

Spool valve

Flange construction

- ◆ pilot operated
- ◆ 4/2-way impulse execution detented
- ◆ 4/3-way with spring centred mid position
- ◆ 4/2-way with spring reset
- ◆ $Q_{max} = 160 \text{ l/min}$
- ◆ $p_{max} = 350 \text{ bar}$

DESCRIPTION

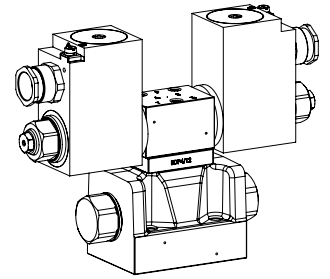
Pilot operated 4-way valve in a 5 chamber system. The control of the pilot valve takes place electrically. Very compact construction with corresponding low weight. The hydraulic control of the pilot valve can be internal or external via an additional connection plate or the mounting interface depending on the type of pilot operation. Spool detented or with spring reset.

The pressure tight encapsulated Ex-protection solenoid coil prevents an explosion on the inside penetrating to the outside as well as an ignitable surface temperature.

NG10

ISO 4401-05

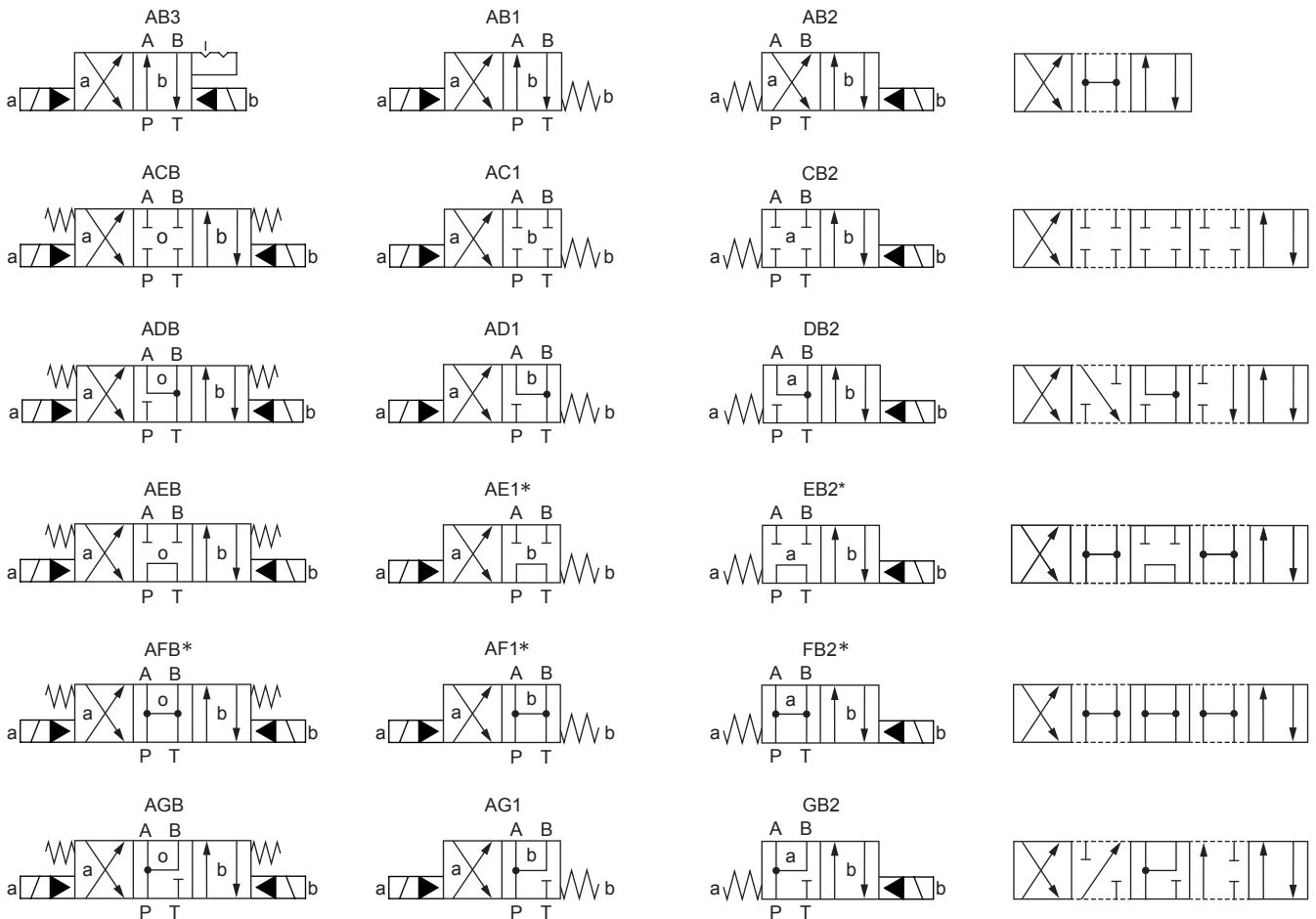
- ⊕ II 2 G Ex db IIC T6, T4
 - ⊕ II 2 D Ex tb III C T80 °C, T130 °C
 - ⊕ I M2 Ex db I Mb
- Class I Division 1
 Class I Zone 1



