

## Spool valve

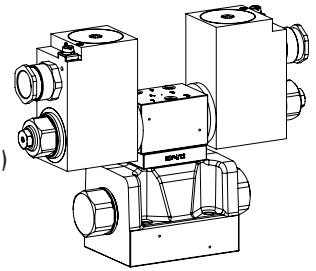
### Flange construction

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

## NG10

### ISO 4401-05

- Ex db IIC T6, T4 Gb (Zone 1)  
 Ex tb III C T80 °C, T130 °C Db (Zone 21)  
 Ex db I Mb  
 ⓧ 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, Group A, B, C, D T4  
 Class II & III, Division I, Group E, F, G T4



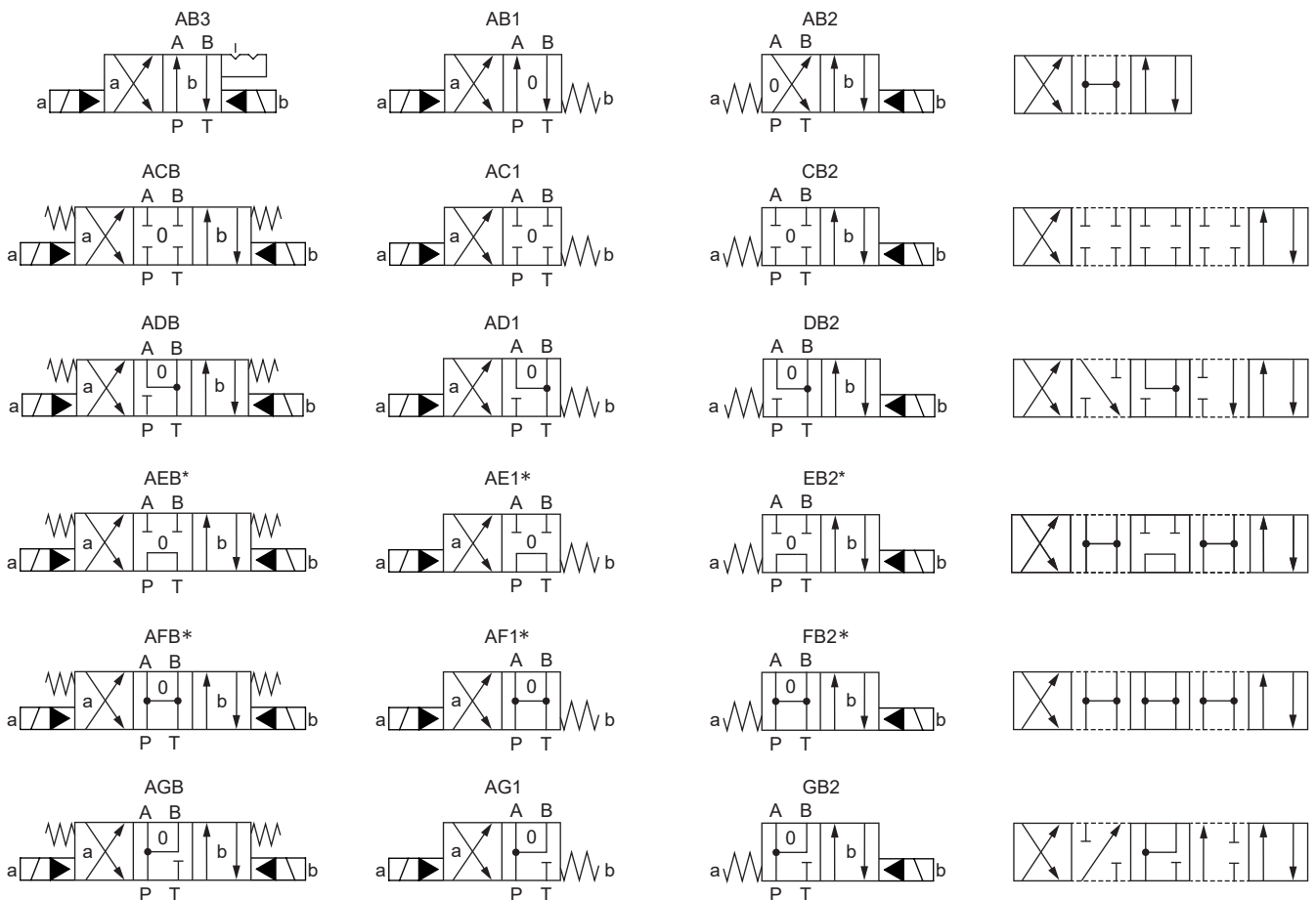
## DESCRIPTION

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.

## 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.

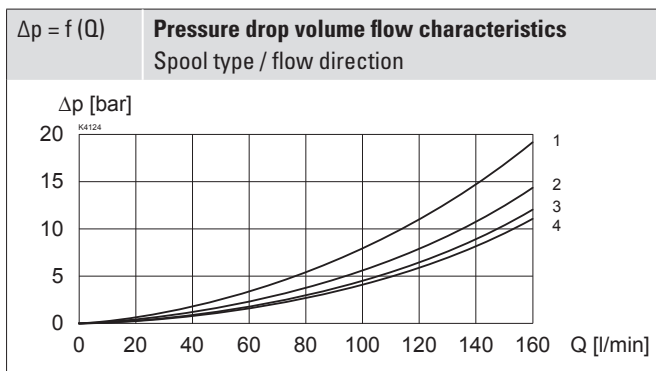
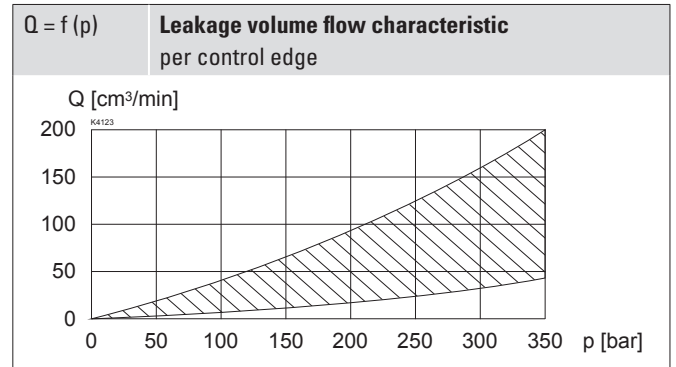
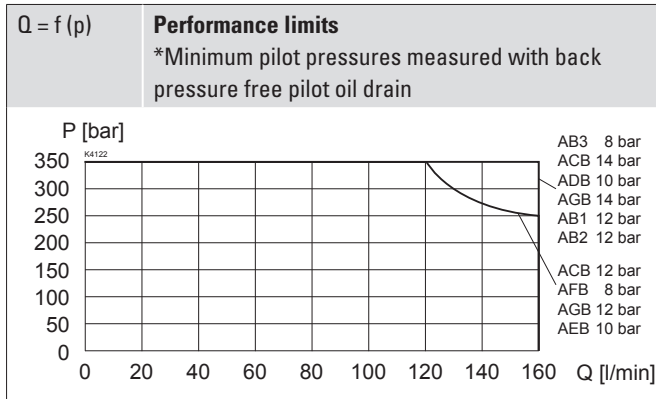
## SYMBOL



