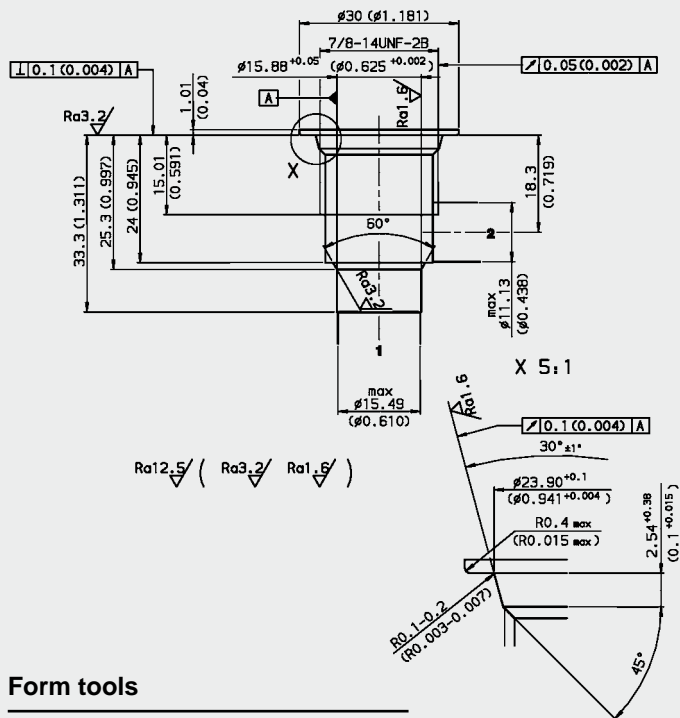
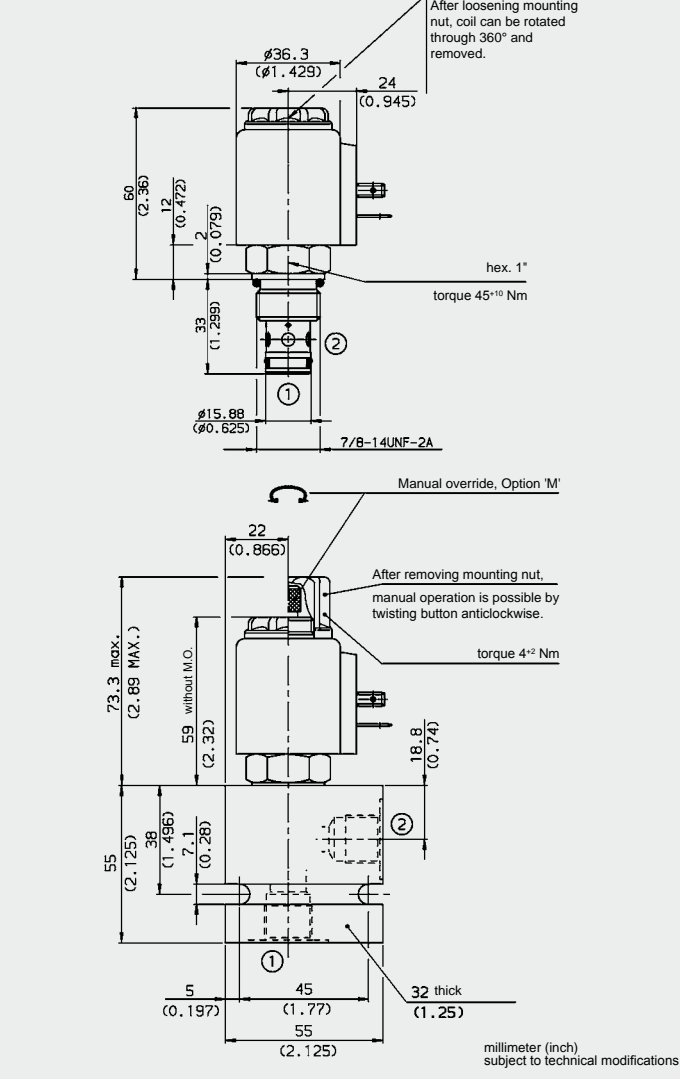
WS10Z-01

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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



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

millimeter (inch)
subject to technical modifications

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) _____

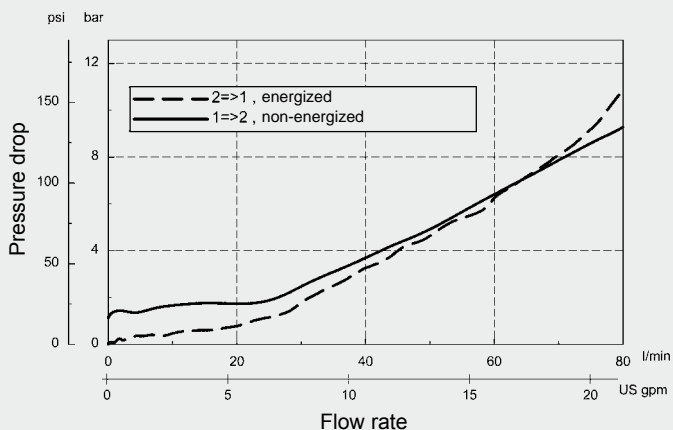
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL-threaded connection M27x1
DL = 2 flying leads, 457 mm long; 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial

AC: AG = DIN connector to EN 175301-803
Other connectors on request

Model code	Part No.
WS10Z-01-C-N-24DG	3030560
WS10Z-01-C-N-230AG	3043793
Other models on request	

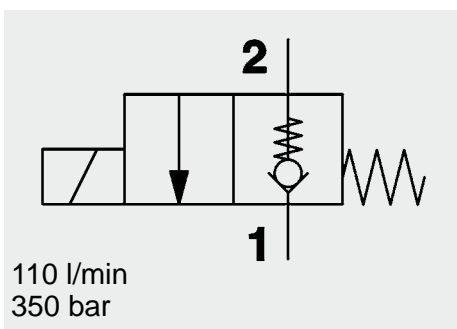
Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, clear anodized	G1/2	210 bar
Other housings on request				

Code	Material	Part No.
FH102-N Seal kit	NBR	3033872
FH102-V Seal kit	FKM	3051757

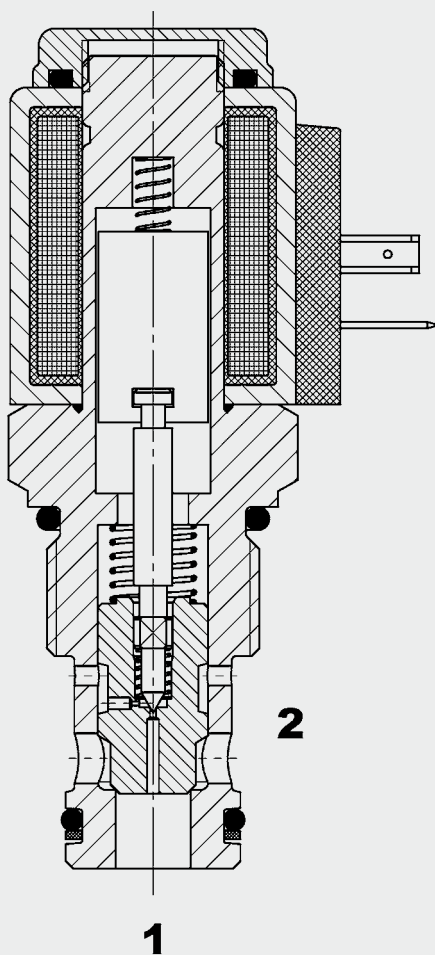


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E-Mail: flutec@hvdac.com



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.

2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Closed **SAE-12 Cartridge – 350 bar** WS12Z-01

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 15% of the nominal voltage
Response time:	Energized: approx. 30 ms De-energized: approx. 70 ms
Coil type:	Coil...-40-1836

torque 4⁺² Nm

After loosening the mounting nut, the coil can be rotated through 360 ° and removed.

hex. 1 1/4"
torque 100⁺⁸ Nm

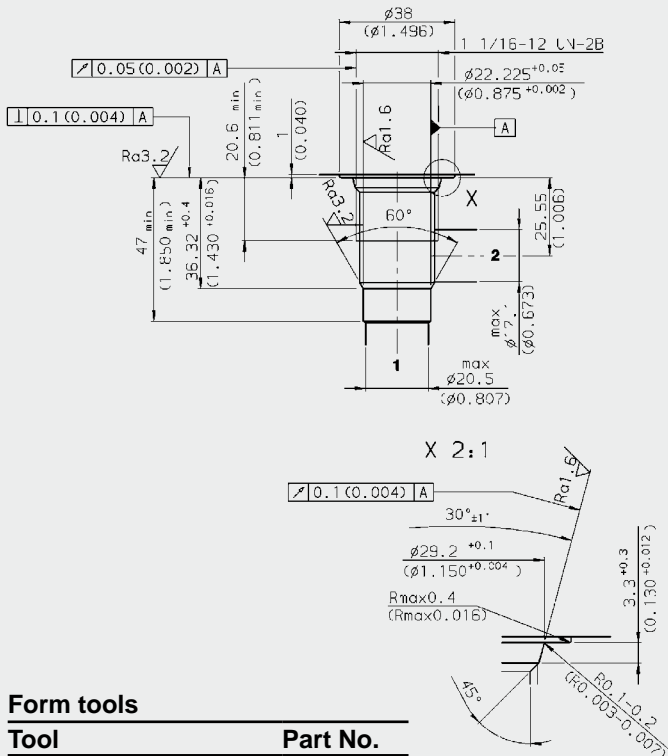
2

1

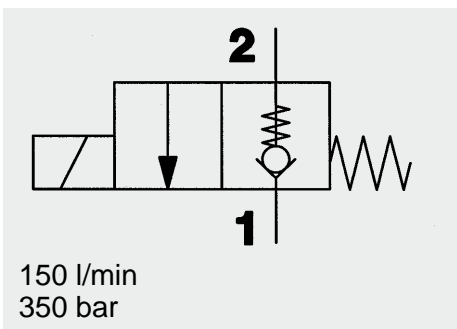
1 1/16-12UN-2A

Dimensions (mm):

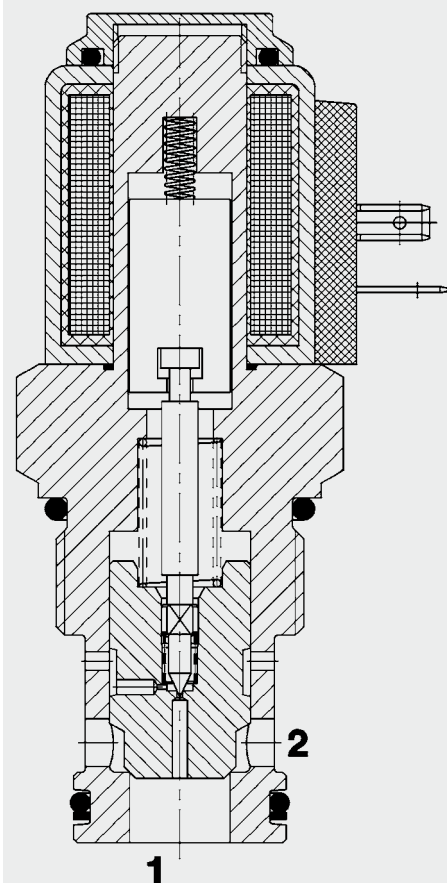
- 61.5 max (2.42 MAX.)
- 23.8 (0.94)
- 13 (0.51)
- 2 (0.08)
- 48 (1.81)
- Ø 22.23 (Ø 0.88)



E 5.998.1/01.13



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.

2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Closed **SAE-16 Cartridge – 350 bar** WS16Z-01

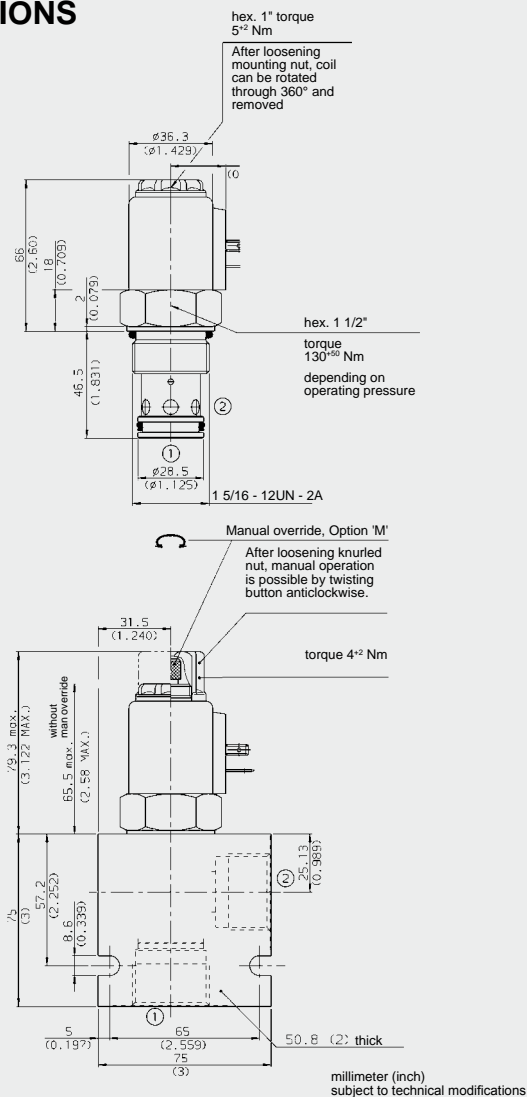
FEATURES

- 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

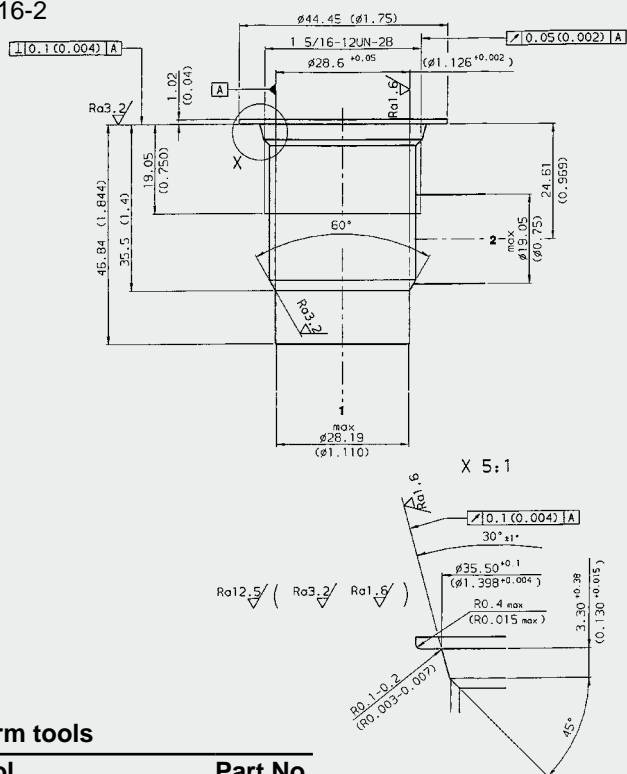
Operating pressure:	350 bar	
Nominal flow:	max. 150 l/min up to 280 bar max. 100 l/min from 280 to 350 bar	
Internal leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /min at 350 bar)	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	7.4 to 420 mm ² /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:	\pm 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

millimeter (inch)
subject to technical modifications

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

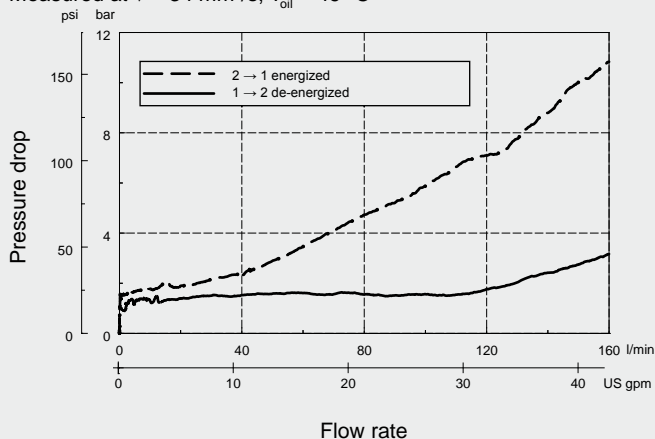
Other models on request

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$

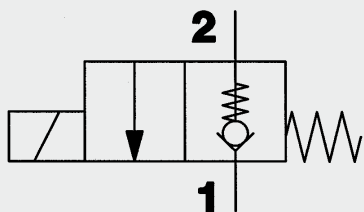


NOTE

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Subject to technical modifications.

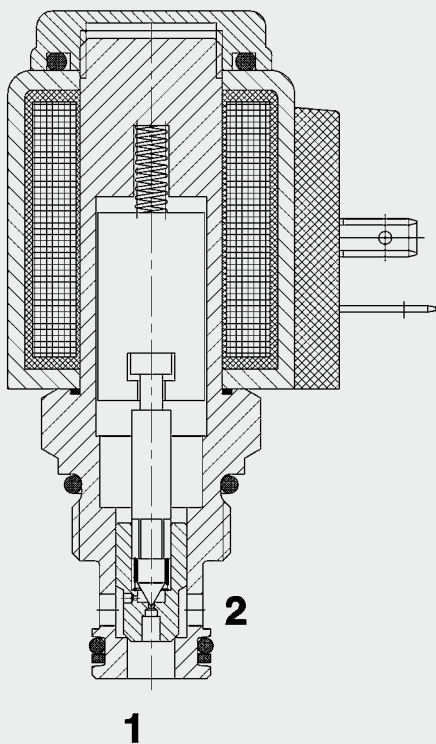
HYDAC Fluidtechnik GmbH

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

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.

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Closed Metric Cartridge Valve – 350 bar

WSM06020Z-01

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

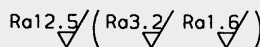
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 40 l/min
Internal leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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

After loosening knurled nut, coil can be rotated through 360 ° and removed.



06020



millimeter
subject to technical modifications

Tool	Part No.
Countersink (shank MK3)	170033
Reamer (shank MK2)	1000768

millimeter
subject to technical modifications

WSM06020Z - 01 M - C - N - 24 DG

Other connectors on request

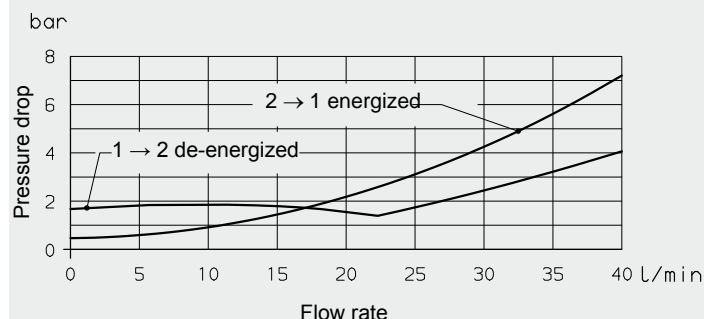
Model code	Part No.
WSM06020Z-01-C-N-24DG	3055428
WSM06020Z-01-C-N-230AG	3055416

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".

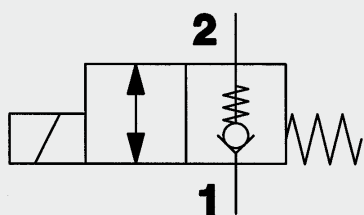
Code	Material	Part No.
SEAL KIT 06020-NBR	NBR	3119017
SEAL KIT 06020-FKM	FKM	3262477

Measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{Oil}} = 46 \text{ }^\circ\text{C}$



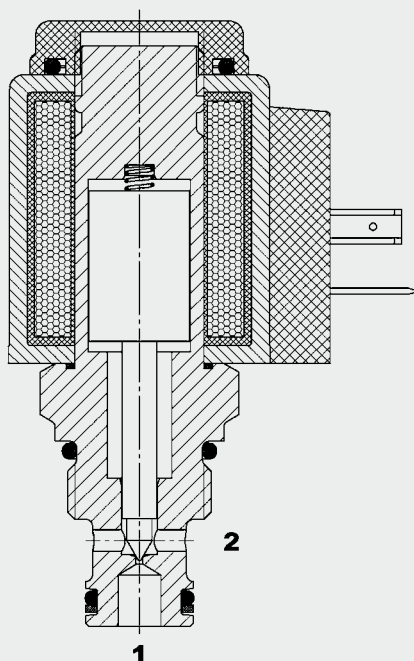
Note
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Subject to technical modifications.

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Up to 3 l/min
Up to 350 bar

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.

2/2 Solenoid Directional Valve Poppet Type, Direct-Acting Normally Closed Metric Cartridge – 350 bar

WSM06020Z-70

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

torque 4⁺² Nm

After loosening knurled nut, coil can be rotated through 360 ° and removed.

Manual override

After loosening knurled nut, manual operation is possible by twisting button anticlockwise.

59 max.

10.8

2

26 max.

26.6

73 max.

2

hex. SW 24
Torque 25⁺⁵ Nm

1

Ø 36.3

Ø 15

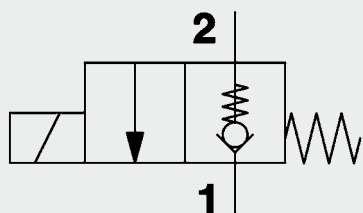
M20x1.5

Ø 23.6

Form tools

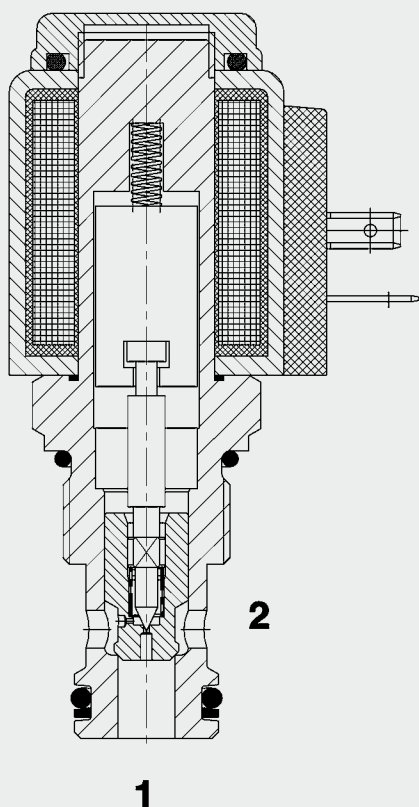
Tool	Part No.
Countersink MK3	170033
Reamer MK2	1000768

millimeter
subject to technical modifications



Up to 75 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, there is free flow through the valve from port 2 to 1. Reverse flow from port 1 to 2 is prevented.

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Closed Metric Cartridge Valve – 350 bar WSM10120Z-01

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

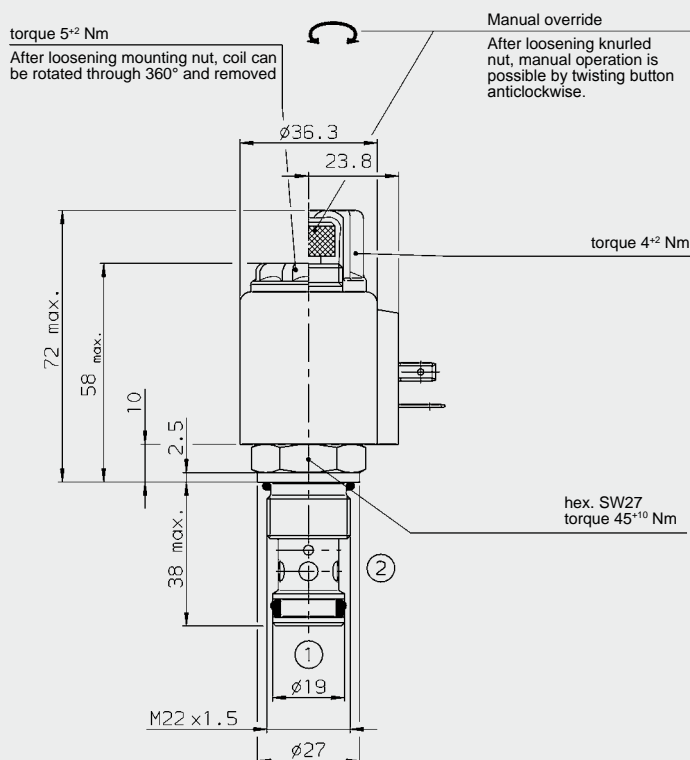
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 75 l/min
Internal leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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



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

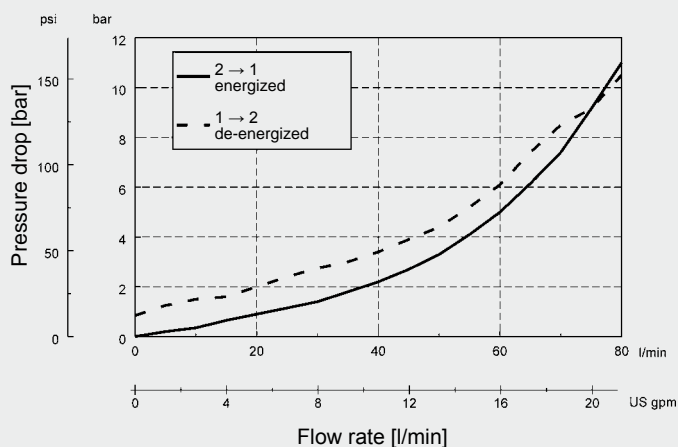
For other connection housings, see brochure no. E 5.252.4
"Connection Housings for Cartridge Valves".

Seal kits

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

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$ $T_{\text{Oil}} = 46^\circ\text{C}$



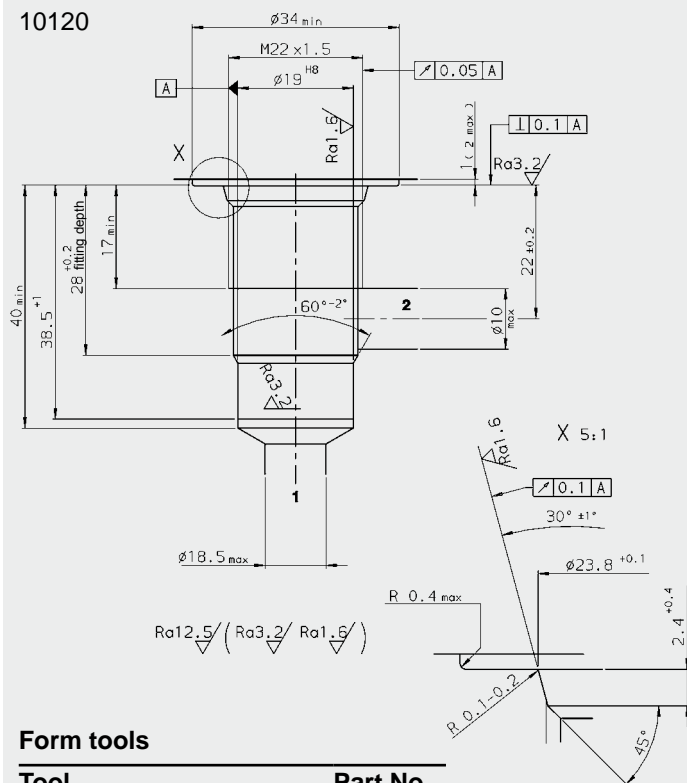
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CAVITY

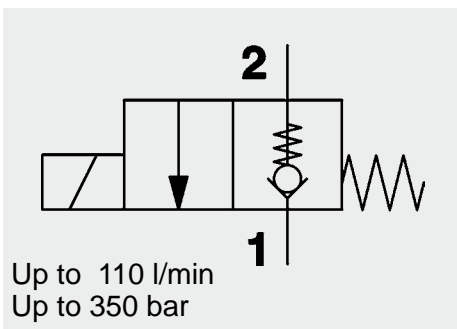
10120



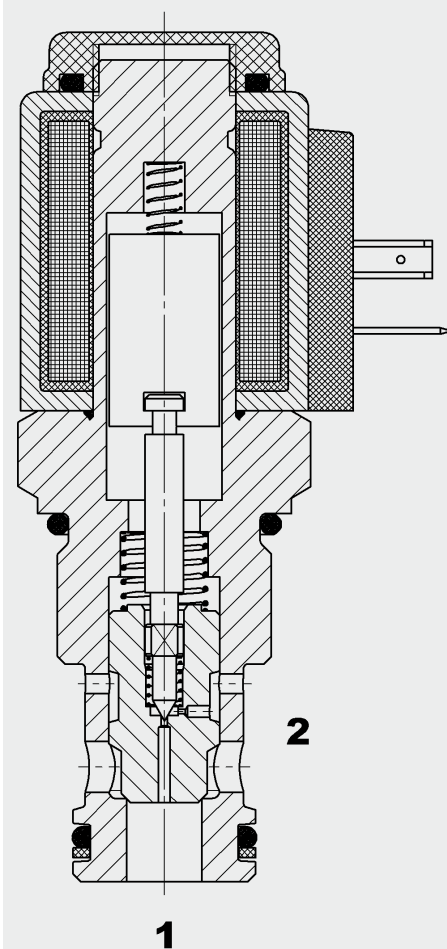
Form tools

Tool	Part No.
Countersink (shank MK3)	170418
Reamer (shank MK2)	1014206

millimeter
subject to technical modifications



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.

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Closed Metric Cartridge Valve – 350 bar

WSM12120Z

FEATURES

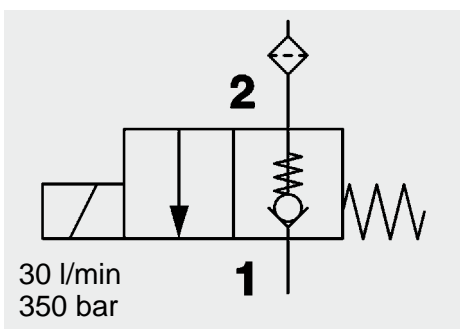
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground control piston to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

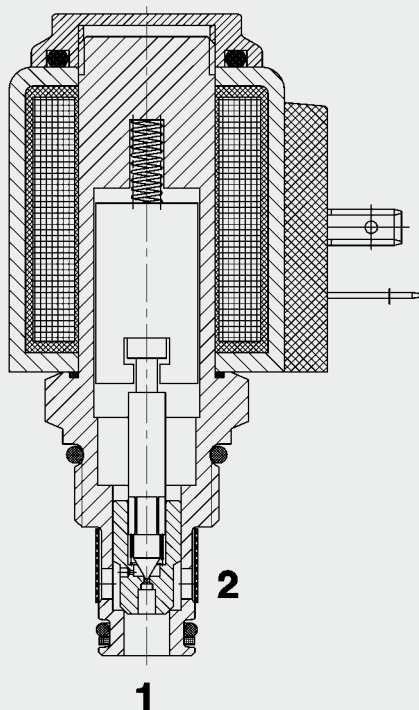
Operating pressure:	max. 350 bar
Nominal flow:	max. 110 l/min
Internal leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /min at 350 bar)
Media operating temperature range:	min. -30 °C to max. +100 °C
Ambient temperature range:	min. -30 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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:	\pm 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



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.

2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Closed Screen Filter **SAE-08 Cartridge – 350 bar** WS08Z-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

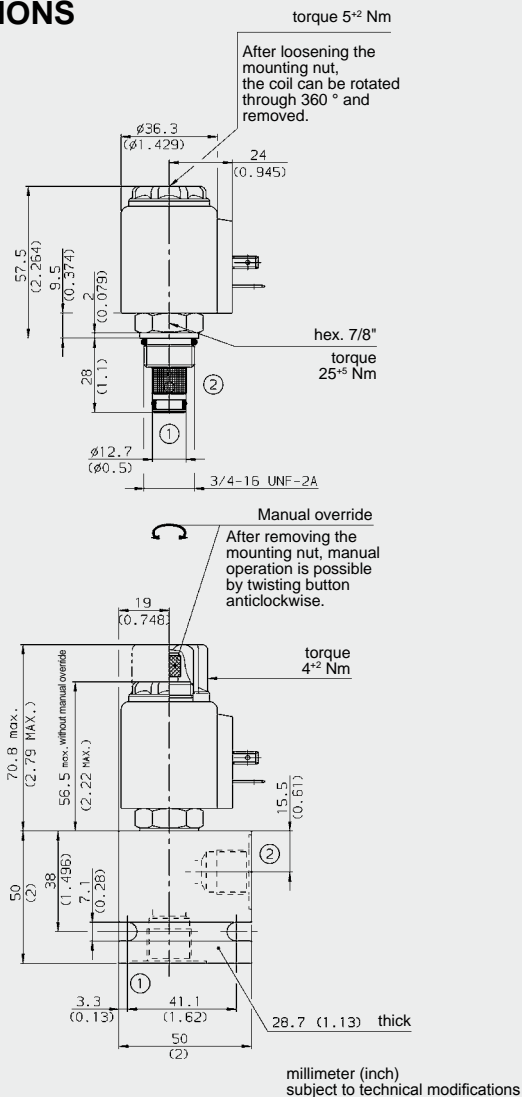
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 30 l/min
Leakage:	Leak-free (max. 5 drops \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Screen filter:	300 μ m 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:	\pm 15% of the nominal voltage
Response time:	Energized: approx. 35 ms De-energized: approx. 50 ms
Coil type:	Coil...-40-1836

DIMENSIONS



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

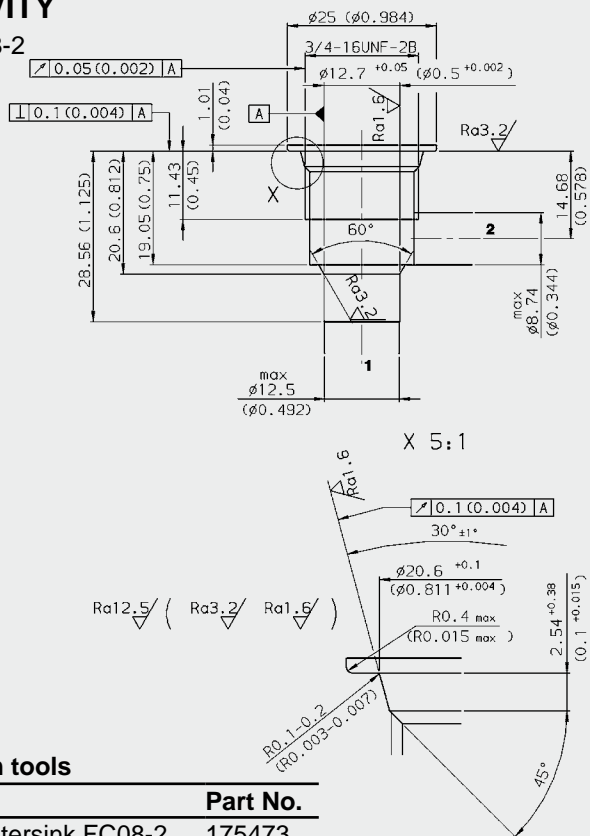
Other line bodies on request

Seal kits

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

CAVITY

FC08-2



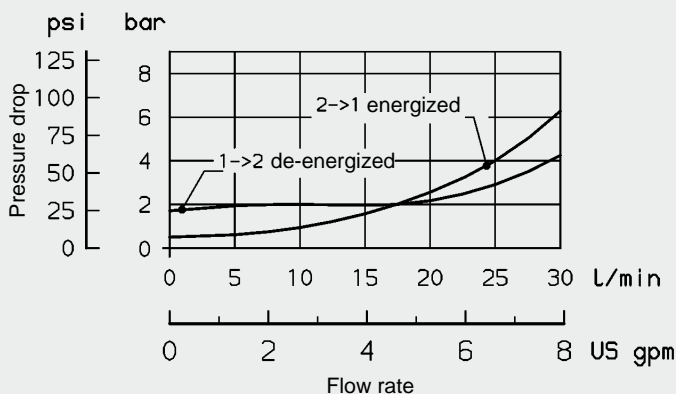
Form tools

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

millimeter (inch) subject to technical modifications

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$

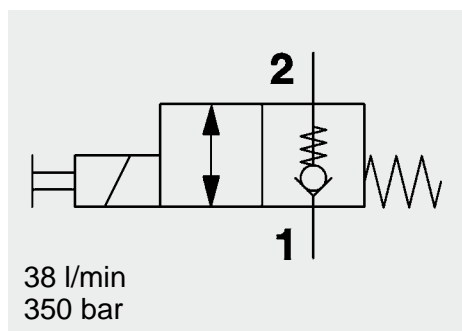


NOTE

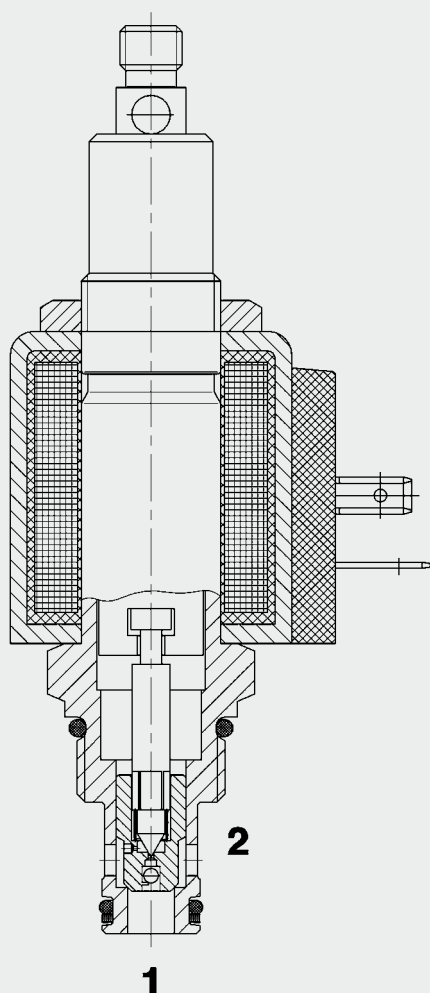
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FUNCTION



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

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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

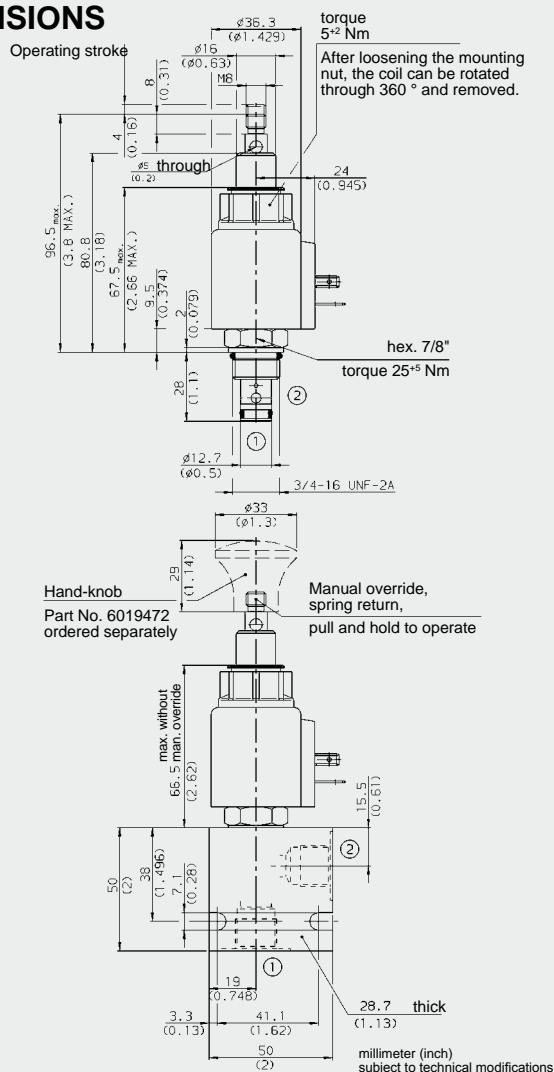
Electrical data:

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:	\pm 15% of the nominal voltage
Response time:	Energized: approx. 35 ms De-energized: approx. 50 ms
Coil type:	Coil...-40-1836

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.

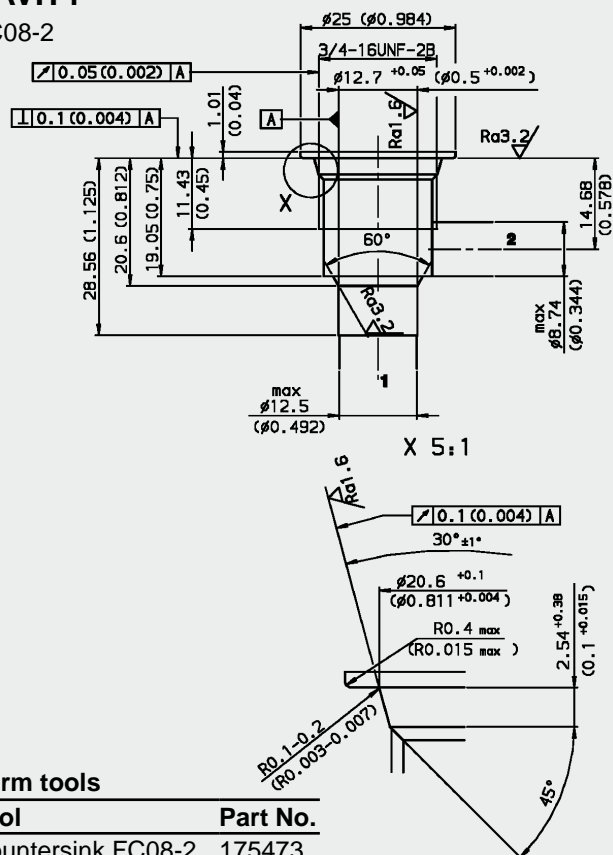
When energized the valve allows flow in both directions.

DIMENSIONS



CAVITY

FC08-2



Form tools

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

millimeter (inch)
subject to technical modifications

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:

$$12 = 12 \text{ V DC}$$

24 = 24 V DC
AC voltages (bridge rectifier built into the coil)

$$115 = 115 \text{ V AC}$$

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

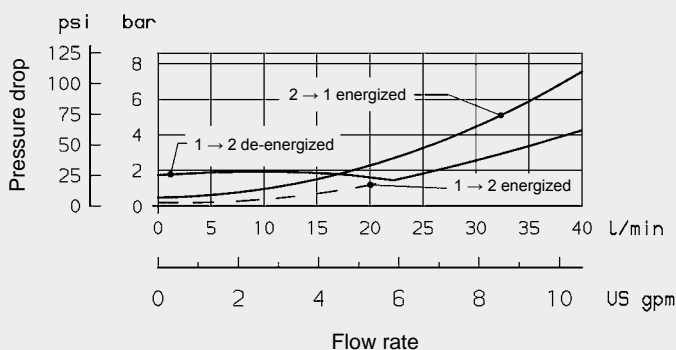
Other bodies on request

Seal kits

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

PERFORMANCE

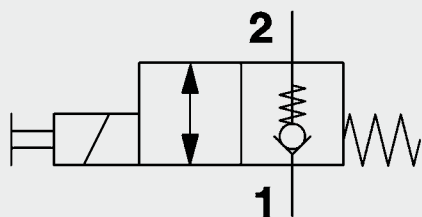
Measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



NOTE

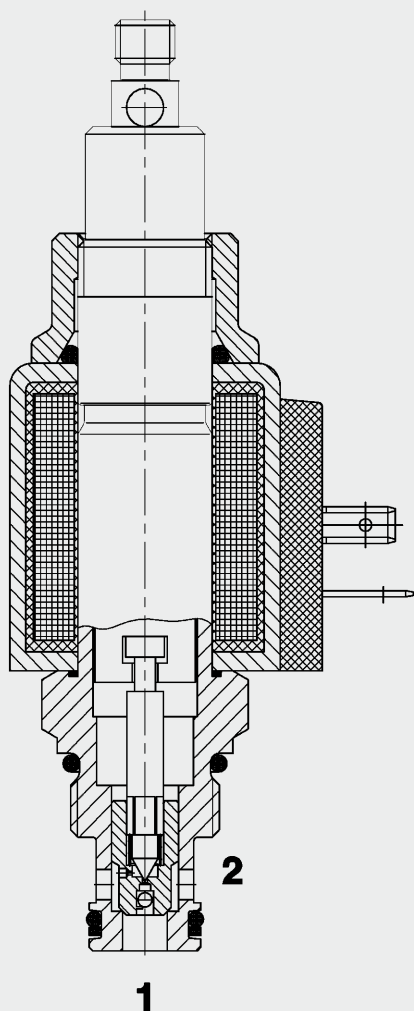
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Up to 40 l/min
Up to 350 bar

FUNCTION



2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Spring-Return Manual Override Normally Closed (Reverse Flow) Metric Cartridge Valve – 350 bar

WSM06020ZR-01J

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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

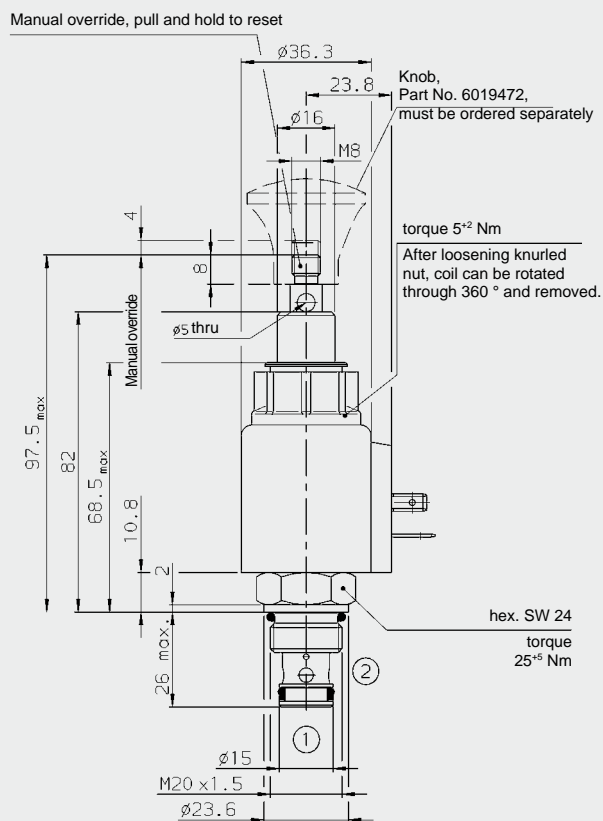
Electrical data

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:	\pm 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

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.

DIMENSIONS



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

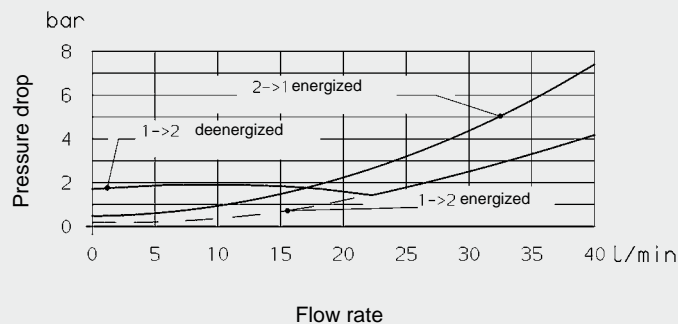
Other bodies on request

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



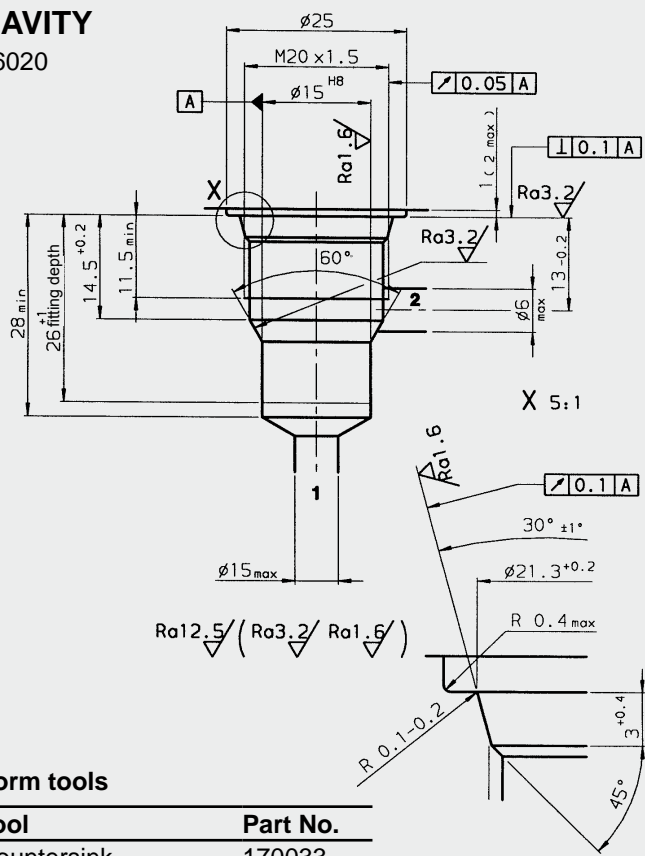
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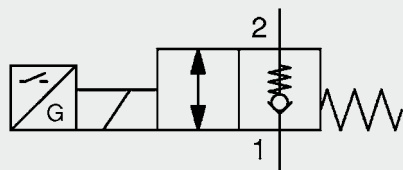
CAVITY

06020



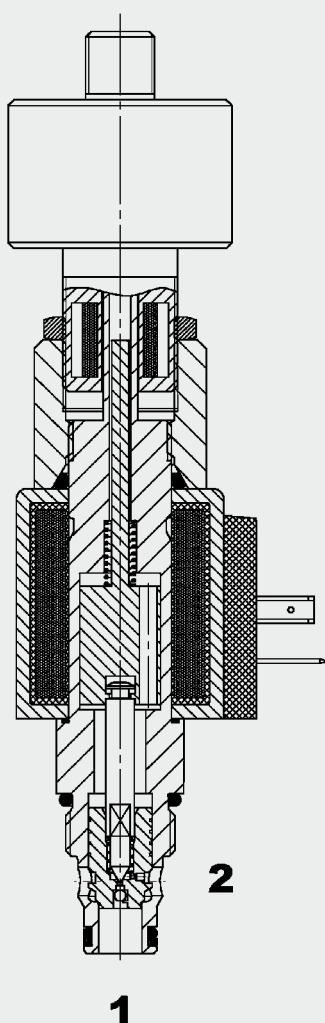
Form tools

Tool	Part No.
Countersink	170033
Reamer	1000768



Up to 40 l/min
Up to 350 bar

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.

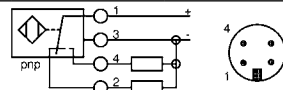
2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Normally Closed (Reverse Flow) With Electronic Switch Position Monitoring SAE-08 Cartridge – 350 bar WS08ZR-01E

FEATURES

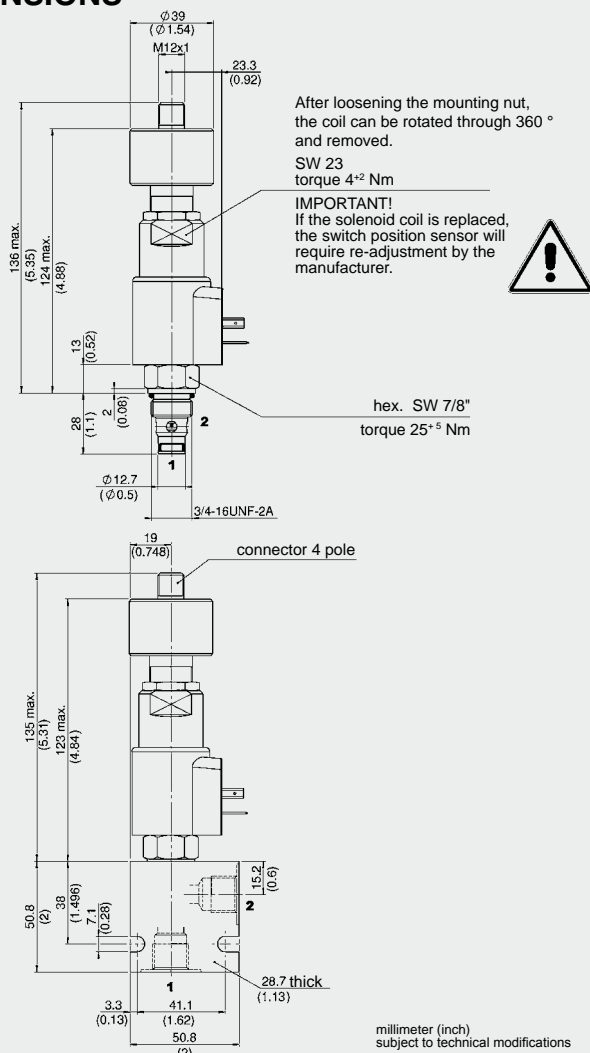
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure 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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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:	\leq 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



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

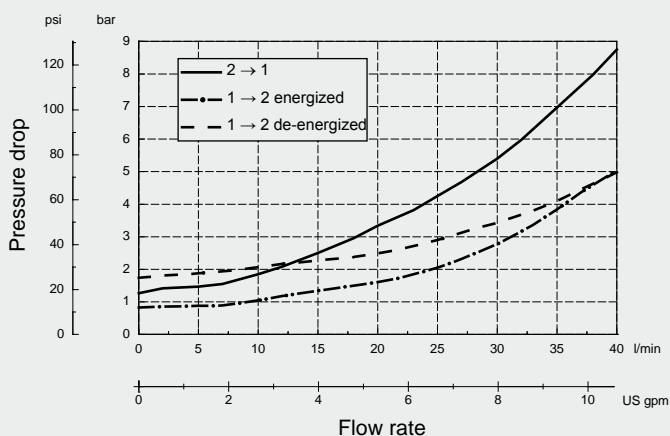
Other bodies on request

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



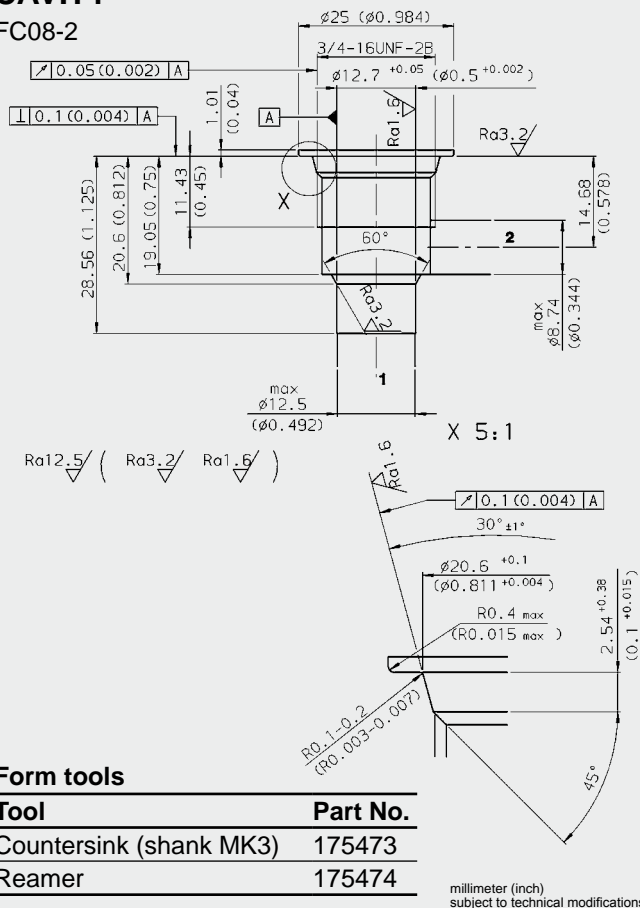
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CAVITY

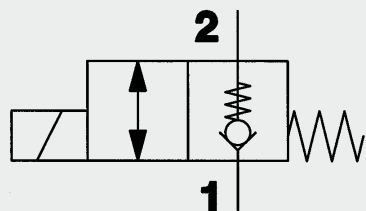
FC08-2



Form tools

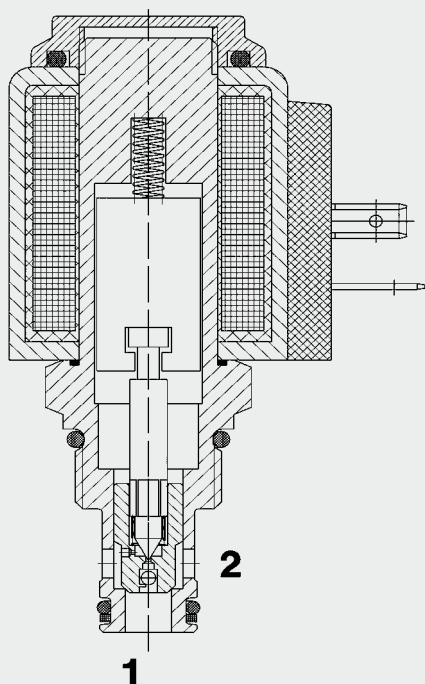
Tool	Part No.
Countersink (shank MK3)	175473
Reamer	175474

millimeter (inch)
subject to technical modifications



38 l/min
350 bar

FUNCTION



2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Closed (Reverse Flow) SAE-08 Cartridge – 350 bar

WS08ZR-01

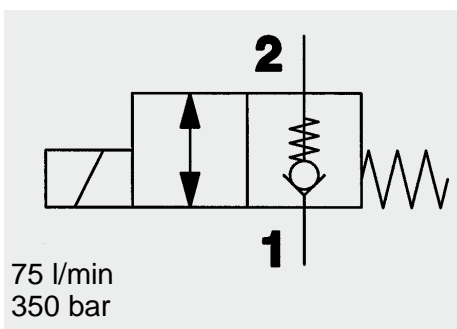
FEATURES

- 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

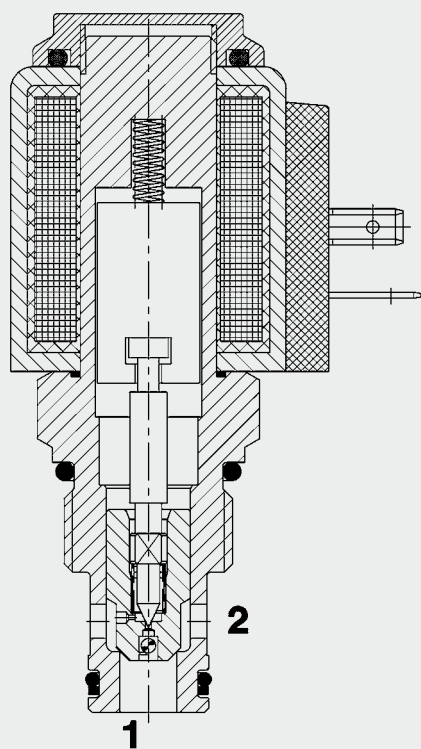
CHARACTERISTICS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 38 l/min	
Leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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	

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.



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.

2/2 Solenoid Directional Valve **UNF** Poppet Type Normally Closed (Reverse Flow) SAE-10 Cartridge – 350 bar WS10ZR-01

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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

After loosening mounting nut, coil can be rotated through 360° and removed.

$\varnothing 36.3$
($\varnothing 1.429$)

24
(0.945)

50
(2.36)
12
(0.472)
2
(0.079)

hex. 1"

torque 45⁺¹⁰ Nm

33
(1.298)

②

①

$\varnothing 15.88$
($\varnothing 0.625$)

7/8-14UNF-2A

22
(0.866)

After removing mounting nut, manual operation is possible by twisting button anticlockwise.

torque 4⁺² Nm

73.3 max.
(2.89 MAX.)

59 max. without M.O.
(2.32 MAX.)

18.8
(0.74)

55
(2.125)
38
(1.496)
7.1
(0.28)

②

①

5
(0.197)

45
(1.77)

55
(2.125)

32
(1.25) thick

millimeter (inch)
subject to technical modifications

[illegible]

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

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

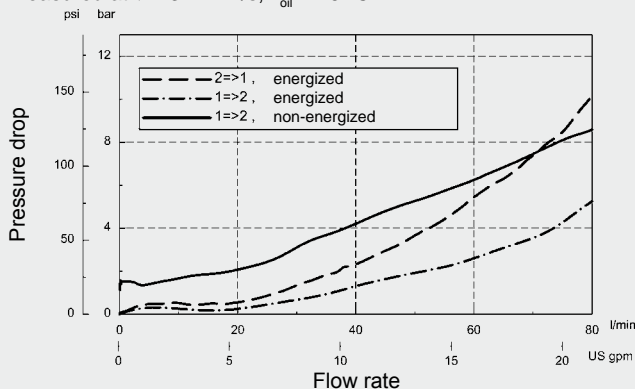
Coil connectors (type 40-1836) _____

Model code	Part No.
WS10ZR-01-C-N-24DG	3030604
WS10ZR-01-C-N-230AG	3043820
Other models on request	

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				

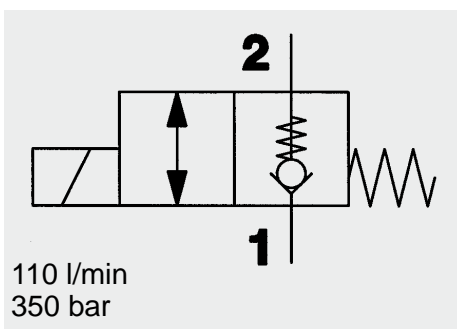
Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$

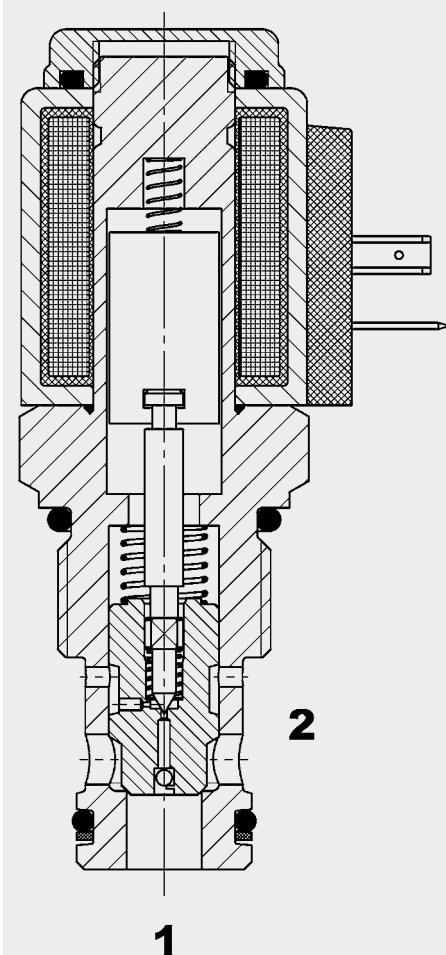


NOTE
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FUNCTION



2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Closed (Reverse Flow) SAE-12 Cartridge – 350 bar

WS12ZR-01

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 15% of the nominal voltage	
Response time:	Energized:	approx. 30 ms
	De-energized:	approx. 70 ms
Coil type:	Coil...-40-1836	

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.

torque 4¹/₂ Nm

After loosening the mounting nut, the coil can be rotated through 360° and removed.

hex. 1 1/4"

torque 100⁻⁸ Nm

Manual override, option 'M'

After removing the mounting nut, manual operation is possible by twisting button anticlockwise.

torque 4¹/₂ Nm

50.8 thick (2)

millimeter (inch) subject to technical modification

Technical drawing of a countersink tool. The drawing shows a side view and a detail view of the tool's tip. The main view includes dimensions for the overall length (47 min), the countersink depth (20.6 min), the countersink angle (60°), and the countersink radius (Ra3.2). The tool has a maximum diameter of 20.5 (ø0.807) and a maximum length of 25.55 (1.006). The drawing also shows a detail view of the tool's tip with a 30° angle and a maximum diameter of 29.2 (ø1.150). The detail view includes a 45° angle and a maximum diameter of 29.2 (ø1.150). The drawing also shows a detail view of the tool's tip with a 30° angle and a maximum diameter of 29.2 (ø1.150). The drawing also shows a detail view of the tool's tip with a 30° angle and a maximum diameter of 29.2 (ø1.150).

Form tools

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

millimeter (inch)
subject to technical modifications

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

Model code	Part No.
WS12ZR-01-C-N-24DG	3157869
WS12ZR-01-C-N-230AG	3157867

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				

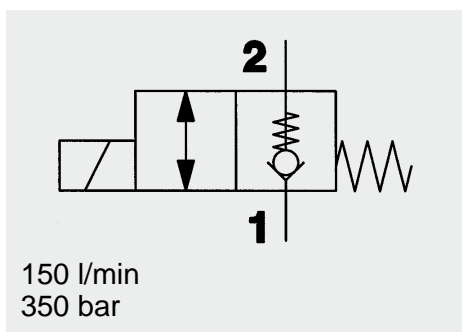
Code	Material	Part No.
FS122-N SEAL KIT	NBR	3071298
FS122-V SEAL KIT	FKM	3071299

Figure 10 is a line graph showing Pressure drop (psi and bar) versus Flow rate (m/min) for a 1000 ft. long 1000 ft. diameter pipe. The graph includes three data series: 2 => 1 (solid line), 1 => 2 (dashed line with dots), and 1 => 2 energized (dashed line). The x-axis represents Flow rate from 0 to 120 m/min, and the y-axis represents Pressure drop from 0 to 180 psi (0 to 13 bar). The 2 => 1 curve shows the highest pressure drop, followed by 1 => 2, and then 1 => 2 energized.

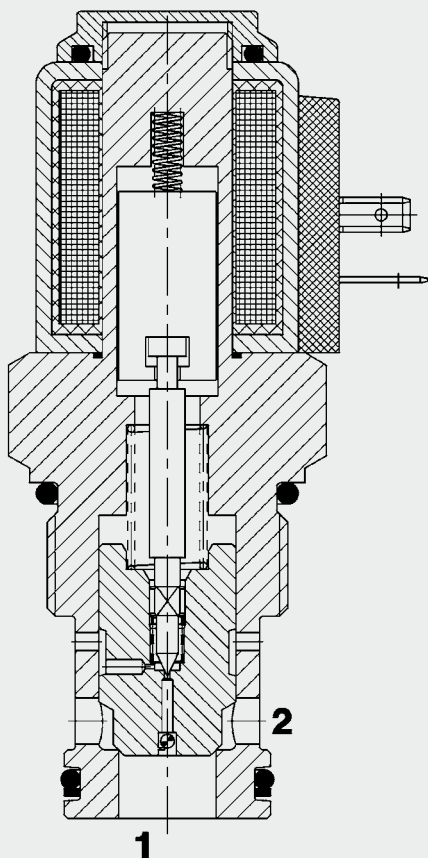
Flow rate (m/min)	2 => 1 (psi)	1 => 2 (psi)	1 => 2 energized (psi)
0	0	0	0
10	10	15	10
20	15	20	15
30	20	25	20
40	25	30	25
50	35	35	30
60	45	40	35
70	55	45	40
80	65	50	45
90	75	55	50
100	85	60	55
110	95	65	60
120	105	70	65

NOTE
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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.

2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Closed (Reverse Flow) SAE-16 Cartridge – 350 bar WS16ZR-01

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 15% of the nominal voltage	
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 70 ms
Coil type:	Coil...-40-1836	

Technical drawing of a mechanical part, likely a reamer, showing front and side views with dimensions and tolerances.

Front View Dimensions:

- Overall length: 45.84 (1.844)
- Section 1: Length 35.5 (1.4), Diameter $\phi 28.19$ (max), Tolerance $(\phi 1.110)$
- Section 2: Length 19.05 (0.750), Diameter $\phi 28.6^{+0.05}$, Tolerance $(\phi 1.126^{+0.002})$
- Section 3: Length 24.61 (0.969), Diameter $\phi 19.05$ (max), Tolerance $(\phi 0.75)$
- Section 4: Length 1.02 (0.04), Diameter $\phi 1.6$
- Section 5: Length 1.5/16-12UN-2B
- Section 6: Length 0.05 (0.002), Diameter $\phi 0.05$
- Section 7: Length 1.5/16-12UN-2B
- Section 8: Length 0.05 (0.002), Diameter $\phi 0.05$

Side View Dimensions:

- Overall length: 35.5 (1.4)
- Section 1: Length 19.05 (0.750), Diameter $\phi 28.19$ (max), Tolerance $(\phi 1.110)$
- Section 2: Length 24.61 (0.969), Diameter $\phi 19.05$ (max), Tolerance $(\phi 0.75)$
- Section 3: Length 1.02 (0.04), Diameter $\phi 1.6$
- Section 4: Length 1.5/16-12UN-2B
- Section 5: Length 0.05 (0.002), Diameter $\phi 0.05$
- Section 6: Length 1.5/16-12UN-2B
- Section 7: Length 0.05 (0.002), Diameter $\phi 0.05$

Form tools

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

millimeter (inch)
subject to technical modifications

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

Model code	Part No.
WS16ZR-01-C-N-24DG	3049536
WS16ZR-01-C-N-230AG	3049568

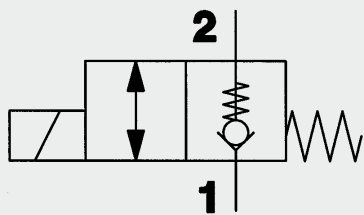
Code	Part No.	Material	Ports	Pressure
FH162-SB8	3032496	Steel, zinc-plated	G1	420 bar
FH162-AB8	3037193	Aluminium, anodized	G1	250 bar
Other housings on request				

Code	Material	Part No.
FS162-N SEAL KIT	NBR	3052427
FS162-V SEAL KIT	FKM	3051758

Flow rate (l/min)	Flow rate (US gpm)	2 → 1 energized (bar)	1 → 2 energized (bar)	1 → 2 de-energized (bar)
0	0	1.5	1.0	1.0
40	10	2.5	1.5	1.5
80	20	5.5	1.8	1.8
120	30	10.0	2.5	2.5
160	40	11.5	3.5	3.5

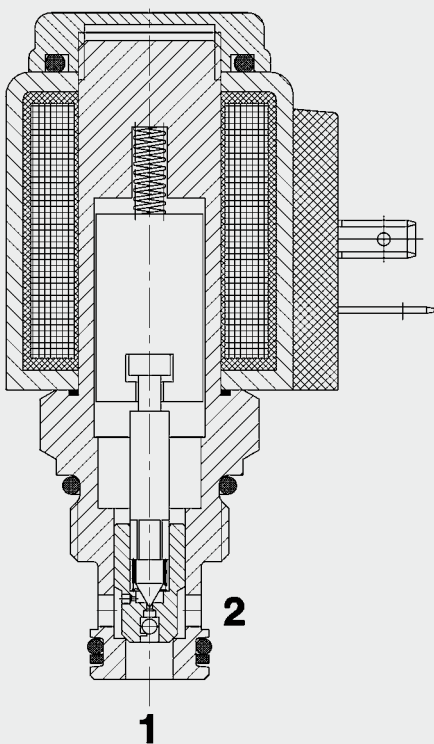
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Up to 40 l/min
Up to 350 bar

FUNCTION



When the solenoid coil is not energized, the valve is closed from port 2 to port 1. 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.

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Closed (Reverse Flow) Metric Cartridge Valve – 350 bar

WSM06020ZR-01

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

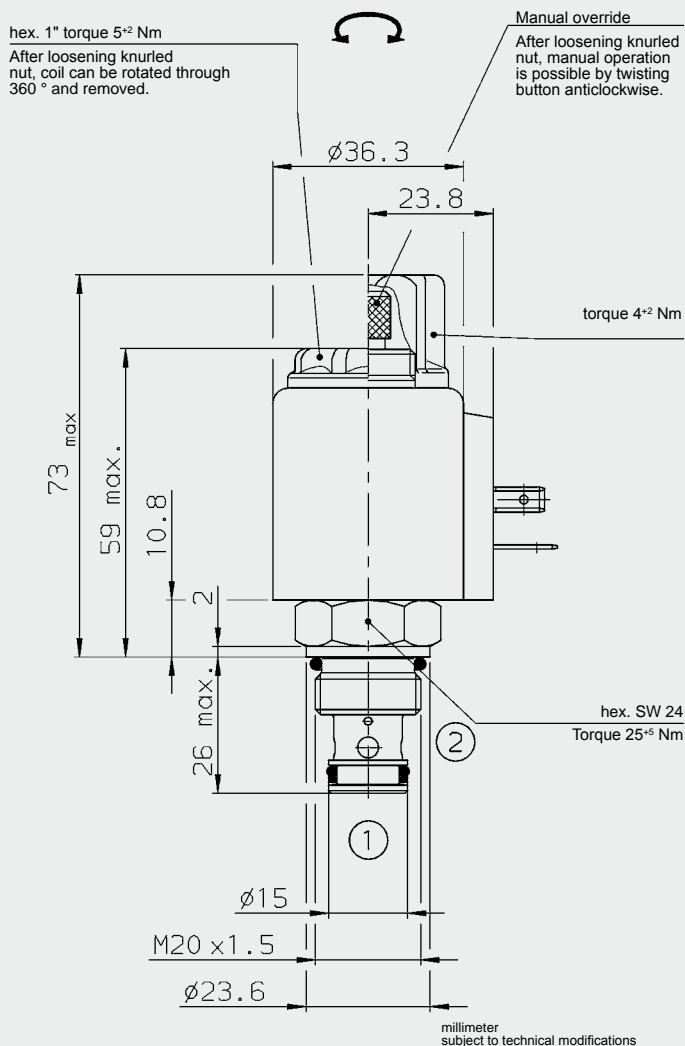
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 40 l/min
Internal leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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



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

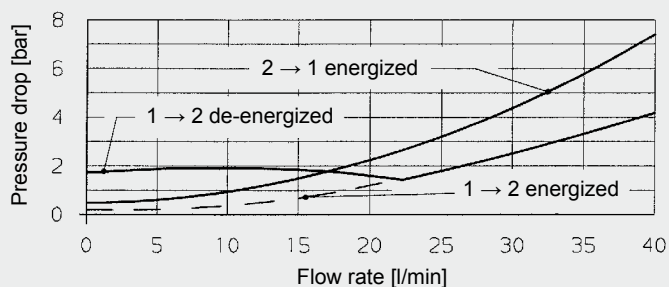
Other housings on request

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



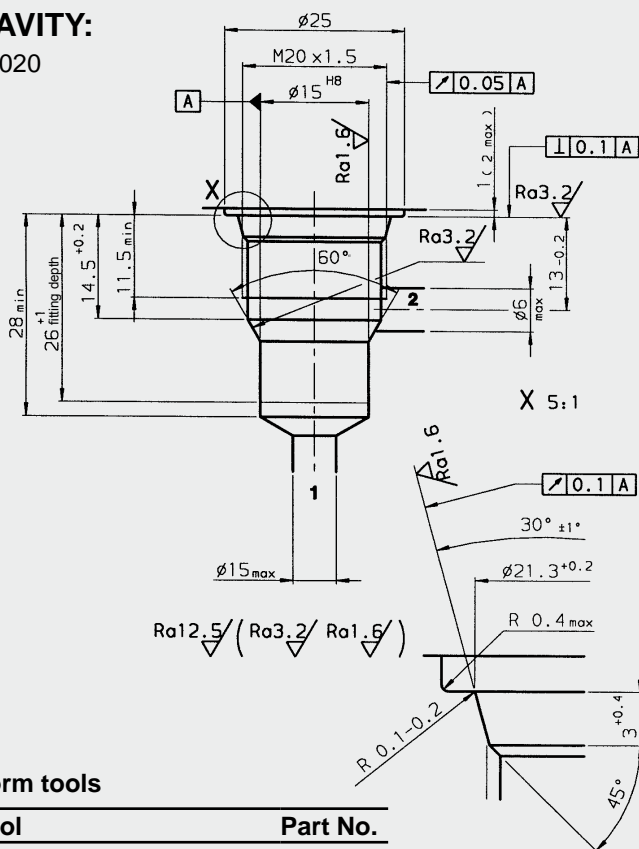
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CAVITY:

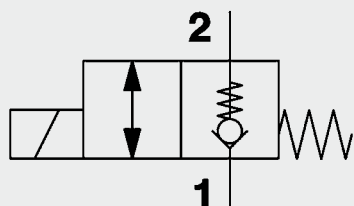
06020



Form tools

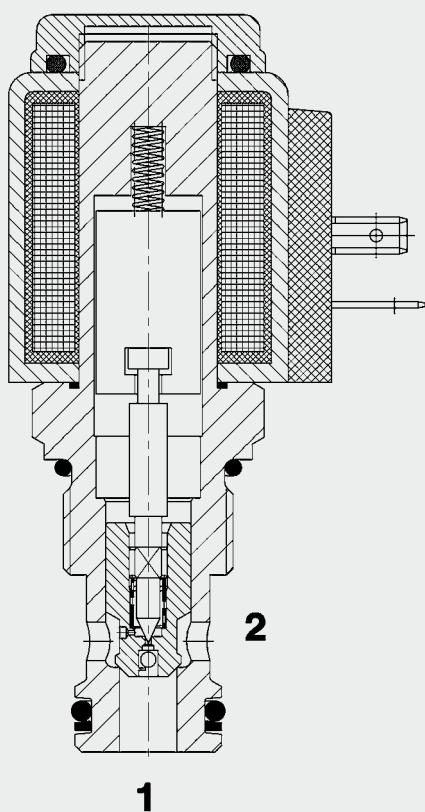
Tool	Part No.
Countersink (shank MK3)	170033
Reamer (shank MK2)	1000768

millimeter
subject to technical modifications



Up to 75 l/min
Up to 350 bar

FUNCTION



2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Closed (Reverse Flow) Metric Cartridge Valve – 350 bar

WSM10120ZR-01

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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

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.

DIMENSIONS

torque 5⁺² Nm

After loosening the mounting nut, the coil can be rotated through 360° and removed

Manual override

After loosening knurled nut, manual operation is possible by twisting button anticlockwise.

torque 4⁺² Nm

hex. SW32
torque 45⁺¹⁰ Nm

M22 x 1.5

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

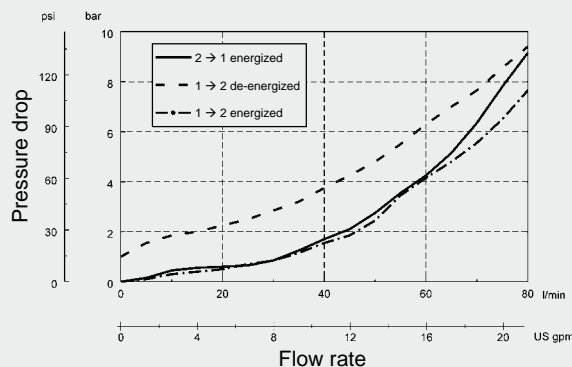
For other connection housings, see brochure no. E 5.252.

Seal kits

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

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



Note

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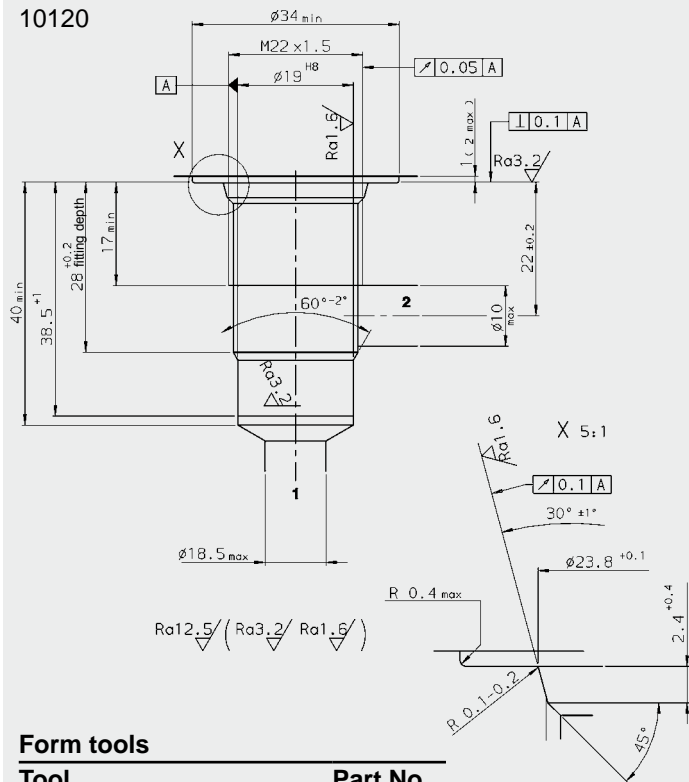
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E-Mail: flutec@hydac.com

CAVITY

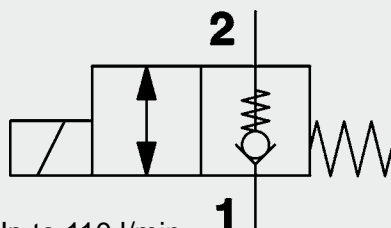
10120



Form tools

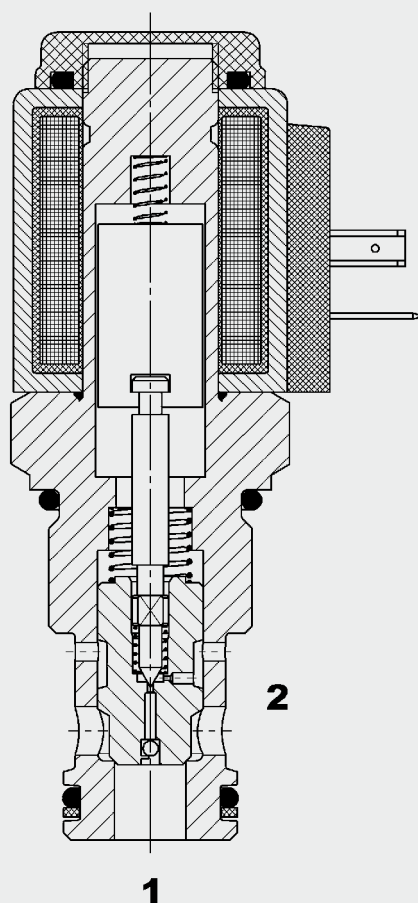
Tool	Part No.
Countersink (shank MK3)	170418
Reamer (shank MK2)	1014206

millimeter
subject to technical modifications



Up to 110 l/min
Up to 350 bar

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.

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Closed (Reverse Flow) Metric Cartridge - 350 bar

WSM12120ZR

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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

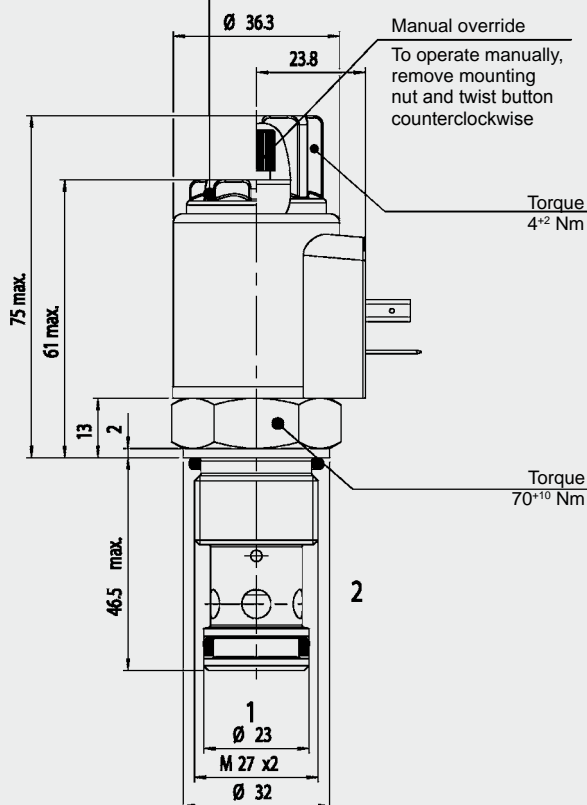
Electrical data

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:	\pm 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



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

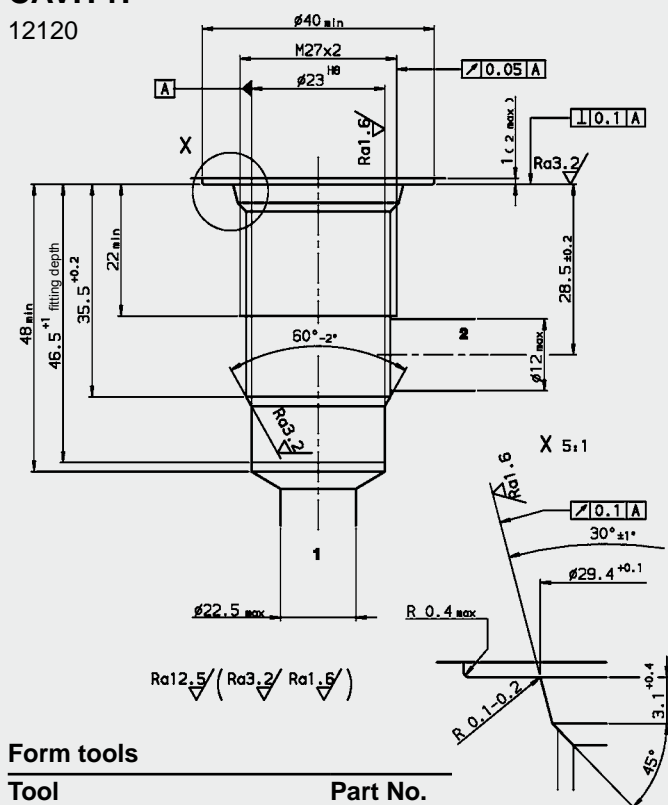
Code	Part No.	Material	Ports	Pressure
R12120-10X-01	396708	Steel, zinc-plated	G 3/4	max. 420 bar
R12120-10X-02	396707	Steel, zinc-plated	M27 x 2	max. 420 bar

Seal kits

Code	Material	Part No.
SEAL KIT 12120-NBR	NBR	3454001
SEAL KIT 12120-FKM	FKM	3454002

CAVITY:

12120



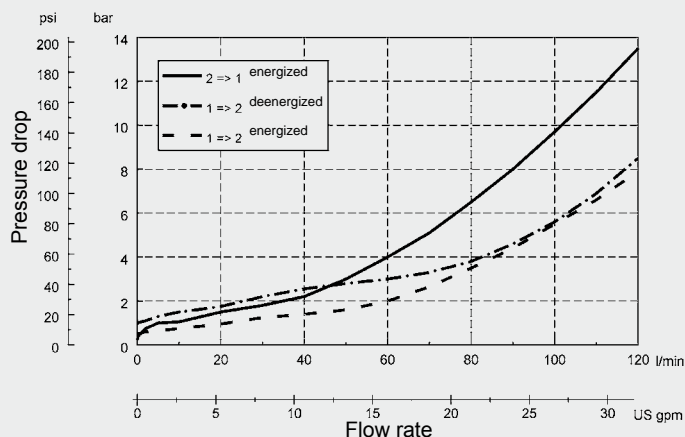
Form tools

Tool	Part No.
Countersink (shank MK3)	172880
Reamer	1014207

millimeter subject to technical modifications

PERFORMANCE

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

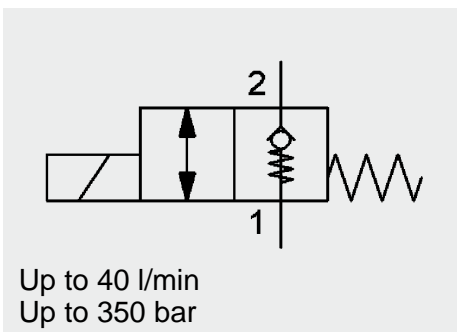


NOTE

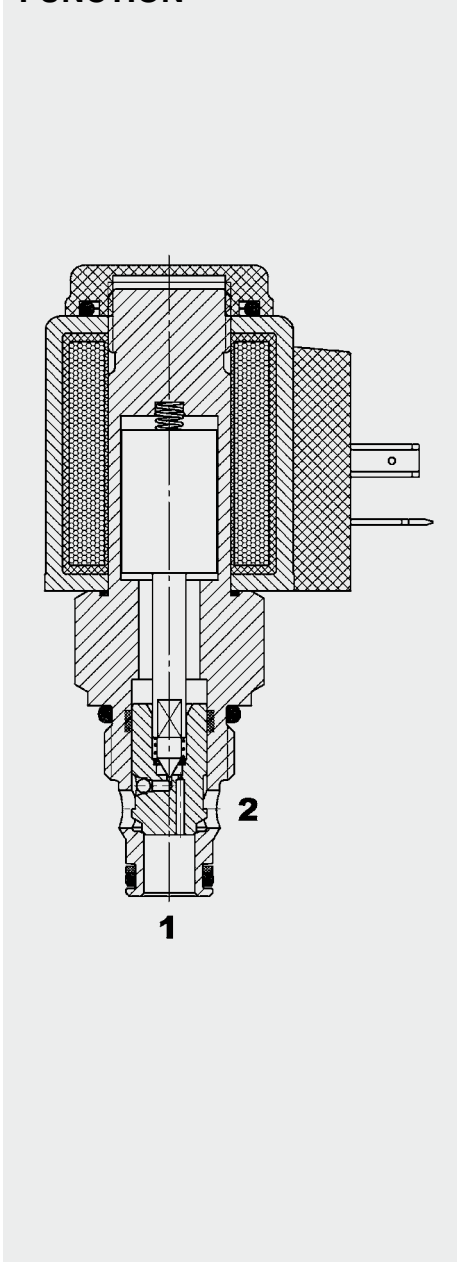
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FUNCTION



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.

2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot Operated, Normally Closed SAE-08 Cartridge – 350 bar WS08BR-31

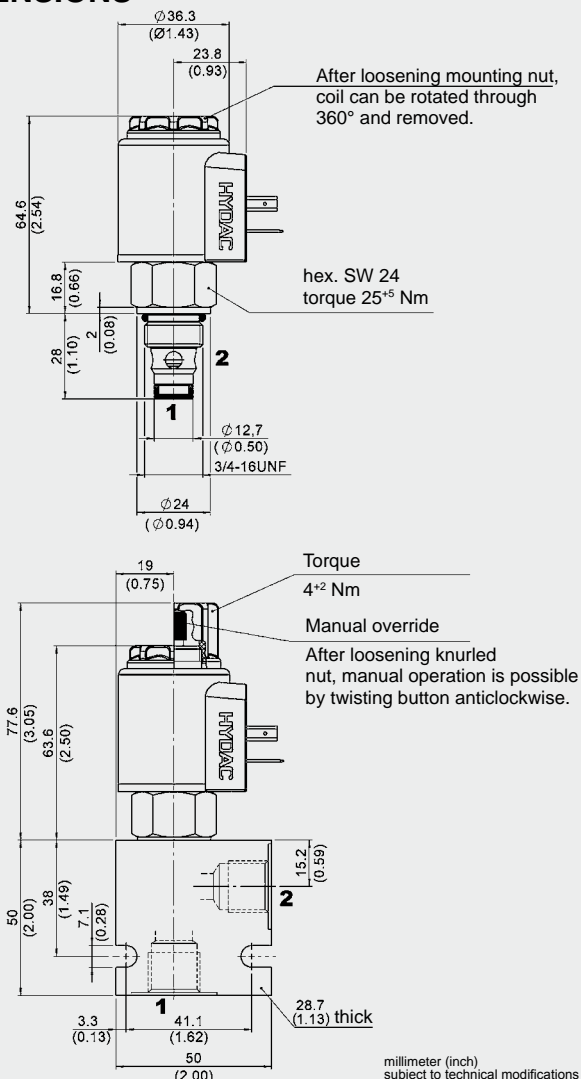
FEATURES

- 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

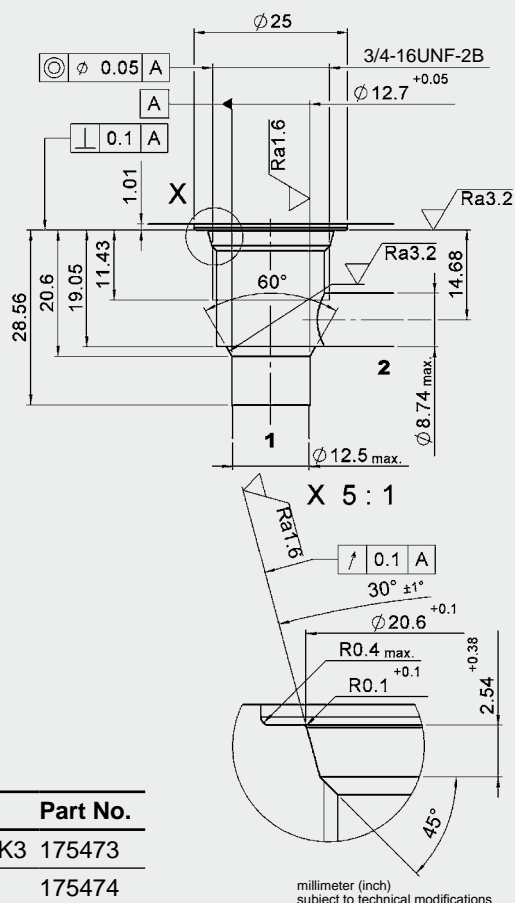
Operating pressure:	max. 350 bar
Nominal flow:	max. 40 l/min
Internal leakage:	Leakage-free
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm²/s to 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

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
DL = leadwires (2), 475mm long

DN = Deutsch connection, axial

AC: AG = DIN connection to
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

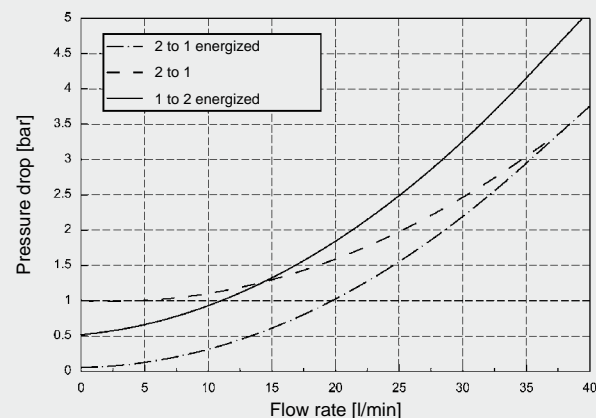
Other bodies on request

Seal kits

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

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$

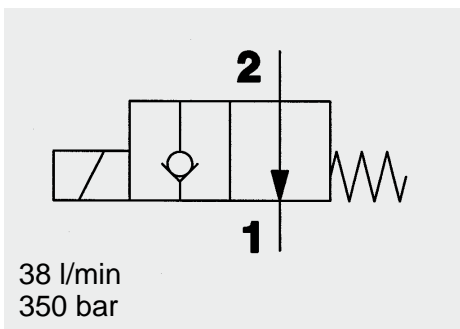


NOTE

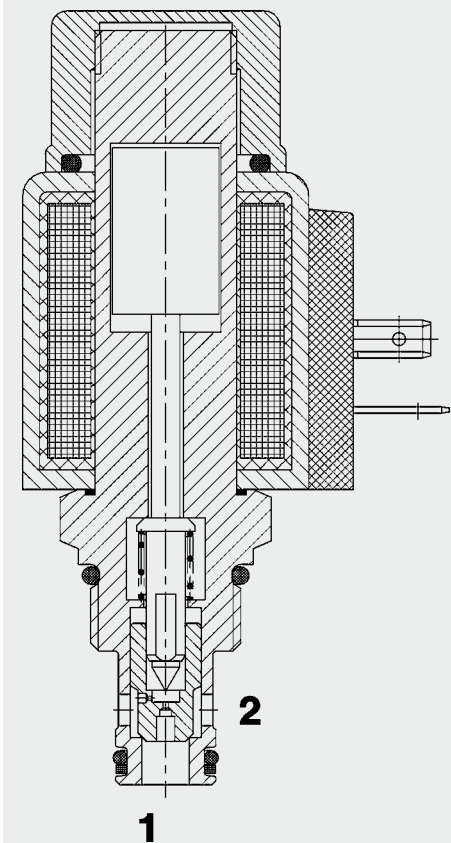
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FUNCTION



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).

2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Open **SAE-08 Cartridge – 350 bar** WS08Y-01

FEATURES

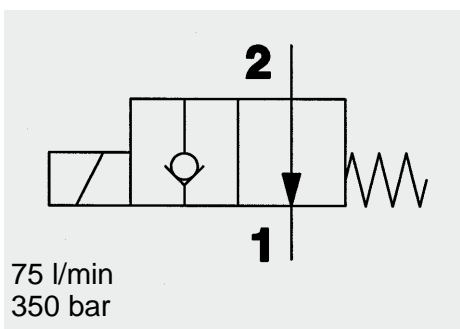
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

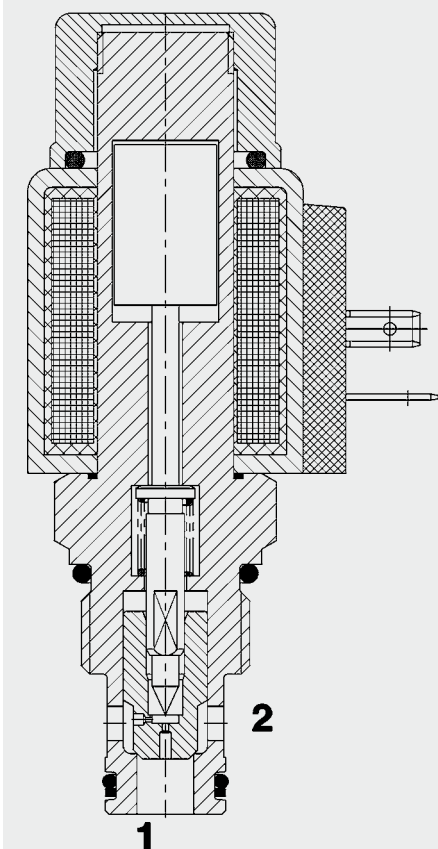
Operating pressure:	max. 350 bar
Nominal flow:	max. 38 l/min
Leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /min at 350 bar)
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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:	\pm 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



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).

2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Open **SAE-10 Cartridge – 350 bar** WS10Y-01

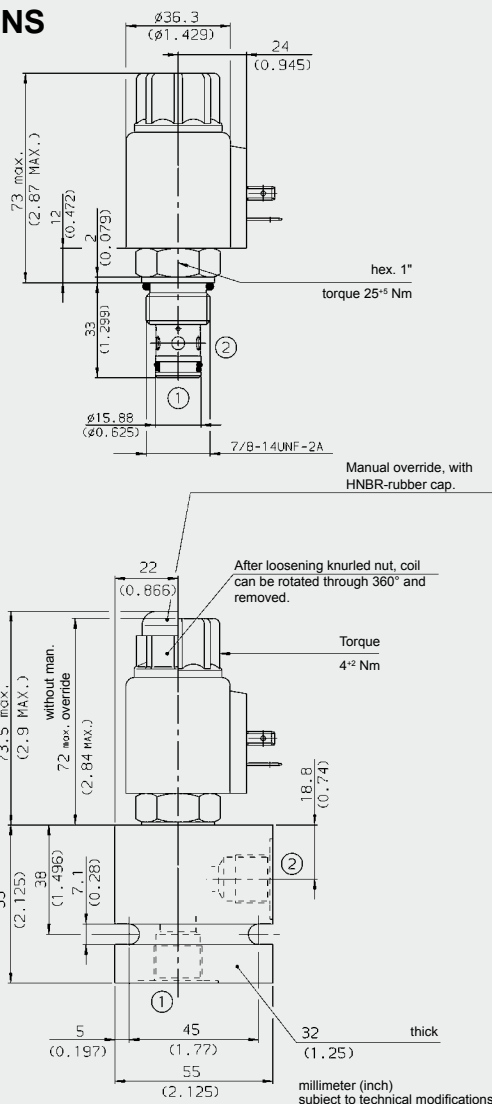
FEATURES

- 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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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



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

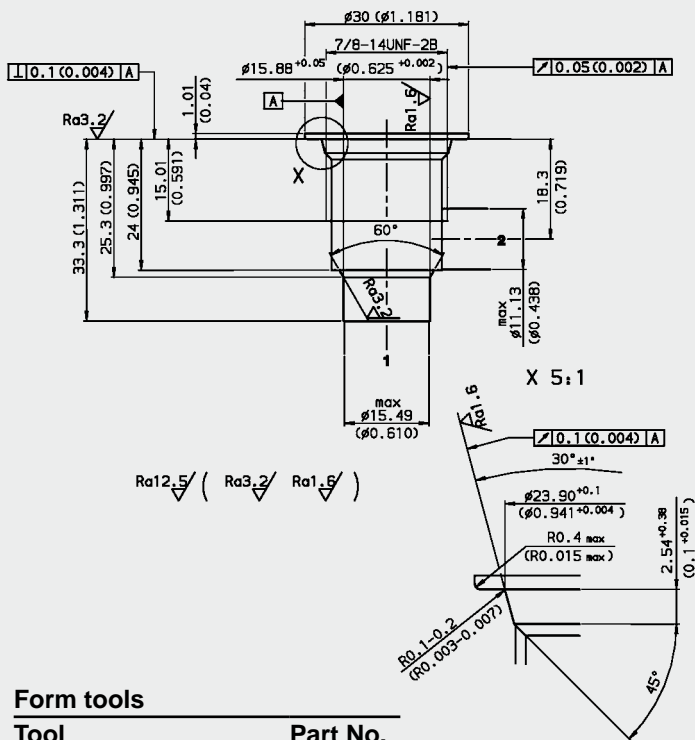
Other housings on request

Seal kits

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

CAVITY

FC10-2



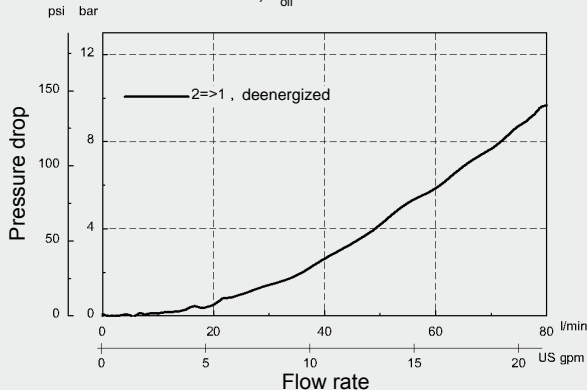
Form tools

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

millimeter (inch)
subject to technical modifications

PERFORMANCE

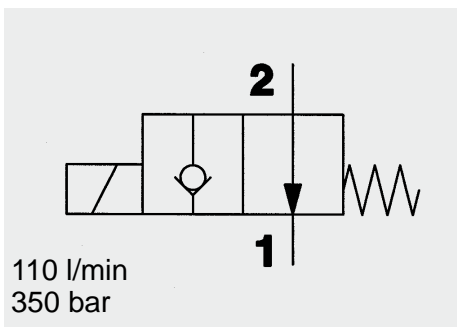
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



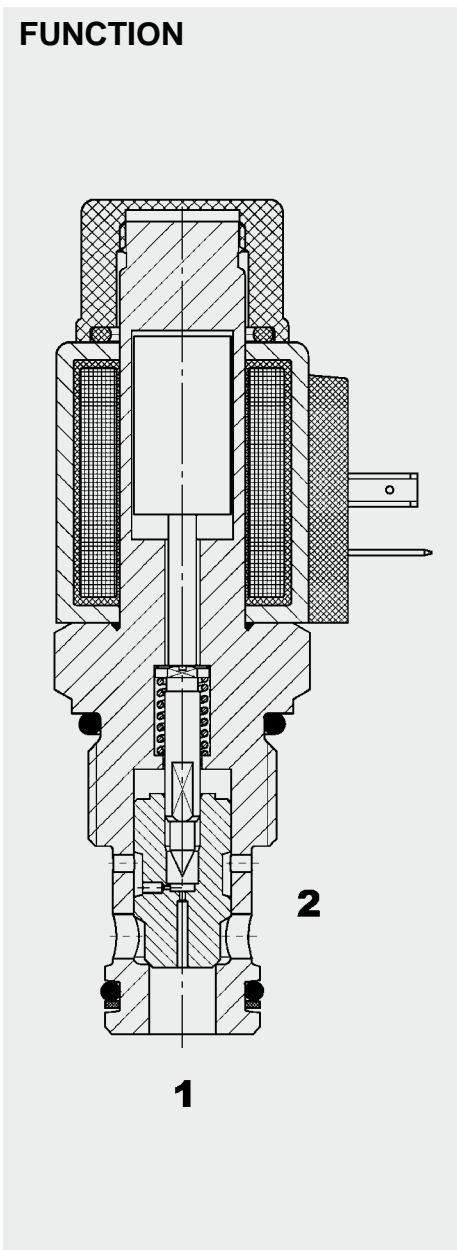
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FUNCTION



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).

2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Open **SAE-12 Cartridge – 350 bar** WS12Y-01

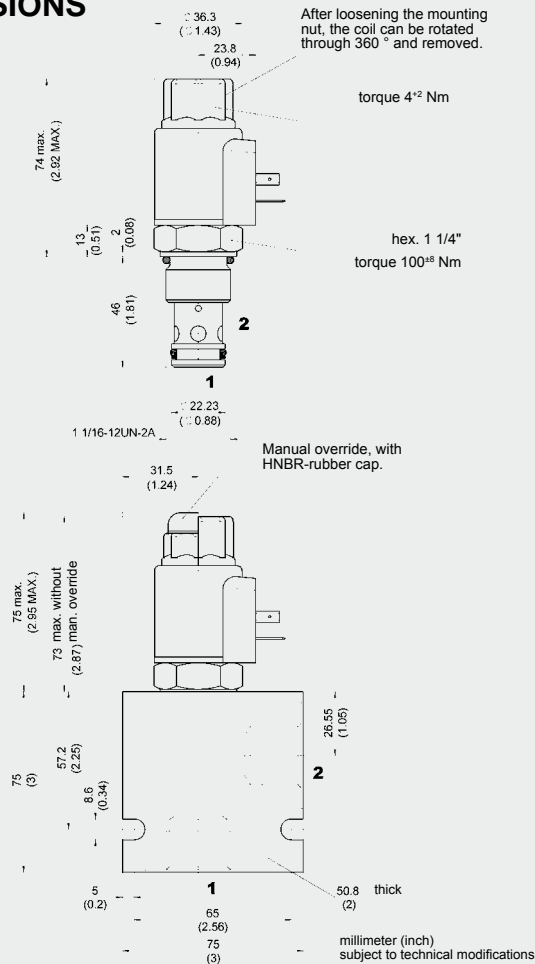
FEATURES

- 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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 15% of the nominal voltage	
Response time:	Energized:	approx. 90 ms
	De-energized:	approx. 25 ms
Coil type:	Coil...-40-1836	

DIMENSIONS



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

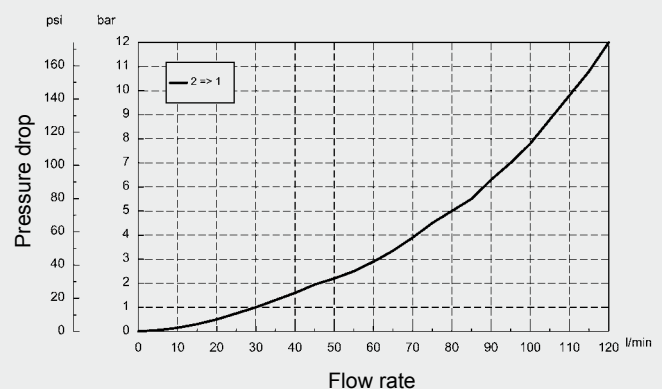
Other line bodies on request

Seal kits

Code	Material	Part No.
FS122-N SEAL KIT	NBR	3071298
FS122-V SEAL KIT	FKM	3071299

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



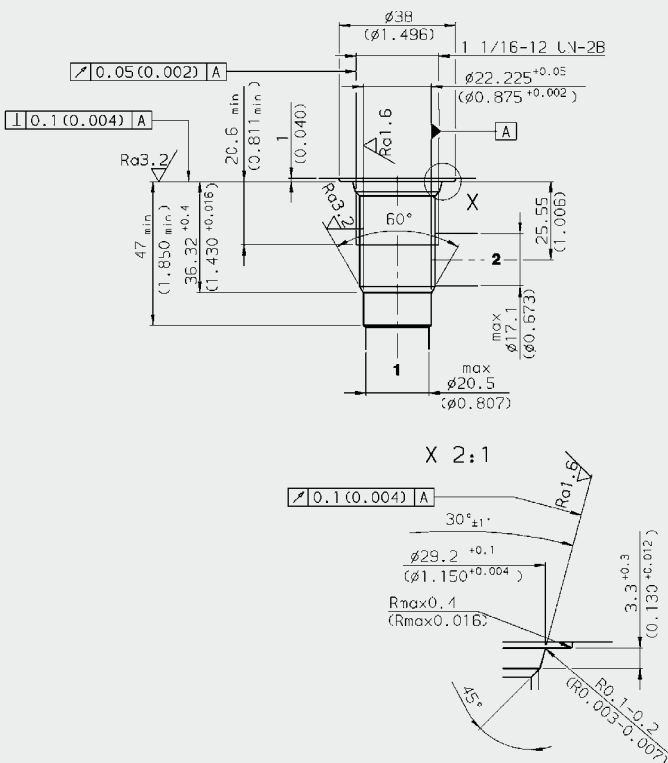
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CAVITY

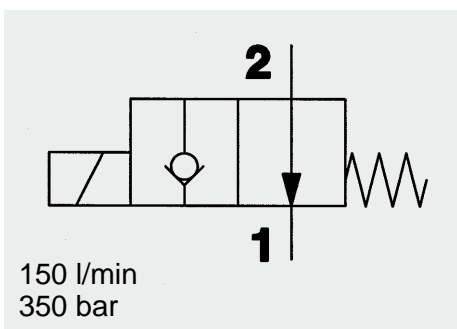
FC12-2



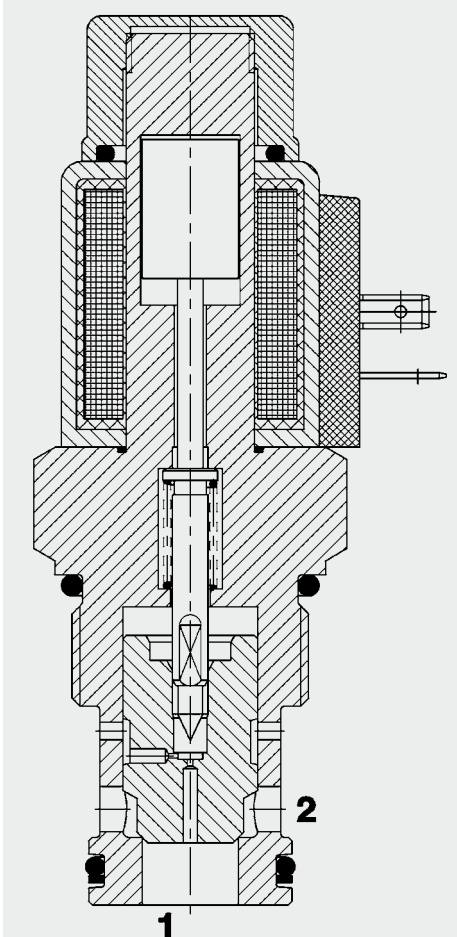
Form tools

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

millimeter (inch)
subject to technical modifications



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).