APPLICATION

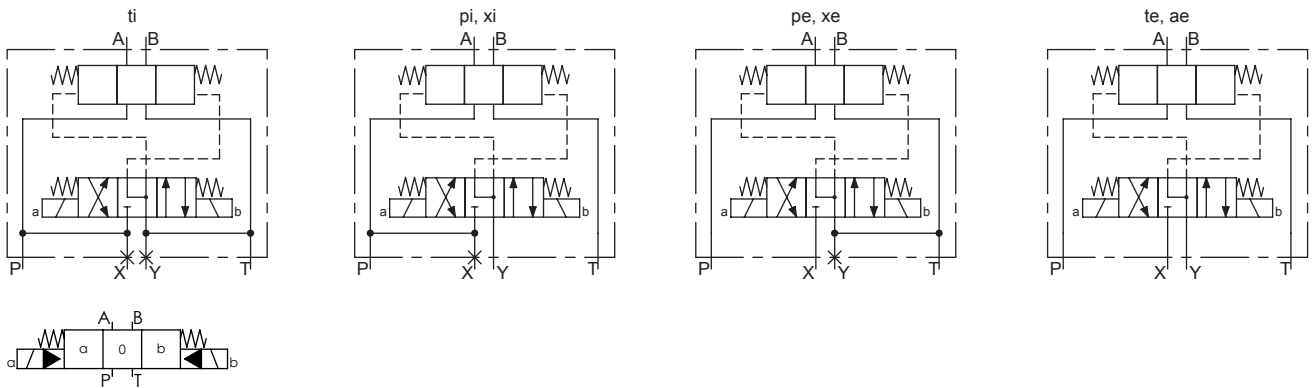
Spool valves are mainly used for controlling direction of movement and stopping of hydraulic cylinders and motors. The direction of movement is determined by the position of the spool and its symbol. Pilot operated valves are used where large volume flows have to be controlled. Switching performance and leakage of the valves must be taken into account when designing the system. Solenoid spool valves are suitable for machine tools and handling systems of any kind.

SYMBOL



* When the connections P and T are connected in the middle position, a back pressure cartridge is built in as standard in the case of internal pilot oil supply (ti/pi). If this back pressure valve is not used (0, according to the type code), it must be ensured that a pilot pressure of minimum 4 bar is present. The pressure difference of this cartridge has to be added to the pressure difference of the main valve (see characteristics) which results in an overall value. Pilot control type xi is not available with a back pressure cartridge.