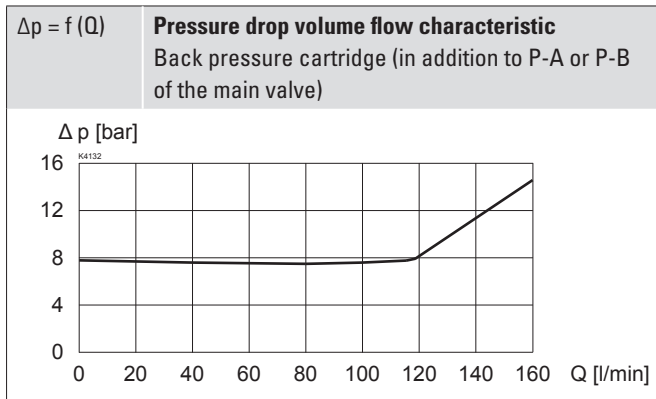
\* When the connections P and T are connected in the middle position, a back pressure cartridge is built in as standard in the case of internal pilot oil supply (ti/pi). If this back pressure valve is not used (0, according to the type code), it must be ensured that a pilot pressure of minimum 4 bar 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.



**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
AB1 / AB2 / AB3	3	3	-	2	1
ACB / AC1 / CB2	3	3	-	2	1
ADB / AD1 / DB2	3	3	-	2	1
AEB / AE1 / EB2	3	3	1	2	1
AFB / AF1 / FB2	2	2	4	4	2
AGB / AG1 / GB2	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.

## GENERAL SPECIFICATIONS

Designation	4/2-, 4/3-spool valve
Mounting	Flange construction
Nominal size	NG10 according to ISO 4401-05
Actuation	Electrical
Ambient temperature	<b>Operation as T6</b> -25...+40 °C (L9) <b>Operation as T4</b> -25...+90 °C (L9) -25...+70 °C (L15) -40...+70 °C (L15)
Weight	5,1 kg (1 solenoid) 6,8 kg (2 solenoids) 0,3 kg control plate 0,17 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 <sup>2</sup> /s...320 mm <sup>2</sup> /s
Temperature range fluid	<b>Operation as T6</b> NBR -25...+40 °C (L9) FKM -20...+40 °C (L9) <b>Operation as T4</b> NBR -25...+70 °C (L9 or L15) FKM -20...+70 °C (L9 or L15) NBR 872 -40...+70 °C (L15)
Contamination efficiency	Class 20 / 18 / 14
Filtration	Required filtration grade $\beta_{10...16} \geq 75$ , 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

**Attention!** The UC execution is always supplied without cable gland



## CERTIFICATES

	Surface	Mining	Standard -25 °C to...	Z604 -40 °C to...
ATEX / UKEX	x	x	x	x
IECEX	x	x	x	x
CCC	x	x	x	x
EAC	x	x	x	x
Australia	x	x	x	x
MA		x	x	
USA / Canada	x		x	x
PESO	x		x	x

The certificates can be found on [www.wandfluh.com](http://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