2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Normally Open SAE-16 Cartridge – 350 bar WS16Y-01

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 \approx 0,25 cm ³ /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 mm ² /s to 420 mm ² /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	

79 max.
(3.11 MAX.)

18
(0.709)

2
(0.079)

46.5
(1.831)

24
(0.945)

hex. 1½"

Torque 130⁻¹⁴⁰ Nm
depending on operating pressure

②

①

Ø28.5
(Ø1.125)

1/5-16-12UN-2A

Manual override with
HNBR-rubber cap

31.5
(1.240)

After loosening knurled nut,
coil can be rotated through
360° and removed.

Torque
4^{Nm}

80.8 max.
(3.181 MAX.)

78.5 max. without
man. override
(3.09)

57.2
(2.252)

8.6
(0.339)

25.13
(0.989)

②

①

5
(0.197)

65
(2.559)

75
(3)

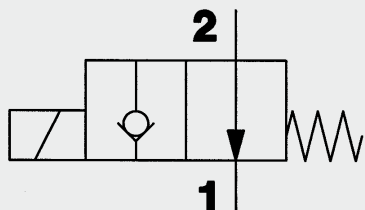
50.8 (2) thick

millimeter (inch)
subject to technical modification

Form tools

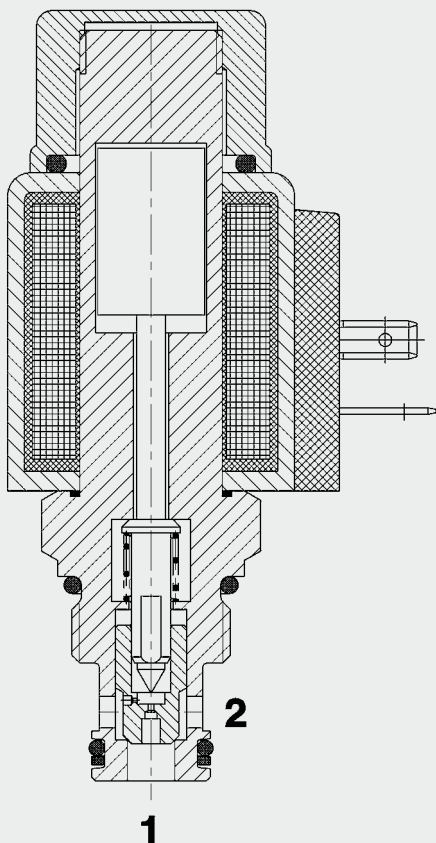
Tool	Part No.
Countersink FC16-2	176218
Reamer FC16-2	176219

millimeter (inch)
subject to technical modifications



Up to 40 l/min
Up to 350 bar

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).

2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Normally Open Metric Cartridge – 350 bar

WSM06020Y-01

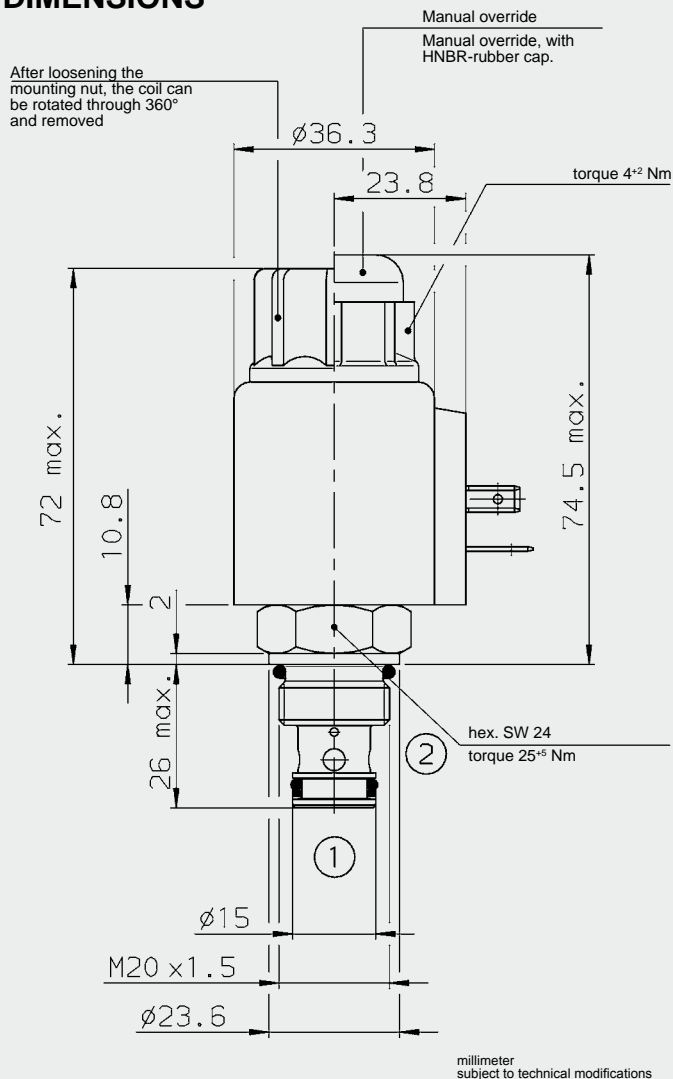
FEATURES

- 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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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



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

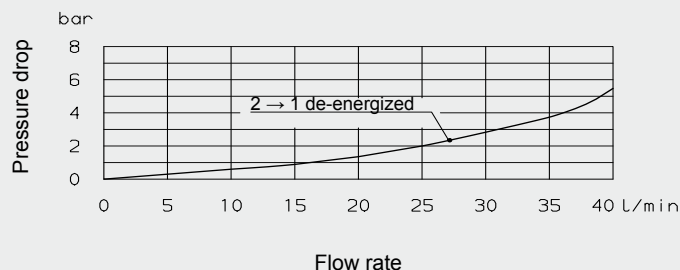
For other connection housings, see brochure no. E 5.252.

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



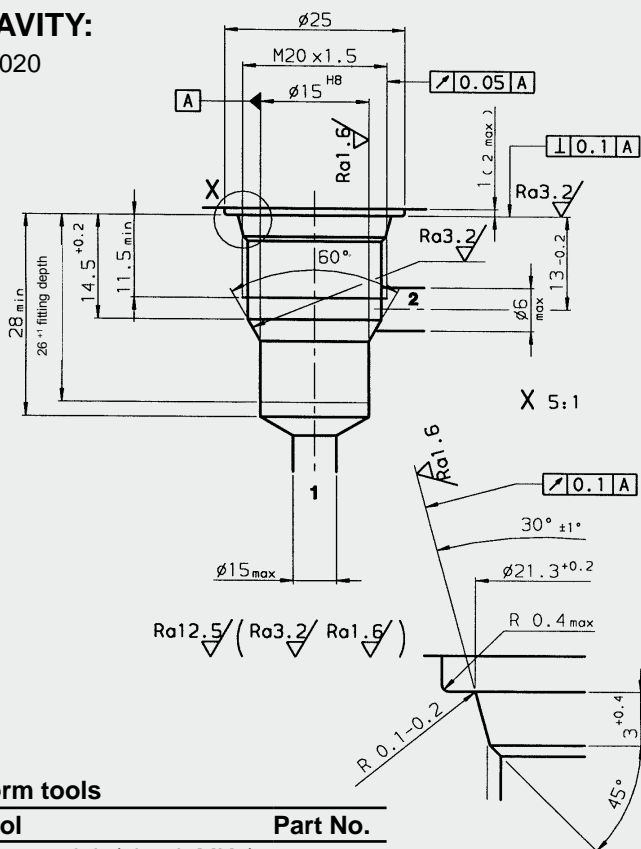
NOTE

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Subject to technical modifications.

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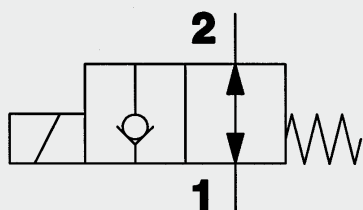
CAVITY:

06020



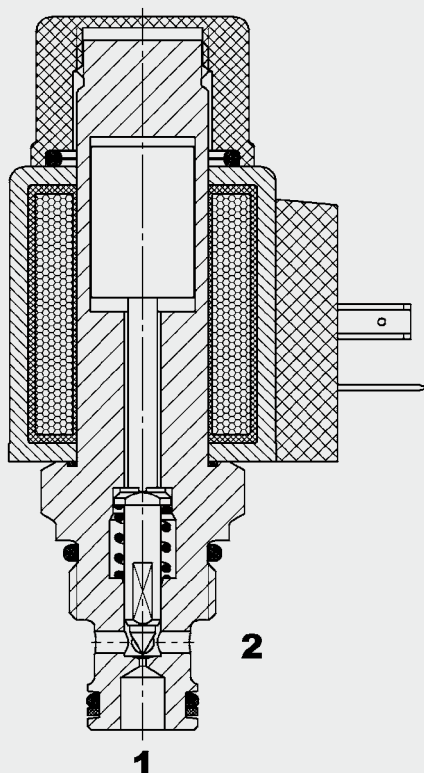
Form tools

Tool	Part No.
Countersink (shank MK3)	170033
Reamer (shank MK2)	1000768



Up to 3 l/min
Up to 350 bar

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).

2/2 Solenoid Directional Valve Poppet Type, Direct-Acting Normally Open Metric Cartridge Valve – 350 bar

WSM06020Y-70

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 mm ² /s to max. 420 mm ² /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

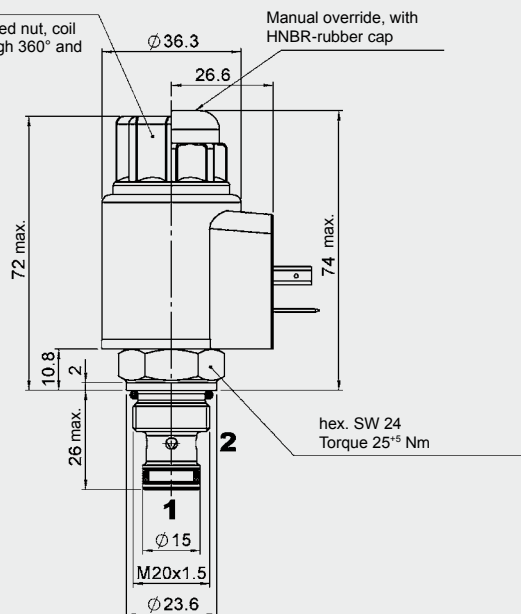
Electrical data:

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

torque 4⁺² Nm

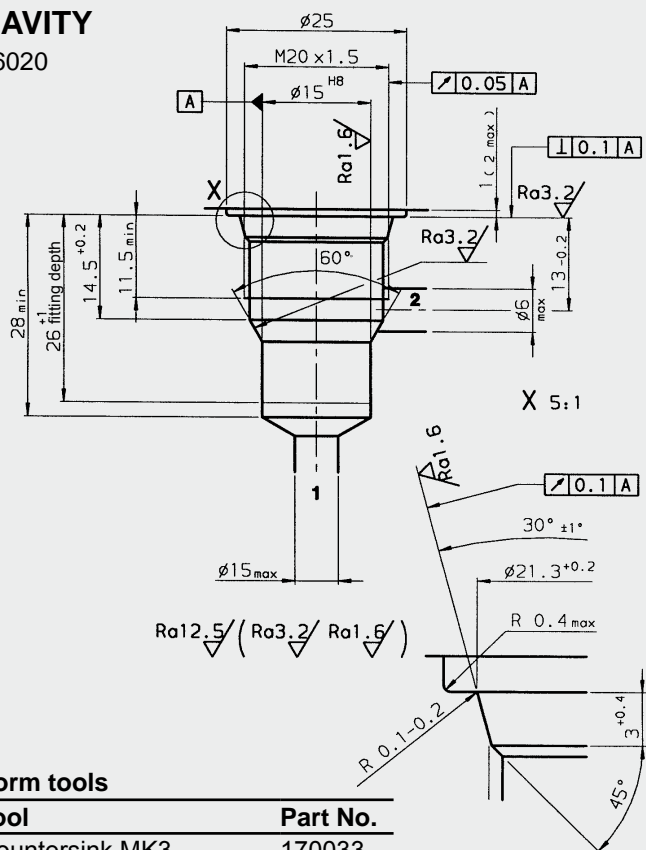
After loosening knurled nut, coil can be rotated through 360° and removed.



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

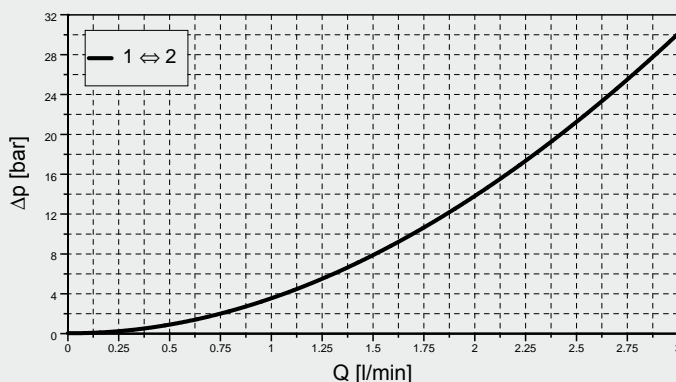
Code	Part No.	Material	Ports	Pressure
R06020-01X-01	275266	Steel, zinc-plated	G 3/8	420 bar

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$

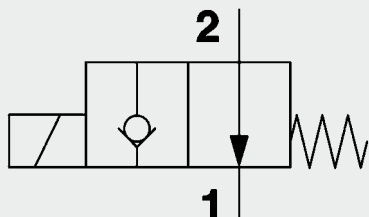


Note

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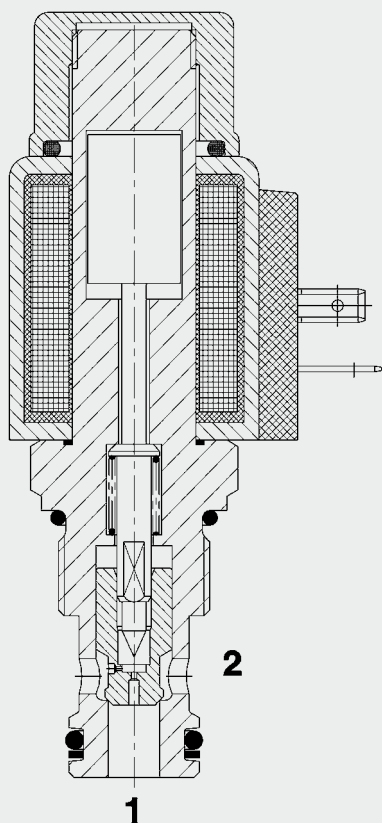
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E-Mail: flutec@hydac.com



Up to 75 l/min
Up to 350 bar

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).

2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Normally Open Metric Cartridge – 350 bar

WSM10120Y-01

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

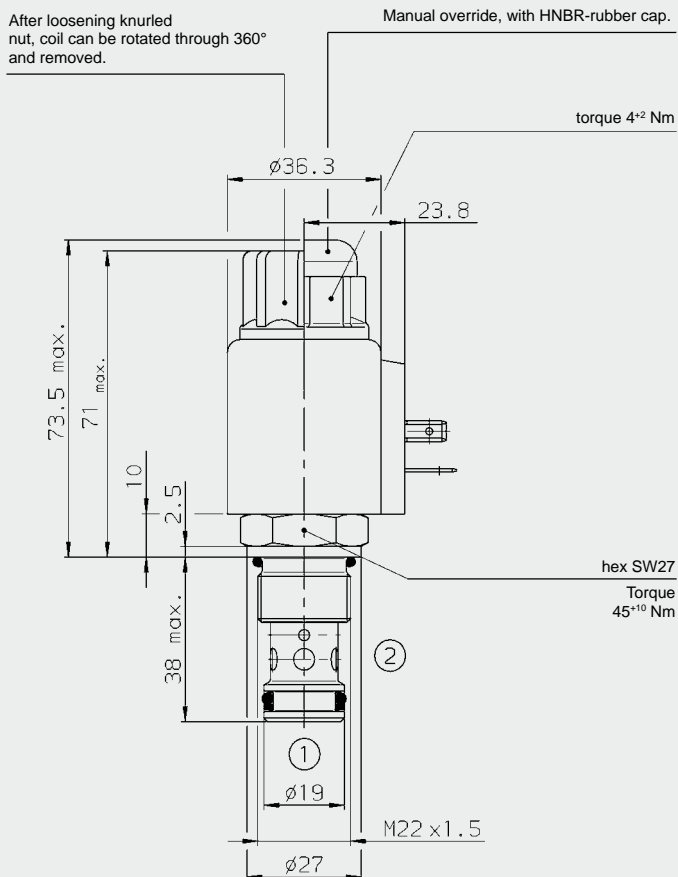
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 75 l/min
Internal leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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



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

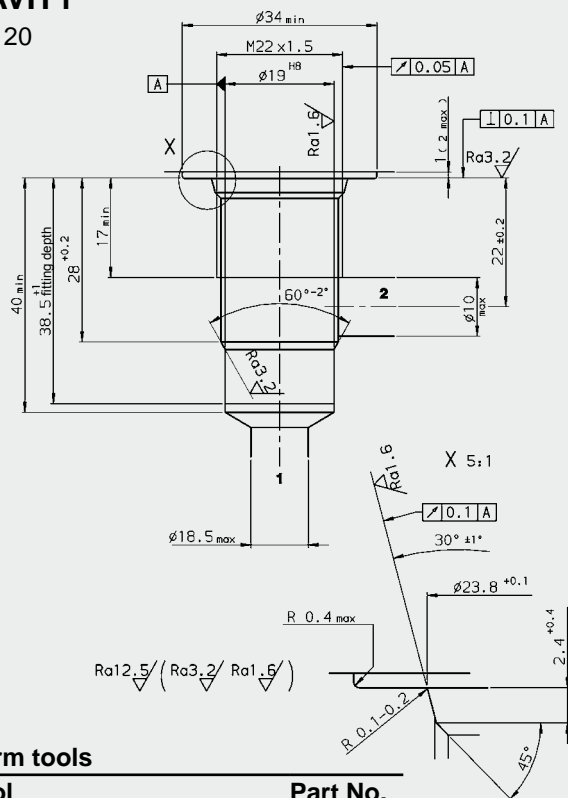
For other connection housings, see brochure no. E 5.252.

Seal kits

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

CAVITY

10120



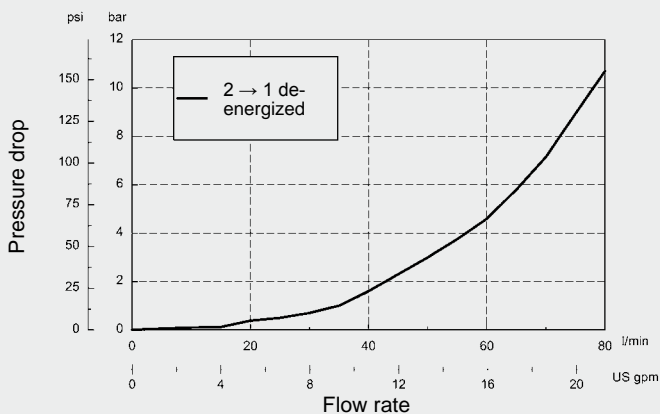
Form tools

Tool	Part No.
Countersink (shank MK3)	170418
Reamer (shank MK2)	1014206

millimeter
subject to technical modifications

PERFORMANCE

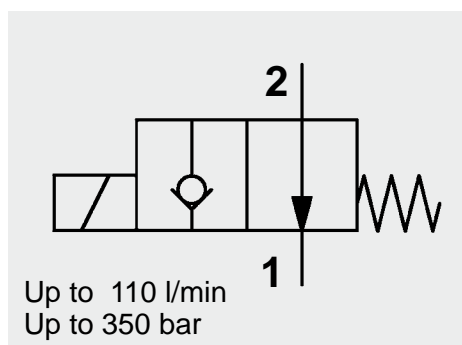
Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



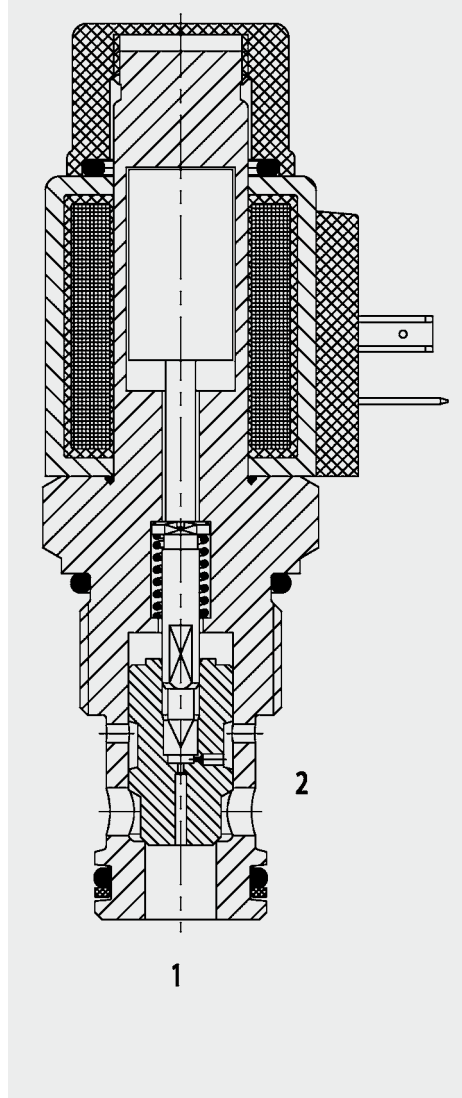
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FUNCTIONING



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).

2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Normally Open Metric Cartridge – 350 bar WSM12120Y

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

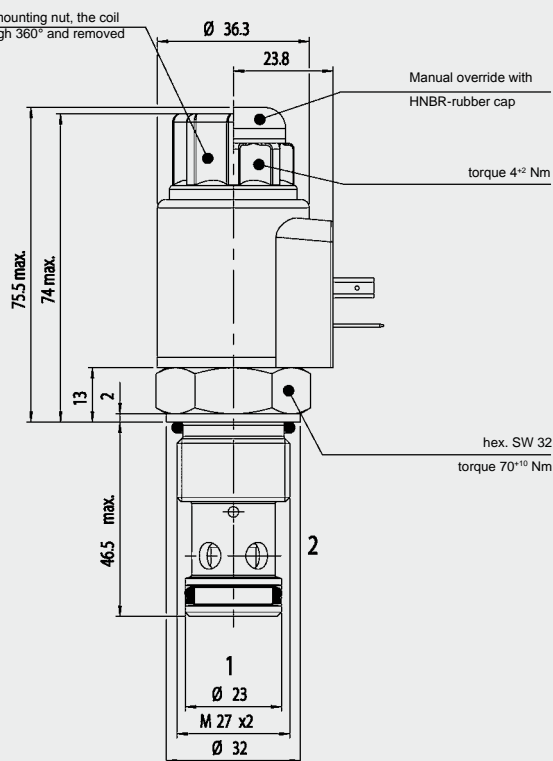
Operating pressure:	max. 350 bar
Nominal flow:	max. 110 l/min
Internal leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /min at 350 bar)
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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:	\pm 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

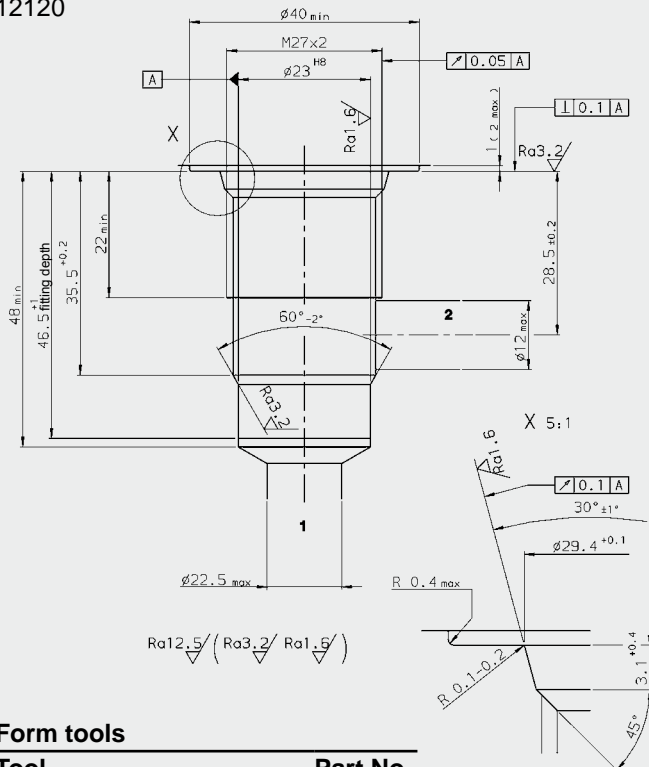
After loosening the mounting nut, the coil can be rotated through 360° and removed



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

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

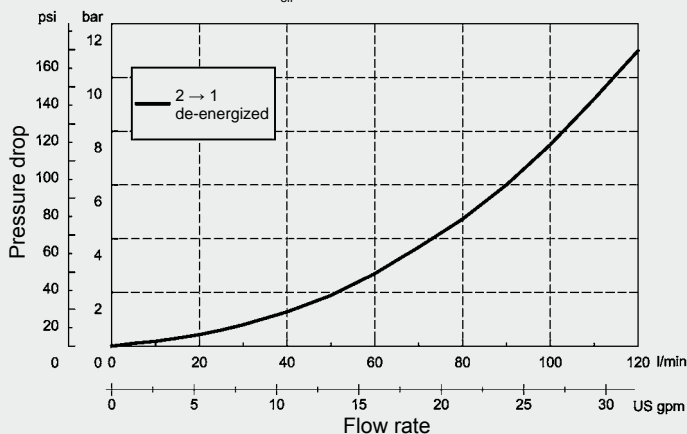
Code	Part No.	Material	Ports	Pressure
R12120-10X-01	396708	Steel, zinc-plated	G 3/4	max. 420 bar
R12120-01X-01	396707	Steel, zinc-plated	M 27 x 2	max. 420 bar

Seal kits

Code	Material	Part No.
SEAL KIT 12120-NBR	NBR	3454001
SEAL KIT 12120-FKM	FKM	3454002

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$

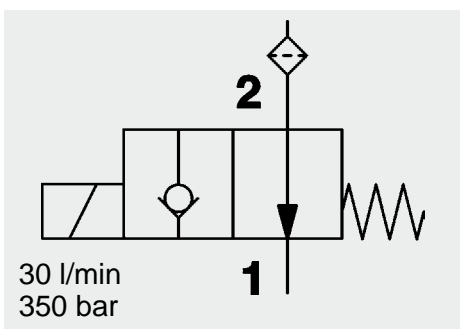


NOTE

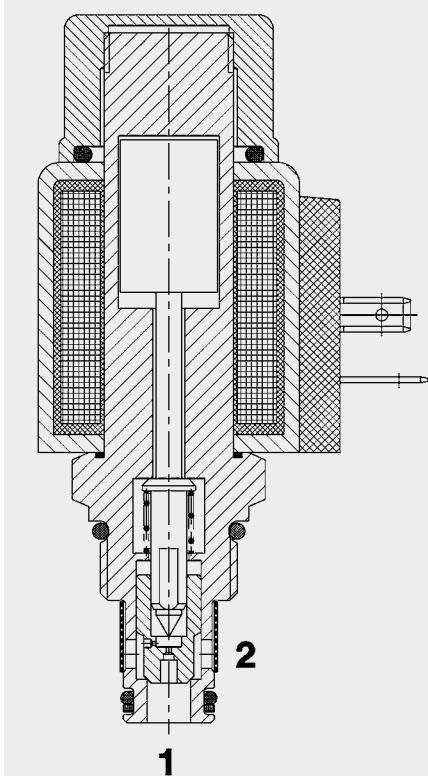
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Subject to technical modifications.

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FUNCTION



When de-energized, there is free flow through the valve from port 2 to 1. Flow from port 1 to 2 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).

2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Open Screen Filter **SAE-08 Cartridge – 250 bar** WS08Y-30

FEATURES

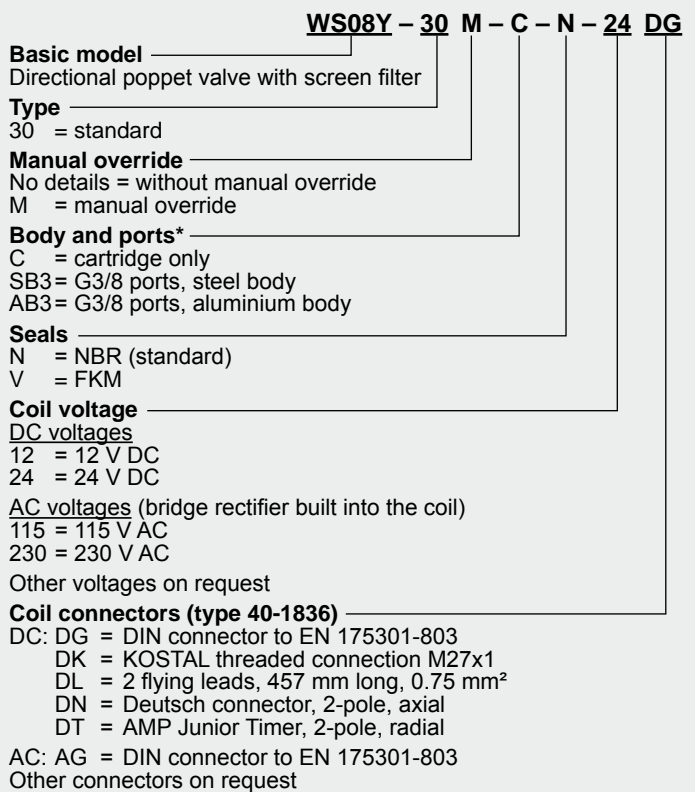
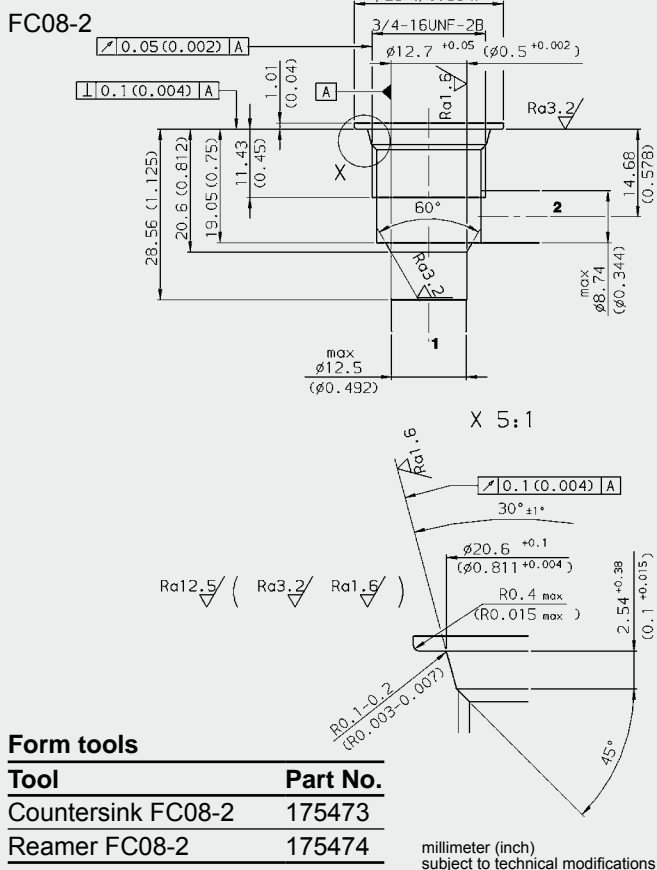
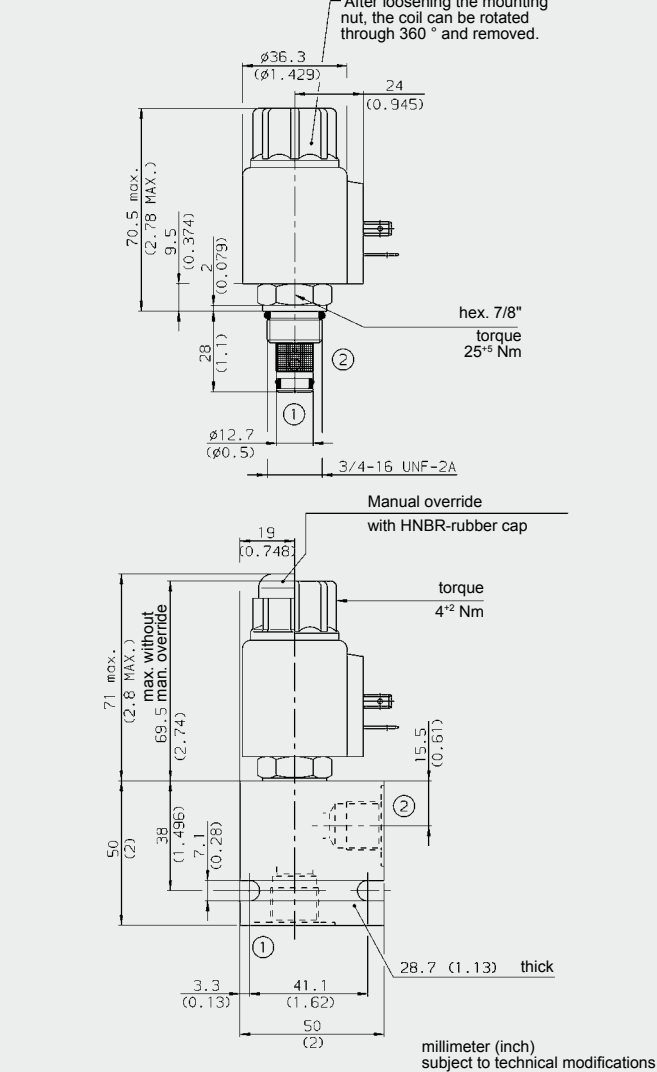
- Excellent switching performance by high power HYDAC solenoid
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- External surfaces zinc-plated and corrosion-proof
- Wide variety of connectors available
- Low pressure drop due to CFD optimized flow path
- In flow direction 2 to 1 internal valve parts protected against coarse contamination by screen filter

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 30 l/min
Leakage:	Leak-free (max. 5 drops \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Screen filter:	300 μ m 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:	\pm 15% of the nominal voltage
Response time:	Energized: approx. 50 ms De-energized: approx. 35 ms
Coil type:	Coil...-40-1836

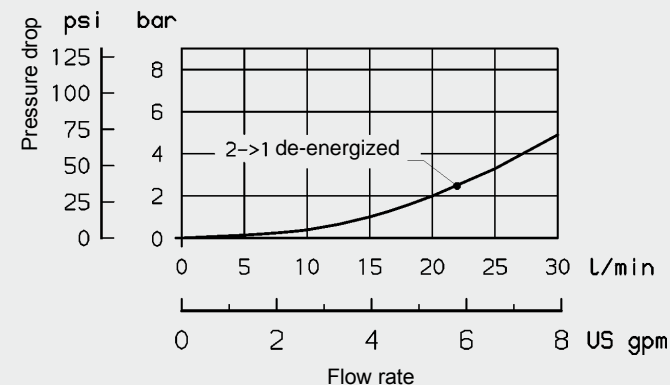


Model code	Part No.
WS08Y-30-C-N-24DG	3132862
WS08Y-30-C-N-230AG	3132863

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

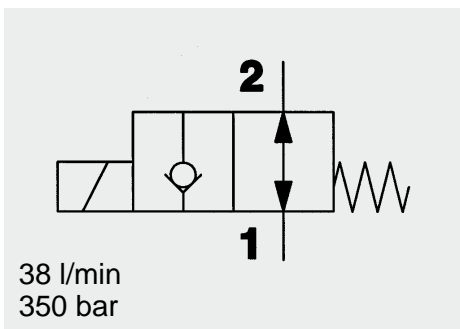
Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

Measured at $\nu = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$

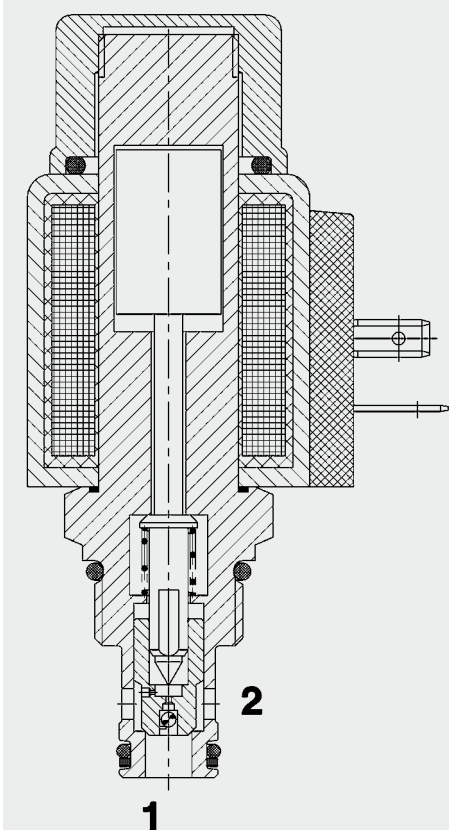


NOTE
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Subject to technical modifications.

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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).

2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Open (Reverse Flow) SAE-08 Cartridge – 350 bar WS08YR-01

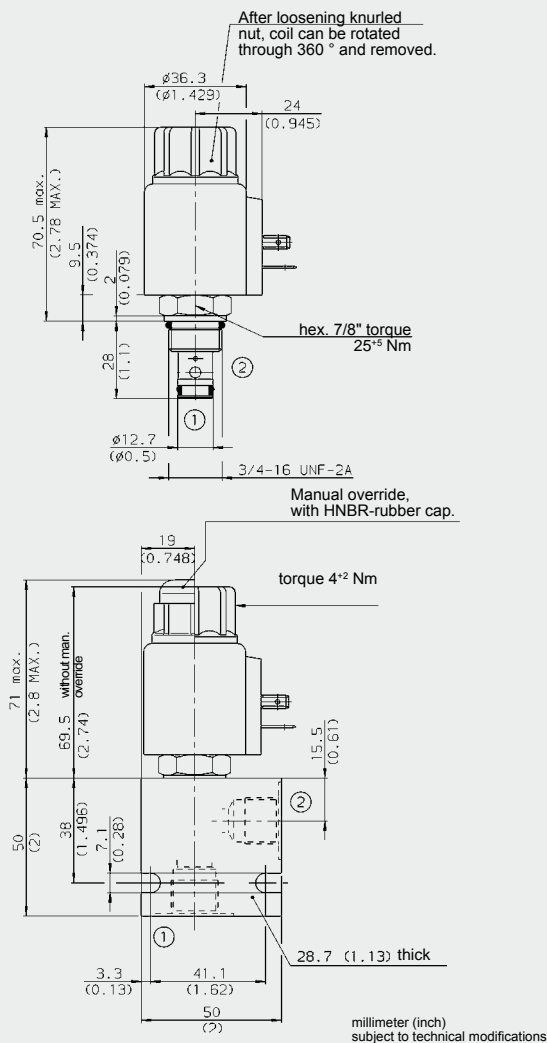
FEATURES

- 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

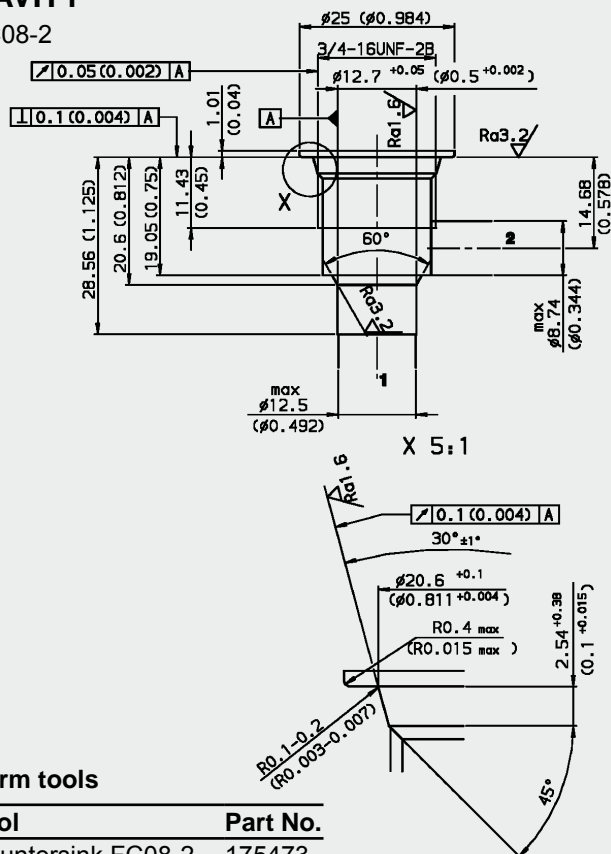
Operating pressure:	max. 350 bar
Nominal flow:	max. 38 l/min
Leakage:	leakage-free (max. 5 drops \approx 0,25 cm ³ /min at 350 bar)
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temp. range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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:	\pm 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

millimeter (inch)
subject to technical modifications

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:

$$\begin{array}{l} 12 = 12 \text{ V DC} \\ 24 = 24 \text{ V DC} \end{array}$$

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**

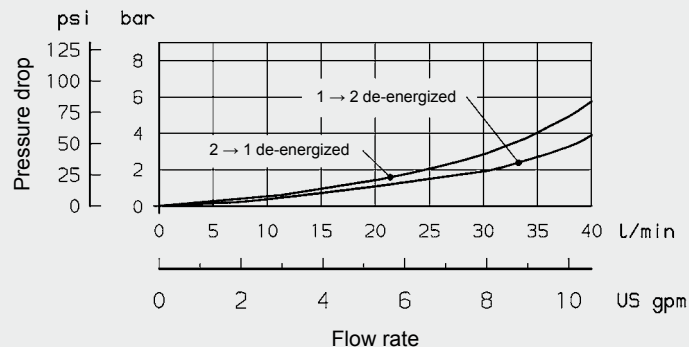
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	350 bar
FH082-AB3	3011423	Aluminium, clear anodized	G3/8	210 bar

Seal kits

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

PERFORMANCE

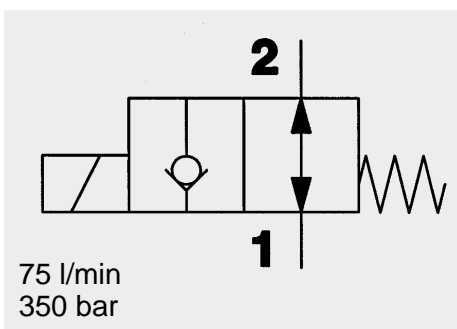
Measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



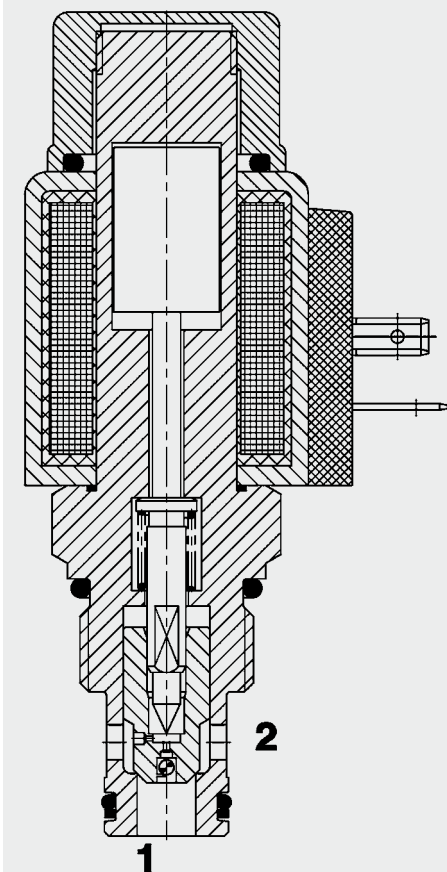
NOTE

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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).

2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Open (Reverse Flow) SAE-10 Cartridge – 350 bar WS10YR

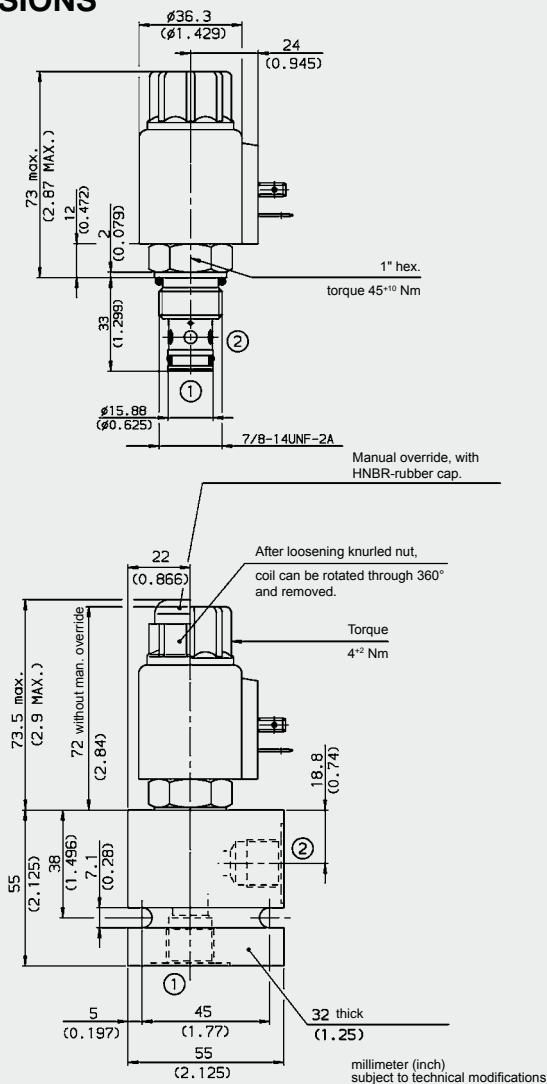
FEATURES

- 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

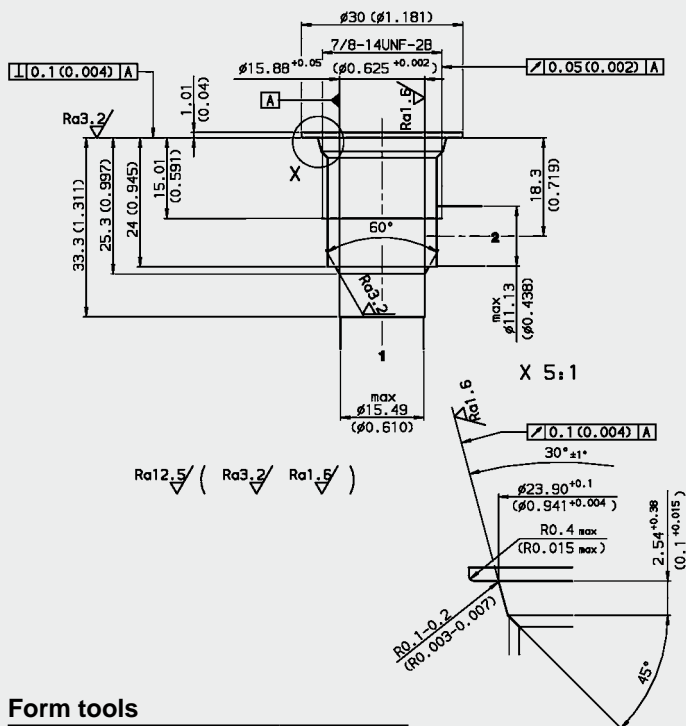
Operating pressure:	max. 350 bar
Nominal flow:	max. 75 l/min
Leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /min at 350 bar)
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. + 60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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:	\pm 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

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

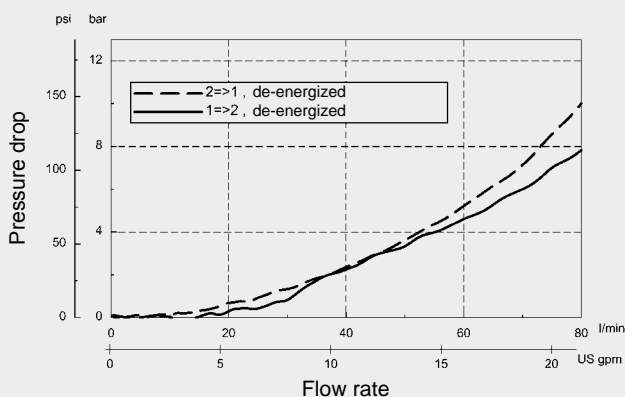
Other housings on request

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$

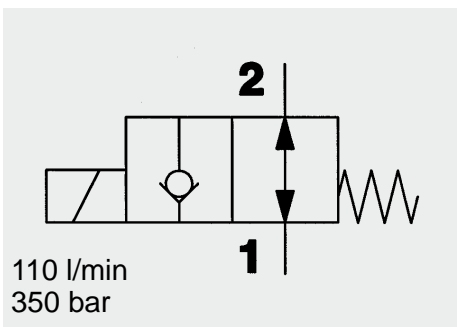


NOTE

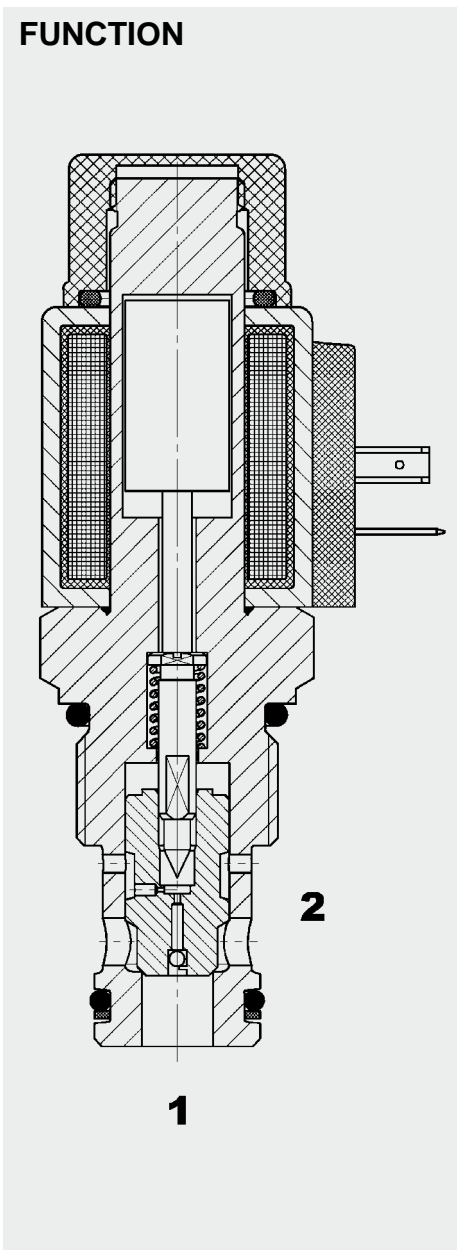
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FUNCTION



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).

2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Open (Reverse Flow) **SAE-12 Cartridge – 350 bar** WS12YR-01

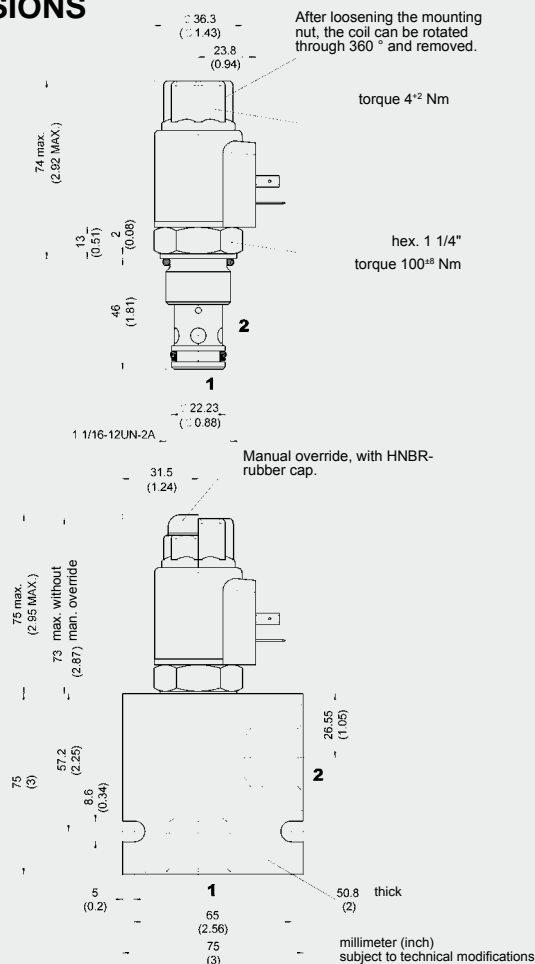
FEATURES

- 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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 15% of the nominal voltage	
Response time:	Energized:	approx. 90 ms
	De-energized:	approx. 35 ms
Coil type:	Coil...-40-1836	

DIMENSIONS



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

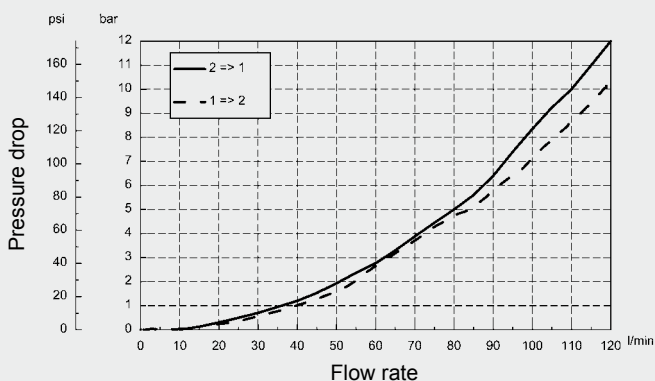
Other line bodies on request

Seal kits

Code	Material	Part No.
FS122-N SEAL KIT	NBR	3071298
FS122-V SEAL KIT	FKM	3071299

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



NOTE

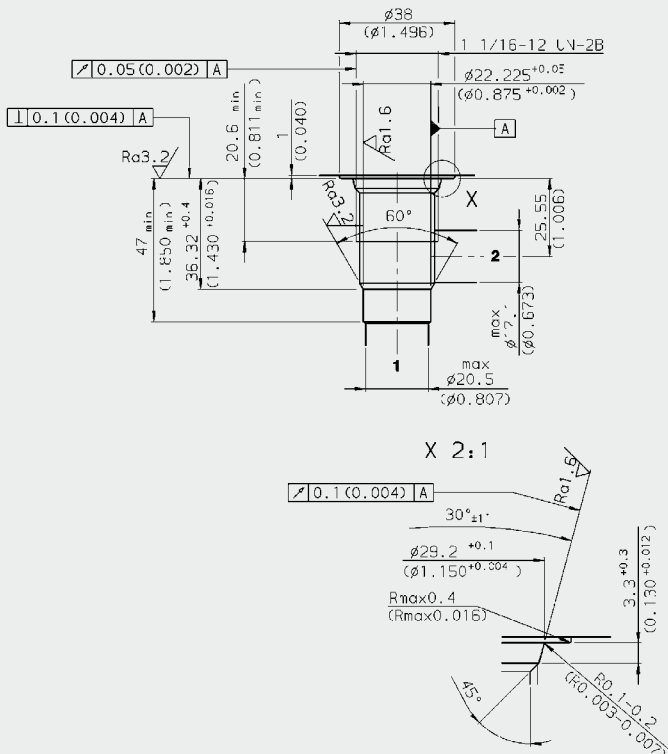
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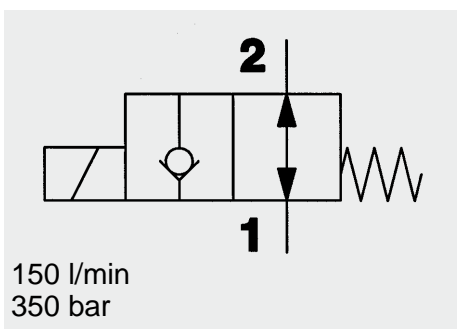
CAVITY

FC12-2

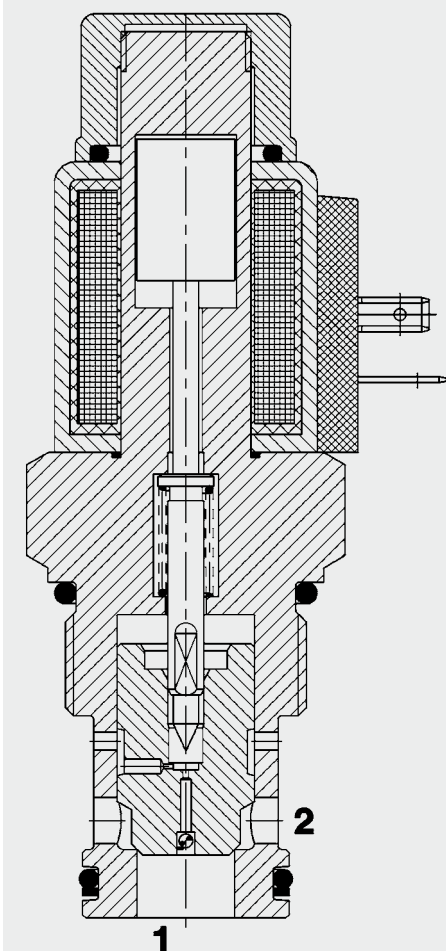


Form tools

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



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).

2/2 Solenoid Directional Valve **UNF** Poppet Type, Pilot-Operated Normally Open (Reverse Flow) SAE-16 Cartridge – 350 bar

WS16YR-01

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 15% of the nominal voltage	
Response time:	Energized:	approx. 150 ms
	De-energized:	approx. 35 ms
Coil type:	Coil...-40-1836	

Technical drawing of a 1/2 inch hex nut with a manual override. The drawing shows two views: a top view and a side view.

Top View Dimensions:

- Overall height: 79 max. (3.11 MAX.)
- Distance from top to hex base: 18 (0.709)
- Hex base diameter: 24 (0.945)
- Distance from hex base to central hole: 2 (0.079)
- Distance from central hole to bottom: 46.5 (1.831)
- Central hole diameter: $\varnothing 28.5$ ($\varnothing 1.125$)
- Bottom hole diameter: 15/16-12UN-2A

Side View Dimensions:

- Overall height: 80.8 max. (3.181 MAX.)
- Distance from top to hex base: 78.5 max. without (3.09)
- Distance from top to hex base: 57.2 (2.252)
- Distance from top to hex base: 8.6 (0.339)
- Distance from top to hex base: 31.5 (1.240)
- Distance from top to hex base: 25.13 (0.989)
- Distance from top to hex base: 75 (3)
- Distance from top to hex base: 65 (2.559)
- Distance from top to hex base: 75 (3)
- Distance from top to hex base: 5 (0.197)
- Distance from top to hex base: 50.8 (2) thick

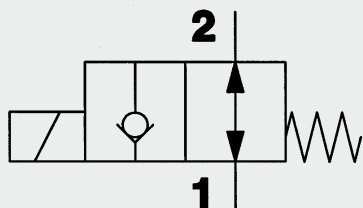
Labels and Notes:

- hex. 1/2"
- Torque 130^{±10} Nm depending on operating pressure
- Manual override with HNBR-rubber cap
- After loosening knurled nut, coil can be rotated through 360° and removed.
- Torque 4^{±2} Nm
- subject to technical modification

Form tools

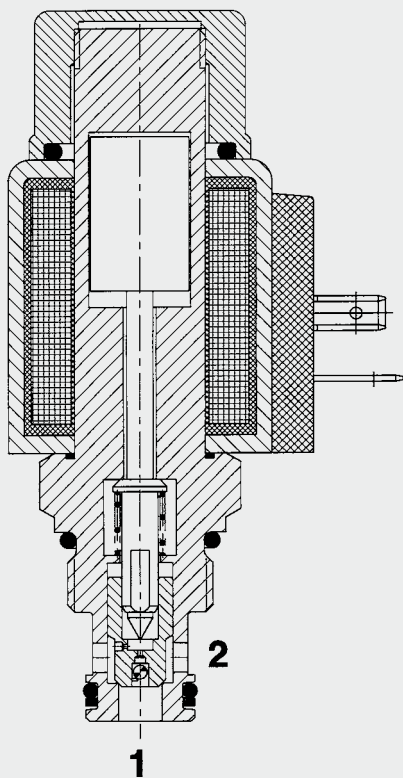
Tool	Part No.
Countersink FC16-2	176218
Reamer FC16-2	176219

millimeter (inch)
subject to technical modifications



Up to 40 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).

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Open (Reverse Flow) Metric Cartridge - 350 bar

WSM06020YR-01

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

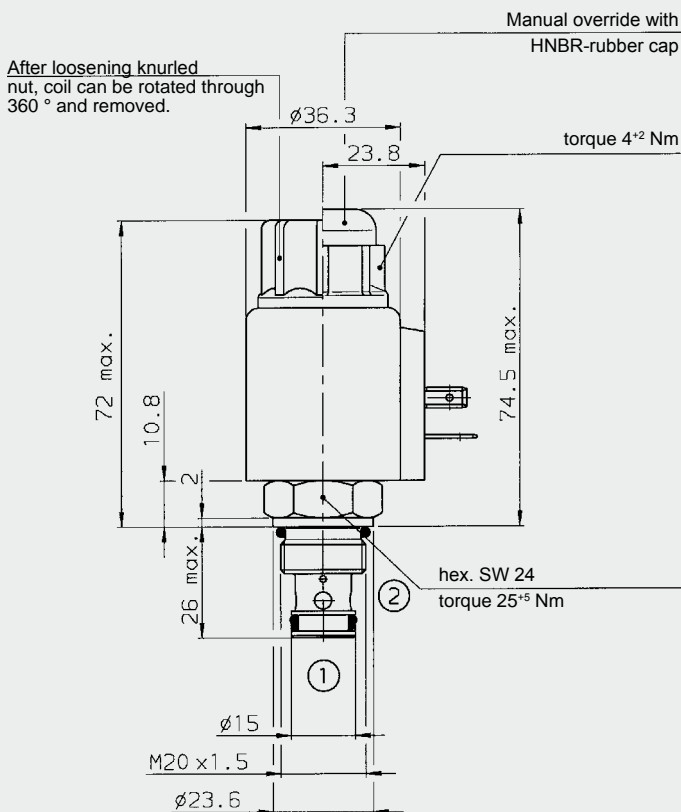
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 40 l/min
Internal leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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



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

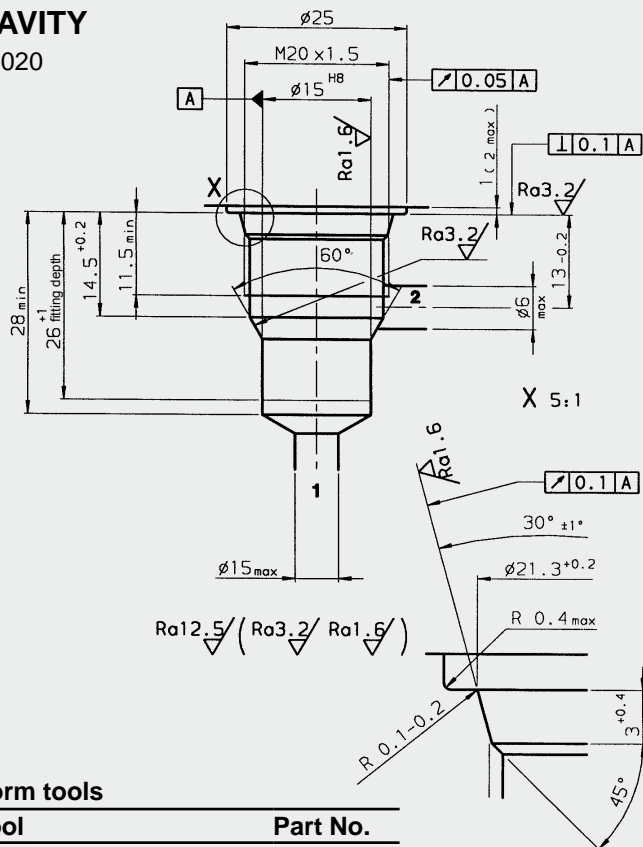
For other line bodies, see brochure no. E 5.252.

Seal kits

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

CAVITY

06020

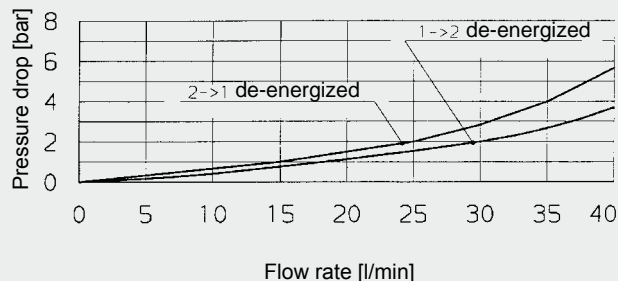


Form tools

Tool	Part No.
Countersink (shank MK3)	170033
Reamer (shank MK2)	1000768

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{Oil}} = 46^\circ\text{C}$

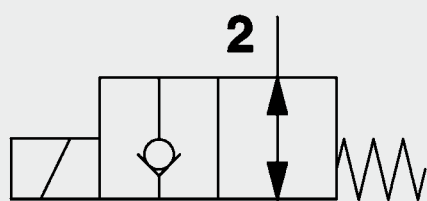


NOTE

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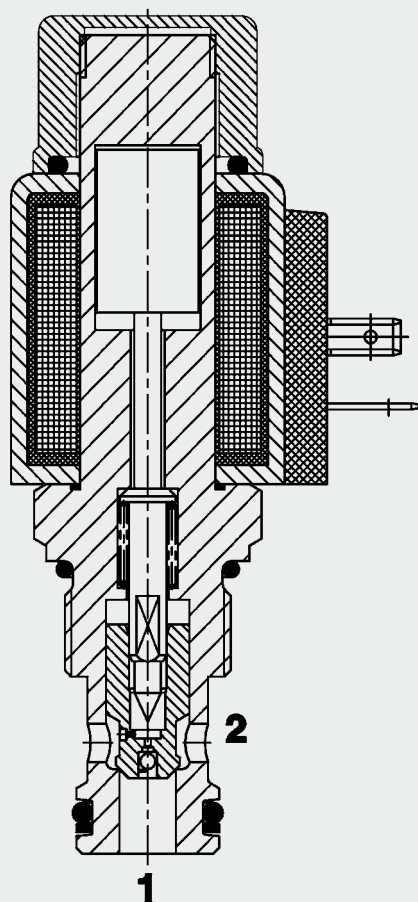
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Up to 75 l/min
Up to 350 bar

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 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).

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Open (Reverse Flow) Metric Cartridge Valve – 350 bar

WSM10120YR-01

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

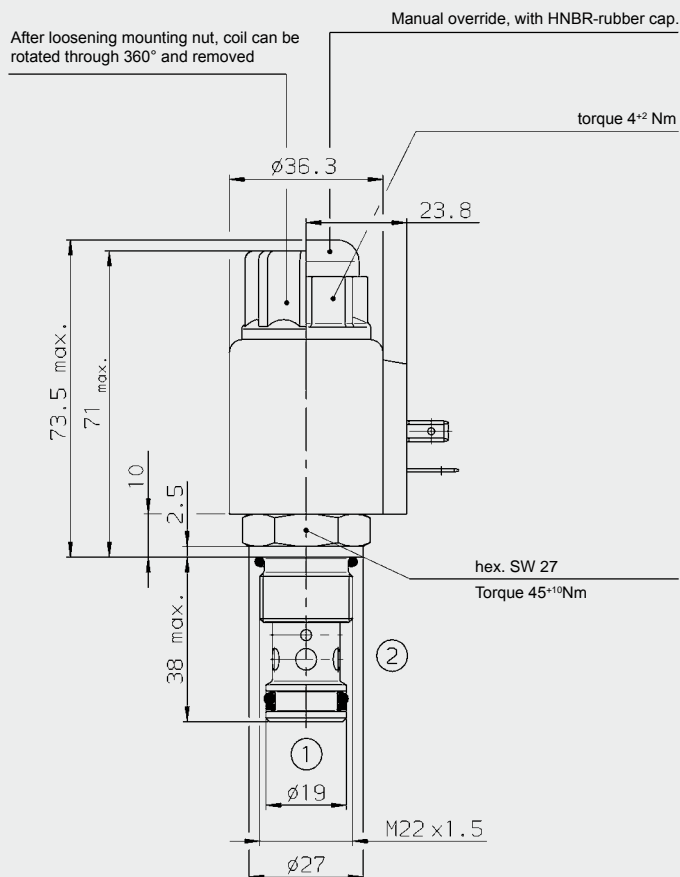
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 75 l/min
Internal leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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



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

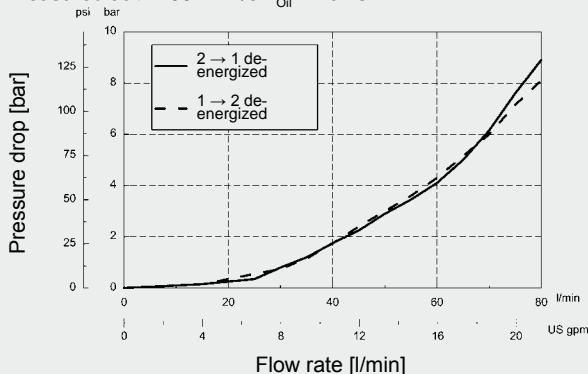
For other connection housings, see brochure no. E 5.252.

Seal kits

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

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$ $T_{\text{oil}} = 46^\circ \text{C}$



Note

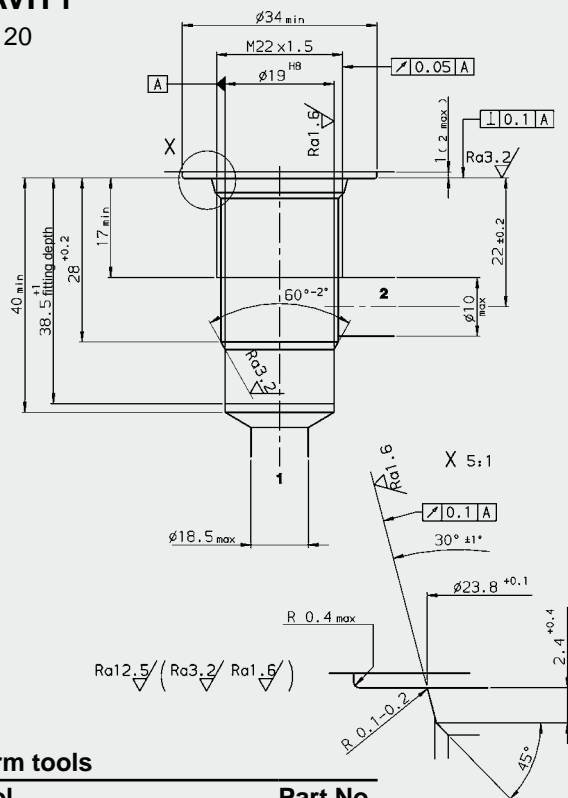
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CAVITY

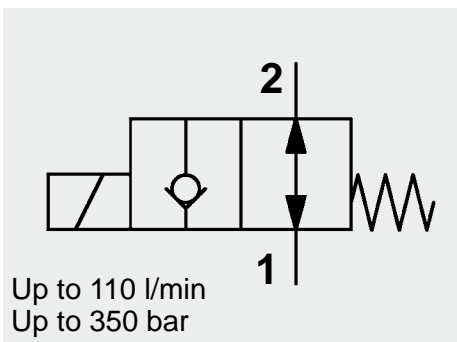
10120



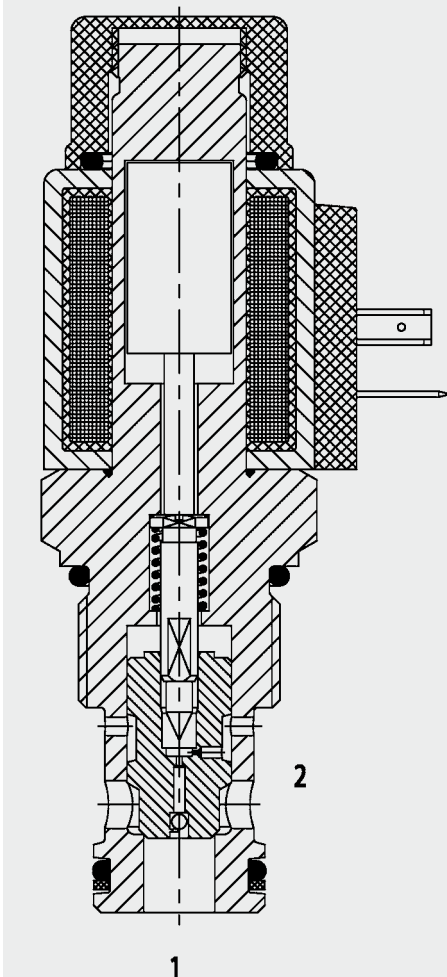
Form tools

Tool	Part No.
Countersink (shank MK3)	170418
Reamer (shank MK2)	1014206

millimeter
subject to technical modifications



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).

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Open (Reverse Flow) Metric Cartridge – 350 bar

WSM12120YR

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

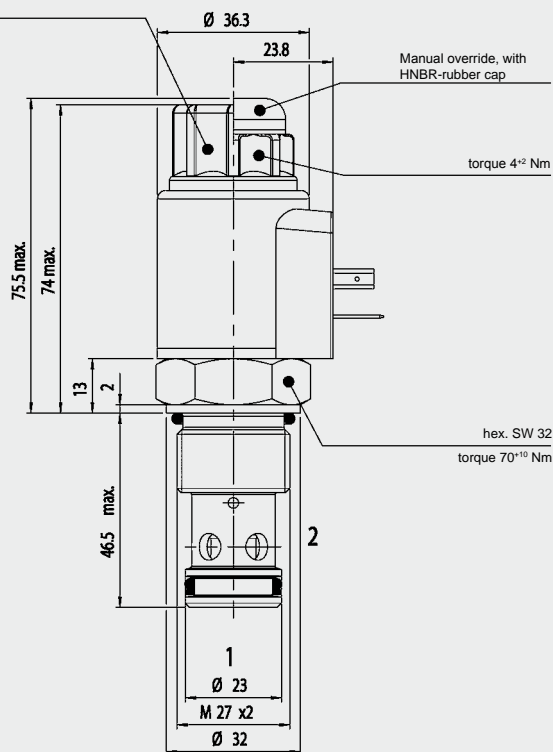
Operating pressure:	max. 350 bar
Nominal flow:	max. 110 l/min
Internal leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /min at 350 bar)
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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:	\pm 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

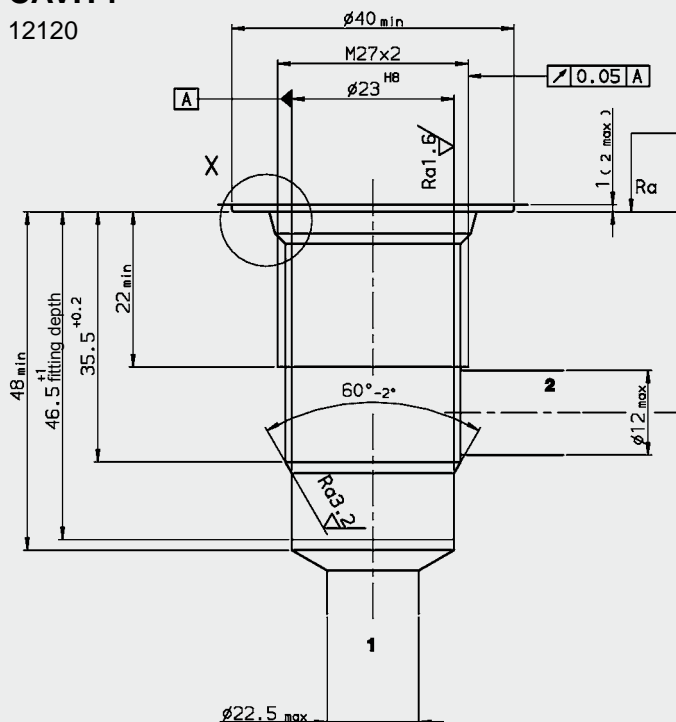
After loosening the mounting nut, the coil can be rotated through 360° and removed



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

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

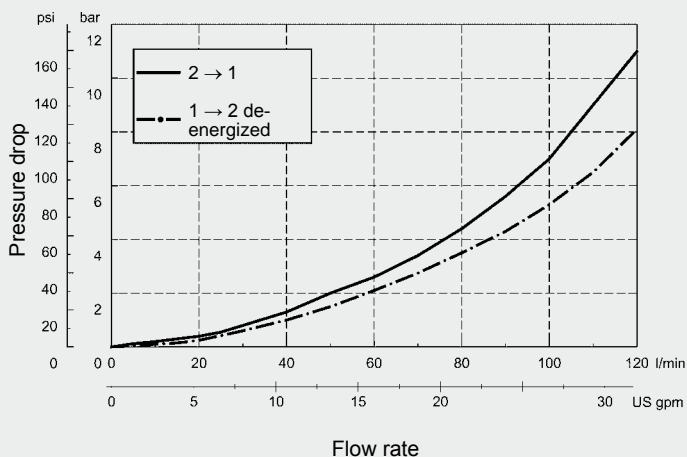
Other line bodies on request

Seal kits

Code	Material	Part No.
SEAL KIT 12120-NBR	NBR	3454001
SEAL KIT 12120-FKM	FKM	3454002

PERFORMANCE

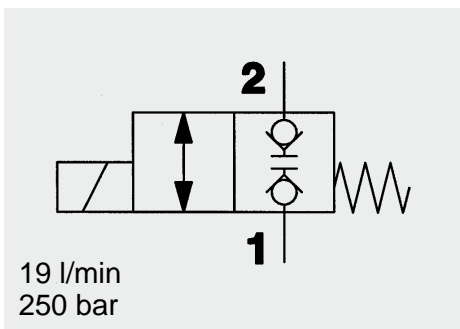
Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



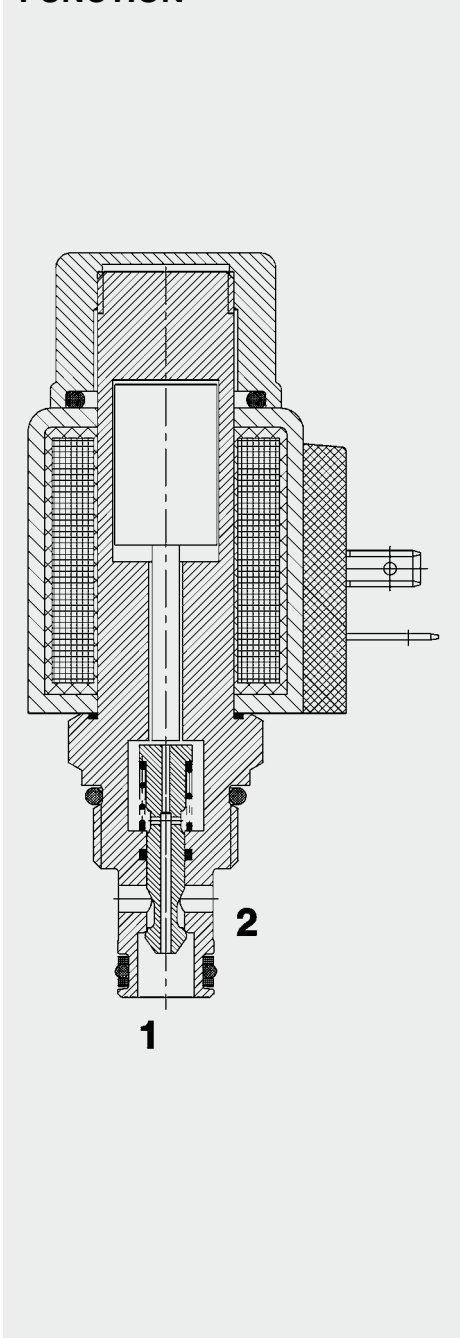
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Subject to technical modifications.

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FUNCTION



In the de-energized mode, the valve blocks flow in both directions.
When energized the valve allows flow in both directions.

2/2 Solenoid Directional Valve Poppet Type, Direct-Acting Normally Closed SAE-08 Cartridge – 250 bar

UNF

WS08W-01

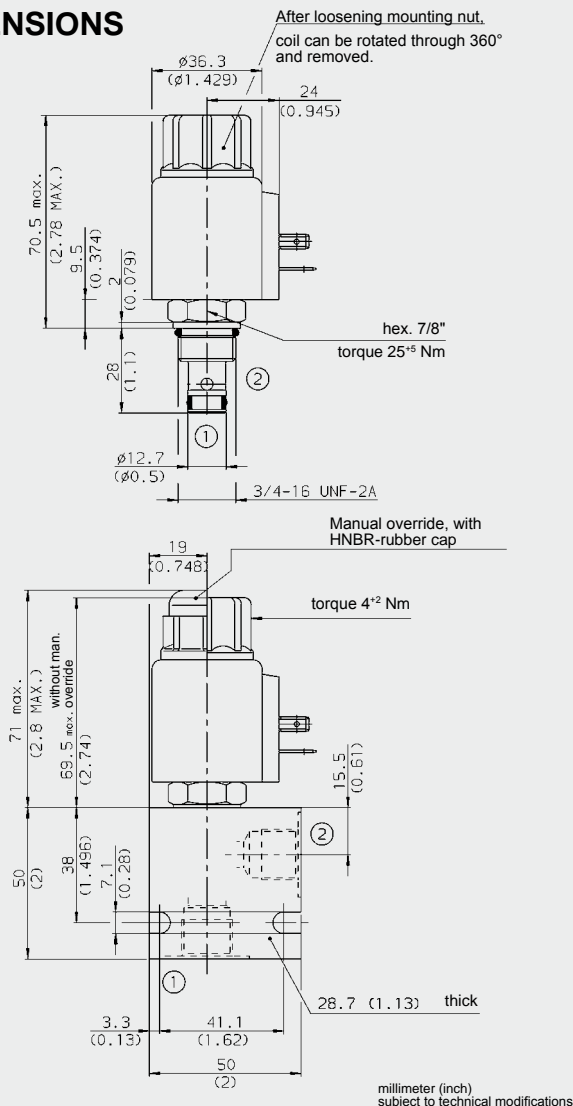
FEATURES

- 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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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



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

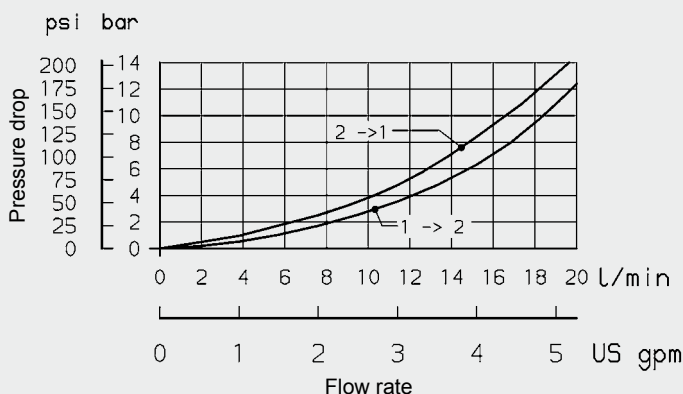
Other housings on request

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



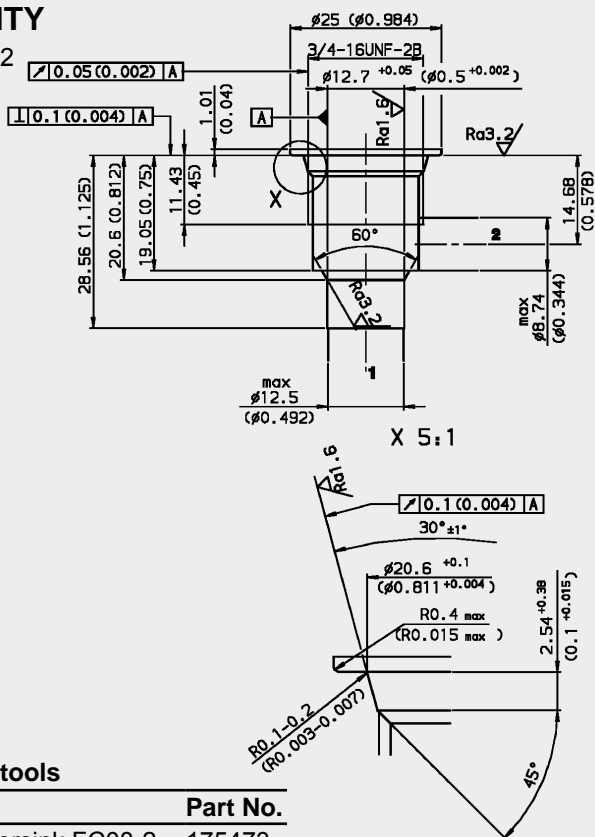
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CAVITY

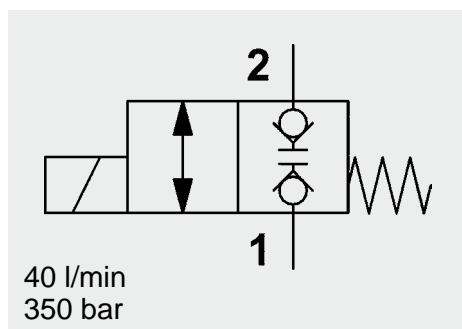
FC08-2



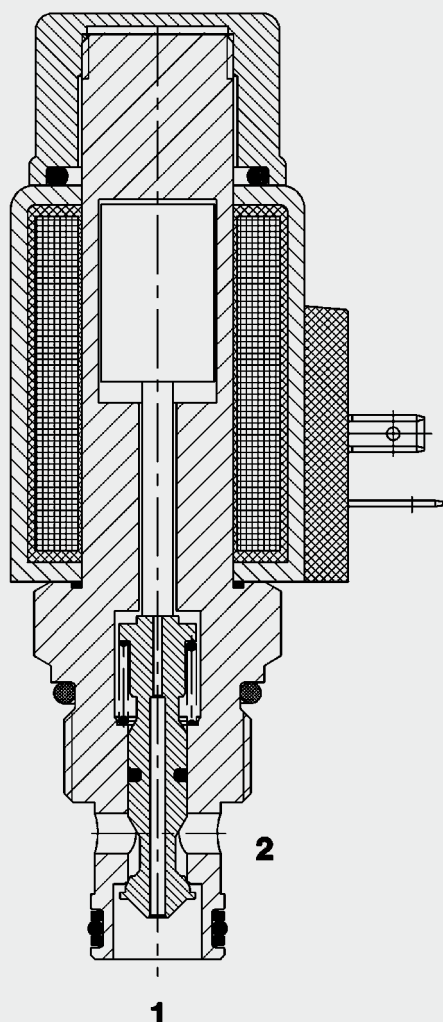
Form tools

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

millimeter (inch)
subject to technical modifications



FUNCTION



2/2 Solenoid Directional Valve **UNF** Poppet Type, Direct-Acting Normally Closed **SAE-10 Cartridge – 350 bar** WS10W

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

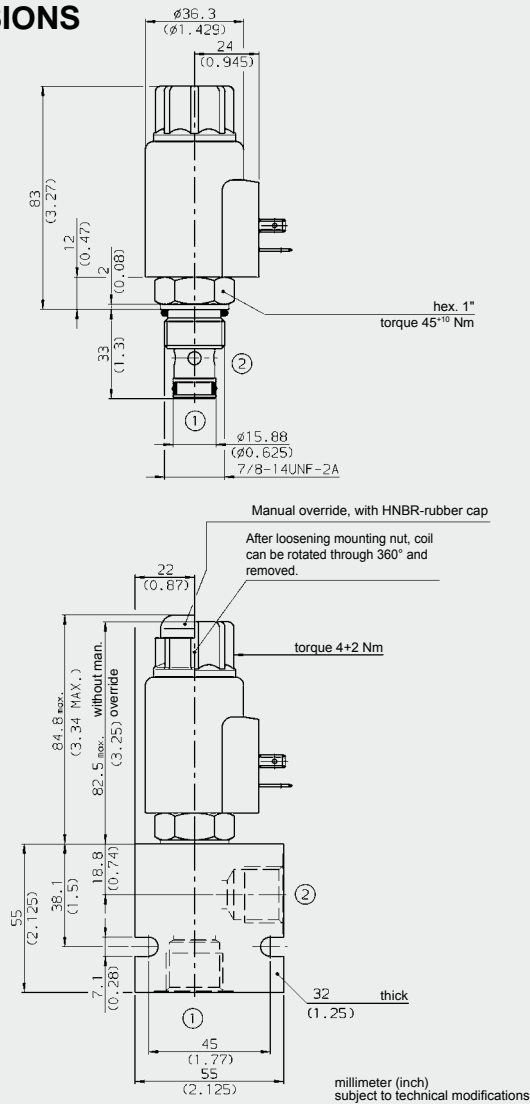
Operating pressure:	350 bar
Nominal flow:	40 l/min
Internal leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /min at 350 bar)
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 to max. 420 mm ² /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:	\pm 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

In the de-energized mode the valve blocks flow in both directions.
When energized the valve allows flow in both directions.

DIMENSIONS



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

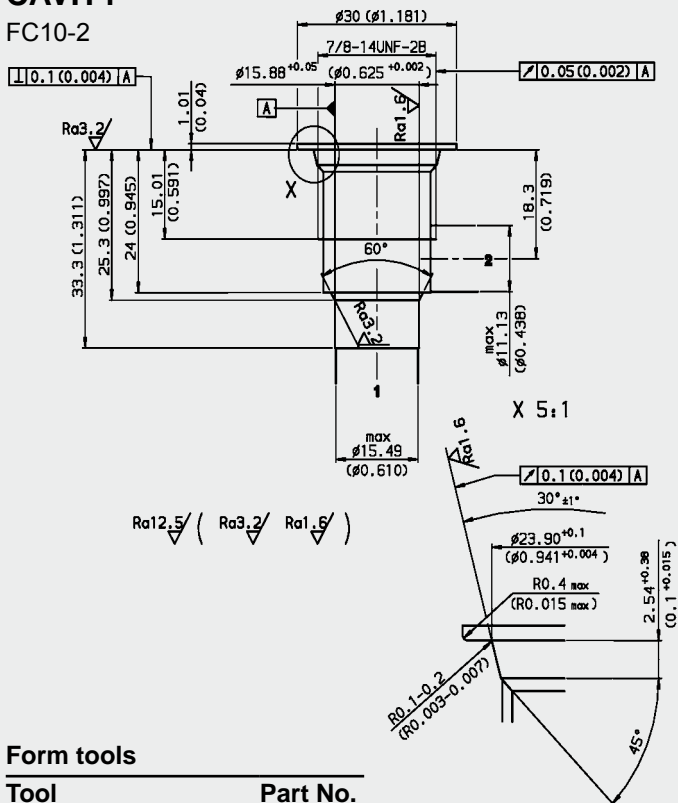
Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, clear anodized	G1/2	210 bar

Seal kits

Code	Part No.	Material
Seal kit FS102-N	3033872	NBR
Seal kit FS102-N	3051757	FKM

CAVITY

FC10-2



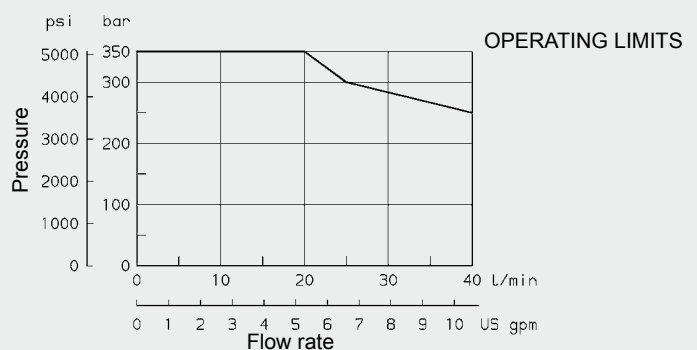
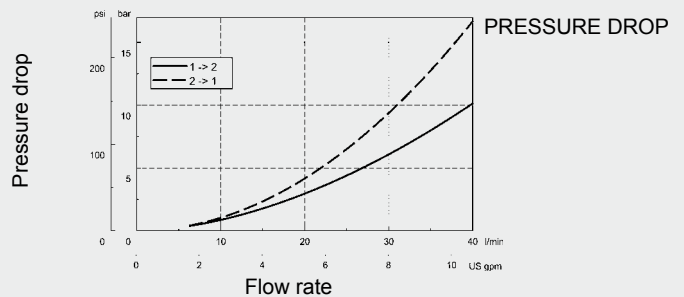
Form tools

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

millimeter (inch)
subject to technical modifications

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$

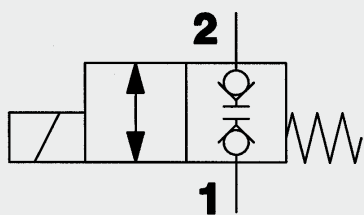


Note

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Subject to technical modifications.

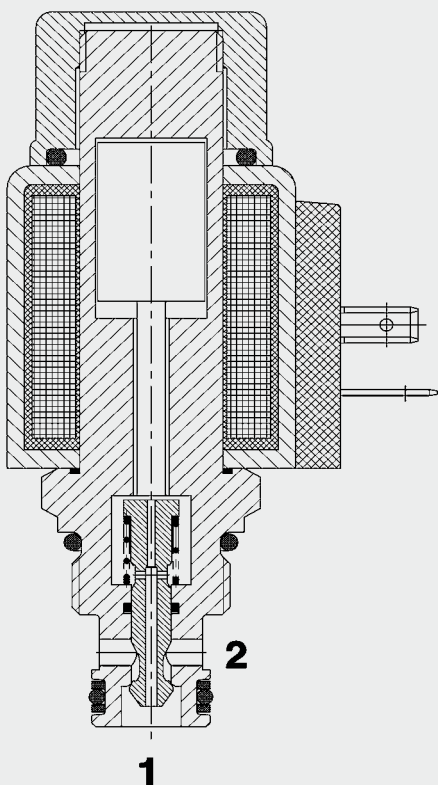
HYDAC Fluidtechnik GmbH

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 19 l/min
Up to 250 bar

FUNCTION



2/2 Solenoid Directional Valve Poppet Type, Direct Acting Normally Closed Metric Cartridge – 250 bar

WSM06020W-01

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 \approx 0,25 cm ³ /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 mm ² /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

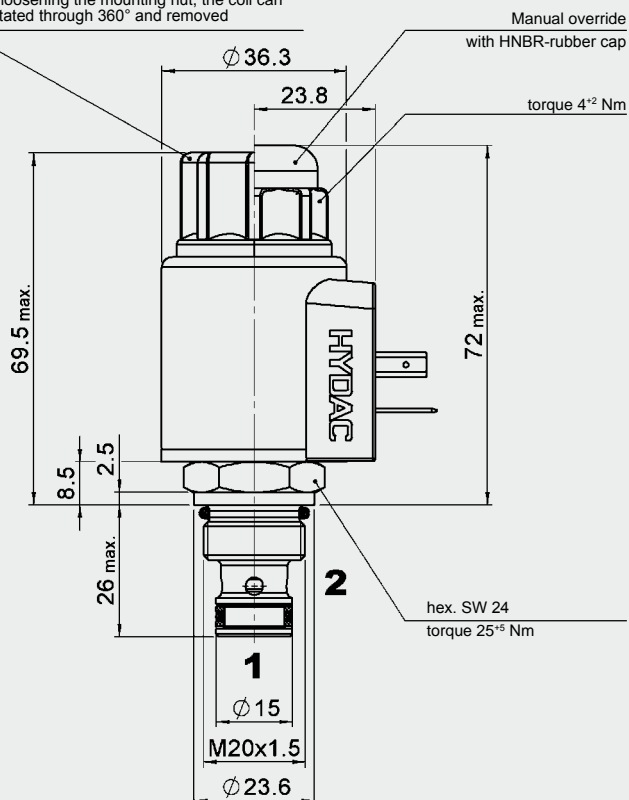
Electrical data:

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:	\pm 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

When the solenoid coil is de-energized, the valve blocks flow in both directions. When energized the valve allows flow in both directions.

DIMENSIONS

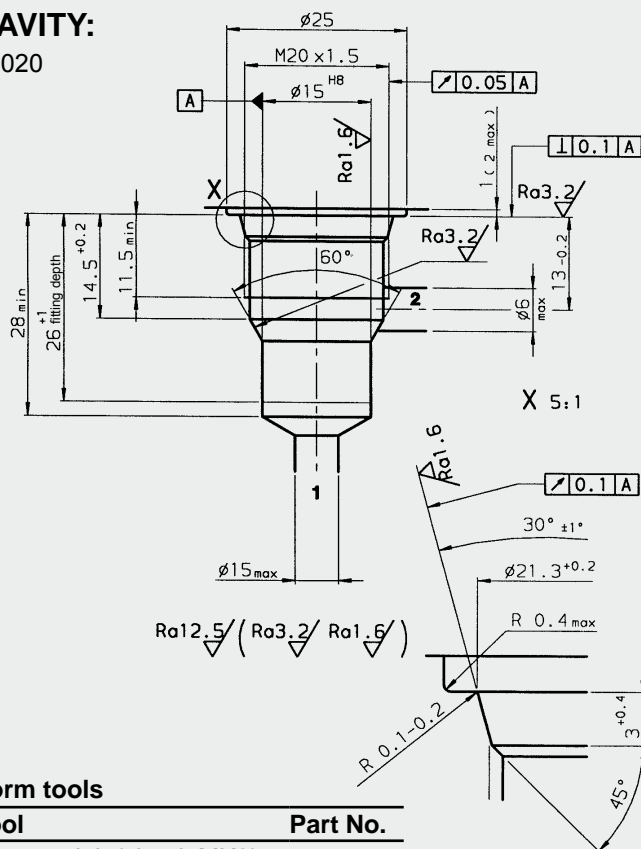
After loosening the mounting nut, the coil can be rotated through 360° and removed



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

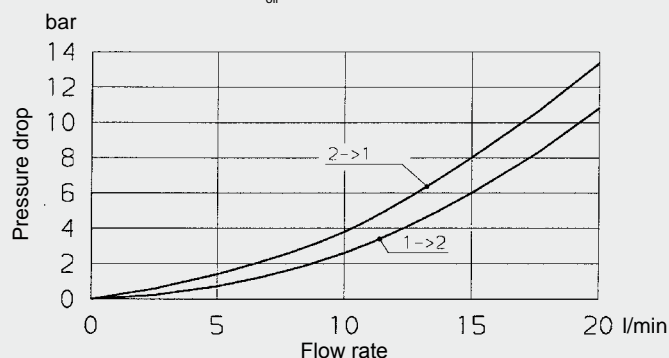
Other housings on request

Seal kits

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

PERFORMANCE

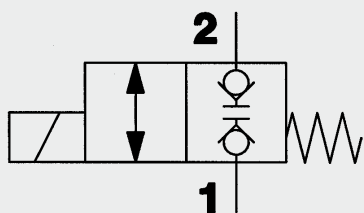
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



NOTE

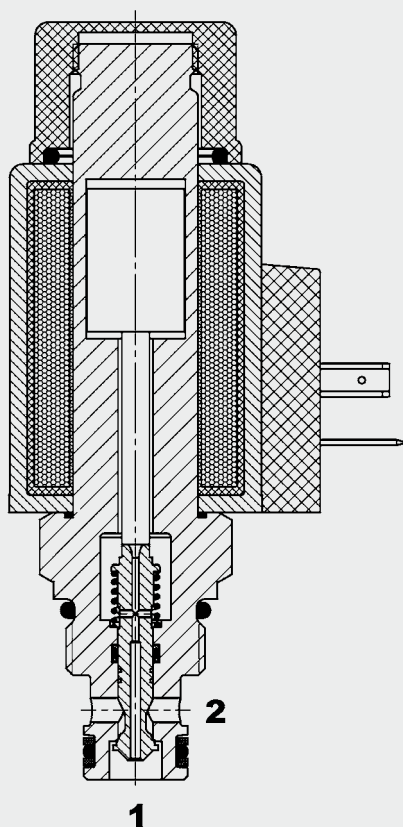
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Up to 25 l/min
Up to 350 bar

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.

2/2 Solenoid Directional Valve Poppet Type, Direct Acting Normally Closed Metric Cartridge – 350 bar WSM06020W-61

FEATURES

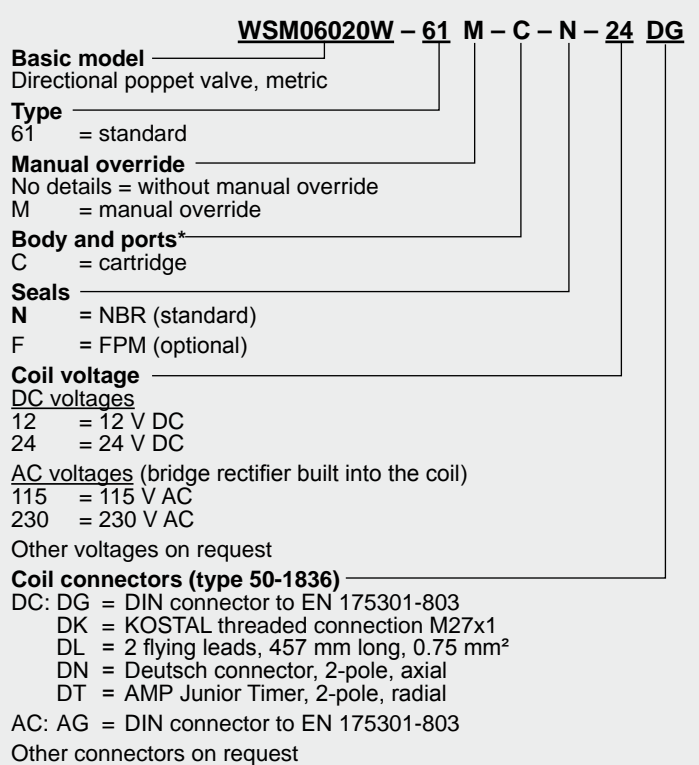
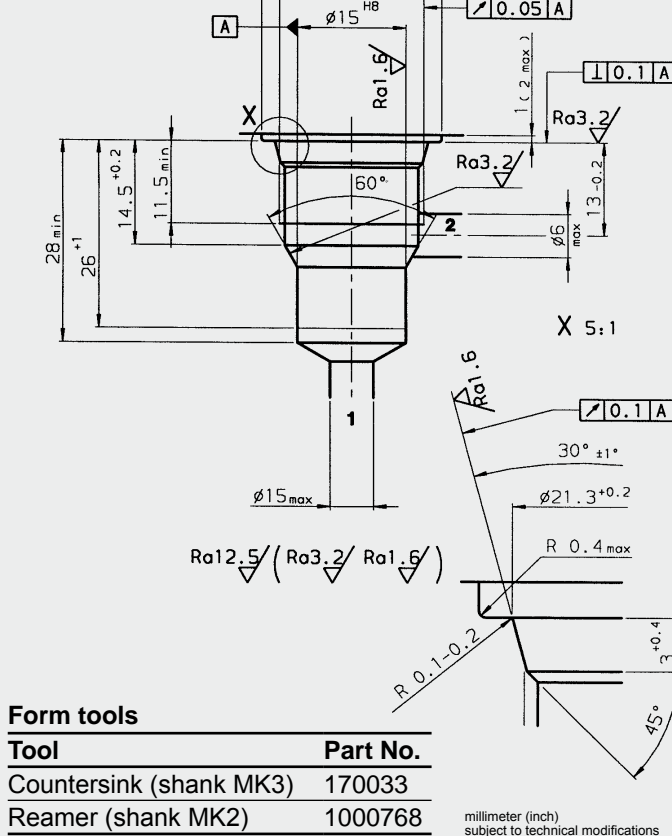
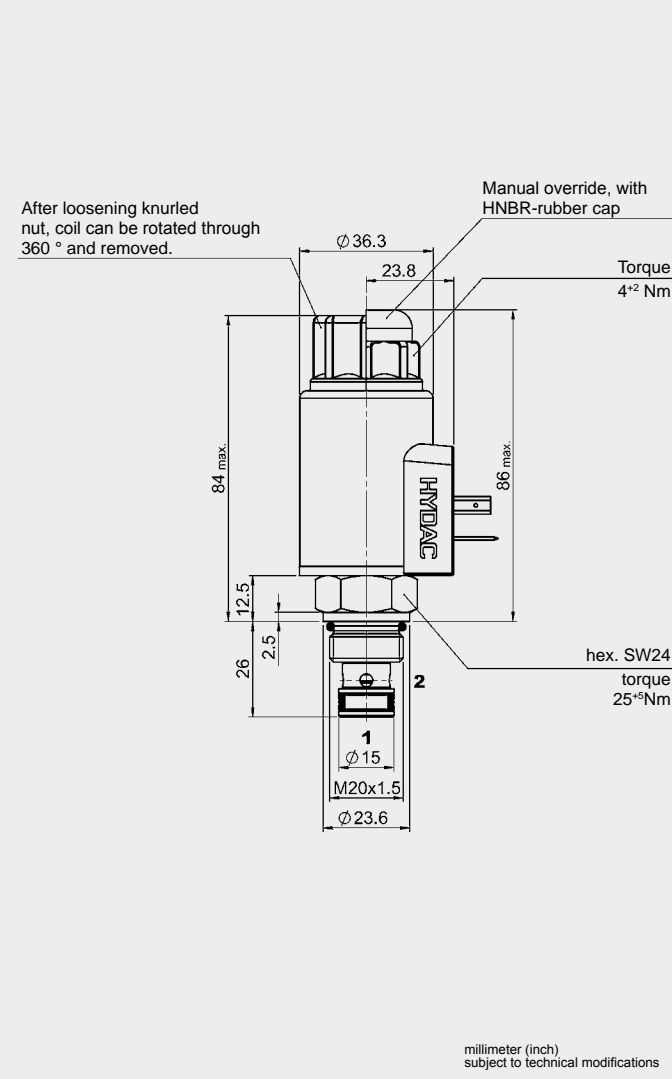
- High performance version for high pressures and long service life
- External surfaces zinc-plated
- Hardened and ground valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance 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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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

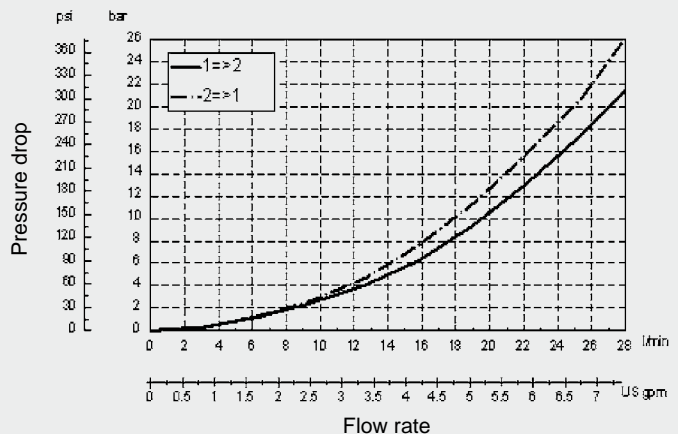


Model code	Part No.
WSM06020W-61-C-N-24DG	3531890
WSM06020W-61-C-N-230AG	3531891
Other models on request	

Code	Part No.	Material	Ports
R06020-01X-01	275266	Steel, zinc-plated	G 3/8
Other line bodies on request			

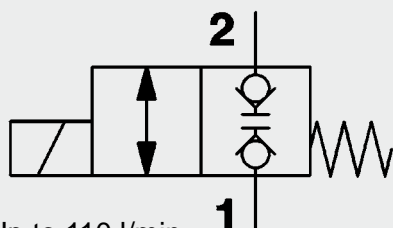
Code	Part No.
SEAL KIT 06020-NBR	3119017
SEAL KIT 06020-FKM	3262477

Measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



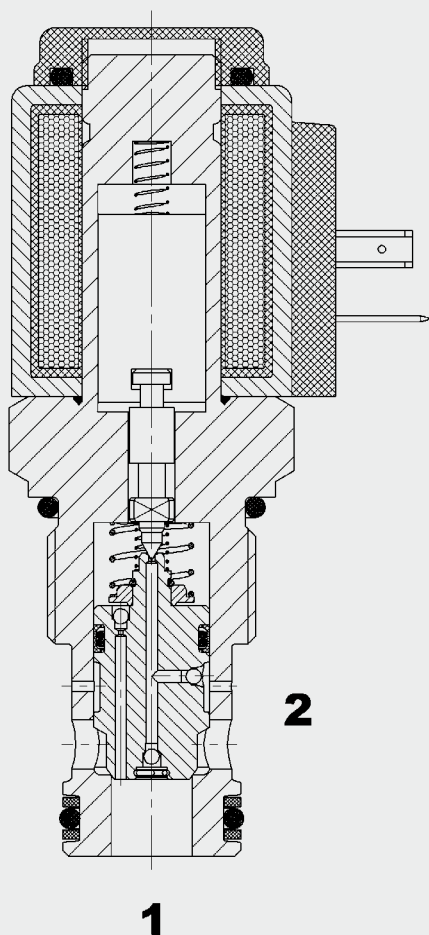
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Up to 110 l/min
Up to 350 bar

FUNCTION



When the solenoid coil is de-energized, the valve blocks flow in both directions. When energized the valve allows flow in both directions.