Types of pilot operation


TYPE CODE

		WVY F A10 - <input type="checkbox"/> - <input type="checkbox"/> - <input type="checkbox"/> - <input type="checkbox"/> / <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> # <input type="checkbox"/>	
Spool valve, pilot operated, explosion proof			
Flange construction			
International standard interface ISO NG10			
Designation of symbols acc. to table			
Back pressure cartridge	Standard <input type="checkbox"/> only symbols AEB and AFB without back pressure cartridge <input type="checkbox"/>	see notes	Section symbols
Type of pilot operation: Control oil Supply (x) and drain (y)	(x) and (y) internally via control plate: <input type="checkbox"/> ti (x) and (y) externally <input type="checkbox"/> te (x) internally (y) externally <input type="checkbox"/> pi (x) externally (y) internally <input type="checkbox"/> pe via mounting interface: (x) and (y) externally <input type="checkbox"/> ae (x) internally (y) externally <input type="checkbox"/> xi (x) externally (y) internally <input type="checkbox"/> xe		
Nominal voltage U_N	12 VDC <input type="checkbox"/> G12 24 VDC <input type="checkbox"/> G24	115 VAC <input type="checkbox"/> R115 230 VAC <input type="checkbox"/> R230	
Nominal power P_N	9 W <input type="checkbox"/> L9 15 W <input type="checkbox"/> L15 17 W <input type="checkbox"/> L17	Ambient temperature up to: 40 °C or 90 °C 70 °C 70 °C (only UL / CSA)	
Certification	ATEX, IECEx, EAC <input type="checkbox"/> Australia <input type="checkbox"/> AU MA <input type="checkbox"/> MA	UL / CSA <input type="checkbox"/> UL	
Sealing material	NBR <input type="checkbox"/> FKM (Viton) <input type="checkbox"/> D1		
Dampening orifices in control connections A and B	without orifice <input type="checkbox"/> orifice \varnothing 0,5 mm <input type="checkbox"/> Q 0,5	Provide for control pressure above 100 bar	
Design index (subject to change)			

1.9-38

GENERAL SPECIFICATIONS

Designation	4/2-, 4/3-spool valve
Mounting	Flange construction
Nominal size	NG10 according to ISO 4401-05
Actuation	Electrical
Ambient temperature	Operation as T6 -25...+40 °C (L9) Operation as T4 -25...+90 °C (L9) -25...+70 °C (L15 / L17) -40...+70 °C (L15 / L17) In case of $U_N = 12$ VDC, the max. ambient temperature has to be reduced by 10 °C.
Weight	5,0 kg (1 solenoid) 6,85 kg (2 solenoids) 0,3 kg spacer plate
MTTFd	150 years

HYDRAULIC SPECIFICATIONS

Working pressure	$p_{max} = 350$ bar
Tank pressure	$p_{Tmax} = 160$ bar (type of pilot operation te, pi, ae and xi) $p_{Tmax} = 100$ bar (type of pilot operation ti, pe and xe)
Pilot pressure	p_{vmin} : 8...14 bar, see performance limits $p_{vmax} = 350$ bar for connection X (control plate) $p_{vmax} = 200$ bar for connection X (mounting interface)
Pressure pilot oil drain	minimum lower by p_{vmin}
Maximum volume flow	$Q_{max} = 160$ l/min
Leakage oil	See characteristic and pilot valves
Fluid	Mineral oil, other fluid on request
Viscosity range	12 mm ² /s...320 mm ² /s
Temperature range fluid	Operation as T6 NBR -25...+40 °C (L9) FKM -20...+40 °C (L9) Operation as T4 NBR -25...+70 °C (L9 or L15 / L17) FKM -20...+70 °C (L15 / L17) FKM -20...+90 °C (L9) NBR 872 -40...+70 °C (L15 / L17)
Contamination efficiency	Class 20 / 18 / 14
Filtration	Required filtration grade $\beta_{10} \dots 16 \geq 75$, see data sheet 1.0-50

ACTUATION

Solenoid spool valve direct operated
 Data sheet 1.3-24
 WDYFA04-AB1 / AB2 for 4/2-way AB1 / AB2
 WDYFA04-AD1 / DB2 for other 4/2-way
 WDYFA04-ADB for 4/3-way with spring centred mid position
 WDYFA04-ADB for 4/2-way impulse execution detented

CERTIFICATES

	Surface	Mining	Standard -25 °C to...	Z604 -40 °C to...
ATEX	x	x	x	x
IECEX	x	x	x	x
EAC	x	x	x	x
Australia	x	x	x	x
MA		x	x	
UL / CSA	x		x	x

The certificates can be found on www.wandfluh.com

INSTALLATION NOTES

Mounting type	Flange mounting 4 fixing holes for socket head screws M6 x 40
Mounting position	Any, preferably horizontal
Tightening torque	$M_D = 13.5$ Nm \pm 10 %, quality min. 10.9 $M_D = 10.5$ Nm \pm 10 %, quality 8.8: ◆ maximum tank pressure without external connections: 80 bar ◆ maximum tank pressure and maximum pressure external connections: 35 bar

Note!



The length of the fixing screw depends on the base material of the connection element.