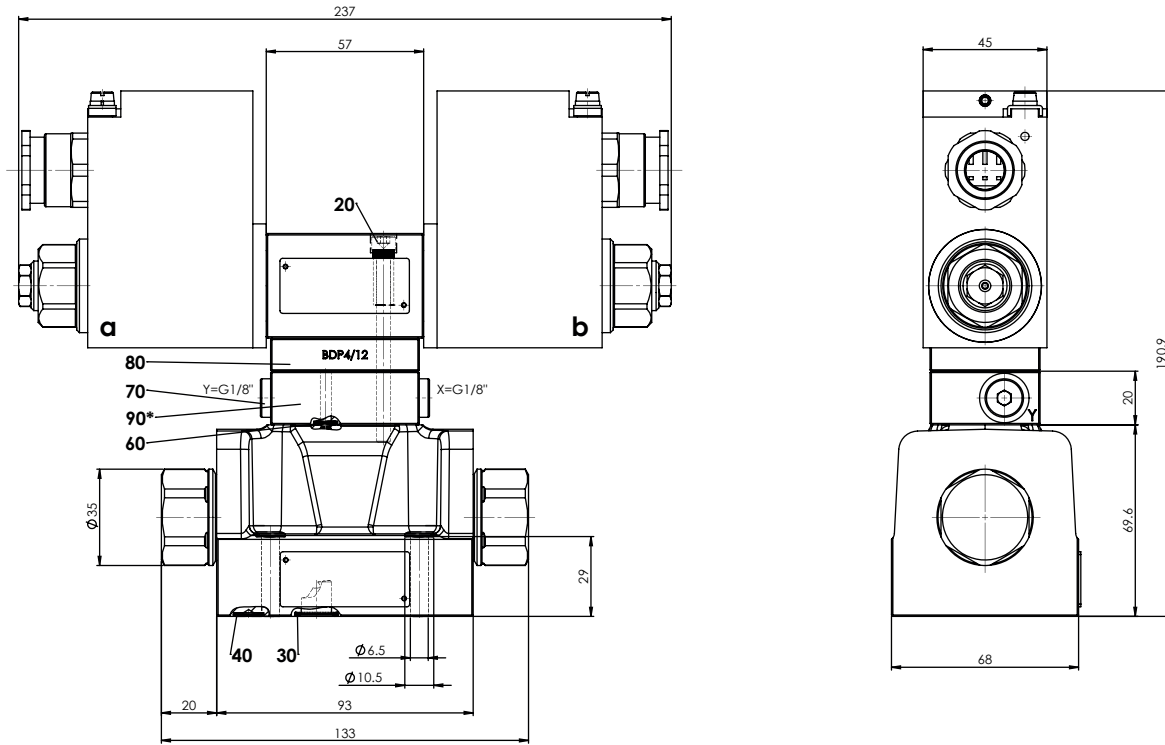
## SURFACE TREATMENT

- ◆ 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

**DIMENSIONS**

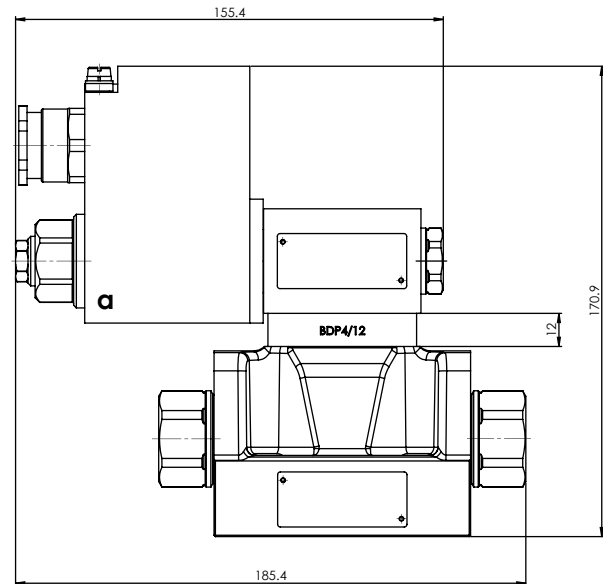
4/3-way spool valve (spring centring)

4/2-way spool valve (impulse)

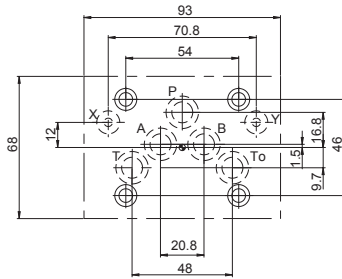


\* Pos.90 Control plate with type of pilot operation te, pi, pe only

4/2-way spool valve (spring reset)



## HYDRAULIC CONNECTION



## 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

## PARTS LIST

Position	Article	Description
20	246.2151	Socket head screw M5 x 50 DIN 912
	246.2171	Socket head screw M5 x 70 DIN 912
70	238.1405	Screw plug VSTI G1/8"-ED
80	173.1400	Spacer plate NG4 Mini
90	173.1500	Control plate NG4 Mini
	251.2923	Seal kit WV.FA10

### Seal kit consisting of:

30	O-ring	ID 12,42 x 1,78
40	O-ring	ID 7,65 x 1,78
60	O-ring	ID 5,28 x 1,78

## 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