2/2 Solenoid Directional Valve Poppet Type, Pilot Operated Normally Closed Metric Cartridge Valve – 350 bar

WSM12120W

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 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

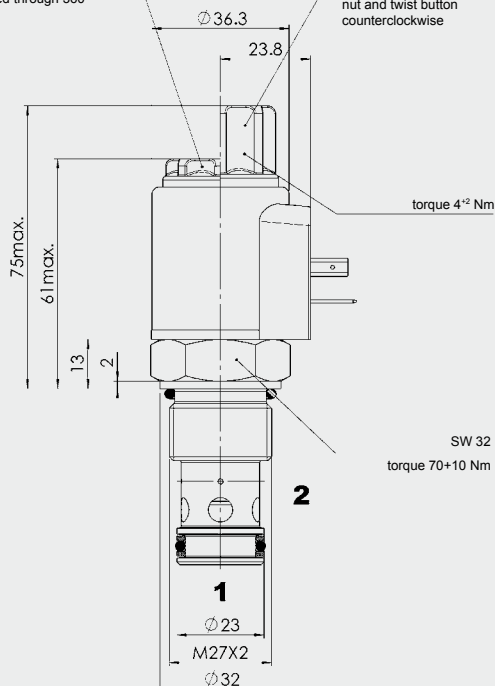
DIMENSIONS

torque 4⁺² Nm

After loosening the mounting nut, the coil can be rotated through 360° and removed

Manual override

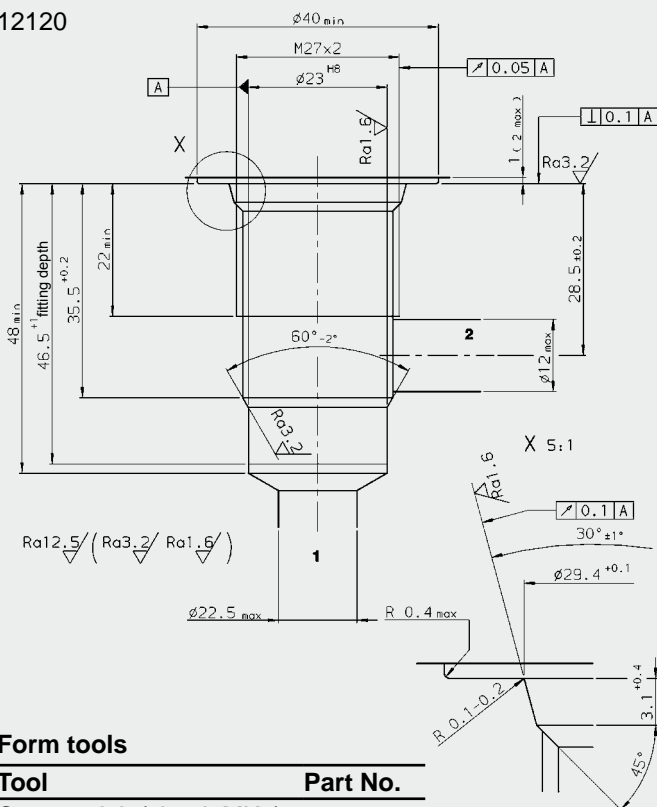
To operate manually, remove mounting nut and twist button counterclockwise



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

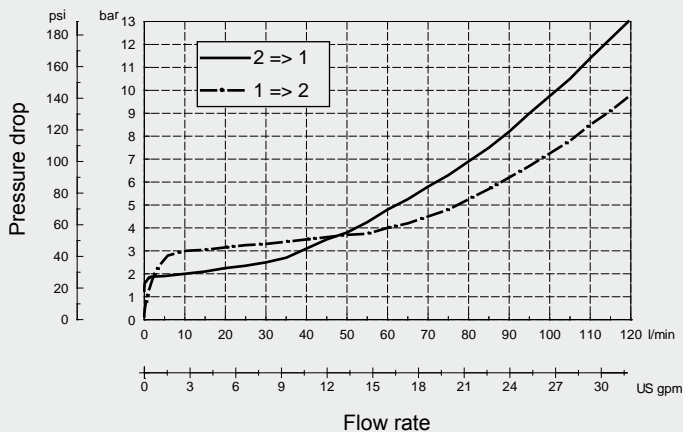
Code	Part No.	Material	Ports	Pressure
R12120-10X-01	396708	Steel, zinc-plated	G 3/4	max. 420 bar
R12120-10X-02	396707	Steel, zinc-plated	M27 x 2	max. 420 bar

Seal kits

Code	Material	Part No.
SEAL KIT 12120-NBR	NBR	3454001
SEAL KIT 12120-FKM	FKM	3454002

PERFORMANCE

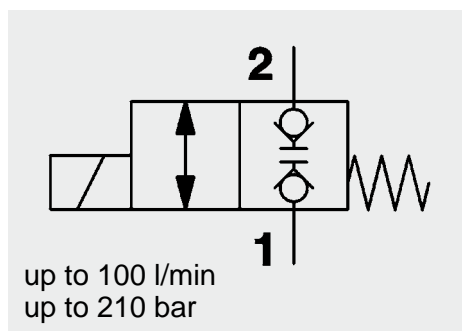
Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



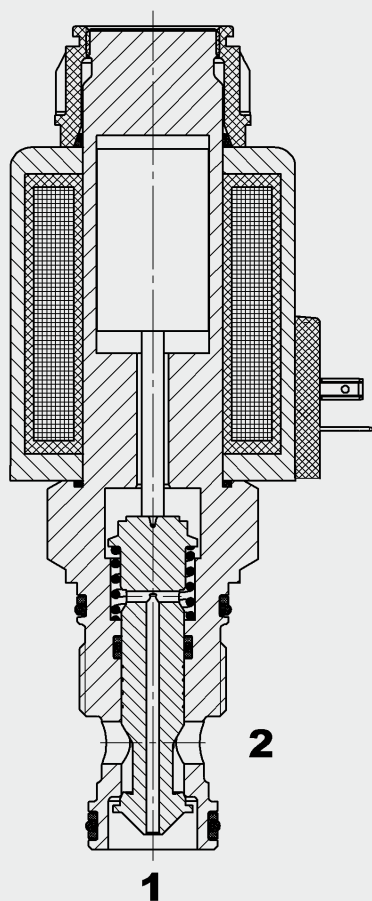
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FUNCTION



2/2 Solenoid Directional Valve Poppet Type, Direct Acting Normally Closed Metric Cartridge – 210 bar WSM16520W

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

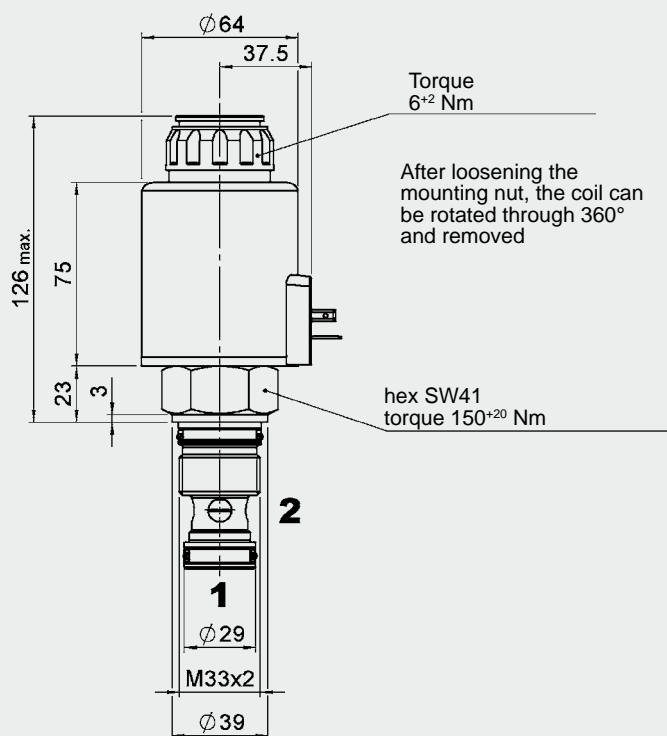
SPECIFICATIONS

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 mm ² /s to max. 420 mm ² /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

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

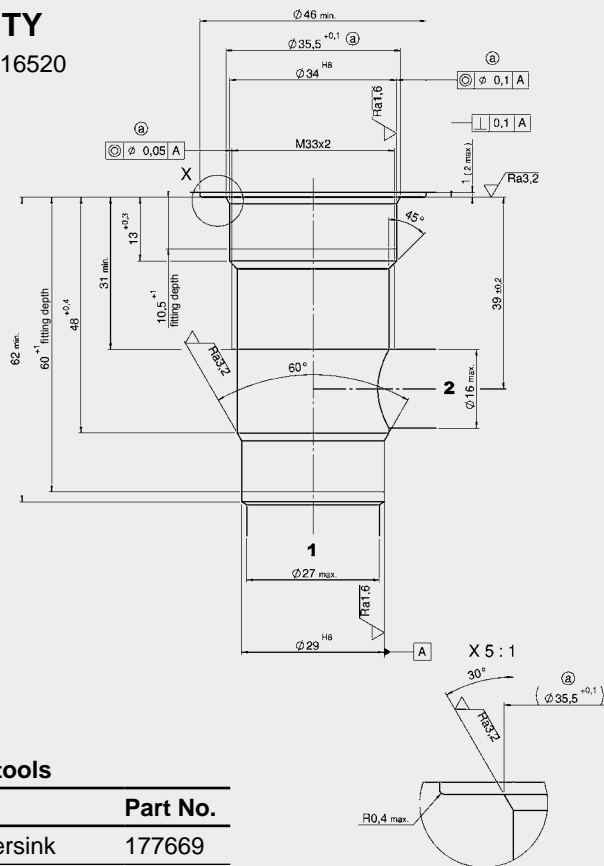
Code	Part No.	Material	Ports	Pressure
R16520-01X-01	3132532	Steel, zinc-plated	1 BSP	350 bar

Seal kits

Code	Part No.
SEAL KIT WSM16520 -NBR	3286856

CAVITY

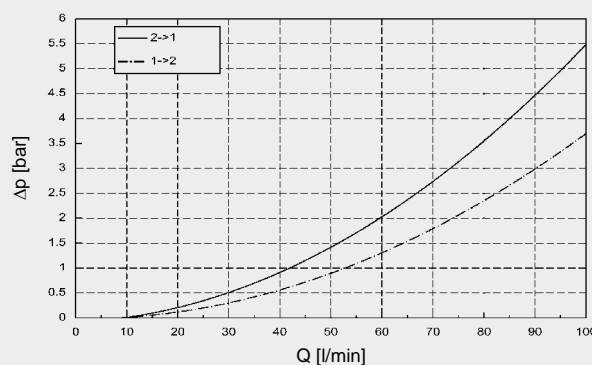
Metric 16520



millimeter (inch)
subject to technical modifications

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ °C}$



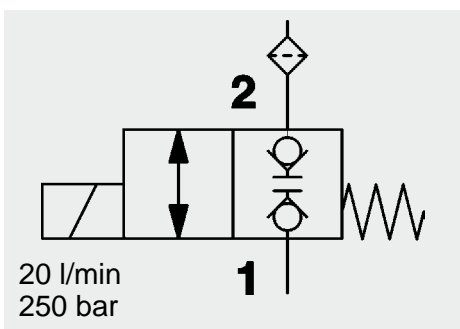
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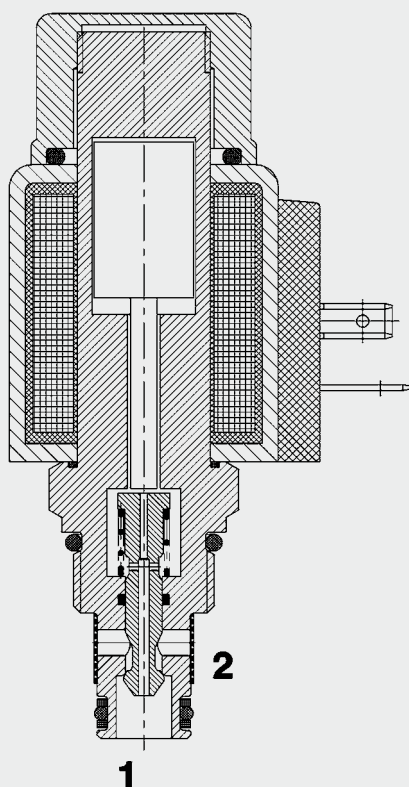
HYDAC Fluidtechnik GmbH
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Tel: 0 68 97 / 509-01
Fax: 0 68 97 / 509-598
E-Mail: flutec@hydac.com

Form tools

Tool	Part No.
Countersink	177669
Reamer	1014952



FUNCTION



When the solenoid coil is de-energized, the valve blocks flow in both directions. When energized the valve allows flow in both directions.

2/2 Solenoid Directional Valve Poppet Type, Direct-Acting Normally Closed, Double-Blocking Screen Filter SAE-08 Cartridge – 250 bar

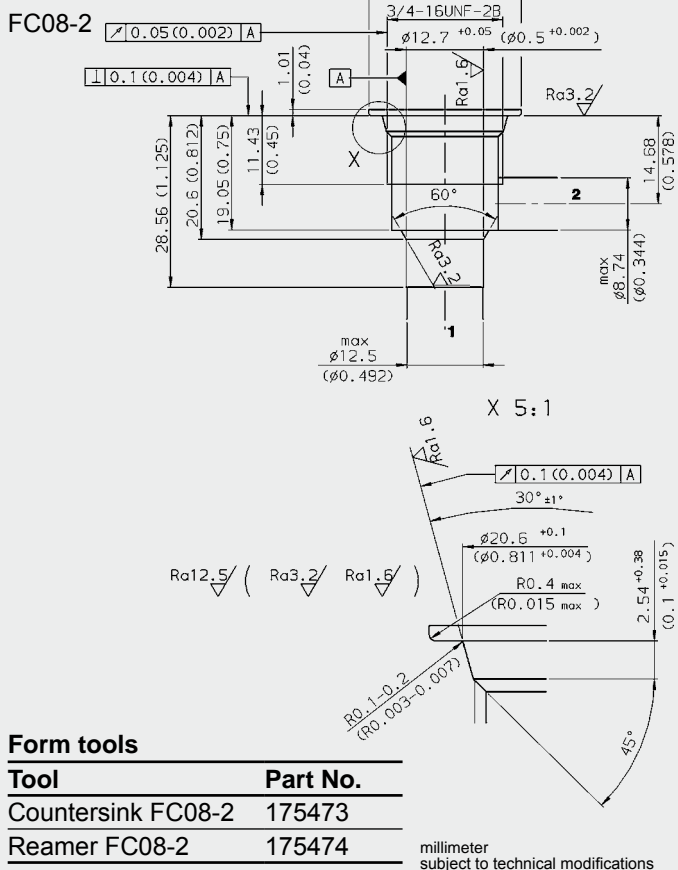
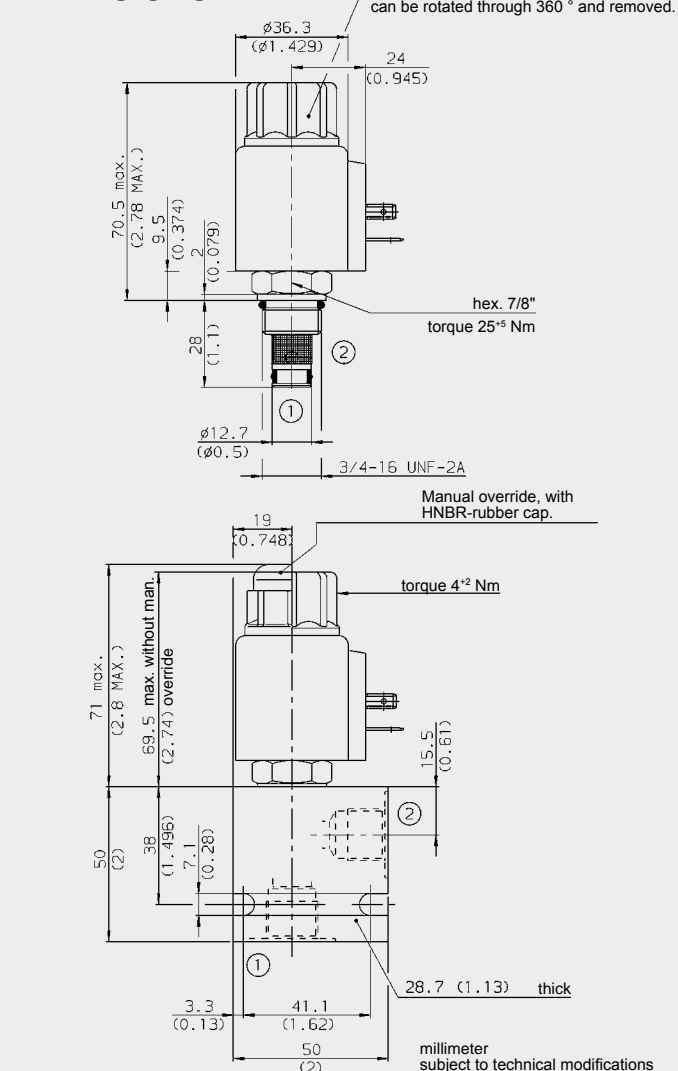
WS08W-30

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

SPECIFICATIONS

Operating pressure:	max. 250 bar	
Nominal flow:	max. 20 l/min	
Leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /s	
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner	
Screen filter:	330 μ m 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:	\pm 15% of the nominal voltage	
Response time:	Energized:	approx. 35 ms
	De-energized:	approx. 50 ms
Coil type:	Coil...-40-1836	



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

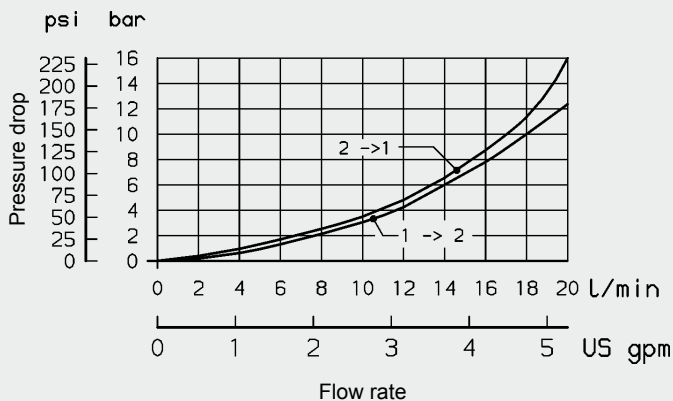
Coil connectors (type 40-1836) _____
DC: DG = DIN connector to EN 175301-803
DK = KOSTAL threaded connection M27x1
DL = 2 flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector to EN 175301-803
Other connectors on request

Model code	Part No.
WS08W-30-C-N-24DG	3132864
WS08W-30-C-N-230AG	3132865

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

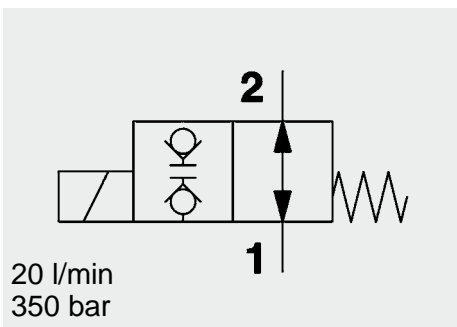
Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

Measured at $\nu = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$

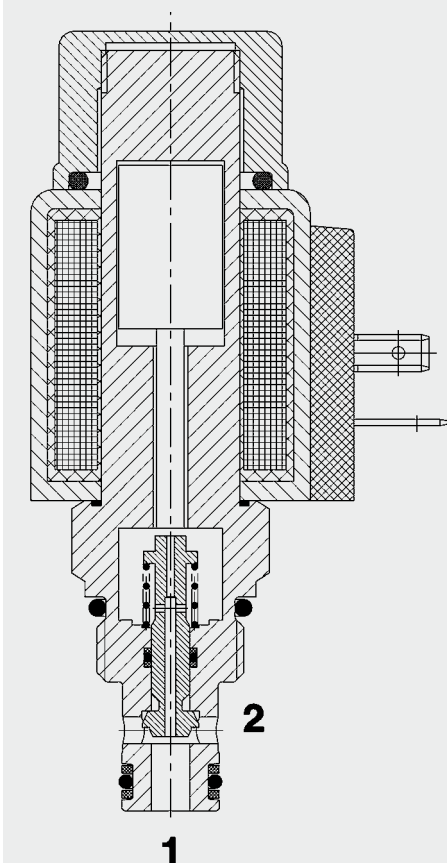


NOTE
The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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FUNCTION



3/2-Solenoid Directional Valve **UNF** Poppet Type, Direct-Acting Normally Open **SAE-08 Cartridge – 350 bar** WS08V-01

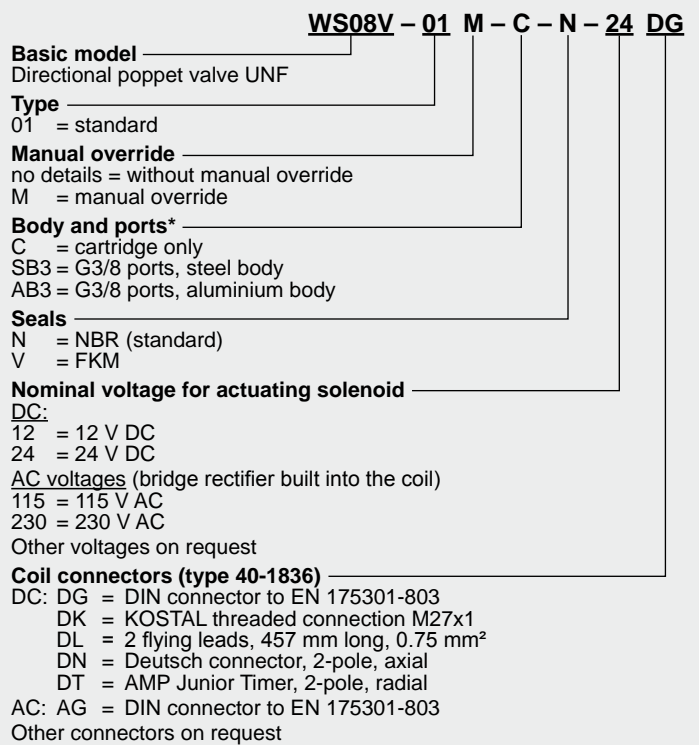
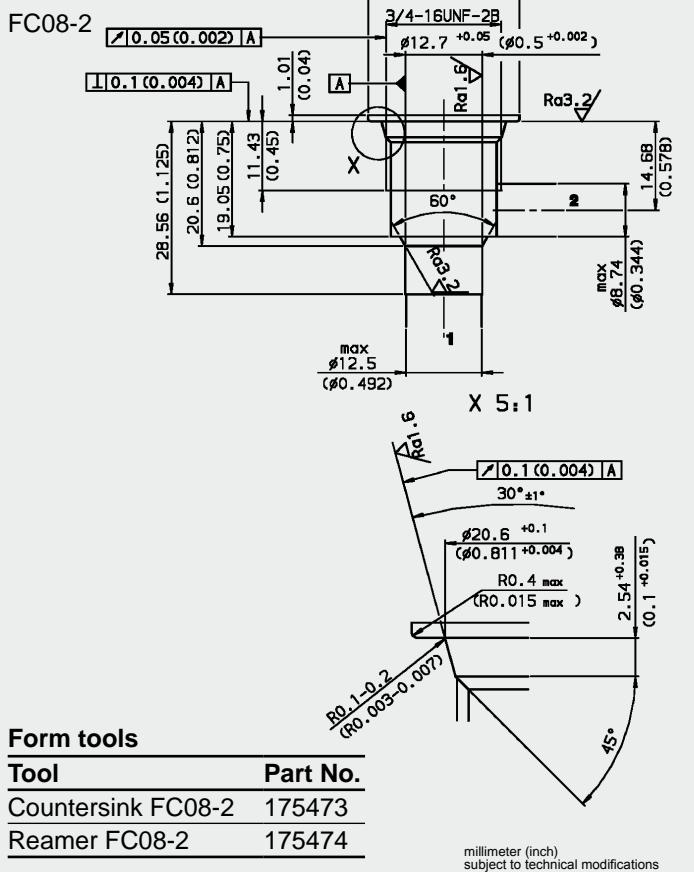
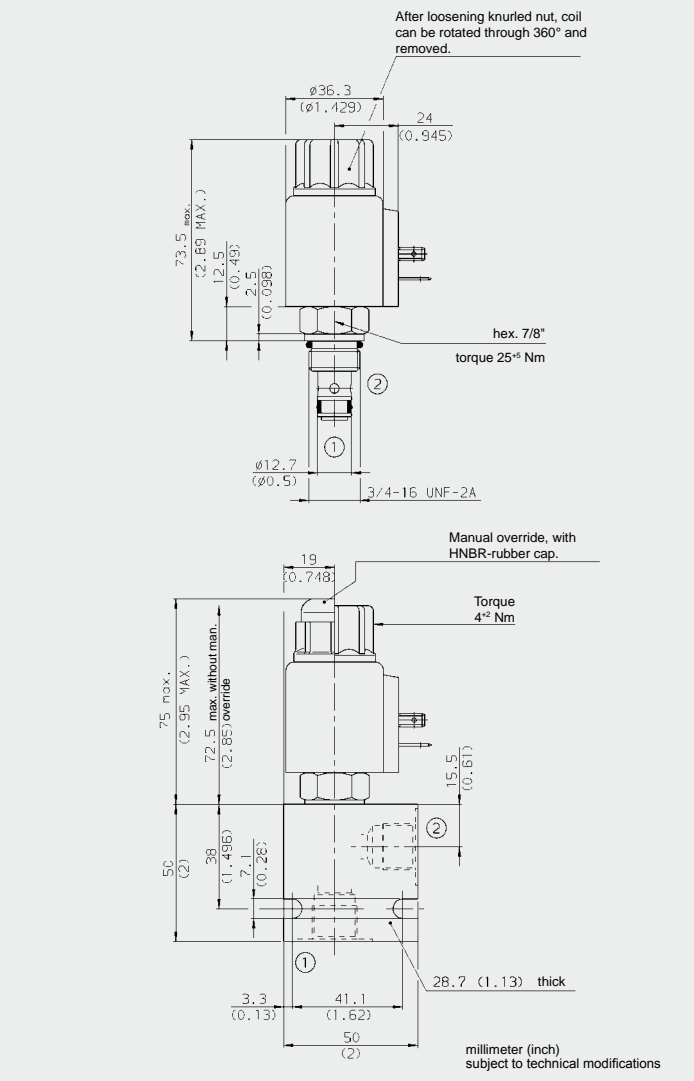
FEATURES

- 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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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	\pm 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

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.

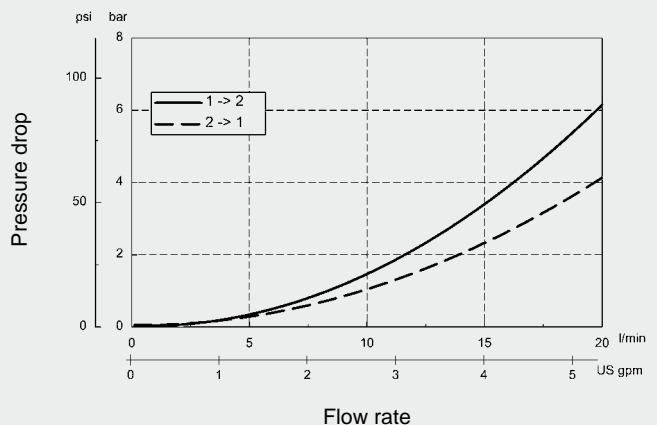


Model code	Part No.
WS08V-01-C-N-24DG	3138653
WS08V-01-C-N-230AG	3138654

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				

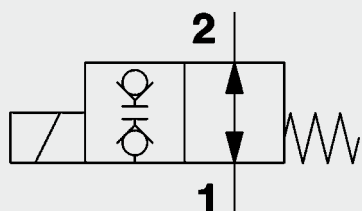
Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



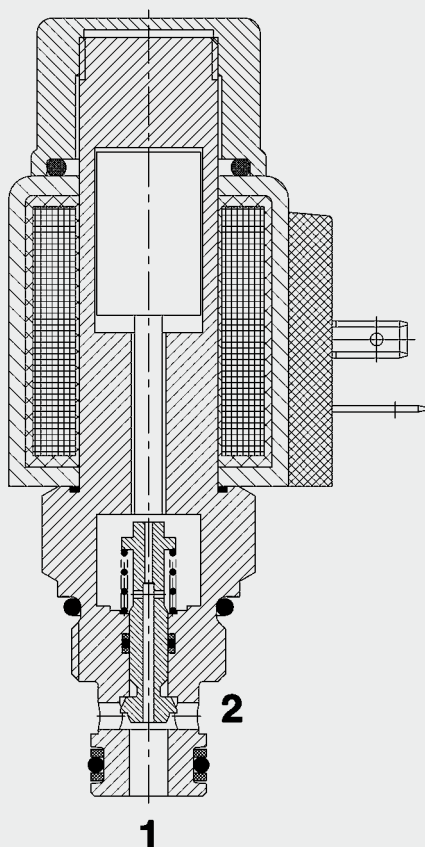
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Up to 20 l/min
Up to 350 bar

FUNCTION



2/2 Solenoid Directional Valve Poppet Type, Direct-Acting Normally Open Metric Cartridge – 350 bar

WSM06020V-01

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 \approx 0,25 cm ³ /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 mm ² /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:	\pm -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

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.

After loosening knurled nut, coil can be rotated through 360 ° and removed.

Manual override, with HNBR-rubber cap

torque 4⁺² Nm

Technical drawing of a manual override assembly. The drawing shows a side view and a top view. The side view shows a cylindrical assembly with a knurled nut at the bottom. The top view shows a circular base with a central hole. Dimensions are given in millimeters. The side view dimensions are: total height 75.5 max., distance from base to top of main body 14.3, distance from base to top of knurled nut 2.5, diameter of main body 36.3, diameter of knurled nut 23.8, and distance from base to top of manual override 78 max. The top view dimensions are: diameter of base 23.6, diameter of central hole 15, and thread specification M20 x 1.5. Callouts include: 1. hex. SW 24 Torque 25⁺⁵ Nm, 2. Manual override, with HNBR-rubber cap, and torque 4⁺² Nm.

hex. SW 24
Torque 25⁺⁵ Nm

1

2

75.5 max.

14.3

2.5

36.3

23.8

78 max.

15

M20 x 1.5

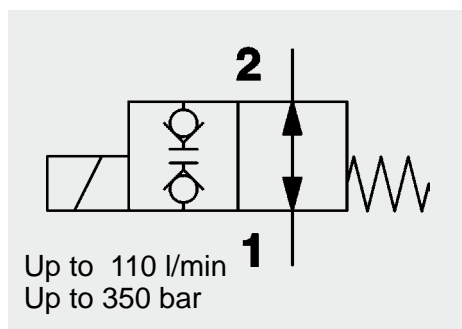
23.6

millimeter
subject to technical modifications

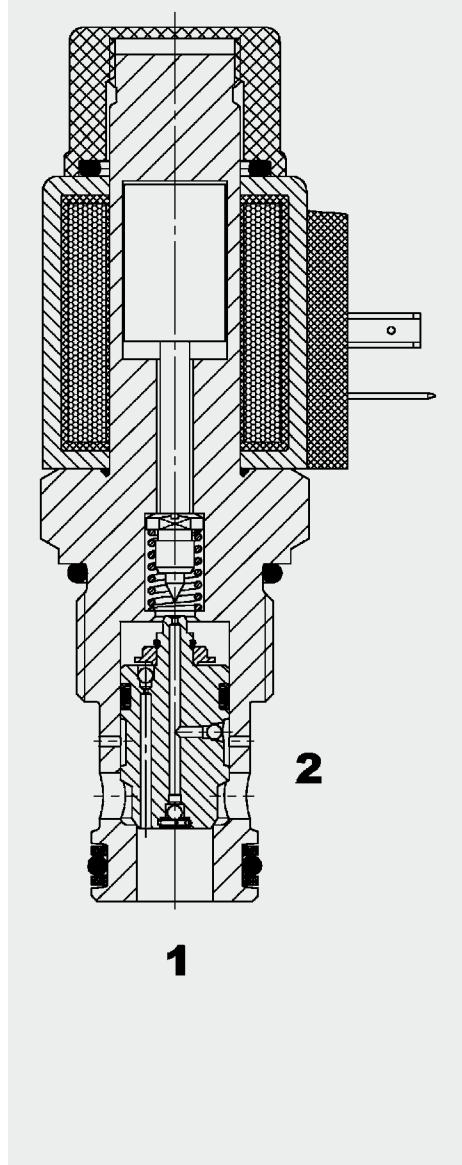
Technical drawing of a countersink and reamer tool. The drawing shows a side view of the tool with dimensions and surface finish requirements. Key features include a countersink with a 60-degree angle, a reamer with a 45-degree angle, and various surface finish symbols (Ra1.6, Ra3.2, Ra12.5, Ra0.1, Ra0.05). Dimensions include diameters (15, 21.3), radii (0.4, 0.1), and lengths (28, 14.5, 11.5, 13). A detail view 'X' shows the 45-degree reamer angle and surface finish Ra0.1.

Form tools	Part No.
Countersink	170033
Reamer	1000768

millimeter
subject to technical modifications



FUNCTION



2/2 Solenoid Directional Valve Poppet Type, Pilot-Operated Normally Open Metric Cartridge – 350 bar

WSM12120V-01

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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

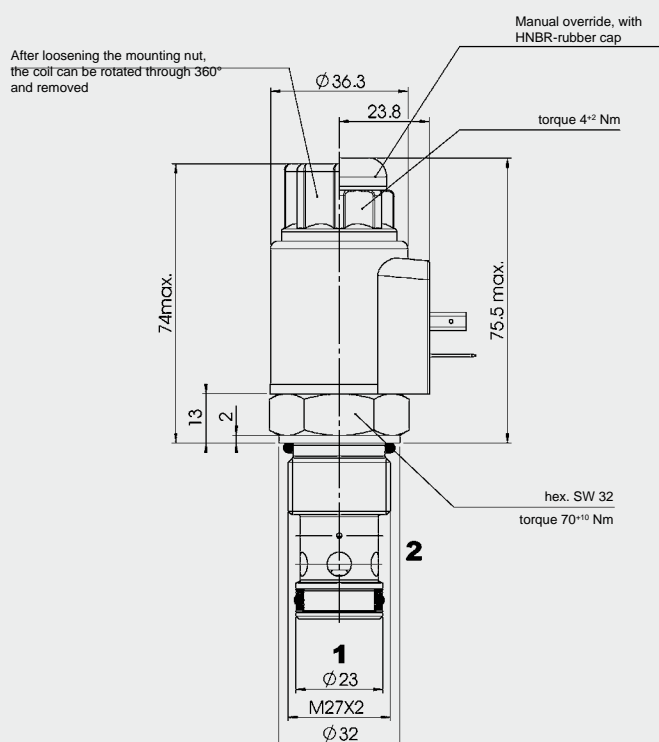
Electrical data

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:	\pm 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

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.

DIMENSIONS



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

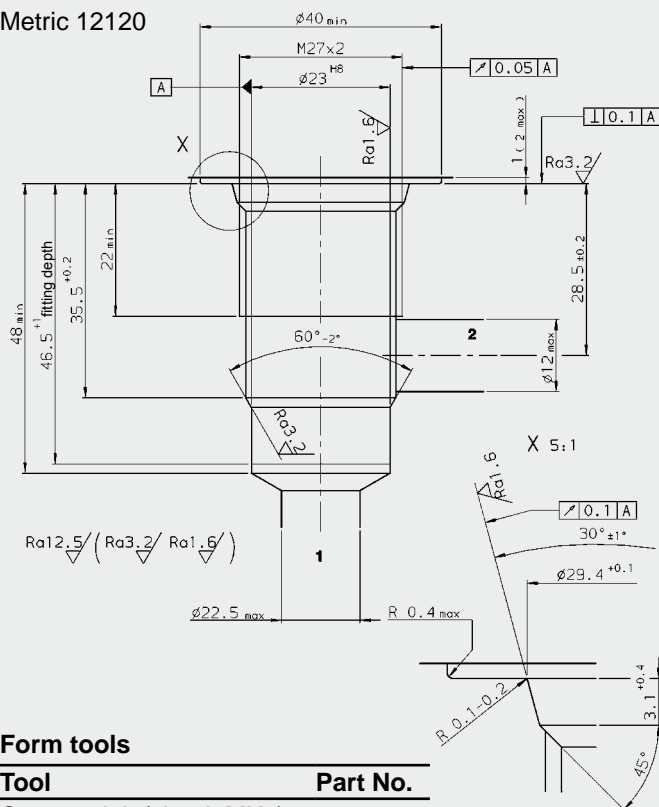
Code	Part No.	Material	Ports	Pressure
R12120-10X-01	396708	Steel, zinc-plated	G 3/4	max. 420 bar
R12120-10X-02	396707	Steel, zinc-plated	M27 x 2	max. 420 bar

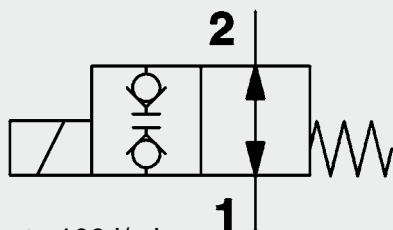
Seal kits

Code	Material	Part No.
SEAL KIT 12120-NBR	NBR	3454001
SEAL KIT 12120-FKM	FKM	3454002

CAVITY

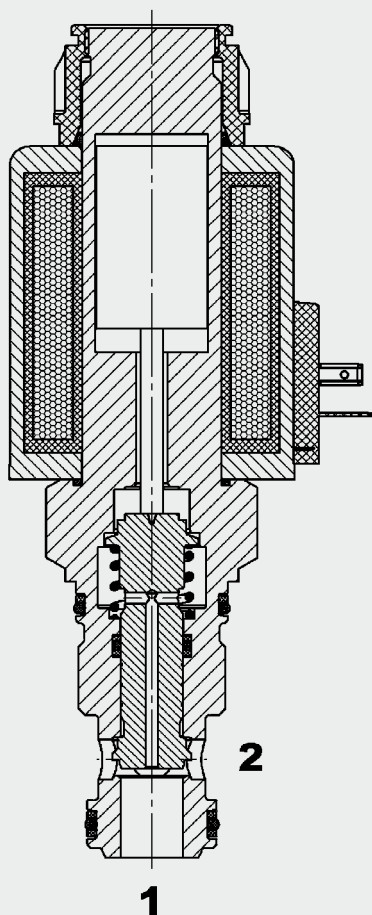
Metric 12120





up to 100 l/min
up to 210 bar

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.

2/2 Solenoid Directional Valve Poppet Type, Direct Acting Normally Open Metric Cartridge – 210 bar WSM16520V

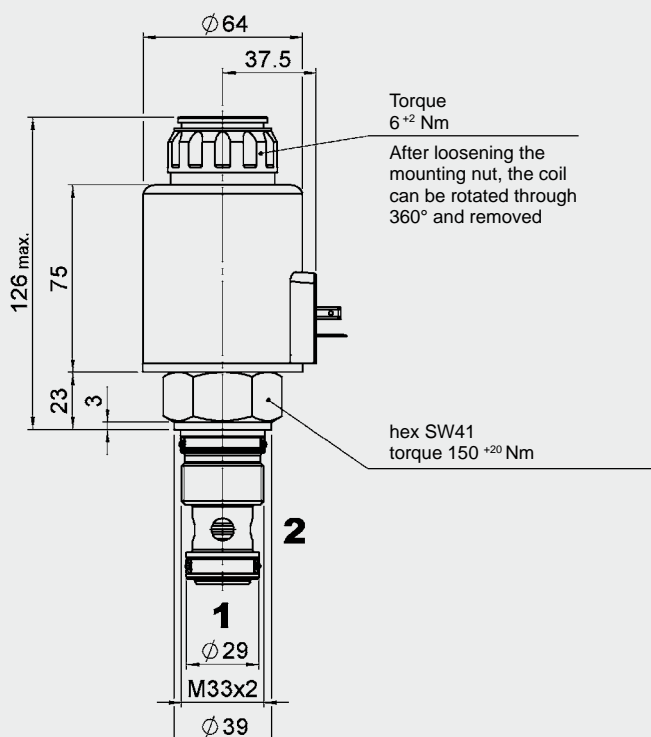
FEATURES

- 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 mm ² /s to max. 420 mm ² /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

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

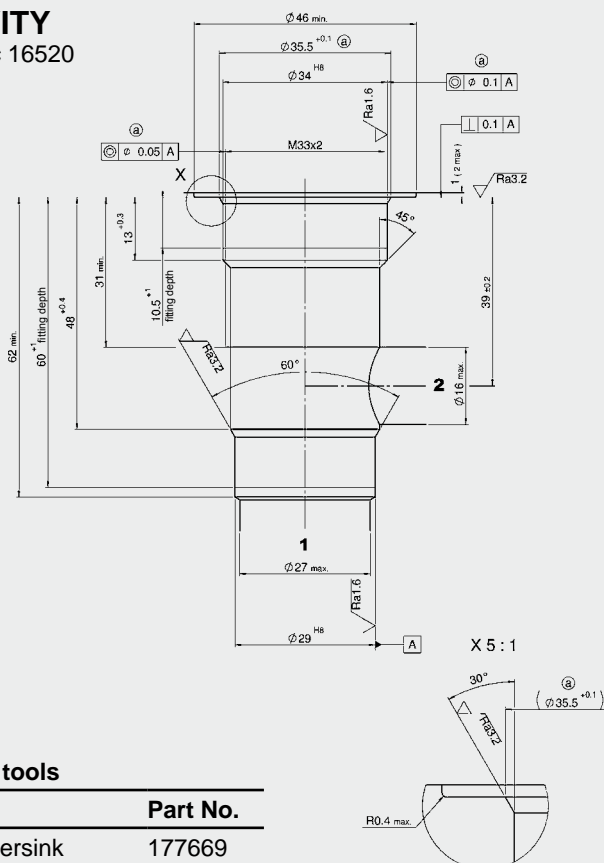
Code	Part No.	Material	Ports	Pressure
R16520-01X-01	3132532	Steel, zinc-plated	1 BSP	420 bar

Seal kits

Code	Part No.
SEAL KIT WSM16520 -NBR	3286856

CAVITY

Metric 16520



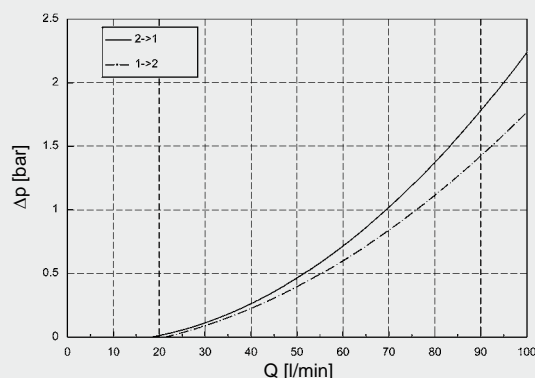
Millimeter
Subject to technical modifications

Form tools

Tool	Part No.
Countersink	177669
Reamer	1014952

PERFORMANCE

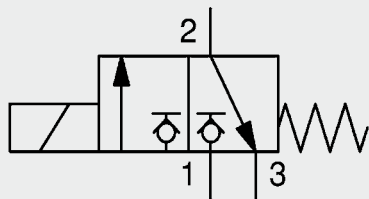
Measured at 33 mm²/s, T_{oil} = 46 °C



NOTE

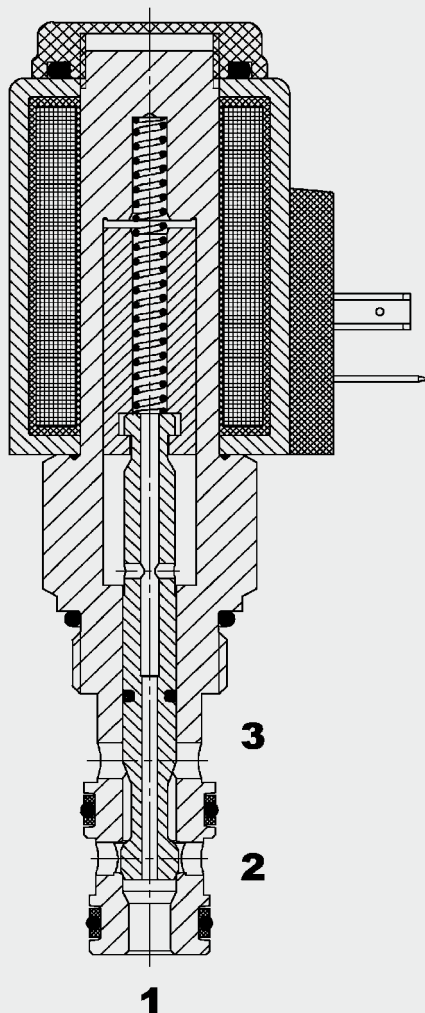
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Up to 22 l/min
Up to 350 bar

FUNCTION



3/2 Solenoid Directional Valve Poppet Type, Direct-Acting Metric Cartridge – 350 bar

WSM08130C-01

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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

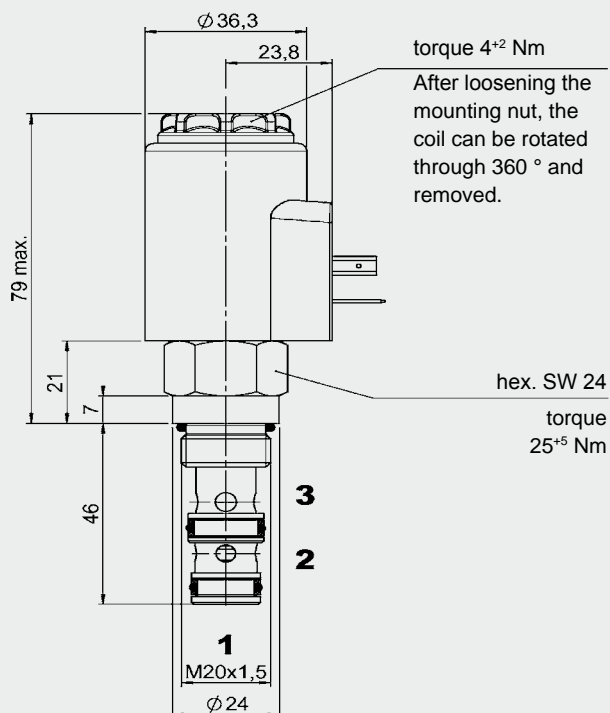
Electrical data:

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:	\pm 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

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.

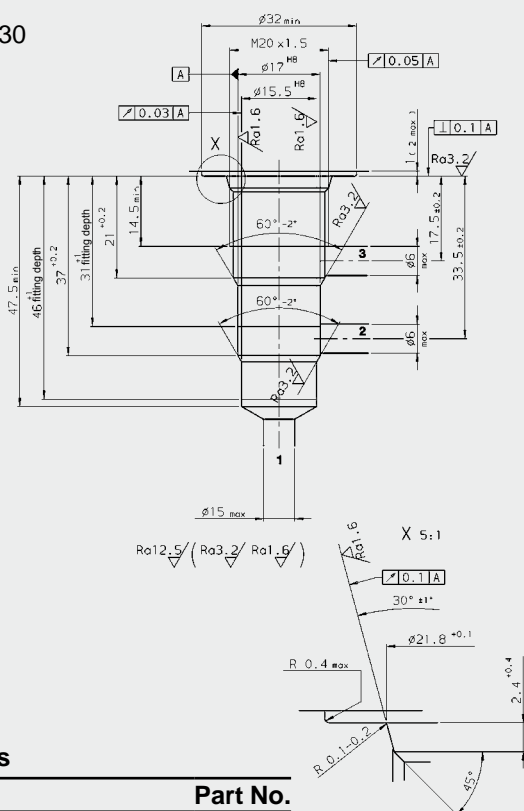
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

Metric 08130



millimeter
subject to technical modifications

Form tools

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

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

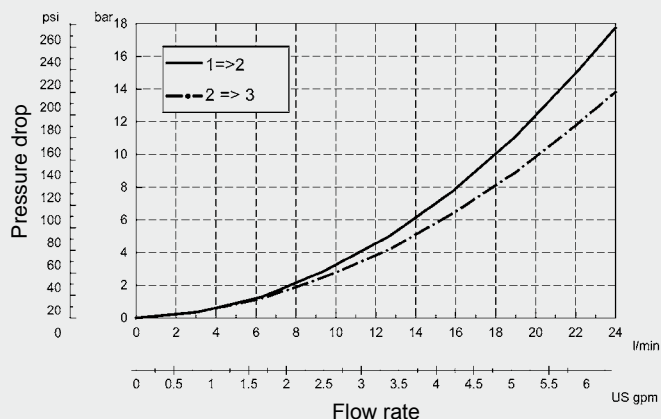
Other bodies on request

Seal kits

Code	Part No.
SEAL KIT 08130-NBR	3164596
SEAL KIT 08130-FKM	3183746

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$

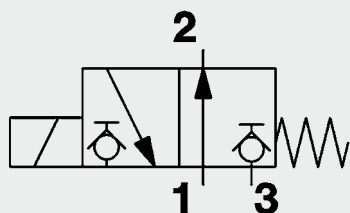


NOTE

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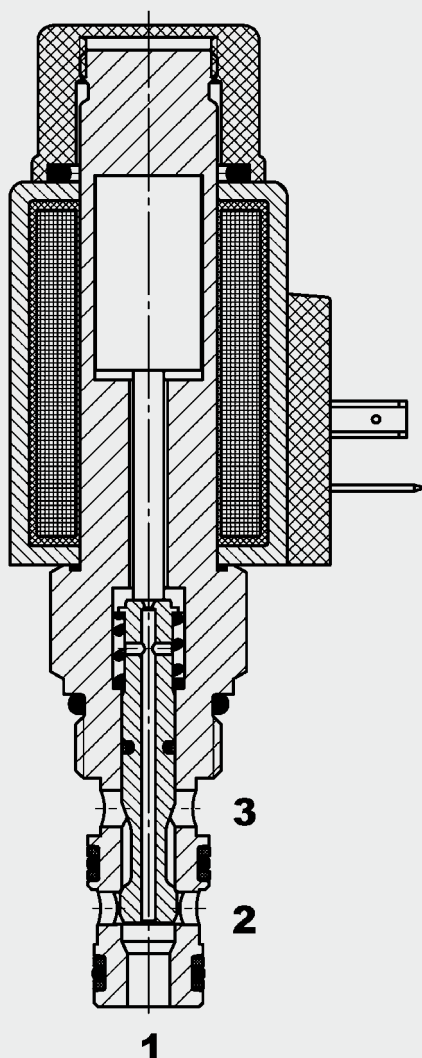
HYDAC Fluidtechnik GmbH

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E-Mail: flutec@hydac.com



23 l/min
350 bar

FUNCTION



3/2 Solenoid Directional Valve **UNF** Poppet Type, Direct-Acting SAE-08 Cartridge – 350 bar WS08D-01

FEATURES

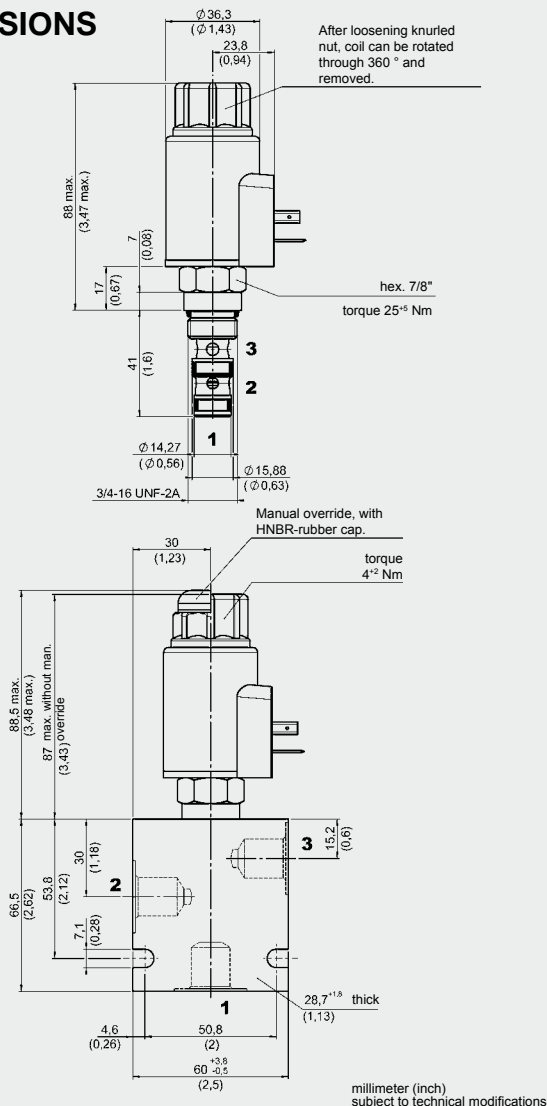
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 23 l/min	
Internal leakage:	leakage-free (max. 5 drops \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 15% of nominal	
Coil duty rating:	Continuous up to 115% of nominal voltage at max 60 °C ambient temperature	
Coil type	Coil...-50-1836	

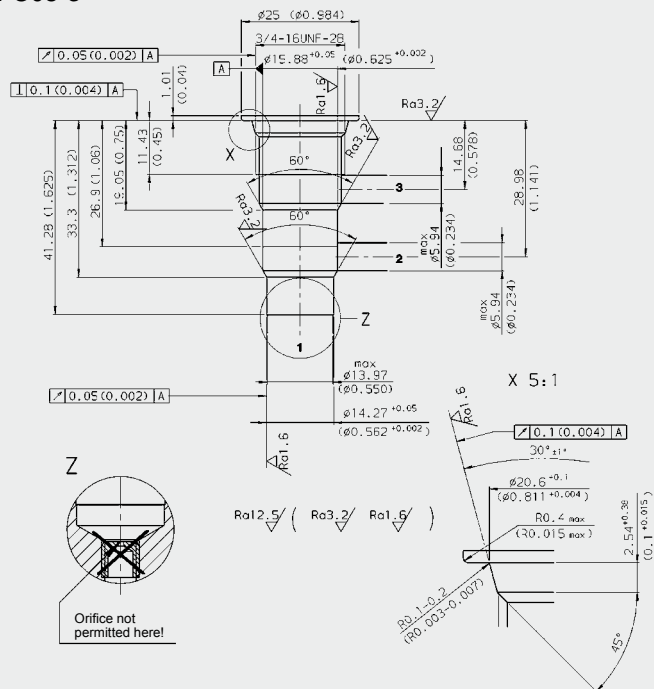
When de-energized, there is free flow through the valve from port 1 to port 2. Port 3 is closed. When energized, the valve allows flow from port 2 to 3, while blocking flow at port 1.

DIMENSIONS



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

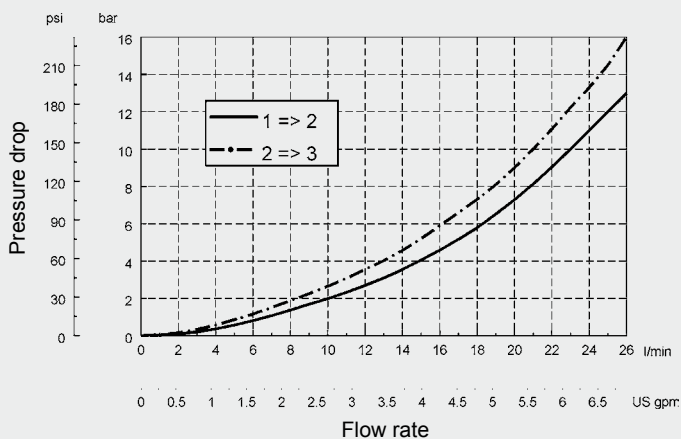
Other models on request

Seal kits

Code	Material	Part No.
FS083-N seal kit	NBR	3054795
FS083-V seal kit	FKM	2591059

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



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

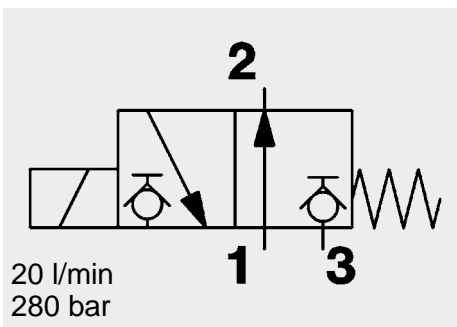
Justus-von-Liebig-Str.

D-66280 Sulzbach/Saar

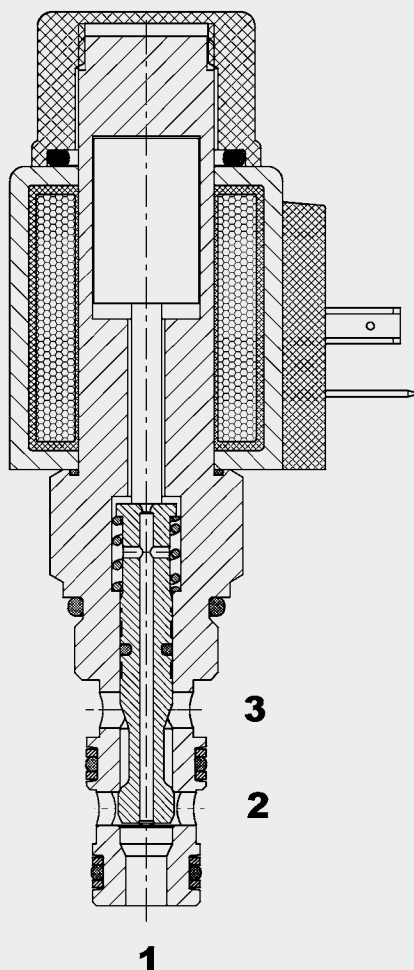
Tel: 0 68 97 /509-01

Fax: 0 68 97 /509-598

E-Mail: flutec@hydac.com



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.

3/2 Solenoid Directional Valve **UNF** Poppet Type, Direct-Acting SAE-08 Cartridge – 280 bar

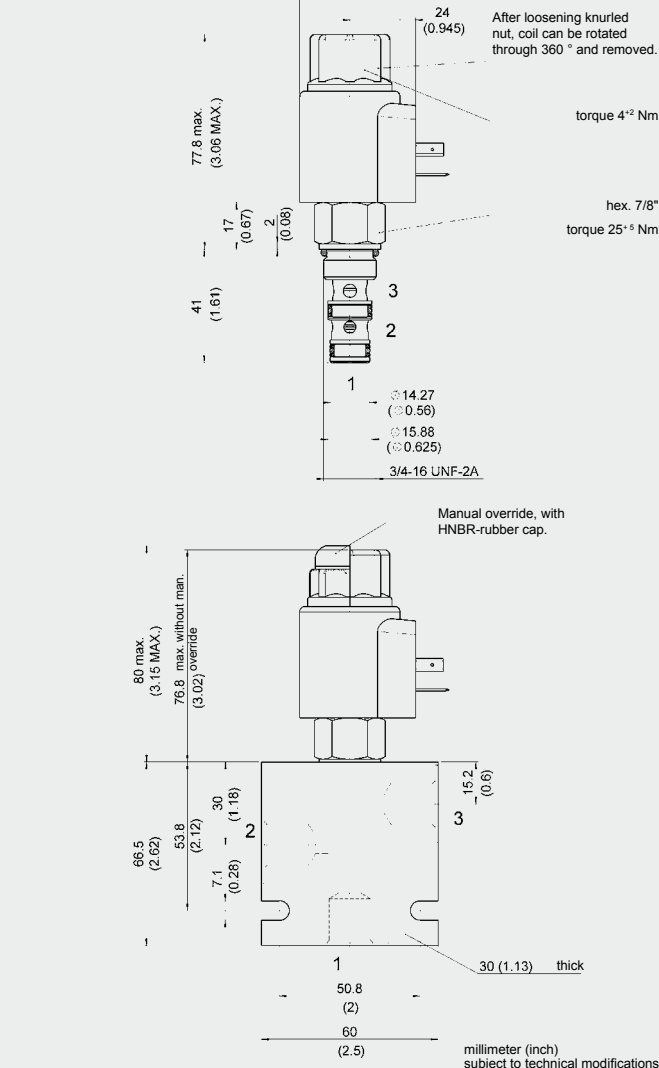
WS08D-51

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\pm 15% of the nominal voltage	
Switching time:	Energized:	approx. 35 ms
	De-energized:	approx. 45 ms
Coil type:	Coil...-40-1836	



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

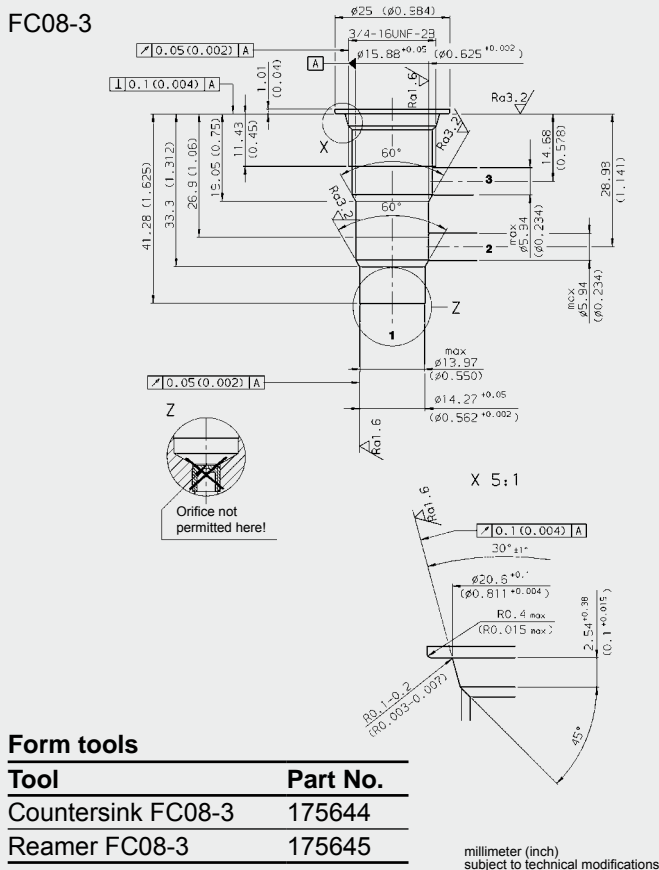
Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC
Other voltages on request

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

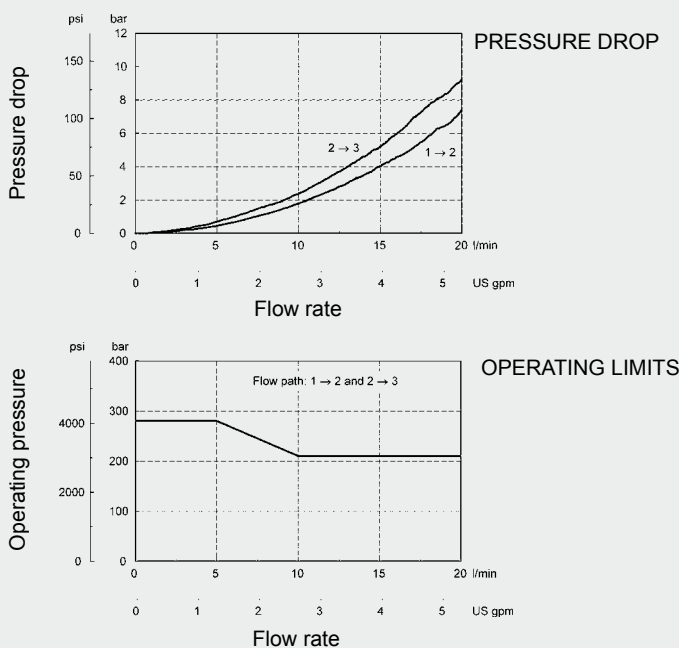
Code	Part No.
WS08D-51-C-N-24DG	3079445
WS08D-51-C-N-230AG	3092948

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				

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

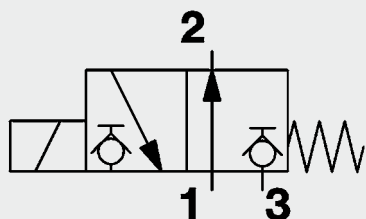


Measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



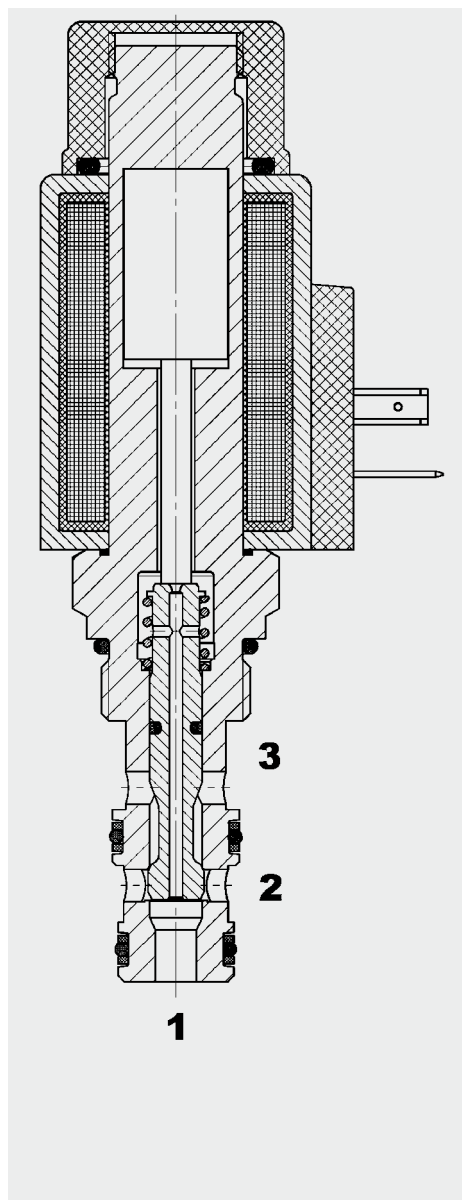
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up to 22 l/min
up to 350 bar

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.

3/2-Solenoid Directional Valve Poppet Type - Direct-Acting Normally Open Metric Cartridge – 350 bar

WSM08130D-01

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	$\pm 15\%$ 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

After loosening mounting nut, coil can be rotated through 360° and removed.

Manual override, with HNBR-rubber cap.

torque 4⁺² Nm

83 max.

23.8

Ø 36.3

84.5 max.

12

3

46

hex. SW24
torque 25⁺⁵ Nm

3

2

1

M20x1.5

Ø 24

Millimeter
Subject to technical modifications

Technical drawing of a mechanical part, likely a shaft or pin, showing dimensions and tolerances. The drawing includes a cross-section view and a side view.

Dimensions and Tolerances:

- Overall length: 47.5 ± 0.1
- Fitting depth: 46 ± 0.2
- Section 1 length: 37 ± 0.2
- Fitting depth (Section 1): 31 ± 0.2
- Section 2 length: 21 ± 0.2
- Section 3 length: 14.5 ± 0.1
- Section 4 length: 17.5 ± 0.2
- Section 5 length: 33.5 ± 0.2
- Section 6 length: 2.4 ± 0.4

Surface Tolerances:

- Surface A: $\sqrt{0.03}$
- Surface B: $\sqrt{0.05}$
- Surface C: $\sqrt{0.1}$
- Surface D: $\sqrt{0.1}$
- Surface E: $\sqrt{0.1}$
- Surface F: $\sqrt{0.1}$
- Surface G: $\sqrt{0.1}$
- Surface H: $\sqrt{0.1}$
- Surface I: $\sqrt{0.1}$
- Surface J: $\sqrt{0.1}$
- Surface K: $\sqrt{0.1}$
- Surface L: $\sqrt{0.1}$
- Surface M: $\sqrt{0.1}$
- Surface N: $\sqrt{0.1}$
- Surface O: $\sqrt{0.1}$
- Surface P: $\sqrt{0.1}$
- Surface Q: $\sqrt{0.1}$
- Surface R: $\sqrt{0.1}$
- Surface S: $\sqrt{0.1}$
- Surface T: $\sqrt{0.1}$
- Surface U: $\sqrt{0.1}$
- Surface V: $\sqrt{0.1}$
- Surface W: $\sqrt{0.1}$
- Surface X: $\sqrt{0.1}$
- Surface Y: $\sqrt{0.1}$
- Surface Z: $\sqrt{0.1}$

Geometric Tolerances:

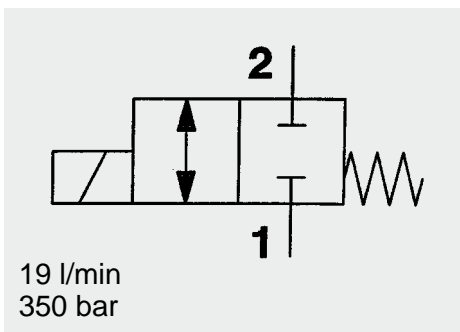
- Form: $\sqrt{0.05}$
- Position: $\sqrt{0.03}$
- Orientation: $\sqrt{0.1}$
- Runout: $\sqrt{0.1}$

Other Features:

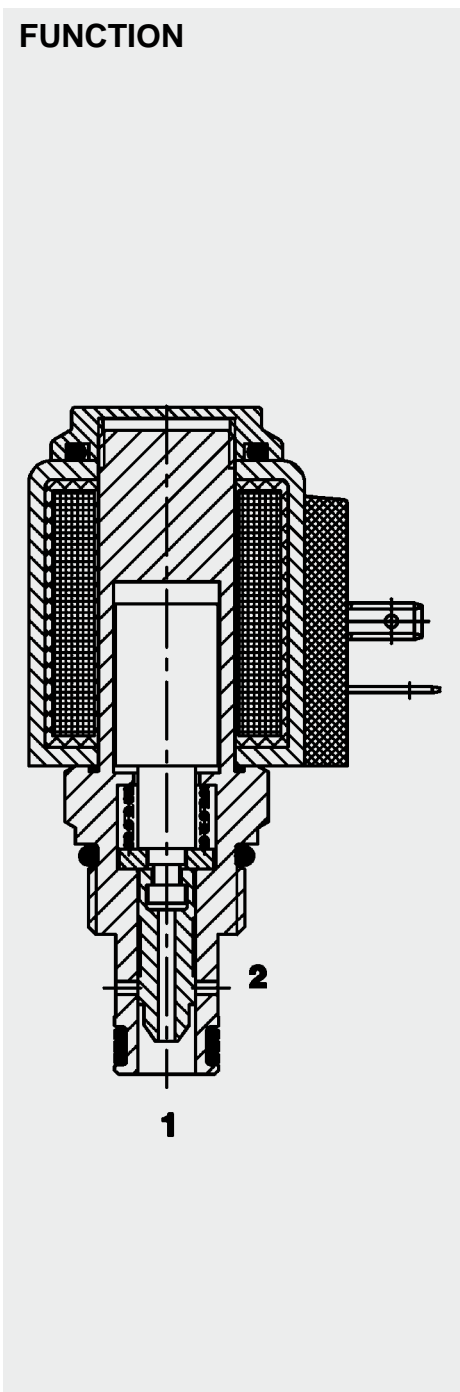
- Thread: $M20 \times 1.5$
- Surface Finish: $Ra 1.6$, $Ra 3.2$, $Ra 12.5$
- Radius: $R 0.4$
- Angle: 45° , $30^\circ \pm 1^\circ$

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

E 5.977.1.1/01.13



FUNCTION



In the de-energized mode, the valve blocks flow in both directions. When energized the valve allows flow in both directions.

2/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting SAE-08 Cartridge – 350 bar WK08W-01

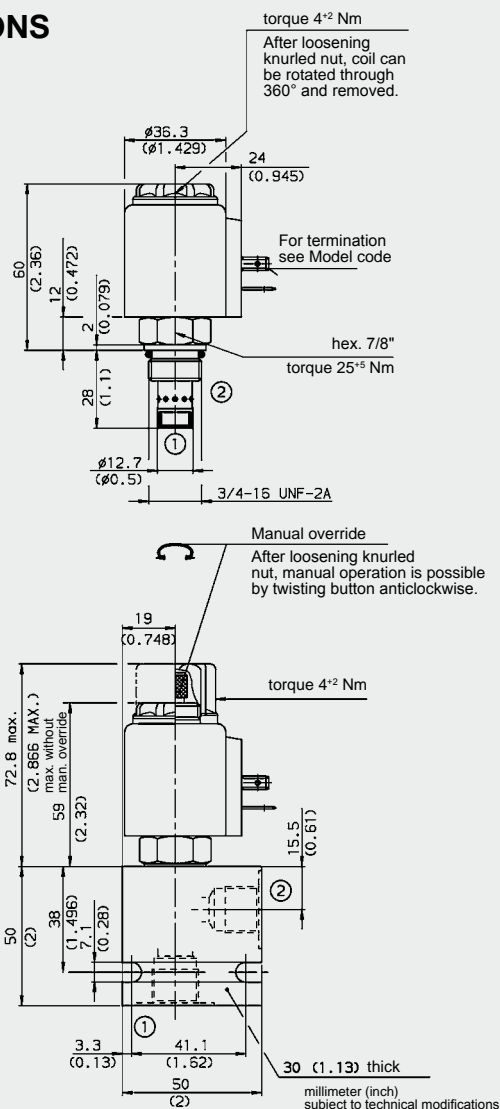
FEATURES

- 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

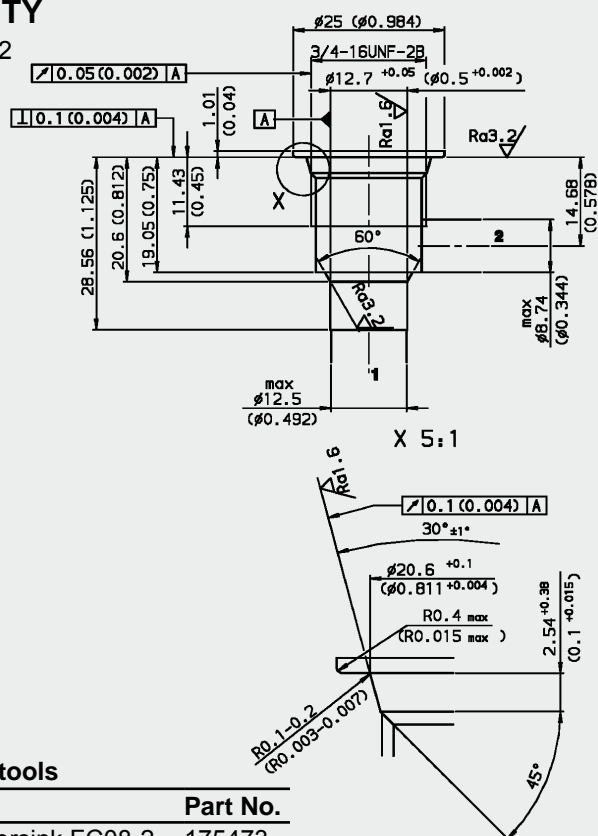
Operating pressure:	max. 350 bar
Nominal flow:	max. 19 l/min
Internal leakage:	150 cm ³ /min at 250 bar
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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

millimeter (inch) subject to technical modifications

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

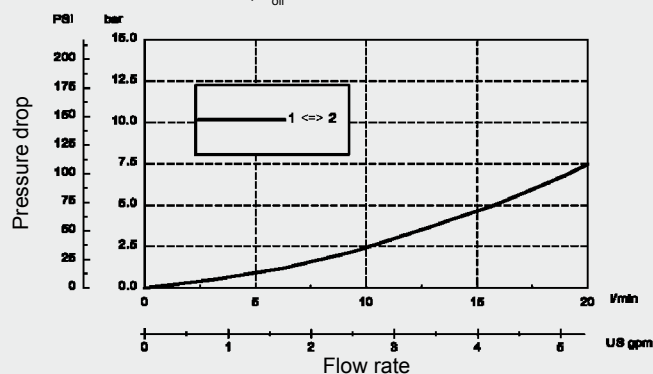
Other housings on request

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{oil} = 46^\circ \text{C}$

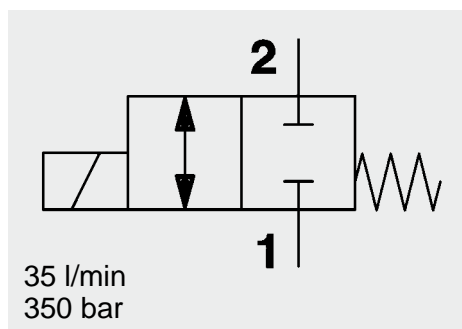


NOTE

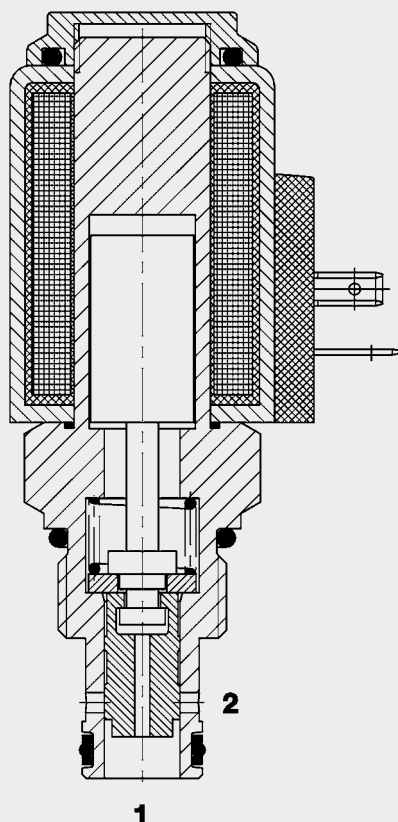
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E-Mail: flutec@hydac.com



FUNCTION



2/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting, SAE-10 Cartridge – 350 bar WK10W-01

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	

When the solenoid coil is de-energized, the valve blocks flow in both directions. When energized the valve allows flow in both directions.

After loosening the mounting nut, the coil can be rotated through 360° and removed.

hex 1" torque 45⁺¹⁰ Nm

Manual override, Option 'M'

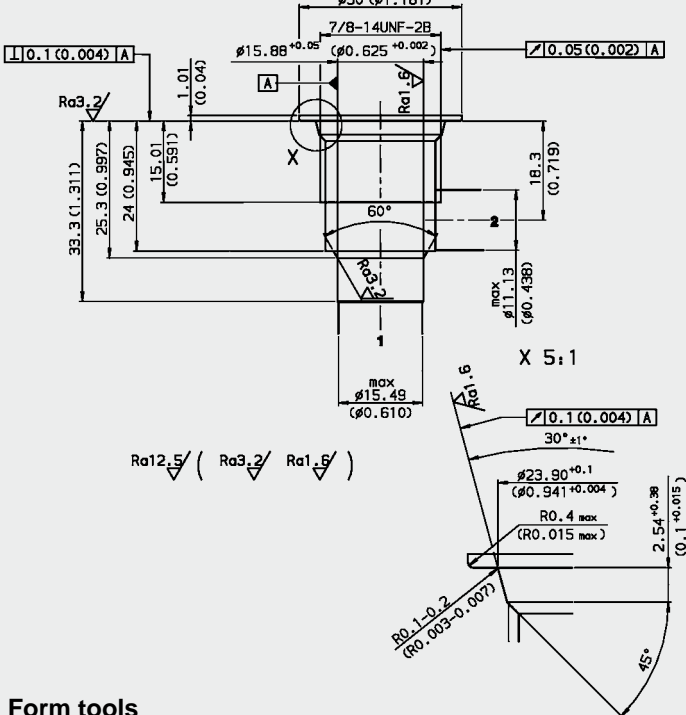
After loosening knurled nut, manual operation is possible by twisting button anticlockwise.

torque 4⁺² Nm

32 thick (1.25)

millimeter (inch)
subject to technical modification

FC10-2



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

WK10W-01 M - C - N - 24 DG

Directional spool valve, UNF

no details = without manual override
M = manual override

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

N = NBR (standard)
V = FKM

DC voltages

24 = 24 V DC

$$115 = 115 \text{ V AC}$$

Other voltages on request

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

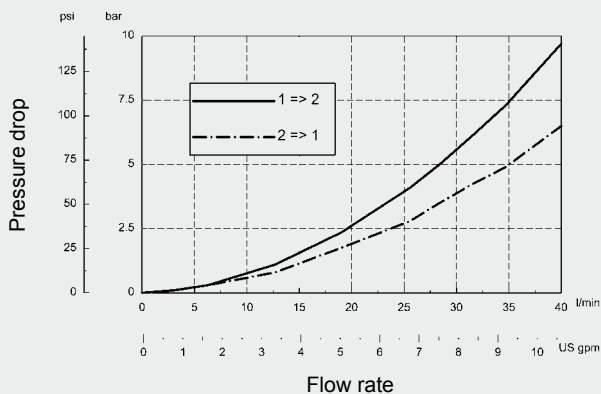
Other connectors on request

Model code	Part No.
WK10W-01-C-N-24DG	3079726
WK10W-01-C-N-230AG	3094629
Other models on request	

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				

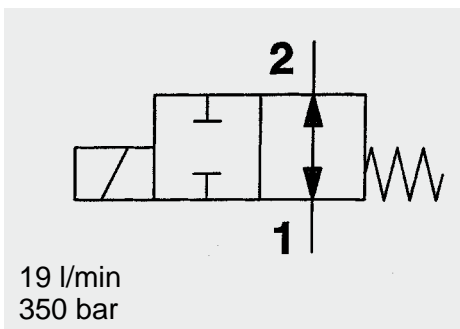
Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

Measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$

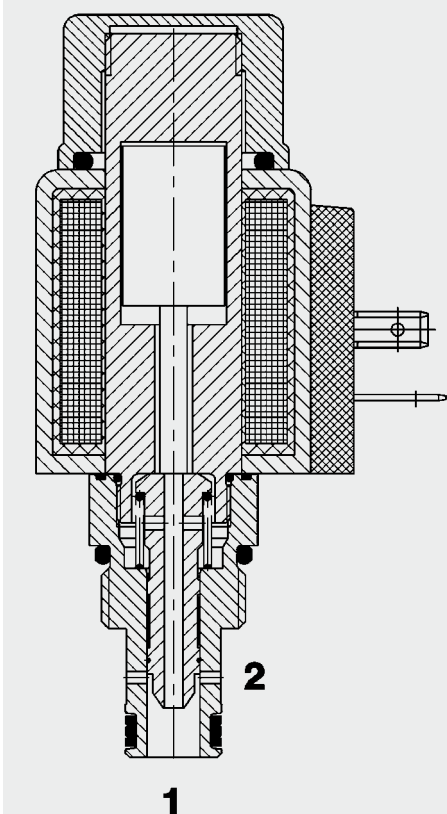


NOTE
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Subject to technical modifications.

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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.

2/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting SAE-08 Cartridge – 350 bar WK08V-01

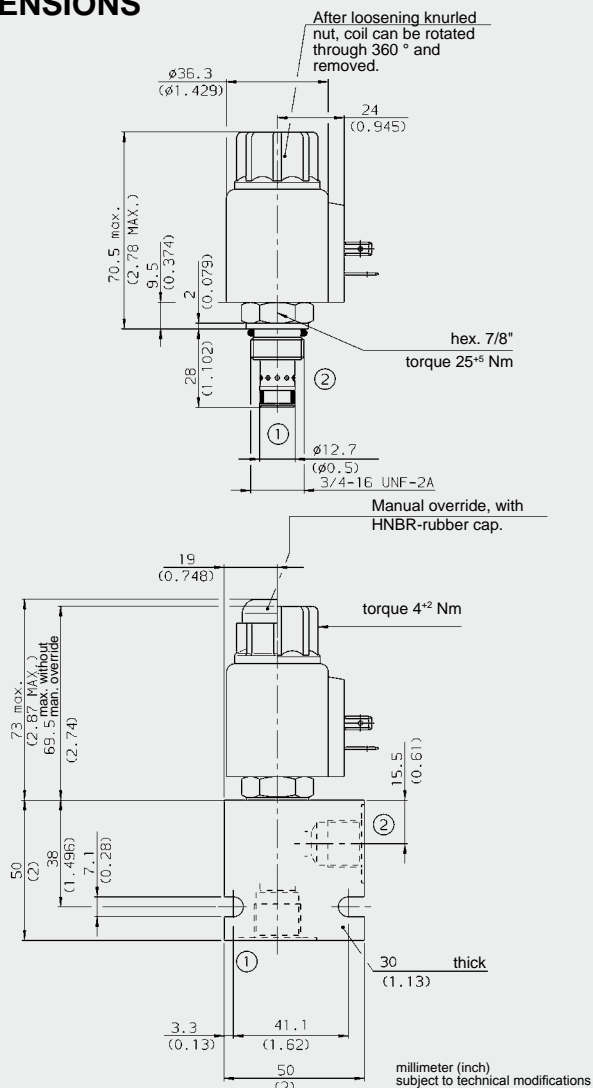
FEATURES

- 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

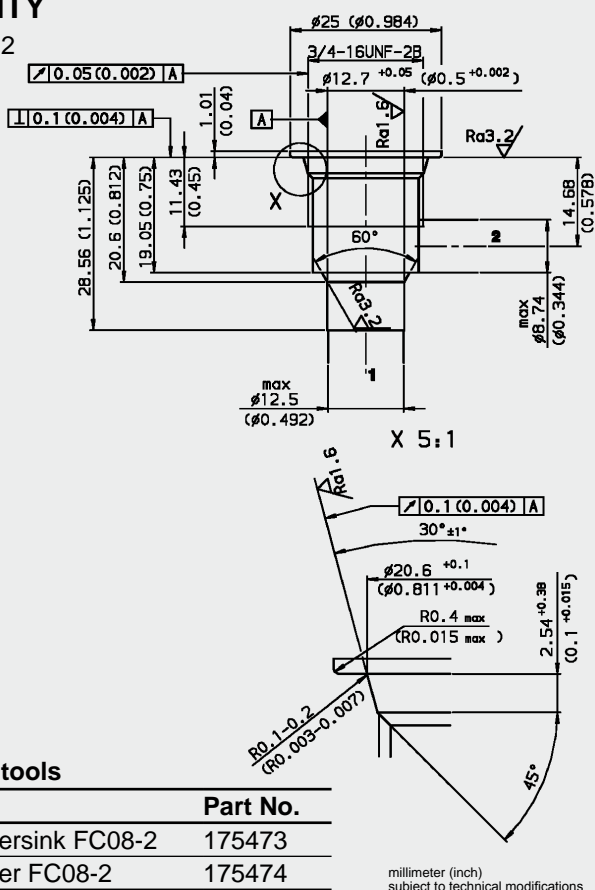
Operating pressure:	max. 350 bar	
Nominal flow:	max. 19 l/min	
Internal leakage:	90 cm ³ /min at 250 bar and 34 mm ² /s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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



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

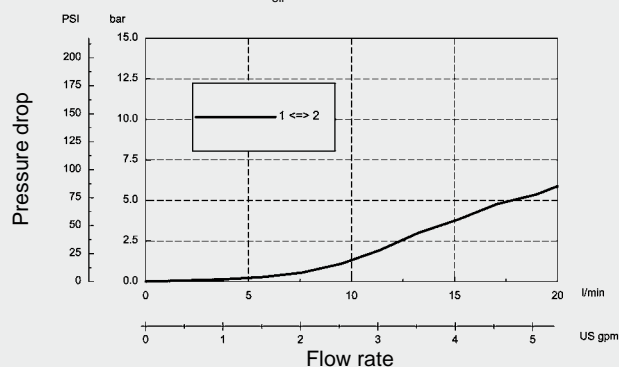
Other line bodies on request

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$

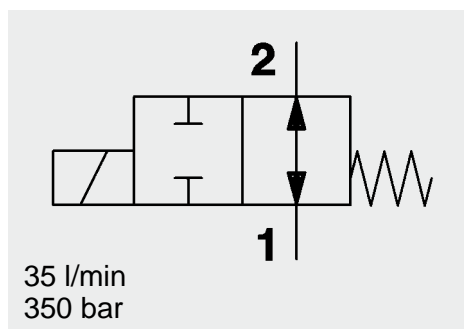


NOTE

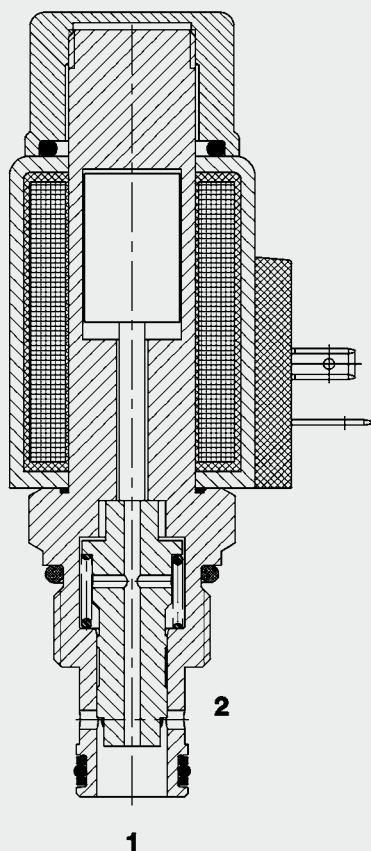
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FUNCTION



2/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting, SAE-10 Cartridge – 350 bar WK10V-01

FEATURES

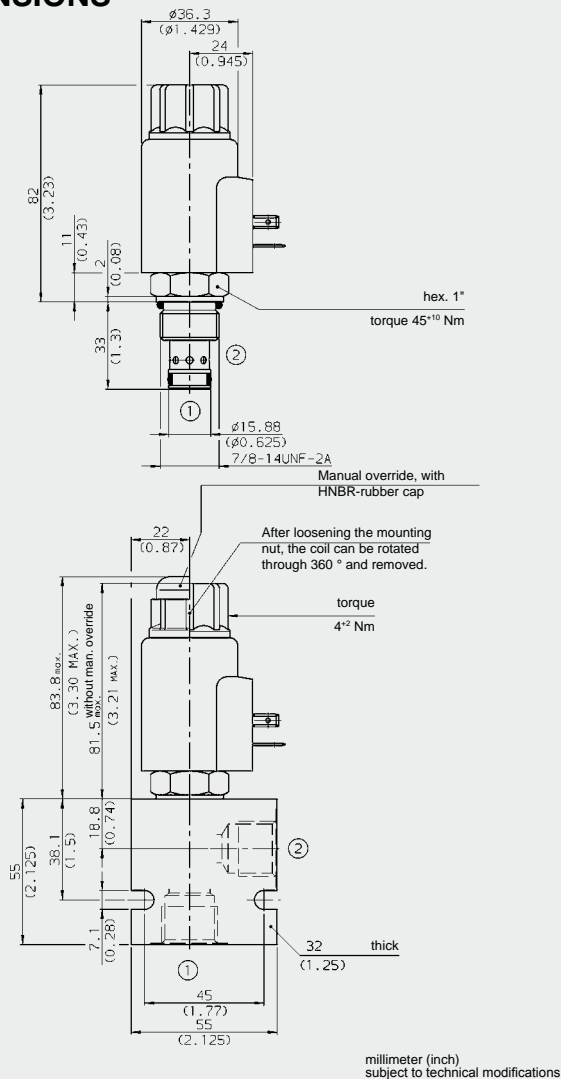
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 35 l/min
Internal leakage:	max. 190 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /s
Filtration:	Class 21/19/16 according to ISO 4406 or cleaner
Materials:	<div> <div>Valve body:</div> <div>Spool:</div> <div>Seals:</div> <div>Back-up rings:</div> <div>Coil:</div> </div> <div> <div>free-cutting steel</div> <div>hardened and ground steel</div> <div>NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)</div> <div>PTFE</div> <div>steel / polyamide</div> </div>
Cavity:	FC10-2
Weight:	<div>Valve complete 0.45 kg</div> <div>Coil only 0.23 kg</div>
Electrical data:	
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil
Current draw at 20 °C:	<div>2.22 A at 12 V DC</div> <div>1.13 A at 24 V DC</div>
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

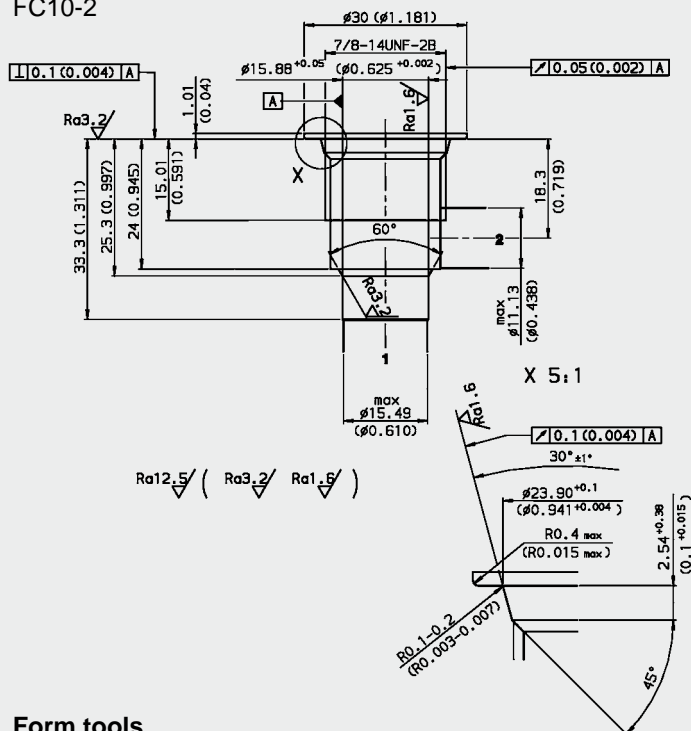
When the solenoid coil is de-energized, the valve is open in both directions.
When the solenoid coil is energized, the valve is closed in both directions.

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

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

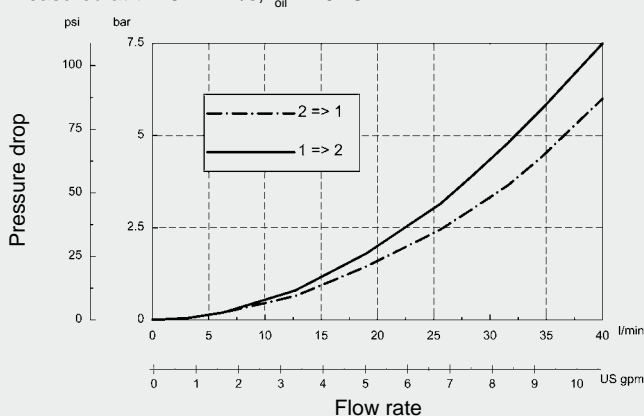
Other bodies on request

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$

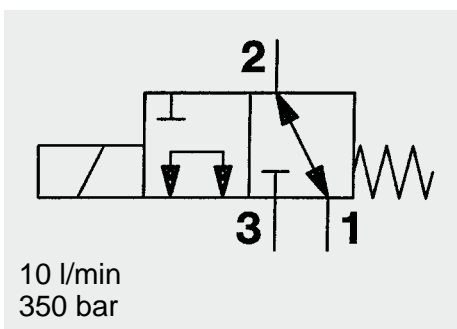


NOTE

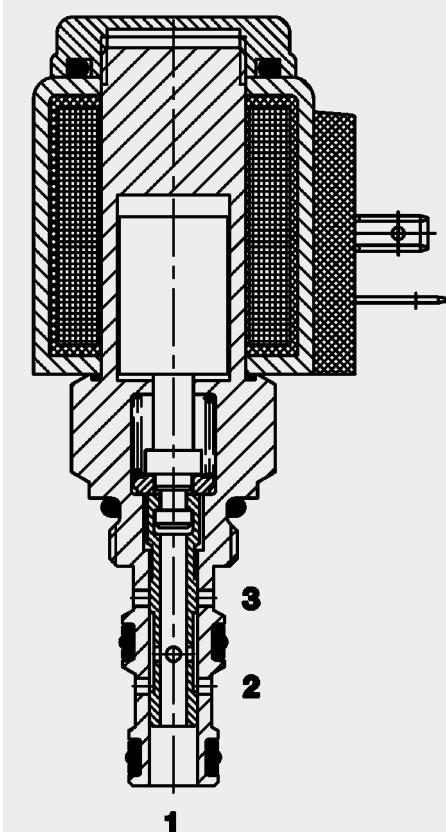
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FUNCTION



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.

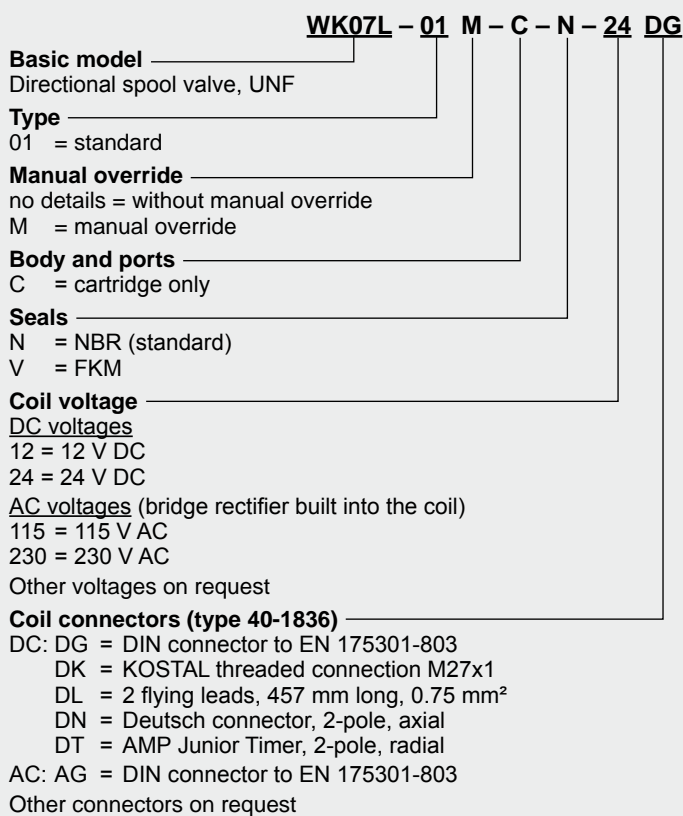
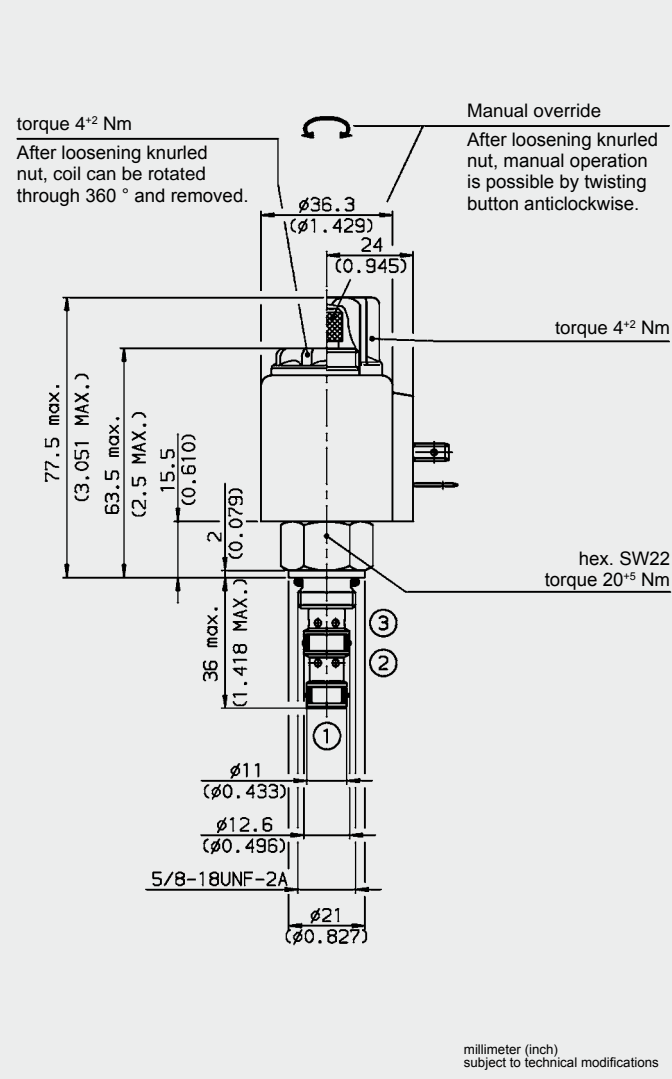
3/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting **SAE-07 Cartridge – 350 bar** WK07L-01

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

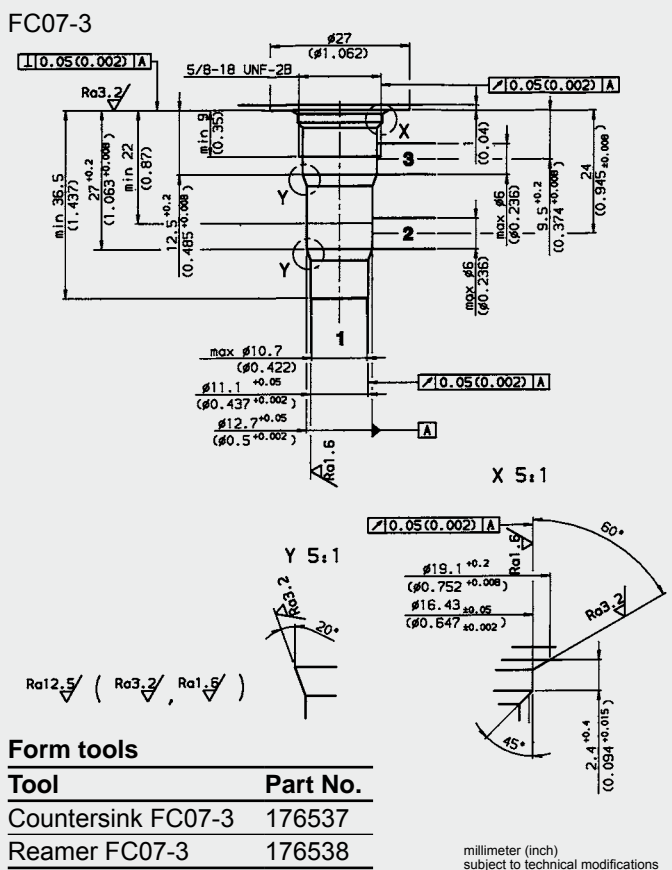
Operating pressure:	max. 350 bar	
Nominal flow:	max. 10 l/min	
Internal leakage:	150 cm³/min at 210 bar and 34 mm²/s	
Media operating temperature range:	-20 °C to +100 °C	
Ambient temperature range:	-20 °C to + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity:	min. 7.4 mm²/s 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	



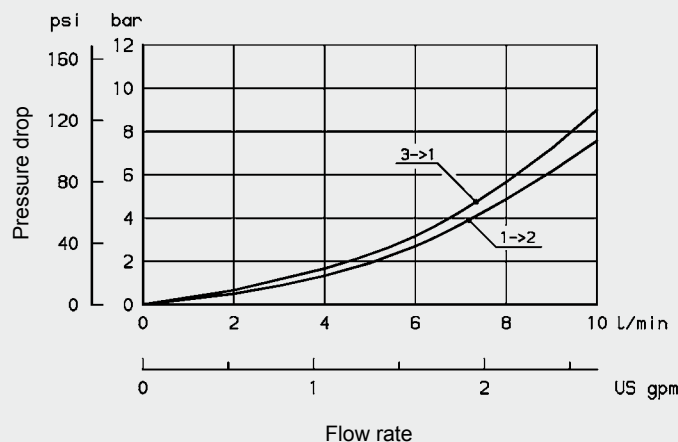
Model code	Part No.
WK07L-01-C-N-24DG	3034324
WK07L-01-C-N-230AG	3091310
Other models on request	

On request

Code	Material	Part No.
FS073-N SEAL KIT	NBR	3086946

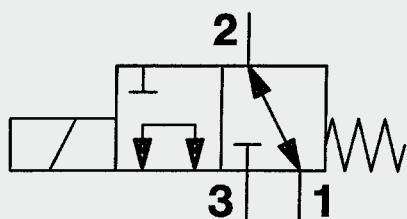


Measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



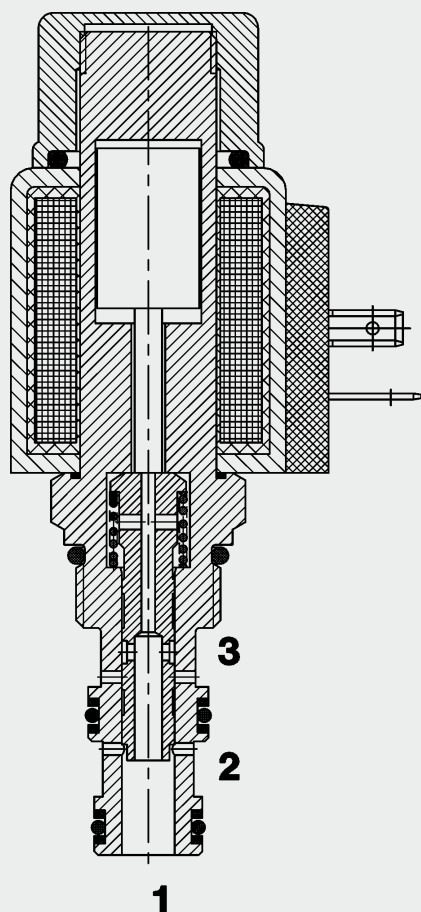
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17 l/min
350 bar

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.