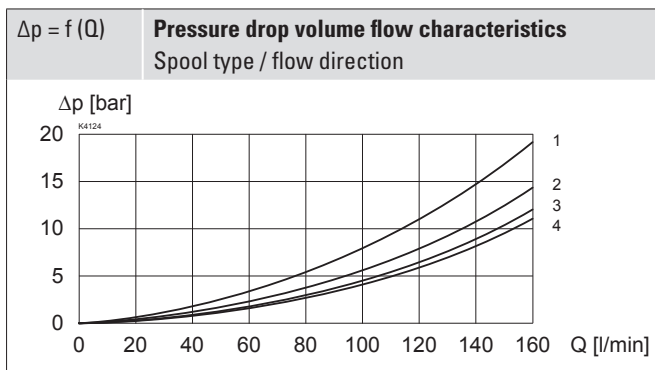
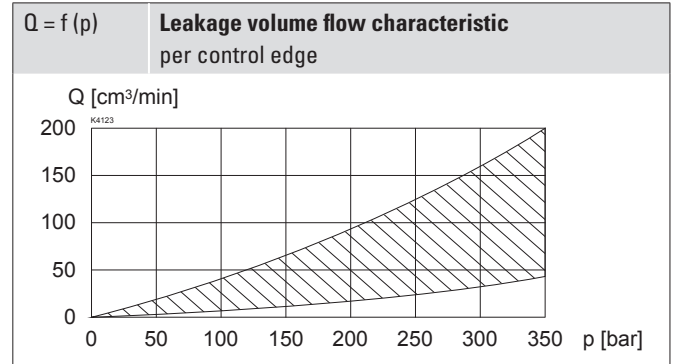
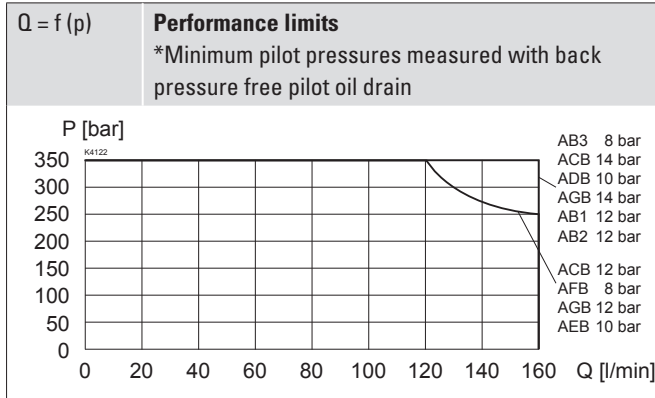
SEALING MATERIAL

NBR or FKM (Viton) as standard, choice in the type code

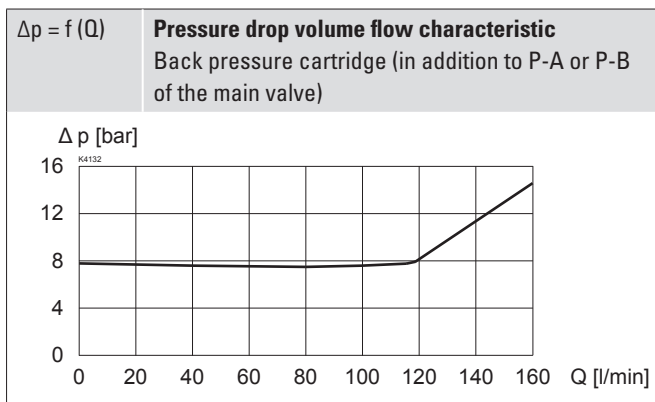
SURFACE TREATMENT

- ◆ The main valve body, the distance plate, the screw plugs, the slip-on coil and the armature tube are zinc-nickel coated
- ◆ The pilot valve body is coated with a two component paint