3/2 Solenoid Directional Valve **UNF** Spool Type - Direct-Acting SAE-08 Cartridge – 350 bar WK08L-01

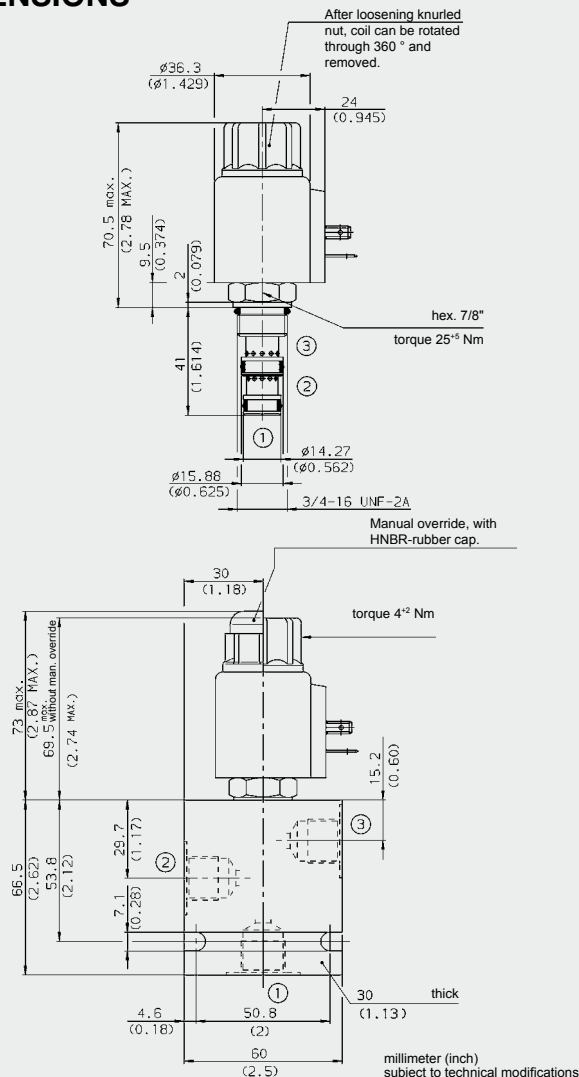
GENERAL

- 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



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

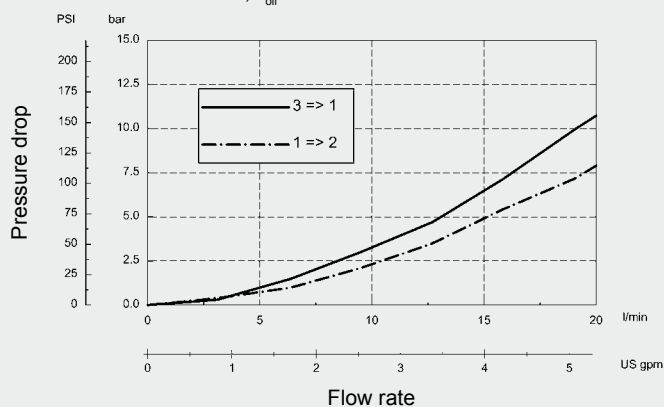
Other models on request

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



NOTE

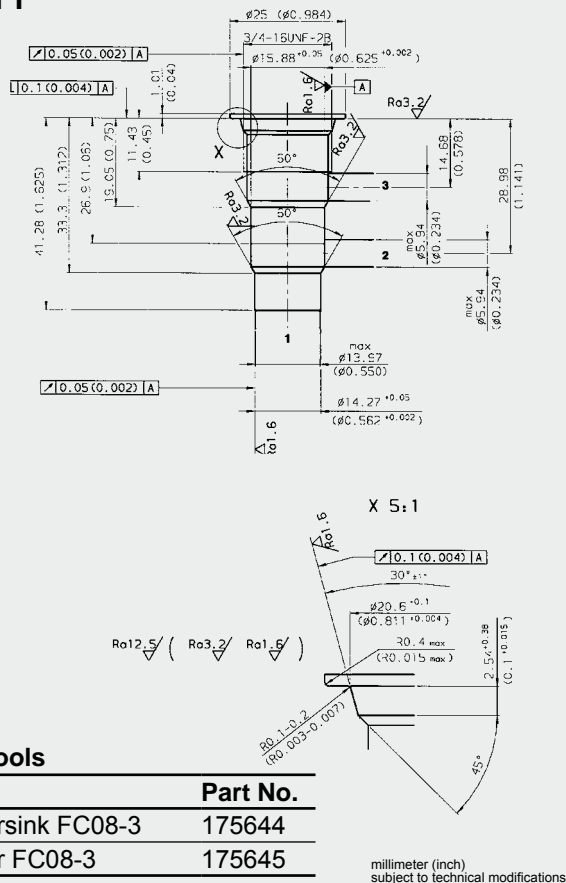
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CAVITY

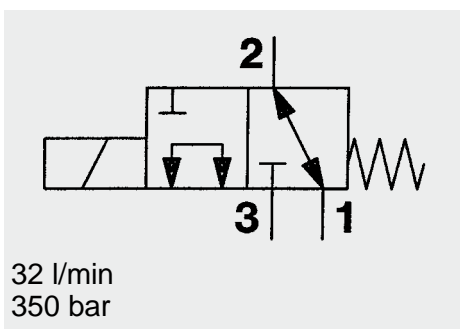
FC08-3



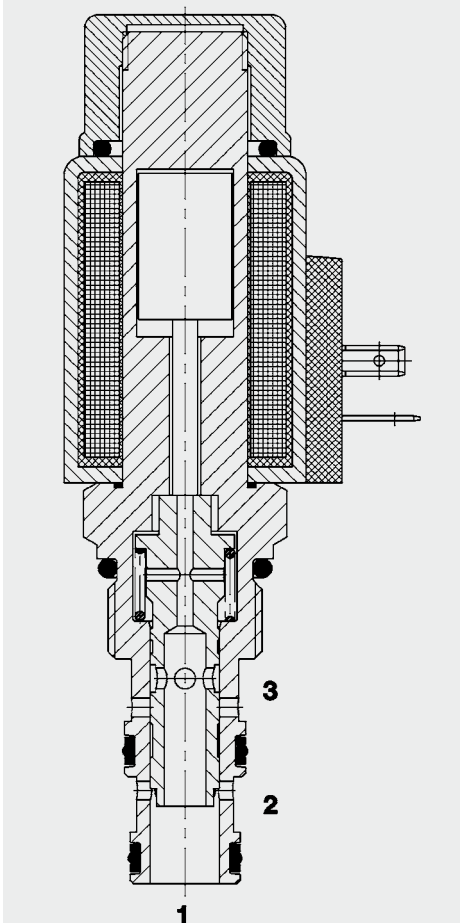
Form tools

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

millimeter (inch)
subject to technical modifications



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.

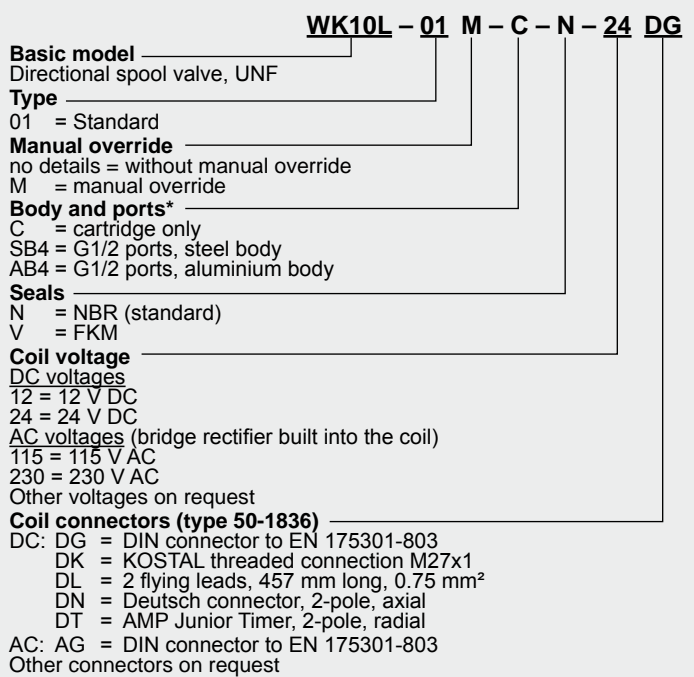
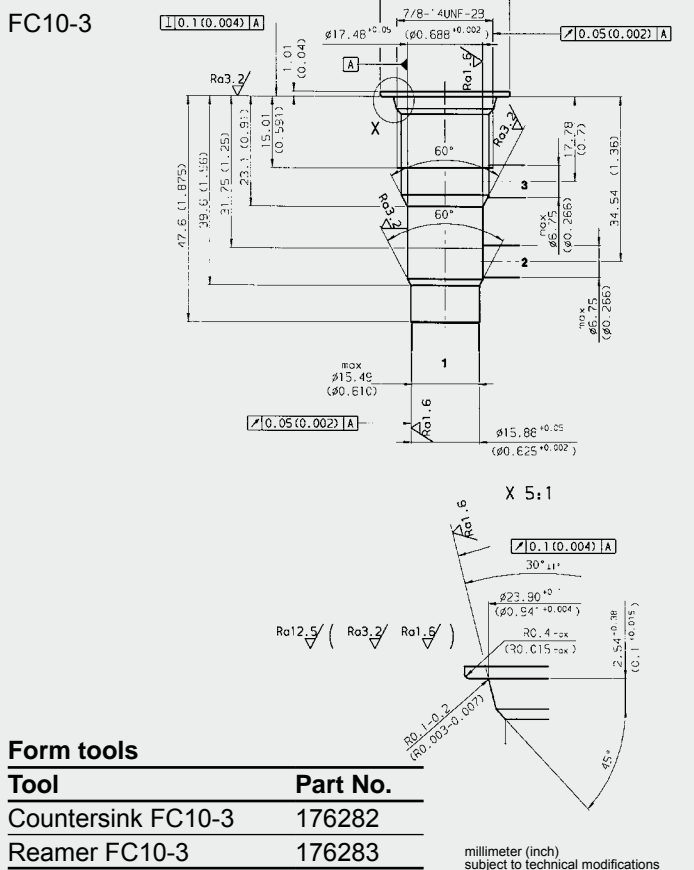
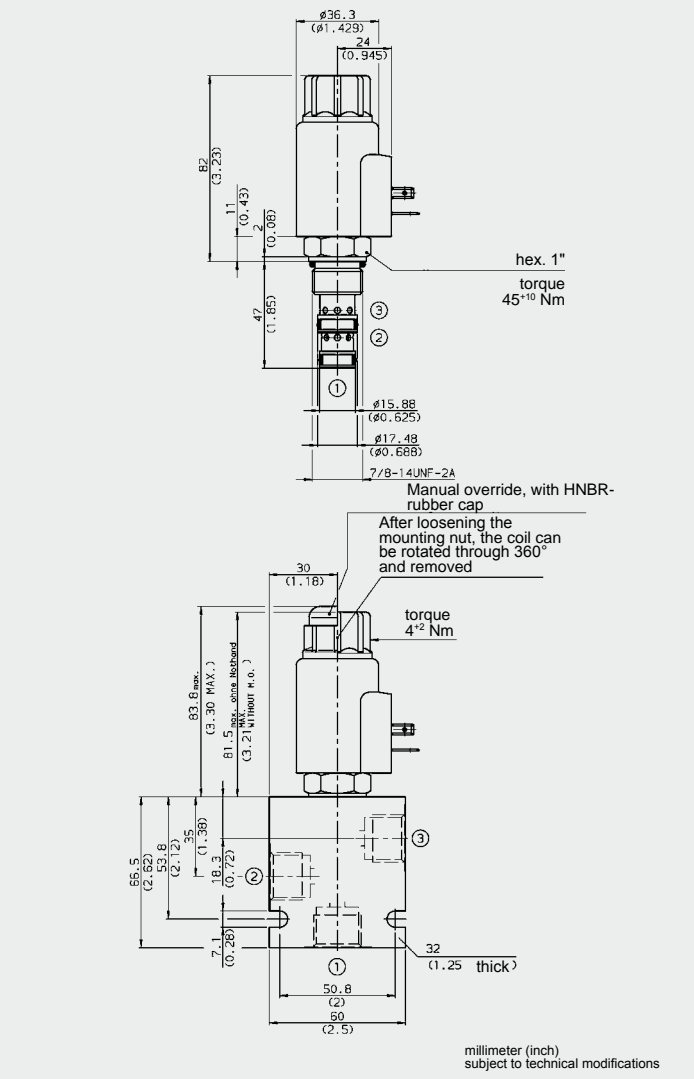
3/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting SAE-10 Cartridge – 350 bar WK10L-01

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

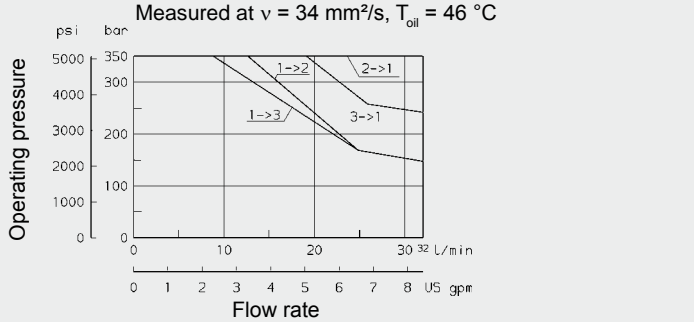
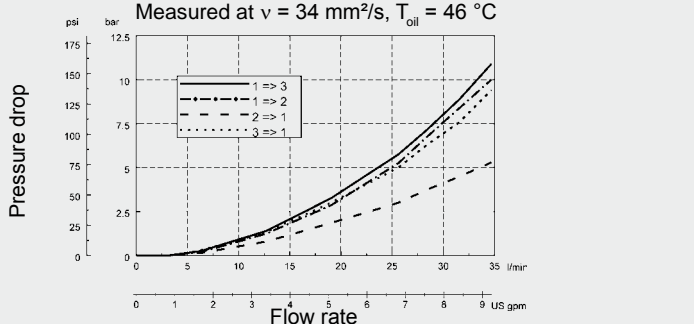
Operating pressure:	max. 350 bar	
Nominal flow:	max. 32 l/min	
Internal leakage:	max. 140 cm ³ /min at 250 bar and 34 mm ² /s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. +60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity:	min. 7.4 mm ² /s to max. 420 mm ² /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)	



Model code	Part No.
WK10L-01-C-N-24DG	3096315
WK10L-01-C-N-230AG	3096316
Other models on request	

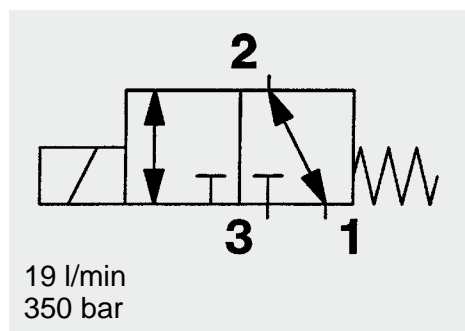
Code	Part No.	Material	Ports	Pressure
FH103-SB4	3037697	Steel, zinc-plated	G1/2	420 bar
FH103-AB4	3038092	Aluminium, clear anodized	G1/2	210 bar
Other line bodies on request				

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

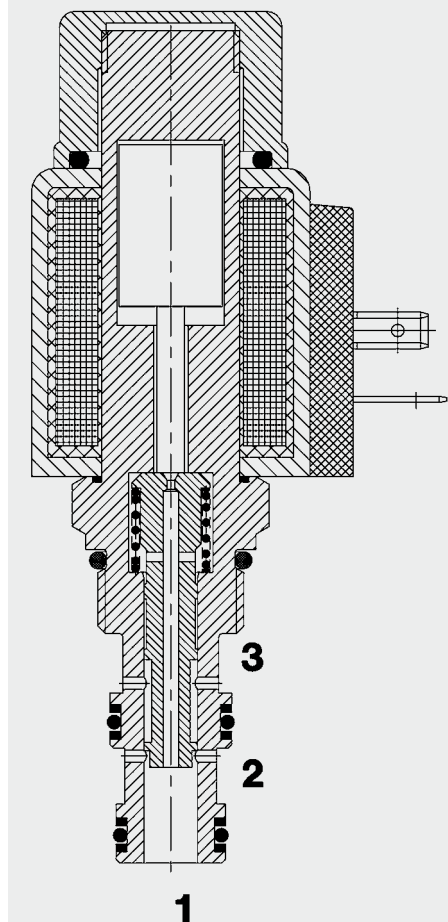


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FUNCTION



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.

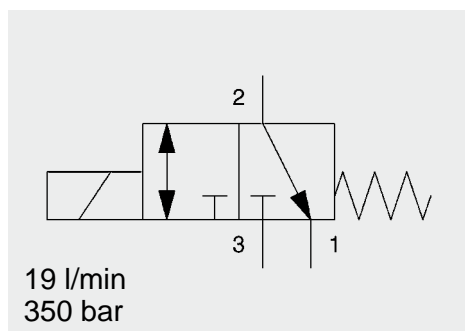
3/2 Solenoid Directional Valve **UNF** Spool Type - Direct-Acting SAE08 Cartridge – 350 bar WK08C-01

FEATURES

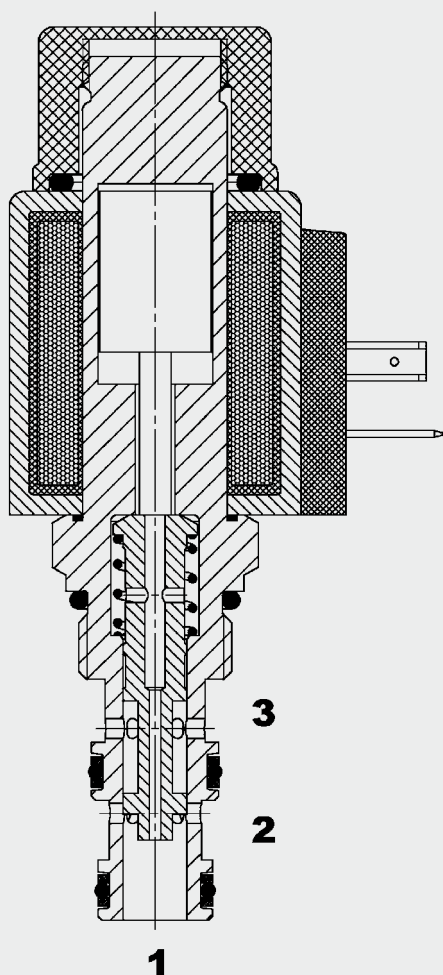
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 19 l/min	
Internal leakage:	max. 90 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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	



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.

3/2 Solenoid Directional Valve **UNF** Spool Type - Direct-Acting SAE-08 Cartridge – 350 bar WK08C-13

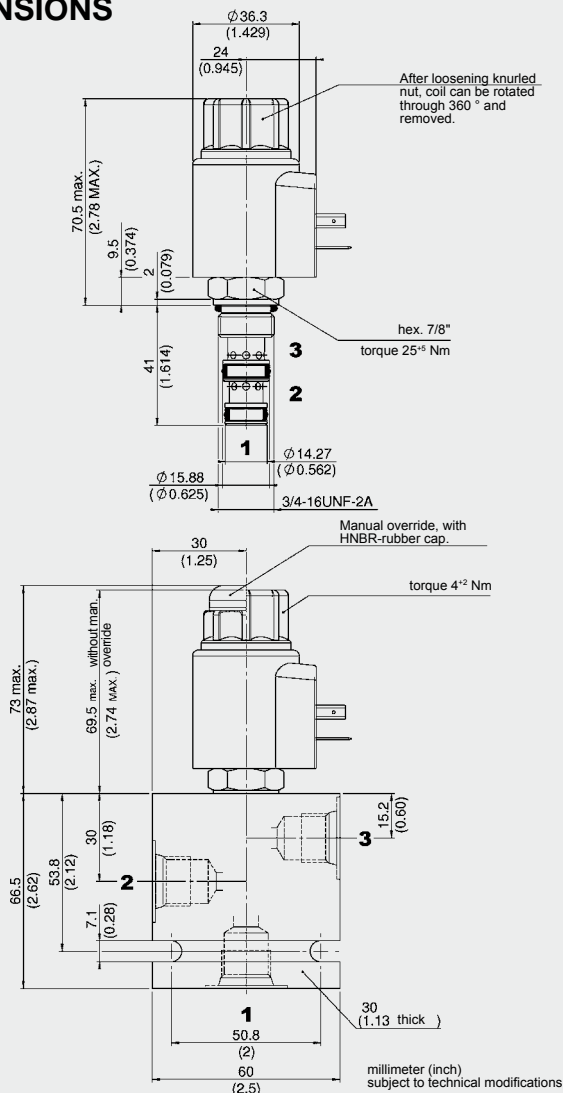
FEATURES

- 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 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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:	<div> <div>Valve body:</div> <div>Piston:</div> <div>Seals:</div> <div>Back-up rings:</div> <div>Coil:</div> </div> <div> <div>free-cutting steel</div> <div>hardened and ground steel</div> <div>NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)</div> <div>PTFE</div> <div>steel / polyamide</div> </div>
Cavity:	FC08-3
Weight:	<div>Valve complete: 0.37 kg</div> <div>Coil only: 0.19 kg</div>
Electrical data:	
Switching time:	<div>Energized: approx. 25 ms</div> <div>De-energized: approx. 40 ms</div>
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil
Current draw at 20 °C:	<div>1.5 A at 12 V DC</div> <div>0.8 A at 24 V DC</div>
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



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

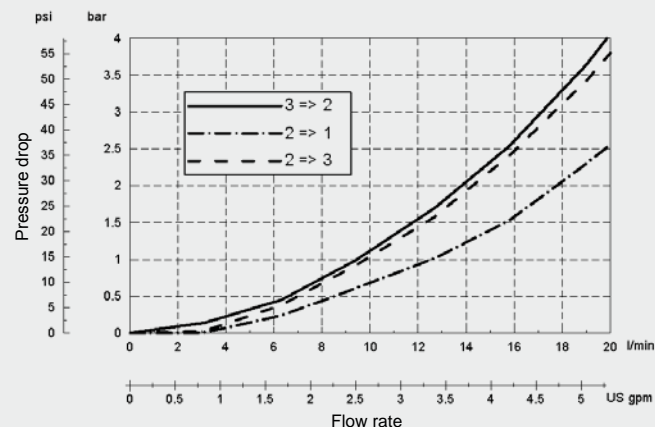
Other models on request

Seal kits

Code	Material	Part No.
Seal kit FS083-N	NBR	3054795
Seal kit FS083-V	FKM	2591059

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



Note

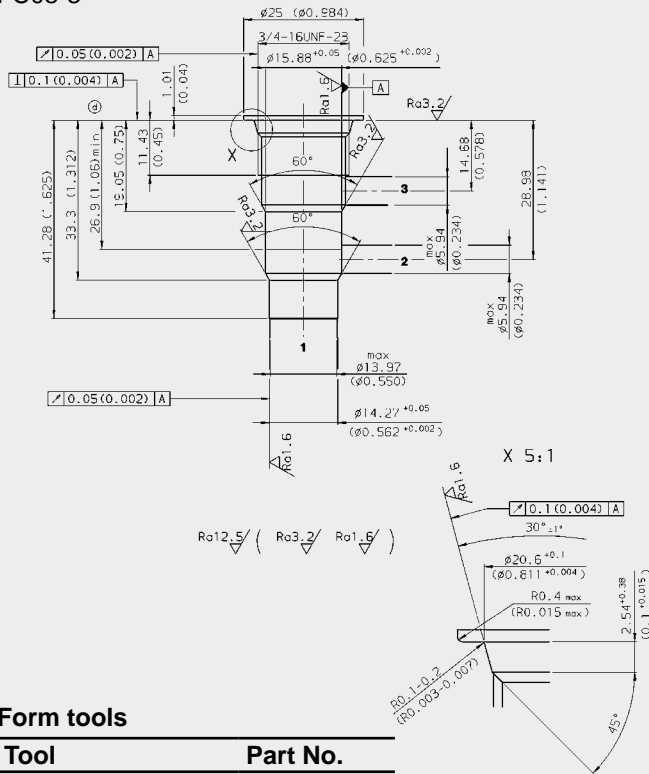
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CAVITY

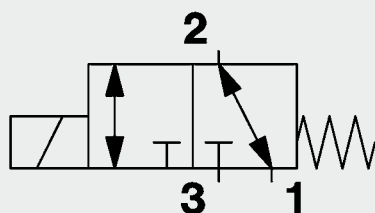
FC08-3



Form tools

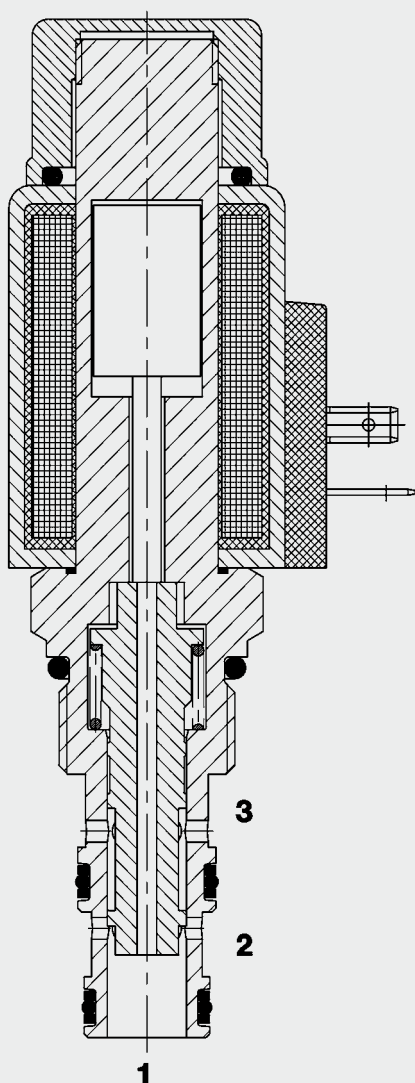
Tool	Part No.
Countersink	175644
Reamer	175645

millimeter (inch)
subject to technical modifications



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.

3/2 Solenoid Directional Valve **UNF** Spool Type, Direct Acting SAE-10 Cartridge – 350 bar WK10C-01

FEATURES

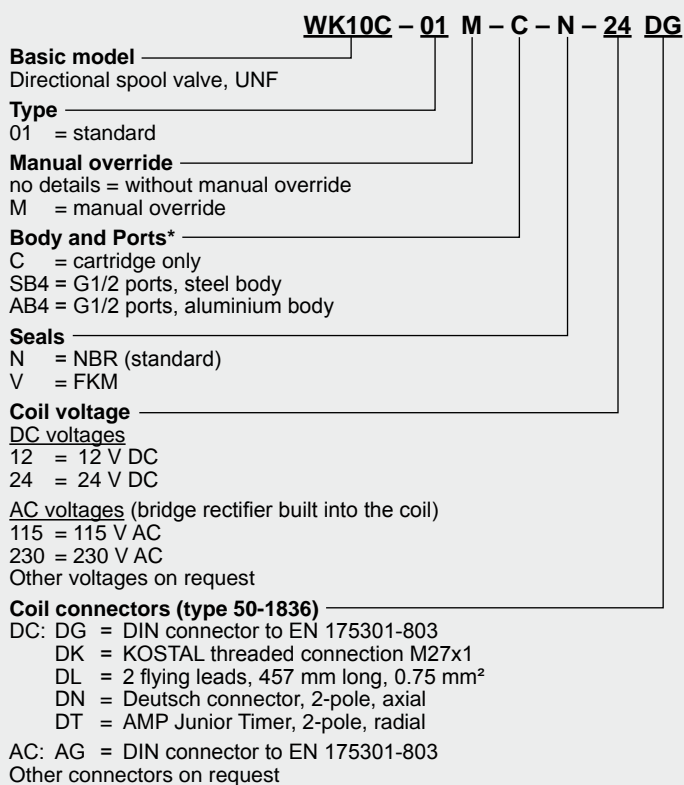
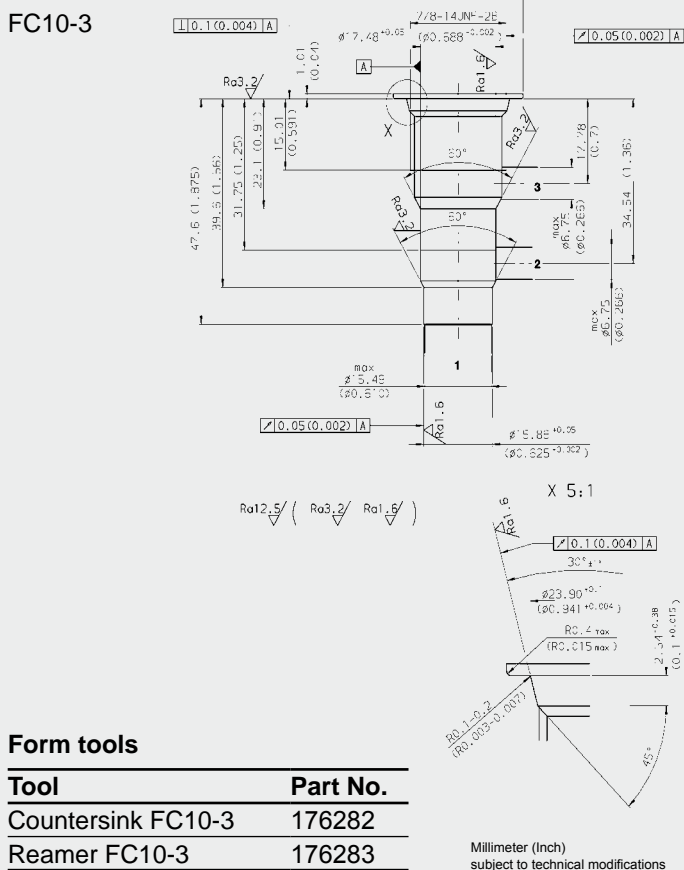
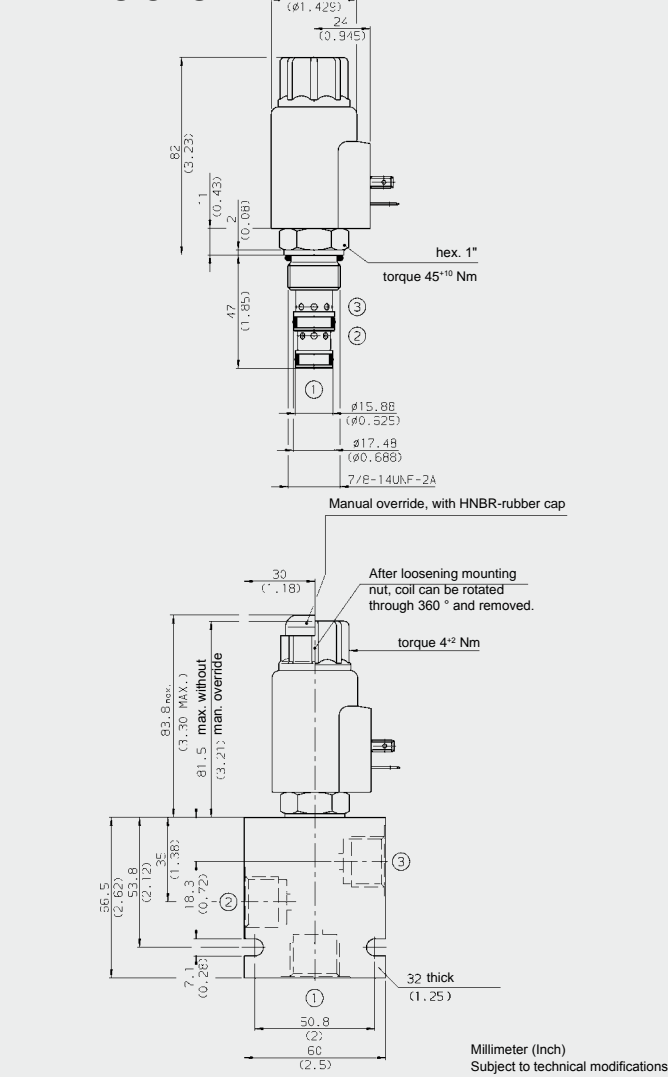
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended service life
- Wide variety of connectors available
- Excellent switching performance by high power HYDAC solenoid
- Low pressure drop due to CFD optimized flow path

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 32 l/min
Internal leakage:	max. 120 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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

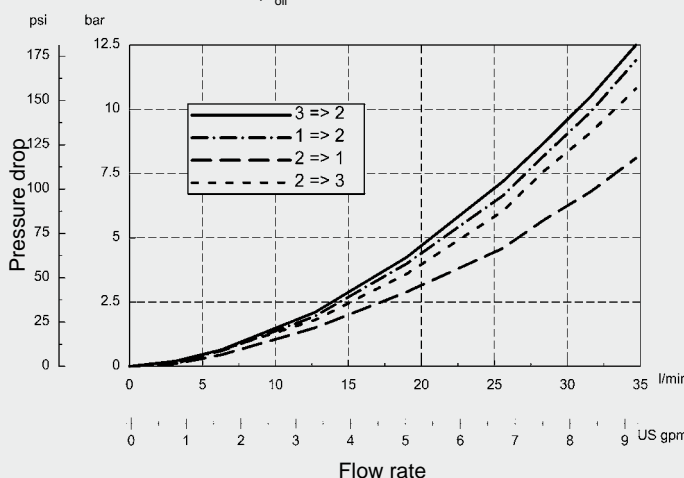


Model code	Part No.
WK10C-01-C-N-24DG	3079848
WK10C-01-C-N-230AG	3094630

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

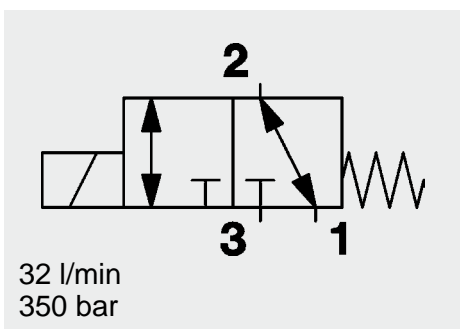
Code	Material	Part No.
FS103-N SEAL KIT	NBR	3071274
FS103-V SEAL KIT	FKM	3049443

Measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$

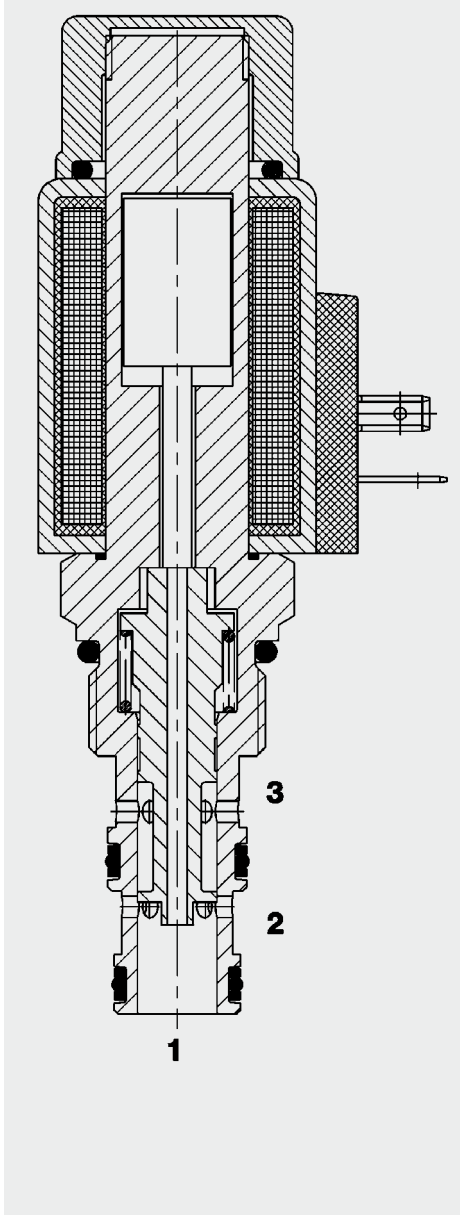


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FUNCTION



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.

3/2 Solenoid Directional Valve **UNF** Spool Type, Direct Acting SAE-10 Cartridge – 350 bar WK10C-40

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

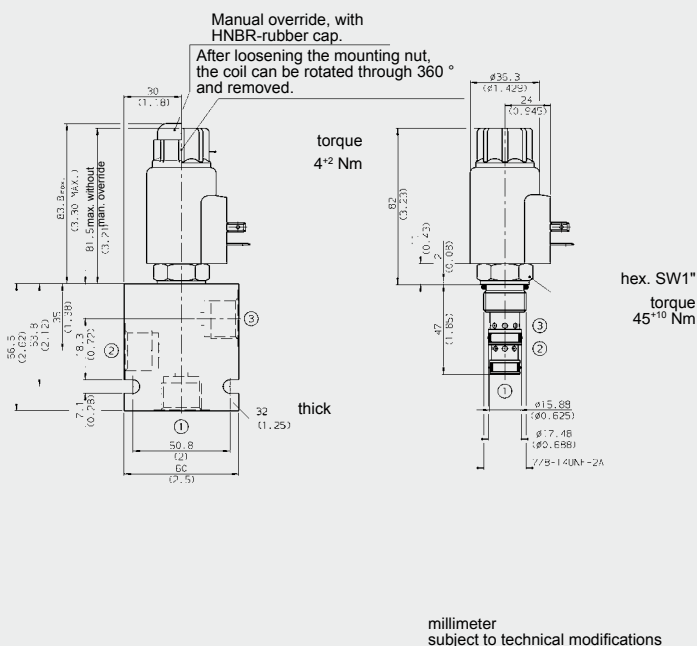
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 32 l/min
Internal leakage:	max. 250 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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



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

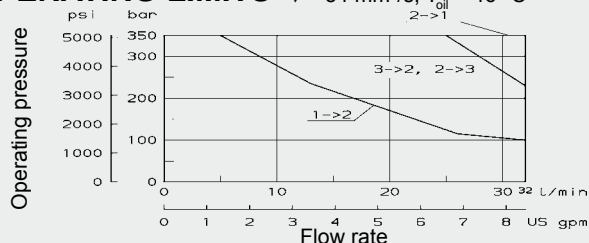
DT = AMP Junior Timer, 2-pole, radial

AC: AG = DIN connector to EN 175301-803

Other connectors on request

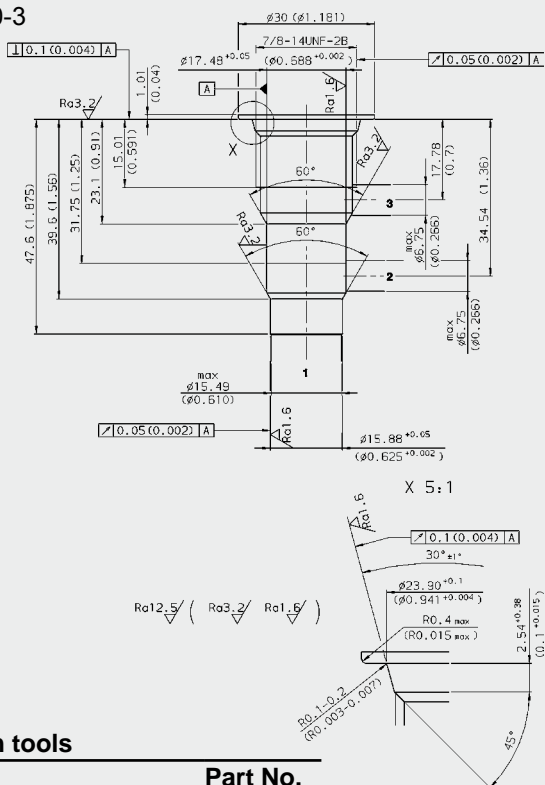
OPERATING LIMITS

$v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



CAVITY

FC10-3



Form tools

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

millimeter subject to technical modifications

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

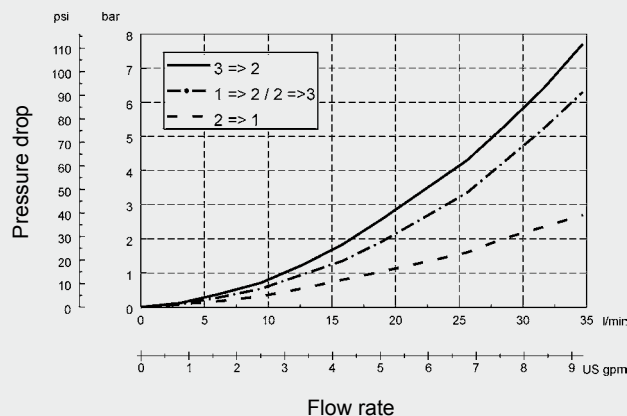
Other line bodies on request

Seal kits

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

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$

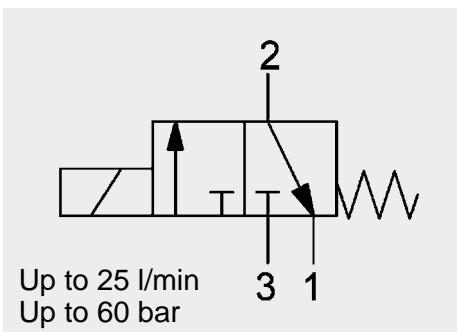


NOTE

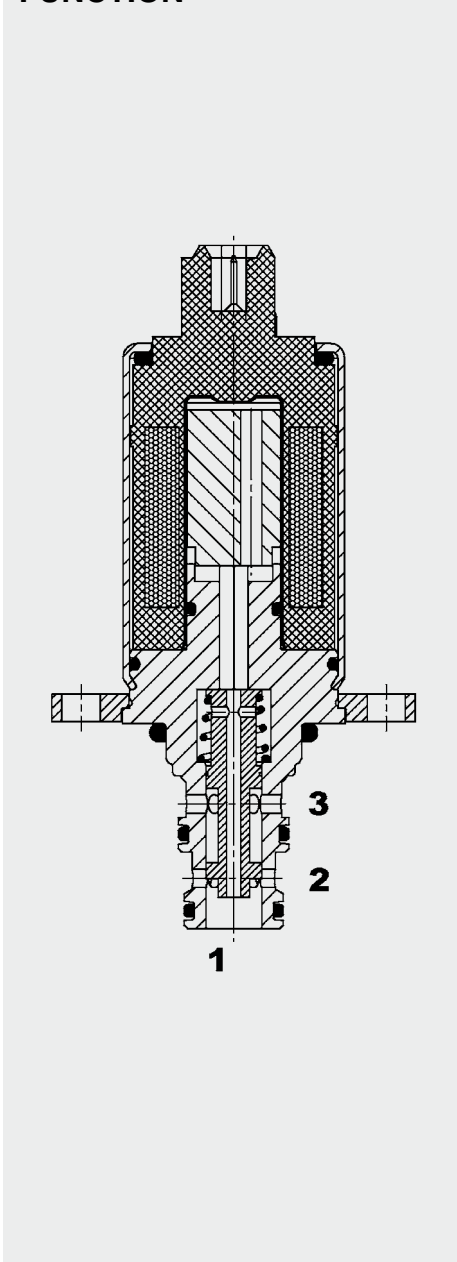
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FUNCTION



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.

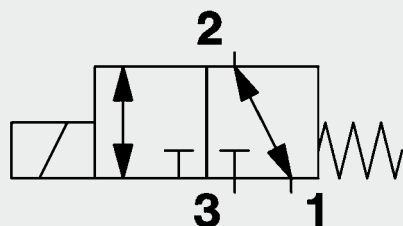
3/2 Solenoid Directional Valve Spool Type Direct Acting Normally Open Slip-In – 60 bar WKC05S30C

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

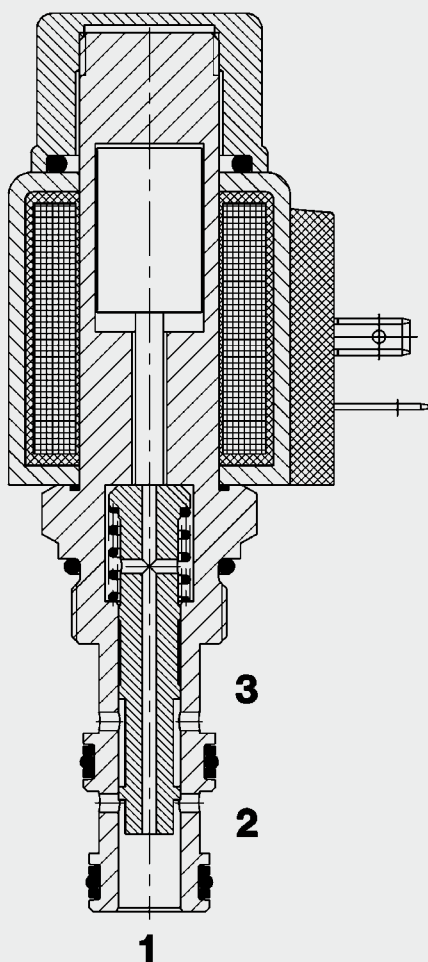
SPECIFICATIONS

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 mm ² /s to max. 420 mm ² /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



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.

3/2 Solenoid Directional Valve Spool Type, Direct-Acting, Metric Cartridge – 350 bar

WKM08130C-01

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 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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

After loosening the mounting nut,
the coil can be rotated through 360°
and removed.

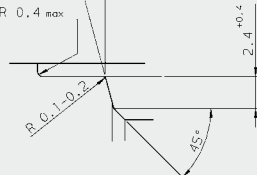


The graph shows the operating pressure (bar) on the y-axis (0 to 350) versus the flow rate (L/min) on the x-axis (0 to 25). Four lines represent different pump configurations:

- 1->2**: A line starting at approximately 350 bar at 5 L/min and decreasing to approximately 150 bar at 25 L/min.
- 2->1, 2->3**: A line starting at approximately 350 bar at 5 L/min and decreasing to approximately 200 bar at 25 L/min.
- 3->2**: A line starting at approximately 350 bar at 5 L/min and decreasing to approximately 250 bar at 25 L/min.

Flow rate (L/min)	1->2 (bar)	2->1, 2->3 (bar)	3->2 (bar)
5	350	350	350
10	300	300	300
15	250	250	250
20	200	200	220
25	150	200	250

08130



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

millimeter
subject to technical modifications

WKM08130C - 01 M - C - N - 24 DG

Directional spool valve, metric

01 = standard

Manual override

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)

$$115 = 115 \text{ V AC}$$

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

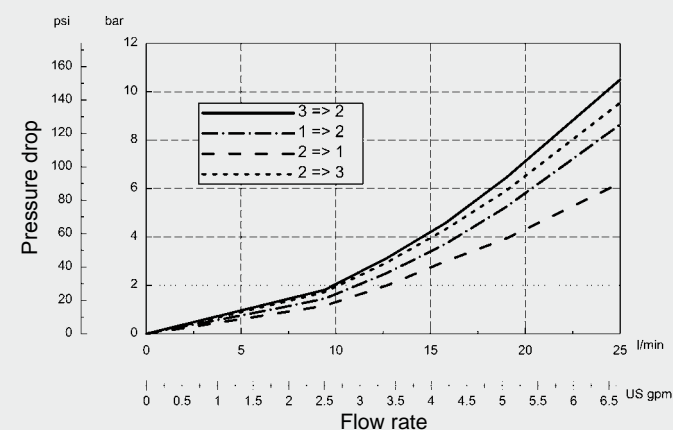
Model code	Part No.
WKM08130C-01-C-N-24DG	3115602
WKM08130C-01-C-N-230AG	3115603

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

Code	Material	Part No.
SEAL KIT 08130-NBR	NBR	3164596
SEAL KIT 08130-FKM	FKM	3183746

Measured at $\nu = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



NOTE
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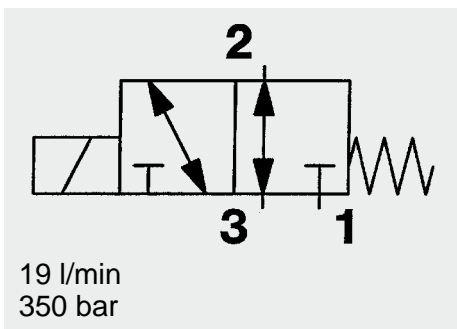
Justus-von-Liebig-Str.

D-66280 Sulzbach/Saar

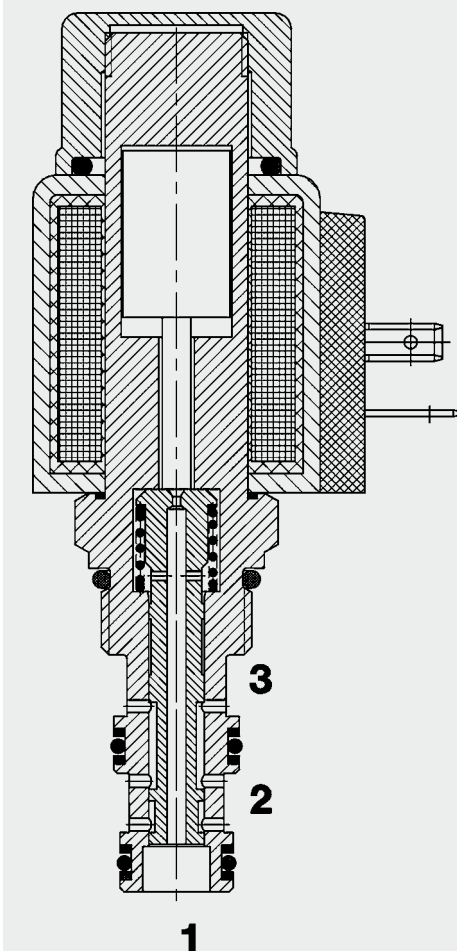
Tel: 0 68 97 /509-01

Fax: 0 68 97 /509-598

E-Mail: flutec@hydac.com



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.

3/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting SAE-08 Cartridge – 350 bar WK08D-01

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

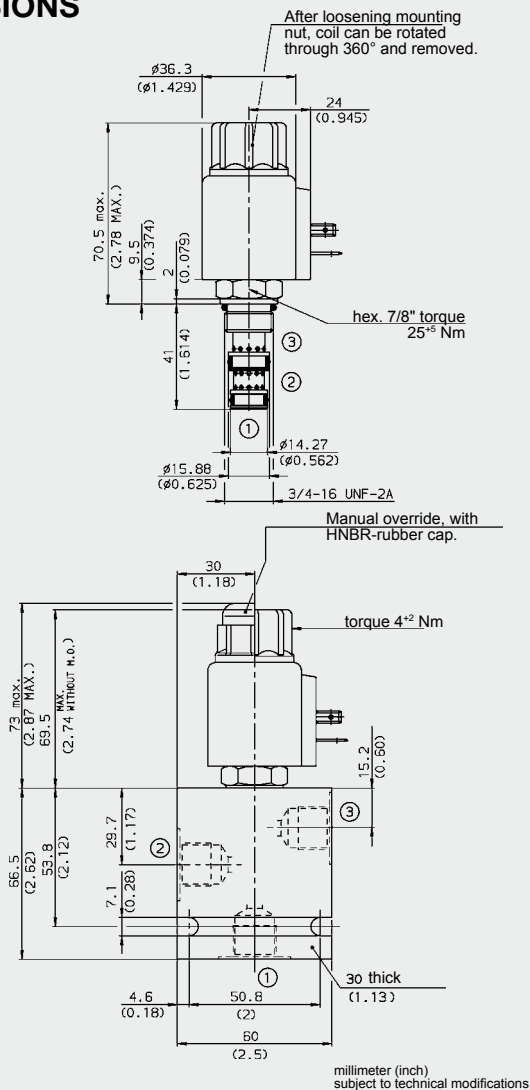
SPECIFICATIONS

Operating pressure:	max. 350 bar	
Nominal flow:	max. 19 l/min (Consult HYDAC for flow rates above 207 bar)	
Internal leakage:	90 cm ³ /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 mm ² /s to max. 420 mm ² /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



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

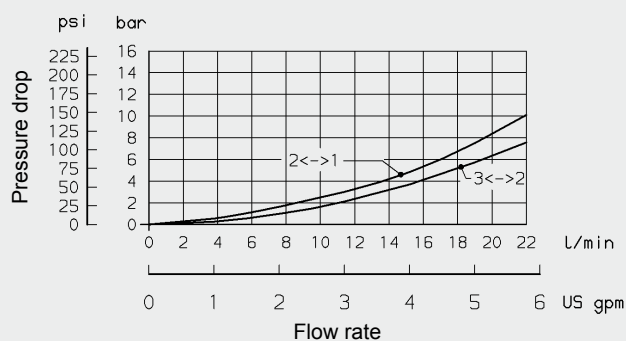
Other line bodies on request

Seal kits

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



NOTE

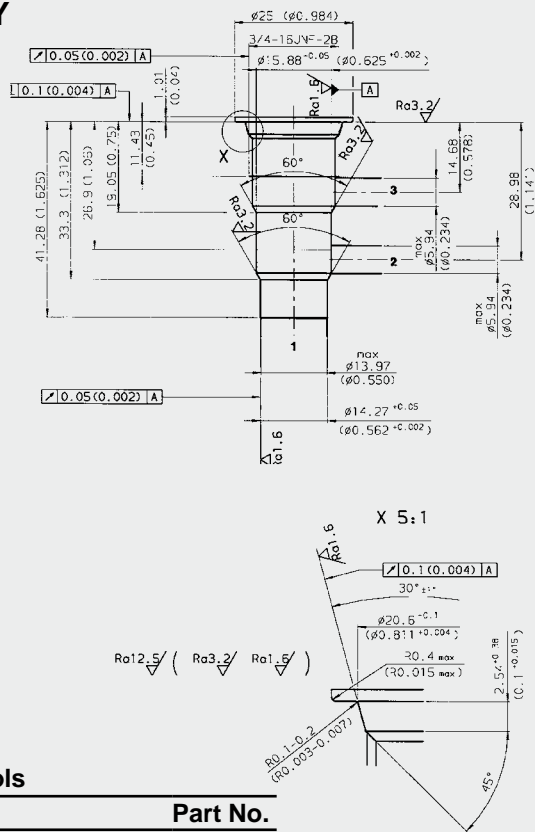
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CAVITY

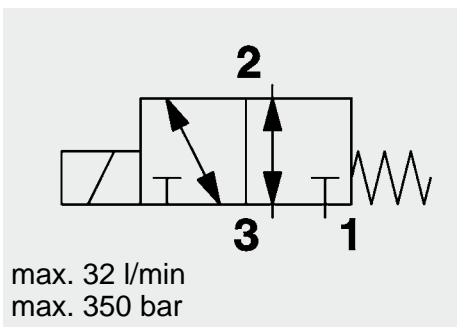
FC08-3



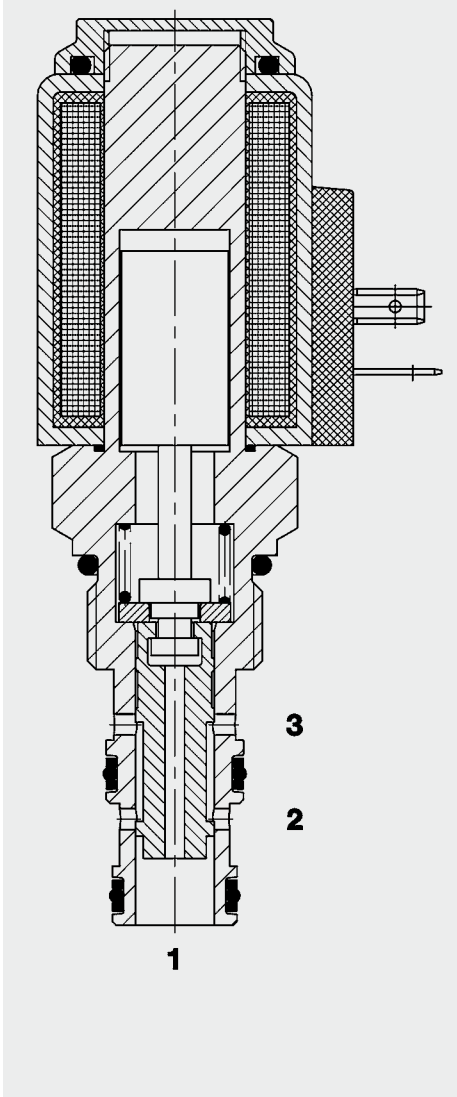
Form tools

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

millimeter (inch)
subject to technical modifications



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.

3/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting SAE-10 Cartridge – 350 bar

WK10D-01

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

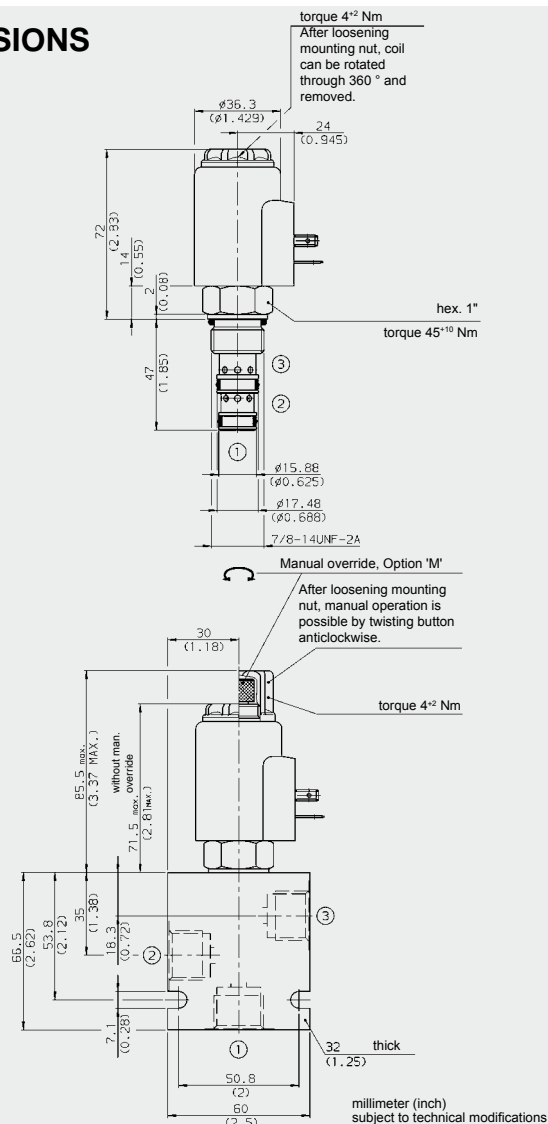
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 32 l/min
Internal leakage:	max. 120 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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



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

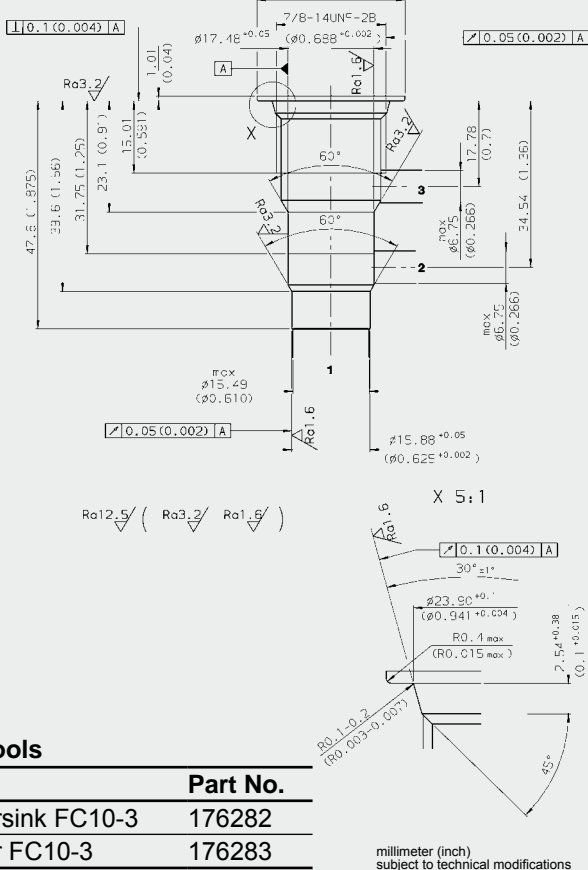
Other bodies on request

Seal kits

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

CAVITY

FC10-3

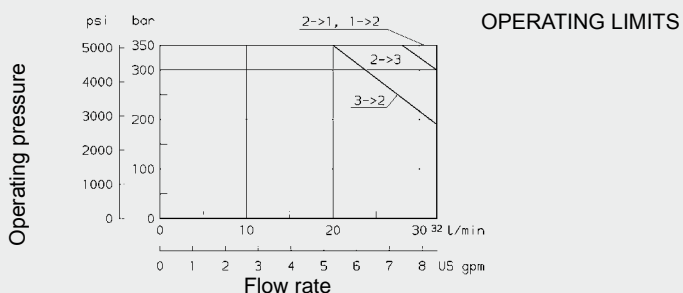
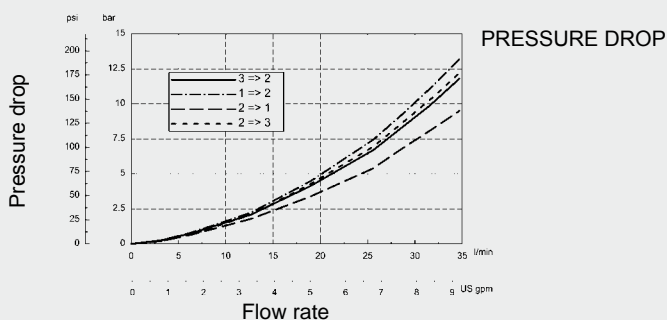


Form tools

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$

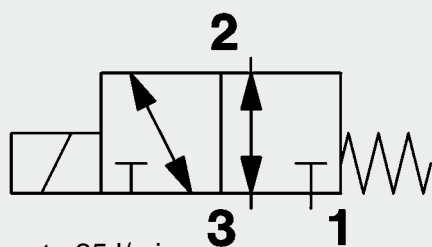


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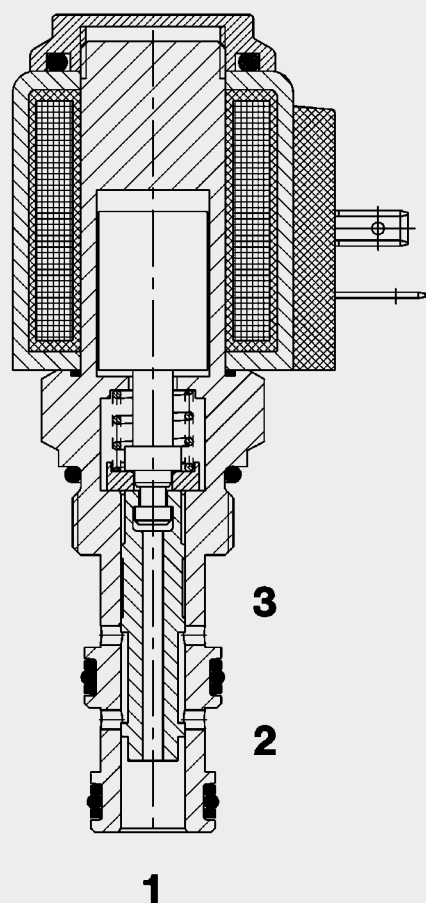
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up to 25 l/min
up to 350 bar

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.

3/2 Solenoid Directional Valve Spool Type, Direct-Acting, Metric Cartridge – 350 bar

WKM08130D-01

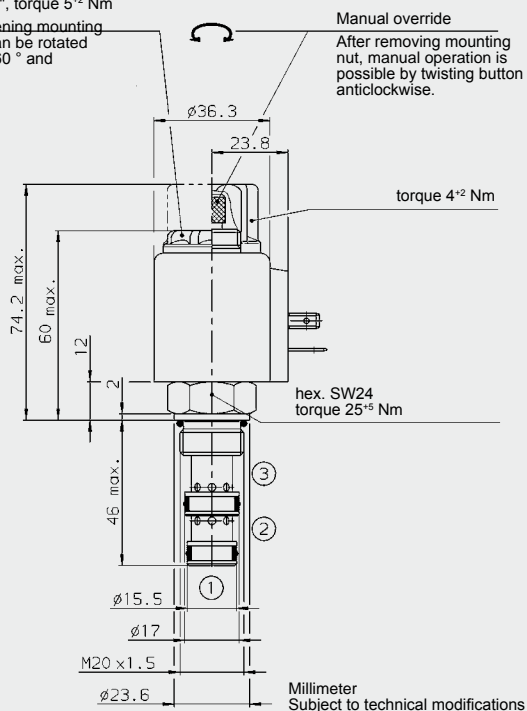
FEATURES

- 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

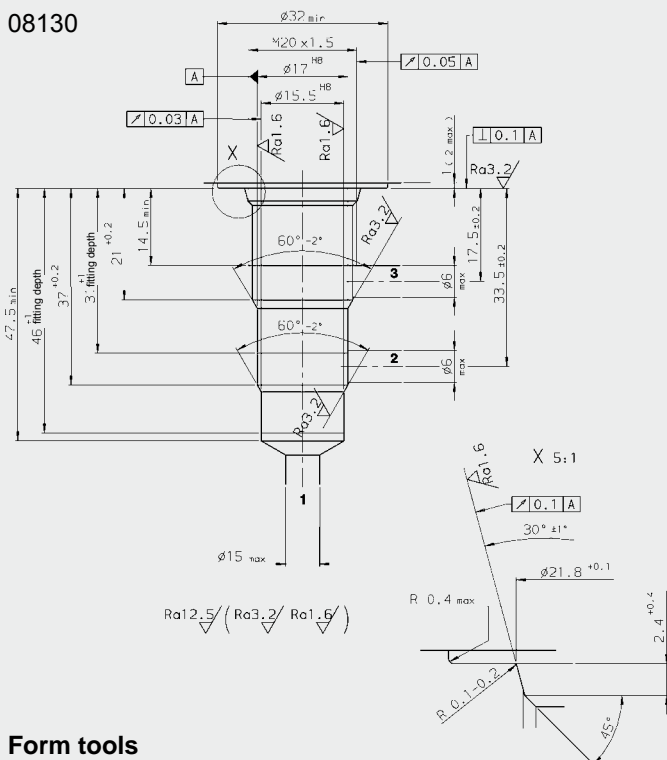
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 25 l/min
Internal leakage:	max. 150 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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:	<div>Valve body: free-cutting steel</div> <div>Piston: hardened and ground steel</div> <div>Seals: NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)</div> <div>Back-up rings: PTFE</div> <div>Coil: steel / polyamide</div>
Cavity:	08130
Weight:	<div>Valve complete: 0.37 kg</div> <div>Coil only: 0.19 kg</div>
Electrical data:	
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil
Nominal voltage at 20 °C:	<div>1.5 A at 12 V DC</div> <div>0.8 A at 24 V DC</div>
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:	<div>energized: approx. 40 ms</div> <div>de-energized: approx. 30 ms</div>
Coil type:	Coil...-40-1836

hex. SW 1", torque 5⁺² Nm
~~After loosening mounting~~
nut, coil can be rotated
through 360 ° and
removed.



08130



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

Millimeter
Subject to technical modifications

WKM08130D - 01 M - C - N - 24 DG

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

$$12 = 12 \text{ V DC}$$

24 = 24 V DC

AC voltages (bridge rectifier built into the coil)

$$115 = 115 \text{ V AC}$$
$$230 = 230 \text{ V AC}$$

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

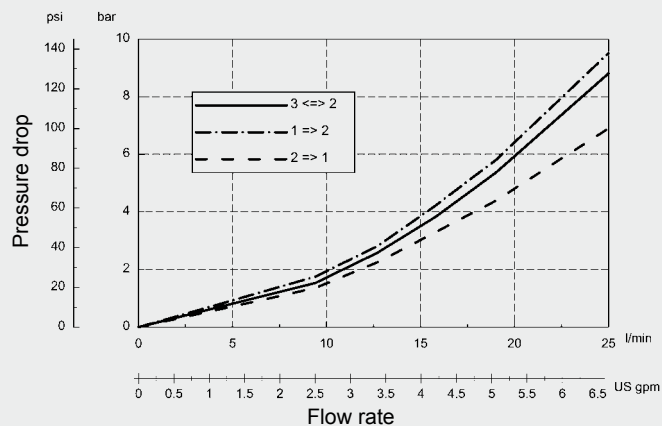
Model code	Part No.
WKM08130D-01-C-N-24DG	3112956
WKM08130D-01-C-N-230AG	3112957

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

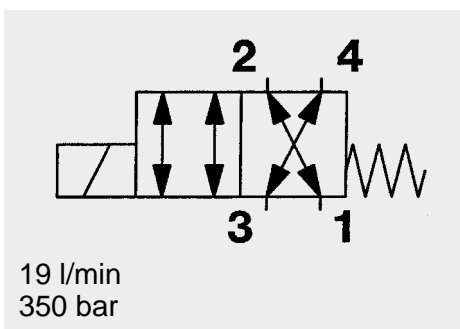
Code	Material	Part No.
SEAL KIT 08130	NBR	3164596
SEAL KIT 08130	FKM	3183746

measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$

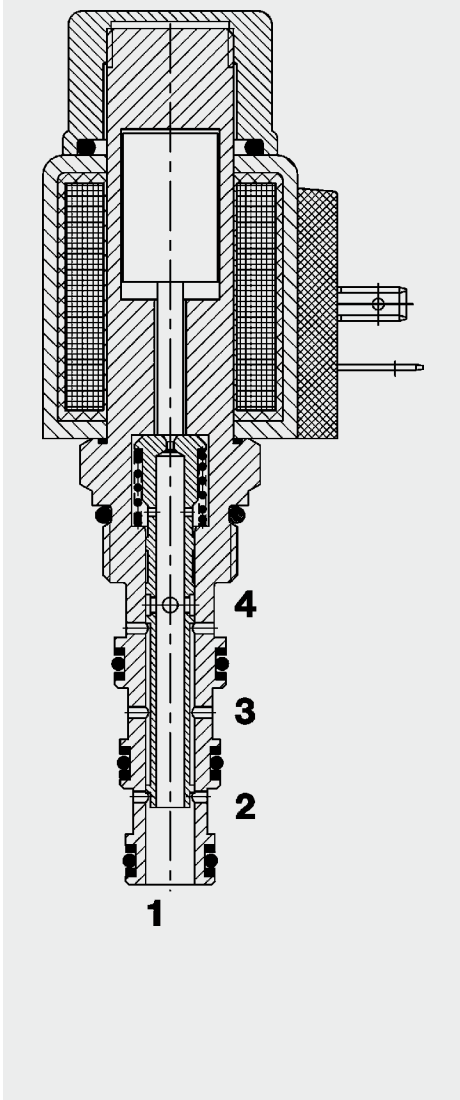


NOTE
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FUNCTION



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.

4/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting SAE-08 Cartridge – 350 bar WK08Y-01

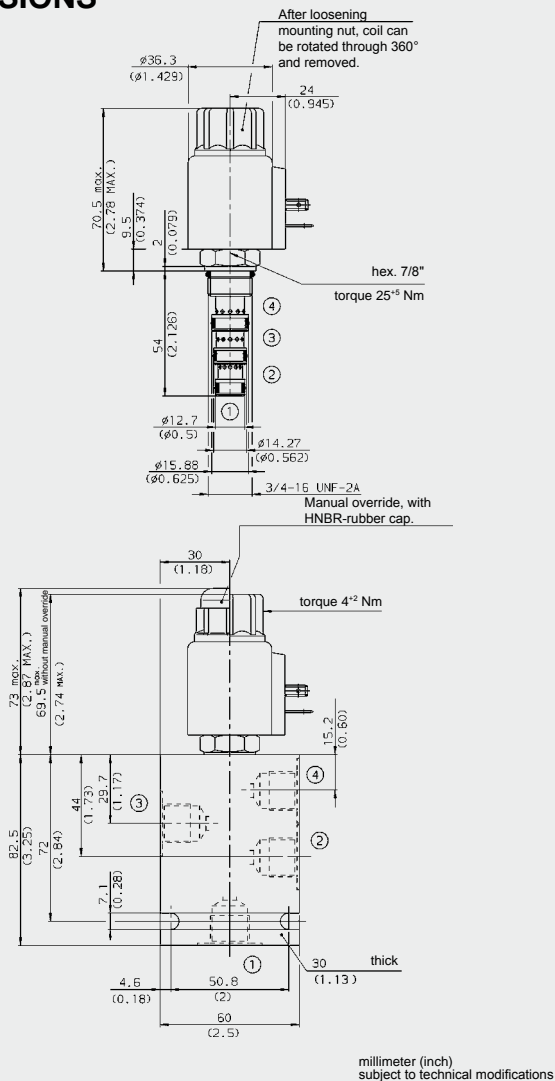
FEATURES

- 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

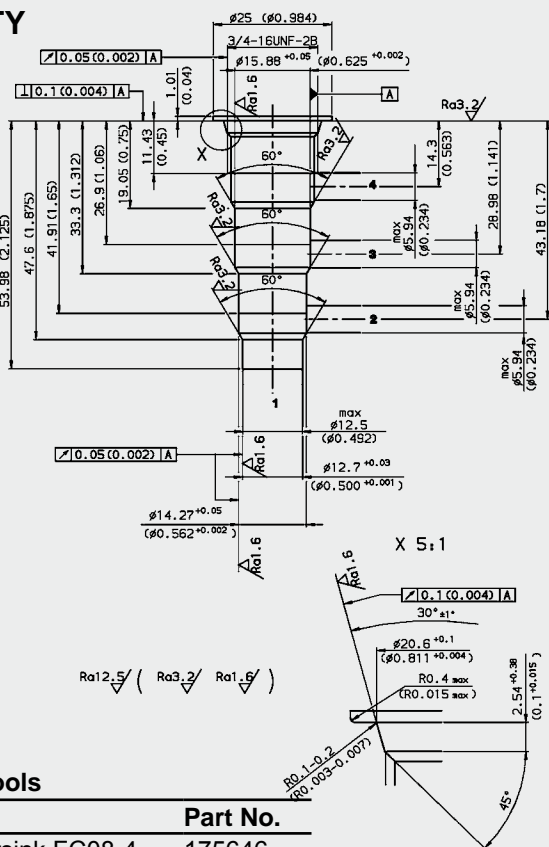
Operating pressure:	max. 350 bar	
Nominal flow:	19 l/min (Consult HYDAC for flow ratings above 207 bar)	
Internal leakage:	90 cm ³ /min at 250 bar and 34 mm ² /s	
Media operating temperature range:	min. -20 °C to max. +100 °C	
Ambient temperature range:	min. -20 °C to max. + 60 °C	
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2	
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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



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

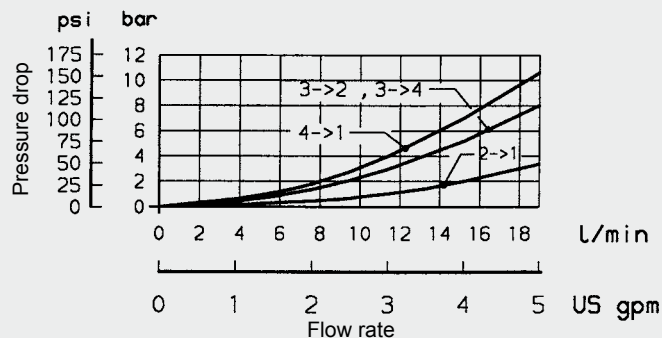
Other models on request

Seal kits

Code	Material	Part No.
FS084-N SEAL KIT	NBR	3071272
FS084-V SEAL KIT	FKM	3071273

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{oil} = 46^\circ \text{C}$



NOTE

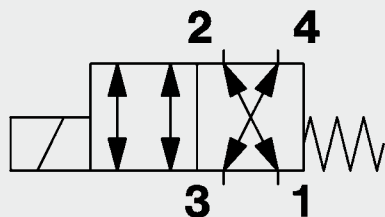
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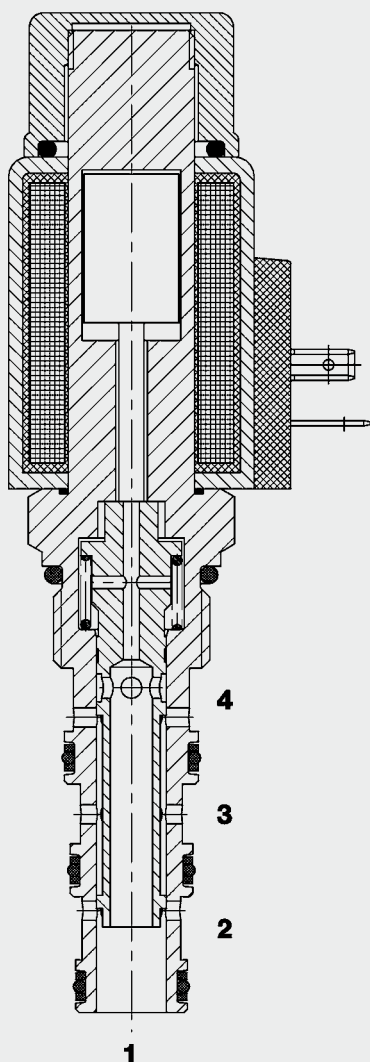
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E-Mail: flutec@hydac.com

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

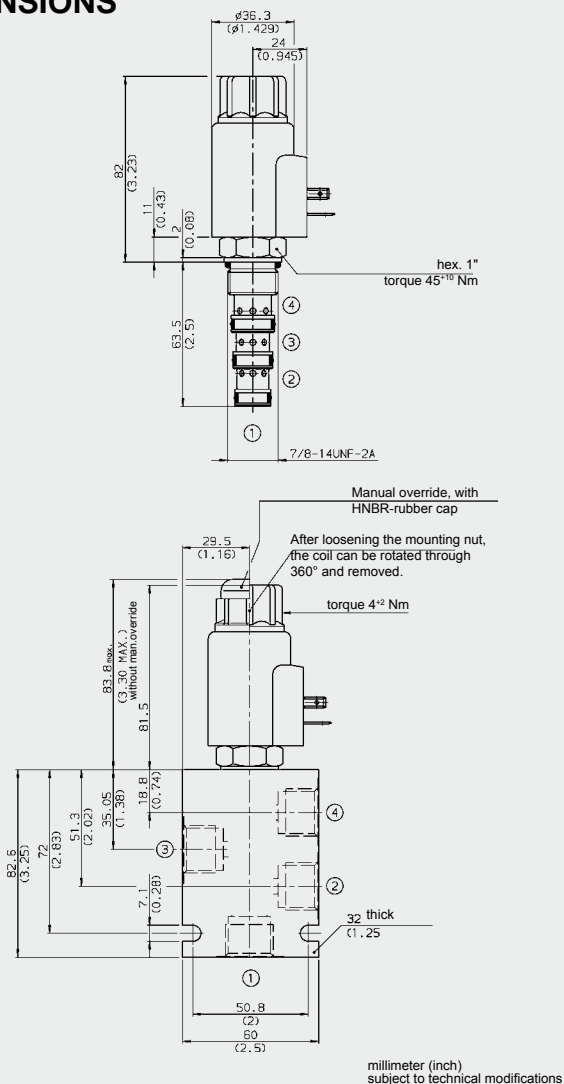
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 32 l/min
Internal leakage:	max. 120 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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:	<div>Valve body: free-cutting steel</div> <div>Spool: hardened and ground steel</div> <div>Seals: NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)</div> <div>Back-up rings: PTFE</div> <div>Coil: steel / polyamide</div>
Cavity:	FC10-4
Weight:	<div>Valve complete 0.48 kg</div> <div>Coil only 0.23 kg</div>

Electrical data:

Response time:	<div>Energized: approx. 35 ms</div> <div>De-energized: approx. 50 ms</div>
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil
Current draw at 20 °C:	<div>2.22 A at 12 V DC</div> <div>1.13 A at 24 V DC</div>
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

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

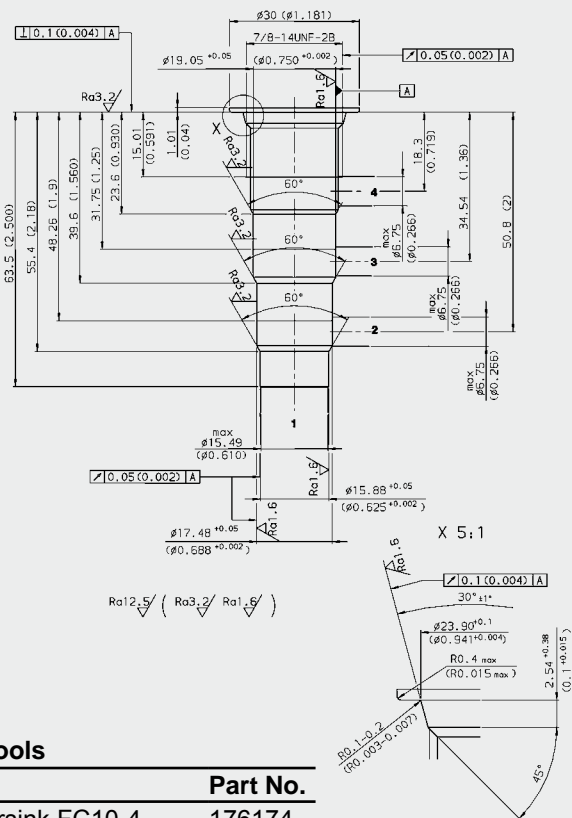
Other bodies on request

Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

CAVITY

FC10-4

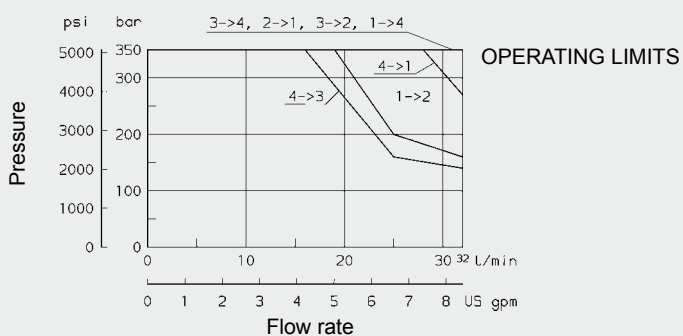
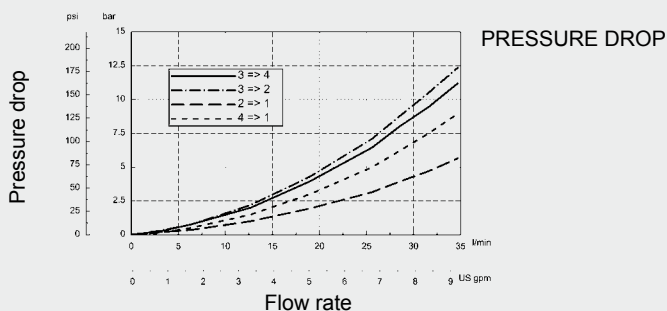


Form tools

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

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$

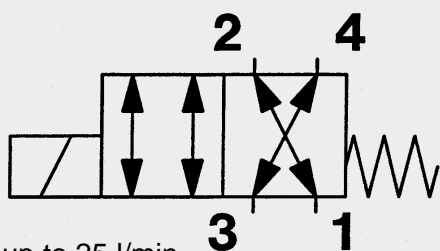


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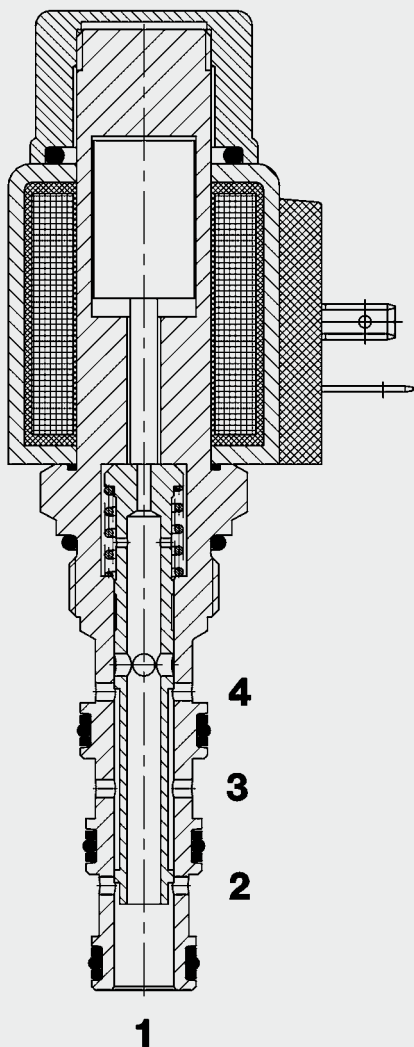
HYDAC Fluidtechnik GmbH

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

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.

4/2 Solenoid Directional Valve Spool Type, Direct-Acting, Metric Cartridge – 350 bar

WKM08140Y-01

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

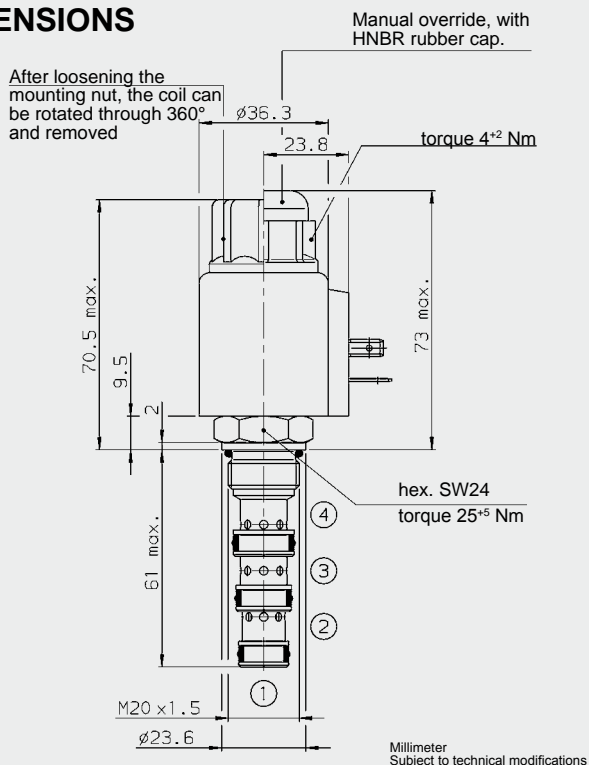
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 25 l/min
Internal leakage:	150 cm ³ /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 mm ² /s to max. 420 mm ² /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



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

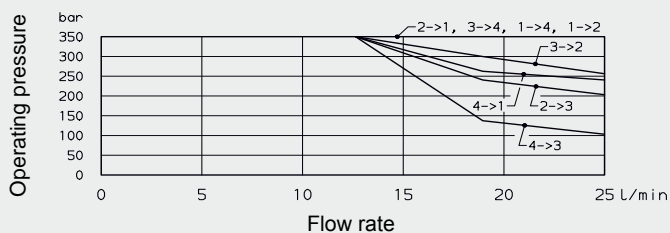
DN = Deutsch connector, axial

AC: AG = DIN connector to EN175301-803

Other connectors on request

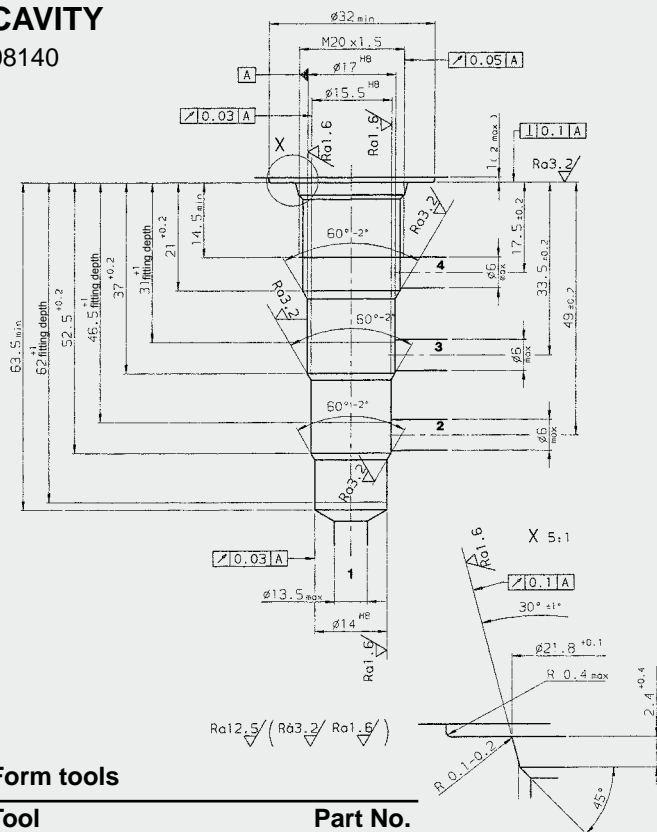
PERFORMANCE

$v = 34 \text{ mm}^2/\text{s}, T_{\text{oil}} = 46^\circ\text{C}$



CAVITY

08140



Form tools

Tool	Part No.
Countersink (shank HE25)	163463
Reamer (shank MK2)	163464

Millimeter Subject to technical modifications

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

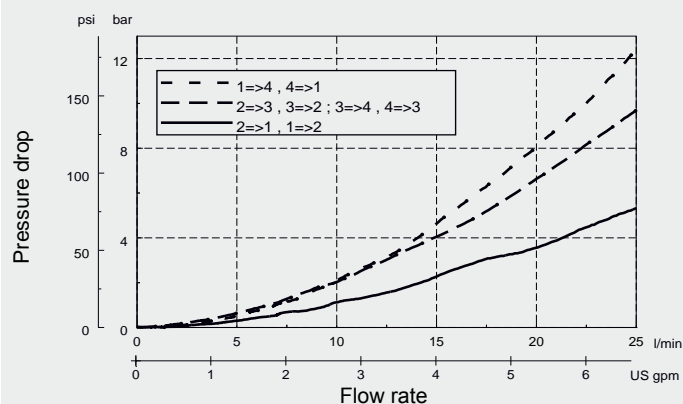
Other housings on request

Seal kits

Code	Material	Part No.
SEAL KIT WKM08140-...-C-N	NBR	3098029

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}, T_{\text{oil}} = 46^\circ\text{C}$



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

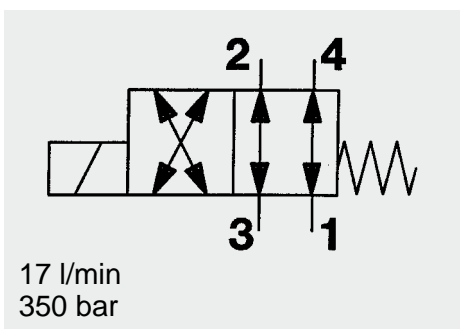
Justus-von-Liebig-Str.

D-66280 Sulzbach/Saar

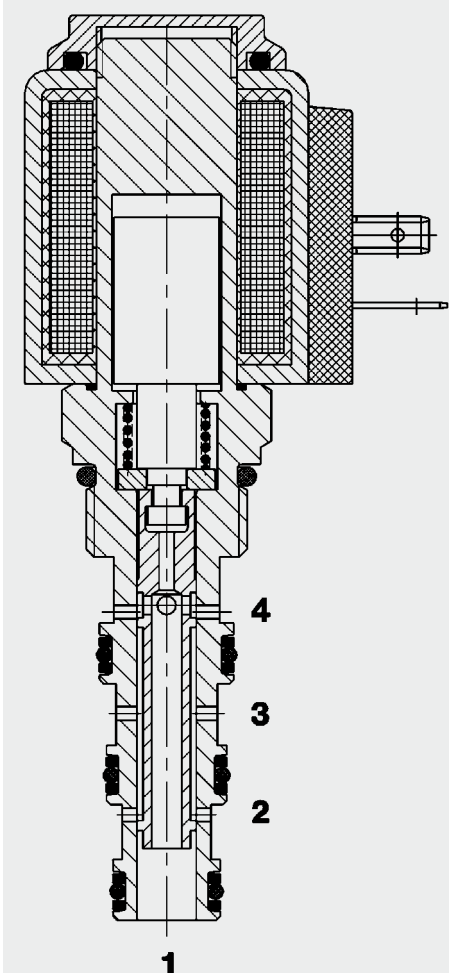
Tel: 0 68 97 /509-01

Fax: 0 68 97 /509-598

E-Mail: flutec@hydac.com



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.

4/2 Solenoid Directional Valve Spool Type, Direct-Acting SAE-08 Cartridge – 350 bar WK08X-01

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 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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

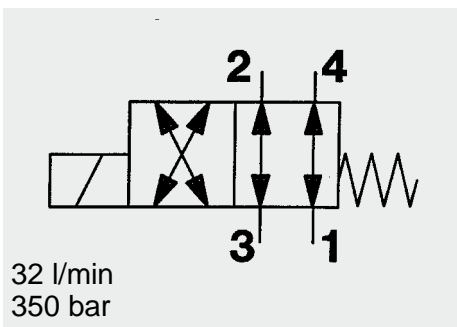
Electrical data:

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	

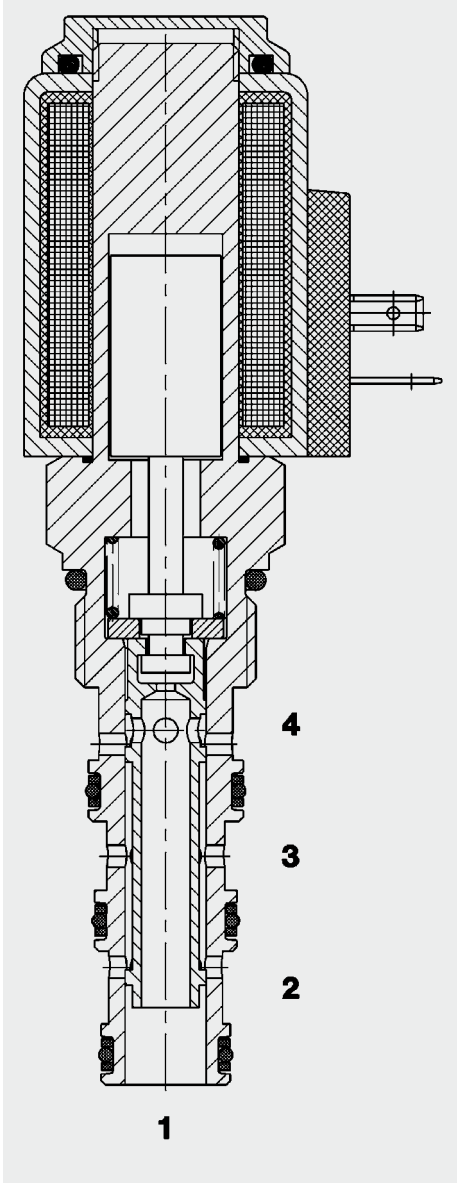
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4/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting **SAE-10 Cartridge – 350 bar** WK10X-01



FUNCTION



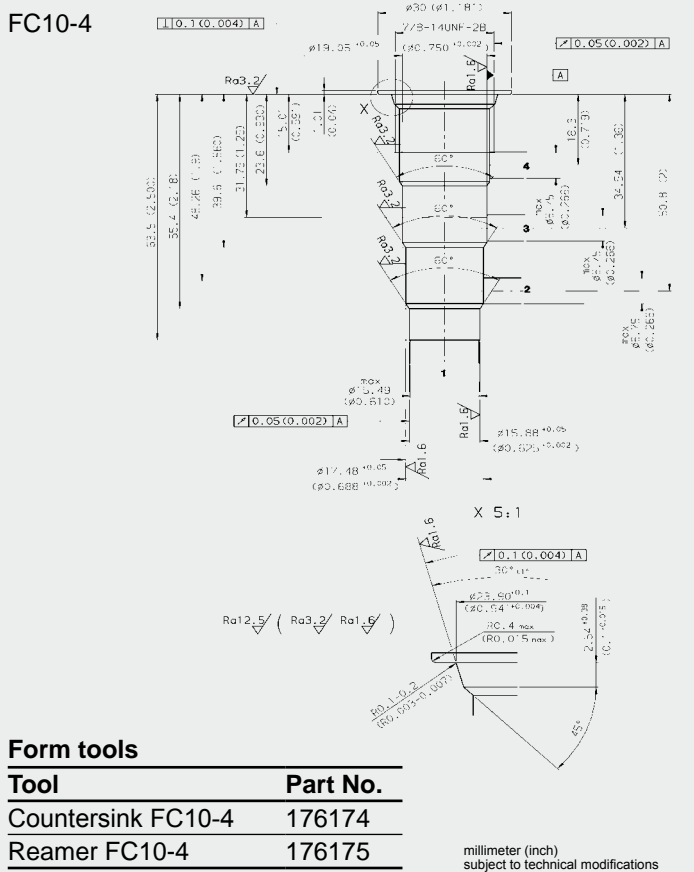
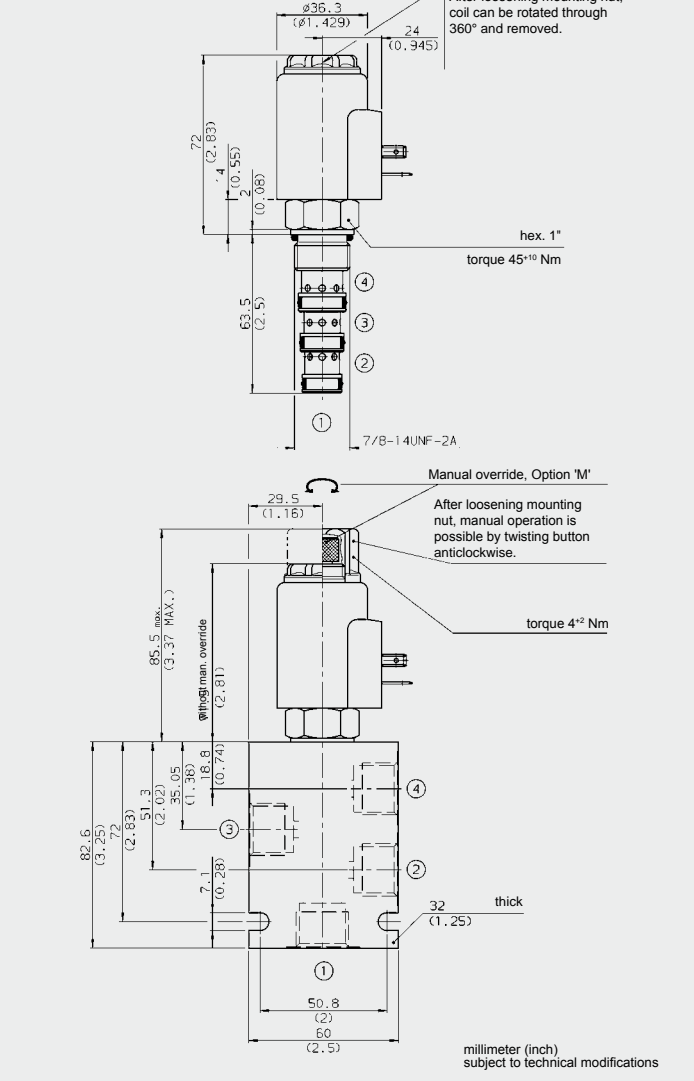
When the solenoid coil is de-energised, the valve allows flow in both directions between ports 3 and 2 and in both directions between ports 4 and 1. When the solenoid coil is energized, there is free flow through the valve in both directions between ports 3 and 4 and also between ports 1 and 2.

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 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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	



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

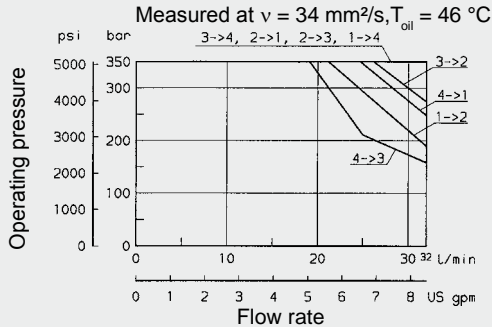
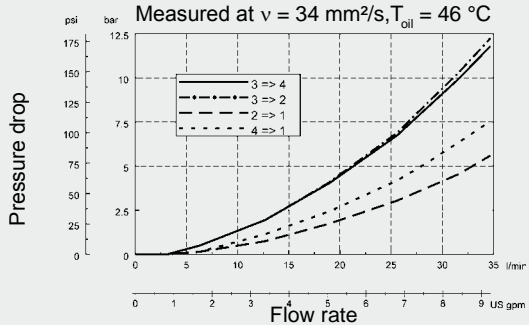
Coil voltage _____
DC voltages
 12 = 12 V DC
 24 = 24 V DC
AC voltages (bridge rectifier built into the coil)
 115 = 115 V AC
 230 = 230 V AC
 Other voltages on request

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

Model code	Part No.
WK10X-01-C-N-24DG	3079851
WK10X-01-C-N-230AG	3096314

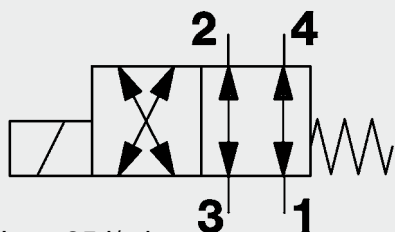
Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB3	3038097	Aluminium, anodized	G1/2	210 bar
Other housings on request				

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275



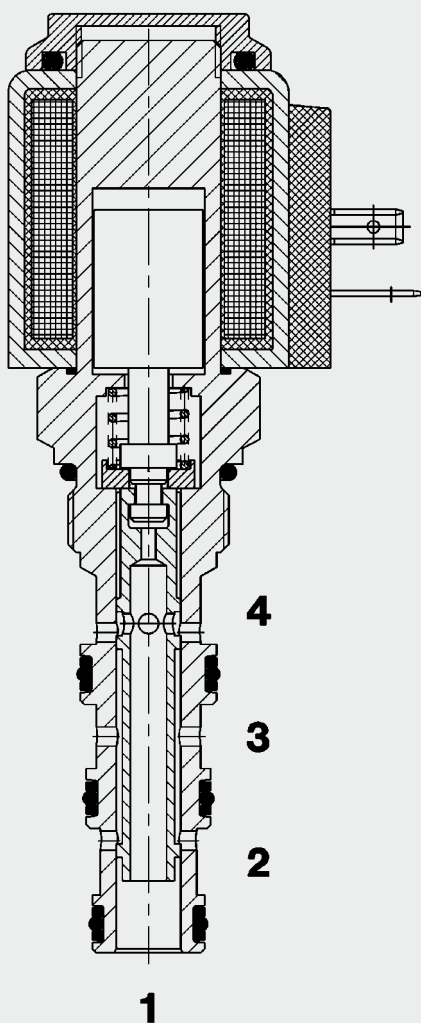
The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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E-Mail: flutec@hydac.com



Up to 25 l/min
Up to 350 bar

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.

4/2 Solenoid Directional Valve Spool Type, Direct-Acting, Metric Cartridge – 350 bar

WKM08140X-01

FEATURES

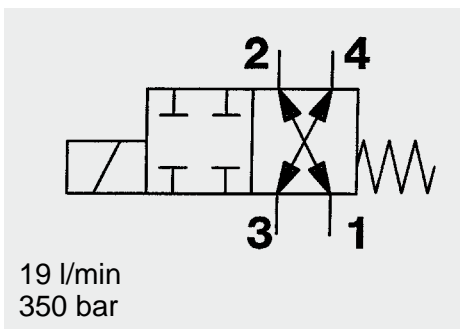
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Hardened and ground control spool to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- External surfaces zinc-plated and corrosion-proof
- Excellent stability throughout the entire flow range
- Compact design enables space-saving installation in connection housings and control blocks

SPECIFICATIONS

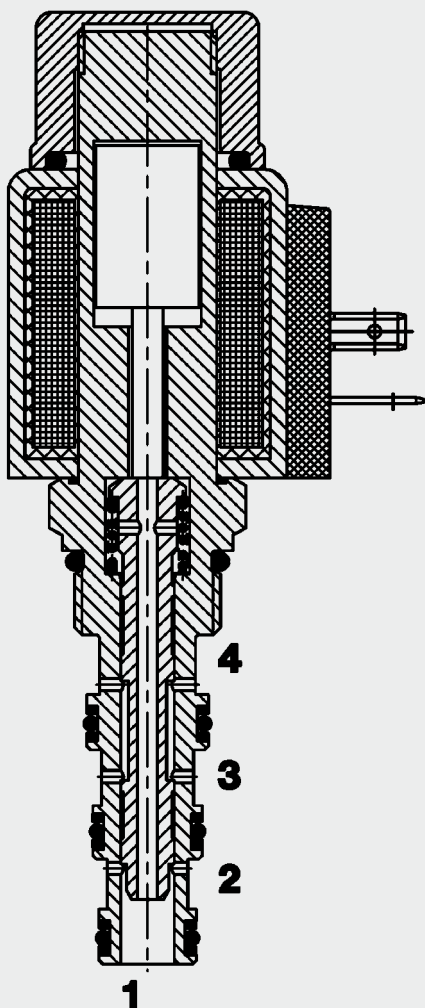
Operating pressure:	max. 350 bar
Nominal flow:	max. 25 l/min
Internal leakage:	max. 150 cm ³ /min at 250 bar and 34 mm ² /s
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 10 mm ² /s to max. 420 mm ² /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:	<div>Valve body: free-cutting steel</div> <div>Spool: hardened and ground steel</div> <div>Seals: NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)</div> <div>Back-up rings: PTFE</div> <div>Coil: steel / polyamide</div>
Cavity:	08140
Weight:	<div>Valve complete 0.38 kg</div> <div>Coil only 0.19 kg</div>

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



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.

4/2 Solenoid Directional Valve **UNF** Spool Type - Direct-Acting SAE-08 Cartridge – 350 bar WK08A-01

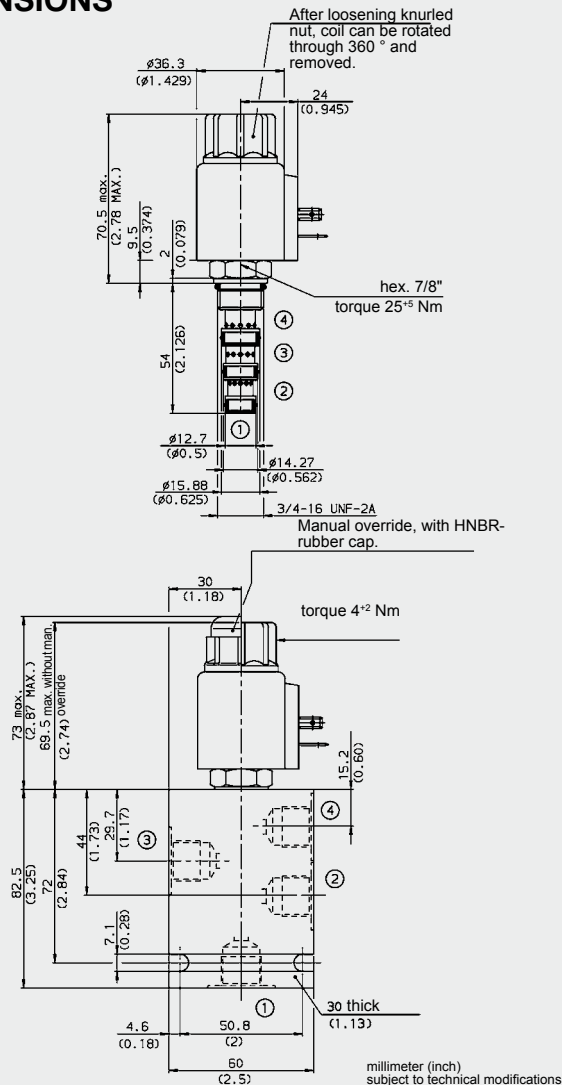
FEATURES

- 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 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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:	<div>Valve body: free-cutting steel</div> <div>Piston: hardened and ground steel</div> <div>Seals: NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)</div> <div>Back-up rings: PTFE</div> <div>Coil: Steel/Polyamide</div>
Cavity:	FC08-4
Weight:	<div>Valve complete 0.38 kg</div> <div>Coil only 0.19 kg</div>
Electrical data	
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil
Current draw at 20 °C:	<div>1.5 A at 12 V DC</div> <div>0.8 A at 24 V DC</div>
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



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
FH08A-SB3	563383	Steel, zinc-plated	G3/8	420 bar
FH08A-AB3	3011407	Aluminium, clear anodized	G3/8	210 bar

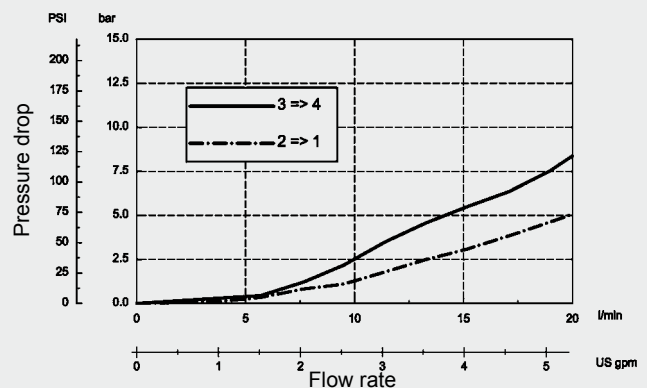
Other housings on request

Seal kits

Code	Material	Part No.
FS084-N SEAL KIT	NBR	3071272
FS084-V SEAL KIT	FKM	3071273

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



NOTE

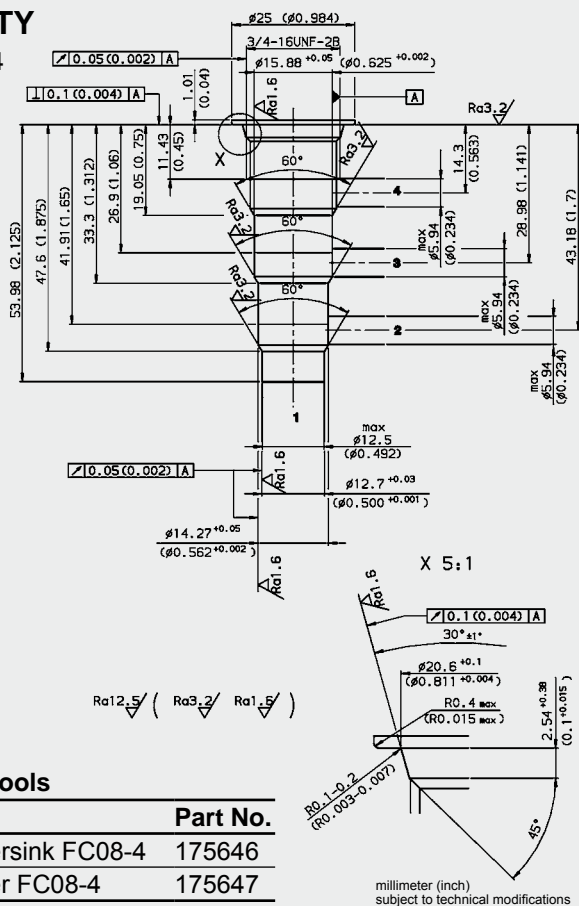
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CAVITY

FC08-4

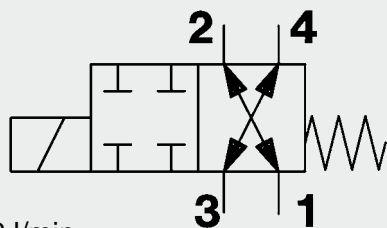


Form tools

Tool	Part No.
Countersink FC08-4	175646
Reamer FC08-4	175647

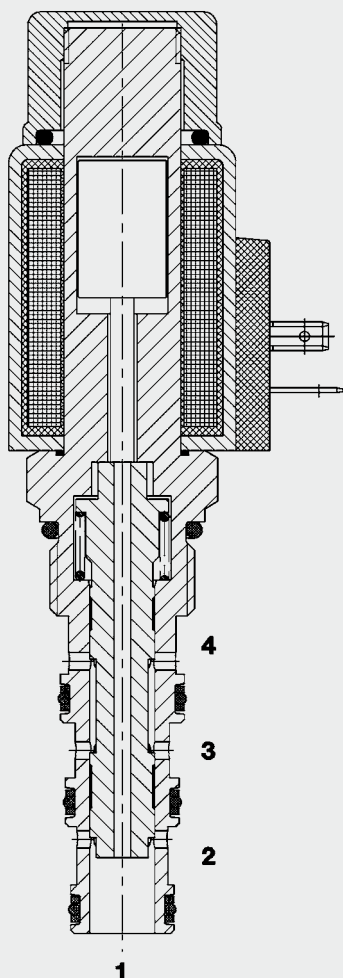
millimeter (inch)
subject to technical modifications

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

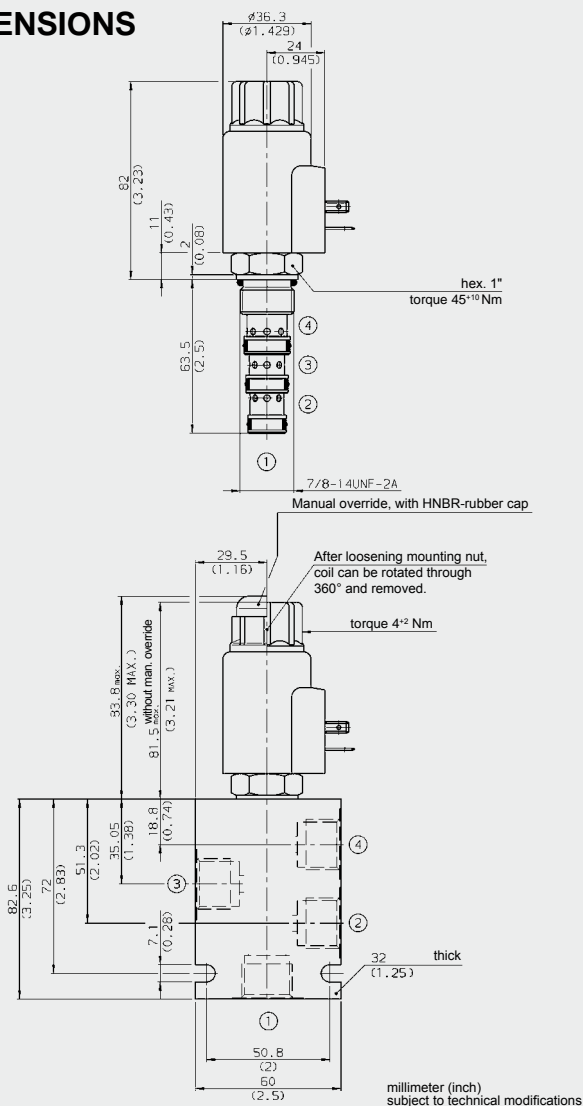
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 32 l/min
Internal leakage:	max. 160 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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:

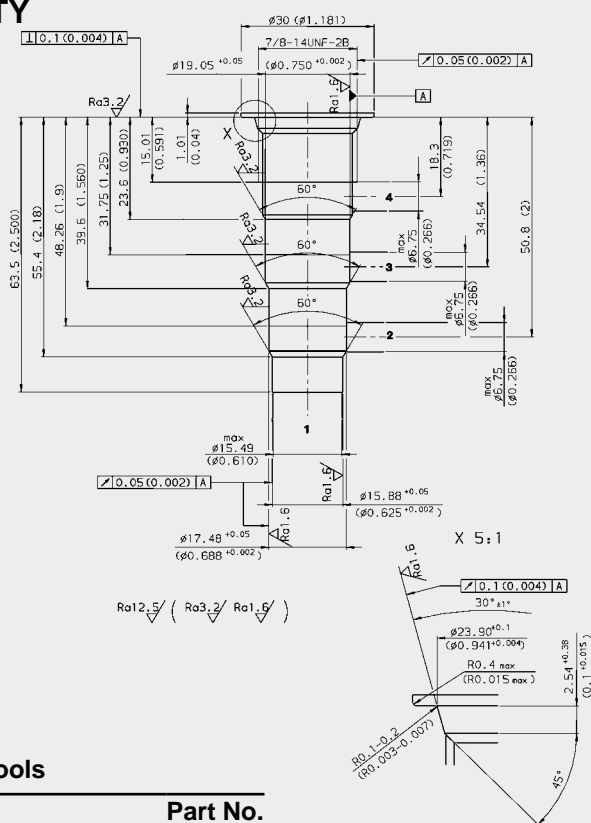
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil
Current draw at 20 °C:	2.22 A at 12 V DC 1.13 A at 24 V DC
Voltage tolerance:	± 15% of the nominal voltage
Coil duty rating:	Continuous up to max. 115% of the nominal voltage at 60 °C ambient temperature
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

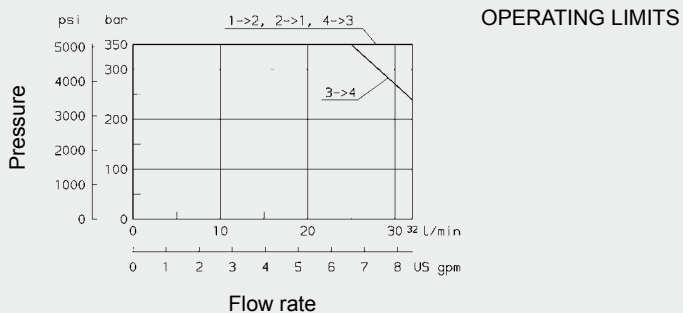
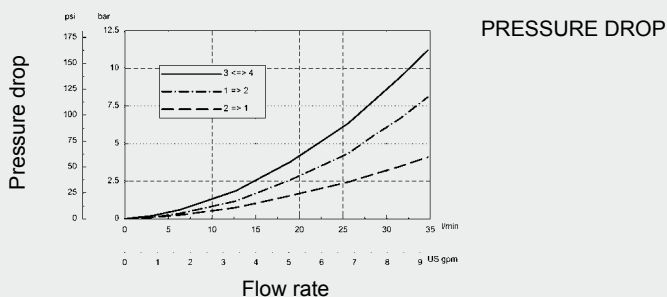
Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

Other models on request

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$ $T_{\text{Oil}} = 46^\circ\text{C}$



NOTE

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Subject to technical modifications.

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D-66280 Sulzbach/Saar

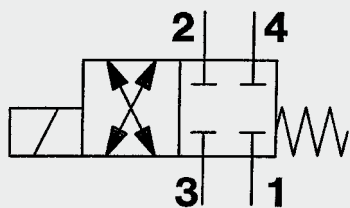
Tel: 0 68 97 /509-01

Fax: 0 68 97 /509-598

E-Mail: flutec@hydac.com

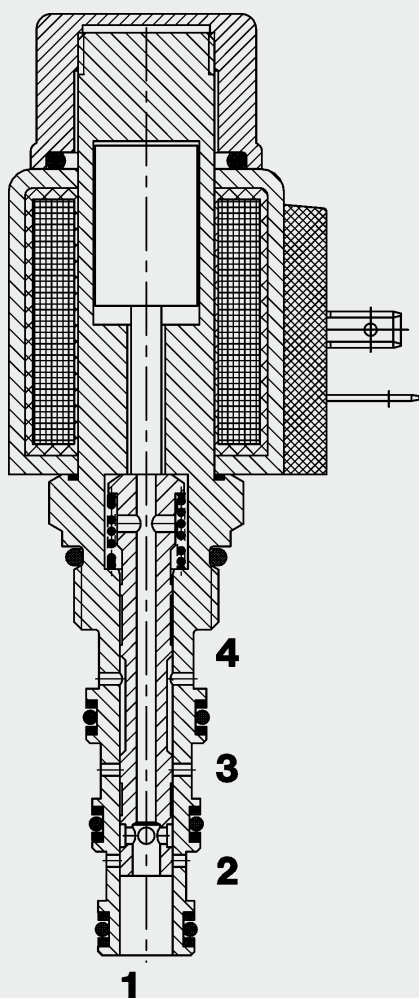
4/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting SAE-08 Cartridge – 350 bar

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

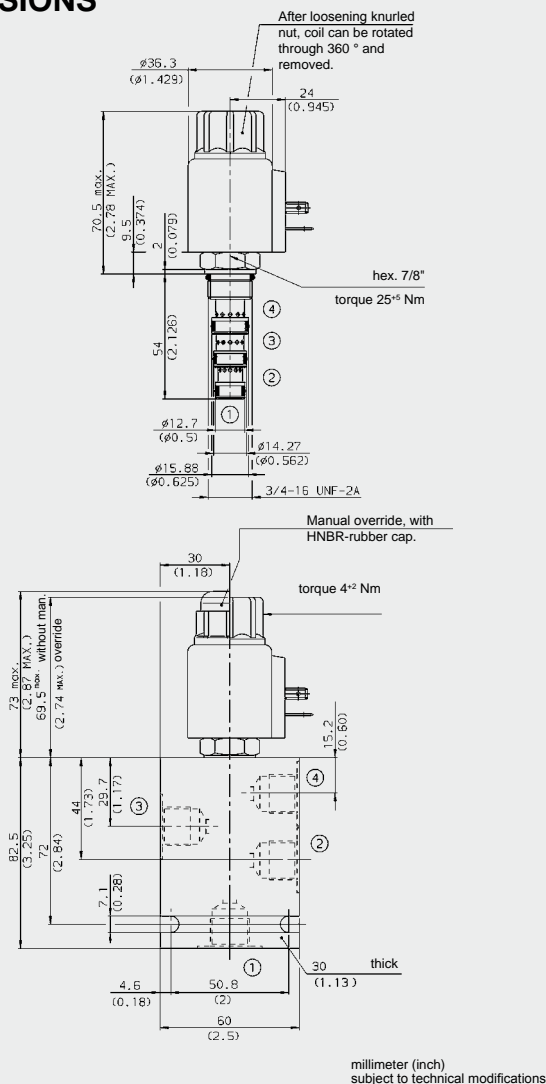
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 19 l/min (Consult HYDAC for flow rates above 207 bar)
Internal leakage:	90 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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



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

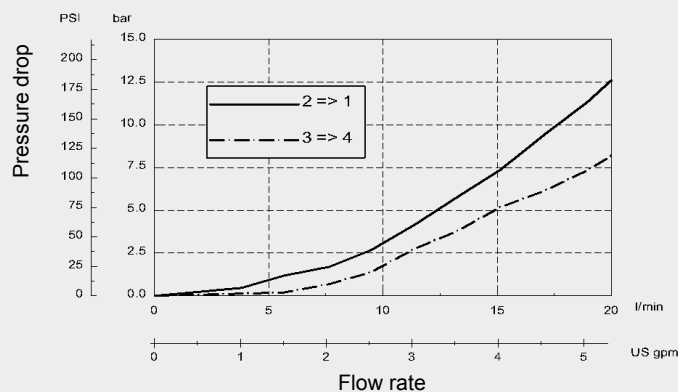
Other housings on request

Seal kits

Code	Material	Part No.
FS084-N SEAL KIT	NBR	3071272
FS084-V SEAL KIT	FKM	3071273

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



NOTE

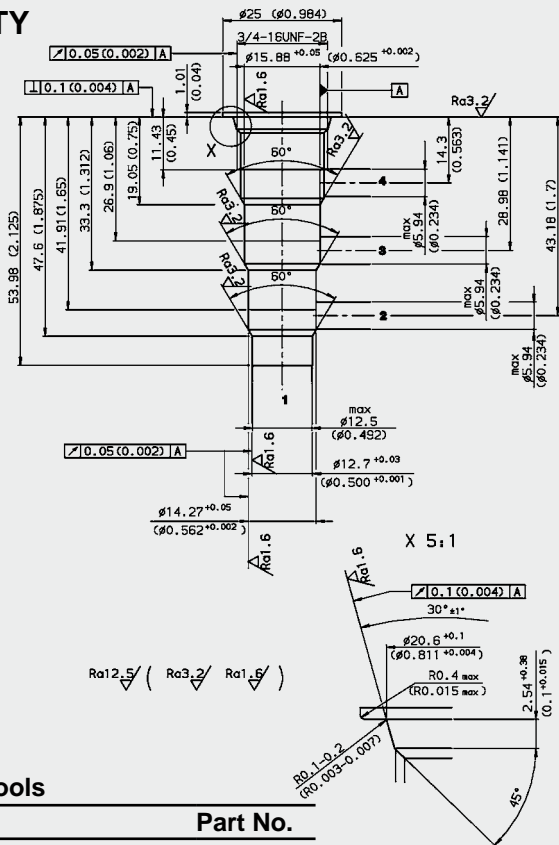
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CAVITY

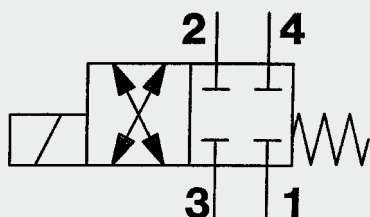
FC08-4



Form tools

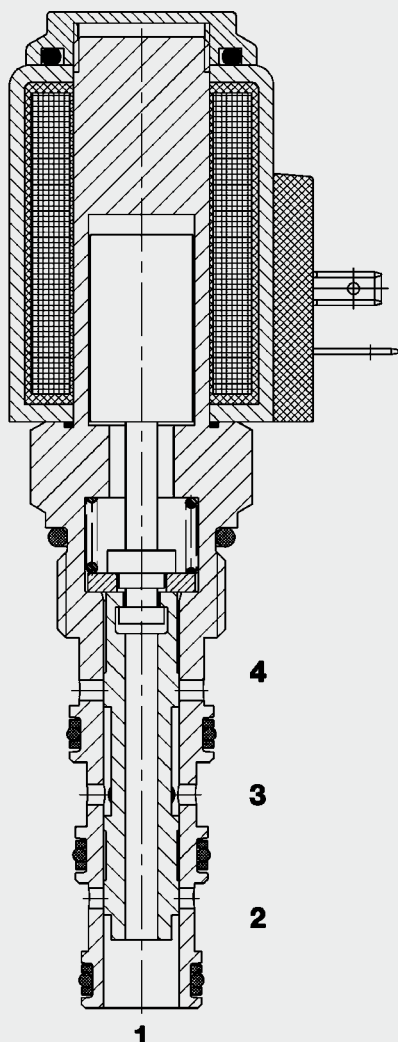
Tool	Part No.
Countersink FC08-4	175646
Reamer FC08-4	175647

4/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting SAE-10 Cartridge – 350 bar WK10Z-01



32 l/min
350 bar

FUNCTION



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	

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.

coil can be rotated through 360° and removed.

25.5 (1") hex.
torque 45⁺¹⁰ Nm

7/8-14UNF-2A

Manual override, Option M

After loosening knurled nut, manual operation is possible by twisting button anticlockwise.

torque
4⁺² Nm

32 (1.25) thick

millimeter (inch)
subject to technical modifications

[illegible]

Basic model _____
 Direct-acting 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

Model code	Part No.
WK10Z-01-C-N-24DG	3094511
WK10Z-01-C-N-230AG	3094512
Other models on request	

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

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$

Flow rate (l/min)	Flow rate (US gpm)	3 => 4 (psi)	1 => 2 (psi)	2 => 1 (psi)	4 => 3 (psi)
0	0	0	0	0	0
5	1	~1	~0.5	~0.2	~0.3
10	2	~4	~1.5	~0.5	~1.0
15	3	~9	~3.5	~1.0	~2.5
20	4	~16	~6.5	~1.5	~4.5
25	5	~25	~10	~2.0	~7.0
30	6	~36	~14	~2.5	~10
35	7	~48	~19	~3.0	~13

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$

1->2, 2->1, 4->3

3->4

Operating pressure

psi bar

5000 350

4000 300

3000 200

2000 100

1000 0

0 0

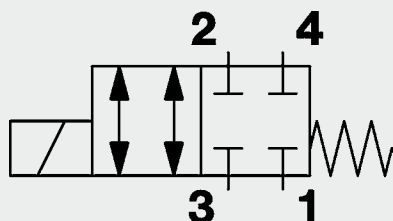
0 10 20 30 32 L/min

0 1 2 3 4 5 6 7 8 US gpm

Flow rate

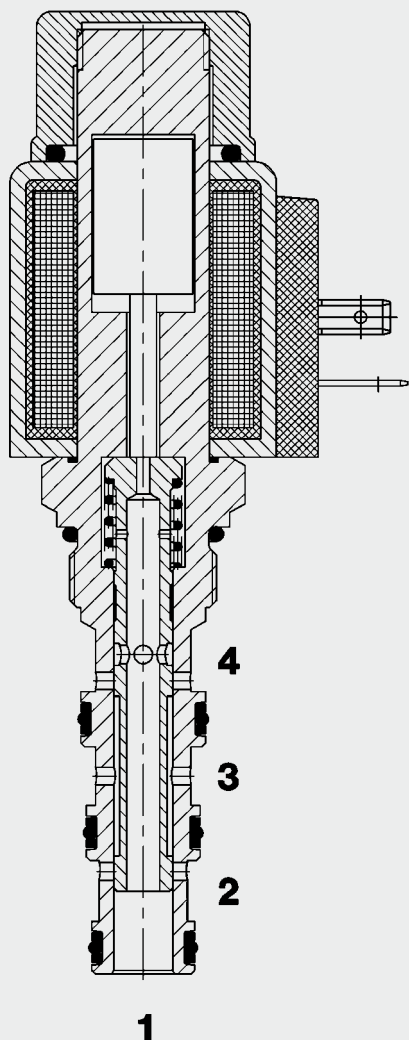
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Subject to technical modifications.

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Up to 25 l/min
Up to 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 3 to 2 or from 2 to 3 and also from port 4 to 1 or from 1 to 4.

4/2 Solenoid Directional Valve Spool Type, Direct-Acting, Metric Cartridge – 350 bar

WKM08140EB-01

FEATURES

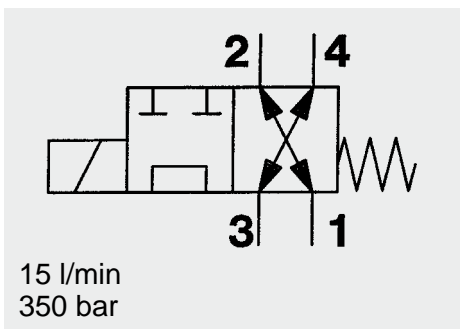
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Hardened and ground control spool to ensure minimal wear and extended service life
- Low pressure drop due to CFD optimized flow path
- External surfaces zinc-plated and corrosion-proof
- Excellent stability throughout the entire flow range
- Compact design enables space-saving installation in connection housings and control blocks

SPECIFICATIONS

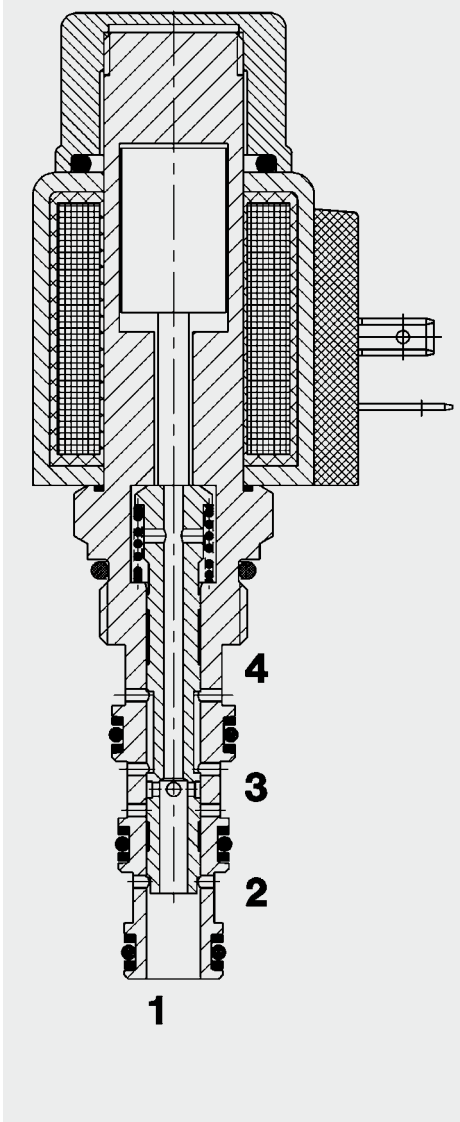
Operating pressure:	max. 350 bar
Nominal flow:	max. 25 l/min
Internal leakage:	max. 150 cm ³ /min at 250 bar and 34 mm ² /s
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 10 mm ² /s to max. 420 mm ² /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



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.

4/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting SAE-08 Cartridge – 350 bar WK08K-01

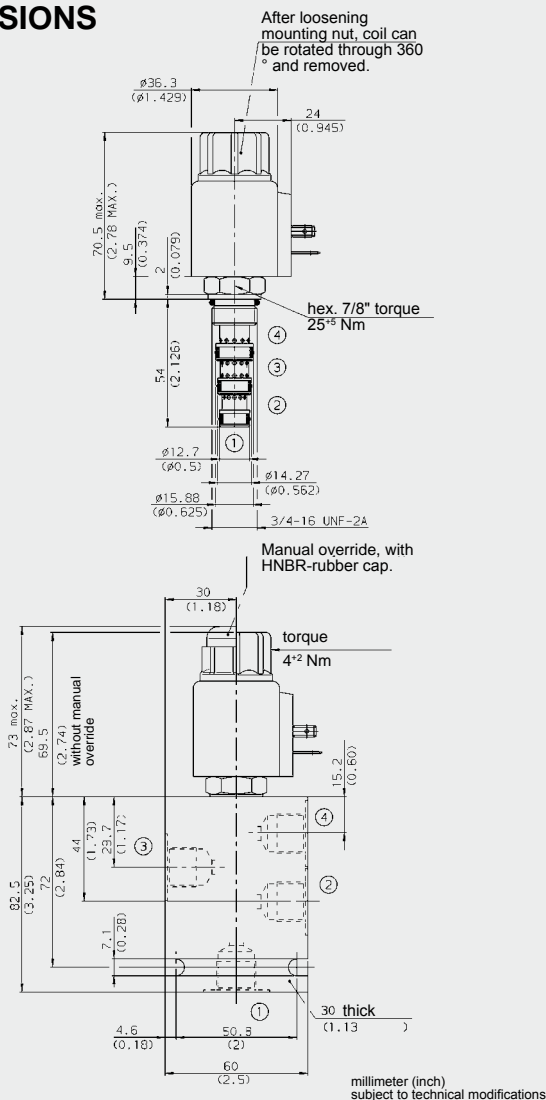
FEATURES

- 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 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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



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

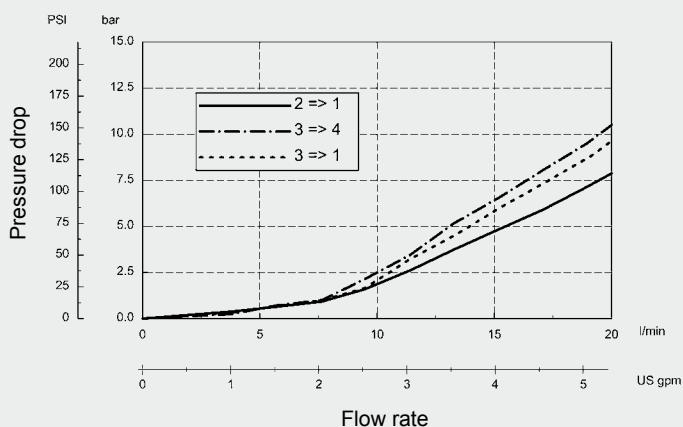
Other housings on request

Seal kits

Code	Material	Part No.
FS084-N SEAL KIT	NBR	3071272
FS084-V SEAL KIT	FKM	3071273

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



NOTE

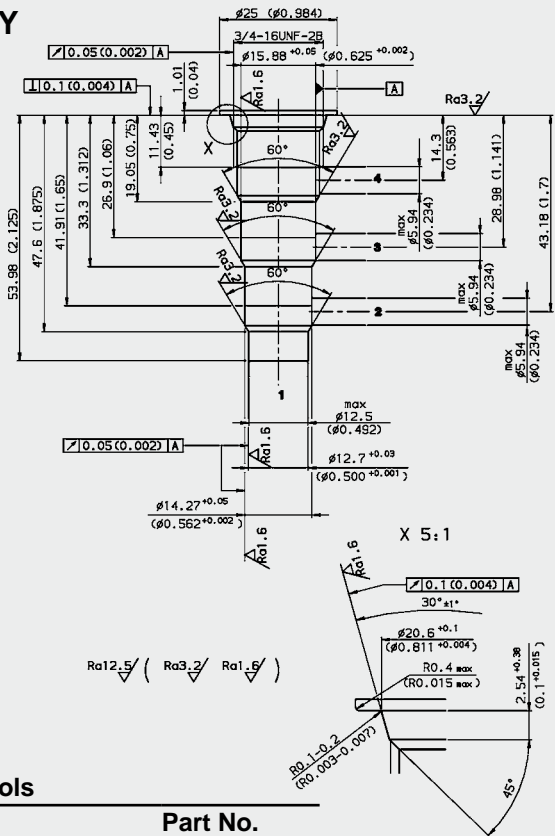
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CAVITY

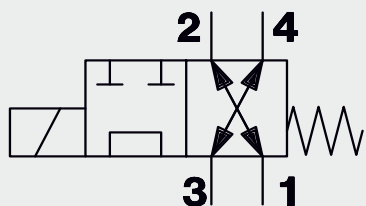
FC08-4



Form tools

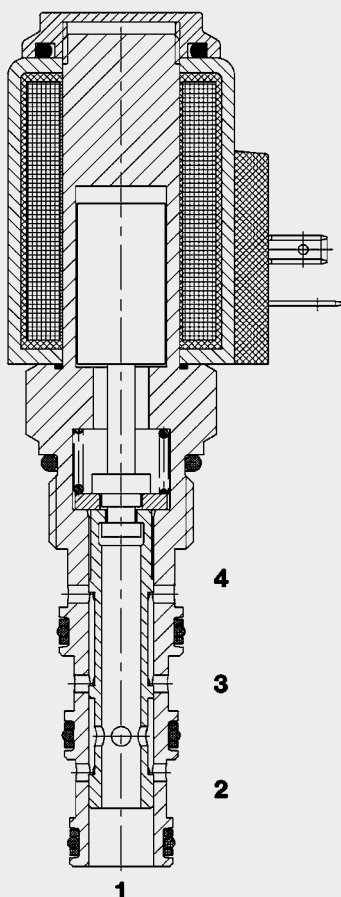
Tool	Part No.
Rougher FC08-4	175646
Reamer FC08-4	175647

millimeter (inch)
subject to technical modifications



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.

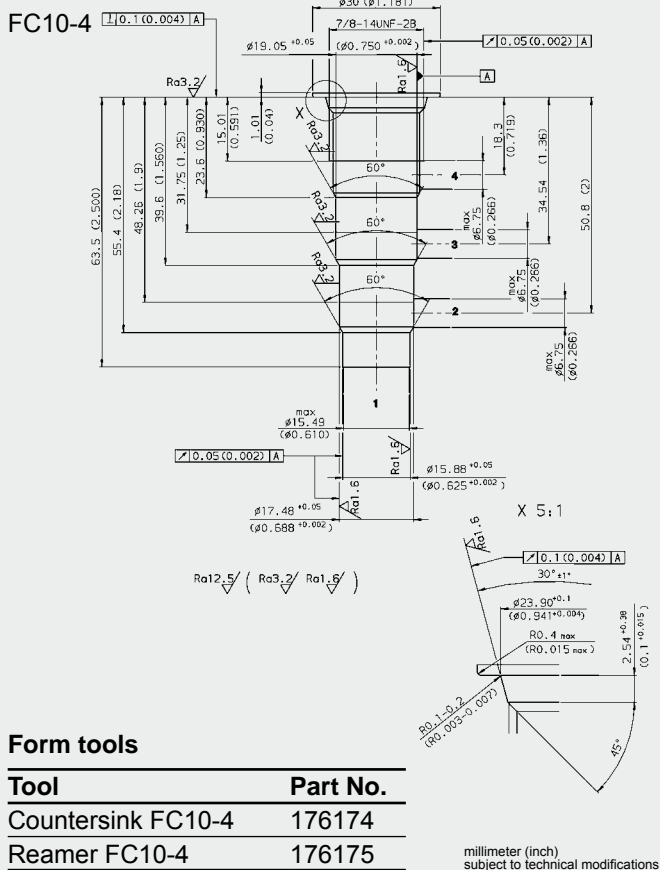
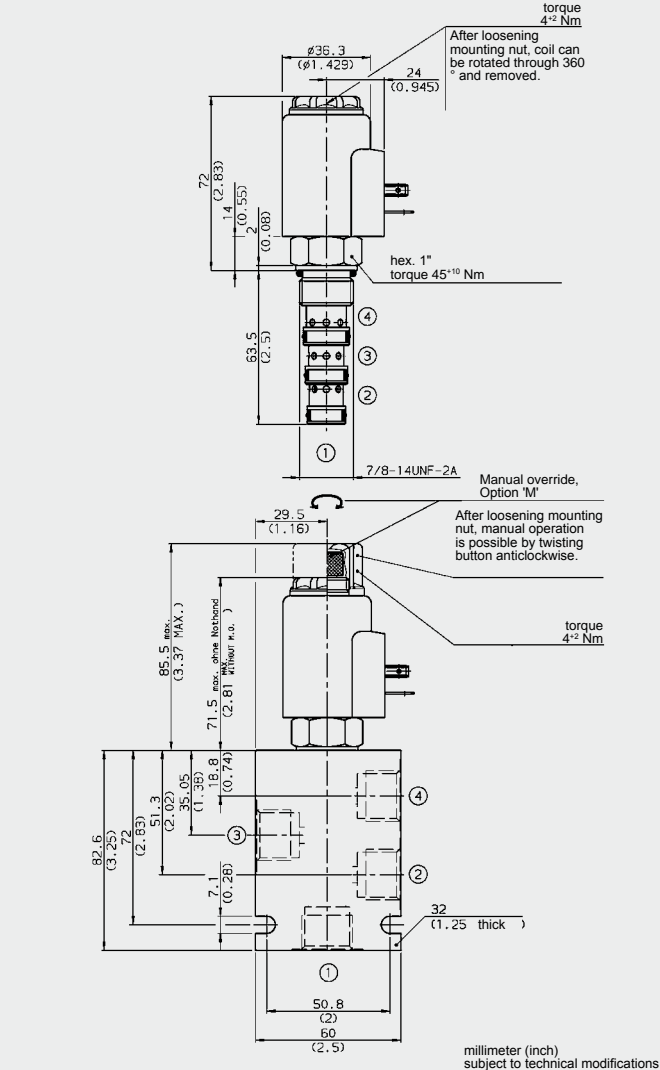
4/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting **SAE-10 Cartridge – 350 bar** WK10K-01

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	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	



Basic model _____
 Directional spool valve, UNF

Manual override _____
 No details = without manual override
 M = manual override

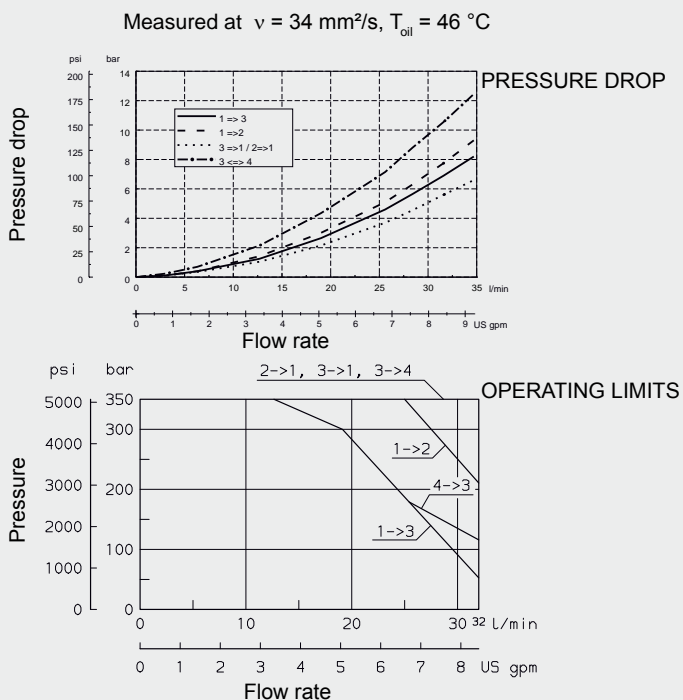
Body and ports* _____
 C = cartridge only
 SB4 = G1/2 ports, steel body
 AB4 = G1/2 ports, aluminium body

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

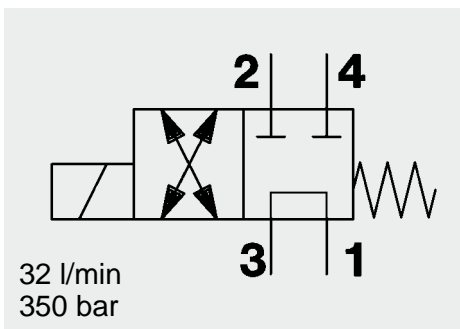
Coil connectors (type 40-1836) _____
 DC: DG = DIN connector to EN 175301-803
 DK = KOSTAL-threaded connection M27x1
 DL = 2 flying leads, 457 mm long; 0.75 mm²
 DN = Deutsch connector, 2-pole, axial
 DT = AMP Junior Timer, 2-pole, radial
 AC: AG = DIN connector to EN 175301-803
 Other connectors on request

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		

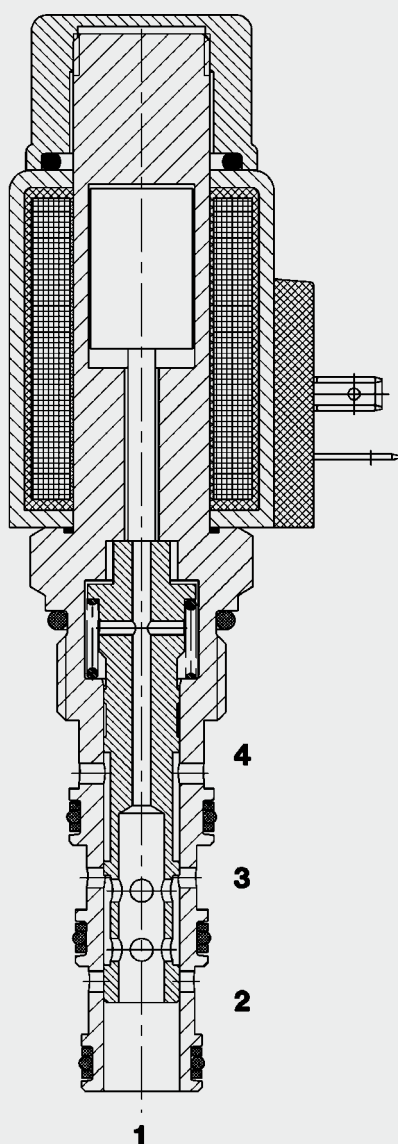


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E-Mail: flutec@hydac.com



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.

4/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting SAE-10 Cartridge – 350 bar

WK10N-01

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 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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

[illegible]

Form tools

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

millimeter (inch)
subject to technical modifications

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

Model code	Part No.
WK10N-01-C-N-24DG	3109892
WK10N-01-C-N-230AG	3109893

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

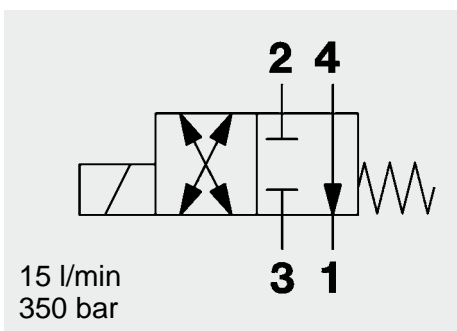
Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

Figure 10 consists of two graphs. The top graph, titled "Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$ ", plots Pressure drop (psi, bar) on the y-axis (0 to 150 psi, 0 to 12 bar) against Flow rate (l/min, US gpm) on the x-axis (0 to 35 l/min, 0 to 9 US gpm). It shows three curves: 1<->3 (solid line), 1<->2 (dashed line), and 3<->4 (dotted line). The bottom graph, titled "Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$ ", plots Operating pressure (psi, bar) on the y-axis (0 to 5000 psi, 0 to 350 bar) against Flow rate (l/min, US gpm) on the x-axis (0 to 30 l/min, 0 to 8 US gpm). It shows a diagonal line representing the operating limits, with labels for different configurations: 3->1, 3->4, 2->1, 1->2 (top left), and 4->3, 1->3 (bottom right).

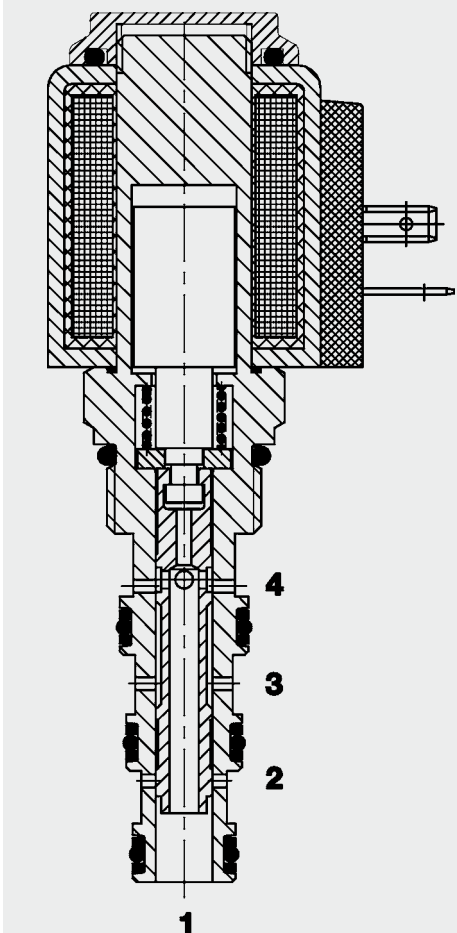
NOTE
The information in this brochure relates to the operating conditions and applications described. For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.

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4/2 Solenoid Directional Valve **UNF** Spool Type - Direct-Acting **SAE-08 Cartridge – 350 bar** WK08P-01



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

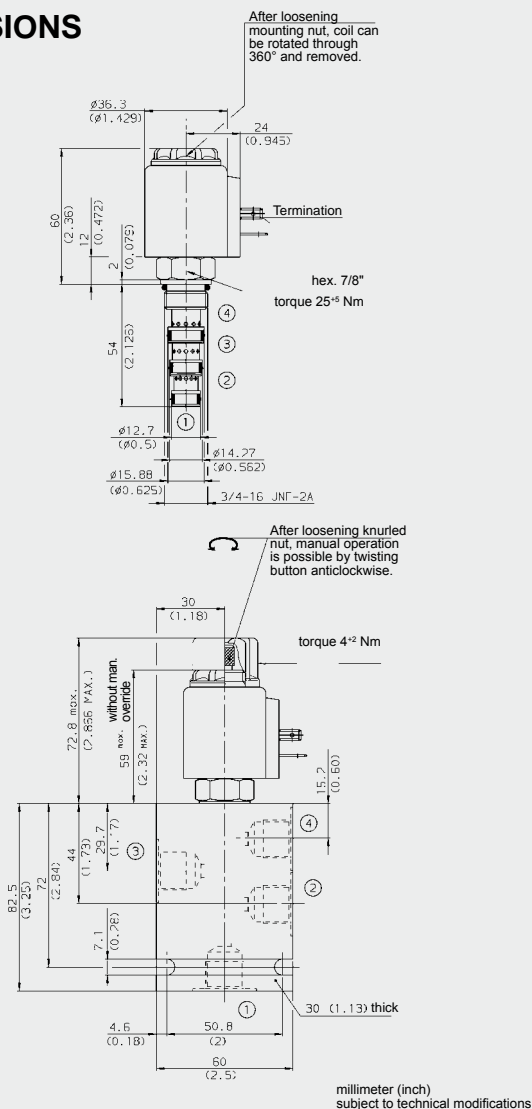
SPECIFICATIONS

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



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

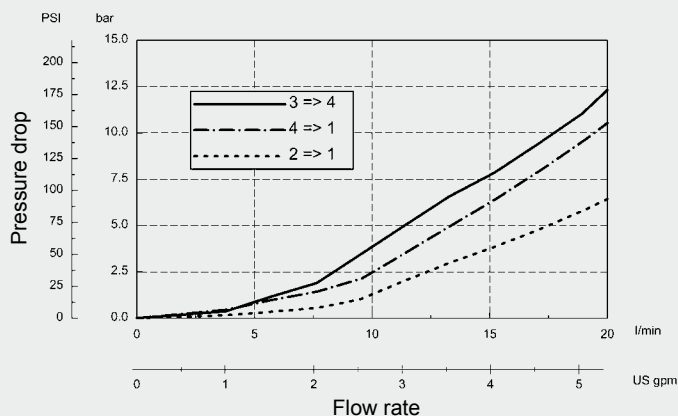
Code	Part No.	Material	Ports	Pressure
FH084-SB3	563383	Steel, zinc-plated	G3/8	420 bar
FH084-AB3	3011407	Aluminium, clear anodized	G3/8	210 bar

Seal kits

Code	Material	Part No.
FS084-N SEAL KIT	NBR	3071272
FS084-V SEAL KIT	FKM	3071273

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



NOTE

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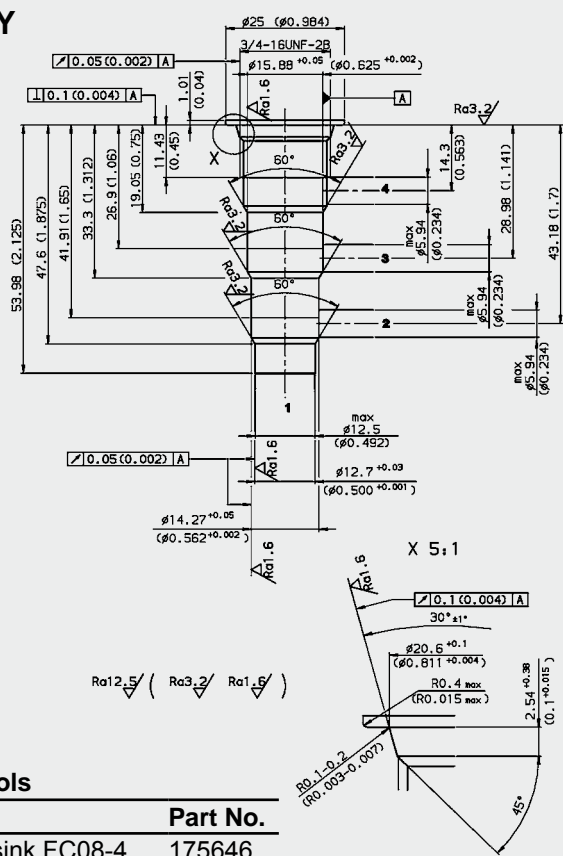
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E-Mail: flutec@hydac.com

CAVITY

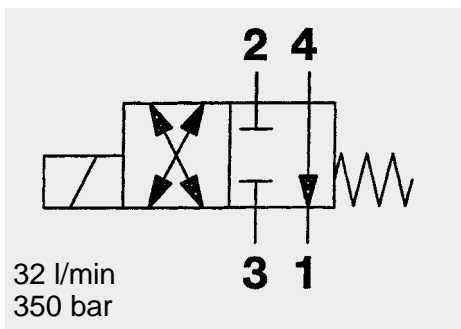
FC08-4



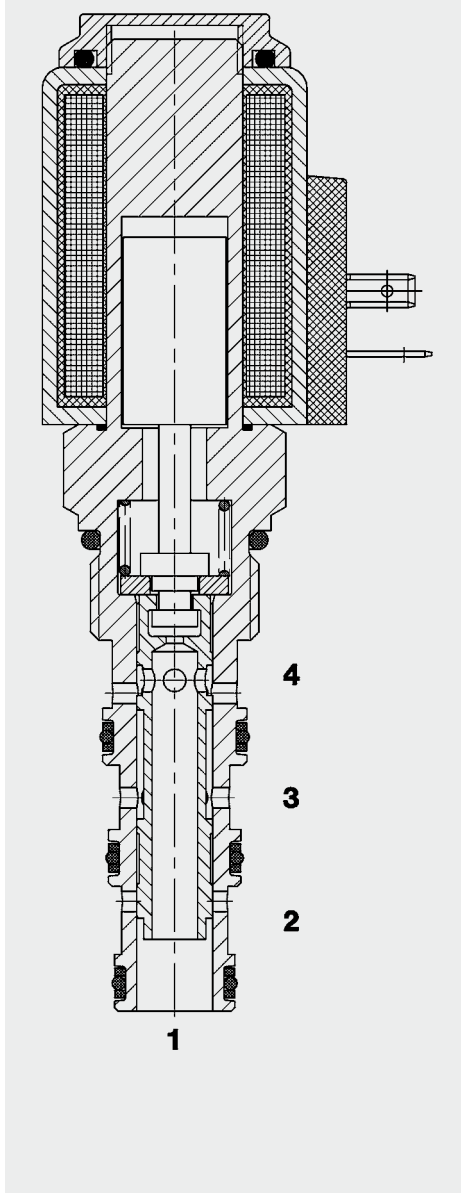
Form tools

Tool	Part No.
Countersink FC08-4	175646
Reamer FC08-4	175647

millimeter (inch)
subject to technical modifications



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.

4/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting, SAE-10 Cartridge – 350 bar WK10P-01

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 cm ³ /min at 250 bar and 34 mm ² /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 mm ² /s to max. 420 mm ² /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	

Front View Dimensions:

- Top mounting hole diameter: $\varnothing 36.3$ ($\varnothing 1.429$)
- Top mounting hole offset: 24 (0.945)
- Top mounting hole distance: 14 (2.83)
- Top mounting hole distance: 2 (0.55)
- Top mounting hole distance: 2 (0.08)
- Top mounting hole distance: 63.5 (2.5)
- Top mounting hole distance: 7/8-14 UNF-2A

Assembly Instructions (Front View):

- torque 5⁺² Nm
- After loosening the mounting nut, the coil can be rotated through 360° and removed.
- hex. 1" torque 45⁺¹⁰ Nm

Side View Dimensions:

- Top mounting hole diameter: 29.5 (1.16)
- Top mounting hole offset: 29.5 (1.16)
- Top mounting hole distance: 85.5 max. (3.37 MAX.)
- Top mounting hole distance: 71.5 (2.8)
- Top mounting hole distance: 18.8 (0.74)
- Top mounting hole distance: 35.05 (1.38)
- Top mounting hole distance: 51.3 (2.02)
- Top mounting hole distance: 77.5 (3.05)
- Top mounting hole distance: 82.5 (3.25)
- Top mounting hole distance: 7.1 (0.28)
- Top mounting hole distance: 50.8 (2)
- Top mounting hole distance: 60 (2.5)

Assembly Instructions (Side View):

- After removing mounting nut, manual operation is possible by twisting button anticlockwise.
- torque 4⁺² Nm
- 32 thick (1.25)

Manual override, Option "M"

millimeter (inch)
subject to technical modifications

Technical drawing of a countersink tool FC10-4. The drawing shows a side view of the tool with various dimensions and tolerances. Key features include a 7/8-14 UNF-2B thread, a 50.8 (2) length, and a 50.8 (2) diameter. The tool is labeled 'Form tools' and 'Form tool subject to technical modifications'.

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

Model code	Part No.
WK10P-01-C-N-24DG	3098533
WK10P-01-C-N-230AG	3098534
Other models on request	

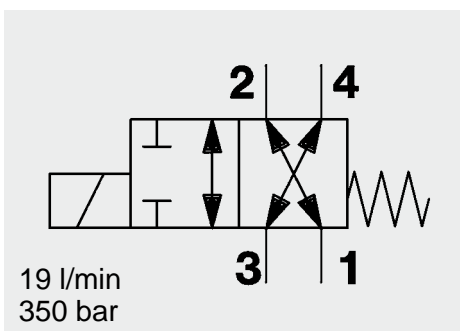
Code	Part No.	Material	Ports	Pressure
FH104-SB4	3037784	Steel, zinc-plated	G1/2	420 bar
FH104-AB4	3038097	Aluminium, anodized	G1/2	210 bar
Other bodies on request				

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275
Other seal kits on request		

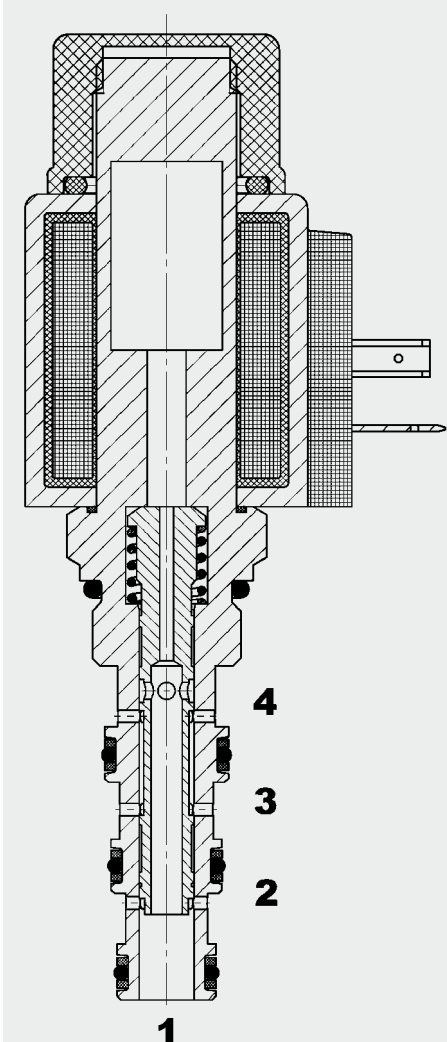
NOTE
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Subject to technical modifications.

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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

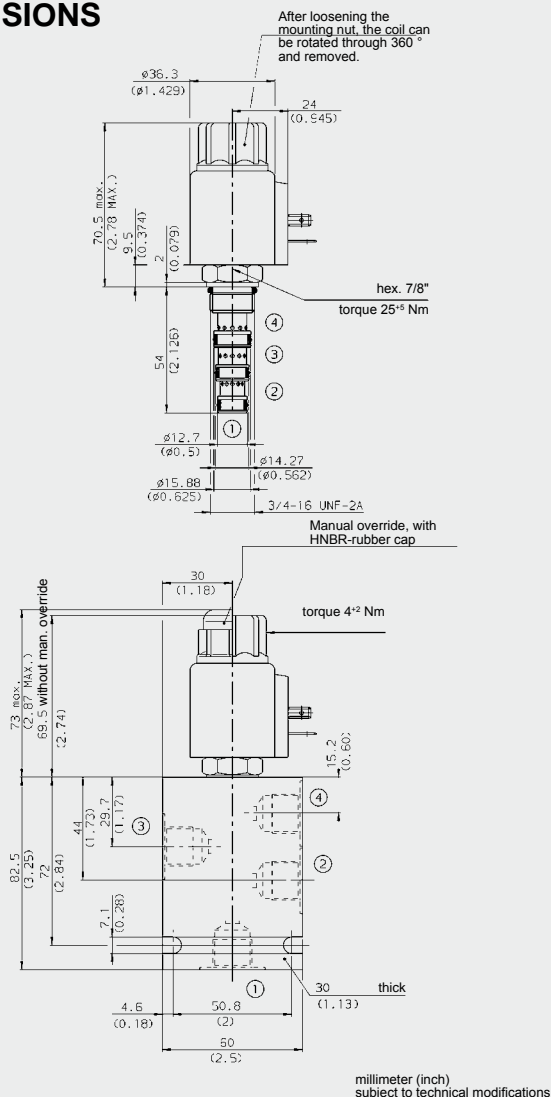
SPECIFICATIONS

Operating pressure:	350 bar
Nominal flow:	19 l/min
Internal leakage:	max. 90 cm ³ /min at 250 bar and 36 mm ² /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 mm ² /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



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

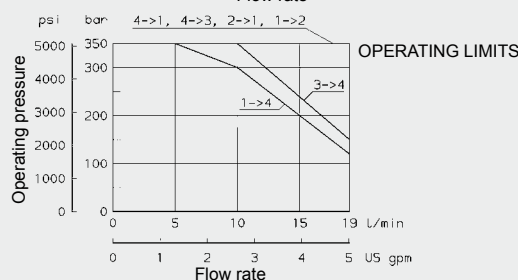
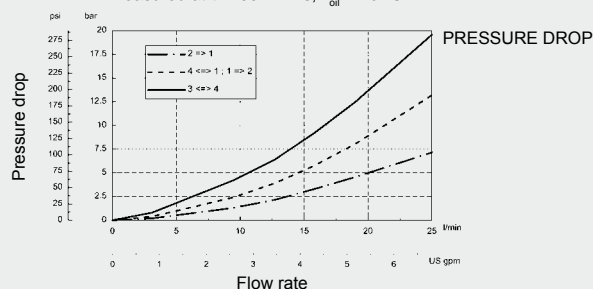
Other bodies on request

Seal kits

Code	Material	Part No.
Seal kit FS084-N	NBR	3071272
Seal kit FS084-V	FKM	3071273

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



NOTE

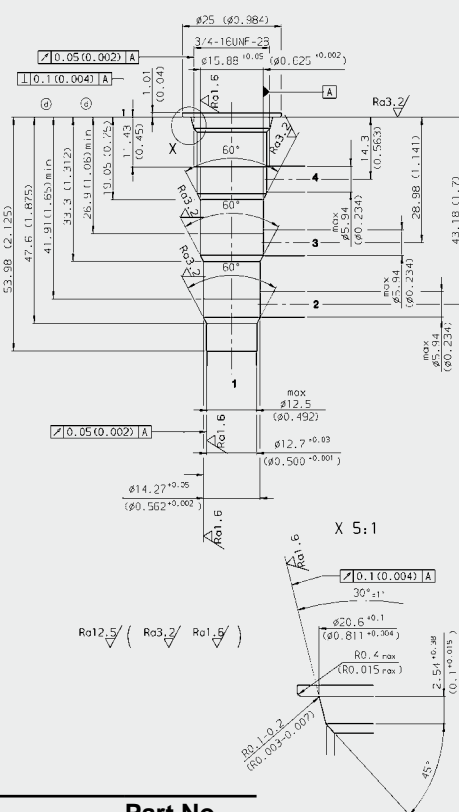
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Subject to technical modifications.

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CAVITY

FC08-4

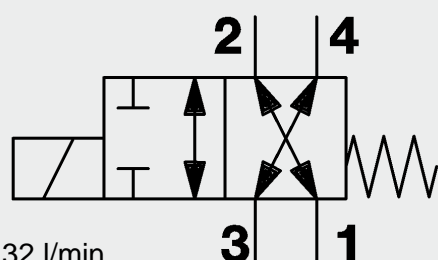


Form tools

Tool	Part No.
Countersink FC08-4	175646
Reamer FC08-4	175647

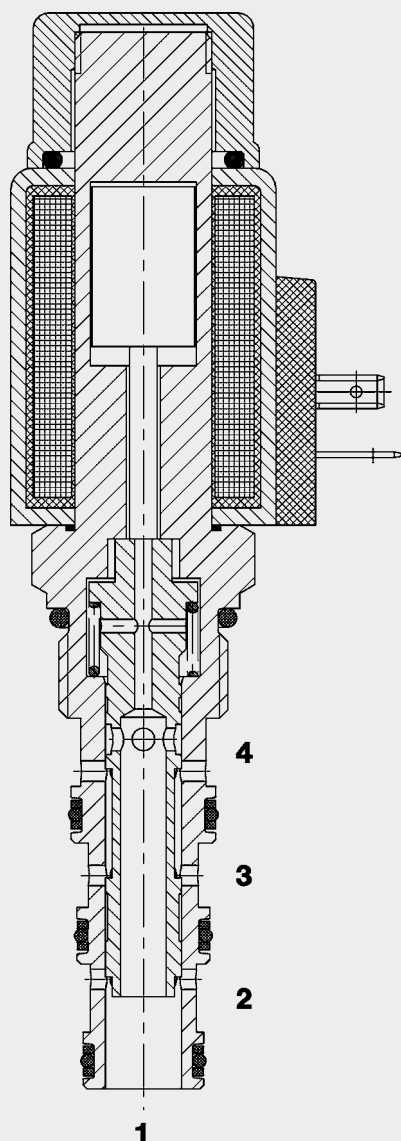
millimeter (inch)
subject to technical modifications

4/2 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting **SAE-10 Cartridge – 350 bar** WK10R-01



32 l/min
350 bar

FUNCTION



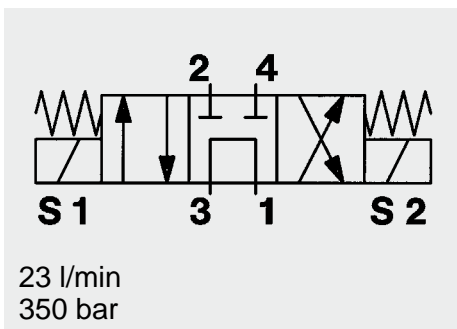
When de-energized, the valve allows flow in both directions between ports 3 and 4 and between ports 1 and 2. When energized, the valve allows flow in both directions between ports 4 and 1, while blocking flow at ports 2 and 3.

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

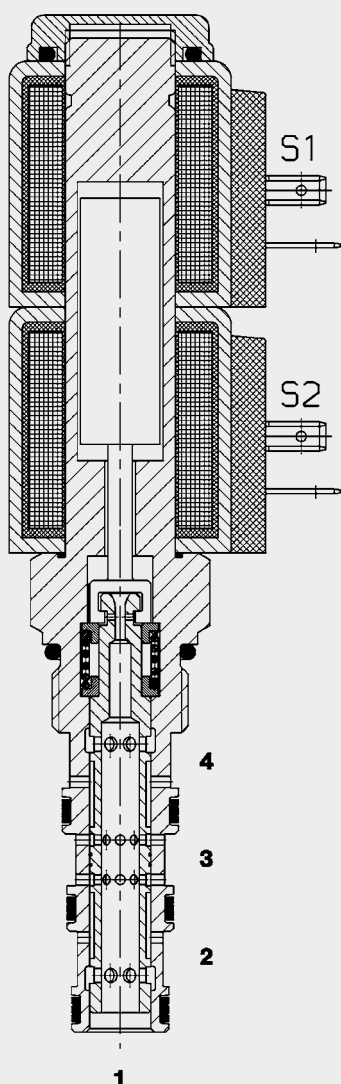
Operating pressure:	max. 350 bar
Nominal flow:	max. 32 l/min
Internal leakage:	max. 160 cm ³ /min at 250 bar and 34 mm ² /s
Media operating temperature range:	min. -20 °C to max. +120 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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:	<div> <div>Valve body:</div> <div>Spool:</div> <div>Seals:</div> <div>Back-up rings:</div> <div>Coil:</div> </div> <div> <div>free-cutting steel</div> <div>hardened and ground steel</div> <div>NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)</div> <div>PTFE</div> <div>Steel/Polyamide</div> </div>
Cavity:	FC10-4
Weight:	<div>Valve complete 0.48 kg</div> <div>Coil only 0.23 kg</div>
Electrical data:	
Type of voltage:	DC solenoid, AC voltage is rectified using a bridge rectifier built into the coil
Current draw at 20 °C:	<div>2.22 A at 12 V DC</div> <div>1.13 A at 24 V DC</div>
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



4/3 Solenoid Directional Valve Spool Type, Direct-Acting SAE-10 Cartridge – 350 bar WK10G-01

UNF

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

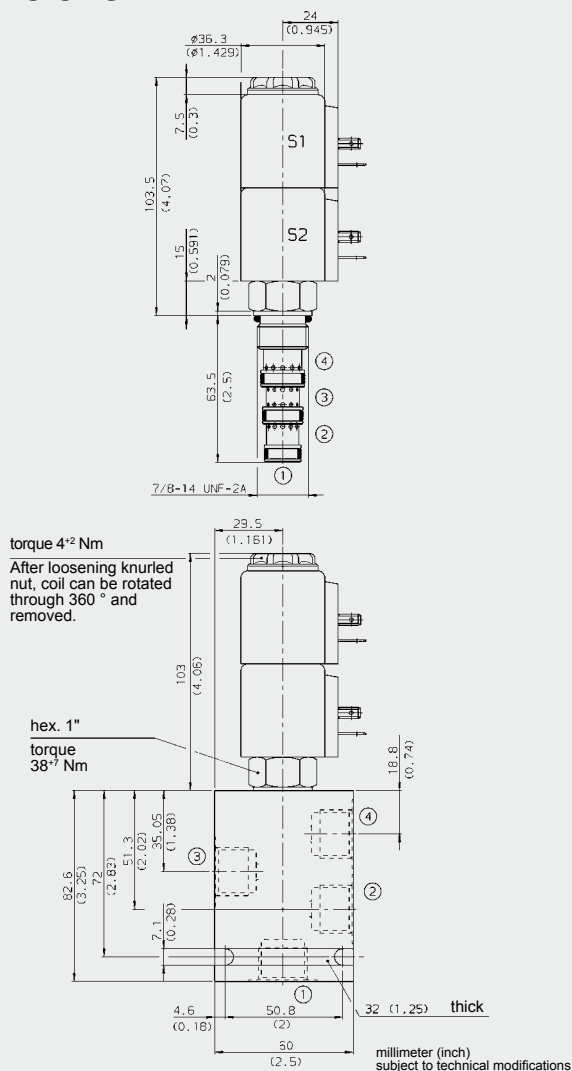
SPECIFICATIONS

Operating pressure:	350 bar
Nominal flow:	max. 23 l/min (Consult HYDAC for flow ratings above 207 bar)
Internal leakage:	max. 280 cm ³ /min at 207 bar and 34 mm ² /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 mm ² /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:	<div>Valve body: free-cutting steel</div> <div>Spool: hardened and ground steel</div> <div>Seals: NBR (standard) FKM (optional, media temperature range -20 °C to +120 °C)</div> <div>Back-up rings: PTFE</div> <div>Coil: Steel / Polyamide</div>
Cavity:	FC10-4
Weight:	<div>Valve complete: 0.67 kg</div> <div>Coil only: 0.19 kg</div>

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



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

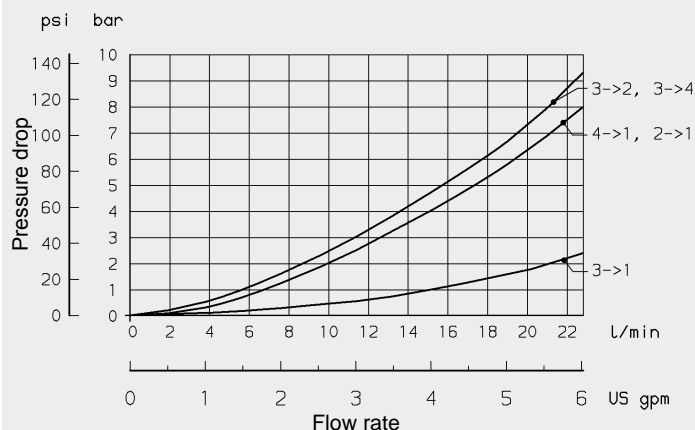
Other models on request

Seal kits

Code	Material	Part No.
Seal kit FS104-N	NBR	3051912
Seal kit FS104-N	FKM	3071275

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{oil} = 46^\circ \text{C}$



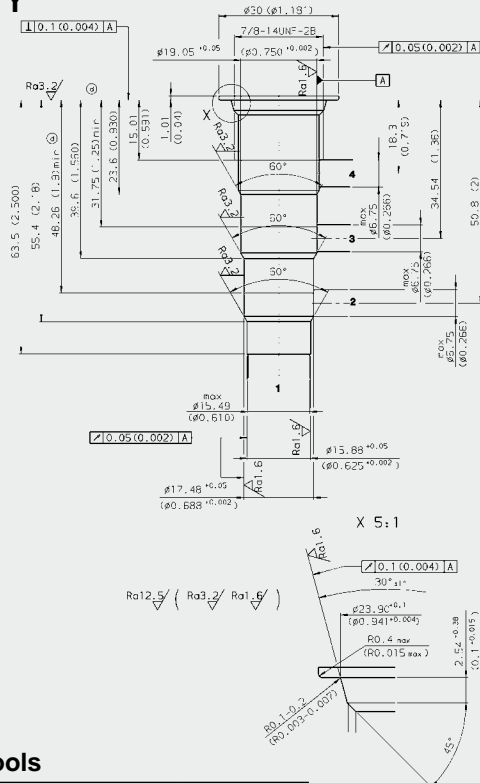
Note

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Subject to technical modifications.

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CAVITY

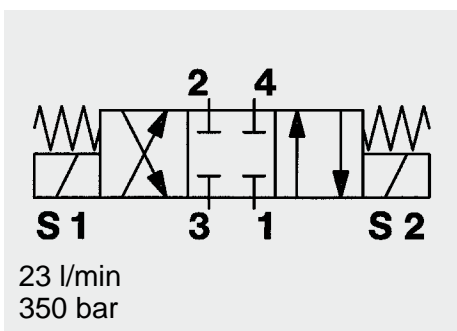
FC10-4



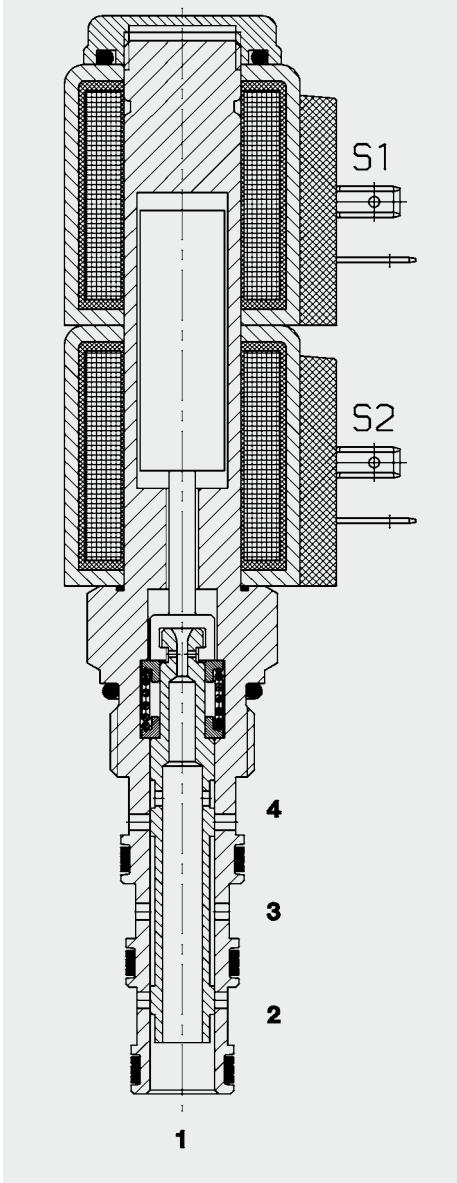
Form tools

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

millimeter (inch)
subject to technical modifications



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.

4/3 Solenoid Directional Valve Spool Type, Direct-Acting Closed Center, SAE-10 Cartridge – 350 bar WK10E-01

UNF

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 cm ³ /min at 207 bar and 34 mm ² /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 mm ² /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)

MODEL CODE

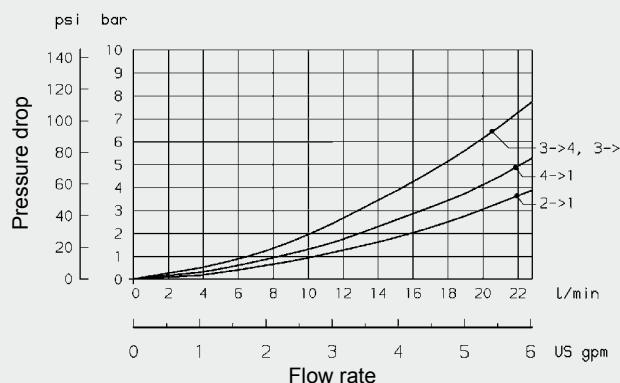
Other connectors on request

Other models on request

Other models on request

Code	Part No.	Material
Seal kit FS104-N	3051912	NBR
Seal kit FS104-N	3071275	FKM

Measured at $\nu = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



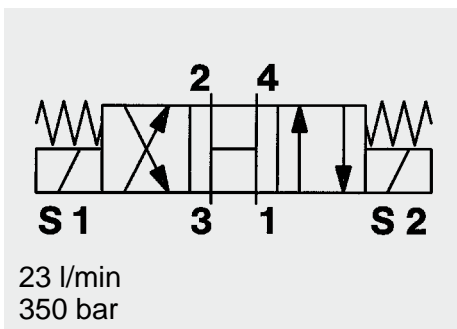
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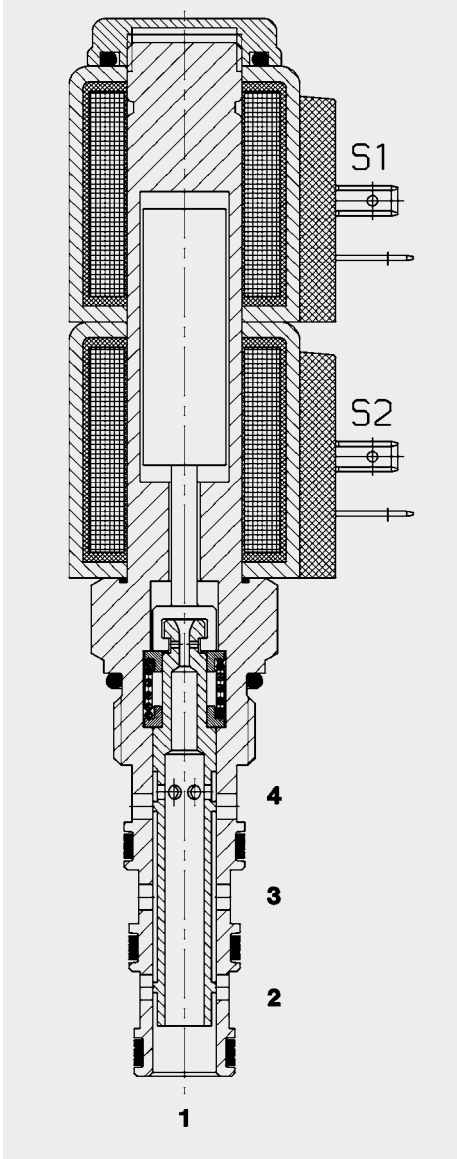
Technical drawing of a mechanical part, likely a shaft or axle, showing dimensions and tolerances. The drawing includes a side view with a keyway and a cross-sectional view. Key dimensions include diameters (e.g., 19.05, 17.48, 15.88, 15.49, 15.75, 15.88), lengths (e.g., 63.5, 48.26, 39.6, 23.5, 18.3, 34.54, 25.75), and angles (e.g., 60°, 30°, 45°). Surface finish symbols (Ra) and geometric tolerances (e.g., 0.05, 0.1, 0.004) are also present. The drawing is labeled "Part No." at the bottom.

millimeter (inch)
subject to technical modifications

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



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.

4/3 Solenoid Directional Valve Spool Type, Direct-Acting SAE-10 Cartridge – 350 bar WK10H-01

UNF

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

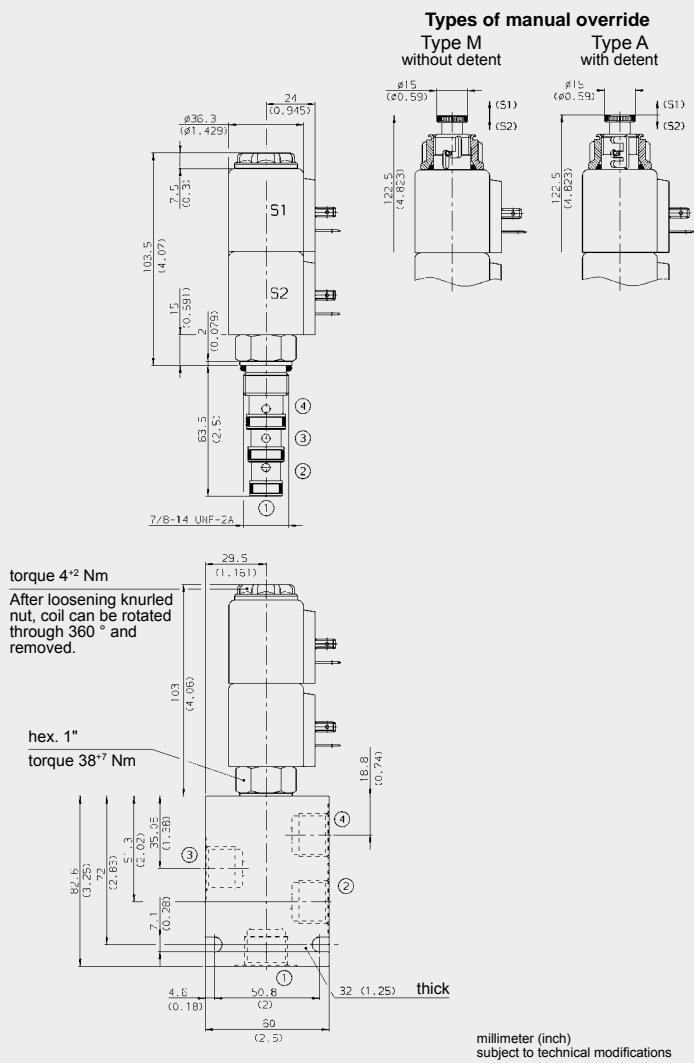
SPECIFICATIONS

Operating pressure:	350 bar
Nominal flow:	23 l/min (Consult HYDAC for flow ratings above 207 bar)
Internal leakage:	max. 160 cm ³ /min at 207 bar and 34 mm ² /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 mm ² /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



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

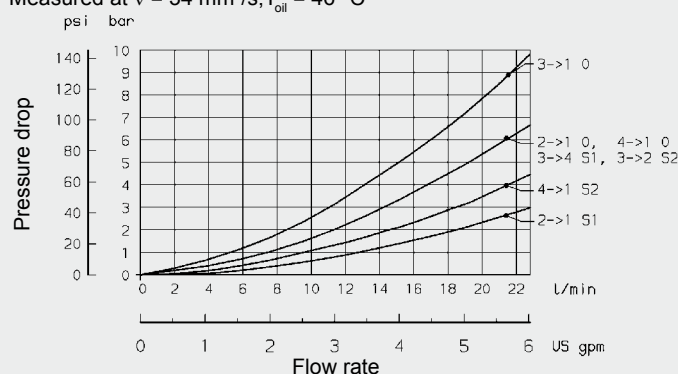
Other line bodies on request

Seal kits

Code	Material	Part No.
Seal kit FS104-N	NBR	3051912
Seal kit FS104-N	FKM	3071275

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



Note

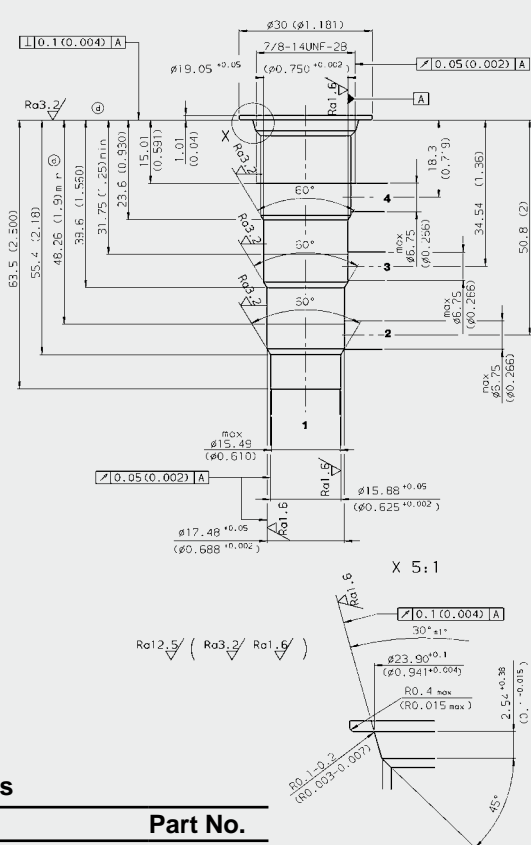
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CAVITY

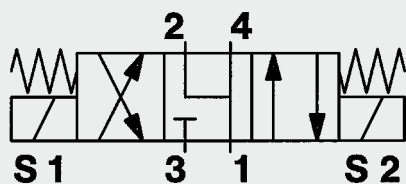
FC10-4



Form tools

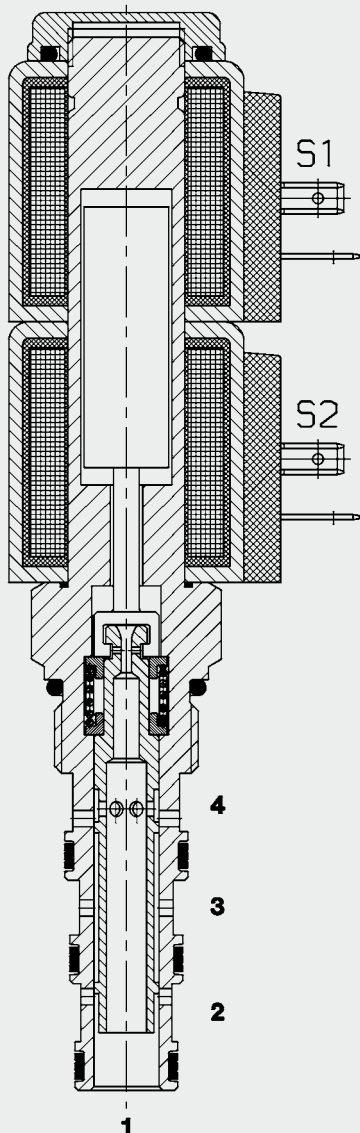
Tool	Part No.
Countersink FC10-4	176174
Reamer FC10-4	176175

millimeter (inch)
 subject to technical modifications



23 l/min
350 bar

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.

4/3 Solenoid Directional Valve **UNF** Spool Type, Direct-Acting SAE-10 Cartridge – 350 bar

WK10J-01

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

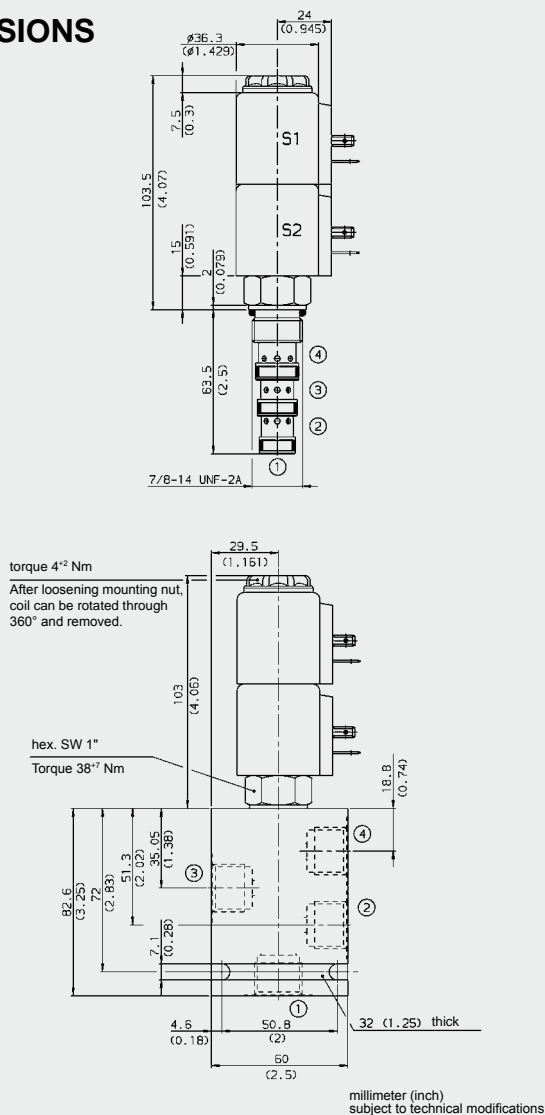
SPECIFICATIONS

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



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

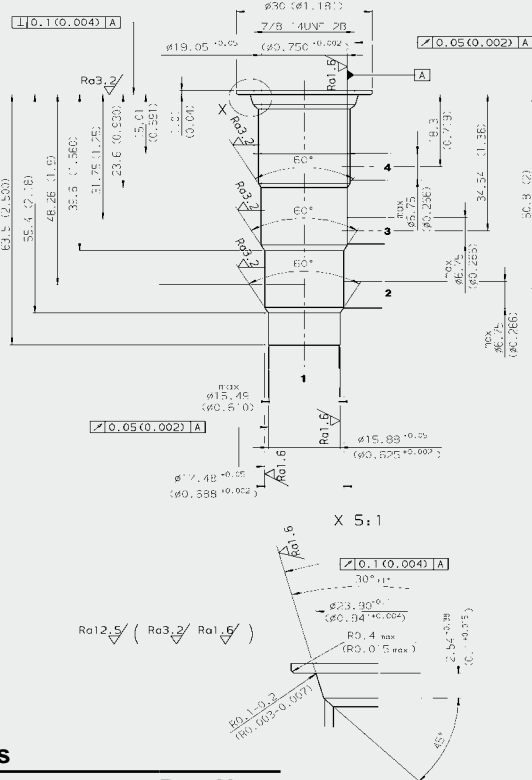
Other models on request

Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

CAVITY

FC10-4



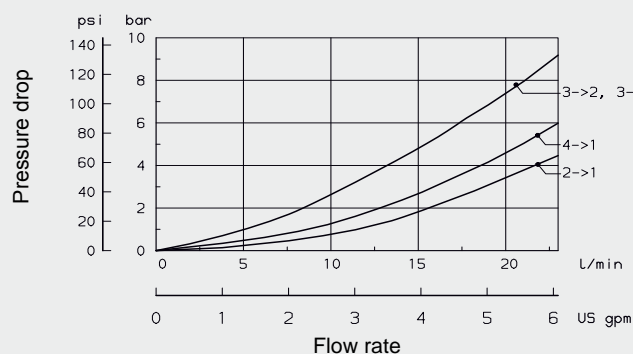
Form tools

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

millimeter (inch)
subject to technical modifications

PERFORMANCE

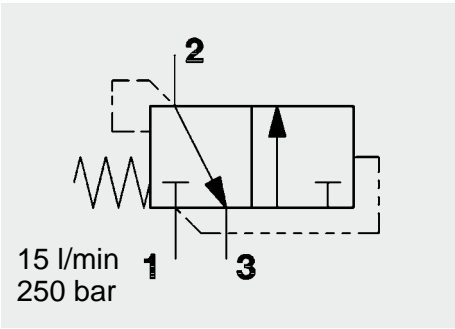
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



NOTE

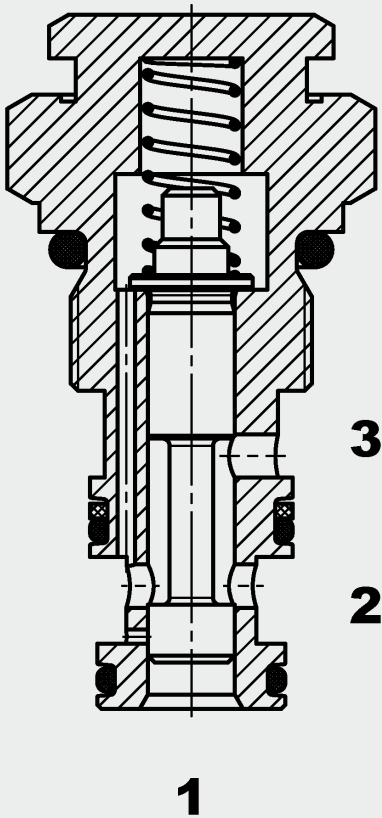
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3/2 Directional Spool Valve Hydraulically Operated Direct Acting Metric Cartridge – 350 bar WKH05330

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.

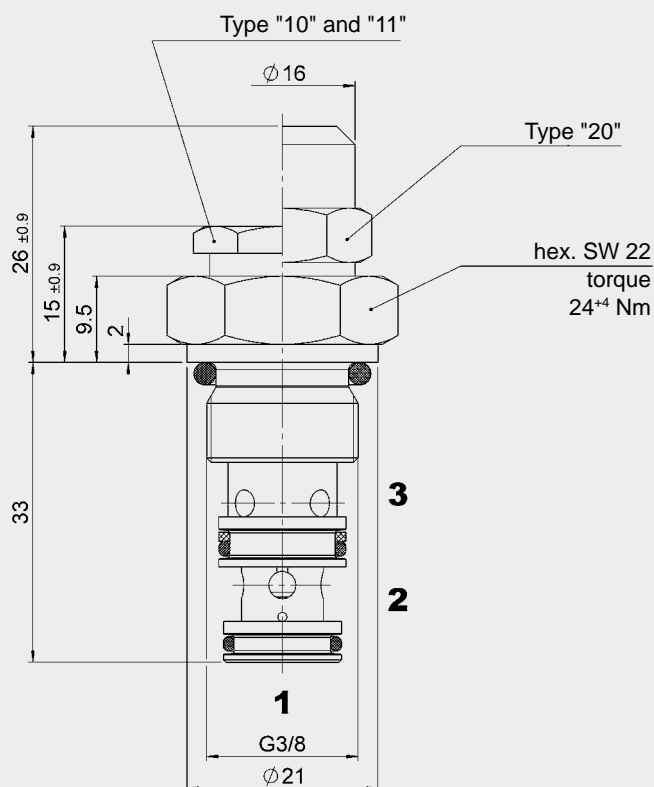
FEATURES

- 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 cm ³ /min at 250 bar and 36 mm ² /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 mm ² /s to max. 420 mm ² /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

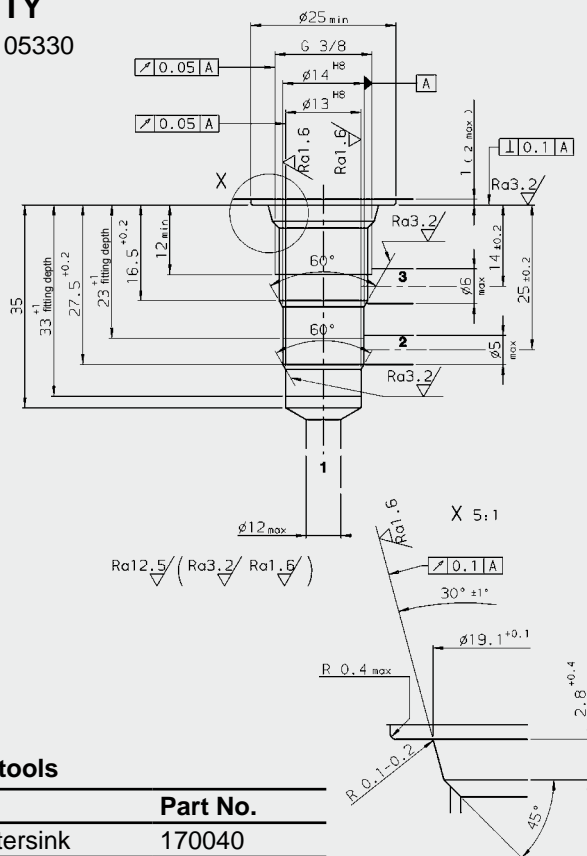
DIMENSIONS



millimeter
subject to technical modifications

CAVITY

Metric 05330



millimeter
subject to technical modifications

Form tools

Tool	Part No.
Countersink	170040
Reamer	1014203

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

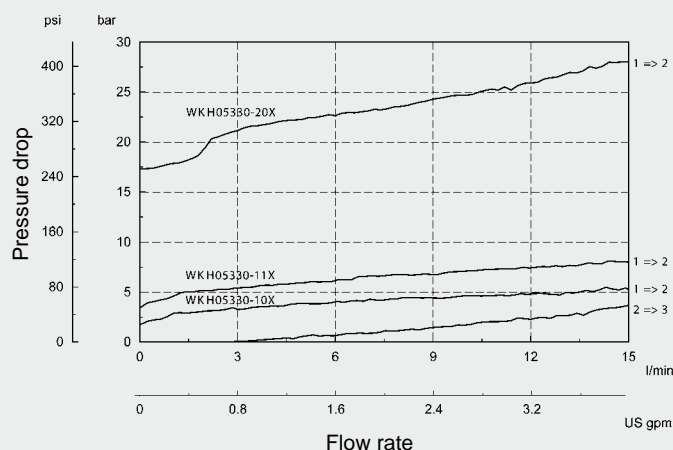
Other models on request

Seal kits

Code	Part No.
Seal kit WKH05330-XXXFKM	3006592

PERFORMANCE

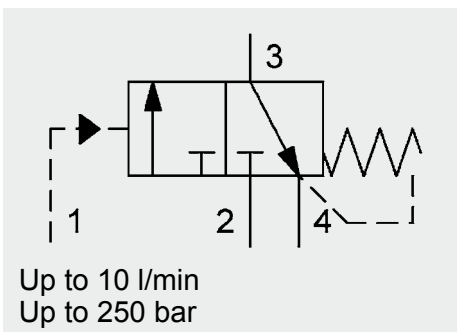
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^{\circ}\text{C}$



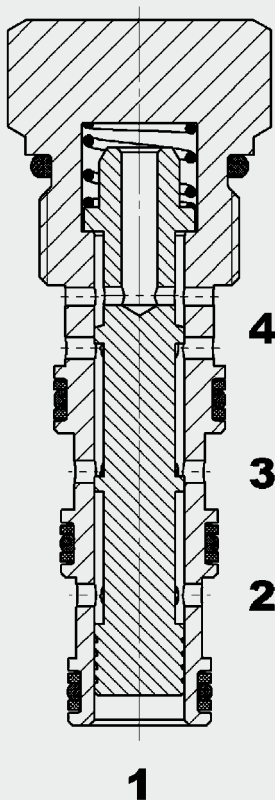
NOTE

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Subject to technical modifications.

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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.

3/2 Directional Spool Valve Hydraulically Operated Direct-Acting SAE-10 Cartridge – 250 bar WKH10C

UNF

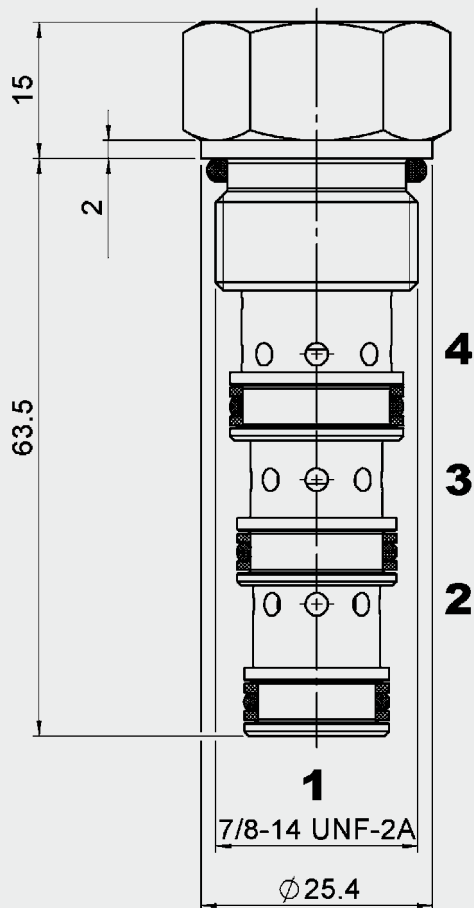
FEATURES

- 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 cm ³ /min at 250 bar and 36 mm ² /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 mm ² /s to max. 420 mm ² /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.

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

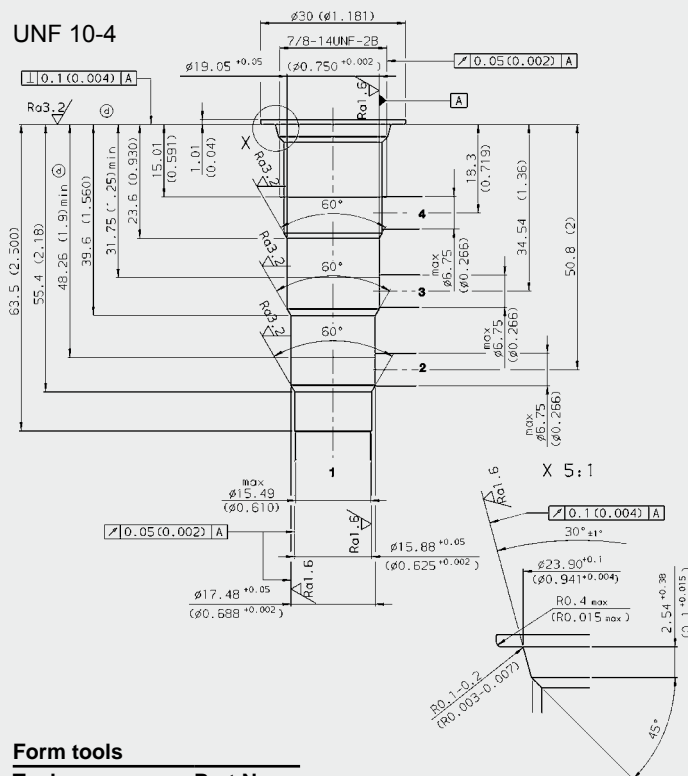
Other line bodies on request

Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

CAVITY

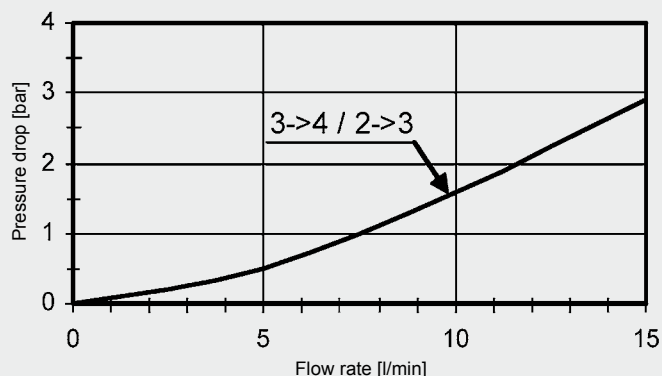
UNF 10-4



Millimeter (inch)
Subject to technical modifications.

PERFORMANCE

measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$,



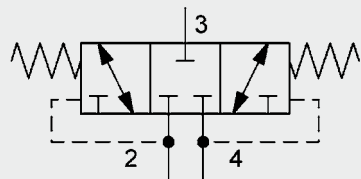
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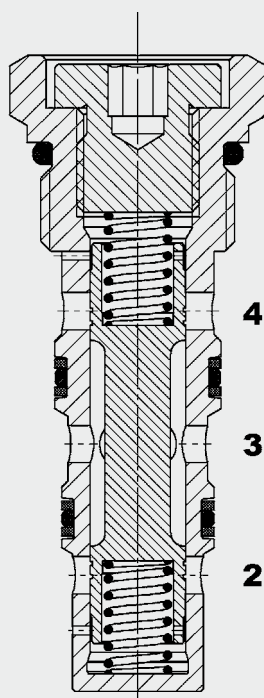
Form tools

Tool	Part No.
Countersink	176174
Reamer	176175



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.

3/3 Directional Valve Hydraulically Operated, Direct Acting SAE-10 Cartridge – 250 bar WKH10DC

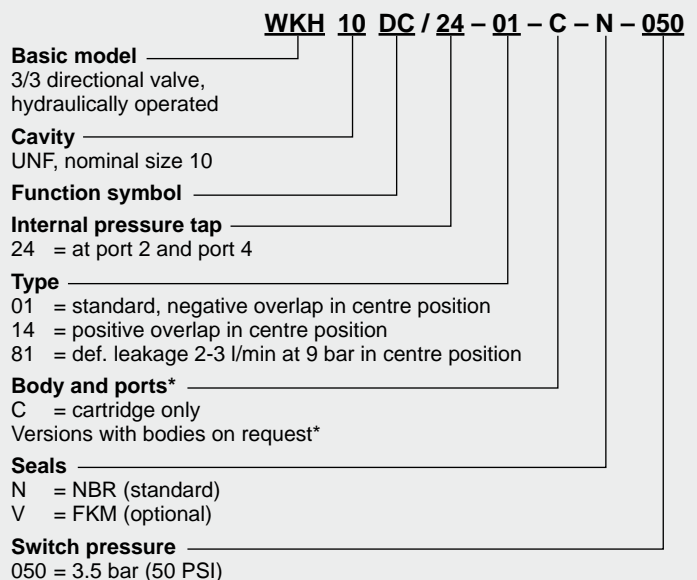
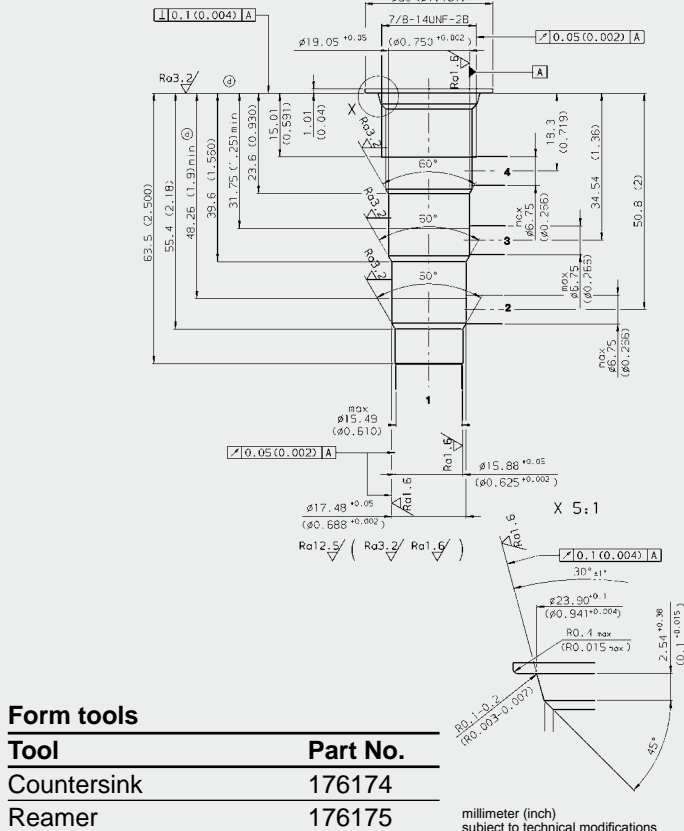
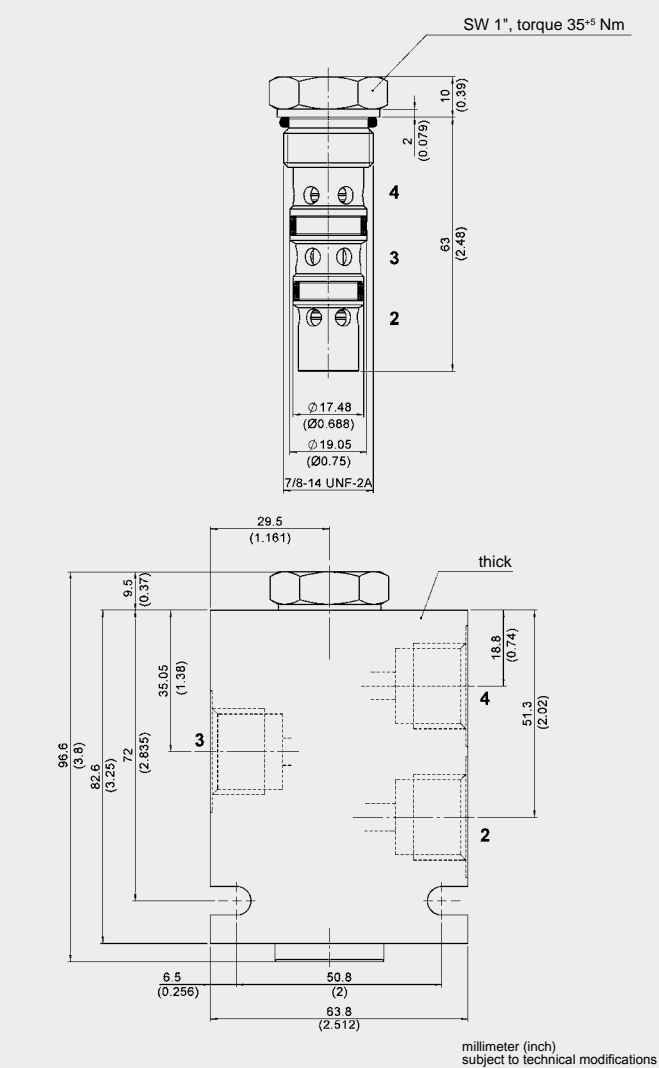
UNF

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 cm ³ /min at 350 bar and 36 mm ² /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. 10mm ² /s to max. 420mm ² /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



Model code	Part No.
WKH10DC/24-14-C-N-050	3481315
WKH10DC/24-81-C-N-050	3543256

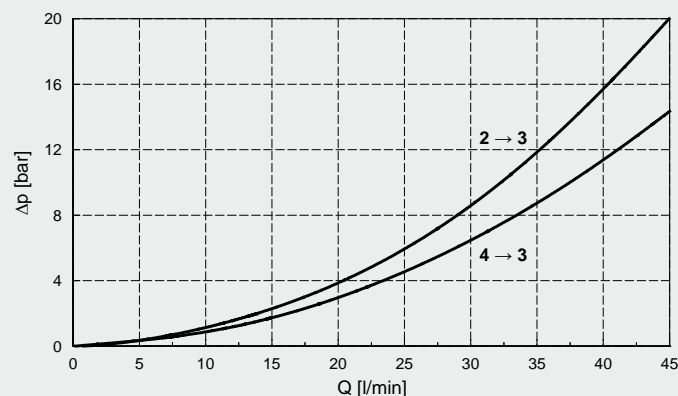
***Standard in-line bodies**

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

Seal kits

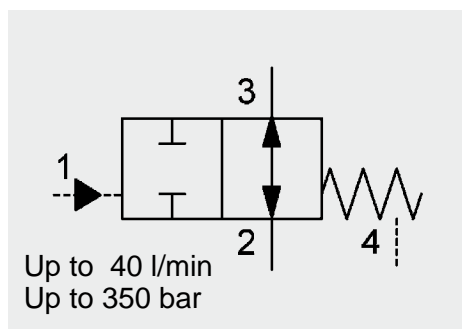
Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

Measured at $\nu = 46 \text{ mm}^2/\text{s}$
 $T_{\text{oil}} = 40 \text{ }^\circ\text{C}$

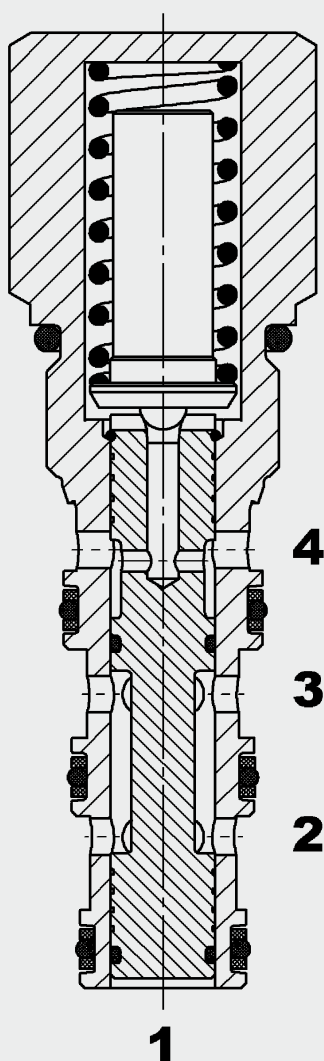


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FUNCTION



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.

2/2 Directional Spool Valve Hydraulically-Operated Direct-Acting Normally Open SAE-10 Cartridge – 350 bar

UNF

WKH10V/14

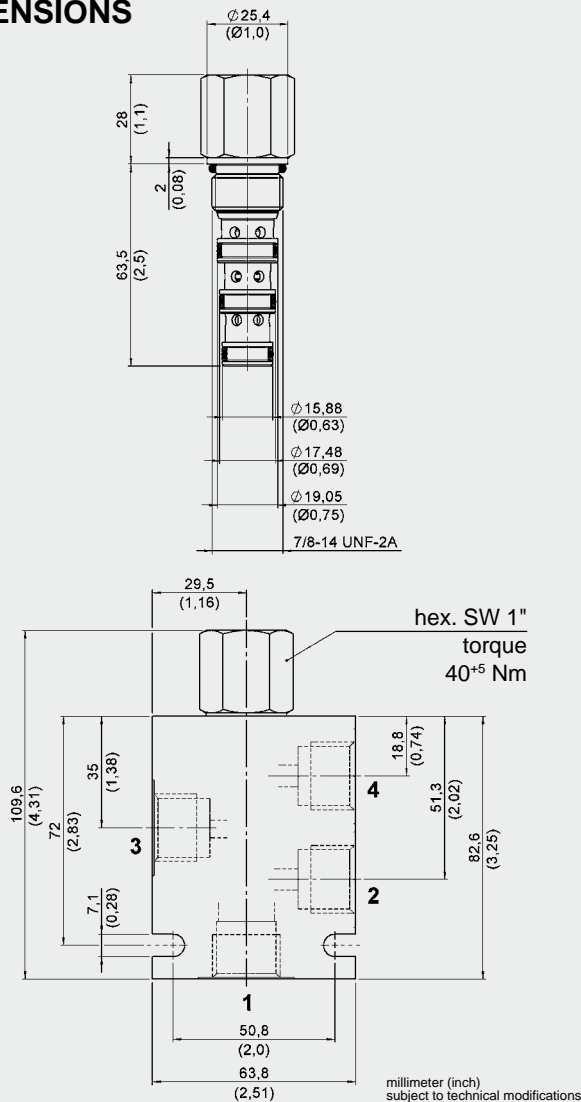
FEATURES

- 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

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 40 l/min
Internal leakage:	max. 200 cm ³ /min at 350 bar and 36 mm ² /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. 7.4mm ² /s to max. 420mm ² /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



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

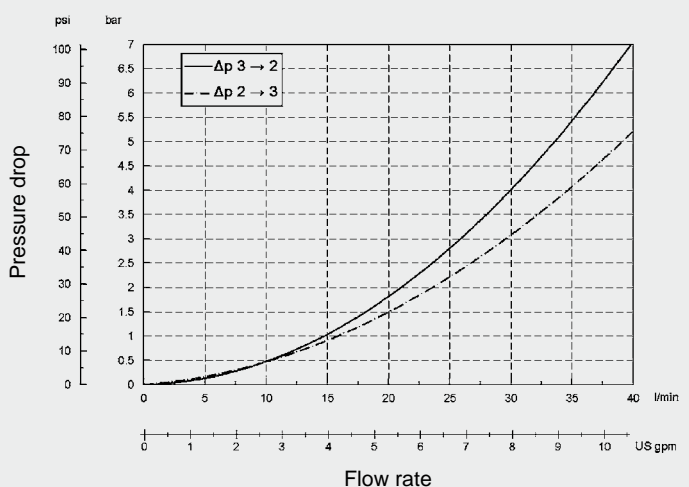
Other line bodies on request

Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



NOTE

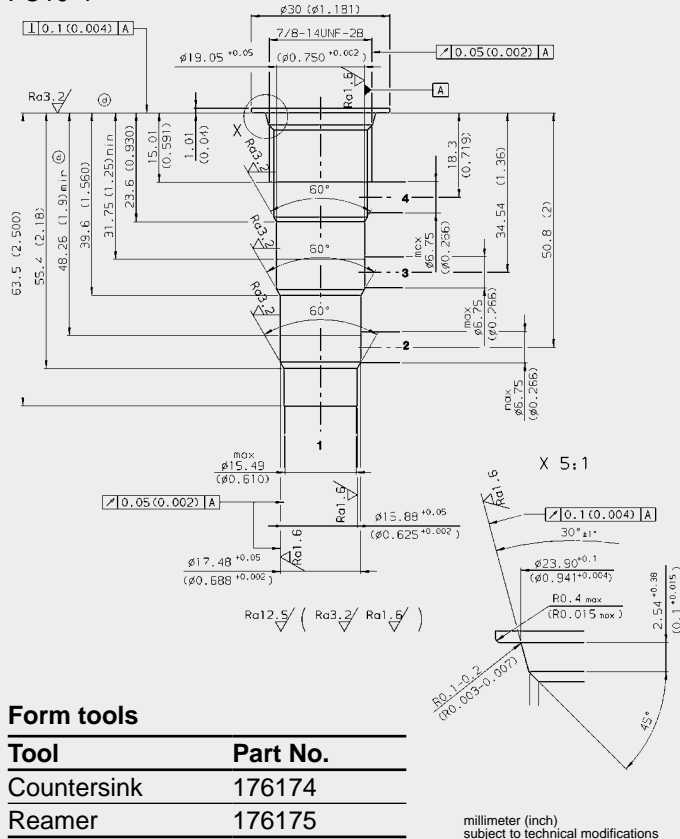
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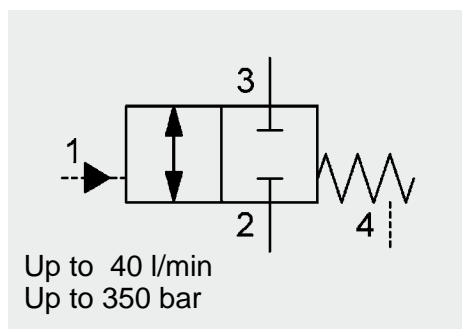
CAVITY

FC10-4

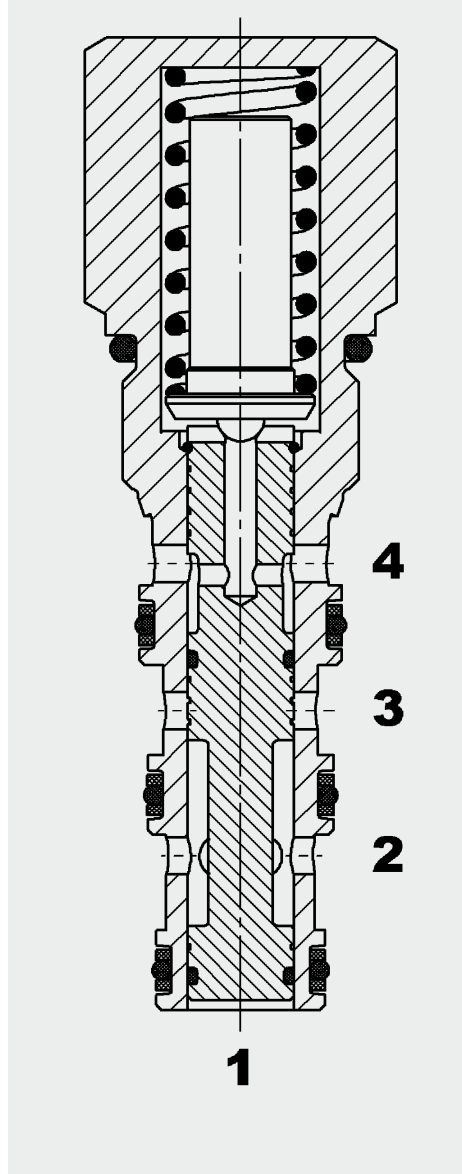


Form tools

Tool	Part No.
Countersink	176174
Reamer	176175



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.