PERFORMANCE SPECIFICATIONS

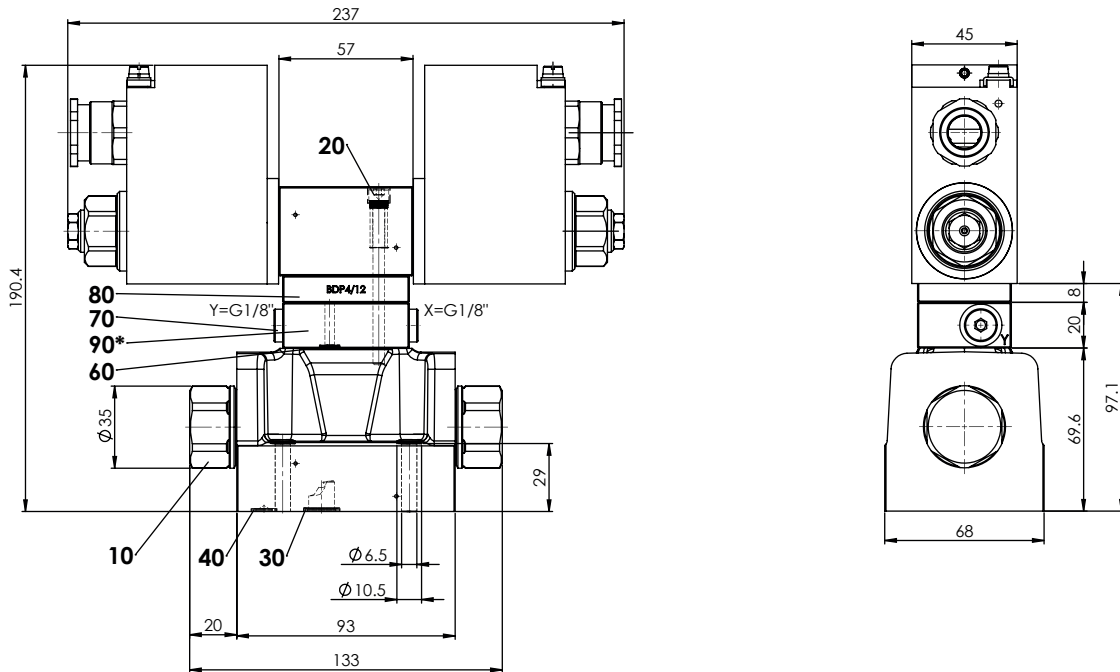
 Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$


Symbol	Volume flow direction				
	P-A	P-B	P-T	A-T	B-T
AB.	3	3	-	2	1
ACB	3	3	-	2	1
ADB	3	3	-	2	1
AEB	3	3	1	2	1
AFB	2	2	4	4	2
AGB	2	2	-	2	1


Note!

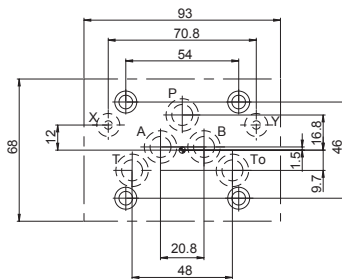

*Please ensure the minimum pilot pressure. Attention internal pilot connections: valves only switch when the pressure difference in the valve is high enough. Further details on request.

ABMESSUNGEN



* Pos.90 Control plate with type of pilot operation te, pi, pe only

HYDRAULIC CONNECTION



PARTS LIST

Position	Article	Description
10	239.7203	Screw plug
20	246.2151	Socket head screw M5 x 50 DIN 912
	246.2171	Socket head screw M5 x 70 DIN 912
30	160.2120	O-ring ID 12,42 x 1,78 (NBR)
	160.8124	O-ring ID 12,42 x 1,78 (FKM)
40	160.2076	O-ring ID 7,65 x 1,78 (NBR)
	160.8076	O-ring ID 7,65 x 1,78 (FKM)
60	160.2052	O-ring ID 5,28 x 1,78 (NBR)
	160.6052	O-ring ID 5,28 x 1,78 (FKM)
70	238.1405	Screw plug VSTI G1/8"-ED
80	173.1400	Spacer plate NG4 Mini
90	173.1500	Control plate NG4 Mini

ACCESSORIES

Fixing screws	Data sheet 1.0-60
Threaded subplates	Data sheet 2.9-40
Multi-station subplates	Data sheet 2.9-70
Horizontal mounting blocks	Data sheet 2.9-110
Technical explanations	Data sheet 1.0-100
Filtration	Data sheet 1.0-50

STANDARDS

Explosion protection	Directive 2014 / 34 / EU (ATEX)
Flameproof enclosure	EN / IEC / UL 60079-1, 31
Cable entry	EN 60079-0, 1, 7, 15, 31
Mounting interface	ISO 4401-05
Protection class	EN 60 529
Contamination efficiency	ISO 4406

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