2/2 Directional Spool Valve Hydraulically Operated, Direct-Acting Normally Closed SAE-10 Cartridge – 350 bar

UNF

WKH10W/14

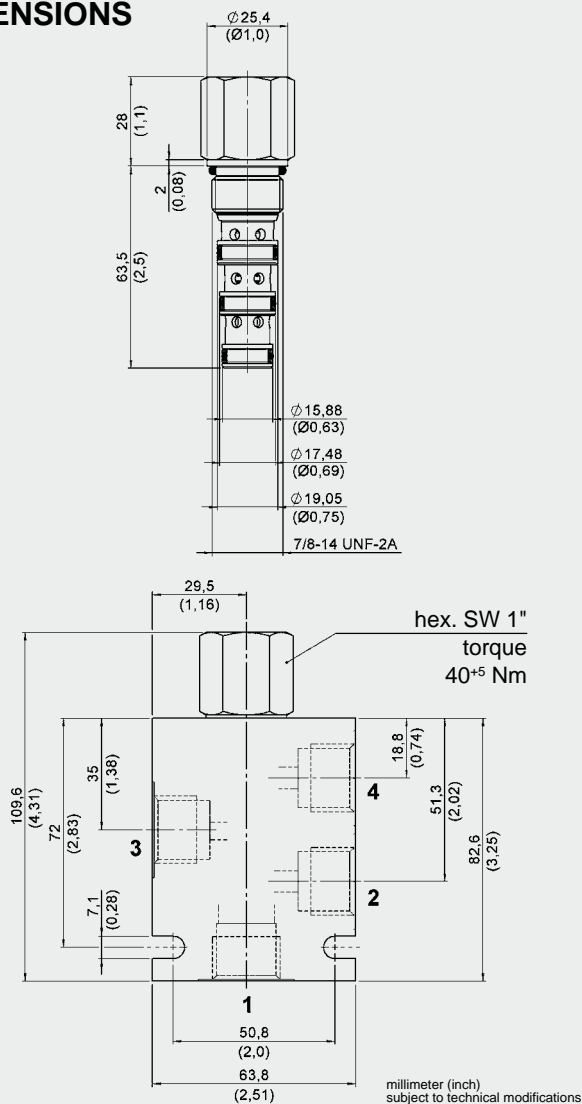
FEATURES

- 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

SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 40 l/min
Internal leakage:	max. 200 cm ³ /min at 350 bar and 36 mm ² /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 mm ² /s to max. 420 mm ² /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



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

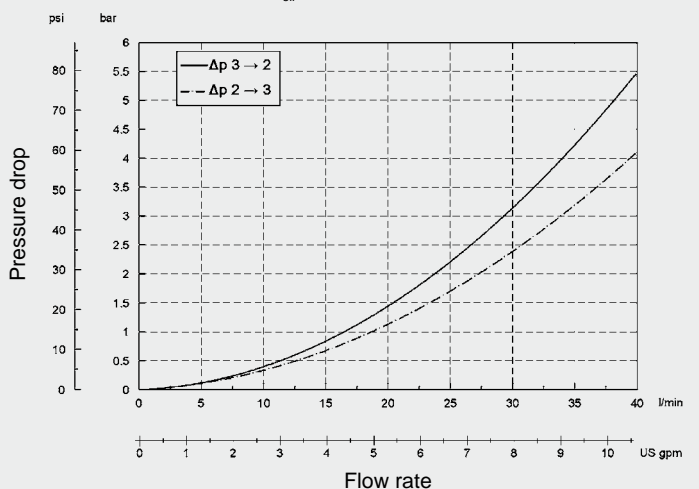
Other line bodies on request

Seal kits

Code	Material	Part No.
FS104-N SEAL KIT	NBR	3051912
FS104-V SEAL KIT	FKM	3071275

PERFORMANCE

Measured at $v = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



NOTE

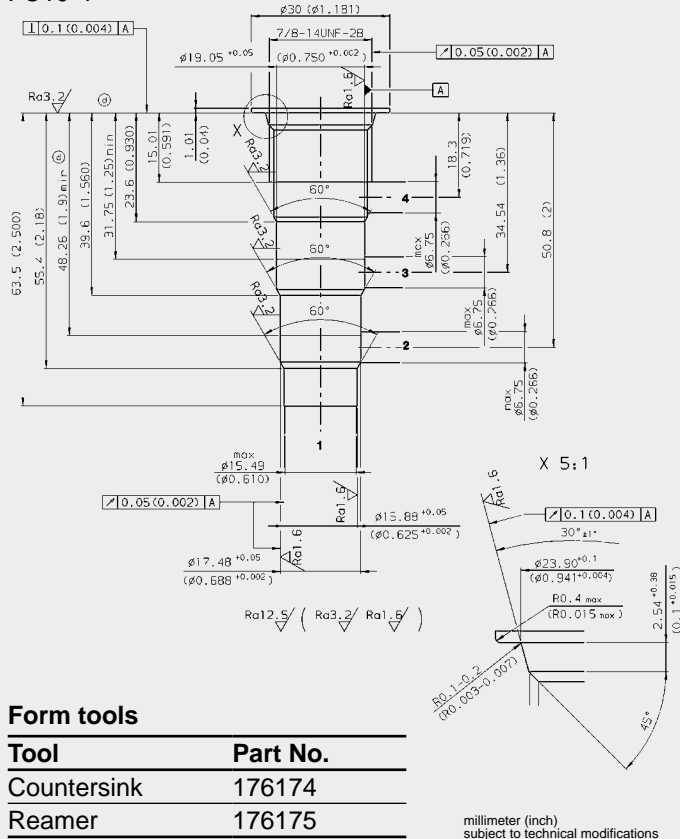
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CAVITY

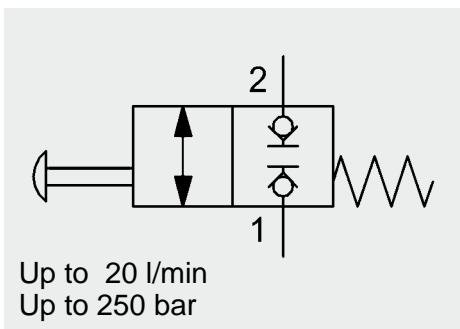
FC10-4



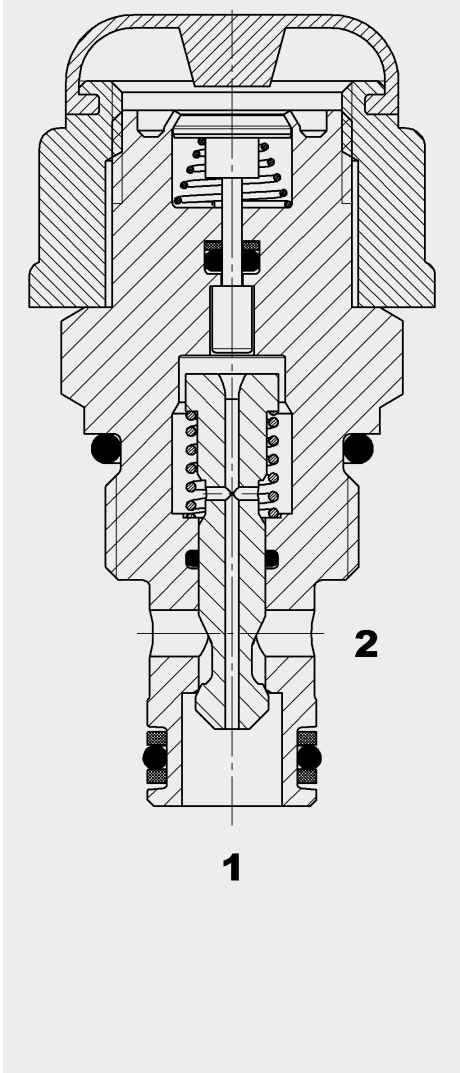
Form tools

Tool	Part No.
Countersink	176174
Reamer	176175

millimeter (inch)
subject to technical modifications



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.

2/2 Directional Poppet Valve **UNF** Manually Operated Normally Closed **SAE-08 Cartridge – 250 bar** WS08W...M

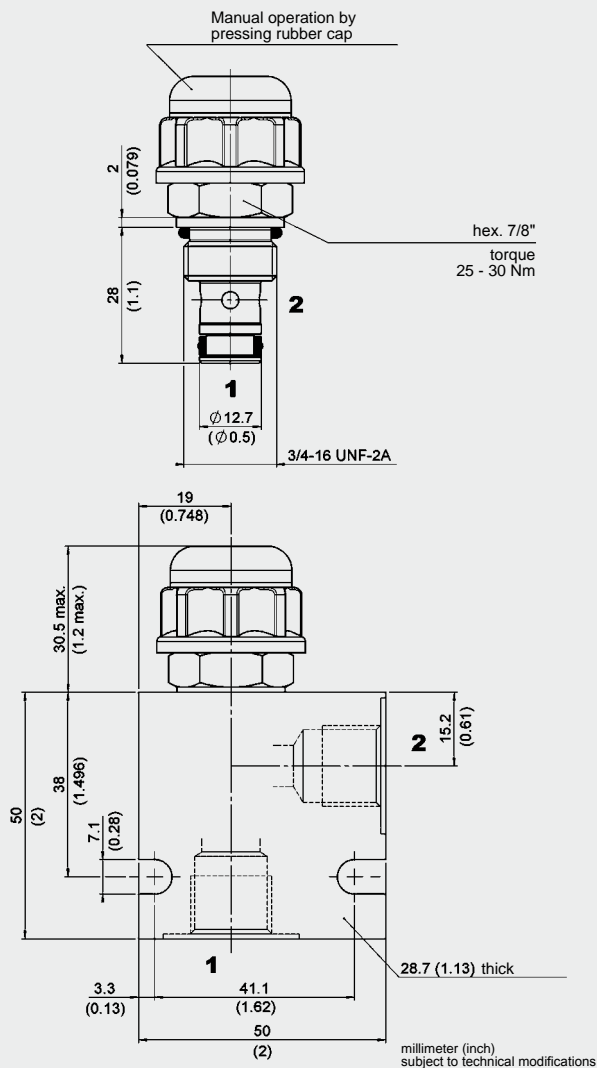
FEATURES

- 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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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



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

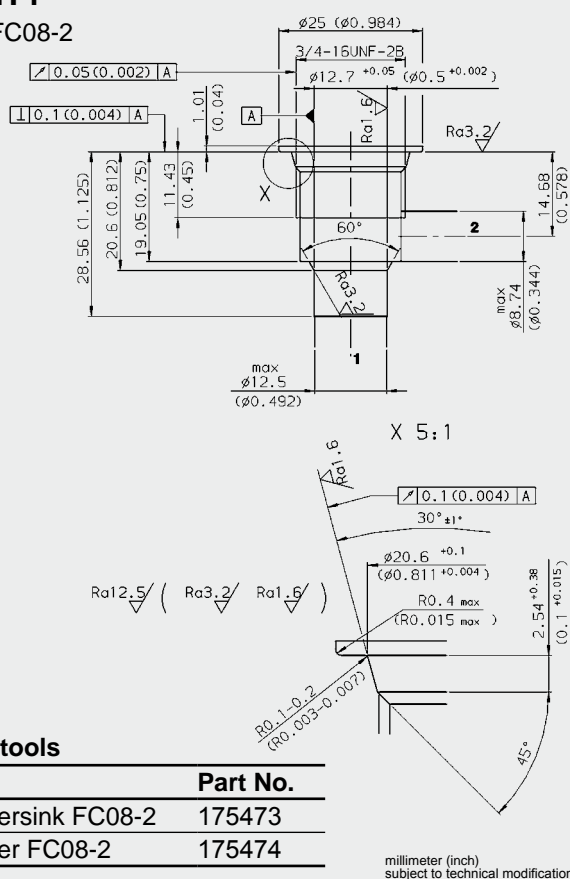
Other line bodies on request

Seal kits

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

CAVITY

UNF FC08-2

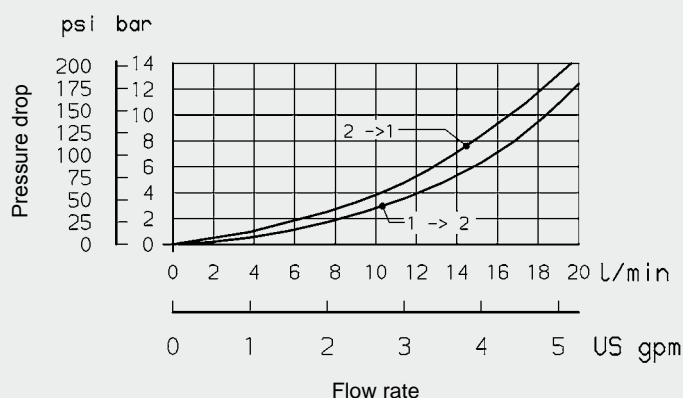


Form tools

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

PERFORMANCE

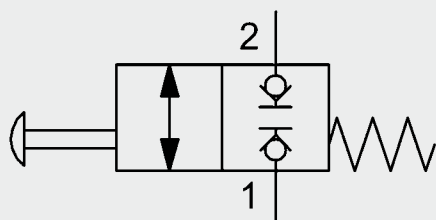
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



Note

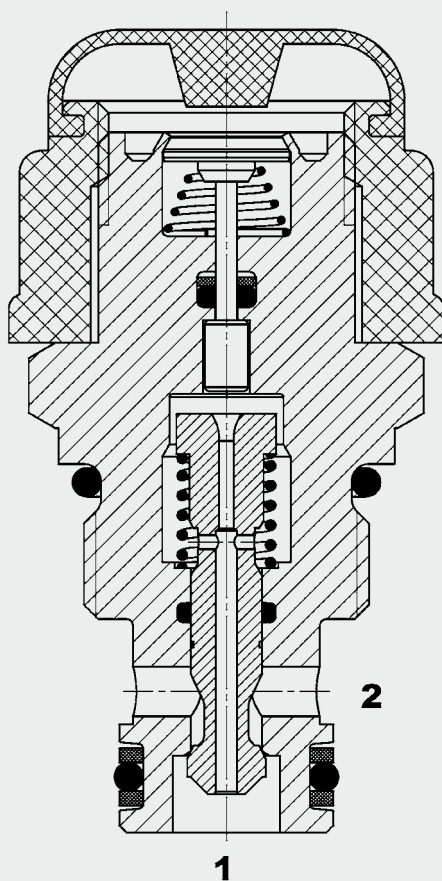
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Up to 20 l/min
Up to 250 bar

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.

2/2 Directional Poppet Valve Manually Operated, Normally Closed Metric Cartridge – 250 bar WSM06020W...M

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 mm ² /s to max. 420 mm ² /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

Technical drawing of a manual operation device, showing a side view and a cross-section view.

Dimensions:

- Top diameter: $\varnothing 30,5$
- Total height: 30,5
- Hex nut height: 2,5
- Lower section height: 25,9
- Internal diameter: $\varnothing 15$
- Thread: M20x1,5
- Bottom diameter: $\varnothing 23,6$

Labels:

- manual operation by pressing rubber cap
- hex. SW 24 Torque 25⁺⁵ Nm
- 1
- 2

millimeter
subject to technical modifications

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

Model code	Part No.
WSM06020W-01-C-N-M	3059183
Other models on request	

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				

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

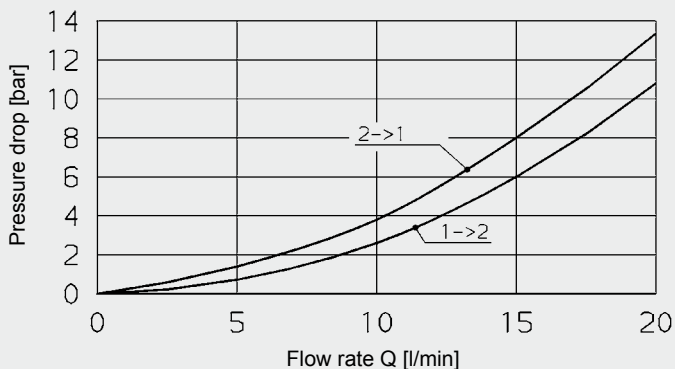
06020

Technical drawing of a countersink and reamer tool. The main view shows a tool with a central shaft (1) and a countersink (2). Dimensions include a total length of 28 min, a filing depth of 14.5 +0.2, and a countersink depth of 11.5 min. The countersink has a 60-degree angle and a radius of Ra3.2. The shaft has a diameter of M20 x 1.5 and a surface finish of Ra1.6. A detail view (X 5:1) shows the countersink's profile with a 30-degree angle, a radius of R 0.1-0.2, and a surface finish of Ra1.6. The detail view also shows a 45-degree angle and a radius of R 0.4 max.

Form tools	Part No.
Countersink MK3	170033
Reamer MK2	1000768

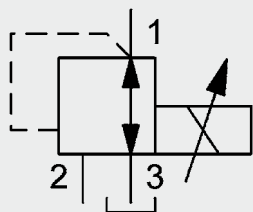
millimeter
subject to technical modifications

Measured at $\nu = 33 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$



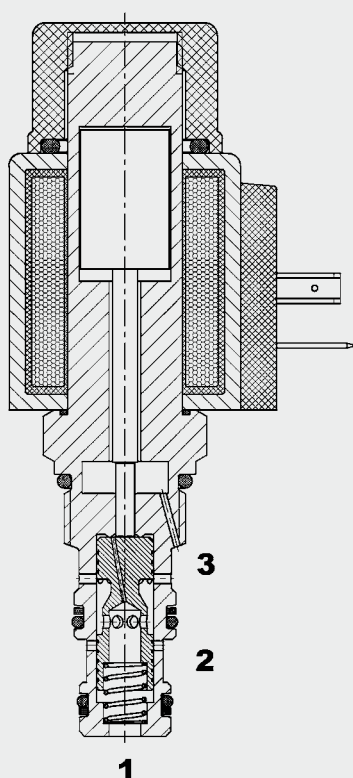
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12 l/min
350 bar

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.

3-Way Proportional Pressure Reducing Valve Spool Type, Direct Acting SAE-08 Cartridge – 350 bar PDR08-01

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 mm ² /s to max. 420 mm ² /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:	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	0.364 kg
	Coil only	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:	approx. 40 ms
	de-energized:	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

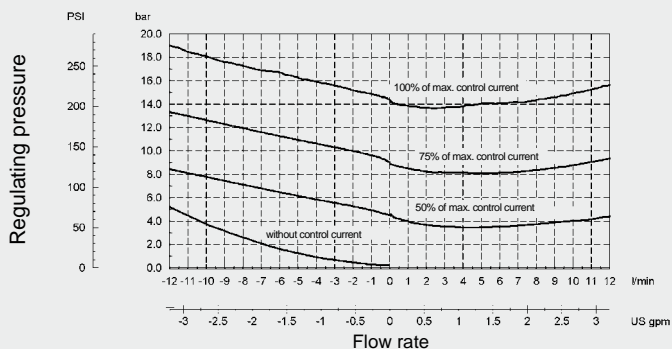
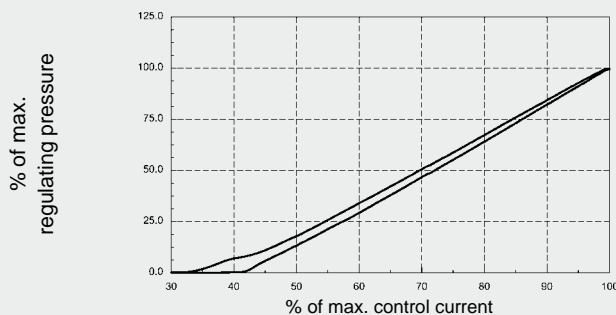
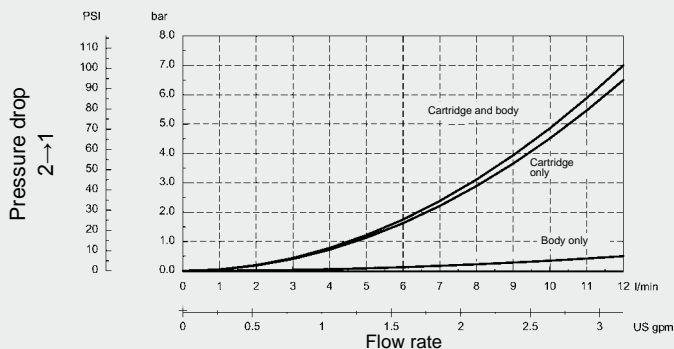
Other bodies on request

Seal kits

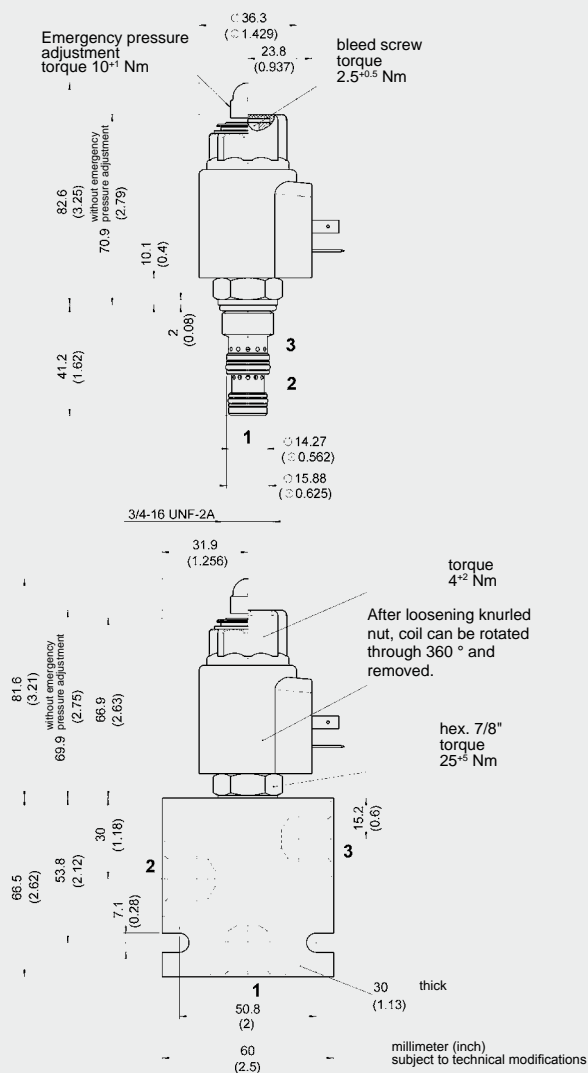
Code	Material	Part No.
FS083-N SEAL KIT	NBR	3054795
FS083-V SEAL KIT	FKM	2591059

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$

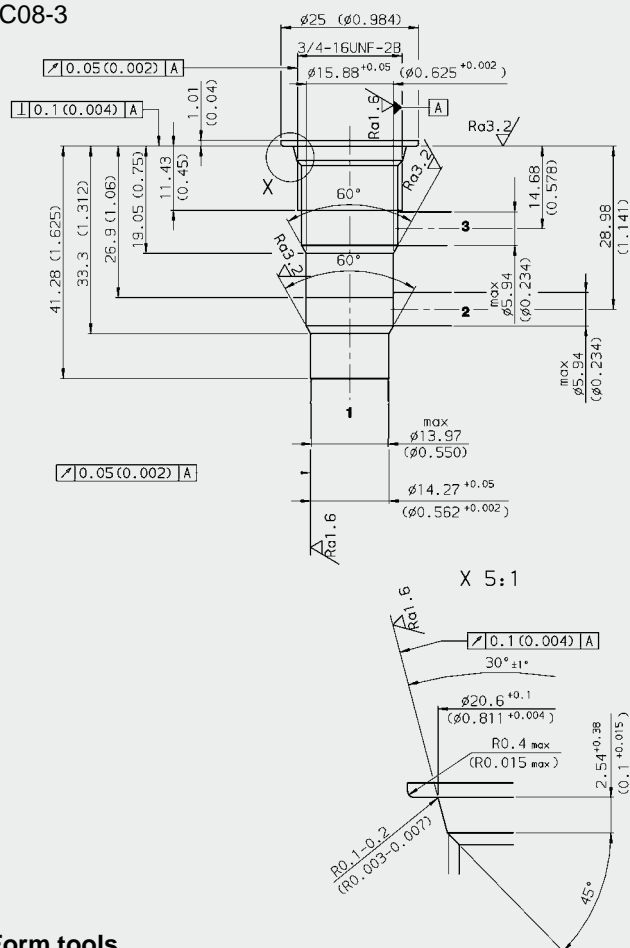


DIMENSIONS



CAVITY:

FC08-3

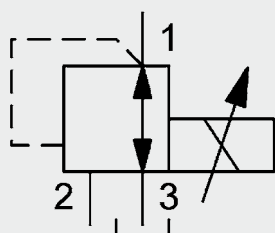


Note

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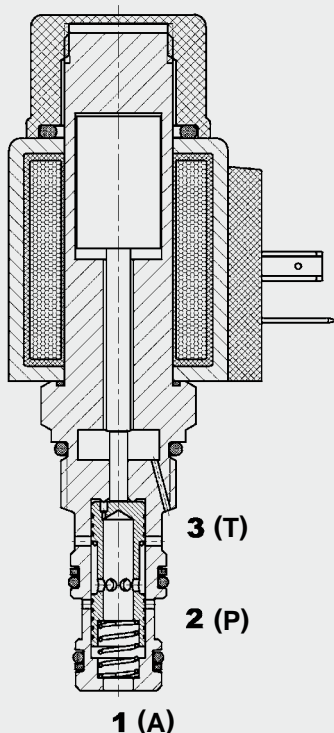
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Up to 17 l/min
Up to 138 bar

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.

3-Way Proportional Pressure Reducing Valve Spool Type, Direct Acting SAE-08 Cartridge – 138 bar PDR08-02

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)

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

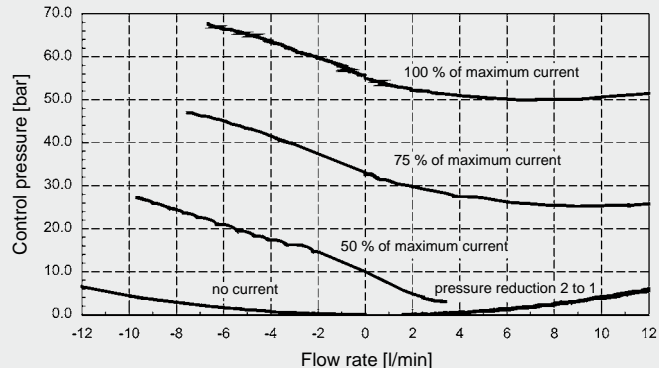
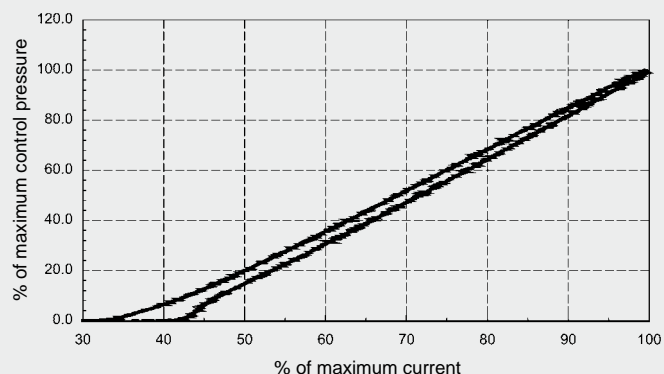
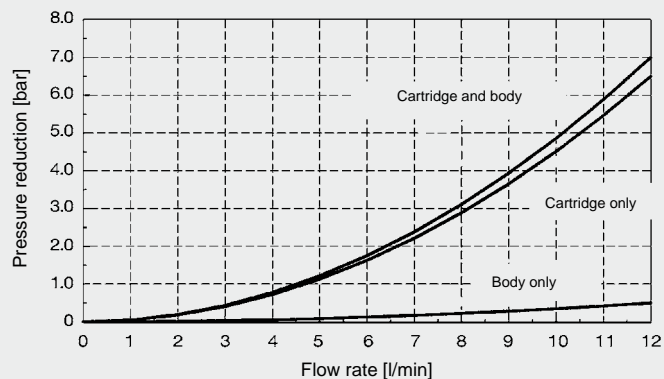
Code	Part No.	Material	Ports	Max. pressure
FH083-SB3	560922	Steel, zinc-plated	G 3/8	420 bar
FH083-AB3	3011427	Aluminium, clear anodized	G 3/8	210 bar

Seal kits

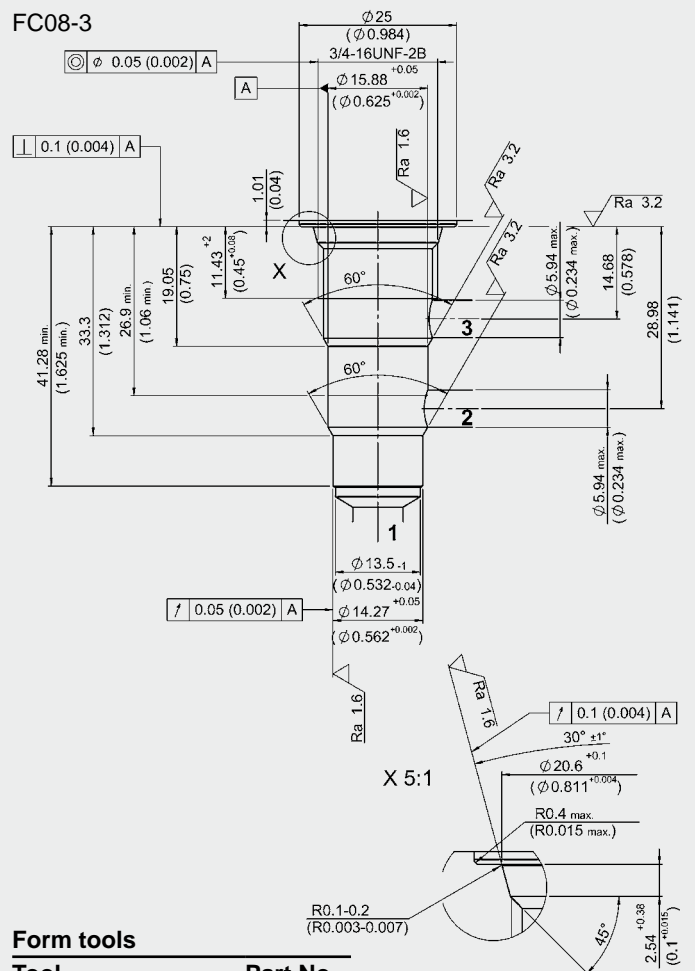
Code	Part No.	Material
FS083-N SEAL KIT	3054795	NBR
FS083-V SEAL KIT	2591059	FKM

PERFORMANCE

$T_{oil} = 46\text{ °C}$, $v = 34\text{ mm}^2/\text{s}$



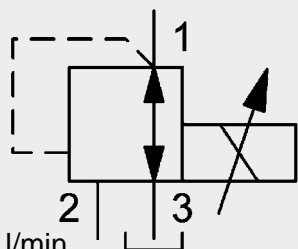
CAVITY



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

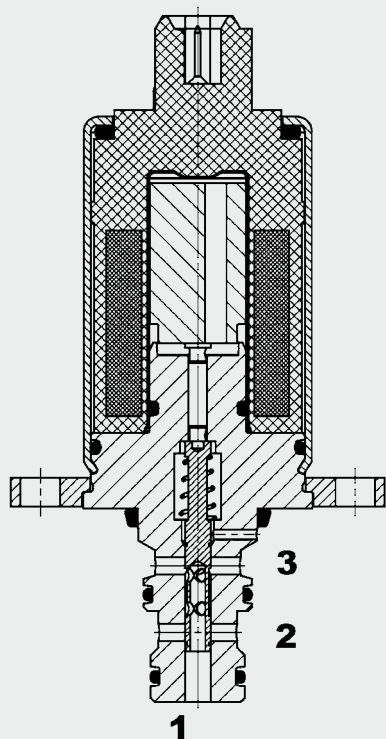
NOTE

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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.

3-Way Proportional Pressure Reducing Valve Spool Type, Direct-Acting Slip-In Valve – 60 bar PDMC04S30D

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:	max. 10 bar
(Should be piped separately to tank)	
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 mm ² /s to max. 420 mm ² /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

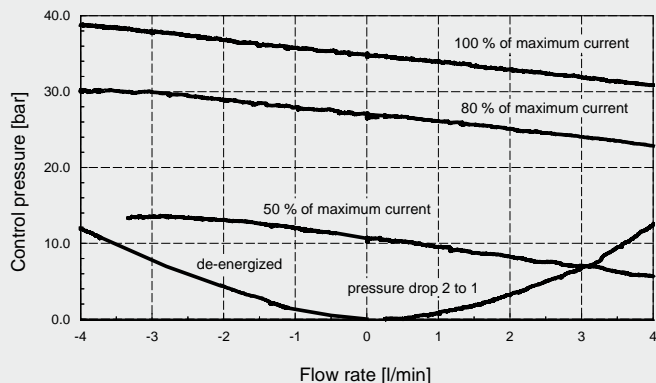
Code	Part No.	Material	Ports
Dual housing: B-BM 2X PDMC04S30D	3482029	Aluminium	A, B = G ¼ P, T = G ¾

Other bodies on request

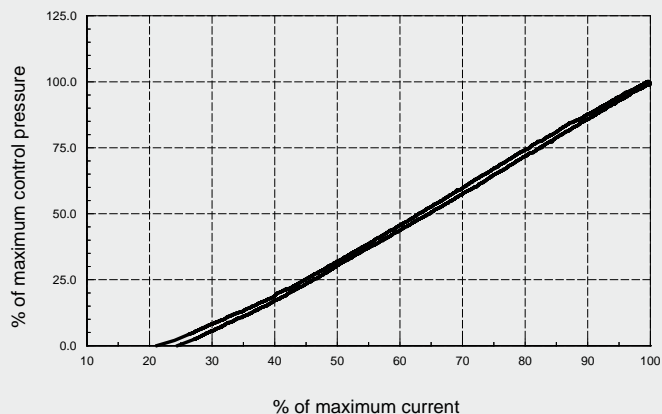
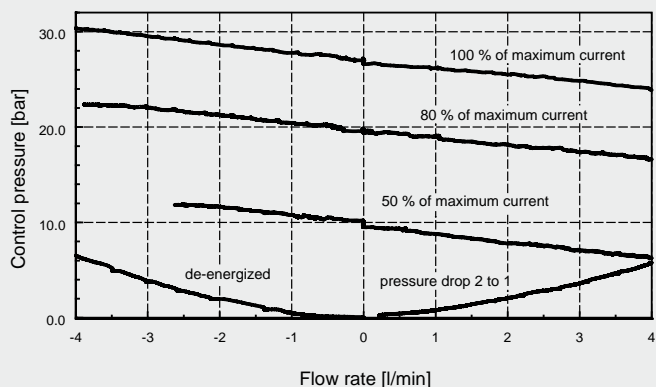
PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ °C}$

Pressure range 32 bar



Pressure range 25 bar

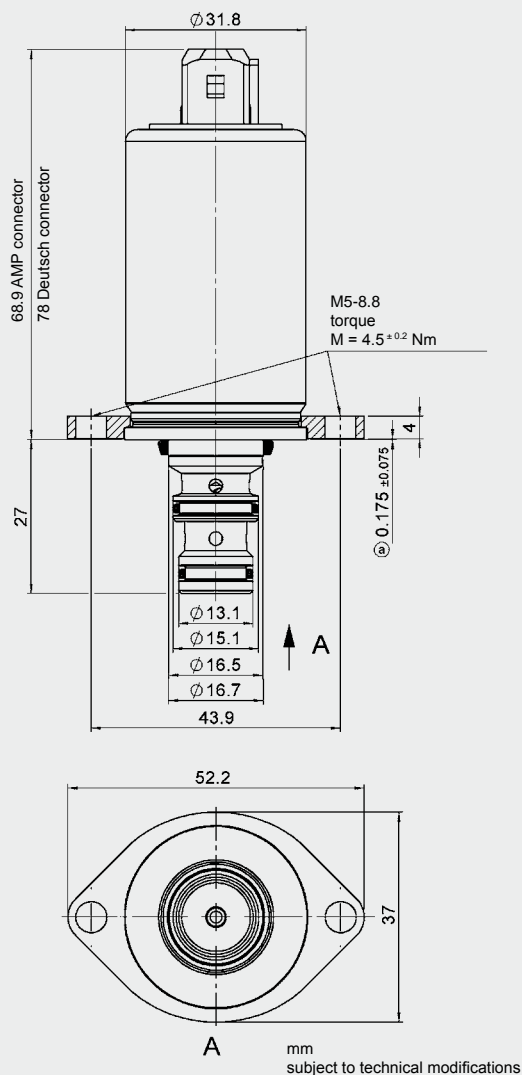


*Thermal load capacity of the coil:

100% duty cycle at $T_{A, \text{max}} = 80 \text{ °C}$

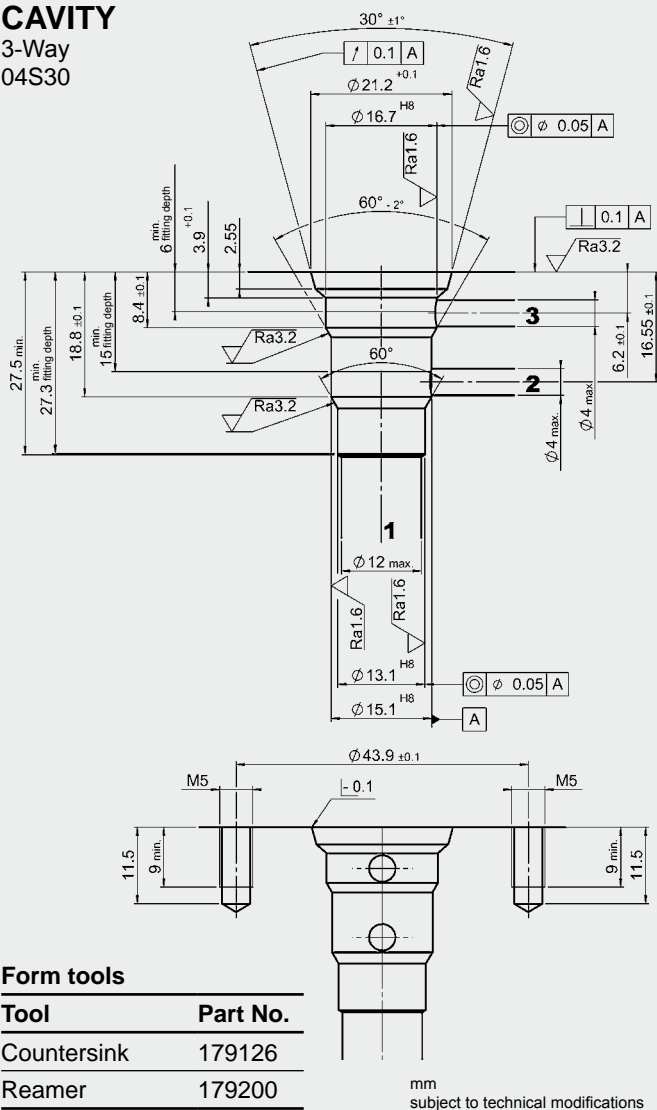
Please note: The data is based on the complete valve, mounted in a line body (block temperature: 105 °C, aluminium or steel; dimensions 40 x 60 x 56 mm), flanged to a base block (block temperature 105 °C, steel, dimensions 200 x 150 x 100 mm). The air in the climatic test cabinet is circulated by the cabinet ventilator.

DIMENSIONS



CAVITY

3-Way
04S30



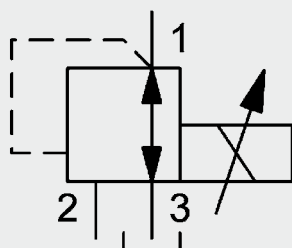
Form tools

Tool	Part No.
Countersink	179126
Reamer	179200

NOTE

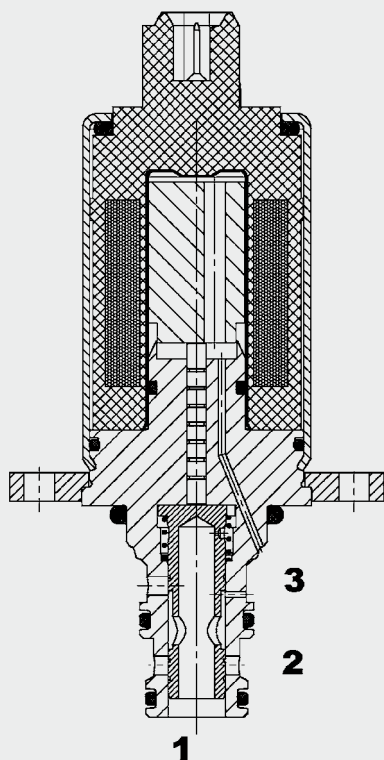
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Up to 12 l/min
Up to 60 bar

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.

3-Way Proportional Pressure Reducing Valve Spool Type, With Area-Ratio Advantage Slip-In Valve – 60 bar PDMC05S30A-11

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:	max. 10 bar
(Should be piped separately to tank, i.e not connected to the working hydraulics)	
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 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 +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

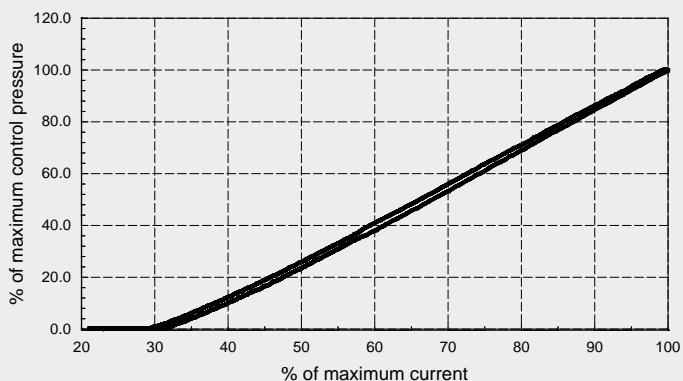
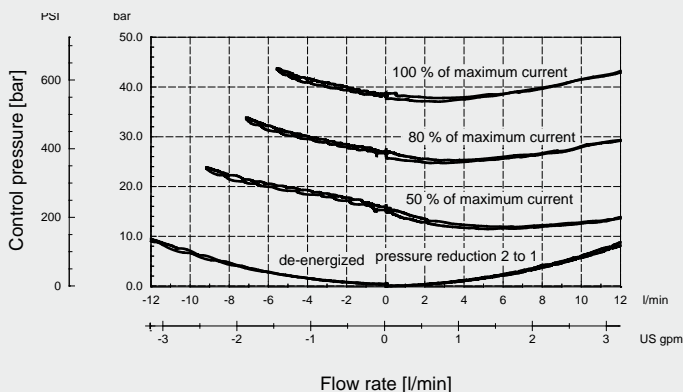
Other models on request

*Standard in-line bodies

Code	Part No.	Material	Ports	Pressure
R05S30-010-01	3364559	Alu	G 3/8	60 bar

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ °C}$

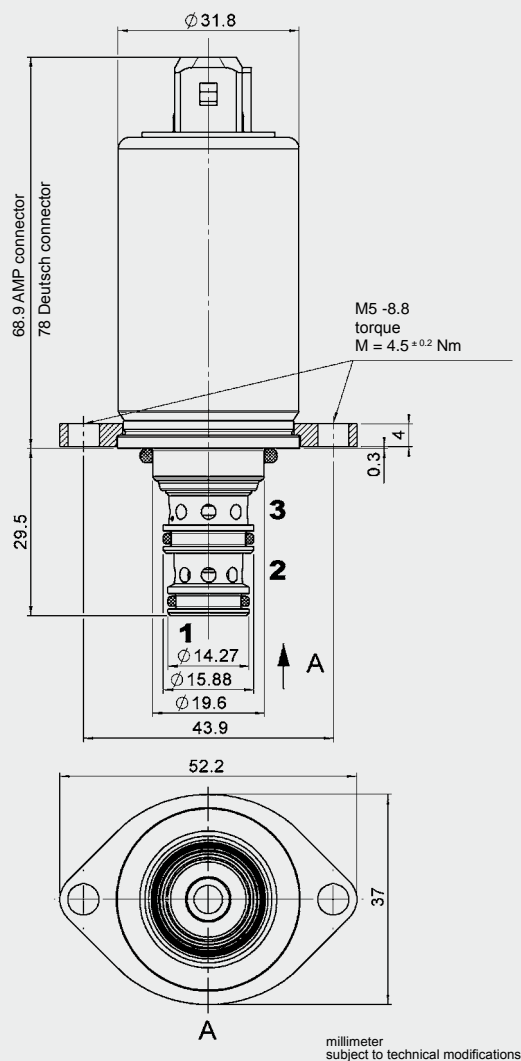


*Thermal load capacity of the coil:

100% duty cycle at $T_{A, \text{max}} = 80 \text{ °C}$

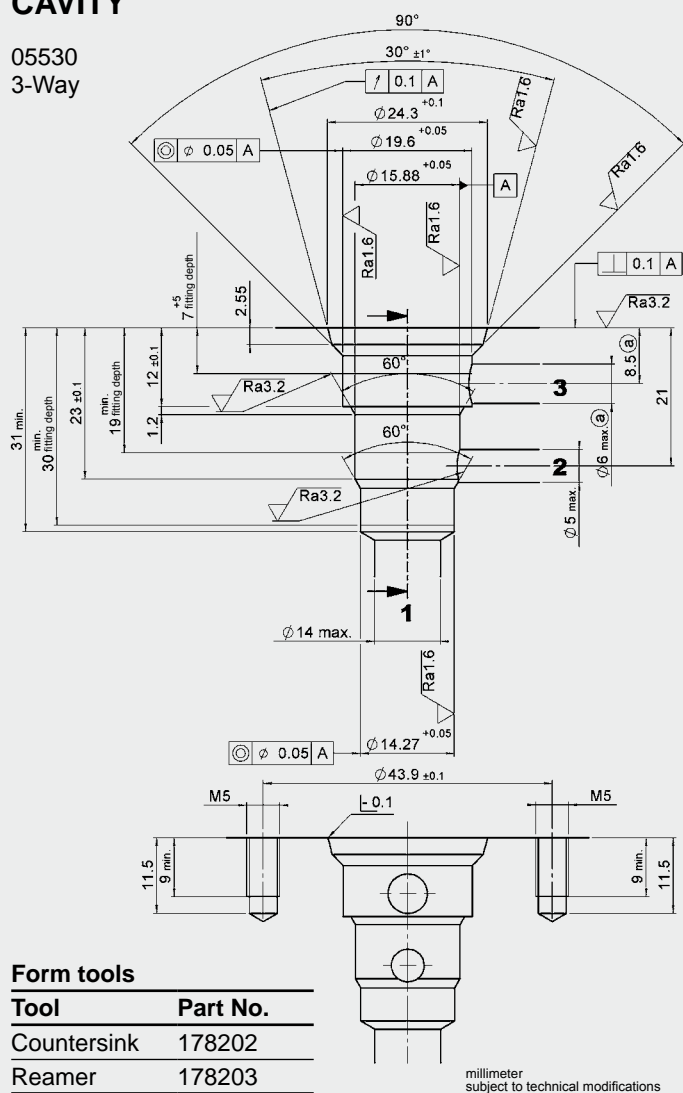
Please note: The data is based on the complete valve, mounted in a line body (block temperature: 105 °C, aluminium or steel; dimensions 40 x 60 x 56 mm), flanged to a base block (block temperature 105 °C, steel, dimensions 200 x 150 x 100 mm). The air in the climatic test cabinet is circulated by the cabinet ventilator.

DIMENSIONS



CAVITY

05530
3-Way



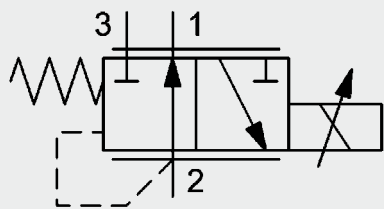
Form tools

Tool	Part No.
Countersink	178202
Reamer	178203

NOTE

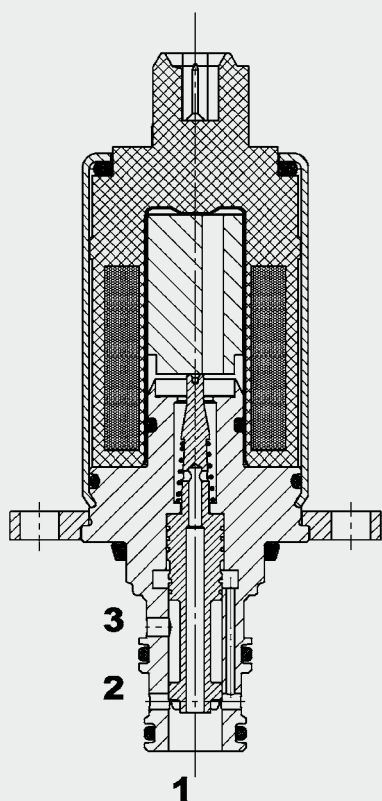
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Up to 20 l/min
Up to 60 bar

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.

3-Way Proportional Pressure Reducing Valve Spool Type, With Area-Ratio Advantage Slip-In Valve – 60 bar PDMC05S30A-50

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 mm ² /s to max. 2,000 mm ² /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:

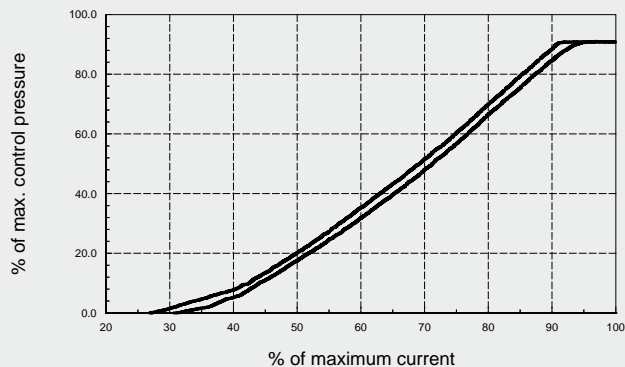
$v = 34 \text{ mm}^2/\text{s}$

$T_{\text{oil}} = 46^\circ\text{C}$

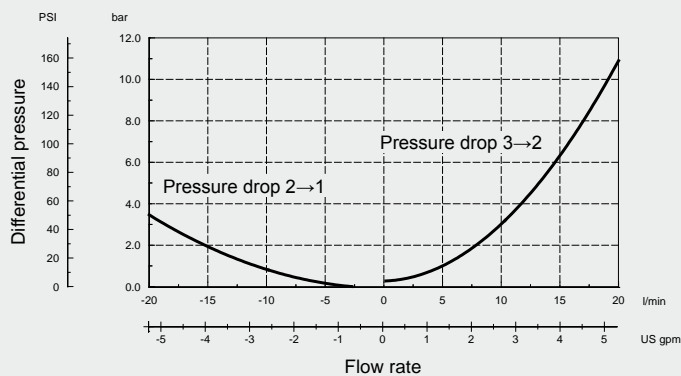
p/I

Supply pressure

$p = 19 \text{ bar} / 275 \text{ psi}$



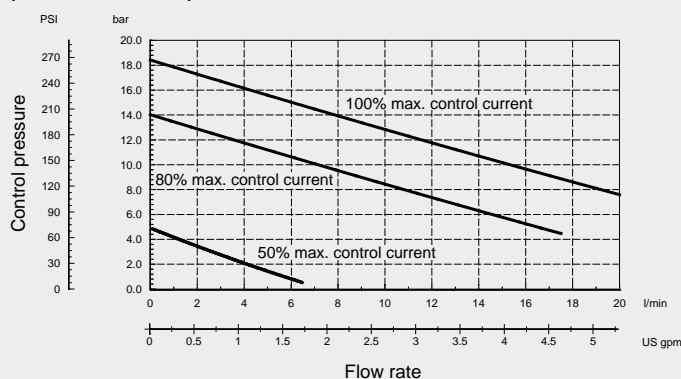
$\Delta p/Q$



p/Q

Supply pressure

$p = 19 \text{ bar} / 275 \text{ psi}$

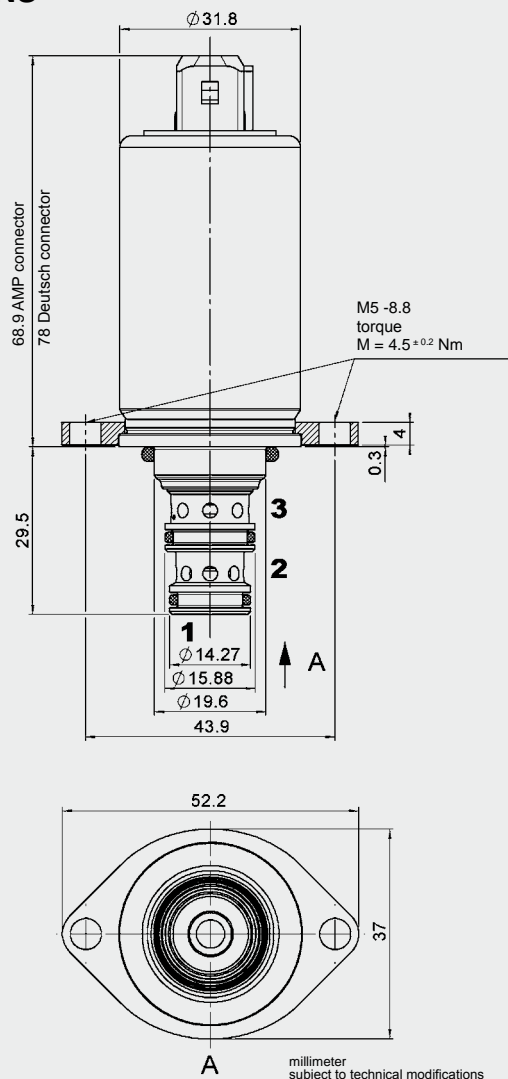


*Thermal load capacity of the coil:

100% duty cycle at $T_{A, \text{max}} = 80^\circ\text{C}$

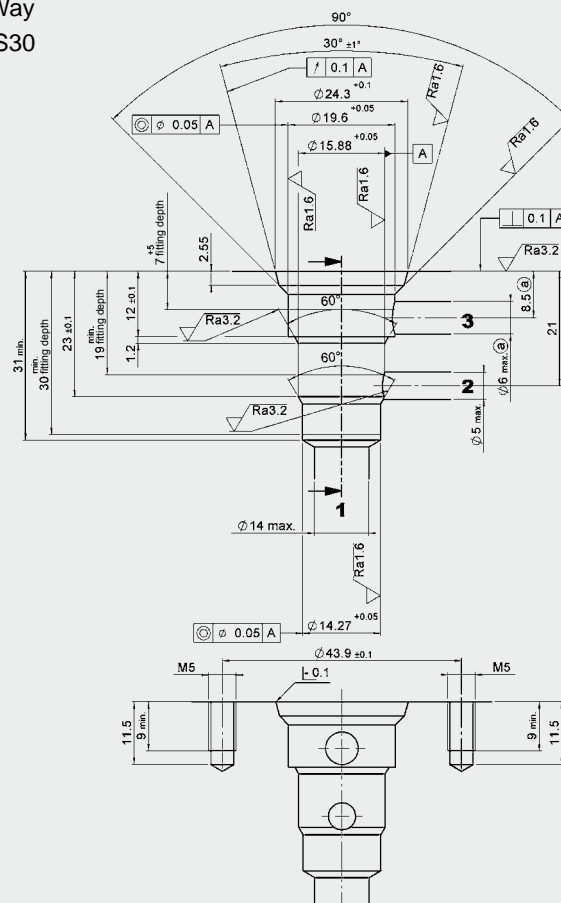
Please note: The data is based on the complete valve, mounted in a line body (block temperature: 105°C , aluminium or steel; dimensions $40 \times 60 \times 56 \text{ mm}$), flanged to a base block (block temperature 105°C , steel, dimensions $200 \times 150 \times 100 \text{ mm}$). The air in the climatic test cabinet is circulated by the cabinet ventilator.

DIMENSIONS



CAVITY

3-Way
05S30



Form tools

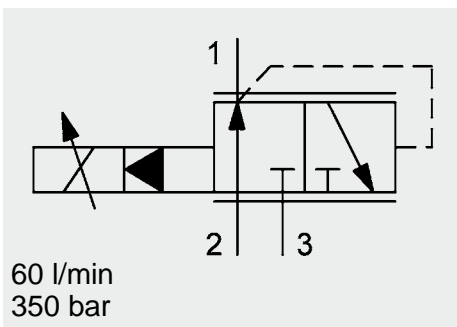
Tool	Part No.
Countersink	178202
Reamer	178203

millimeter
subject to technical modifications

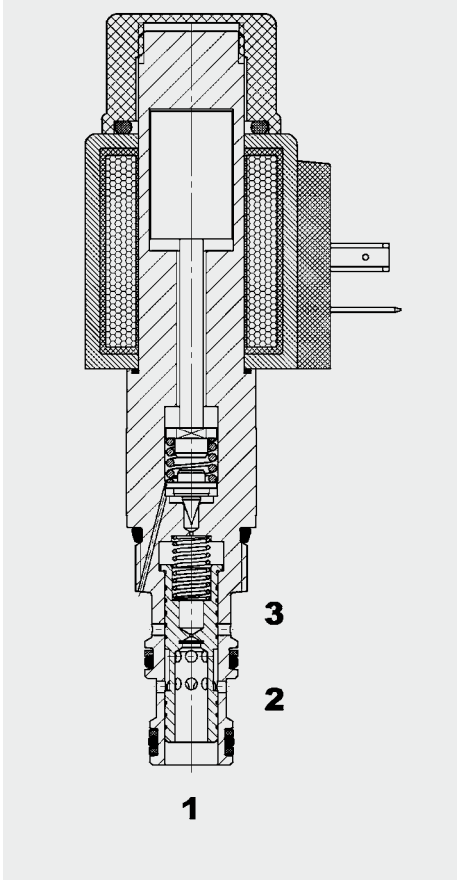
NOTE

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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 position 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.

3-Way Proportional Pressure Reducing Valve Spool Type, Pilot-Operated SAE-08 Cartridge – 350 bar PDR08P-01

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

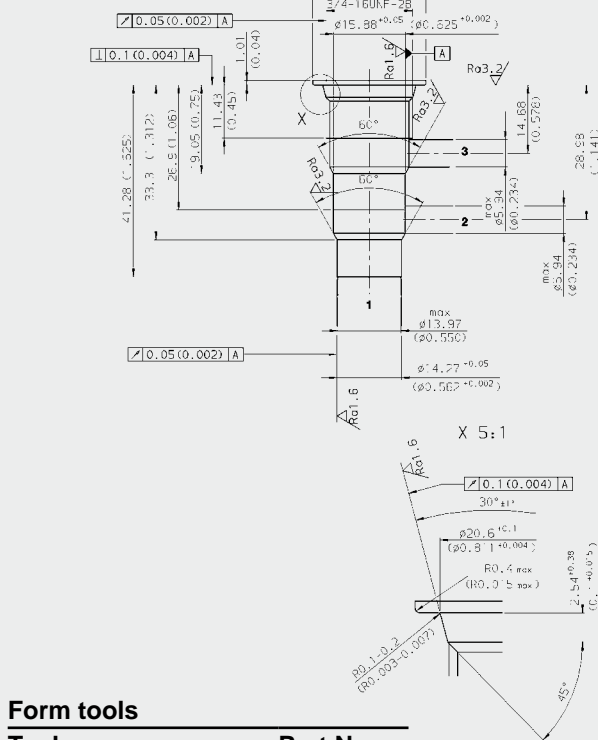
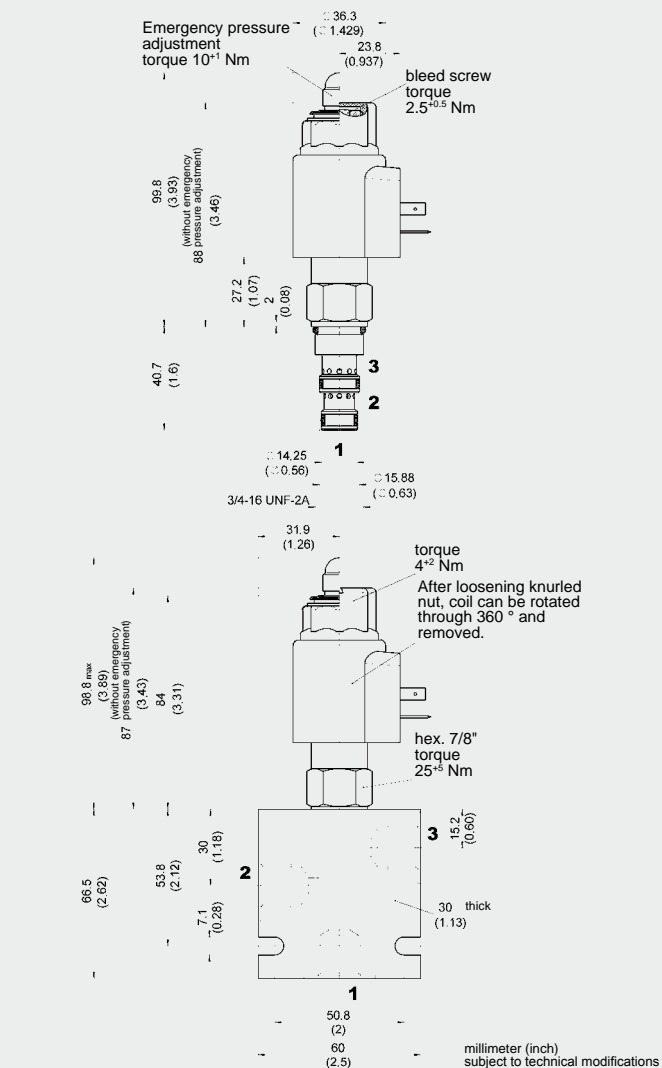
SPECIFICATIONS

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 mm ² /s to max. 420 mm ² /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:

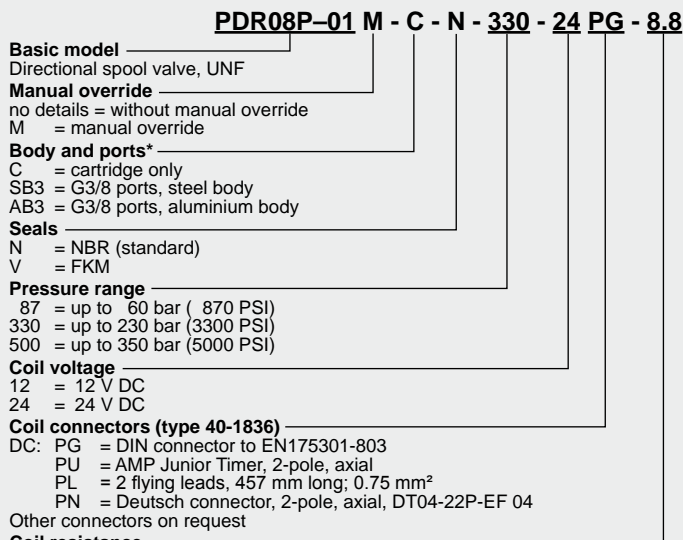
Control currents:	1050 mA, 8.8 Ω (24 Volt) 2100 mA, 2.2 Ω (12 Volt)
Internal leakage:	less than 0.5 l/min at 350 bar
Dither frequency:	approx. 160 Hz - 250 Hz
Response time:	energized: approx. 60 ms de-energized: approx. 40 ms
Hysteresis with dither:	2-4% of I _{nom}
Repeatability:	2-4% of I _{nom}
Hysteresis:	≤ 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.



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

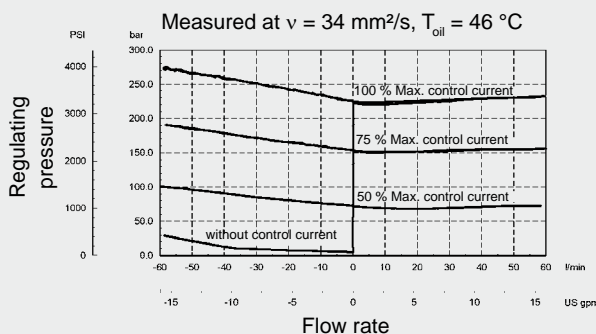
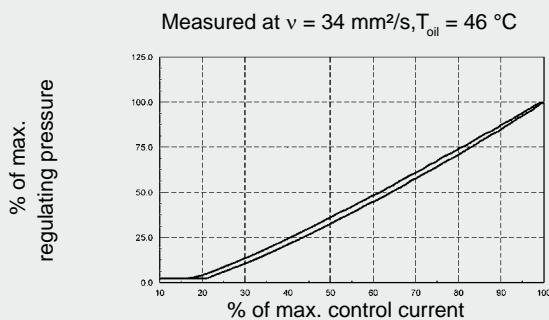
millimeter (inch)
subject to technical modifications



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

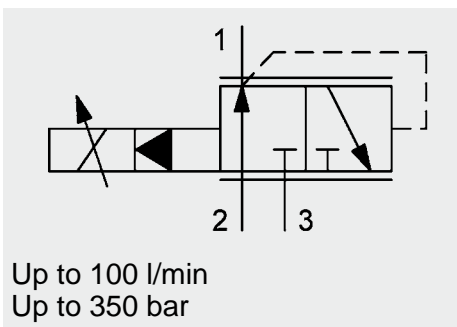
Code	Part No.	Material	Ports	Pressure
FH083-SB3	560922	Steel, zinc-plated	G3/8	420 bar
FH083-AB3	3011427	Aluminium, anodized	G3/8	210 bar
Other bodies on request				

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

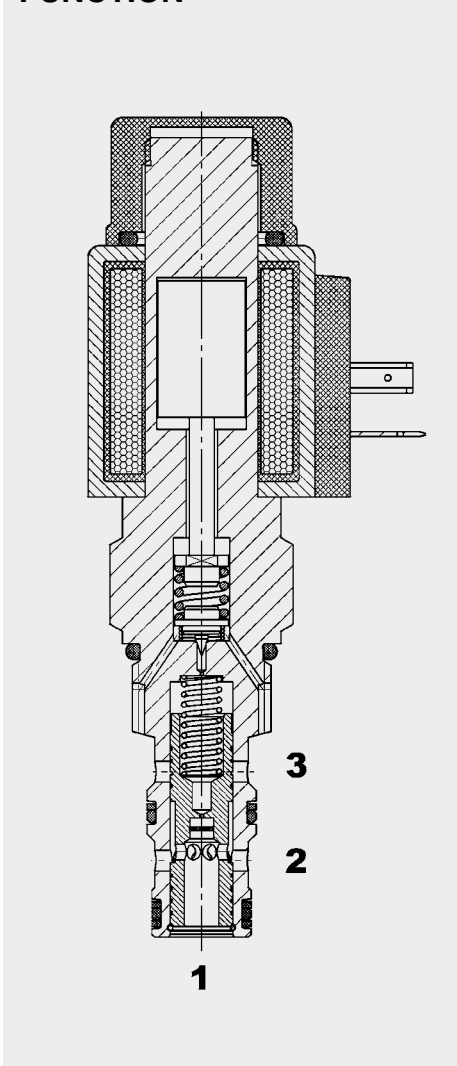


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FUNCTION



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!

3-Way Proportional Pressure Reducing Valve Spool Type, Pilot-Operated SAE-10 Cartridge – 350 bar PDR10P-01

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.

emergency pressure
adjustment
torque 10^{+1} Nm



FC10-3



millimeter (inch)
subject to technical modifications

PDR10P-01 M - C - N - 330 - 24 PG - 8.8

Manual override

no details = without manual override
M = manual override

Body and ports*

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

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)

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	

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

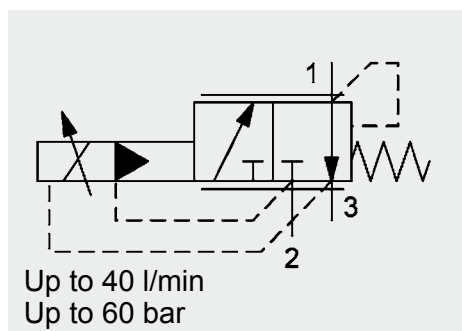
Code	Material	Part No.
FS103-N SEAL KIT	NBR	3071274
FS103-V SEAL KIT	FKM	3049443

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ }^\circ\text{C}$

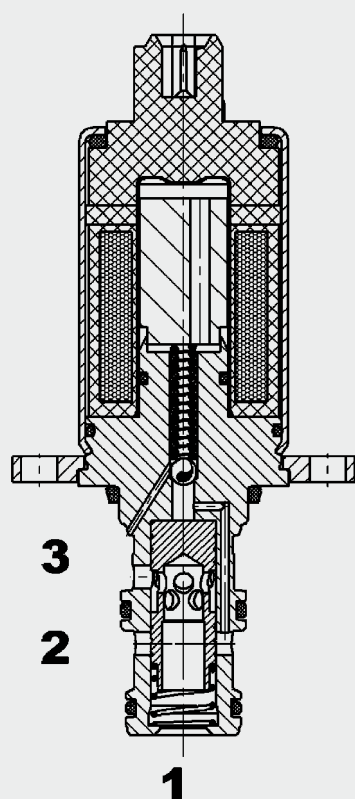


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FUNCTION



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.

3-Way Proportional Pressure Reducing Valve Spool Type, Pilot-Operated Slip-In Valve – 60 bar PDMC10S30P

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 mm ² /s to max. 2000 mm ² /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

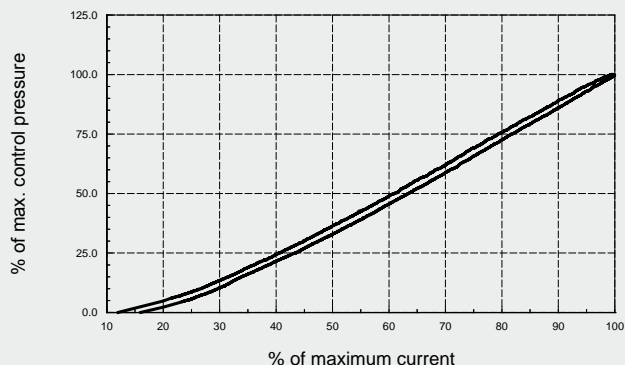
PERFORMANCE

Measured at

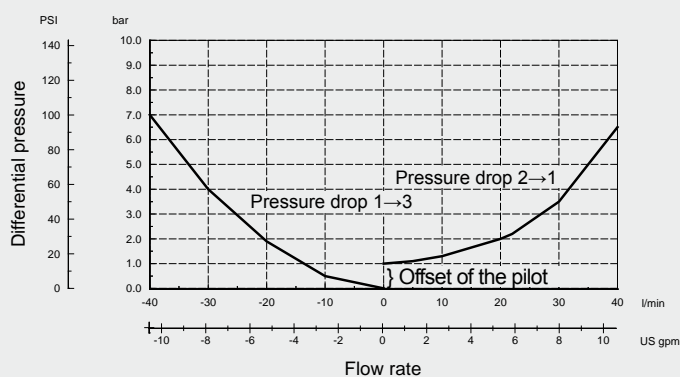
$v = 34 \text{ mm}^2/\text{s}$

$T_{\text{oil}} = 46^\circ\text{C}$

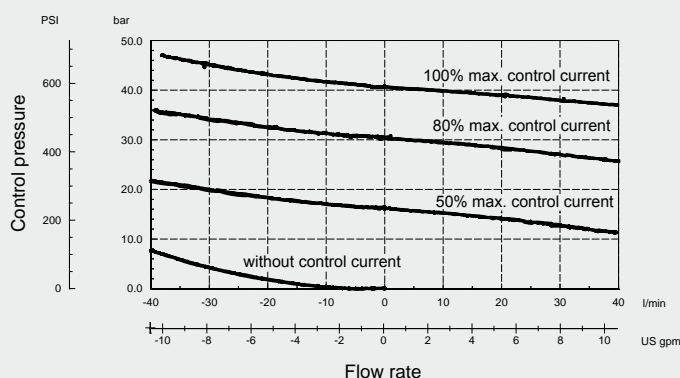
p/I



$\Delta p/Q$



p/Q

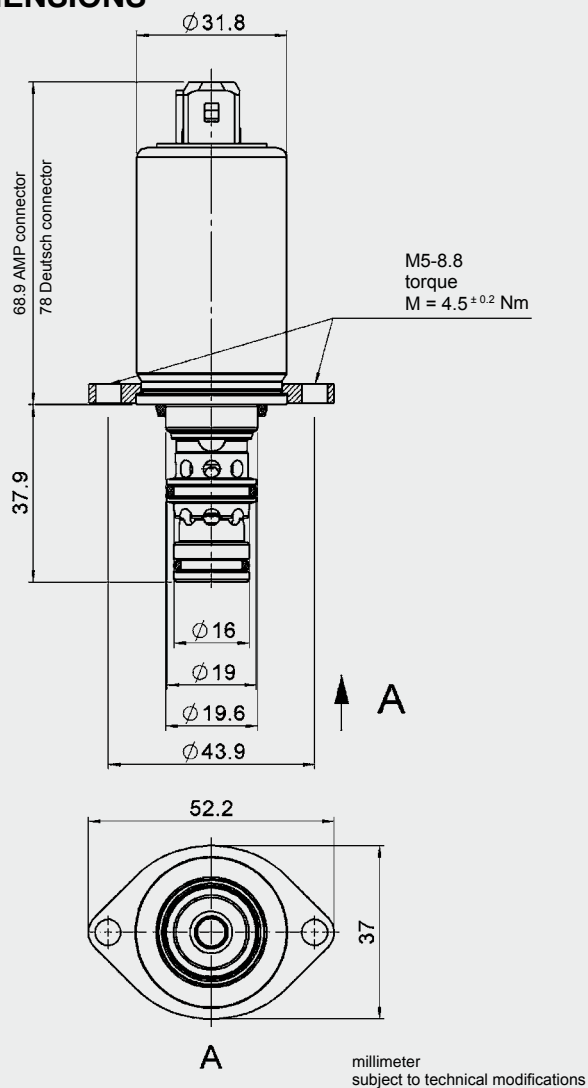


*Thermal load capacity of the coil:

100% duty cycle at $T_{A, \text{max}} = 80^\circ\text{C}$

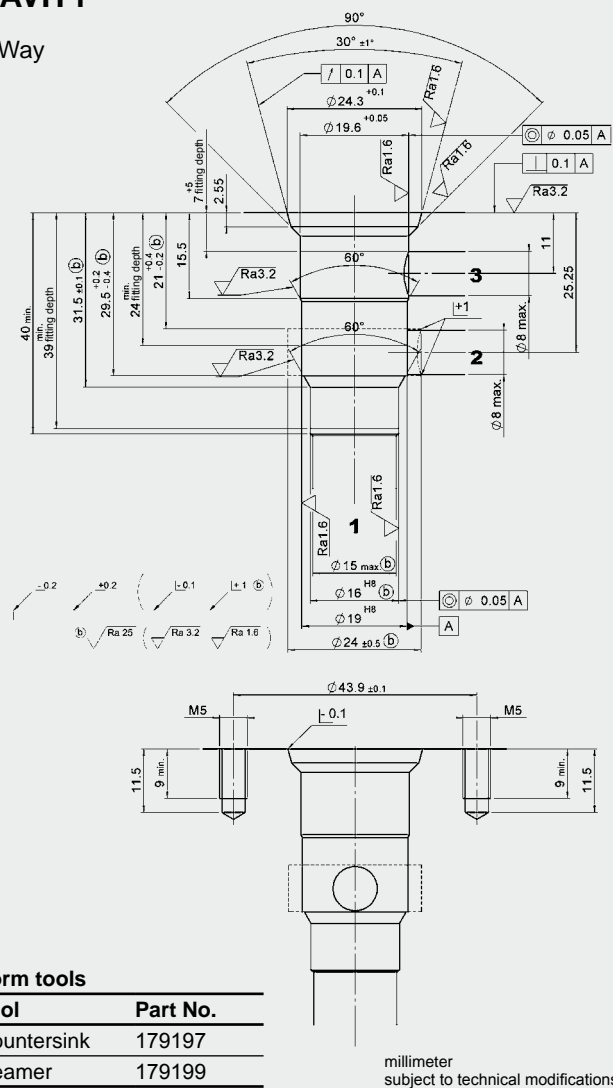
Please note: The data is based on the complete valve, mounted in a line body (block temperature: 105°C , aluminium or steel; dimensions $40 \times 60 \times 56 \text{ mm}$), flanged to a base block (block temperature 105°C , steel, dimensions $200 \times 150 \times 100 \text{ mm}$). The air in the climatic test cabinet is circulated by the cabinet ventilator.

DIMENSIONS



CAVITY

3-Way



Form tools

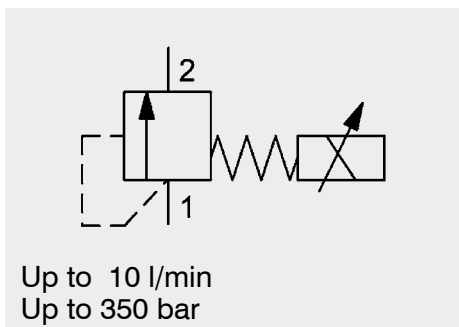
Tool	Part No.
Countersink	179197
Reamer	179199

millimeter
subject to technical modifications

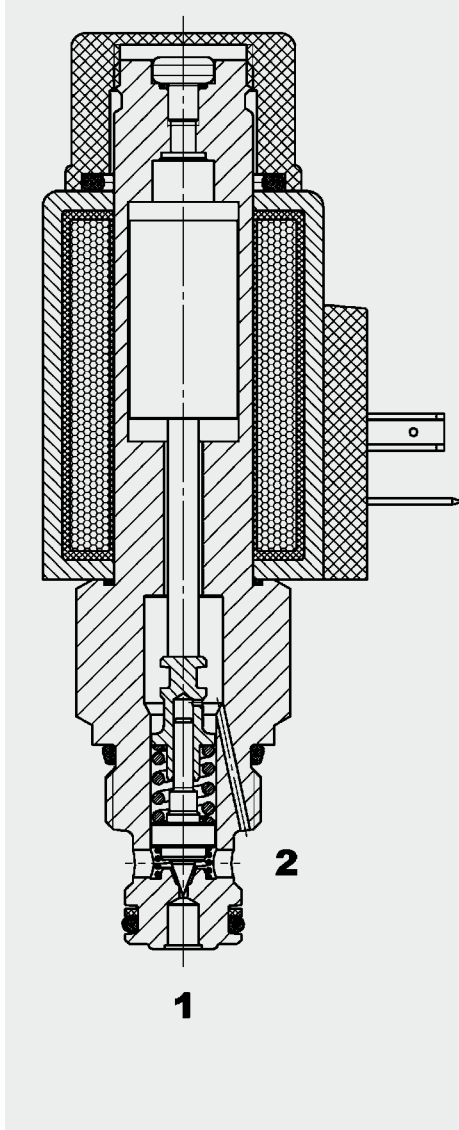
NOTE

NOTE
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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.

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

PDBM06020

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 cm ³ /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 mm ² /s to max. 420 mm ² /s
Filtration:	Class 19/17/14 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

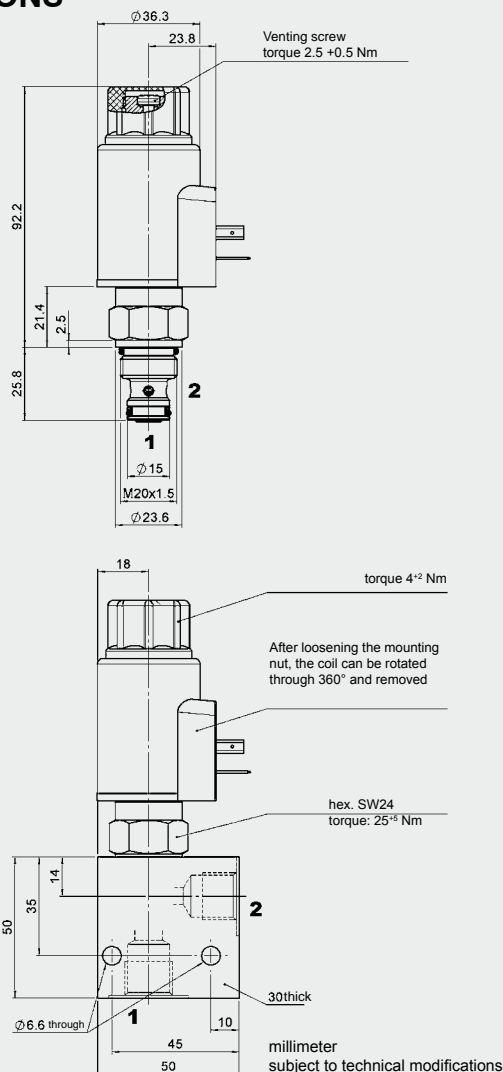
Electronic data:

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



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

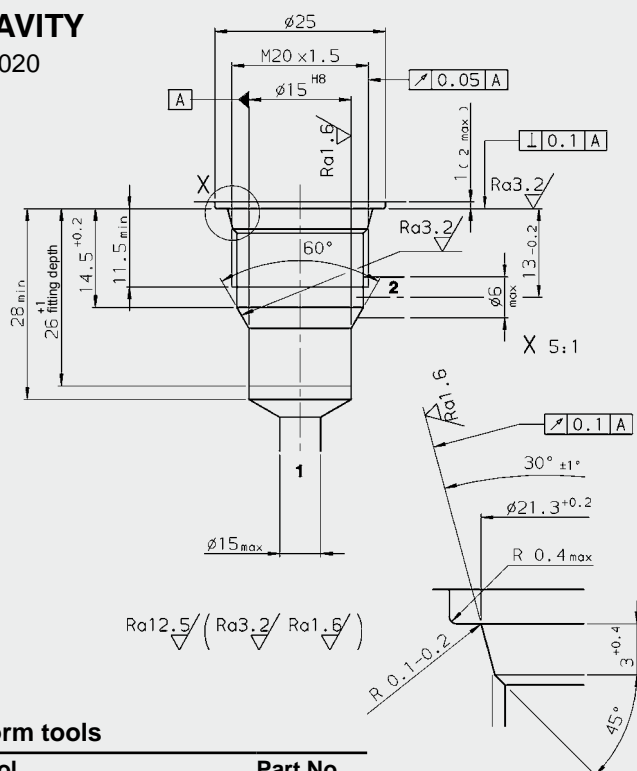
Coil voltage
12 = 12 V (4.1 Ohm)
24 = 24 V (18 Ohm)

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)

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

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

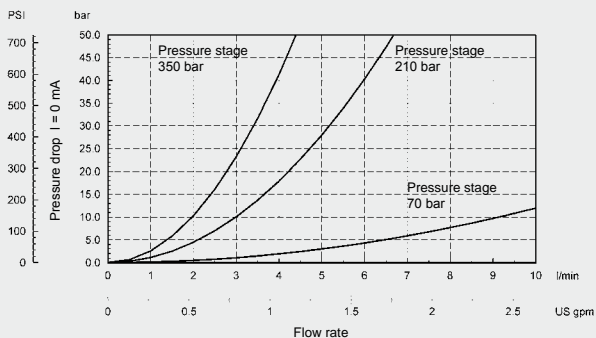
Seal kits

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

PERFORMANCE

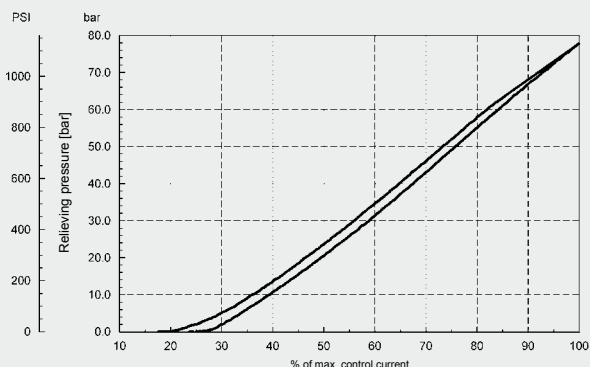
Δp -Q curve

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



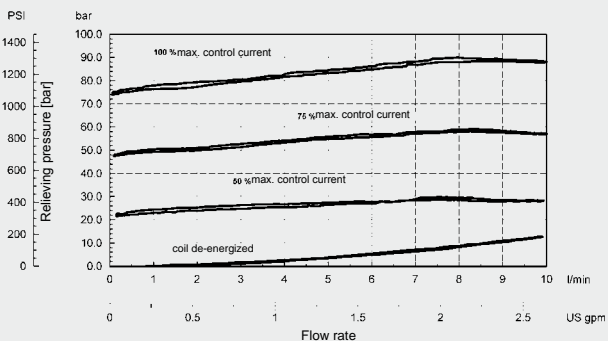
p-I curve, Pressure range 70 bar

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



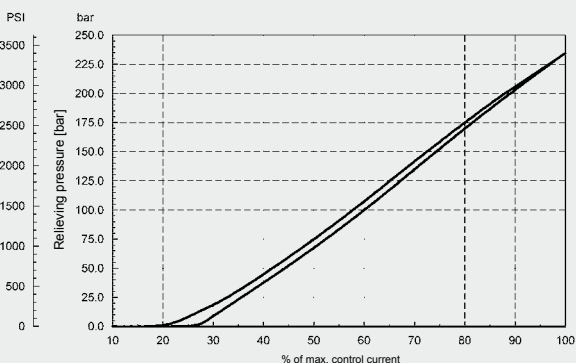
Q curve, Pressure range 70 bar

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



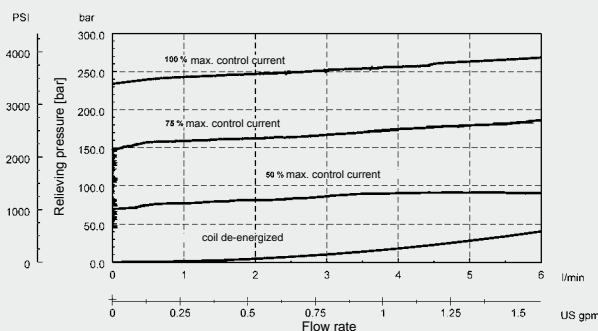
p-I curve, Pressure range 210 bar

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



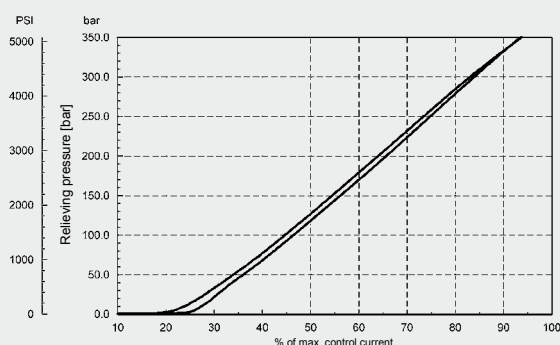
p-Q curve, Pressure range 210 bar

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



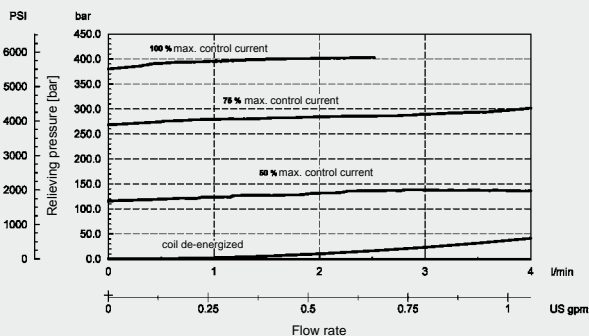
p-I curve, Pressure range 350 bar

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



p-Q curve, Pressure range 350 bar

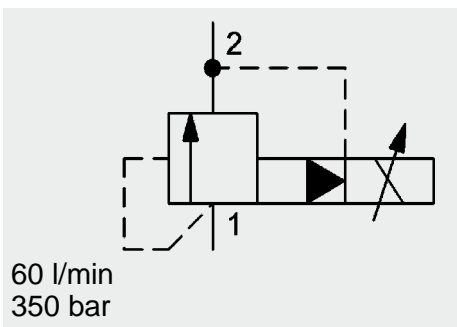
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



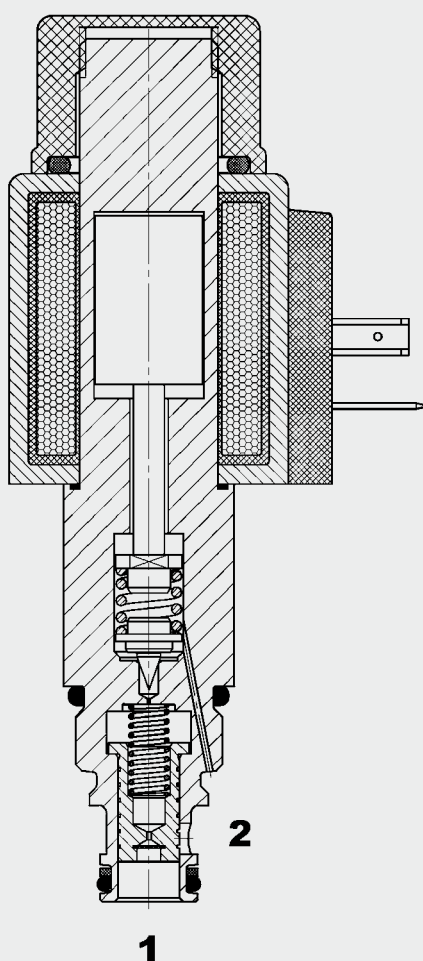
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FUNCTION



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.

Proportional Pressure Relief Valve Spool Type, Pilot-Operated SAE-08 Cartridge – 350 bar

PDB08P-01

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

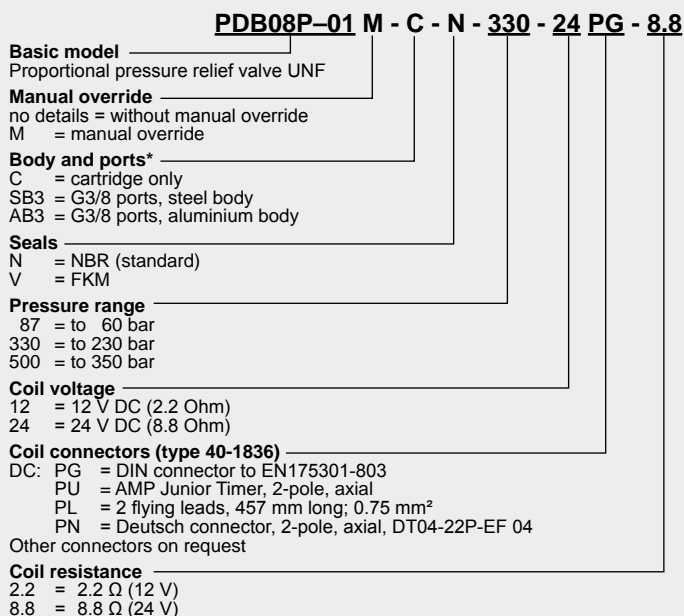
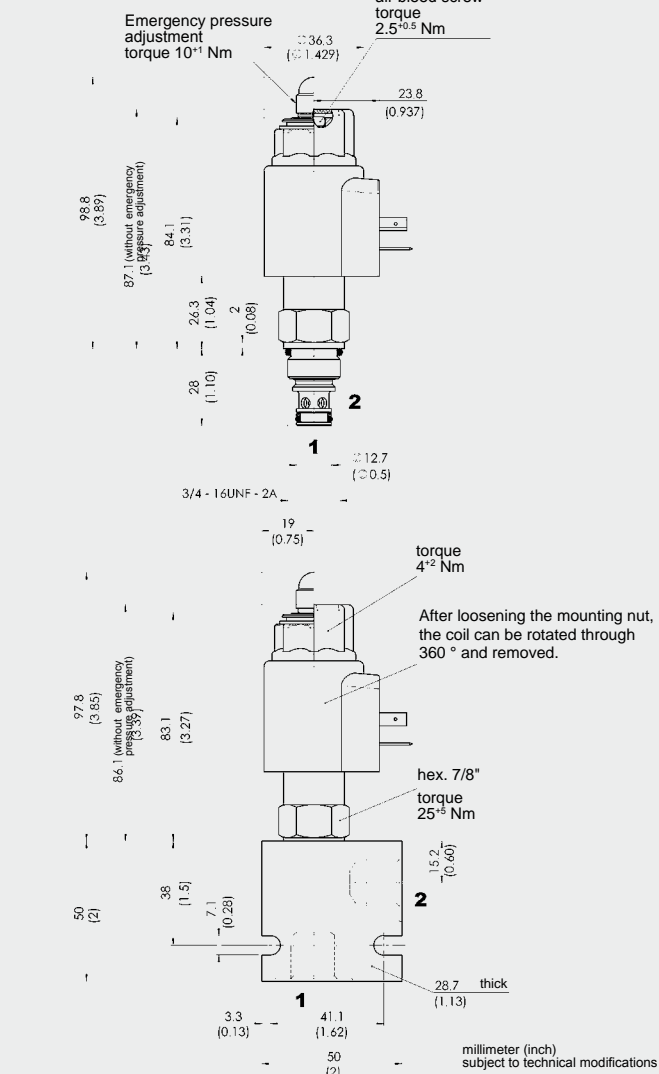
SPECIFICATIONS

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 mm ² /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

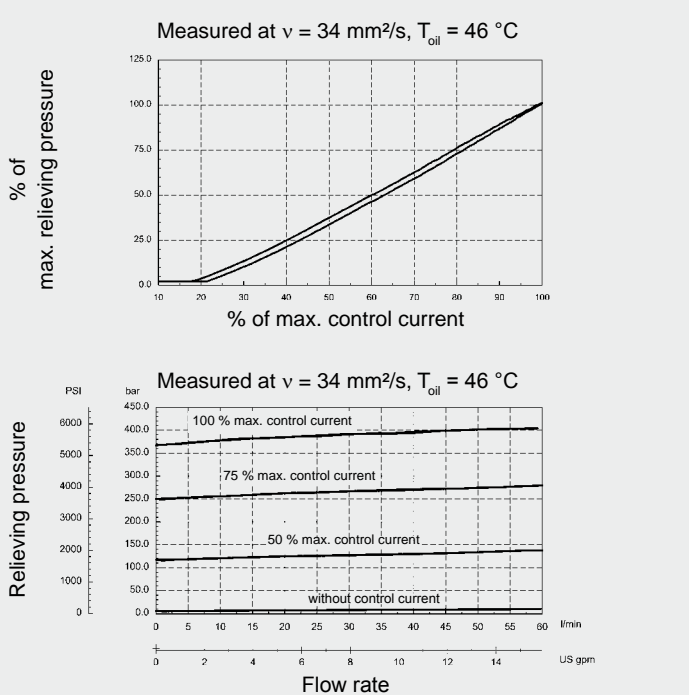
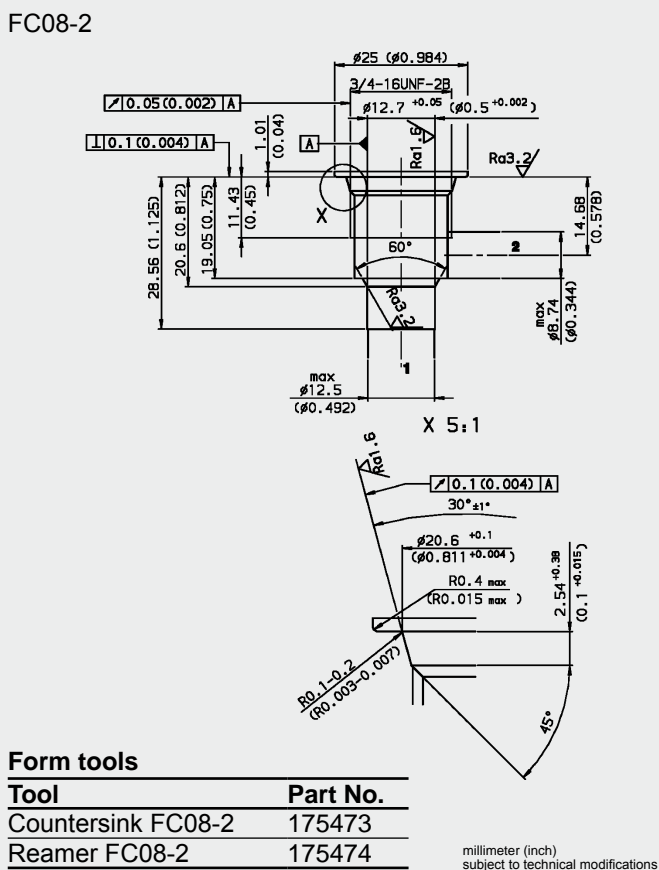
The PDB08P can also be supplied with an emergency pressure adjustment (version -01M). This allows a manual pressure adjustment of the valve if the electrical signal is interrupted. This adjustment should be used only in the case of electrical failure since the manual setting would be additive to the 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).



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

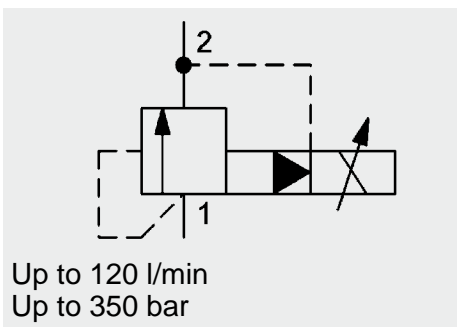
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	420 bar
FH082-AB3	3011423	Aluminium, anodized	G3/8	210 bar

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

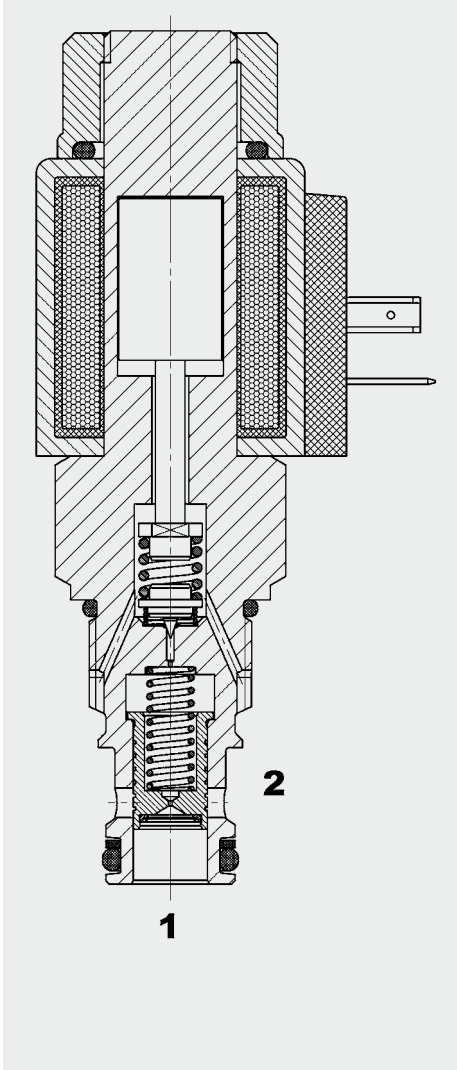


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FUNCTION



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.

Proportional Pressure Relief Valve Spool Type, Pilot-Operated Normally Open Metric Cartridge – 350 bar PDBM10120AP

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.	

emergency press. adj.
torque
 10^{-1} Nm

bleed screw
torque
 $2.5^{+0.5}$ Nm

91.9
(without emergency
80.3 pressure adjustment)

36.5

17.5
M22x1.5
27

23.8

19.5

2

36

88.9
(without emergency
78.3 pressure adjustment)

45

70

24

15

53

60

torque
 4^{+2} Nm

After loosening the mounting
nut, the coil can be rotated
through 360° and removed

hex. SW 27
torque 45^{+10} Nm

through

40 thick

1

2

millimeter
subject to technical modifications

Form tools

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

millimeter
subject to technical modifications

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)

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

Code	Part No.	Material	Ports	Pressure
R10120A-01X-01	395232	Steel, zinc-plated	G1/2	420 bar
Other bodies on request				

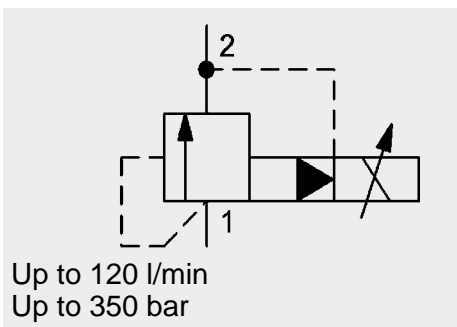
Code	Material	Part No.
SEAL KIT DB10120A...NBR	NBR	3085499
SEAL KIT DB10120A...FKM	FKM	560222

The top graph shows the relationship between the percentage of maximum relieving pressure and the percentage of maximum flow rate. The y-axis is labeled '% of max. relieving pressure' and ranges from 0.0 to 125.0. The x-axis is labeled '% of max. flow rate' and ranges from 10 to 100. Two curves are plotted, both starting at (10, 0) and ending at (100, 100). The curves are very close to each other, indicating a nearly linear relationship between pressure and flow rate in this range.

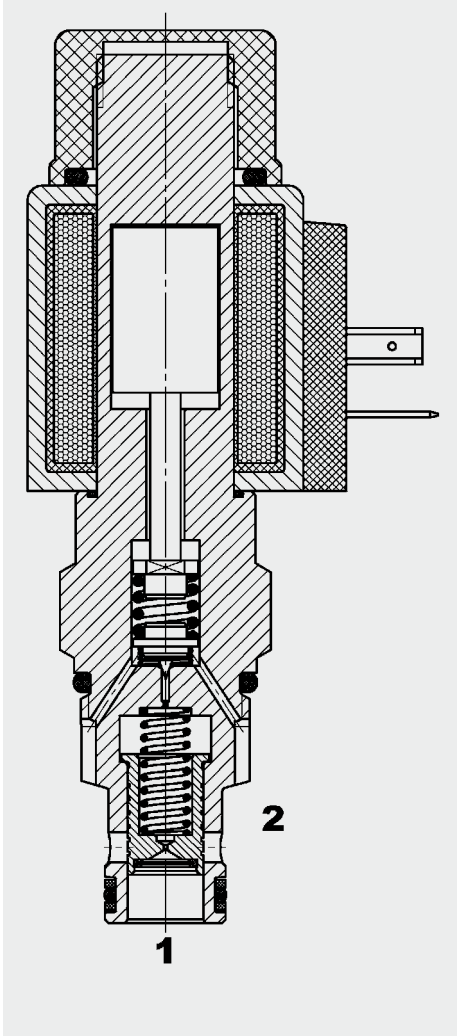
The bottom graph shows Pressure (PSI and bar) versus Flow rate (l/min and US gpm) for three different solenoid current conditions. The y-axis has two scales: PSI (0 to 5000) and bar (0.0 to 350.0). The x-axis has two scales: l/min (0 to 120) and US gpm (0 to 30). The three curves represent different solenoid current conditions: 100% max. solenoid current, 75% max. solenoid current, and coil de-energized. The 100% max. solenoid current curve starts at approximately 2500 PSI (175 bar) at 0 flow and increases to about 4200 PSI (300 bar) at 120 l/min. The 75% max. solenoid current curve starts at approximately 1700 PSI (125 bar) at 0 flow and increases to about 3200 PSI (230 bar) at 120 l/min. The coil de-energized curve starts at approximately 200 PSI (15 bar) at 0 flow and increases to about 400 PSI (30 bar) at 120 l/min.

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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.

Proportional Pressure Relief Valve Spool Type, Pilot-Operated SAE-10 Cartridge – 350 bar PDB10P-01

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

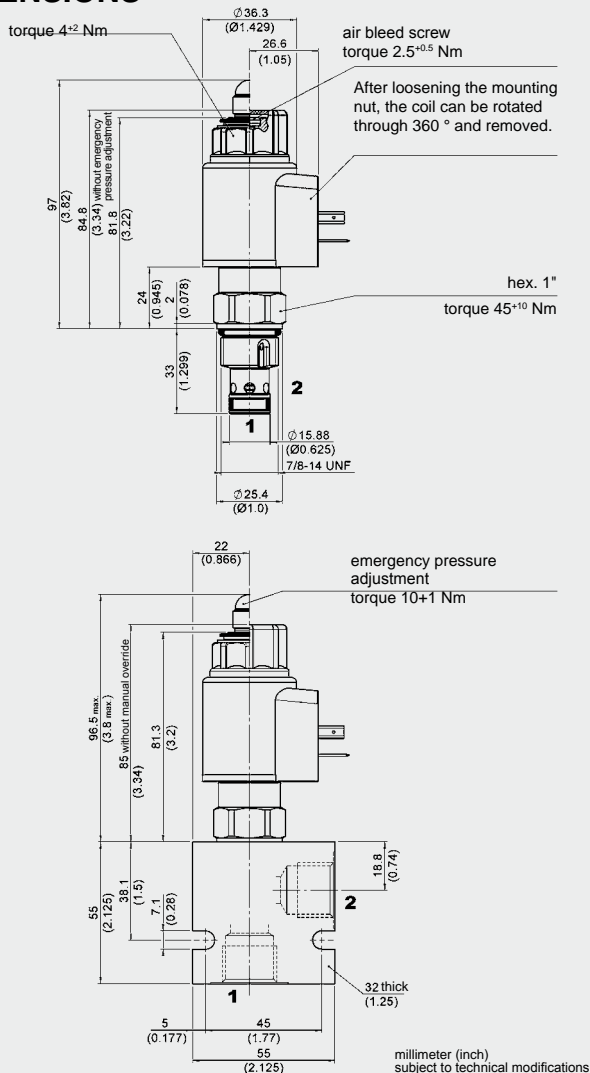
Operating pressure:	max. 350 bar
Nominal flow:	max. 120 l/min
Operating pressure ranges:	up to 60 bar up to 230 bar up to 350 bar
Internal leakage:	< 0.5 l/min at 350 bar
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	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



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

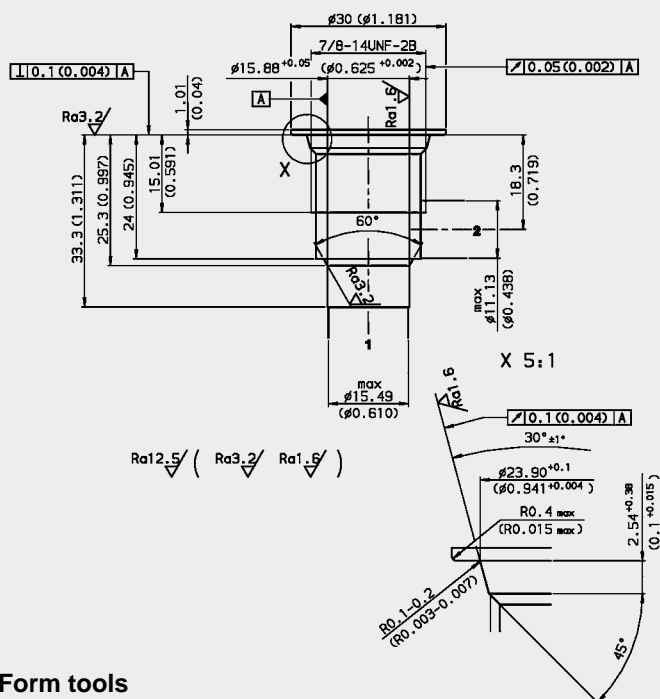
For other line bodies, see brochure no. E 5.252.

Seal kits

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

CAVITY

FC10-2

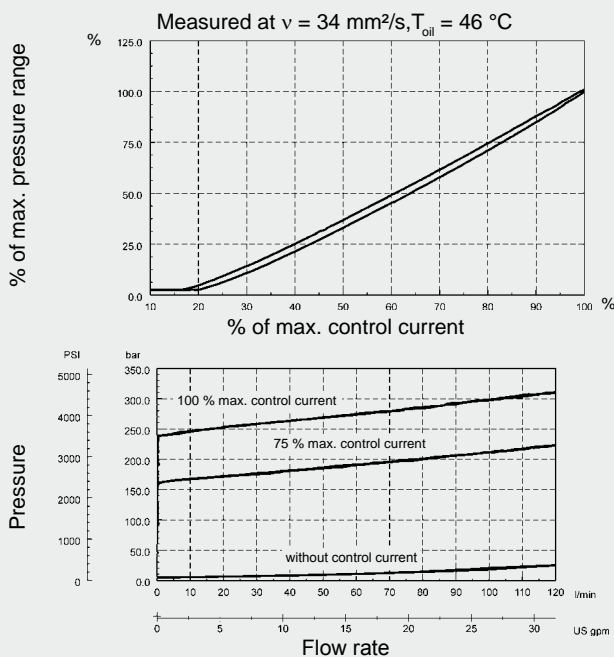


Form tools

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

millimeter (inch) subject to technical modifications

PERFORMANCE

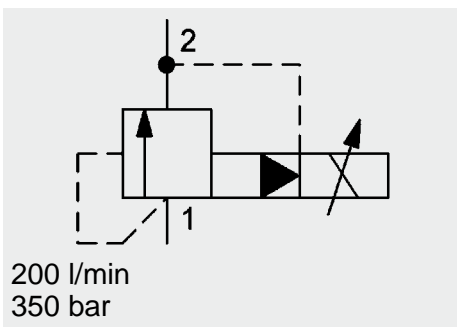


NOTE

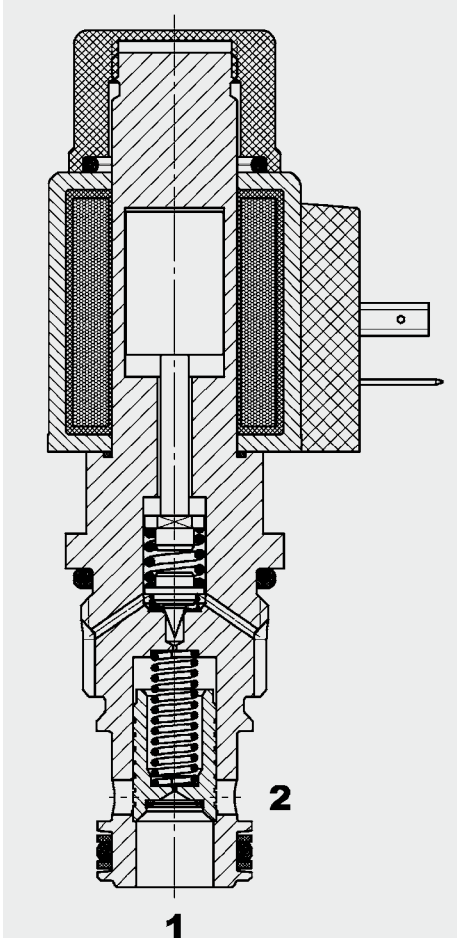
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FUNCTION



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.

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

PDB12P-01

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

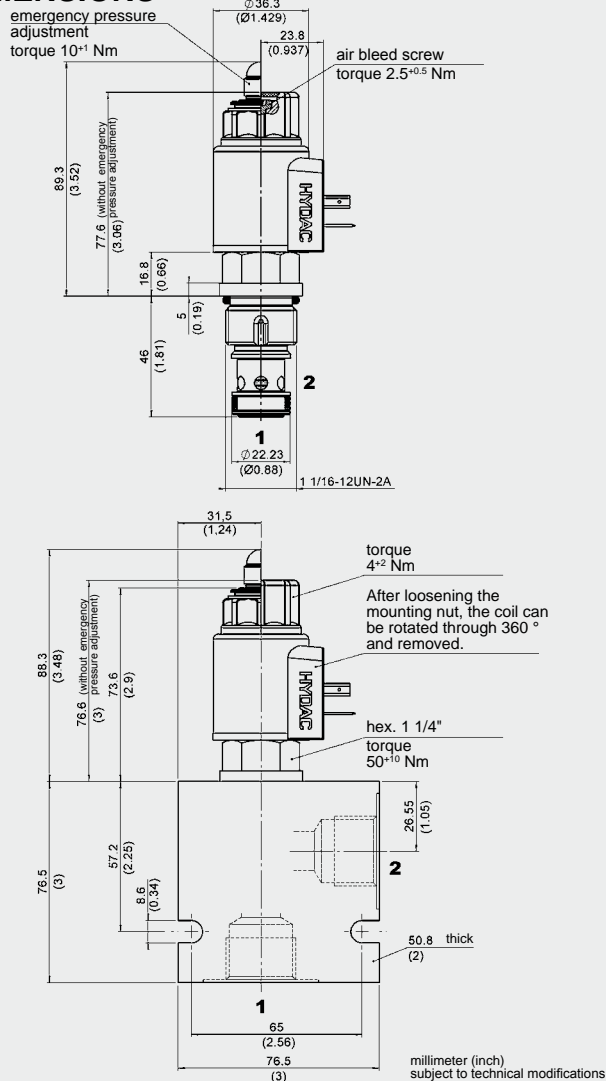
Operating pressure:	max. 350 bar
Nominal flow:	max. 200 l/min
Operating pressure ranges:	up to 60 bar up to 230 bar up to 350 bar
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. 60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 7.4 mm ² /s to max. 420 mm ² /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: 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 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



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

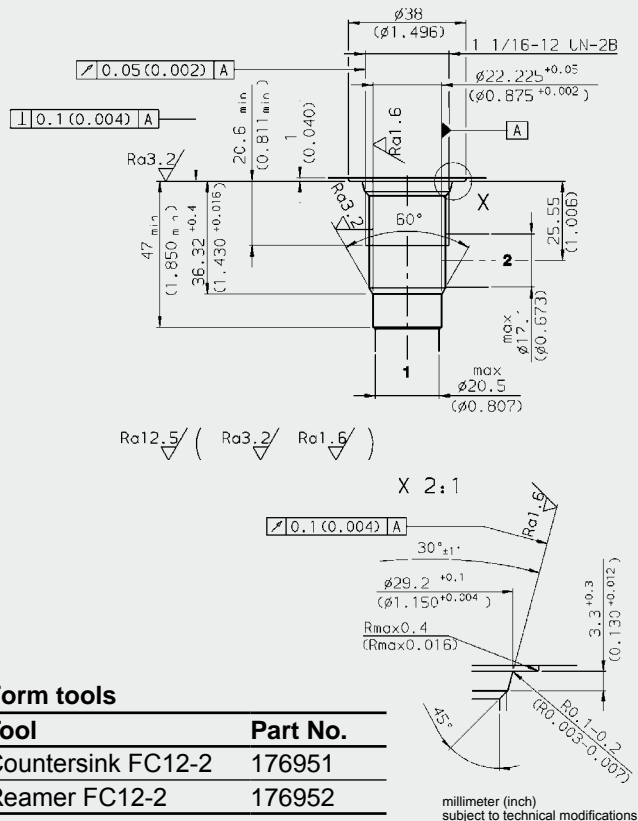
Other bodies on request

Seal kits

Code	Material	Part No.
FS122-N SEAL KIT	NBR	3071298
FS122-V SEAL KIT	FKM	3071299

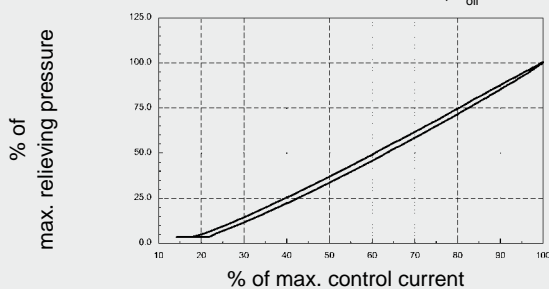
CAVITY

FC12-2

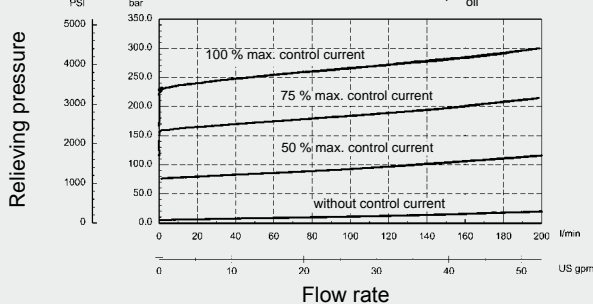


PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



NOTE

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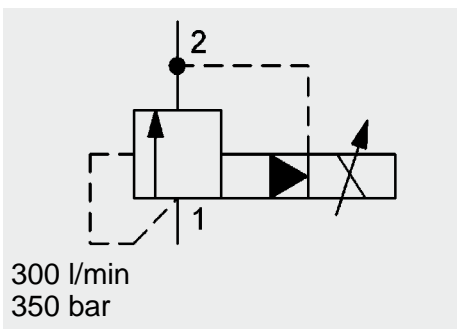
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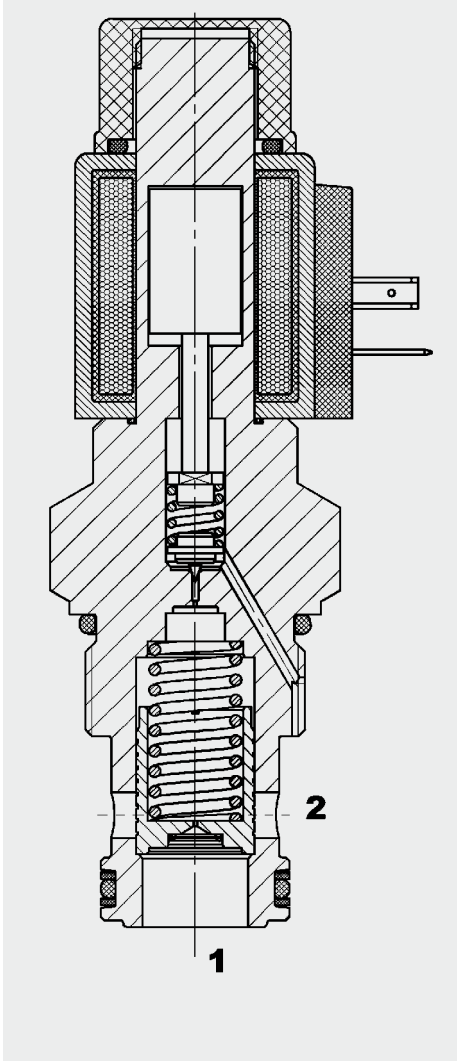
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FUNCTION



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.

Proportional Pressure Relief Valve Spool Type, Pilot-Operated SAE-16 Cartridge – 350 bar PDB16P-01

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

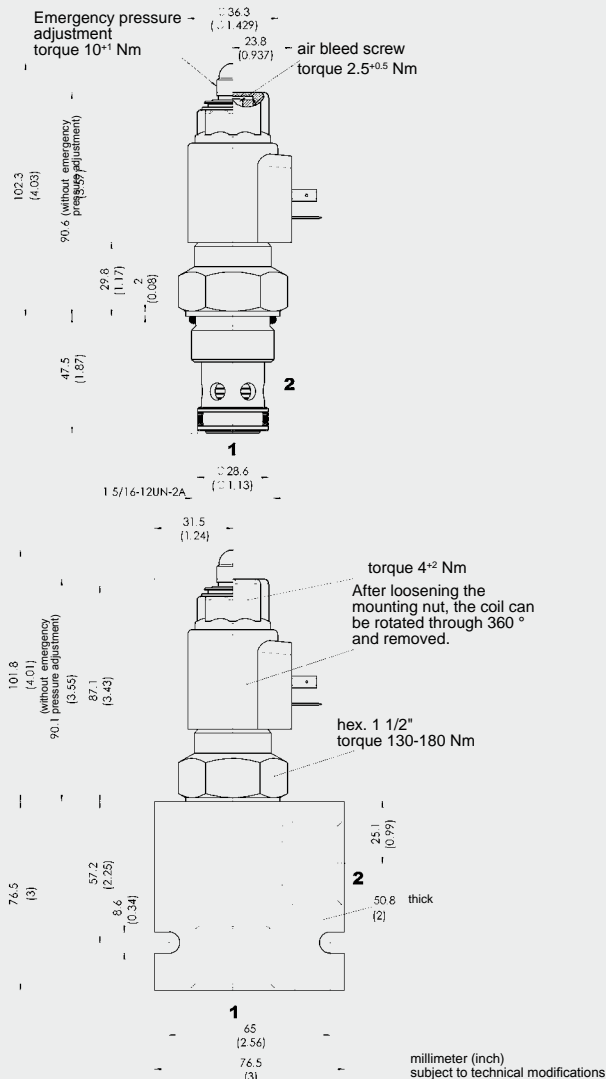
Operating pressure:	max. 350 bar
Nominal flow:	max. 300 l/min
Operating pressure ranges:	up to 60 bar up to 230 bar up to 350 bar
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. 60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 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: approx. 70 ms De-energized: 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



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

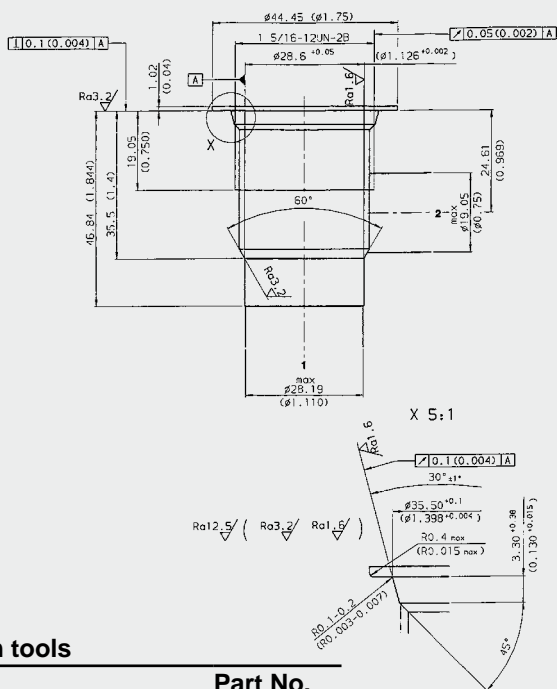
Other bodies on request

Seal kits

Code	Material	Part No.
FS162-N SEAL KIT	NBR	3052427
FS162-V SEAL KIT	FKM	3051758

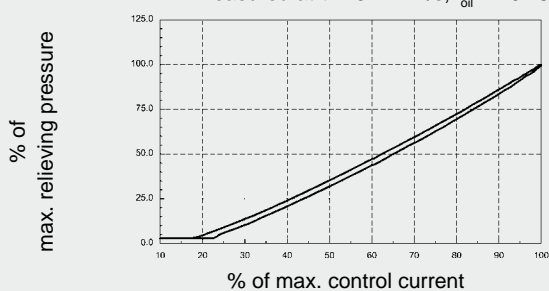
CAVITY

FC16-2

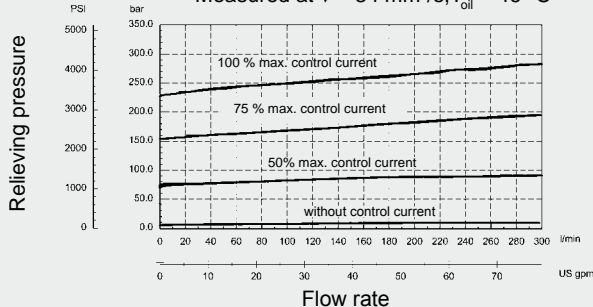


PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



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Subject to technical modifications.

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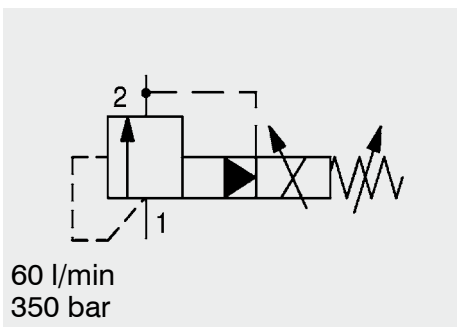
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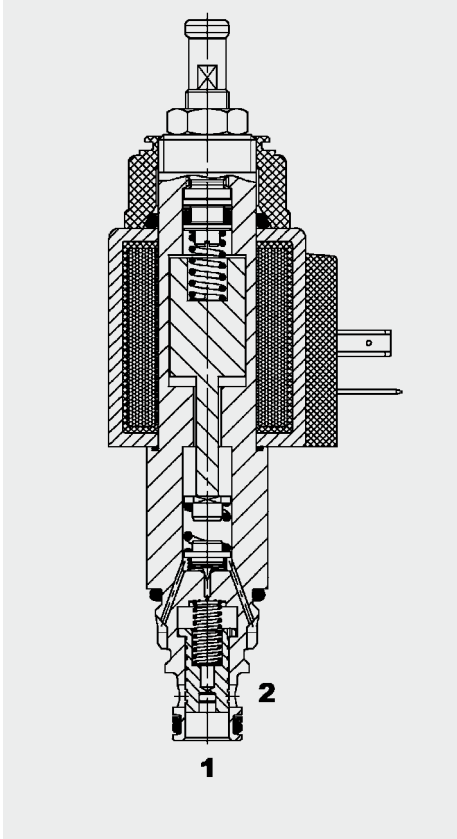
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FUNCTION



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.

Proportional Pressure Relief Valve Inversely Controlled Spool Type, Pilot-Operated SAE-08 Cartridge – 350 bar

PDB08PZ-08

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 mm ² /s to max. 420 mm ² /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

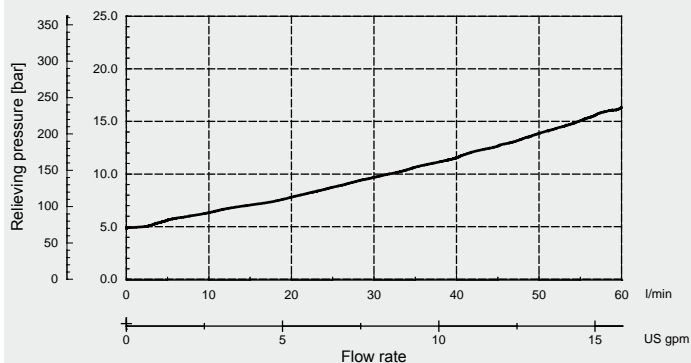
Code	Part No.	Material	Ports	Pressure
FH082-SB3	560919	Steel, zinc-plated	G3/8	max. 420 bar
FH082-AB3	3011423	Aluminium, anodized	G3/8	max. 210 bar

Seal kits

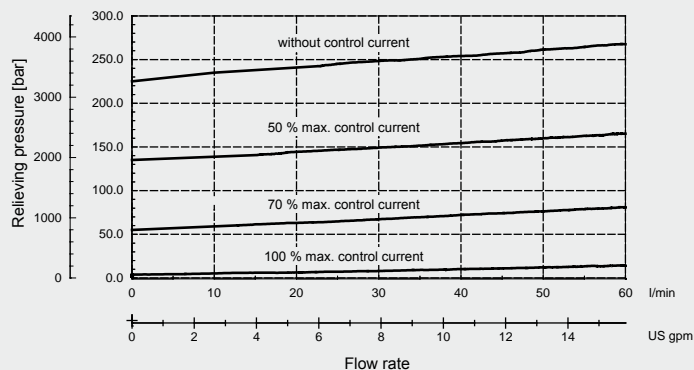
Code	Material	Part No.
FS082-N SEAL KIT	NBR	3033920
FS082-V SEAL KIT	FKM	3051756

PERFORMANCE

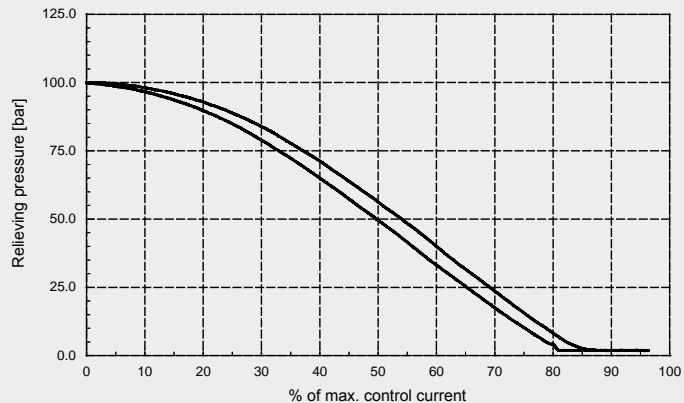
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



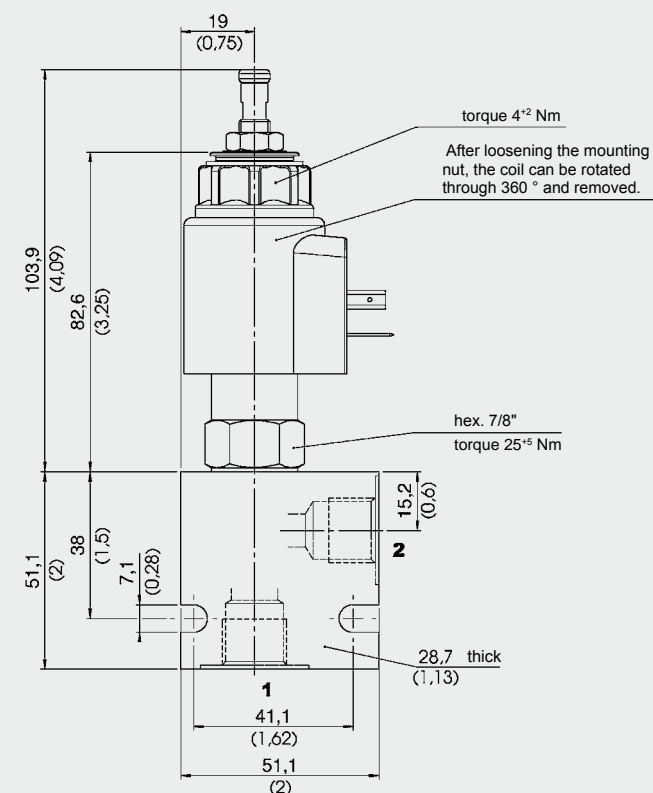
Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$



FC08-2



Technical drawing of a mechanical part, showing a detail view (X 5:1) and a main view.

Main View Dimensions:

- Overall width: $\phi 25 (\phi 0.984)$
- Thread: $3/4-16UNF-2B$
- Thread diameter: $\phi 12.7^{+0.05} (\phi 0.5^{+0.002})$
- Surface texture: $Ra 1.6$ (on the thread), $Ra 3.2$ (on the main body)
- Chamfer: 60°
- Chamfer radius: $R0.3$
- Chamfer width: $1.43 (0.45)$
- Chamfer height: $1.01 (0.04)$
- Overall height: $28.56 (1.125)$
- Internal diameter: $\phi 20.6 (\phi 0.812)$
- Internal diameter: $\phi 19.05 (\phi 0.75)$
- Internal diameter: $\phi 12.5^{max} (\phi 0.492)$
- Internal diameter: $\phi 8.74^{max} (\phi 0.344)$
- Internal diameter: $\phi 1.68 (0.578)$

Detail View (X 5:1) Dimensions:

- Chamfer: $30^\circ \pm 1^\circ$
- Chamfer radius: $R0.1-0.2 (R0.003-0.007)$
- Chamfer width: $2.54^{+0.38} (0.1^{+0.015})$
- Chamfer height: $0.1 (0.004)$
- Chamfer radius: $R0.4^{max} (R0.015^{max})$
- Chamfer diameter: $\phi 20.6^{+0.1} (\phi 0.811^{+0.004})$
- Chamfer radius: $R0.1-0.2 (R0.003-0.007)$
- Chamfer width: $2.54^{+0.38} (0.1^{+0.015})$
- Chamfer height: $0.1 (0.004)$
- Chamfer radius: $R0.4^{max} (R0.015^{max})$
- Chamfer diameter: $\phi 20.6^{+0.1} (\phi 0.811^{+0.004})$

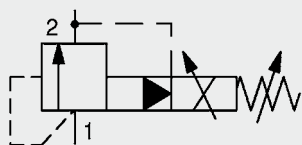
Form tools

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

millimeter (inch)
subject to technical modifications

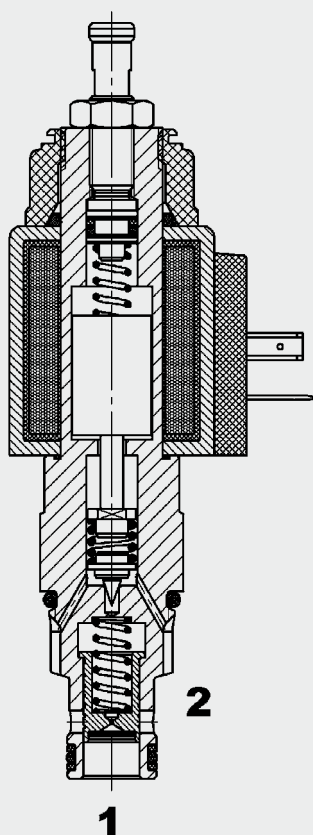
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120 l/min
350 bar

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.

Proportional Pressure Relief Valve Inverse Controlled Spool Type, Pilot-Operated SAE-10 Cartridge – 350 bar

PDB10PZ-08/-09

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 mm ² /s to max. 420 mm ² /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

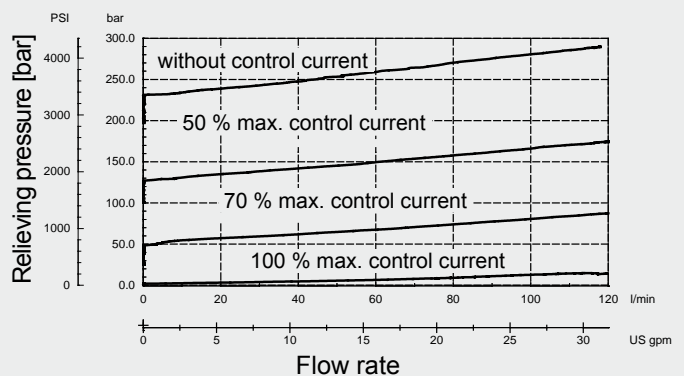
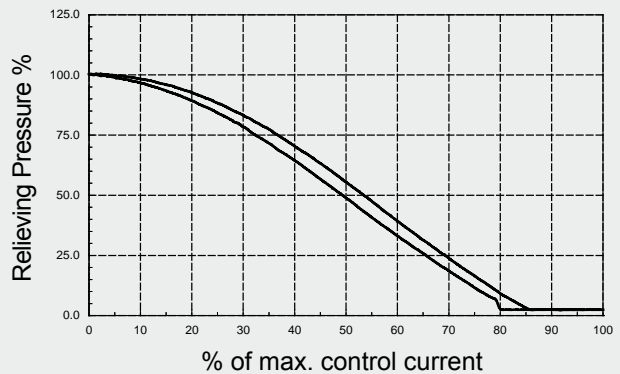
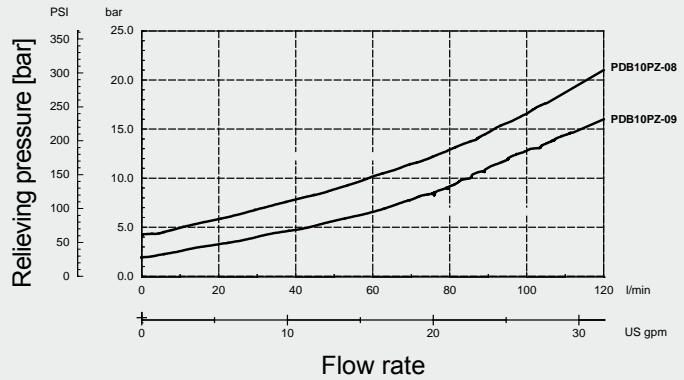
Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	G1/2	420 bar
FH102-AB4	3037777	Aluminium, anodized	G1/2	210 bar

Seal kits

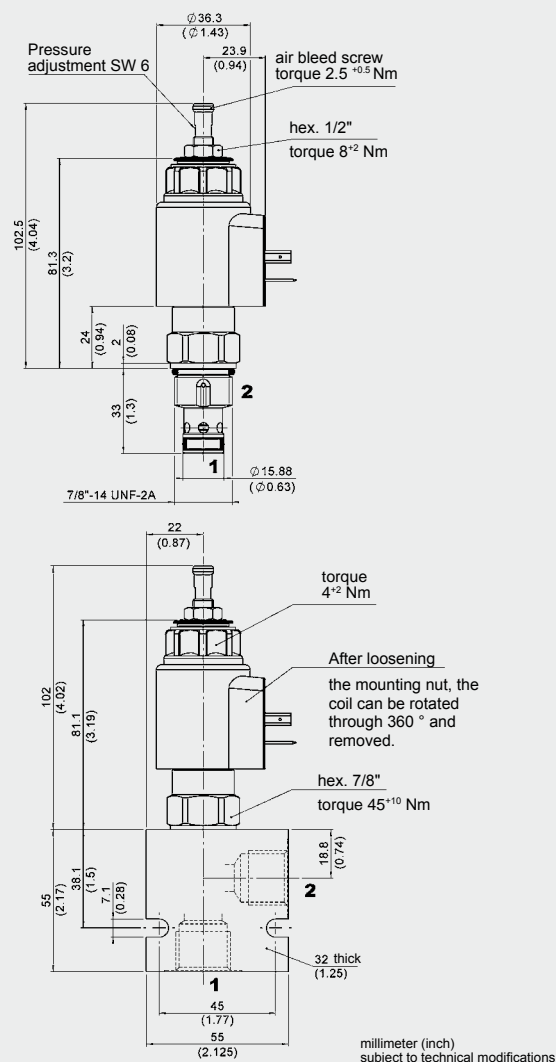
Code	Material	Part No.
FS102-N SEAL KIT	NBR	3033872
FS102-V SEAL KIT	FKM	3051757

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ\text{C}$

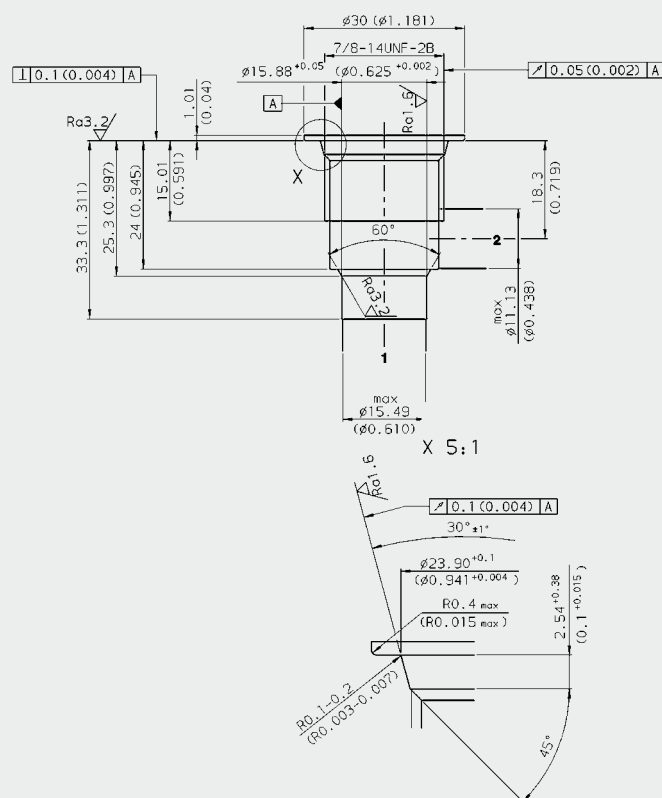


DIMENSIONS



CAVITY

FC10-2



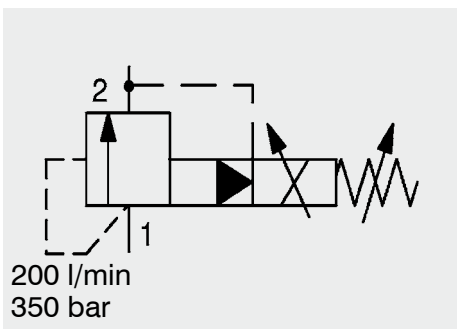
Form tools

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

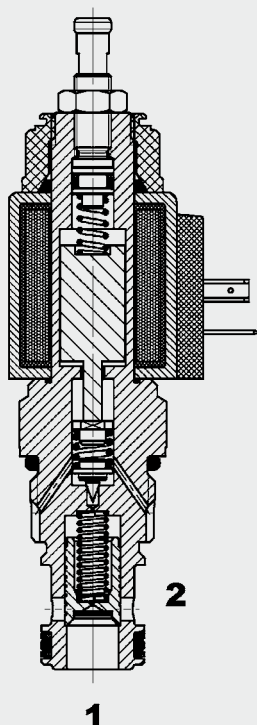
NOTE

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Subject to technical modifications.

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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.

Proportional Pressure Relief Valve Inversely Controlled Spool Type, Pilot-Operated SAE-12 Cartridge – 350 bar

PDB12PZ-08/-09

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 mm ² /s to max. 420 mm ² /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

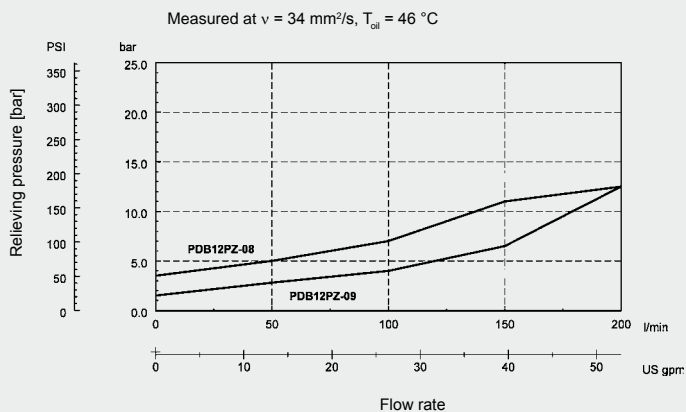
Code	Part No.	Material	Ports	Pressure
FH122-SB6	3053782	Steel, zinc-plated	G3/4	max. 420 bar
FH122-AB6	3053843	Aluminium, anodized	G3/4	max. 210 bar

Seal kits

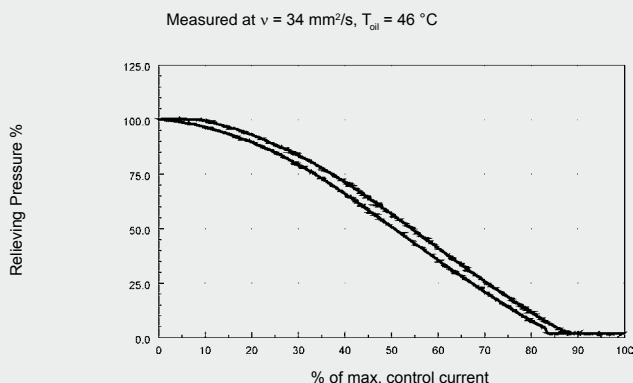
Code	Material	Part No.
FS122-N SEAL KIT	NBR	3071298
FS122-V SEAL KIT	FKM	3071299

PERFORMANCE

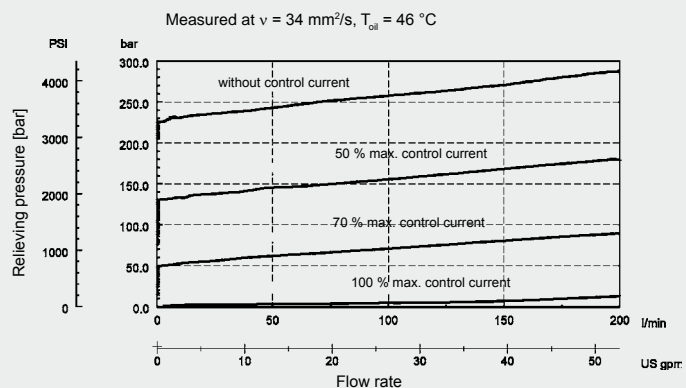
Δp -Q graph



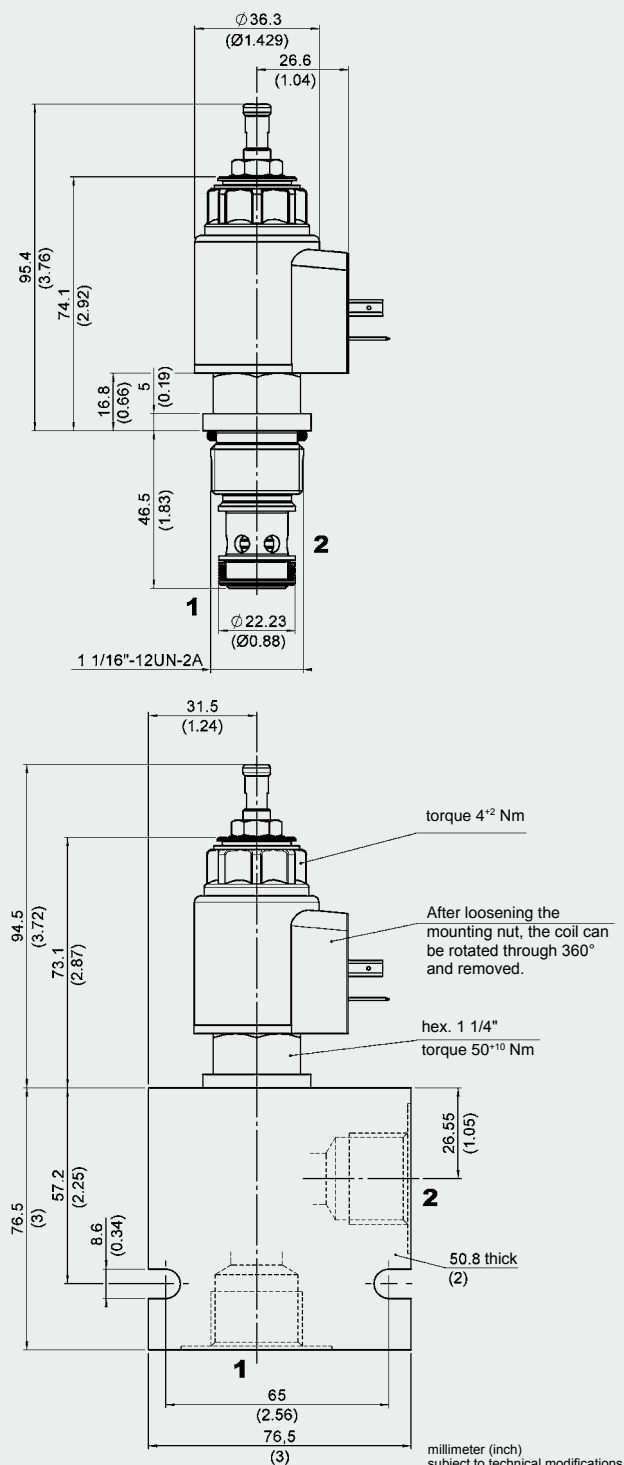
P-I graph



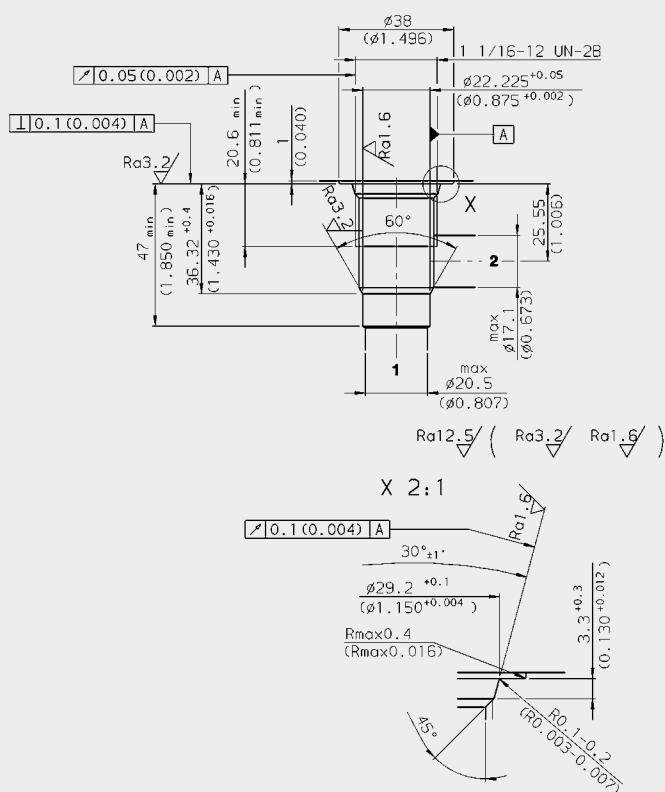
P-Q graph, typical



DIMENSIONS



CAVITY FC12-2



Form tools

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

millimeter (inch)
subject to technical modifications

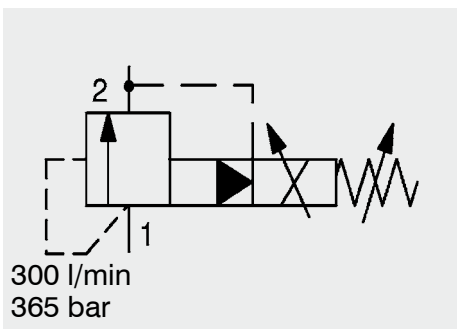
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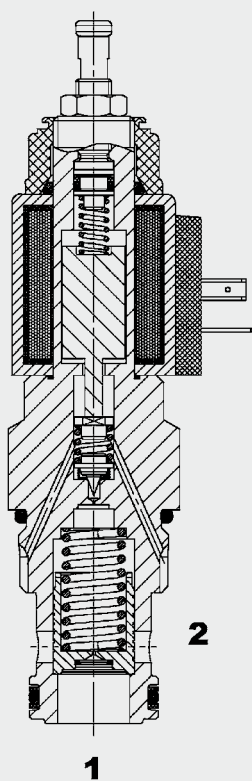
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FUNCTION



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.

Proportional Pressure Relief Valve Inversely Controlled Spool Type, Pilot-Operated SAE-16 Cartridge – 365 bar PDB16PZ-08/-09

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 mm ² /s to max. 420 mm ² /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

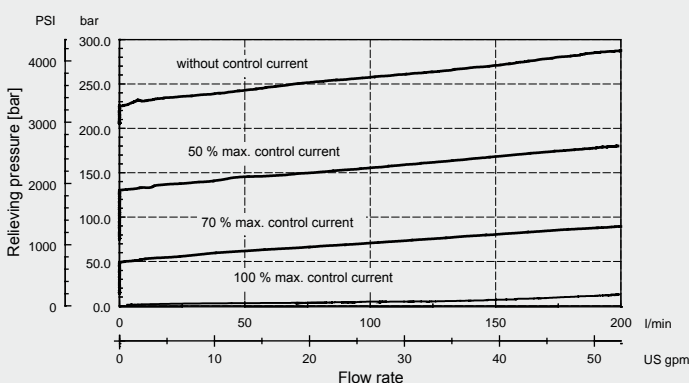
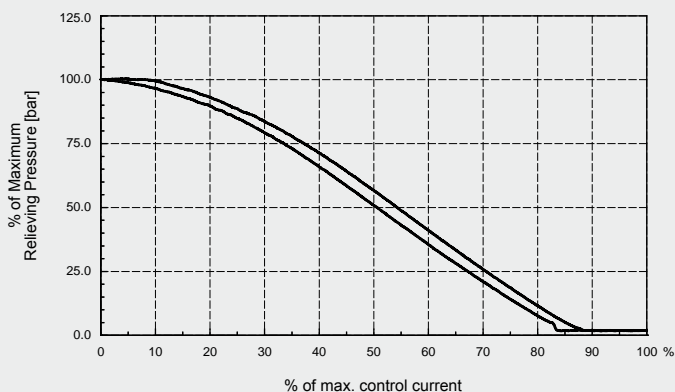
Code	Part No.	Material	Ports	Pressure
FH162-SB8	3032496	Steel, zinc-plated	G1	max. 420 bar
FH162-AB8	3037193	Aluminium, anodized	G1	max. 210 bar

Seal kits

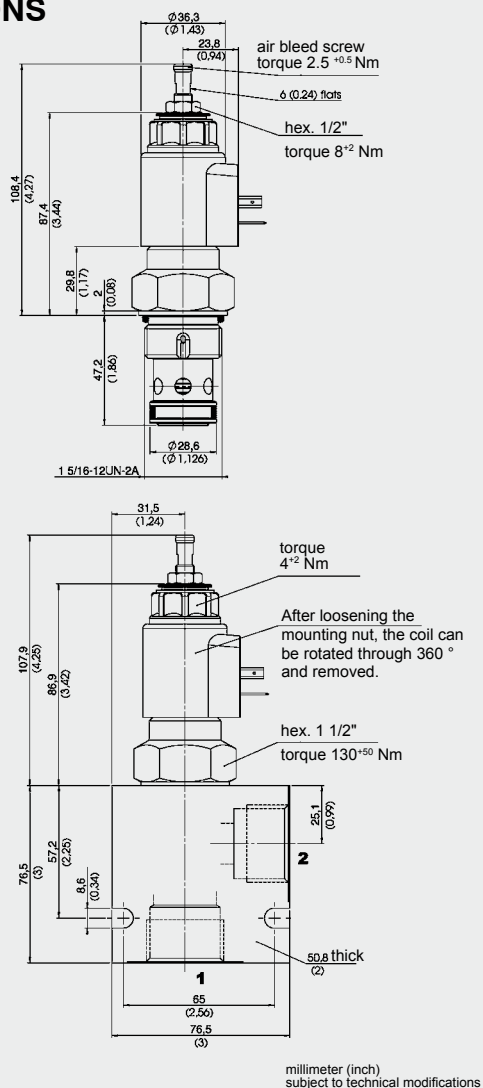
Code	Material	Part No.
FS162-N SEAL KIT	NBR	3052427
FS162-V SEAL KIT	FKM	3051758

PERFORMANCE

Measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46 \text{ °C}$

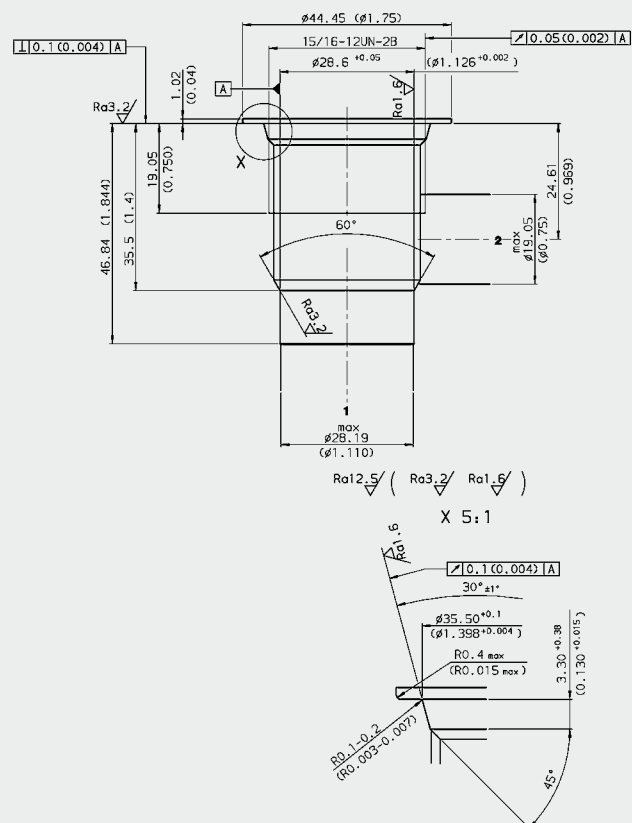


DIMENSIONS



CAVITY

FC16-2



Form tools

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

millimeter (inch)
subject to technical modifications

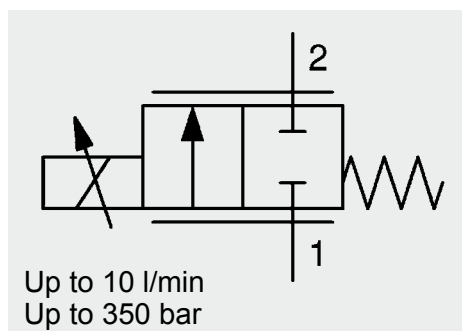
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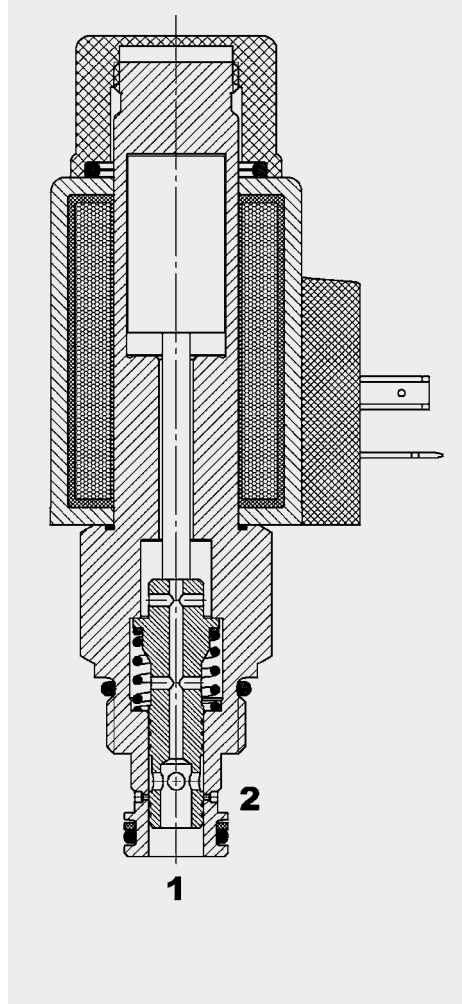
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FUNCTION



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.

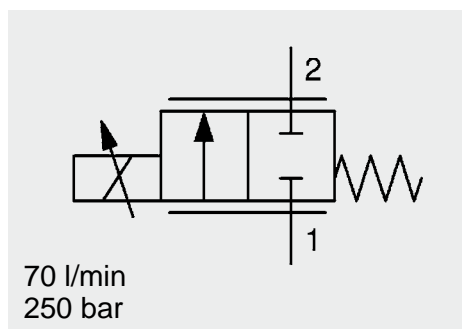
Proportional Flow Control Valve Spool Type, Direct-Acting, Normally Closed Metric Cartridge – 350 bar PWK06020W

FEATURES

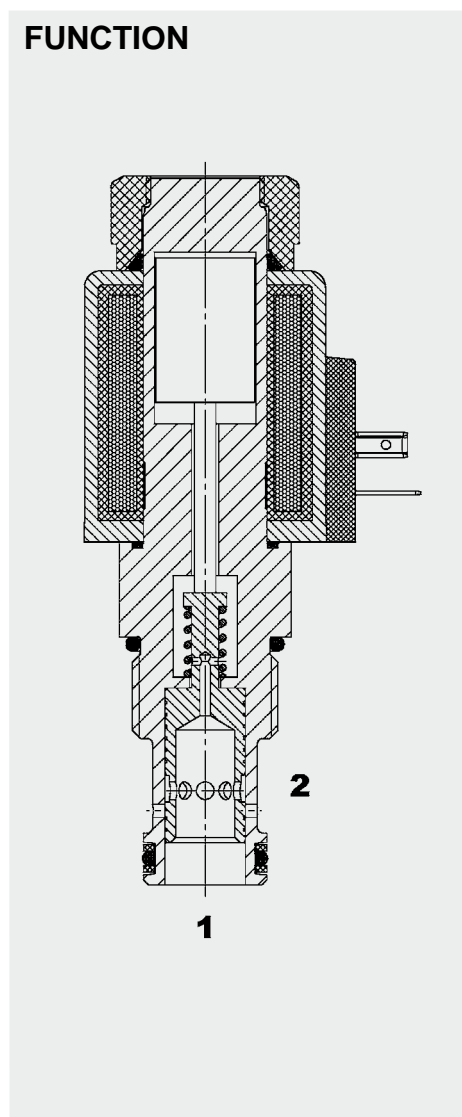
- Stepless adjustment of the effective oil flow, depending on the coil current.
- Excellent stability throughout the entire flow range
- Excellent dynamic performance
- External surfaces zinc-plated and corrosion-proof
- Hardened and ground internal valve components to ensure minimal wear and extended 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 mm ² /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 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: 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



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.

Proportional Flow Control Valve Spool Type, Direct-Acting, Normally Closed Metric Cartridge – 250 bar

PWK12120W

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 mm ² /s to max. 420 mm ² /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

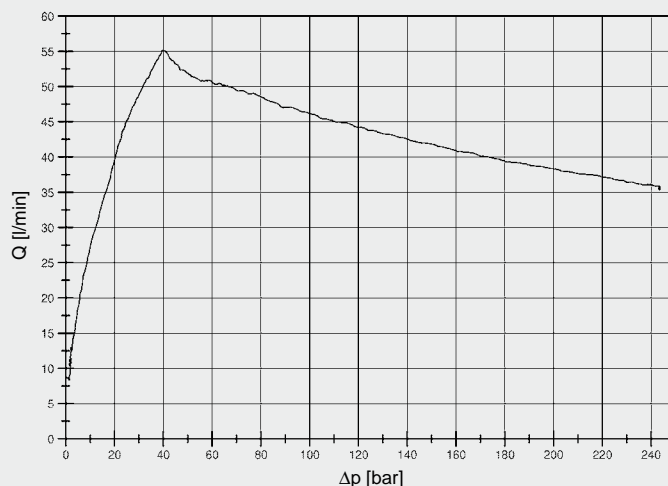
Code	Part No.
SEAL KIT 12120-NBR	3454001
SEAL KIT 12120-FKM	3454002

$\Delta p/Q$ CURVES*

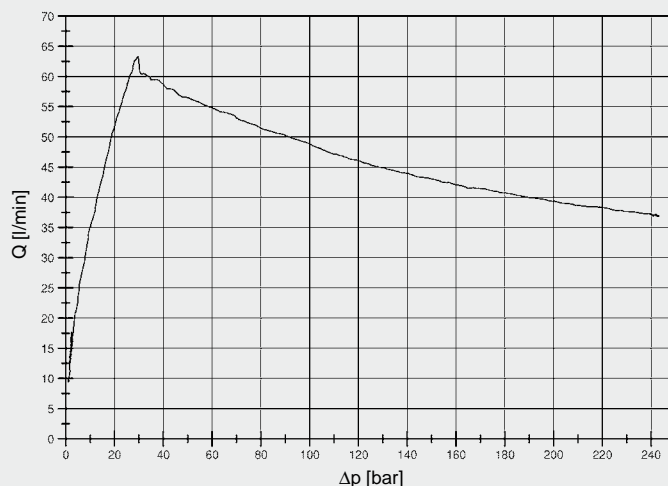
Measured at $v = 40 \text{ mm}^2/\text{s}$

$T_{oil} = 42^\circ\text{C}$

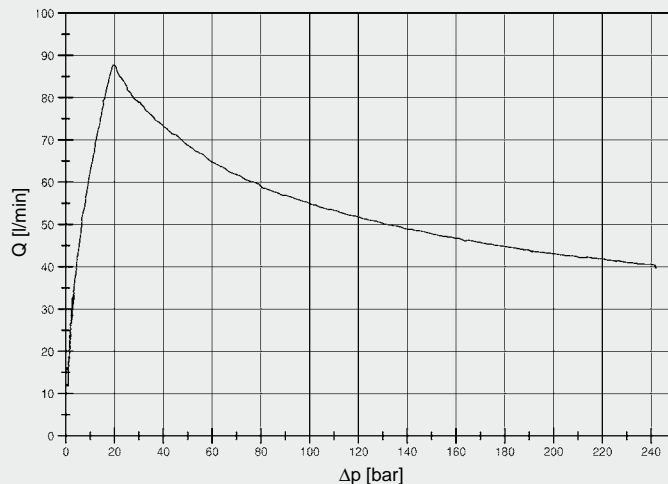
Flow rate: 20 l



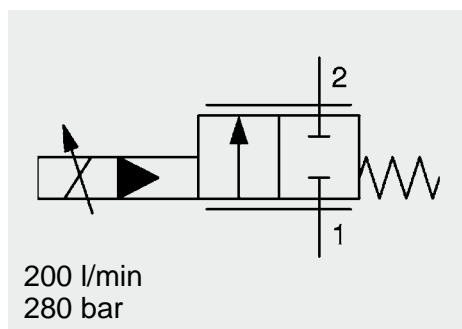
Flow rate: 25 l



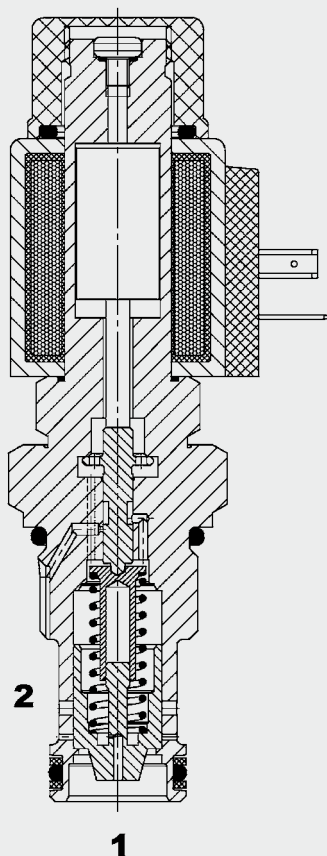
Flow rate: 45 l



* Curves are measured without pressure compensator!
By using a pressure compensator with $\Delta p = 15 \text{ bar}$ please refer to x-axis.



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.

Proportional Flow Control Valve Spool Type, Pilot-Operated Normally Closed Metric Cartridge – 280 bar

PWK12120WP

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

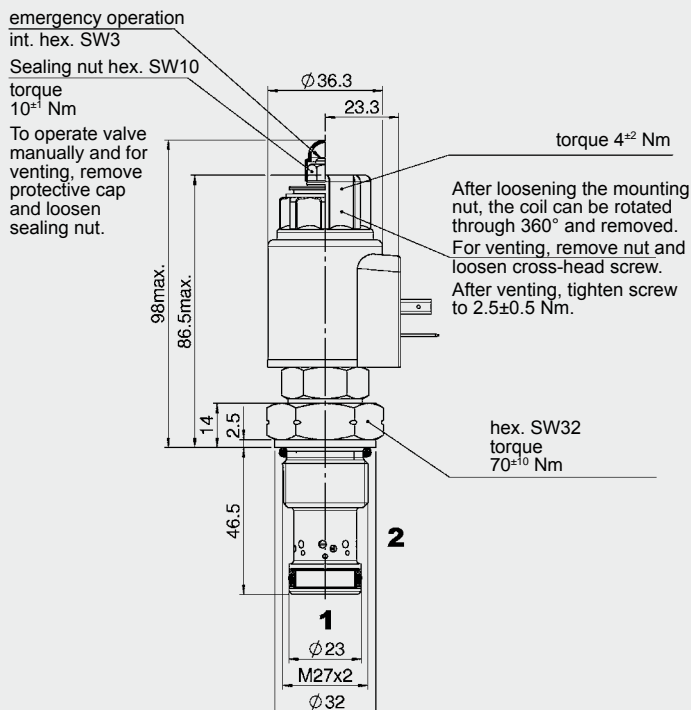
Operating pressure:	max. 280 bar
Nominal flow:	max. 200 l/min
Permitted pressure differential between ports 1 and 2:	max. 50 bar
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 10 mm ² /s to max. 420 mm ² /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



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

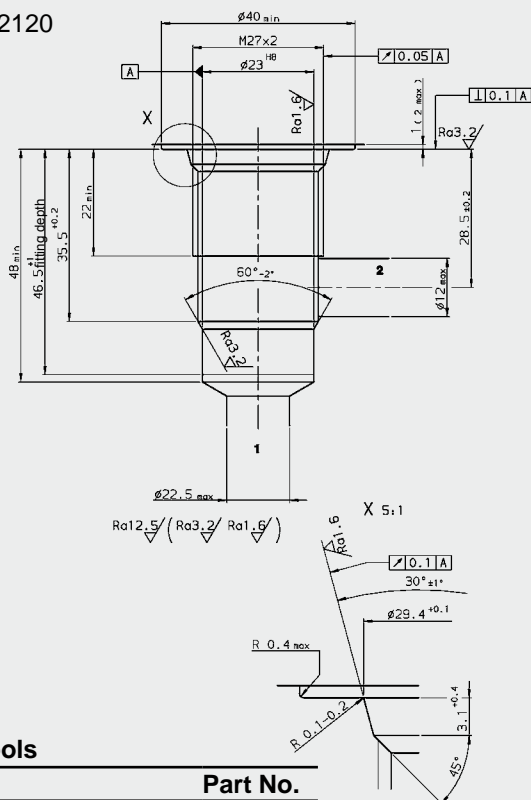
*Standard in-line bodies

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

CAVITY

Metric 12120



Form tools

Tool	Part No.
Countersink (shank MK3)	172880
Reamer (shank MK2)	1014207

PERFORMANCE

Measured at

$v = 34 \text{ mm}^2/\text{s}$

$T_{oil} = 46^\circ\text{C}$

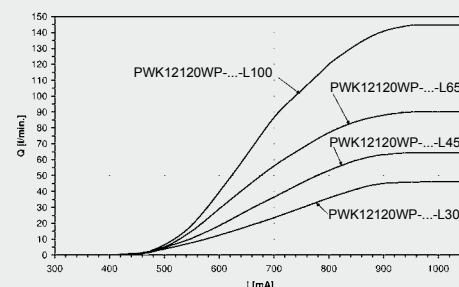
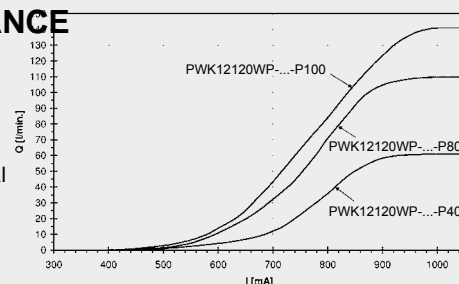
and 10 bar
pressure differential

Coil

24P-8.8,

Control current

PWM 160 Hz



NOTE

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For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

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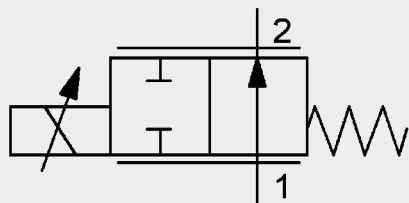
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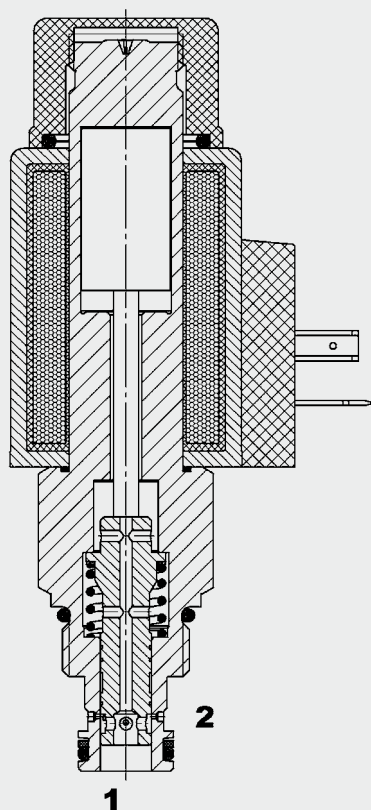
Fax: 0 68 97 /509-598

E-Mail: flutec@hydac.com



up to 10 l/min
up to 350 bar

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.

Proportional Flow Control Valve Spool Type, Direct-Acting, Normally Open Metric Cartridge – 350 bar PWK06020V

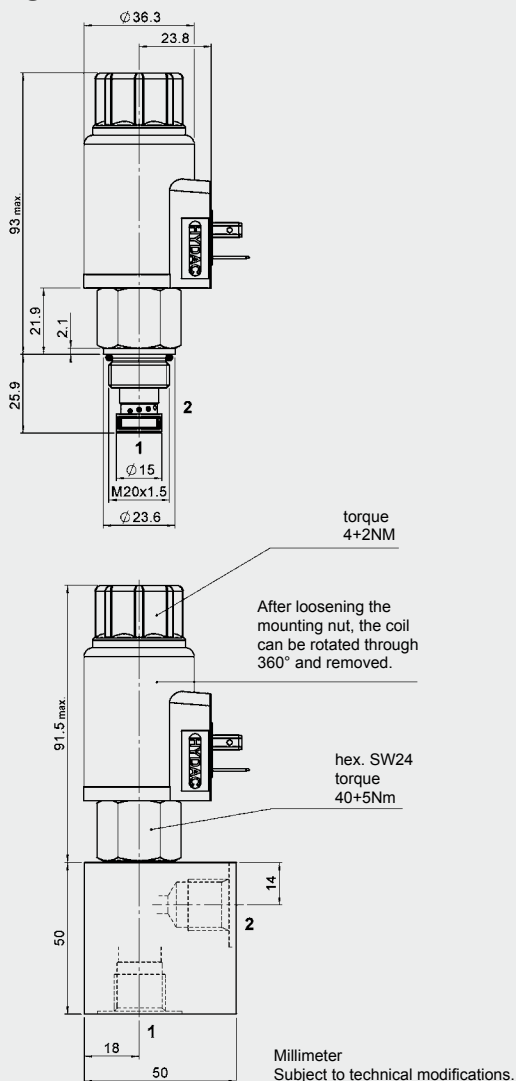
FEATURES

- 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

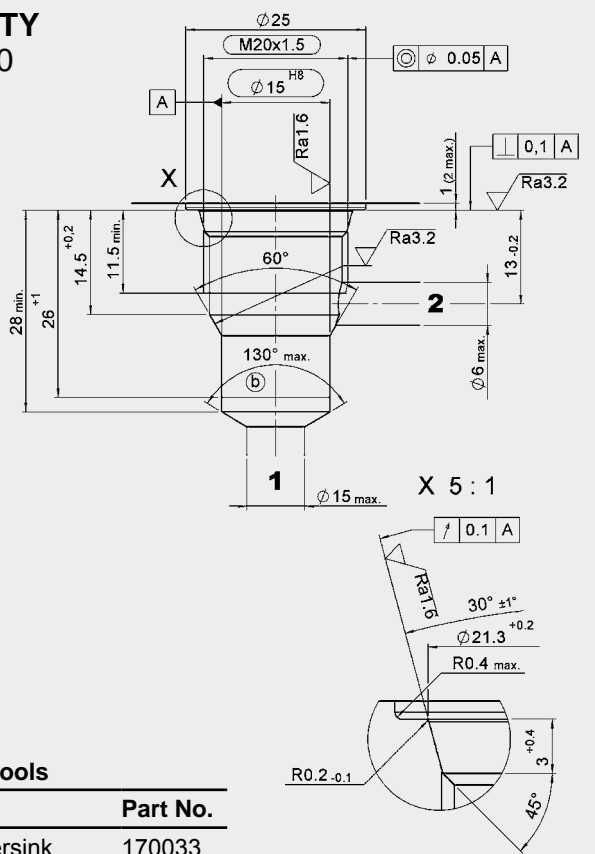
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 10 l/min
Internal leakage:	max. 0.9 l/min (at 350 bar / 32 mm ² /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 mm ² /s to max. 420 mm ² /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



CAVITY 06020



Form tools

Tool	Part No.
Countersink	170033
Reamer	1000768

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

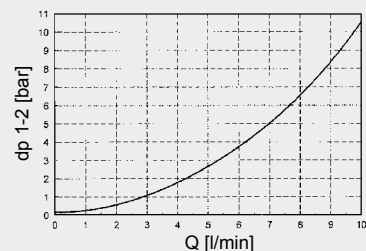
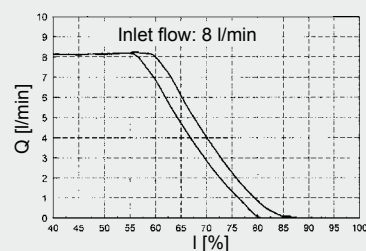
Seal kits

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

PERFORMANCE

$T_{oil} = 46^\circ C$
 $v = 33 \text{ mm}^2/s$

PWM = 80 Hz

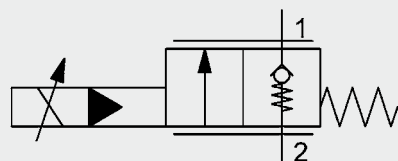


$T_{oil} = 46^\circ C$
 $v = 33 \text{ mm}^2/s$

NOTE

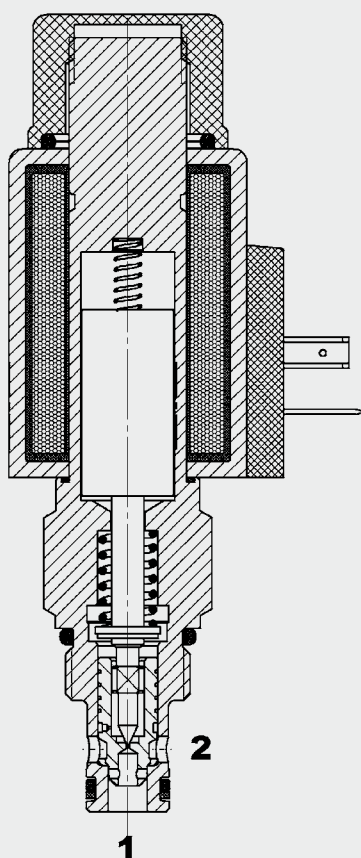
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55 l/min
350 bar

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.

Proportional Flow Controller Poppet Type, Pilot-Operated, Normally Closed SAE-08 Cartridge – 350 bar

PWS08Z-01

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

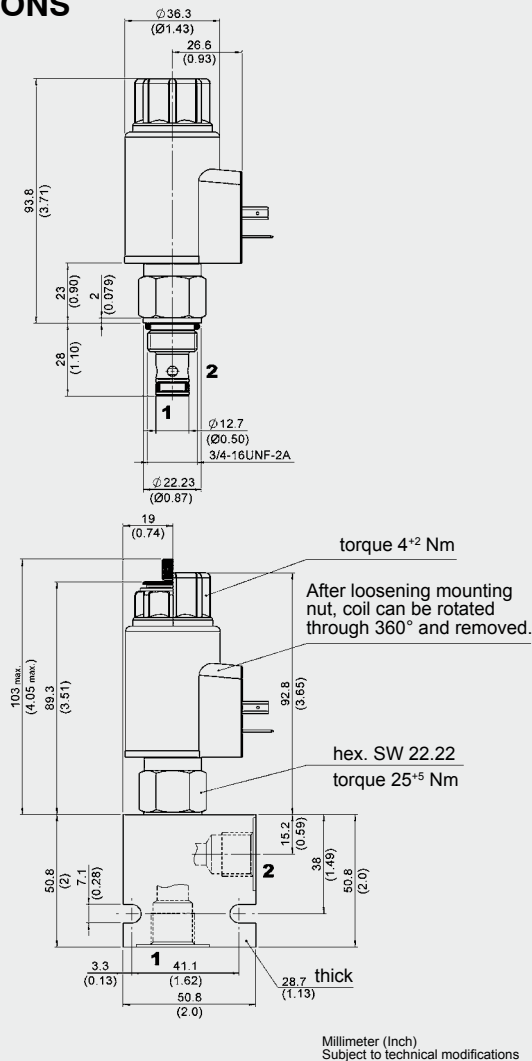
SPECIFICATIONS

Operating pressure:	max. 350 bar
Nominal flow:	max. 55 l/min
Internal leakage:	Leakage-free (max. 5 drops \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	\leq 1.5 % of I _{nom}
Reversal error:	\leq 2 % of I _{nom}
Response sensitivity:	\leq 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



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

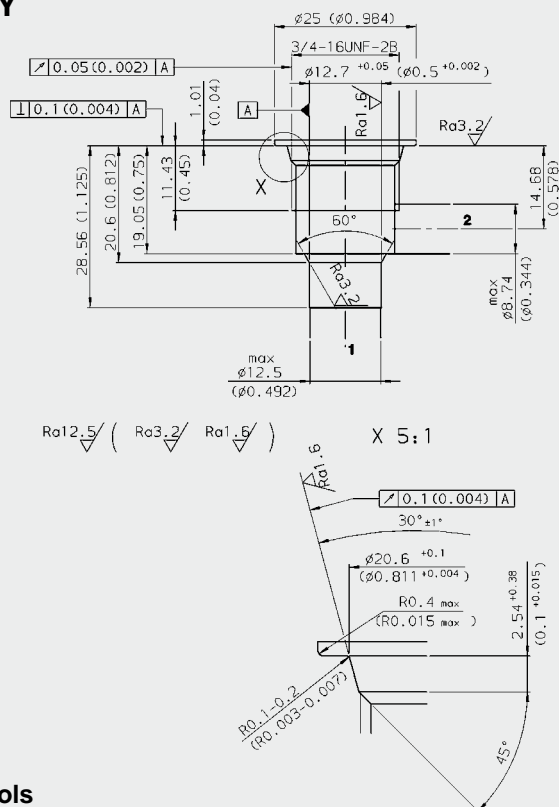
Other line bodies on request

Seal kits

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

CAVITY

FC08-2



Form tools

Tool	Part No.
Countersink	175473
Reamer	175474

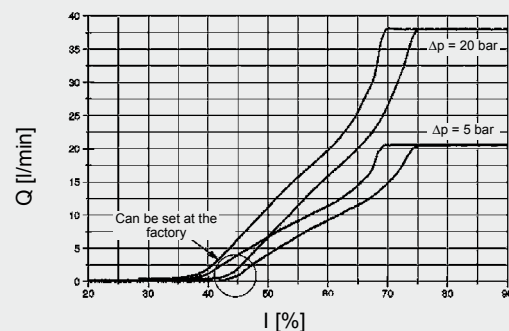
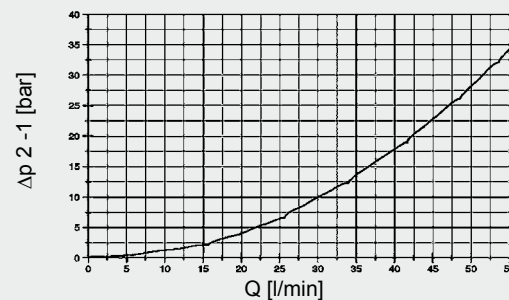
Millimeter (Inch)
Subject to technical modifications

PERFORMANCE

Measured at

$v = 34\text{ mm}^2/\text{s}$,

$T_{oil} = 46^\circ\text{C}$



NOTE

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Subject to technical modifications.

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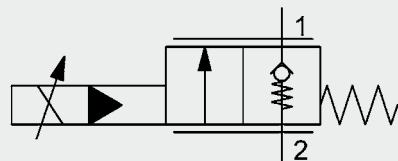
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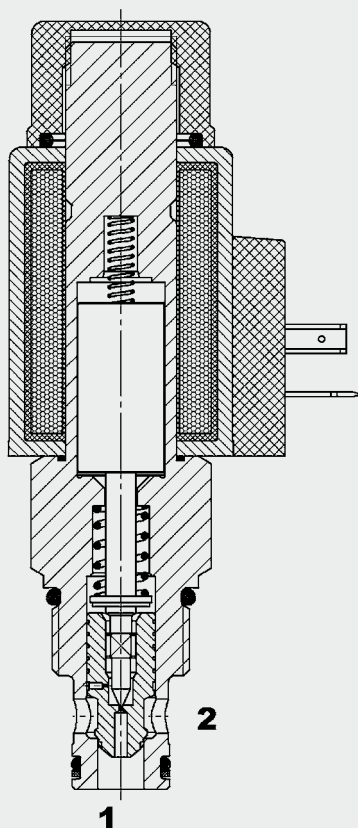
Fax: 0 68 97 /509-598

E-Mail: flutec@hydac.com



100 l/min
350 bar

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.

Proportional Flow Controller Poppet Type, Pilot-Operated, Normally Closed SAE-10 Cartridge – 350 bar

PWS10Z-11

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

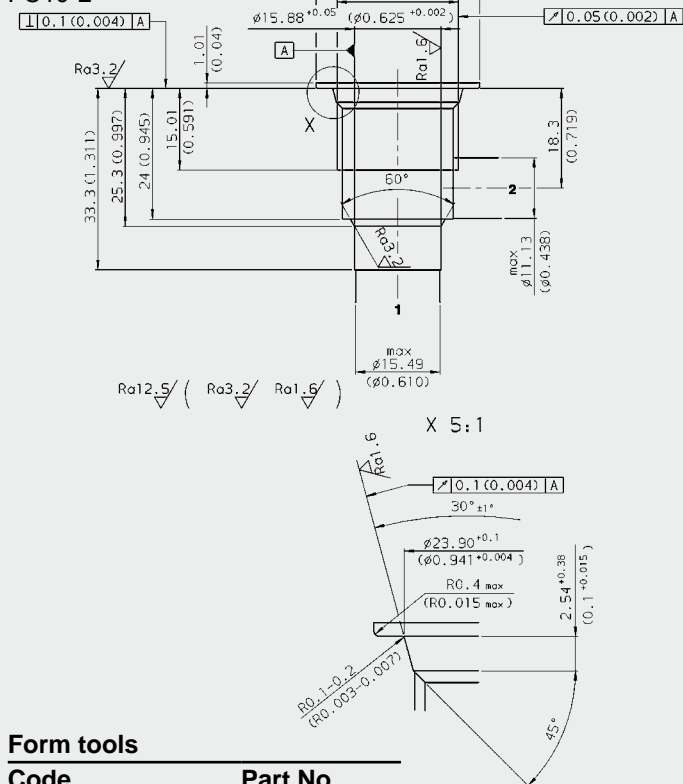
Operating pressure:	max. 350 bar
Nominal flow:	max. 100 l/min
Internal leakage:	leakage-free (max. 5 drops \approx 0,25 cm ³ /min at 350 bar)
Media operating temperature range:	min. -20 °C to max. +100 °C
Ambient temperature range:	min. -20 °C to max. +60 °C
Operating fluid:	Hydraulic oil to DIN 51524 Part 1 and 2
Viscosity range:	min. 10 mm ² /s to max. 420 mm ² /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:	\leq 1.5 % of I _{nom}
Reversal error:	\leq 2 % of I _{nom}
Response sensitivity:	\leq 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.

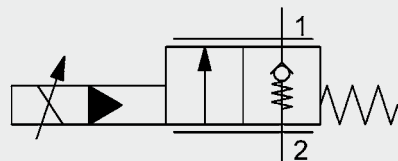
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FC10-2



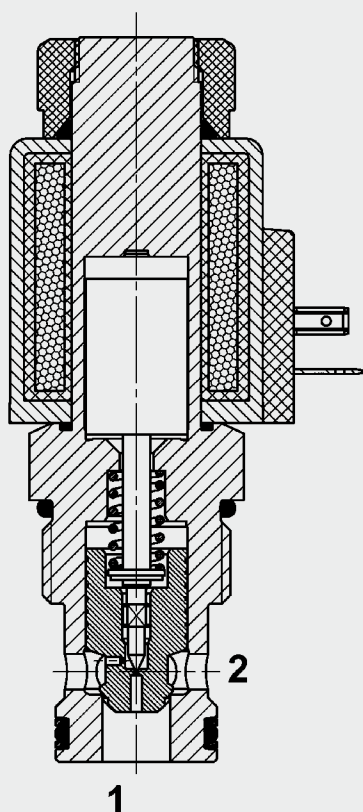
Code	Part No.
Countersink	176379
Reamer	165706

Millimeter (Inch)
Subject to technical modifications



200 l/min
350 bar

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.

Proportional Flow Controller Poppet Type, Pilot-Operated, Normally Closed SAE-16 Cartridge – 350 bar

PWS16Z-01

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 \approx 0,25 cm ³ /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 mm ² /s to max. 420 mm ² /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:	$\leq 2\%$ of I _{nom}
Reversal error:	$\leq 2\%$ of I _{nom}
Response sensitivity:	$\leq 1\%$ of I _{nom}
Type of coil:	Coil (12 or 24) P...-50-2345

Technical drawing of the SW38.1 coil assembly, showing front and side views with dimensions and annotations.

Front View Dimensions:

- Top flange outer diameter: $\varnothing 44.8$ ($\varnothing 1.76$)
- Top flange thickness: 28 (1.1)
- Coil body height: 82.2 (3.23)
- Coil body outer diameter: $\varnothing 28.6$ ($\varnothing 1.12$)
- Coil body length: 46.5 (1.83)
- Coil body inner diameter: $\varnothing 38.1$ ($\varnothing 1.5$)
- Coil body material: 1 5/16-12UN-2A
- Coil body part number: 2

Side View Dimensions:

- Coil body height: 81.7 (3.21)
- Coil body outer diameter: $\varnothing 28.6$ ($\varnothing 1.12$)
- Coil body length: 45 (1.77)
- Coil body inner diameter: $\varnothing 38.1$ ($\varnothing 1.5$)
- Coil body material: 1 5/16-12UN-2A
- Coil body part number: 2

Annotations:

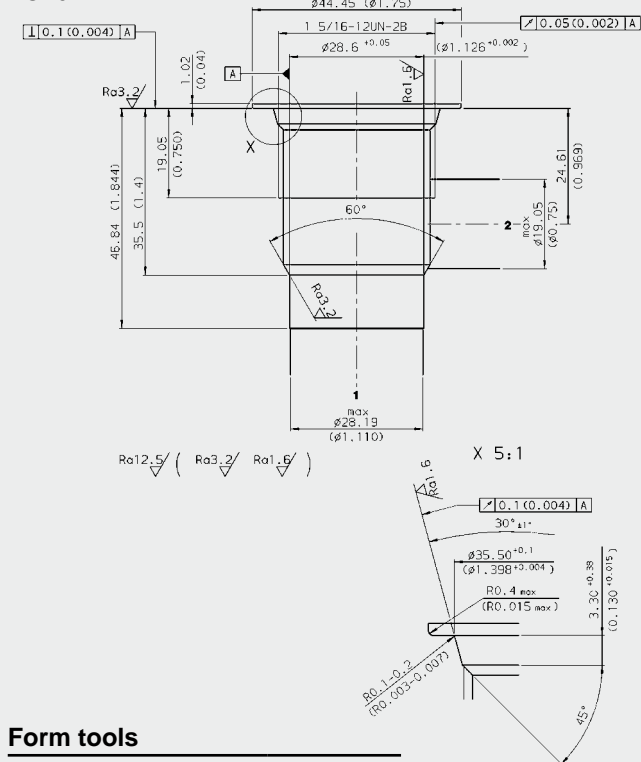
- torque 4^{+2} Nm
- After loosening mounting nut, coil can be rotated through 360° and removed.
- hex. SW38.1
- torque 140^{+30} Nm
- 50.8 (2) thick

Bottom View Dimensions:

- Coil body height: 76.5 (3.01)
- Coil body outer diameter: $\varnothing 28.6$ ($\varnothing 1.12$)
- Coil body length: 45 (1.77)
- Coil body inner diameter: $\varnothing 38.1$ ($\varnothing 1.5$)
- Coil body material: 1 5/16-12UN-2A
- Coil body part number: 2

Millimeter (Inch)
Subject to technical modifications

FC16-2



Tool	Part No.
Countersink	176218
Reamer	165219

Millimeter (Inch)
Subject to technical modifications

	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 mm ²					
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)					

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	

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

Code	Material	Part No.
FS162-N SEAL KIT	NBR	3052427
FS162-V SEAL KIT	FKM	3051758

Measured at $v = 34 \text{ mm}^2/\text{s}$
 $T_{\text{oil}} = 46^\circ\text{C}$

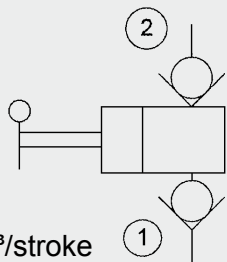
The top graph plots the pressure drop Δp_{2-1} [bar] on the y-axis (0 to 40) against the flow rate Q [l/min] on the x-axis (0 to 200). The curve shows a non-linear increase in pressure drop with flow rate.

The bottom graph plots the flow rate Q [l/min] on the y-axis (0 to 200) against the absolute pressure $|$ [%] on the x-axis (20 to 100). Two curves are shown for different pressure drops: $\Delta p = 20 \text{ bar}$ and $\Delta p = 5 \text{ bar}$. Both curves show a sharp increase in flow rate as pressure increases, reaching a plateau around 80% absolute pressure.

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.

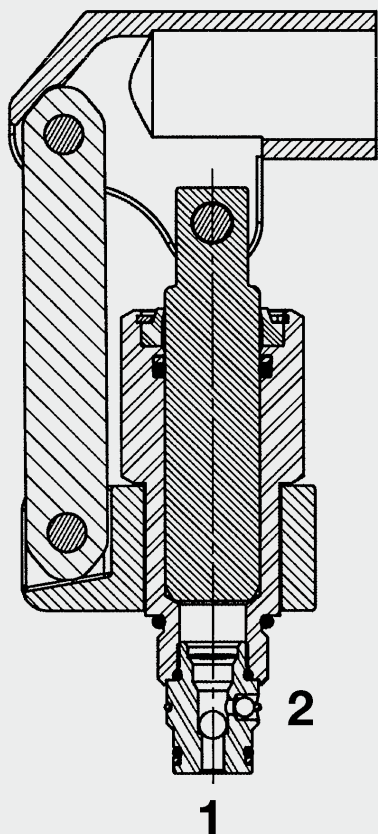
HYDAC Fluidtechnik GmbH
Justus-von-Liebig-Str.
D-66280 Sulzbach/Saar
Tel: 0 68 97 /509-01
Fax: 0 68 97 /509-598
E-Mail: flutec@hydac.com

Hand Pump Manual Operation SAE-10 Cartridge – 207 bar MP10



Up to 7.5 cm³/stroke
Up to 207 bar

FUNCTION



FEATURES

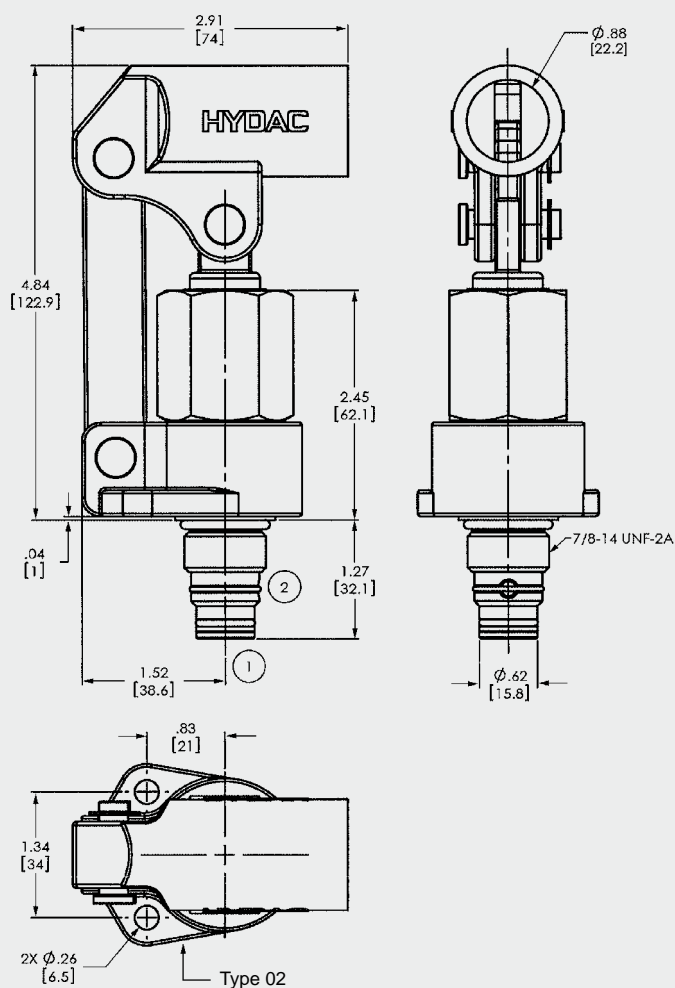
- Robust design for high loads
- Built-in check valves on inlet and outlet
- Handle can be turned through 360°
- Type 02 has fixing lugs to secure the lever assembly

SPECIFICATIONS

Operating pressure:	max. 207 bar
Nominal flow:	max. 7.5 cm ³ /stroke
Leakage:	Leakage-free (max. 0.35 cm ³ /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 mm ² /s to max. 420 mm ² /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

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.

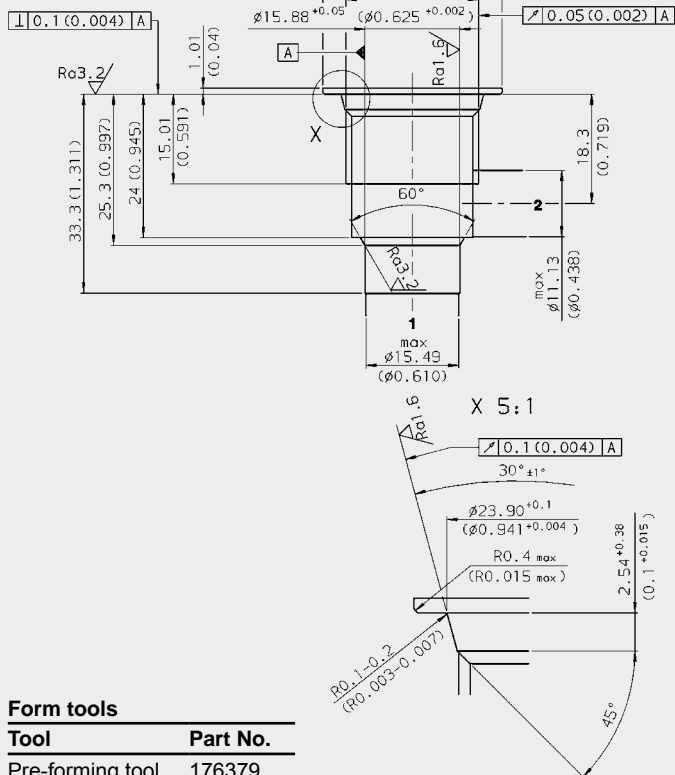
DIMENSIONS



inch [mm]
Subject to technical modifications.

CAVITY

FC10-2



mm (inch)
Subject to technical modifications.

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

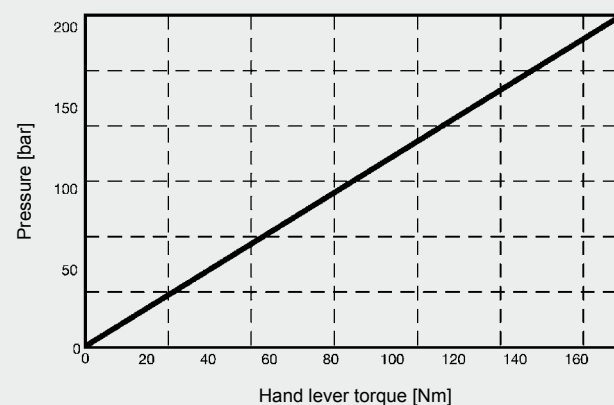
Code	Part No.	Material	Ports	Pressure
FH102-SB4	3037594	Steel, zinc-plated	1/2 BSP	420 bar
FH102-AB4	3037777	Aluminium, clear anodized	1/2 BSP	210 bar

Other line bodies on request

Seal kits

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

PERFORMANCE

$$T_{oil} = 46\text{ }^{\circ}\text{C}$$
$$\nu = 33 \text{ mm}^2/\text{s}$$


NOTE

NOTE
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Subject to technical modifications.

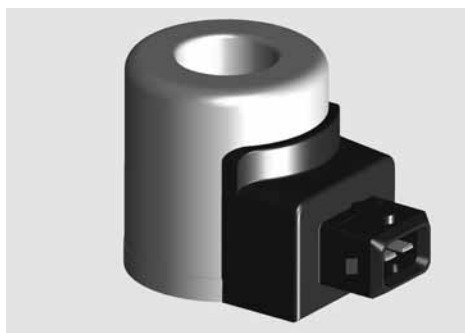
HYDAC Fluidtechnik GmbH

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



Solenoid Coils for Directional Valves (Solenoid Operated)

Types

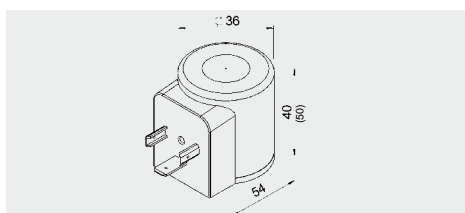
For the following
valves:

40-1836

WSM06020 Y, YR, Z, ZR, V, W ...
WSM10120 Y, YR, Z, ZR, W ...
WSM12120 Y, YR, Z, ZR, V, W ...
WS08 C, Y, YR, Z, ZR, V, W ...
WS10 Y, YR, Z, ZR, W ...
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 ...

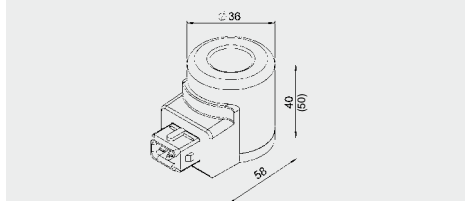
50-1836

WS10 W ...
WSM08130 C, D ...
WS08 C, D ...
WK10 A, C, D, K, L, N, P ...
WK10 R, V, W, X, Y, Z ...



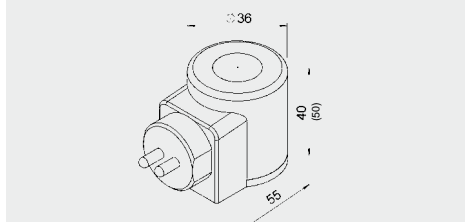
Connector type G

DIN connector to EN175-301-803



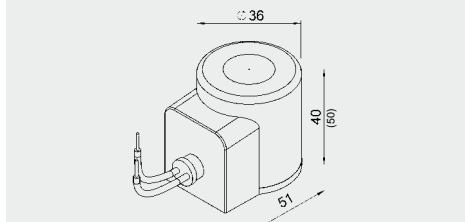
Connector type T

AMP Junior Timer, 2-pole



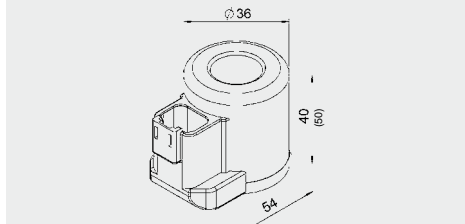
Connector type K

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 $+60^{\circ}\text{C}$
- **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 \varnothing , 36 mm external \varnothing)
Type 50-1836 = 50 mm high (18 mm internal \varnothing , 36 mm external \varnothing)

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:

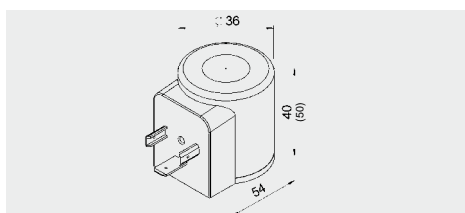
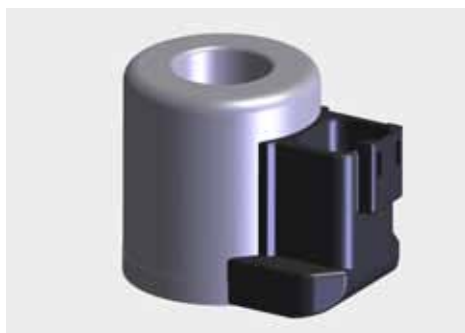
BASIC MODEL AND RELEVANT PART NUMBERS

Nominal voltage	Coil length	Coil power	Nominal resistance	Nom. current	Part numbers for type of connector				
					DIN	Junior Timer	Kostal	Lead-wires	Deutsch
[Volt]	[mm]	[Watt]	[Ohm]	[Amp.]	(G)	(T)	(K)	(L)	(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	—	—	—	—

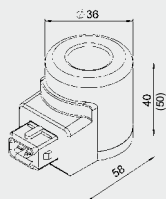
NOTE

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.

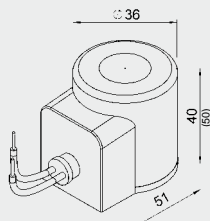
HYDAC Fluidtechnik GmbH
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E-Mail: flutec@hydac.com



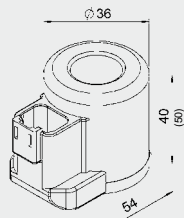
Connector type G
(DIN connector to EN175-301-803)



Connector type T
AMP Junior Timer, 2-pole



Connector type L
Lead-wires, 457 mm



Connector type N
Deutsch connector, 2-pole

Solenoid Coils for Proportional Valves (Solenoid Operated)

Types

For the following valves
(amongst others):

40-1836

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...

50-1836

PDR08-11(-20)(-50)...
PWKM06020 V (W)...
PWKM10120 V (W)...
PWKM12120 V (W)...
PDBM06020...
PWS08...
PWS10...

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 $+60^{\circ}\text{C}$
- **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 \varnothing , 36 mm external \varnothing)
Type 50-1836 = 50 mm high (18 mm internal \varnothing , 36 mm external \varnothing)

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 (G)	Junior timer (T)	Lead-wires (L)	Deutsch (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	3120939	3179980	3179990
				12PG-4.1-50-1836	12PT-4.1-50-1836	12PL-4.1-50-1836	12PN-4.1-50-1836
	24 V DC	17.6	0.85	3179953	3120938	3179985	3179991
				24PG-18-50-1836	24PT-18-50-1836	24PL-18-50-1836	24PN-18-50-1836

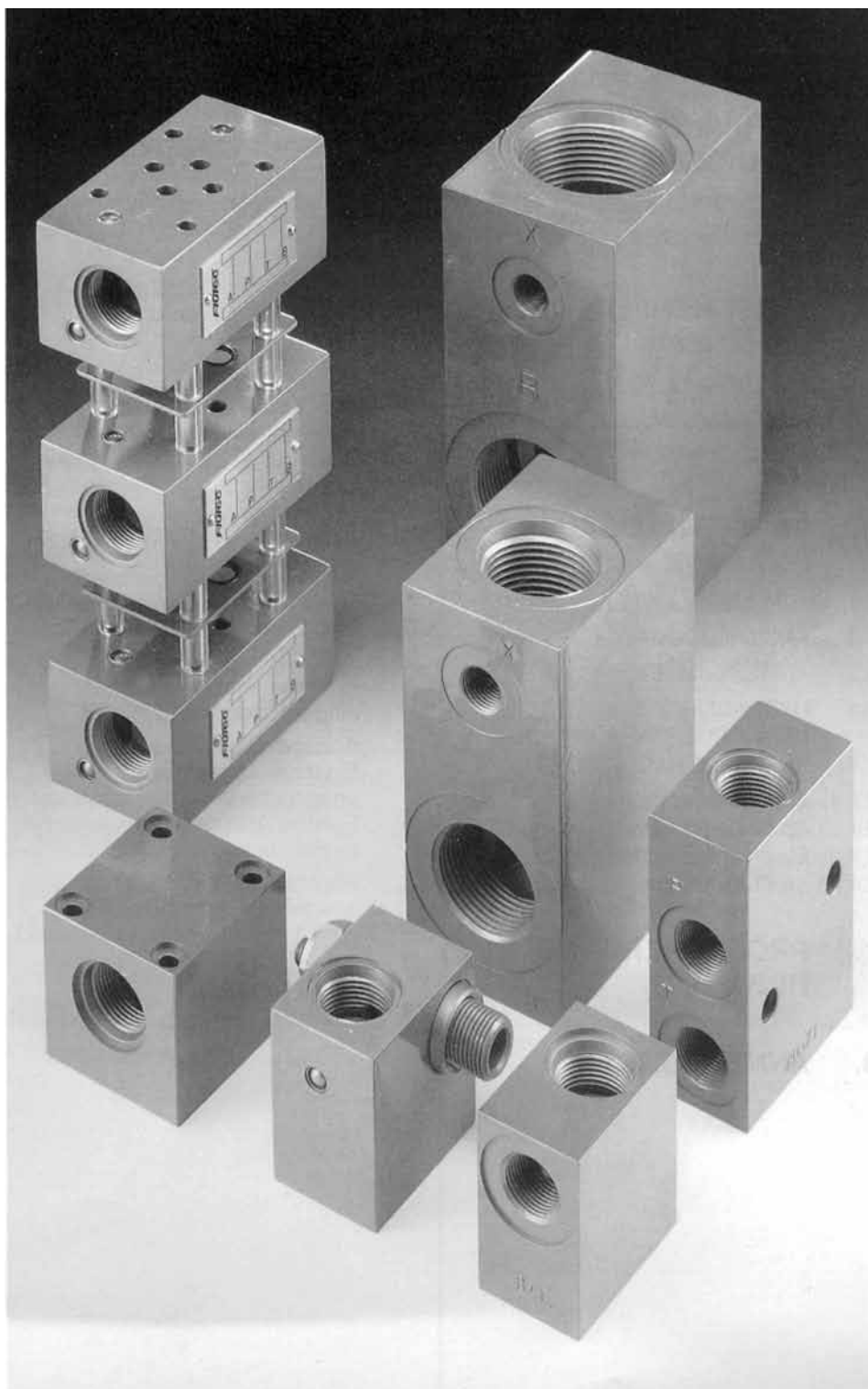
NOTE

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.

Standard Inline Bodies
Sandwich Bodies
Subplate Bodies

Connection Housings for Cartridge Valves



INDEX HOUSING BROCHURE

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- 1.2. RECOMMENDATIONS

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- 2.1.2 Type of mounting
- 2.1.3 **Installation**
- 2.1.4 **Weights**
- 2.1.5 **Materials**
- 2.1.6 **Surface treatment**

3. DIMENSIONS

- 3.1. GENERAL

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- 4.1. MODEL CODE
- 4.2. DIMENSIONS

5. STANDARD LINE BODIES UNF

- 5.1. MODEL CODE
- 5.2. DIMENSIONS

6. SANDWICH PLATE HOUSINGS

- 6.1. MODEL CODE
- 6.2. CONNECTION DIMENSIONS
- 6.3. DIMENSIONS

7. SUBPLATE BODIES

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- 7.2. CONNECTION DIMENSIONS
- 7.3. DIMENSIONS
- 7.4. HYDRAULIC DETAILS
SUBPLATE BODY
TYPE D
 - 7.4.1. **Orifice insert**
 - 7.4.1.1 Pressure drop curves
 - 7.4.2. **Check valve insert**
 - 7.4.2.1 Pressure drop curves

8. DESIGN RECOMMENDATIONS

9. NOTES

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

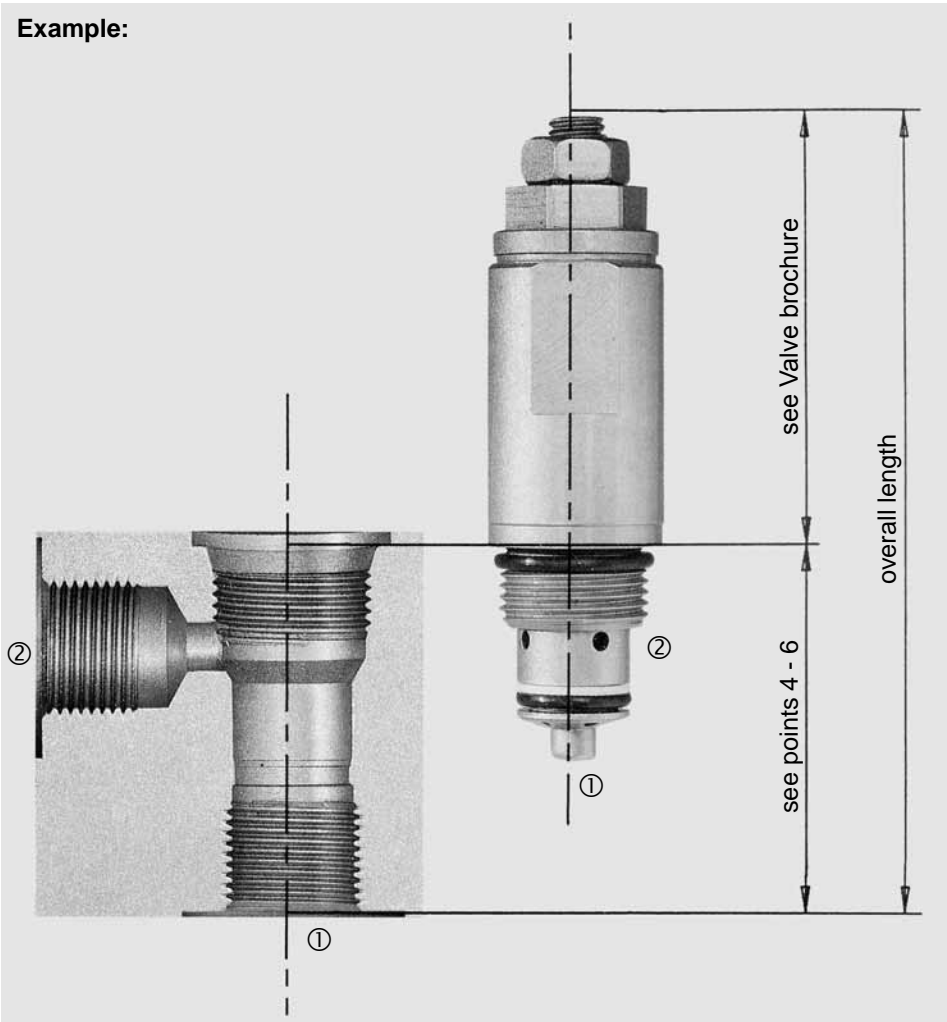
2.1.6 **Surface treatment**

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.



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

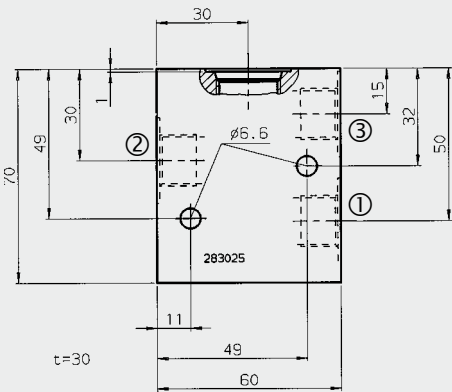
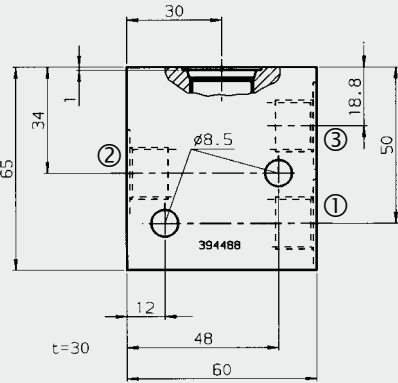
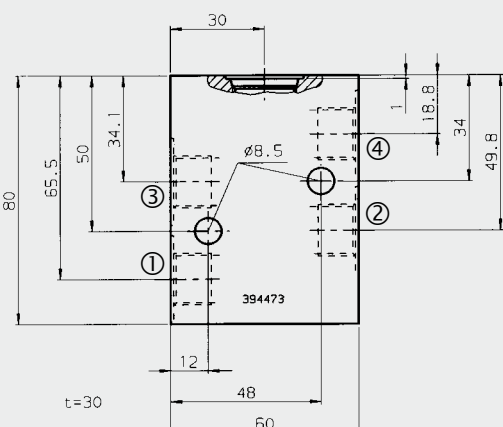
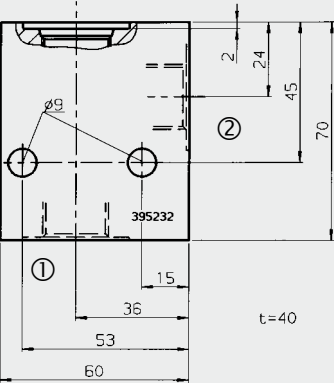
Type
(describes individual condition;
e. g. surface, dimensions,
functional properties ...)

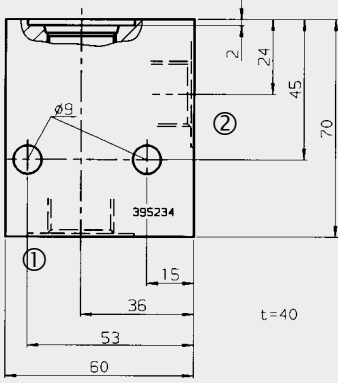
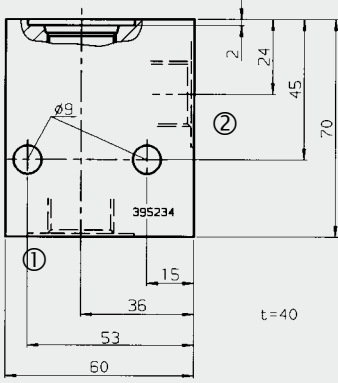
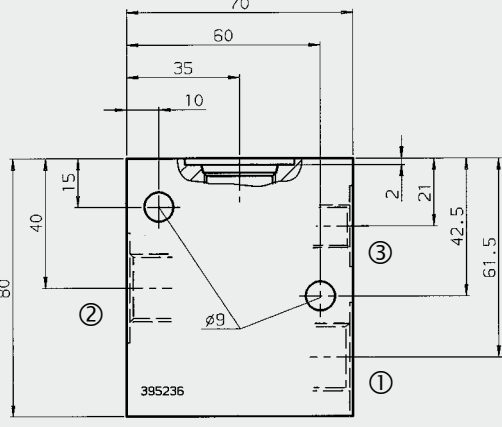
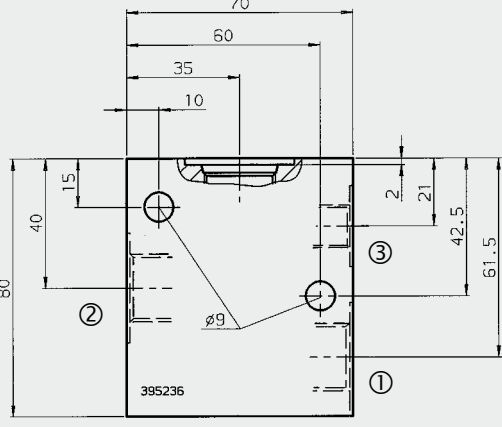
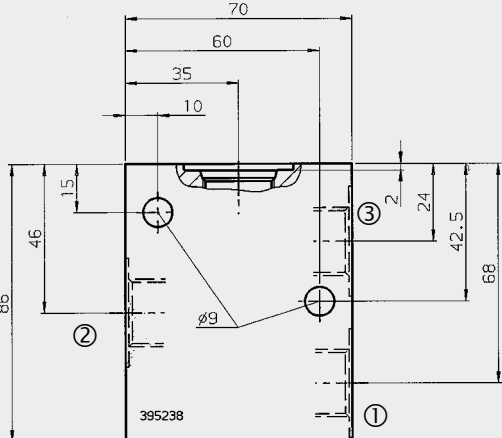
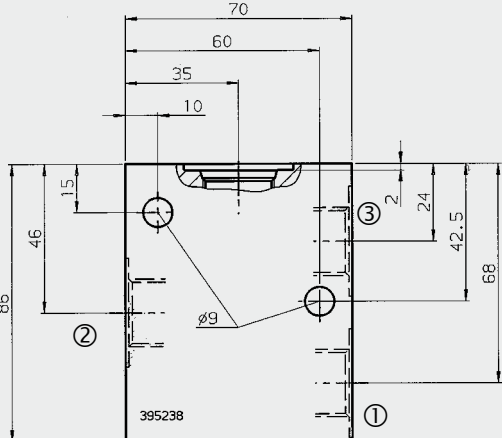
Series
(determined by manufacturer)

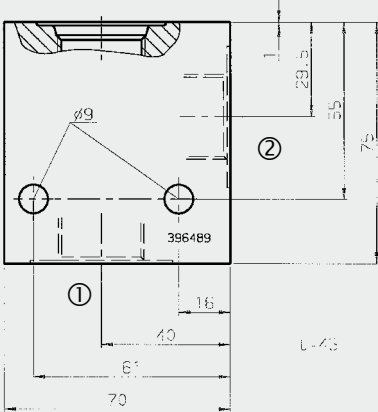
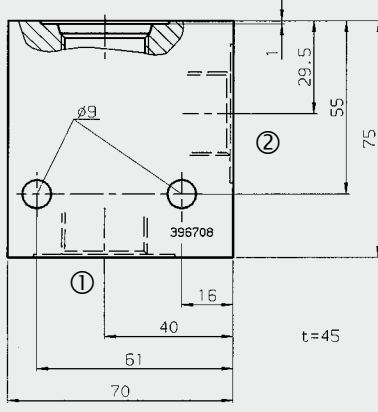
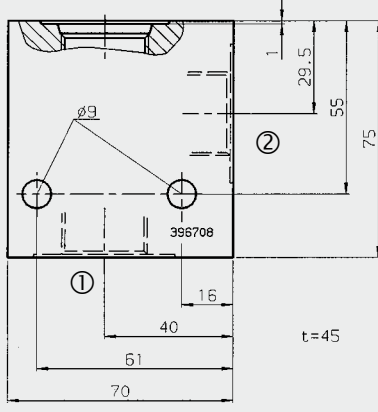
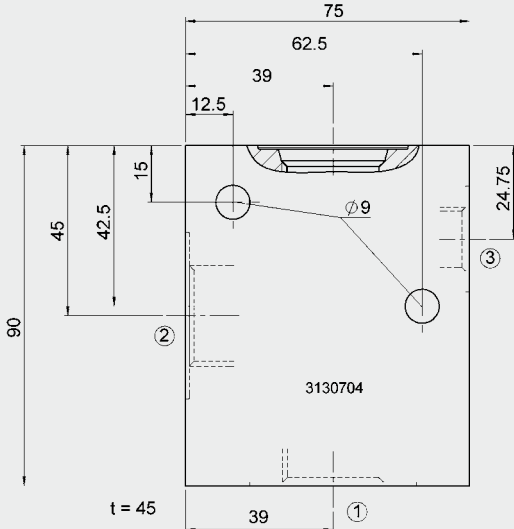
Housing connection thread
see point 4.2

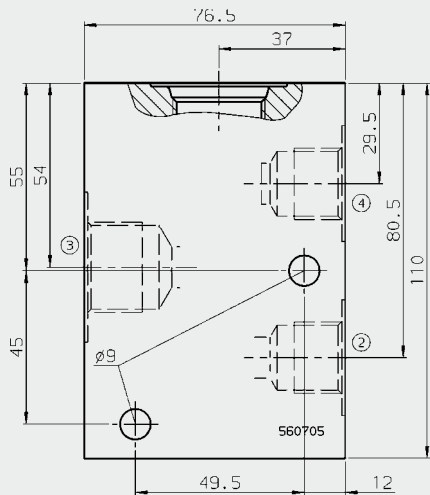
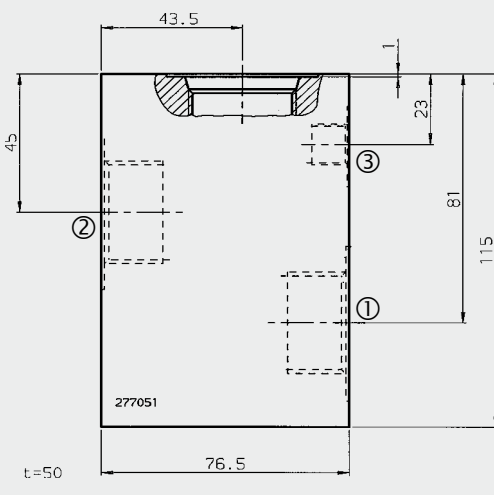
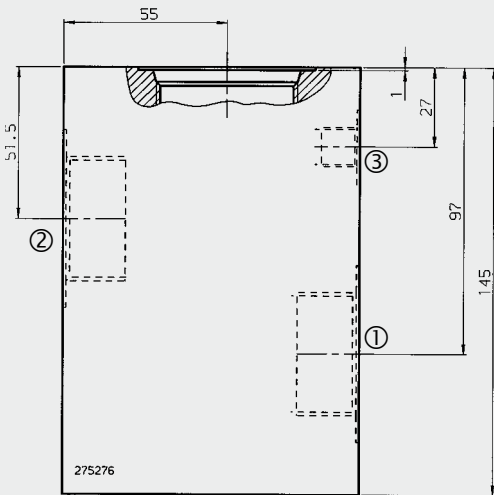
4.2. DIMENSIONS

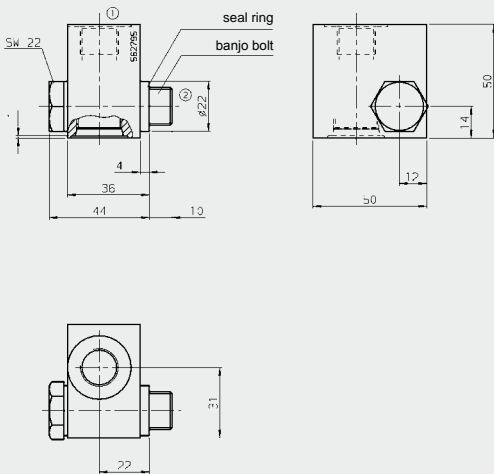
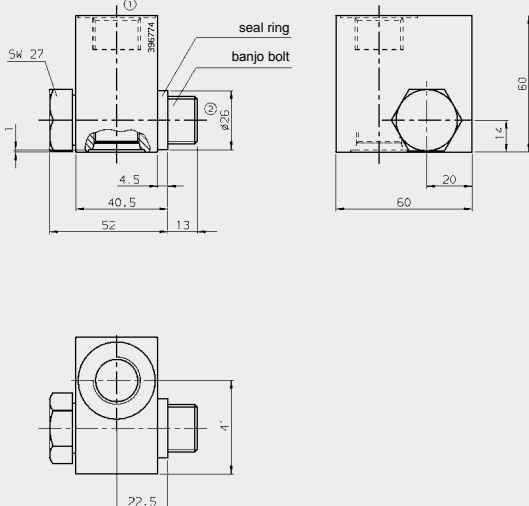
Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
277440	R03230-01X-01	① G 1/4 ② G 1/4 ③ G 1/4	<p>Weight: 0.67 kg</p>	WSE 3	5.203
275266	R06020-01X-01	① G 3/8 ② G 3/8	<p>Weight: 0.45 kg</p>	DB4E DSR5E DZ5E PDB 06020 DV5E SR5E RV5E	5.161 393400 5.166 5.164 5.113 5.117 5.175
276842	R06020-10X-01	① G 3/8 ② G 3/8	<p>Weight: 0.44 kg</p>	WSM06020Z WSM06020ZR WSM06020Y WSM06020YR WSM06020W WSM06020V	5.943 5.946 5.947 5.948 5.949 5.949
275033	R08021-01X-01 Plug Port 3 when using ERVM-G1/2	① G 3/8 ② G 3/8 ③ G 1/4	<p>Weight: 0.77 kg</p>	ERVE-R 1/2 SBVE-R 1/2 RPR08021-01 ERVM-G1/2	5.172 5.177 396487 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	<p>Weight: 0.76 kg</p>	ERVE-R 1/2 SBVE-R 1/2 RPR08021-01 ERVM-G1/2	5.172 5.177 396487 283843

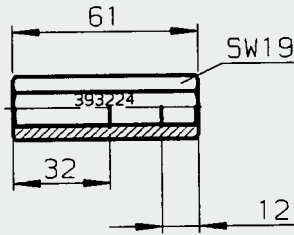
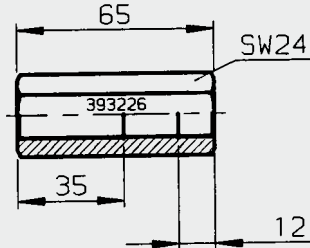
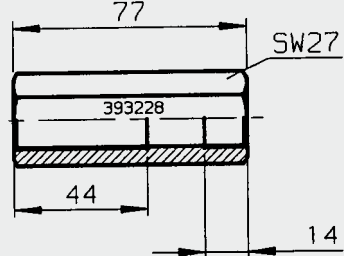
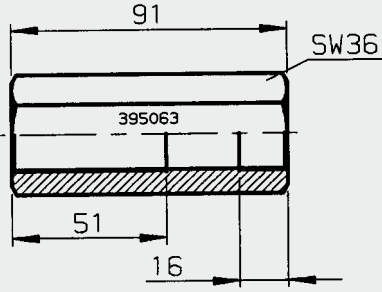
Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
283025	R08030-01X-01	① G 3/8 ② G 3/8 ③ G 3/8	 <p>Weight: 0.74 kg</p>	DMVE-G 1/2	5.162
394488	R08130-01X-01	① G 3/8 ② G 3/8 ③ G 3/8	 <p>Weight: 0.70 kg</p>	PDM08130 WSEC08130 WSED08130 WKM08130C WKM08130D WKM08130L WSM08130D	5.168 5.935 5.934 5.976 5.977
394378	R08130-01X-02	① M 14x1.5 ② M 14x1.5 ③ M 14x1.5			
394473	R08140-01X-01	① G 3/8 ② G 3/8 ③ G 3/8 ④ G 3/8	 <p>Weight: 0.86 kg</p>	WKM08140Y WKM08140X WKM08140A WKM08140Z WKM08140K WKM08140P WKM08140EB	5.942 5.985
393535	R08140-01X-02	① M 14x1.5 ② M 14x1.5 ③ M 14x1.5 ④ M 14x1.5			5.981
395232	R10120A-01X-01	① G 1/2 ② G 1/2	 <p>Weight: 1.04 kg</p>	DB10120A DB10-13X PDBM10120AP	5.167 3122049 5.978
395233	R10120A-01X-02	① M 22x1.5 ② M 22x1.5			

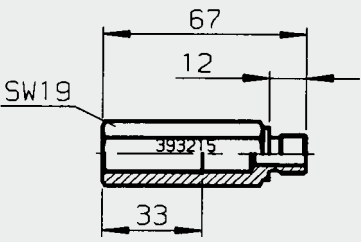
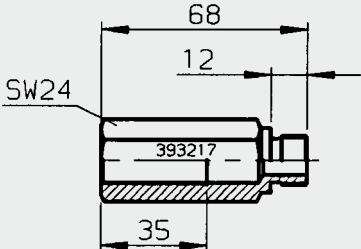
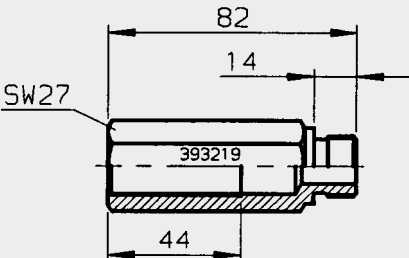
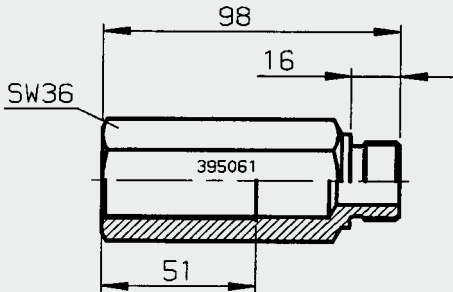
Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
395234	R10120-01X-01	① G 1/2 ② G 1/2		RV10120	5.179
				SD10120	5.114
				WSE10120	5.206
				RVM10120	
395235	R10120-01X-02	① M 22x1.5 ② M 22x1.5			
			Weight: 1.04 kg		
395236	R10121-01X-01	① G 1/2 ② G 1/2 ③ G 1/4		RP 10121	284115
				RPL 10121	395294
395237	R10121-01X-02	① M 22x1.5 ② M 22x1.5 ③ M 14x1.5			
			Weight: 1.45 kg		
395238	R10130-01X-01	① G 1/2 ② G 1/2 ③ G 1/2		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			
			Weight: 1.48 kg		

Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
396489	R12120A-01X-01	① G $\frac{3}{4}$ ② G $\frac{3}{4}$	 <p>Weight: 1.40 kg</p>	DB 12120 A	5.169
396708	R12120-10X-01	① G $\frac{3}{4}$ ② G $\frac{3}{4}$	 <p>Weight: 1.39 kg</p>	WSM12120	396324
396707	R12120-10X-02	① M 27x2 ② M 27x2	 <p>Weight: 1.39 kg</p>		
3130704	R12121-01X-01	① G $\frac{3}{4}$ ② G $\frac{3}{4}$ ③ G $\frac{3}{8}$	 <p>Weight: 1.89 kg</p>	DB12121PE	5.996
				DB12121PF	5.997
				PDB12121PE	
				PDB12121PF	

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	 <p>t=45</p> <p>Weight: 2.40 kg</p>	ST12230	560637
277051	R16021-01X-01	① G 1 ② G 1 ③ G 1/4	 <p>t=50</p> <p>Weight: 2.52 kg</p>	ERVE16021	5.172
				SBVE-R1	5.177
275276	R20021-01X-01	① G 1 1/4 ② G 1 1/4 ③ G 1/4	 <p>t=60</p> <p>Weight: 4.60 kg</p>	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	 <p>Weight: 0.56 kg</p>	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	 <p>Weight: 0.92 kg</p>	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		SRE 1	5.118
				RBE-R 1/4	5.174
	on request	M 14x1.5	Weight: 0.09 kg		
393226	XX08520-01X	G 3/8		SRE 2	5.118
				RBE-R 3/8	5.174
	on request	M 18x1.5	Weight: 0.15 kg		
393228	XX10520-01X	G 1/2		SRE 3	5.118
				RBE-R 1/2	5.174
	on request	M 22x1.5	Weight: 0.19 kg		
395063	XX12520-01X	G 3/4		SRE 4	5.118
				RBE-R 3/4	5.174
	on request	M 27x2	Weight: 0.44 kg		

Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
393215	XB05520-01X	G 1/4	 <p>Weight: 0.09 kg</p>		
393217	XB08520-01X	G 3/8		SRE 1	5.118
				RBE-R 1/4	5.174
on request	M 14x1.5		 <p>Weight: 0.14 kg</p>		
393219	XB10520-01X	G 1/2		SRE 2	5.118
				RBE-R 3/8	5.174
on request	M 18x1.5		 <p>Weight: 0.20 kg</p>		
395061	XB12520-01X	G 3/4		SRE 3	5.118
				RBE-R 1/2	5.174
on request	M 22x1.5		 <p>Weight: 0.43 kg</p>		
on request	M 27x2			SRE 4	5.118
				RBE-R 3/4	5.174

5. STANDARD INLINE BODY
UNF

5.1. MODEL CODE

FH082-S-S6

Standard inline body

Cartridge valve cavity
see valve brochure

Housing material
S = free-cutting steel
A = aluminium

Housing connection thread

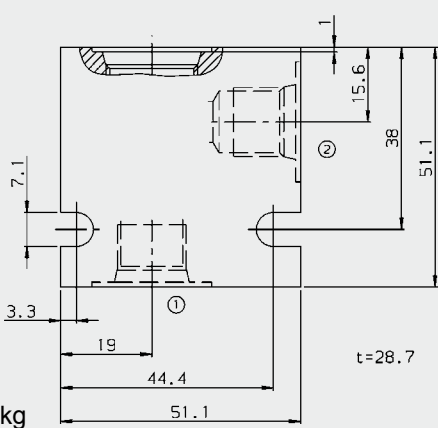
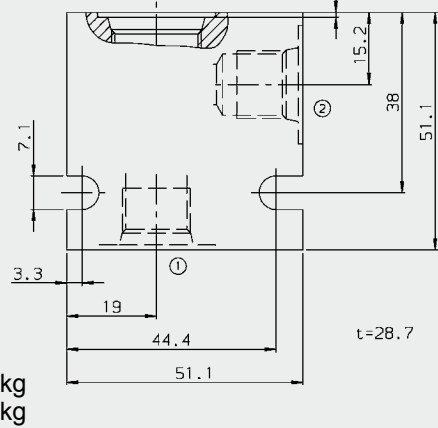
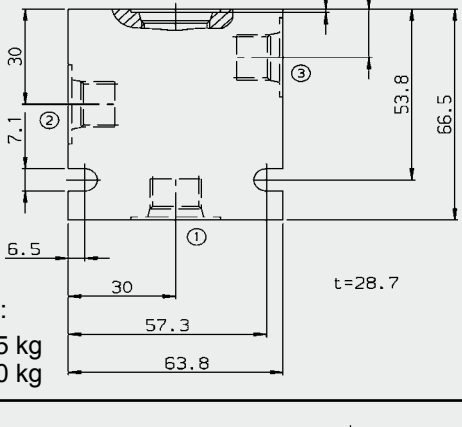
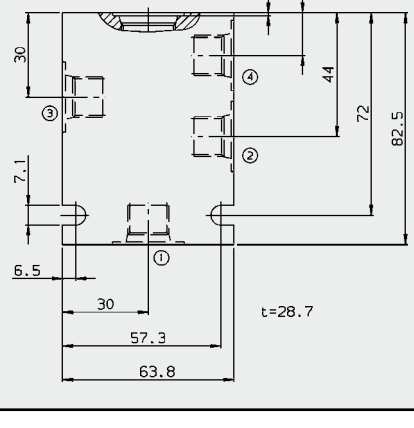
S6 = SAE 6
S8 = SAE 8
S12 = SAE 12
S16 = SAE16

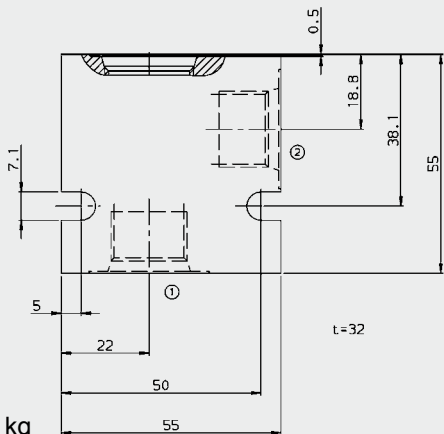
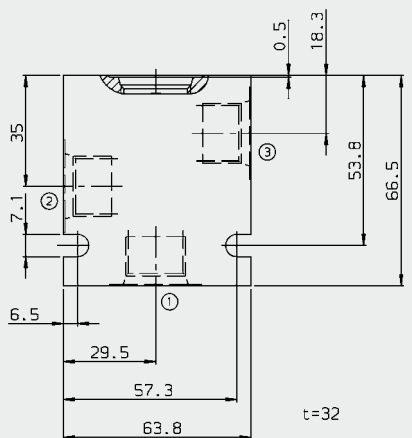
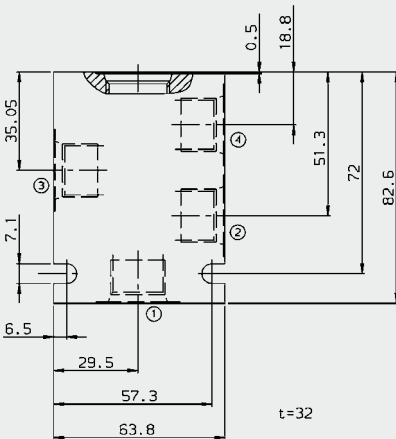
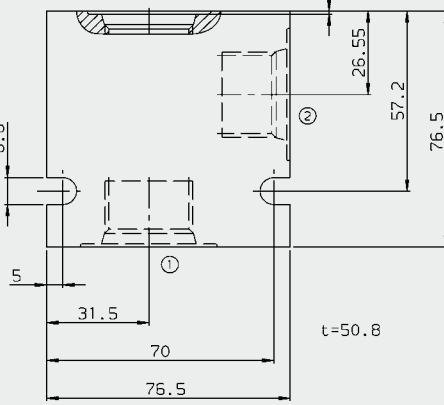
N3 = 3/8" NPTF
N4 = 1/2" NPTF
N8 = 1" NPTF

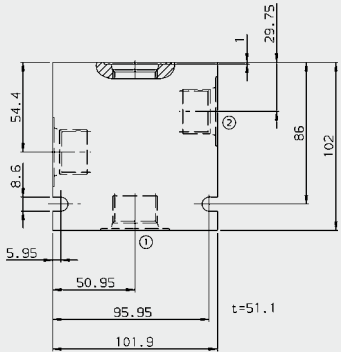
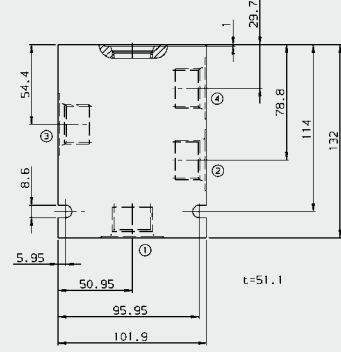
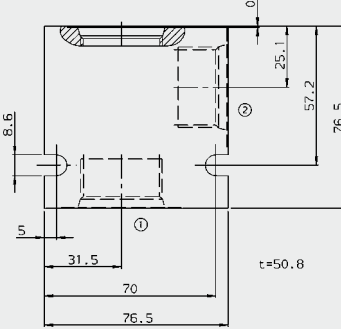
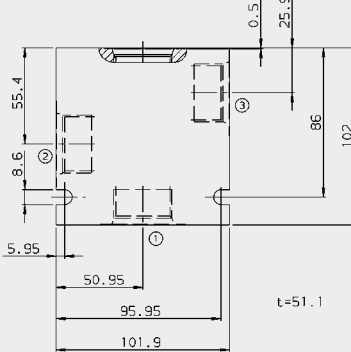
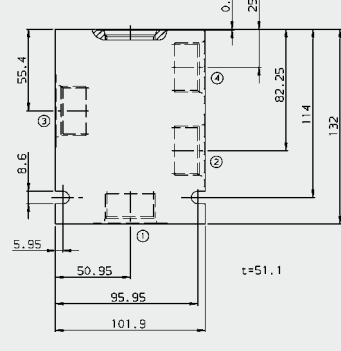
B3 = 3/8" BSP
B4 = 1/2" BSP
B6 = 3/4" BSP
B8 = 1" BSP

Others on request

5.2. DIMENSIONS

Part No.	Model Code	Thread Size	Dimensions	Cartridge valve	
				Type	Brochure / Data Sheet No.
3067477	FH0812-AB3	① 3/8"BSP	 <p>Weight: Al: 0.15 kg St: 0.42 kg</p>	WKM081W-01	5.956
3067468	FH0812-SB3	② 3/8"BSP		WS081Z-01	5.980
3067619	FH0812-AN3	① 3/8"NPTF		WS081ZR-01	5.979
3067472	FH0812-SN3	② 3/8"NPTF		WS081Y-01	5.987
3067518	FH0812-AS6	① SAE6		WS081YR-01	5.986
3076471	FH0812-SS6	② SAE6			
3011423	FH082-AB3	① 3/8"BSP	 <p>Weight: Al: 0.15 kg St: 0.42 kg</p>	WS08ZR-01J	5.984
560919	FH082-SB3	② 3/8"BSP		DB08A	5.922
3011411	FH082-AN3	① 3/8"NPTF		DB08P	5.922.1
560918	FH082-SN3	② 3/8"NPTF		RV08A	5.912
3011409	FH082-AS6	① SAE6		SD08-01	5.928
560917	FH082-SS6	② SAE6		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	 <p>Weight: Al: 0.25 kg St: 0.70 kg</p>	DR08-01	5.920
560922	FH083-SB3	② 3/8"BSP		RP08A	5.923
3011425	FH083-AN3	③ 3/8"BSP		RS08-01	5.933
560921	FH083-SN3	① 3/8"NPTF		SRP08-01	5.929
3011424	FH083-AS6	② 3/8"NPTF		WK08L-01	5.913
560920	FH083-SS6	③ 3/8"NPTF		WK08C-01	5.906
3116230	FH083-SM14F	③ 3/8"NPTF		WK08D-01	5.915
		① M14x1.5		WS08D-01	
		② M14x1.5		DR08P-01	5.920.1
		③ M14x1.5		PDR08P-01	5.990.1
				PDR08-01	
				PDR08-10	
				PDR08-20	
3011407	FH084-AB3	① 3/8"BSP	 <p>Weight: Al: 0.31 kg St: 0.86 kg</p>	WK08Y-01	5.905
563383	FH084-SB3	② 3/8"BSP		WK08X-01	5.919
3011406	FH084-AN3	③ 3/8"BSP		WK08A-01	5.910
563382	FH084-SN3	④ 3/8"BSP		WK08Z-01	5.916
3011404	FH084-AS6	① 3/8"NPTF		WK08K-01	5.904
563381	FH084-SS6	② 3/8"NPTF		WK08P-01	5.909
		③ 3/8"NPTF			
		④ 3/8"NPTF			
		① SAE6			
		② SAE6			
		③ SAE6			
		④ SAE6			

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	 <p>Weight: Al: 0.20 kg St: 0.54 kg</p>	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	 <p>Weight: Al: 0.26 kg St: 0.72 kg</p>	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	 <p>Weight: Al: 0.32 kg St: 0.88 kg</p>	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	 <p>Weight: Al: St:</p>	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	 <p>Weight: Al: St:</p>		
3053908	FH123-SB6	② 3/4"BSP			
3053897	FH123-AS12	③ 3/4"BSP			
3053909	FH123-SS12	④ 3/4"BSP			
3054099	FH124-AB6	① 3/4"BSP	 <p>Weight: Al: St:</p>		
3054097	FH124-SB6	② 3/4"BSP			
3054208	FH124-AS12	③ 3/4"BSP			
3054206	FH124-SS12	④ 3/4"BSP			
3037193	FH162-AB8	① 1"BSP	 <p>Weight: Al: 0.56 kg St: 1.55 kg</p>	RV16A-01	5.951
3032496	FH162-SB8	② 1"BSP		WS16Z-01	5.945
3037207	FH162-AN8	① 1"NPTF		WS16ZR-01	5.841
3032660	FH162-SN8	② 1"NPTF		WS16Y-01	5.840
3037195	FH162-AS16	① SAE16		WS16YR-01	5.844
3032655	FH162-SS16	② SAE16		DB16P-01	5.822.3
				PDB16P-01	5.991.3
3037208	FH163-AB8	① 1BSP	 <p>Weight: Al: 1.10 kg St: 3.05 kg</p>	RP16A-01	5.931
3036257	FH163-SB8	② 1BSP			
3037212	FH163-AN8	③ 1BSP			
3036312	FH163-SN8	① 1NPTF			
3037210	FH163-AS16	② 1NPTF			
3036285	FH163-SS16	③ 1NPTF			
3037213	FH164-AB8	① 1"BSP	 <p>Weight: Al: 1.43 kg St: 3.95 kg</p>	ST16-01	
3032902	FH164-SB8	② 1"BSP			
3037216	FH164-AN8	③ 1"BSP			
3035700	FH164-SN8	④ 1"BSP			
3037214	FH164-AS16	① 1"NPTF			
3036672	FH164-SS16	② 1"NPTF			

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

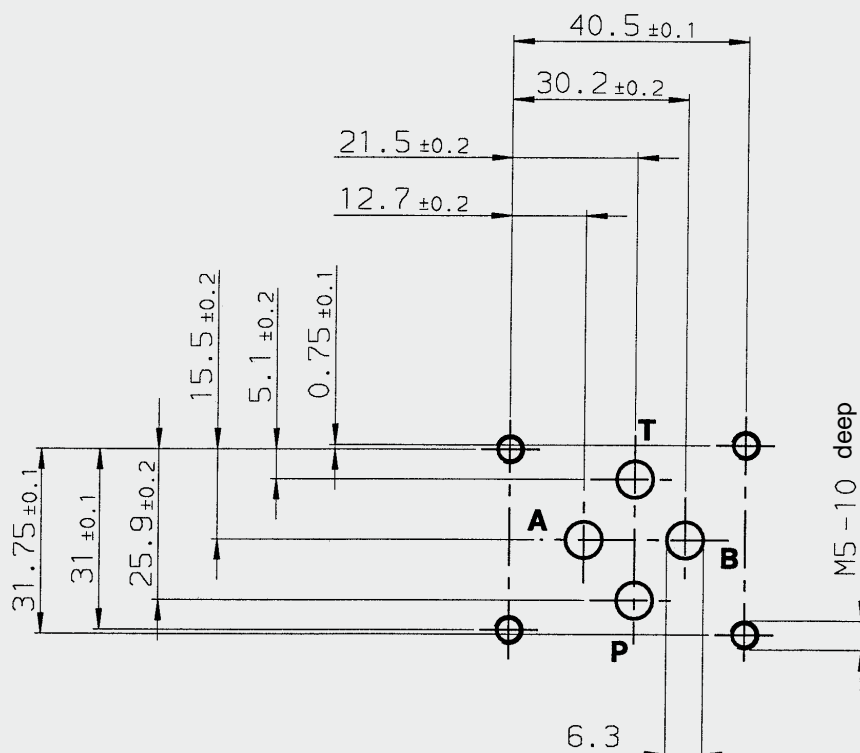
Cartridge valve cavity _____
see valve brochure

Type _____
(describes individual condition;
e. g. surface, dimensions,
functional properties ...)

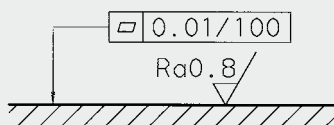
Series _____
(determined by manufacturer)

6.2. CONNECTION DIMENSIONS

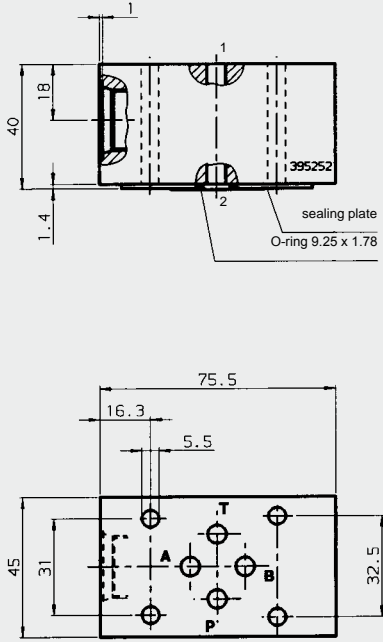
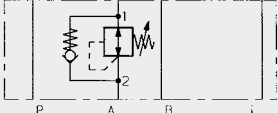
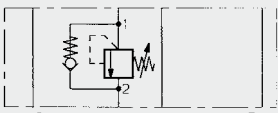

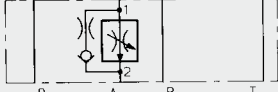
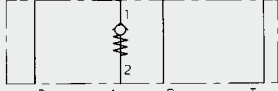
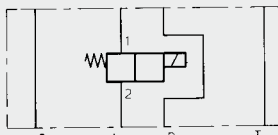
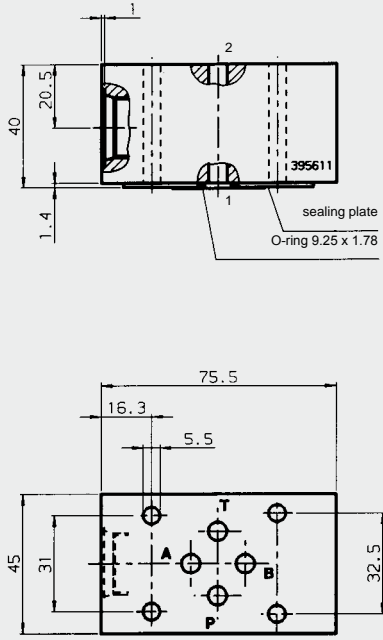
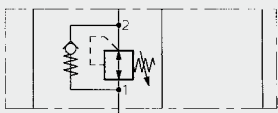
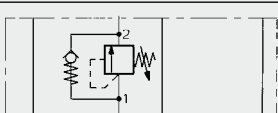
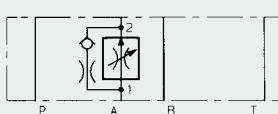
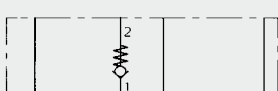
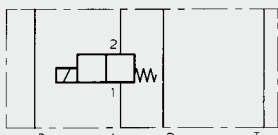
Interface A6 DIN 24340 and CETOP R 35 H-4.2-4-03
Installation height to CETOP RP 99H-4-03
(view onto connection plate)

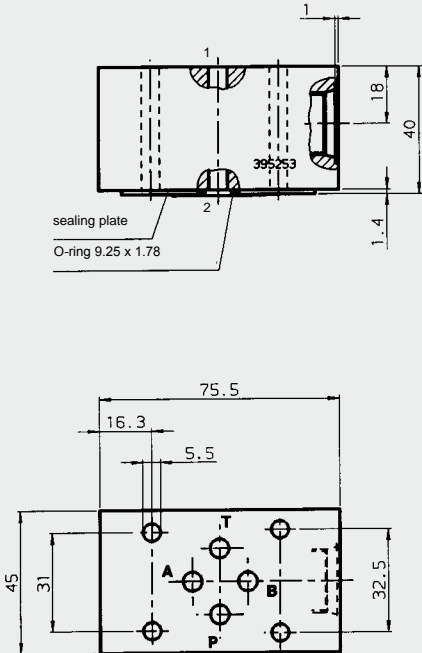
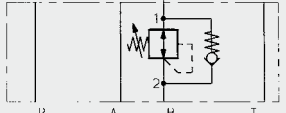
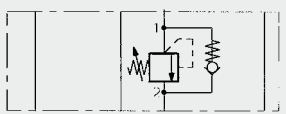

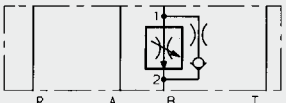
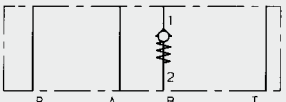
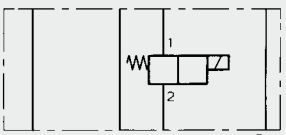
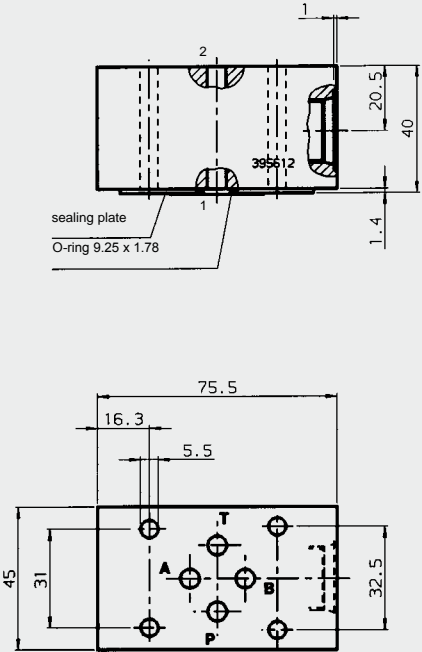
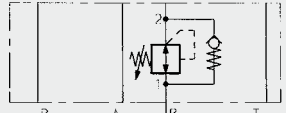
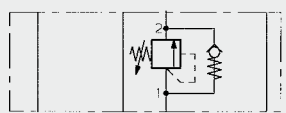
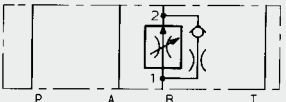
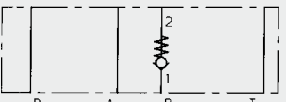
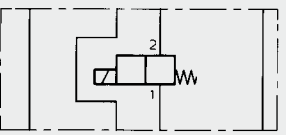


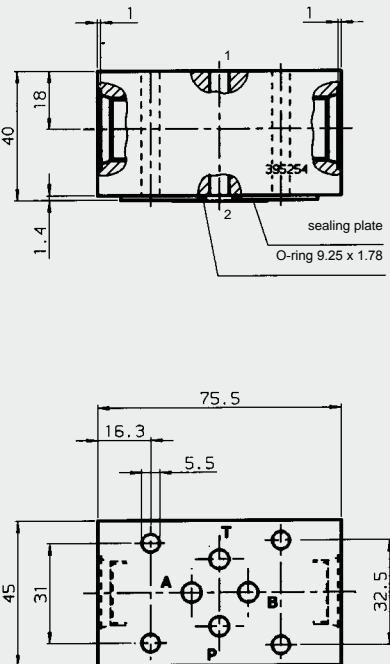
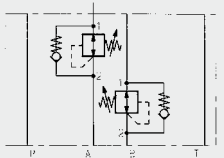
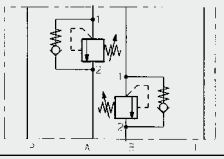
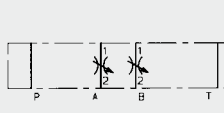
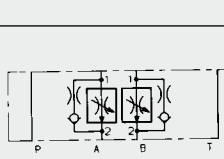
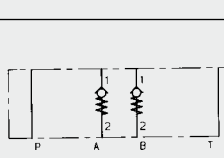
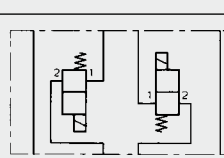
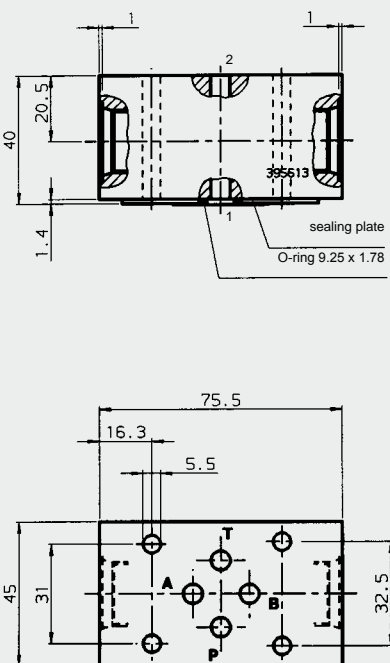
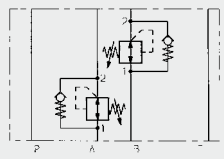
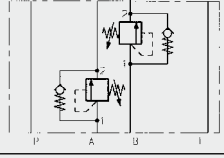
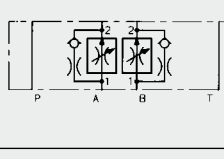
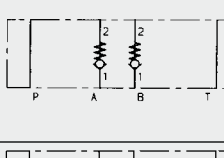
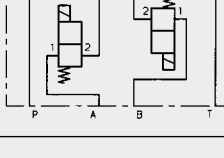
required surface finish
of mounting plate

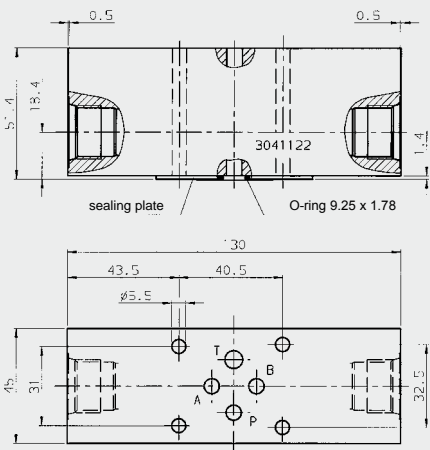
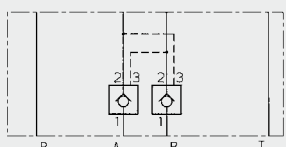
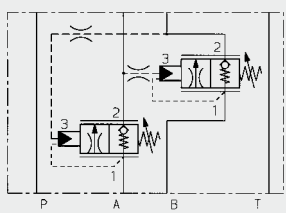
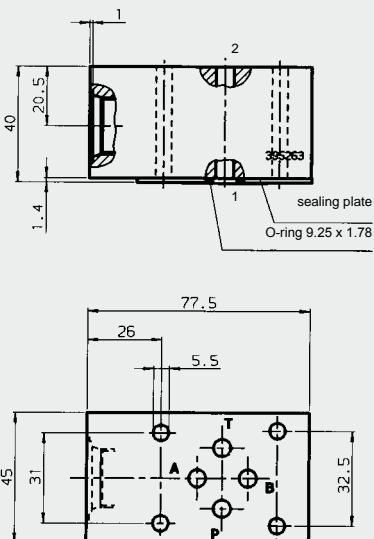
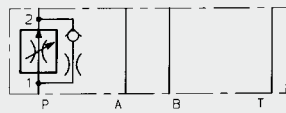
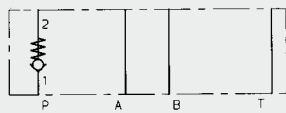
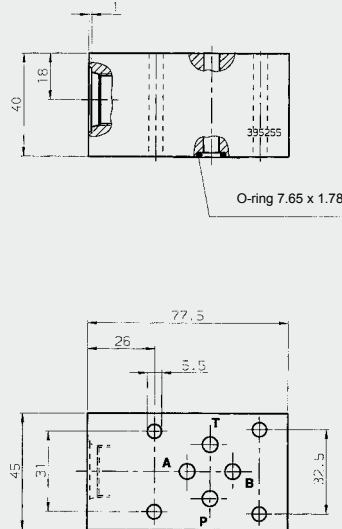
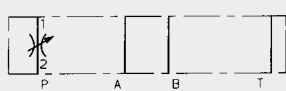
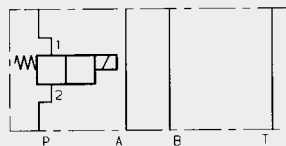


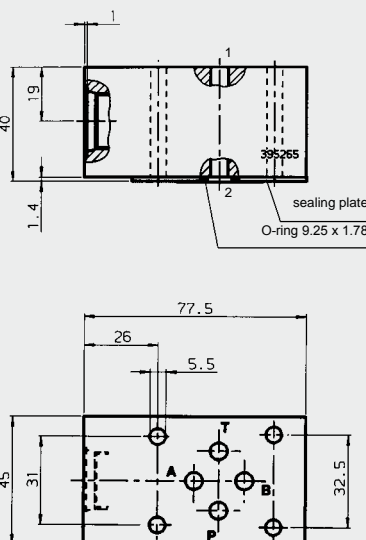

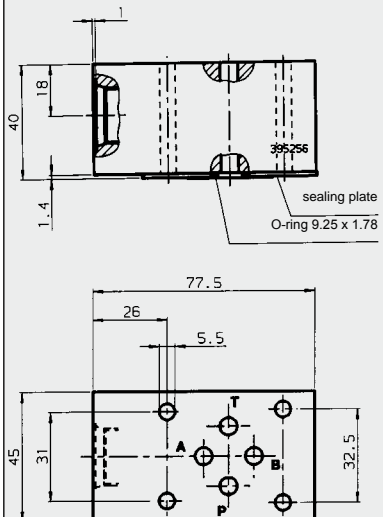

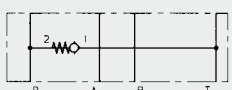
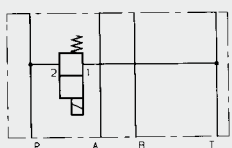
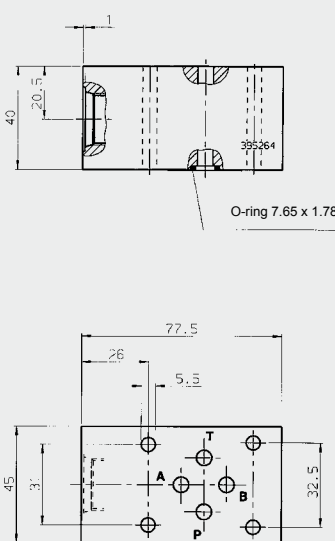
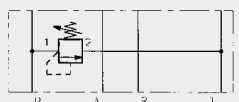
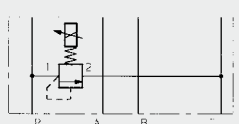
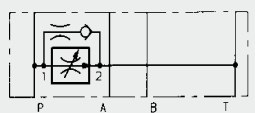
6.3. DIMENSIONS

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
395252	ZA06020-01X Cartridge valve in line A	 <p>Weight: 0.92 kg</p>	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	 <p>Weight: 0.92 kg</p>	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	 <p>sealing plate O-ring 9.25 x 1.78</p> <p>Weight: 0.92 kg</p>	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	 <p>sealing plate O-ring 9.25 x 1.78</p> <p>Weight: 0.92 kg</p>	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		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	
			Weight: 0.87 kg		
395613	ZAB06020-10X Cartridge valve in lines A and B		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	
			Weight: 0.87 kg		

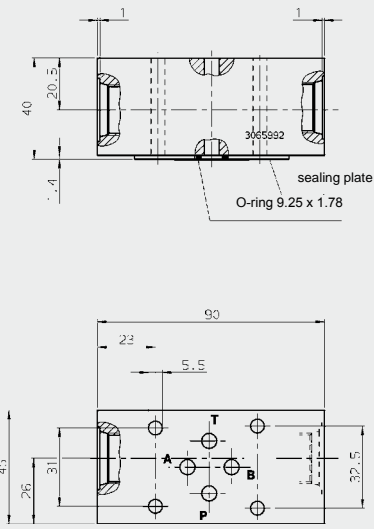
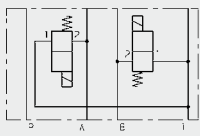
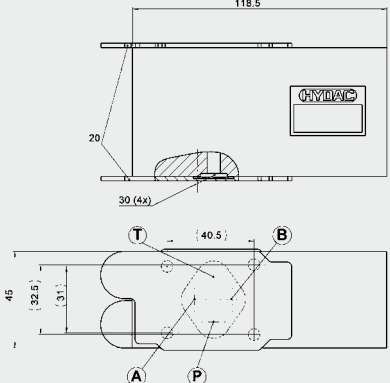
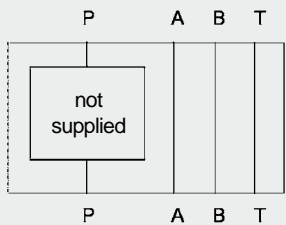
Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
3041122	ZAB08021-02X Cartridge valve in lines A and B	Material: aluminium max. pressure: $p_{\max} = 210 \text{ bar}$  Weight: 0.69 kg	ERVE08021	5.172	
			SBVE-R½	5.177	
395263	ZP06020-01X Cartridge valve in line 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 5.943 WSM06020ZR 5.946 WSM06020Y 5.947 WSM06020YR 5.948 WSM06020W 5.949 WSM06020V		

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
395265	ZT06020-01X Cartridge valve in line T	 <p>Weight: 0.91 kg</p>	RV5E	5.175	
395256	ZPT06020-01X Cartridge valve between lines P and T	 <p>Weight: 0.91 kg</p>	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	 <p>Weight: 0.91 kg</p>	DB4E	5.161	
			PDB06020	5.164	
			SR5E	5.117	

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
395258	ZBT06020-01X Cartridge valve between lines B and T		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		DB4E	5.161	
			PDB06020	5.164	
			DV5E	5.113	
			SR5E	5.117	
			WSM06020W WSM06020V	5.949	

Weight: 1.04 kg

Weight: 0.99 kg

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
3065992	ZABT06020-02X	 <p>Weight: 0.98 kg</p>	WSM06020Z 5.943 WSM06020ZR 5.946 WSM06020Y 5.947 WSM06020YR 5.948 WSM06020W 5.949 WSM06020V		
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

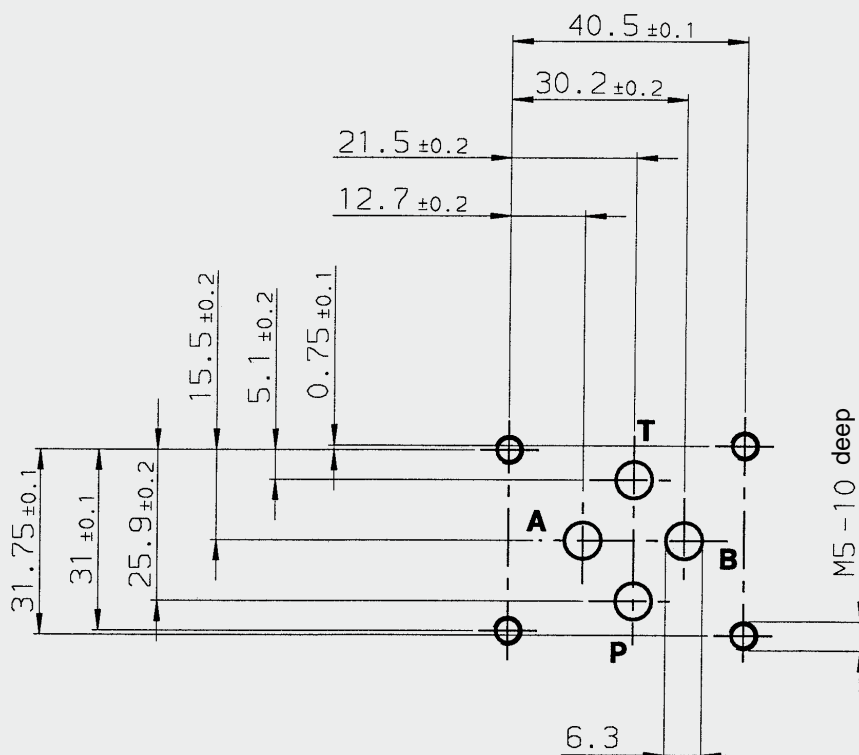
Type _____
(describes individual condition; e. g. surface, dimensions, functional properties ...)

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	

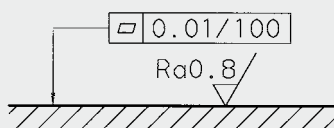
Series _____
(determined by manufacturer)

7.2. CONNECTION DIMENSION

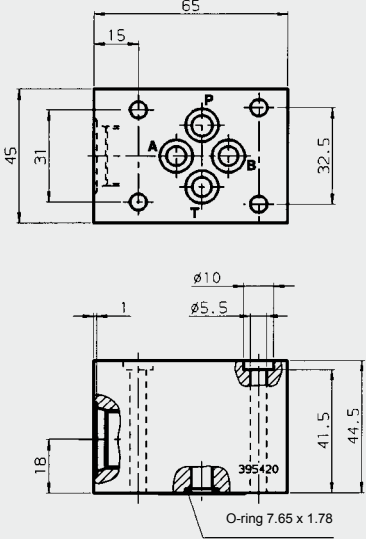
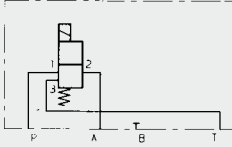
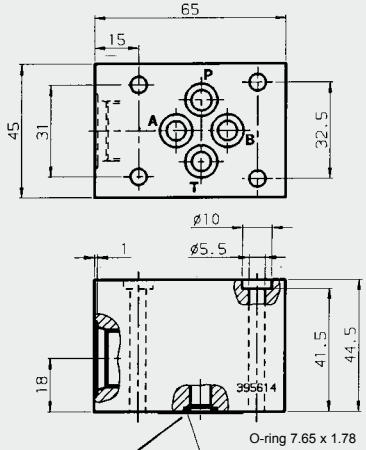
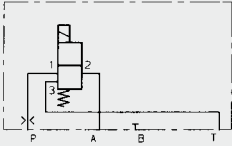
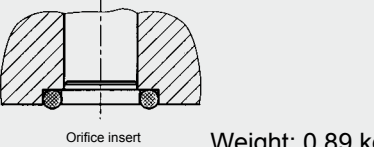
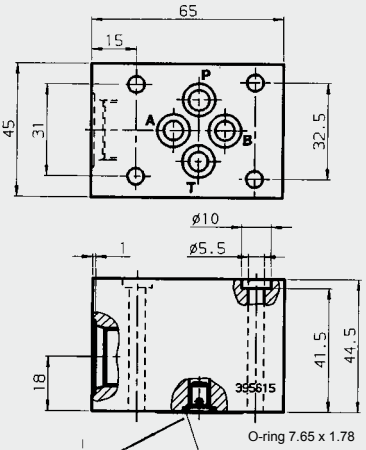
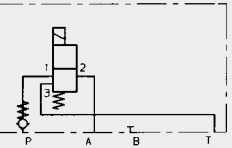
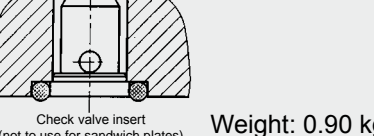
Interface A6 DIN 24340 and CETOP R 35 H-4.2-4-03
Installation height to CETOP RP 99H-4-03
(view onto connection plate)

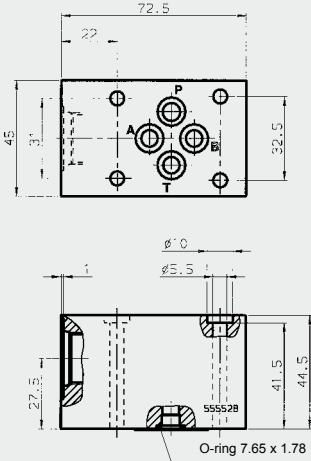
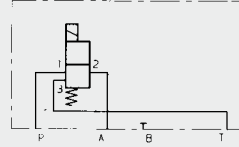
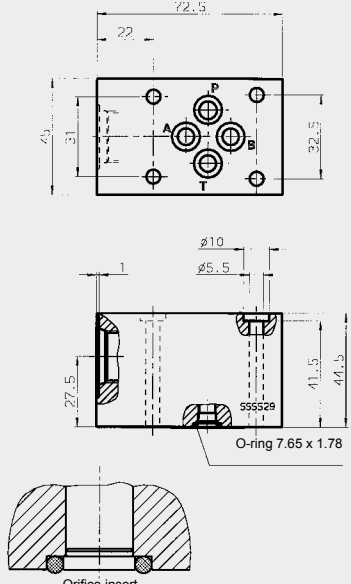
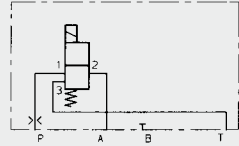
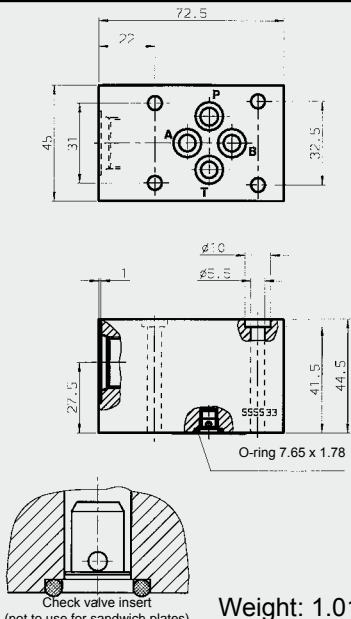
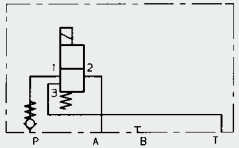


required surface finish
of mounting plate



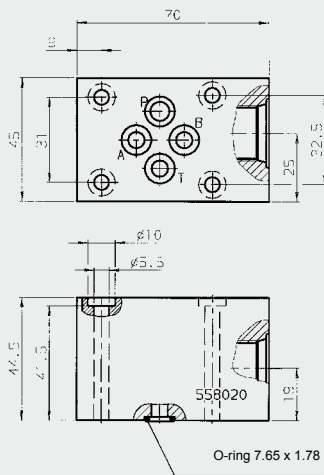
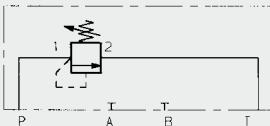
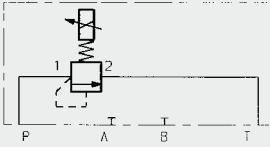
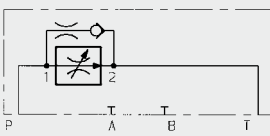
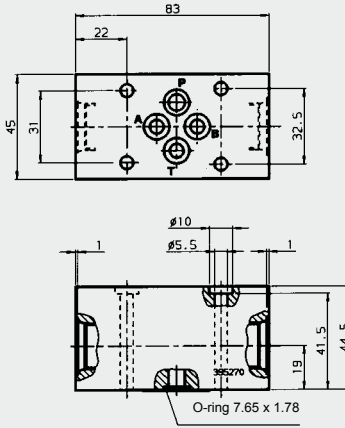
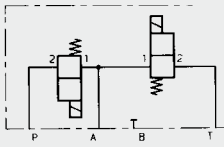
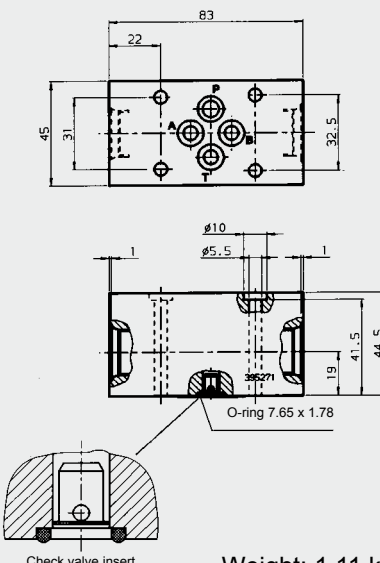
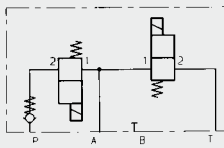
7.3. DIMENSIONS

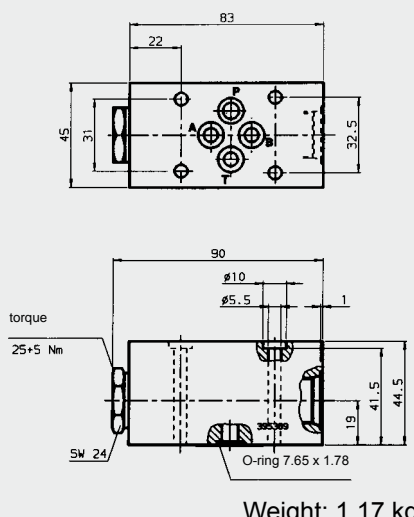
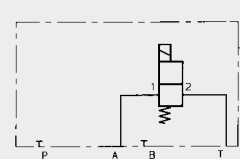
Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
395420	D03230-01X	 <p>Weight: 0.89 kg</p>	WSE 3	5.203	
395614	D03230-11X	 <p>Weight: 0.89 kg</p>	WSE 3	5.203	
395621	D03230-12X				
395622	D03230-13X				
395623	D03230-15X				
	For model code see point 7.1 For curves see point 7.4	 <p>Weight: 0.89 kg</p>			
395615	D03230-30X	 <p>Weight: 0.90 kg</p>	WSE 3	5.203	
	For curves see point 7.4	 <p>Weight: 0.90 kg</p>			

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
555528	D08130-01X	 <p>Weight: 1.00 kg</p>	PDM08130 WSEC08130 WSED08130 WKM08130C WKM08130D WKM08130L WSM08130D	5.168 5.935 5.934 5.976 5.977	
555529	D08130-11X	 <p>Weight: 1.00 kg</p>	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	 <p>Weight: 1.01 kg</p>	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	<p>Weight: 0.98 kg</p>	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	<p>Weight: 0.98 kg</p>	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	<p>O-ring 7.65 x 1.78</p>	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	
Weight: 0.69 kg					

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
558020	DPT06020-01X Cartridge valve between P and T		DB4E	5.161	
				5.164	
			PDB06020 SR5E	5.117	
Weight: 0.90 kg					
395270	DPAT06020-01X Cartridge valve between P and A and between A and T		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		
			Weight: 1.10 kg		
395271	DPRAT06020-01X Cartridge valve between P and A and between A and T with check valve in port P		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		
			Weight: 1.11 kg		

Part No.	Model Code	Dimensions	Cartridge valve		Symbol
			Type	Brochure / Data Sheet No.	
395389	DAT06020-01X Cartridge valve between A and T		WSM06020Z 5.943 WSM06020ZR 5.946 WSM06020Y 5.947 WSM06020YR 5.948 WSM06020W 5.949 WSM06020V		

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 $v = 34 \text{ mm}^2/\text{s}$ and $t_{\text{oil}} = 46^\circ\text{C}$

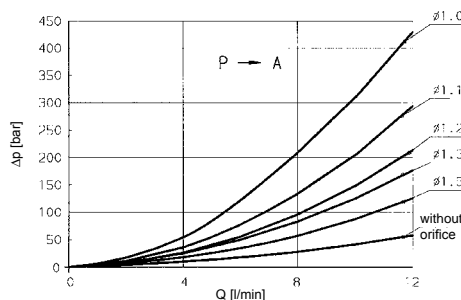
7.4.2. Check valve insert

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.

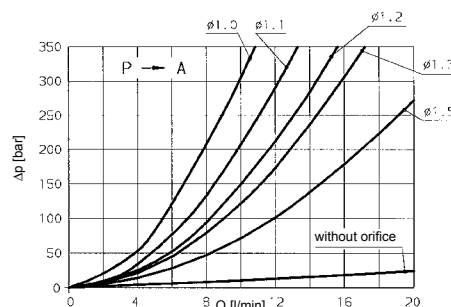
7.4.2.1 Pressure drop curves

Dependent on flow rate, measured at $v = 34 \text{ mm}^2/\text{s}$ and $t_{\text{oil}} = 46^\circ\text{C}$

D03230-... with WSE30C...



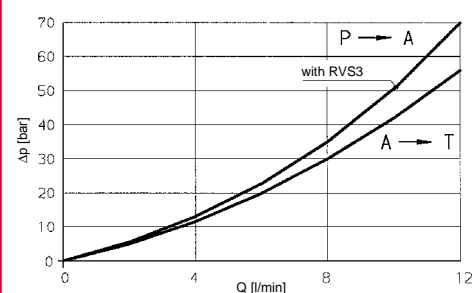
D08130-... with WSEC08130-...



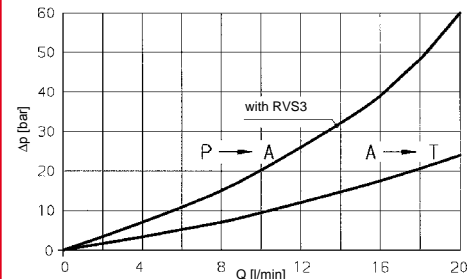
8. DESIGN RECOMMENDATIONS

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-...



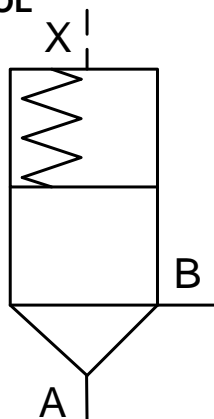
9. NOTES

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.



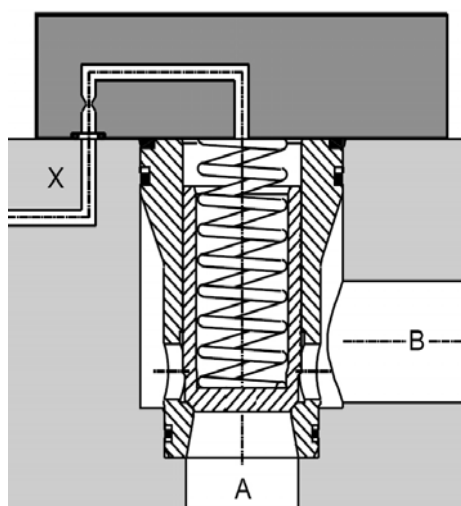
2-port slip-in cartridge valve pressure function, poppet type Cone A (1:1) Type L-CEE Sizes 16 up to 63

SYMBOL



Q max = 6.000 l/min

P max = 350 bar



FEATURES:

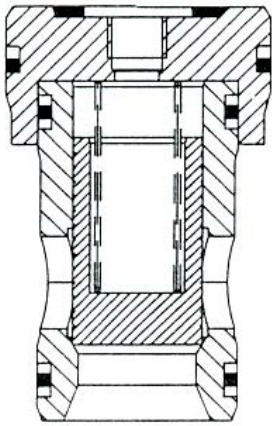
- 2-port slip-in cartridge valves according to ISO 7368 with two operational ports A and B.
- valve cone without damping nose
- hydraulic control by pilot pressure applied to port X

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 ($p_A \times A_A$, $p_B \times A_B$) affect the opening of the valve.

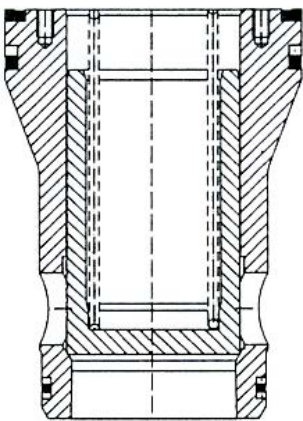
SPECIFICATIONS:

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 mm ² /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



Sizes
16 - 32

Sleeve + sleeve cap + cone



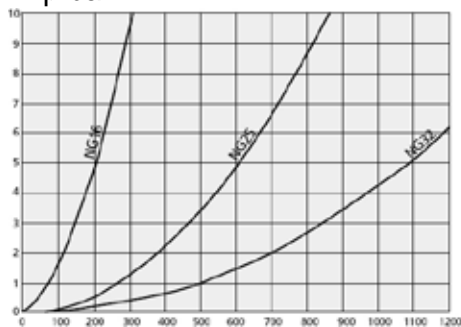
Sizes
40 - 63

Cone + sleeve

PERFORMANCE

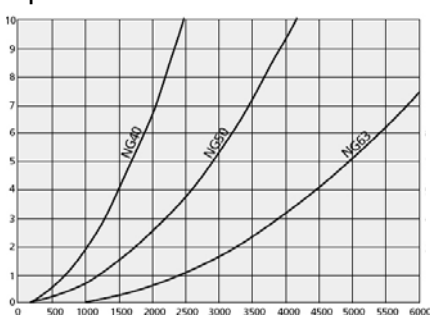
Measured at 35 mm²/s, T-Oil 50°C

Δp bar



Flow l/min

Δp bar



Flow l/min

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

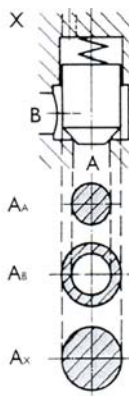
Model

Cavity to ISO 7368

Cone type

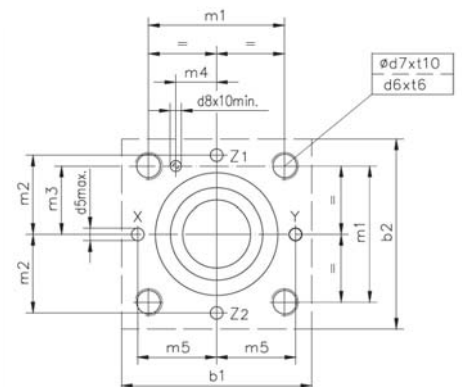
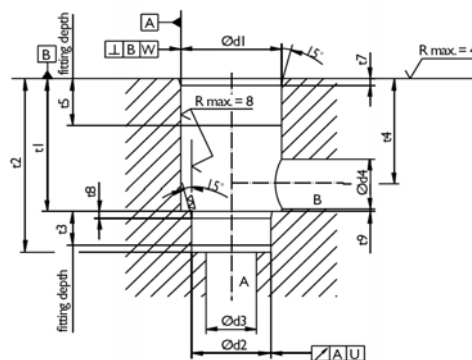
A = step cone 1:1

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 mm ²	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) cm ³	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

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	M18	M12	M16	M20	M20	M30
d7 H13	6	6	6	8	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	36	45	55	68	80	105
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
ε10 min.	10	10	10	10	10	10
U	0,03	0,03	0,03	0,05	0,05	0,05
V	0,05	0,05	0,1	0,1	0,1	0,2

Annotation

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At deviant applications and/or operating conditions please contact the technical dept.

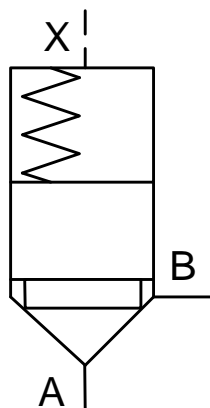
Technical information are subject to technical modifications.

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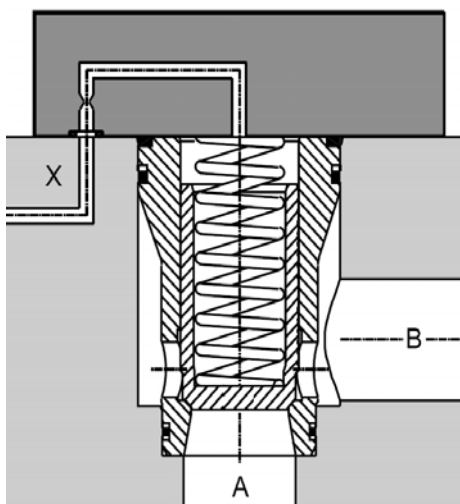


2-port slip-in cartridge valve directional function, poppet type Cone B (1: 1,6) Type L-CEE Sizes 16 up to 63

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")

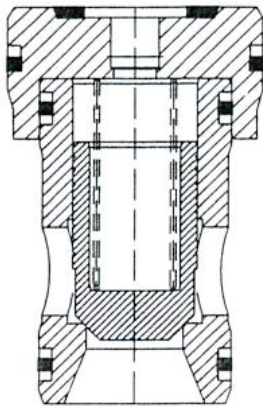
FUNCTION:

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 ($p_A \times A_A$, $p_B \times A_B$) affect the opening of the valve.

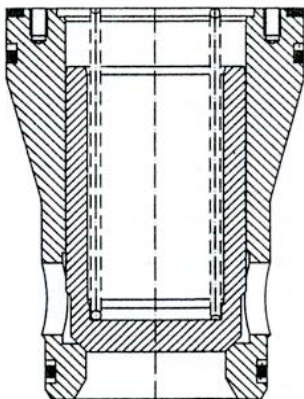
SPECIFICATIONS:

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:	according to ISO 7368
Ratio:	1 : 1,6
Flow direction:	A<->B



Sizes
16 - 32

Sleeve + sleeve cap + cone



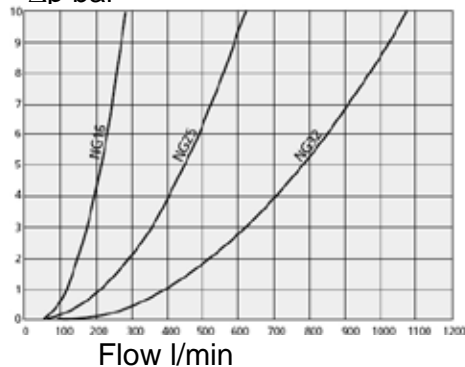
Sizes
40 - 63

Cone + sleeve

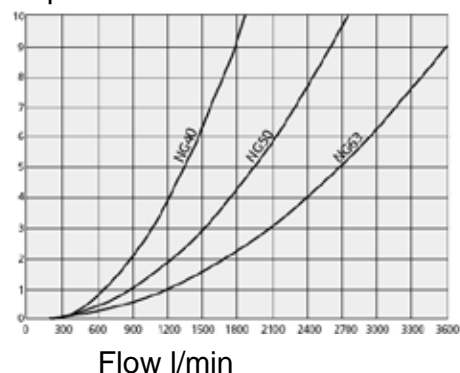
PERFORMANCE

Measured at 35 mm²/s, T-Oil 50°C

Δp bar



Δp bar



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

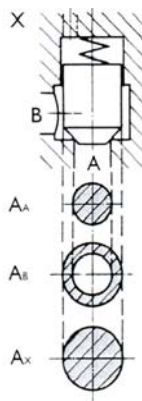
Sealing element at the cone

omission = without sealing between cone and sleeve

X = with sealing between cone and sleeve

(Attention: different springs necessary, call factory!)

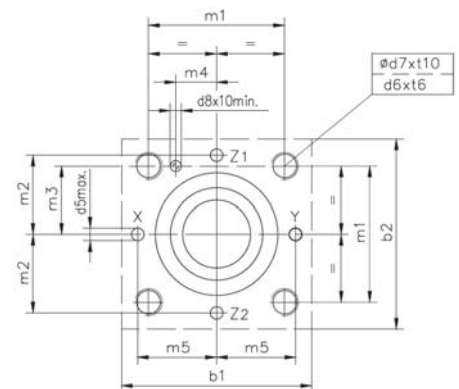
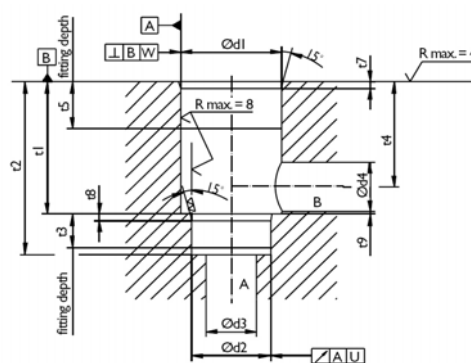
Basic versions



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 mm ²	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 _v) cm ³	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!)

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
V	0.05	0.05	0.1	0.1	0.1	0.2

Annotation

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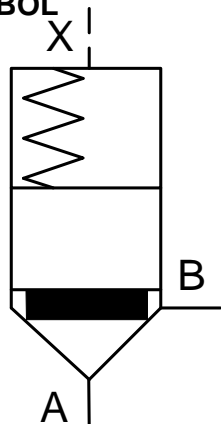
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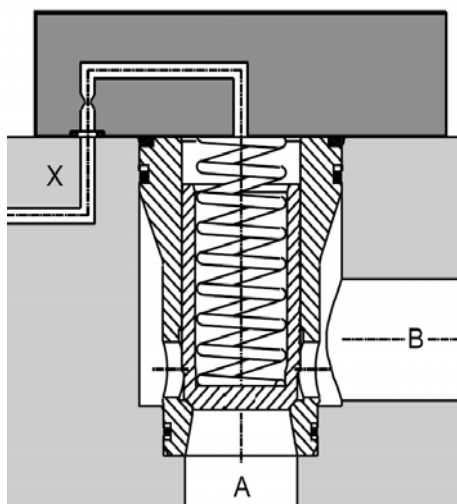


2-port slip-in cartridge valve directional function, poppet type Cone C (1:1,6) with damping Type L-CEE Sizes 16 up to 63

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

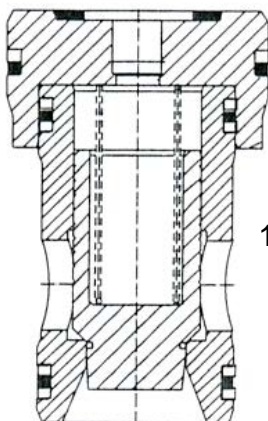
FUNCTION:

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 ($p_A \times A_A$, $p_B \times A_B$) affect the opening of the valve.

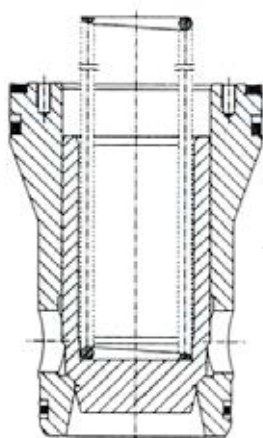
SPECIFICATIONS:

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 mm ² /s
Sealing:	FKM + PU (NBR,FKM on request)
Installation position:	optional
Manner of Mounting:	Manifold cartridge mounting according to ISO 7368
Cavity:	
Ratio:	1 : 1,6
Flow direction:	A<-->B



Sizes
16 - 32

Sleeve + sleeve cap + cone



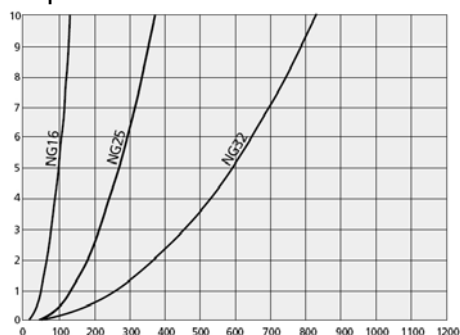
Sizes
40 - 63

Cone + sleeve

PERFORMANCE

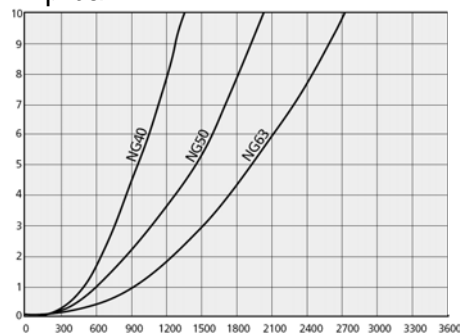
Measured at 35 mm²/s, T-Oil 50°C

Δp bar



Flow l/min

Δp bar



Flow l/min

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

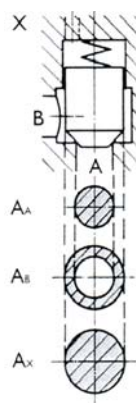
Model

Cavity to ISO 7368

Cone type

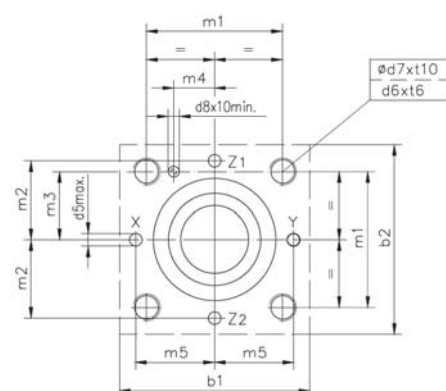
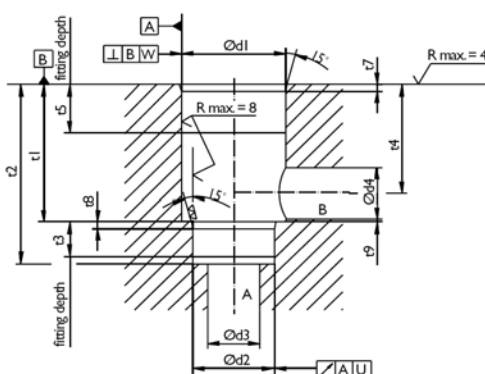
C = step cone 1:1,16 with damping

Basic versions



Cone C without sealing at cone						
Part No.	6061145	6061202	6061209	6061214	6061220	6061226
Stroke mm	NW16	NW25	NW32	NW40	NW50	NW63
A _A mm ²	6,0	12,0	14,0	15,0	20,0	24,0
A _A (Ref)	123,0	227,0	452,0	804,0	1590,0	2642,0
A _B	1,0	1,0	1,0	1,0	1,0	1,0
A _X	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) cm ³	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						
Part No. 0,3 bar	NW16	NW25	NW32	NW40	NW50	NW63
Part No. 1 bar	6061191	6061229	6061233	6061237	6061241	6061245
Part No. 2 bar	6061204	6061230	6061234	6061238	6061242	6061247
Part No. 4 bar	6061227	6061231	6061235	6061239	6061243	6061248
Part No. 6 bar	6061228	6061232	6061236	6061240	6061244	6061249

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 max	16	25	32	40	50	63
d4	17	25	32	43	54	66
d4 max	16	25	32	40	50	63
d5 max	25	32	40	50	63	80
d6	4	6	8	10	10	12
d7 H13	M8	M12	M16	M20	M20	M30
m1 ±0.2	6	6	6	6	8	8
m2 ±0.2	46	58	70	85	100	125
m3 ±0.2	25	33	41	50	58	75
m4 ±0.2	23	29	35	42.5	50	62.5
m5 ±0.2	10.5	16	17	23	30	38
t1 ±0.1	25	33	41	50	58	75
t2 ±0.1	43	58	70	87	100	130
t3	56	72	85	105	122	155
t4	11	12	13	15	17	20
t4 at d4 max	34	44	52	64	72	95
t5	29.5	40.5	48	59	65.5	86.5
t6	20	30	30	30	35	35
t7	20	25	35	45	45	65
t8	2	2.5	2.5	3	4	4
t9	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
V	0.05	0.05	0.1	0.1	0.1	0.2

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2/2 slip-in cartridge cover

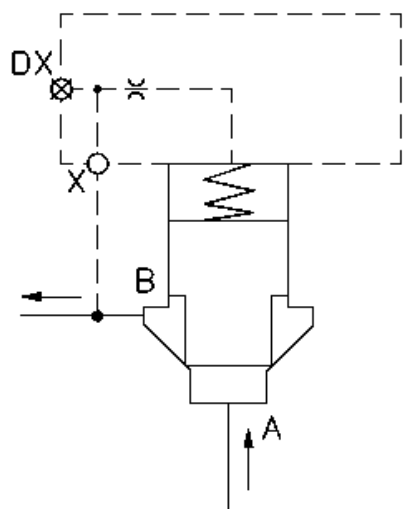
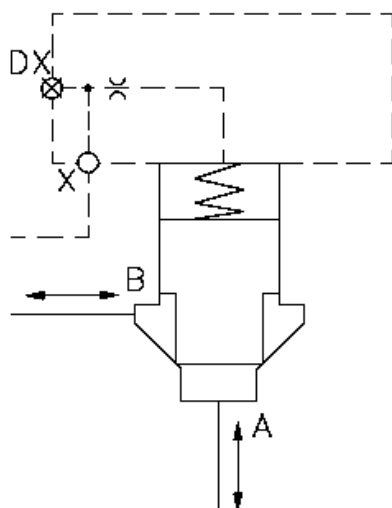
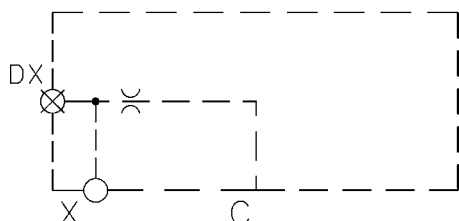
Function 1D

Series LD-CCE

Size 16 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)

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

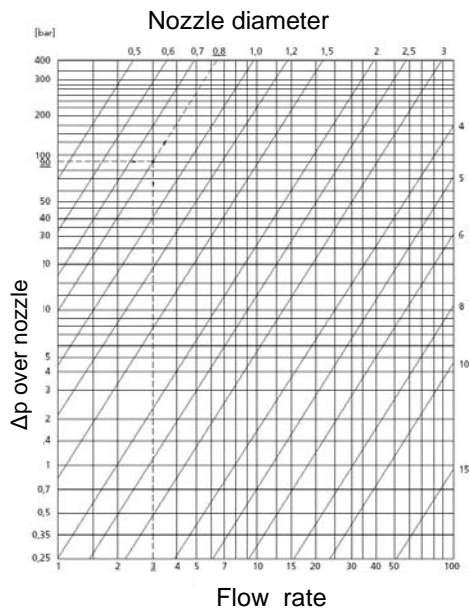
Nozzles

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



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MODEL CODE

LD - C C E 16 D 6 1D

Name _____
LD-CCE= 2/2 slip-in cartridge covers,
Standard

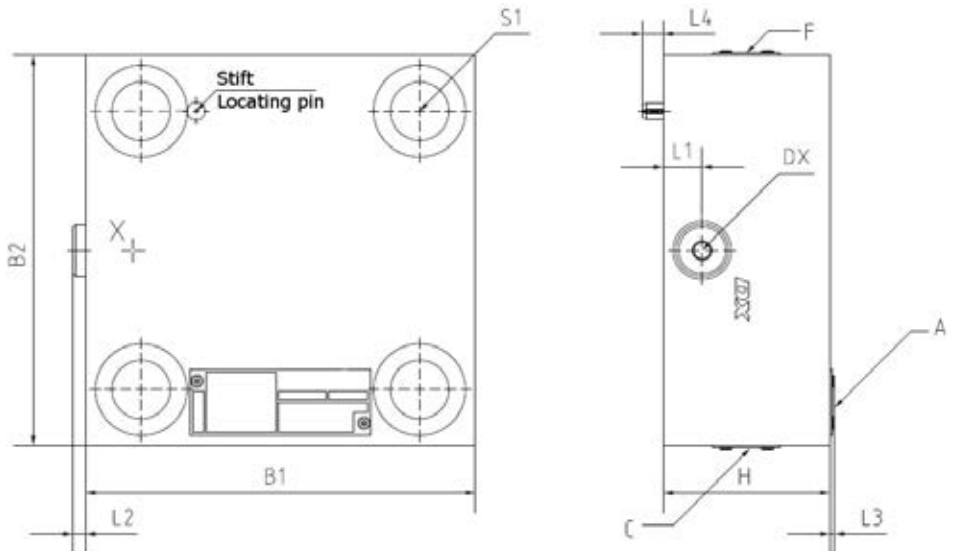
Nominal size _____
Size 16, 25, 32, 40, 50, 63

Series _____
named by manufacturer

Type _____
Threads and control ports according to ISO 7368

Cover code _____
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"	G 3/8"
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



2/2 slip-in cartridge cover

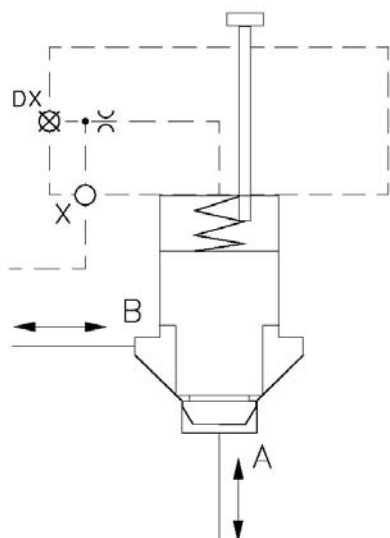
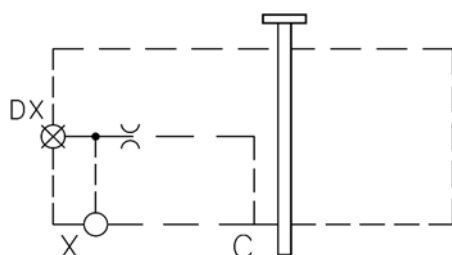
Function 1H

Series LD-CCE

Size 16 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)

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

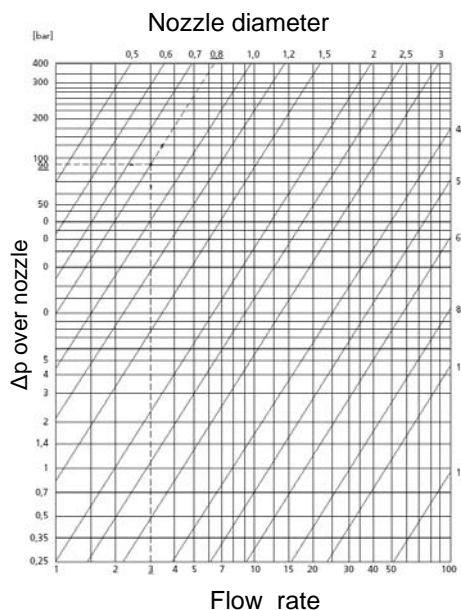
Ports	NG16 NG25 NG32
X	M5 M6 M6

	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



Annotation

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Technical information are subject to technical modifications.

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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

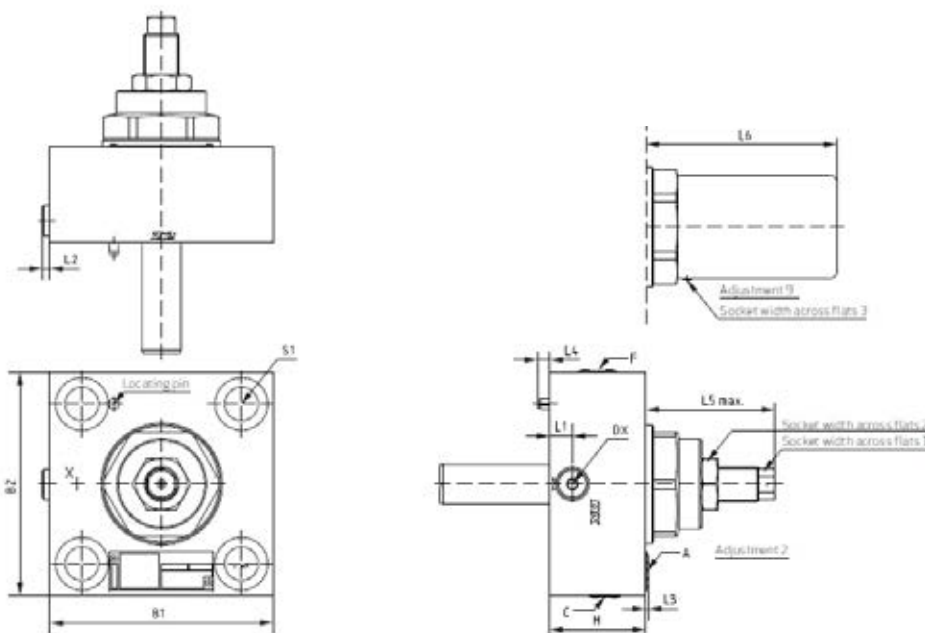
1H = functional symbol

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	160
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	65	65	85	85	110	150
Socket width across flats 2 [Nm]						
Socket width across flats 3 (Allen screw)	2	2	2	2	2	2
Tightening torque	5	5	5	5	5	5
Socket width across flats 3 [Nm]						
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



2/2 slip-in cartridge cover

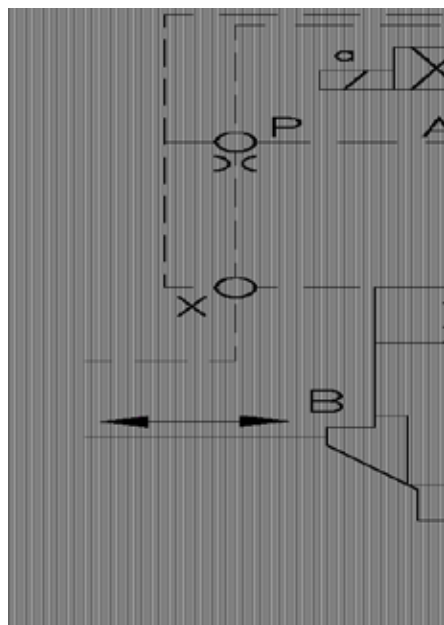
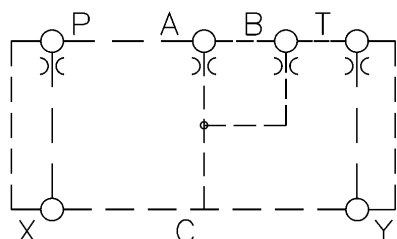
Function RM

Series LD-CCE

Size 16 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 scheme 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 de-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)

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

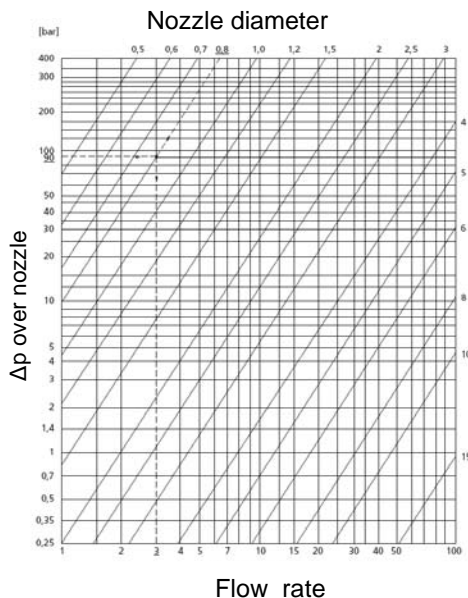
Ports	NG16 NG25 NG32
P, A, B, T	M6 M6 M6

	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



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MODEL CODE

LD - C C E 16 D 6 RM

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

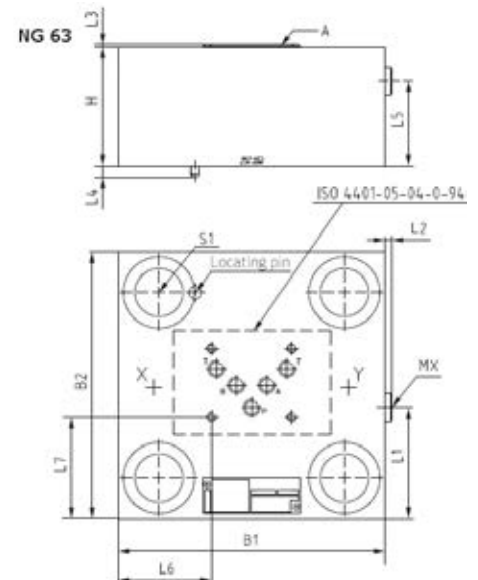
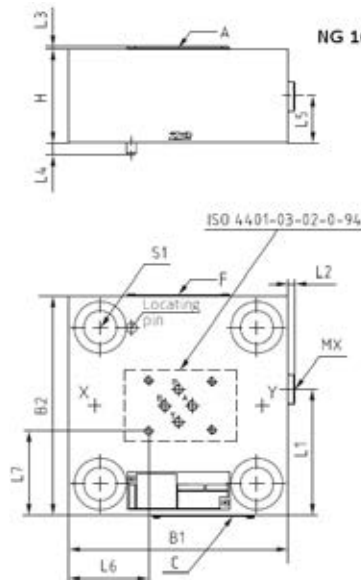
Cover code

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



2/2 slip-in cartridge cover

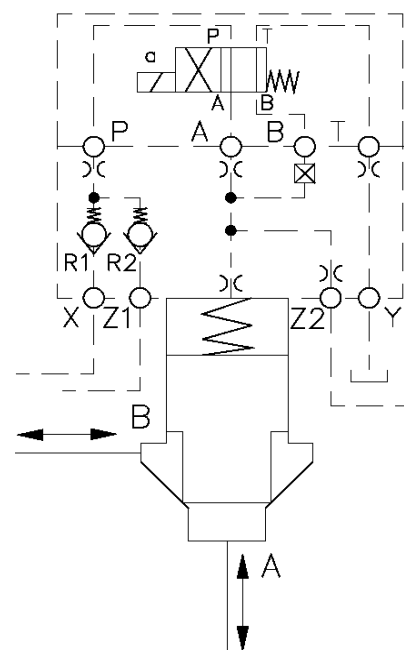
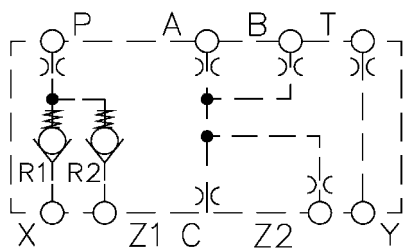
Function 4W

Series LD-CCE

Size 16 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 scheme 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:
Temp. range of operating fluid:
Ambient temperature range:
Operating fluid:

max. 350 bar
min. -20°C up to max. +80°C
min. -20°C up to max. +60°C
hydraulic fluid according to DIN 51524 part 1 and 2
Class 20/18/15
according to ISO 4406 (C)
2,8 up to 380 mm²/s
FKM + PU (NBR / FKM on request)

Filtration:

Viscosity range:
Seals:

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

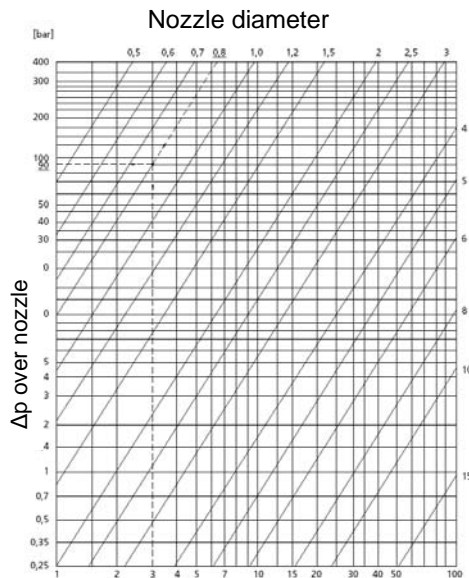
Ports	NG16	NG25	NG32
P, A, B, T	M6	M6	M6
C, Z2	M5	M6	M6

	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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MODEL CODE

LD-CCE 16 D 6 4W

Name _____

LD-CCE= 2/2 slip-in cartridge cover, Standard

Nominal size _____

Size 16, 25, 32, 40, 50, 63

Series _____

named by manufacturer

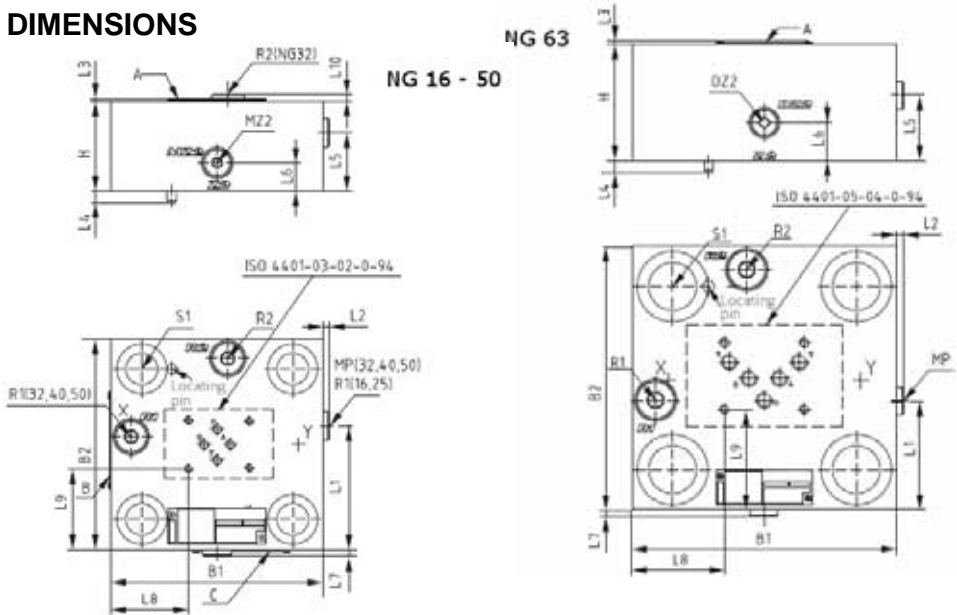
Type

Threads and control ports according to ISO 7368

Cover code

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, M22 + D22***	-	-	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



2/2 slip-in cartridge cover

Function 2WR

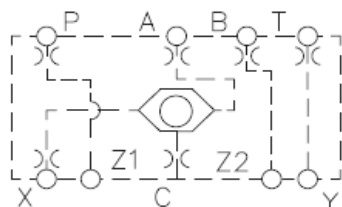
Series LD-CCE

Size 16 up to 63

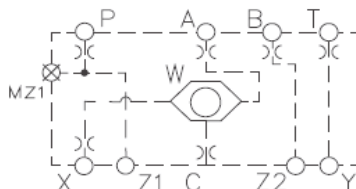
SYMBOL

P_{max} = 350 bar

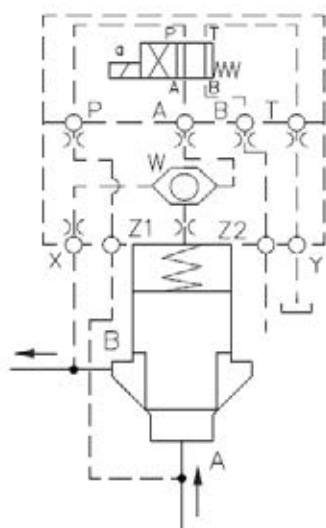
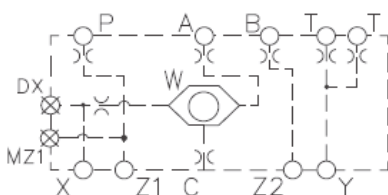
NG16, 25



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)

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

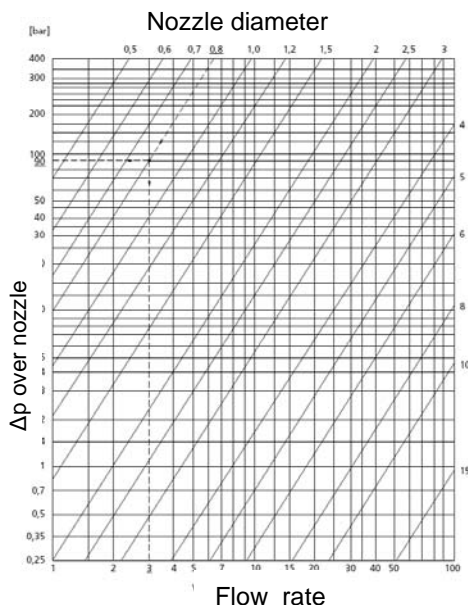
Ports	NG16	NG25	NG32
X, C	M5	M6	M6
P, A, B, T	M6	M6	M6

	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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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

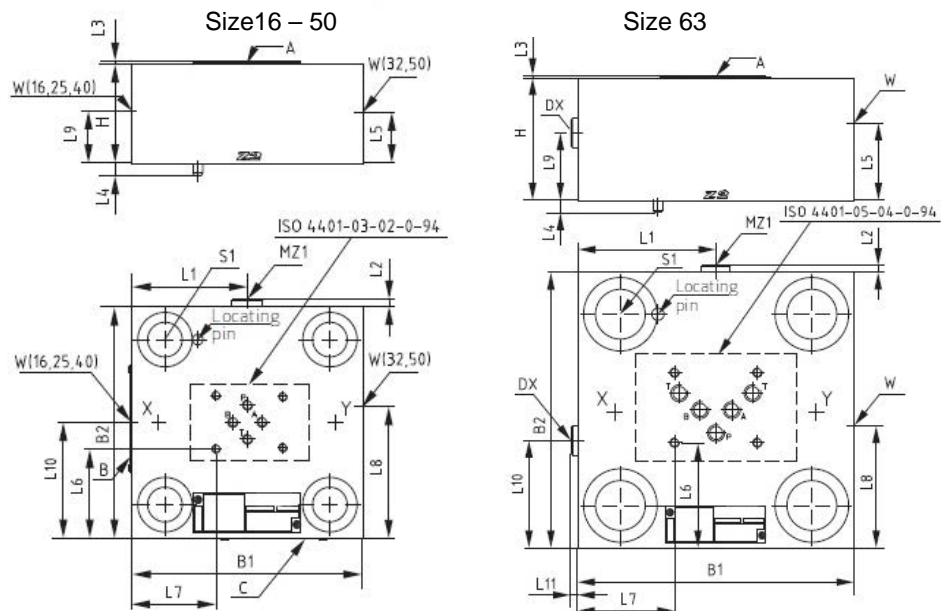
Type

Threads and control ports according to ISO 7368

Cover code

2WR = functional symbol

DIMENSIONS



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



2/2 slip-in cartridge cover

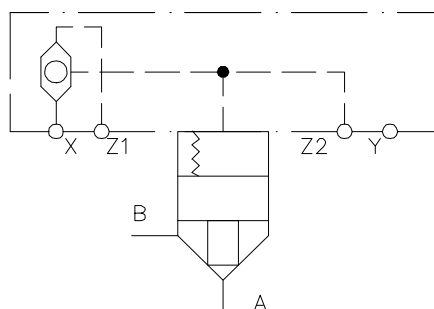
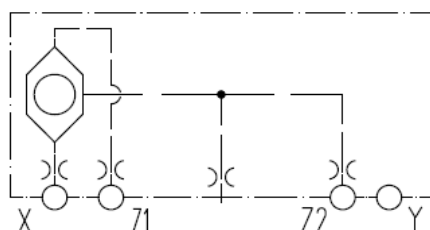
Function 2DR

Series LD-CCE

Size 16 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)

Standard models

Type	Part No.
LD-CCE 16 D6 2DR	6083395
LD-CCE 25 D6 2DR	6083396
LD-CCE 32 D6 2DR	6083397

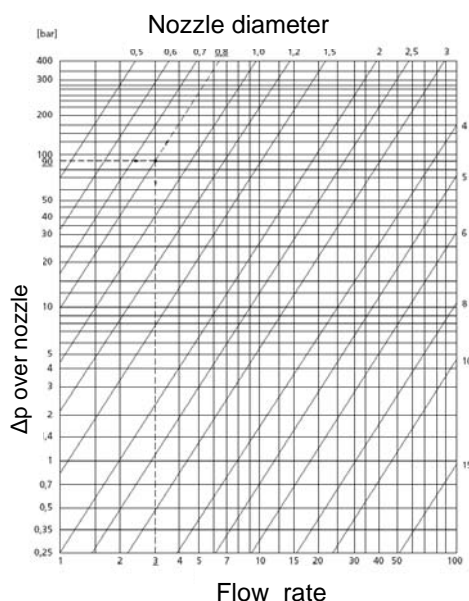
Nozzles

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



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.

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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

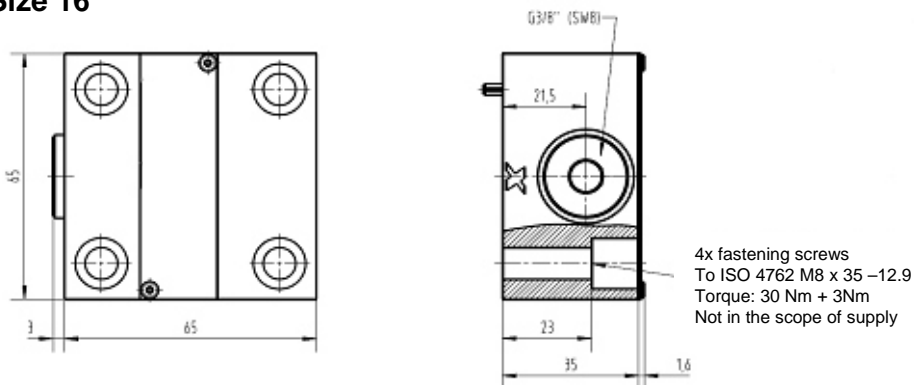
Threads and control ports according to ISO 7368

Cover code

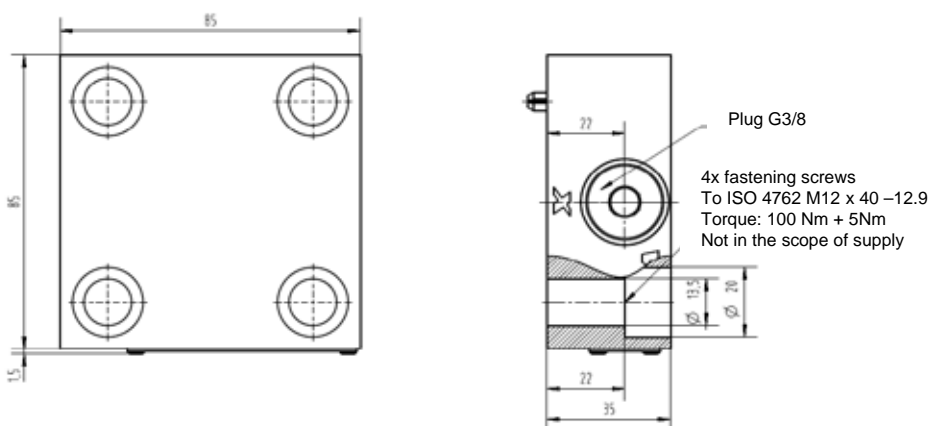
2DR = functional symbol

DIMENSIONS

Size 16



Size 25



Size 32

