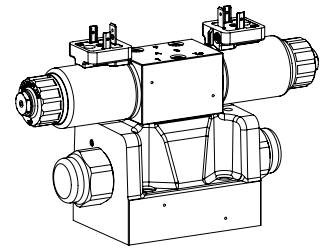


## Proportional spool valve

### Flange construction

- ◆ pilot operated
- ◆  $Q_{max} = 200 \text{ l/min}$
- ◆  $Q_{Nmax} = 90 \text{ l/min}$
- ◆  $p_{max} = 350 \text{ bar}$

**NG10**  
**ISO 4401-05**



### DESCRIPTION

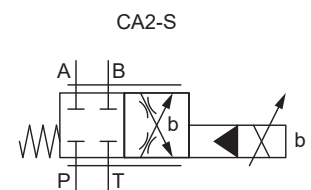
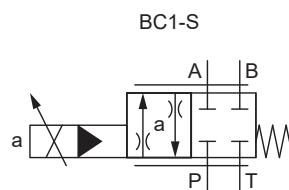
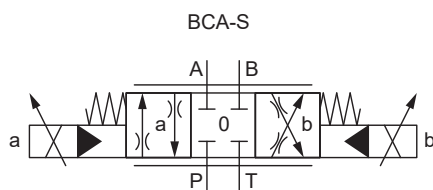
Pilot operated proportional spool valve with 4 connections in 5-chamber system. Precise spool fit, low leakage, long service life time. Very compact construction with corresponding low weight. The pilot valve is a proportional solenoid operated pressure reducing valve. The function of the pilot and main valve as well as the interaction of both valves can be found in the hydraulic diagram. Proportional to the solenoid current, the spool stroke, the spool opening and the valve volume flow increase. The proportional spool valve is not pressure compensated. For the control, Wandfluh proportional amplifiers are available (see register 1.13).

### APPLICATION

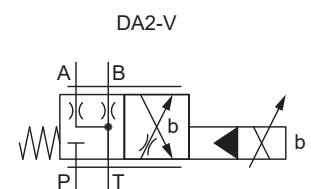
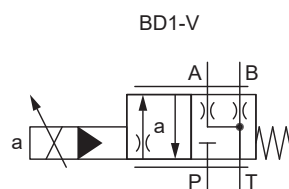
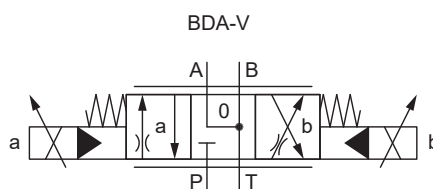
Proportional spool valves are perfectly suitable for demanding tasks due to the high resolution, large volume flow and low hysteresis. Pilot operated valves are used where large volume flows have to be controlled. Due to the large flow range and the high stiffness of the actuation as a result of the pilot control, these valves are suitable for applications where fast acceleration and deceleration processes, high speeds and sensitive motion sequences are required. The applications are in the industrial as well as in the mobile hydraulics for the smooth control of hydraulic actuations.

### SYMBOL

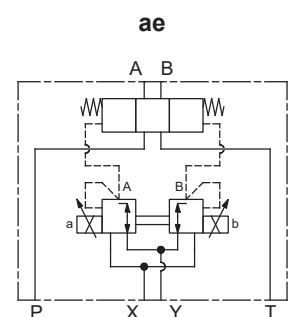
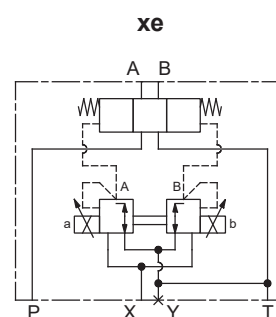
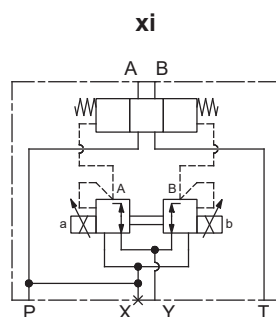
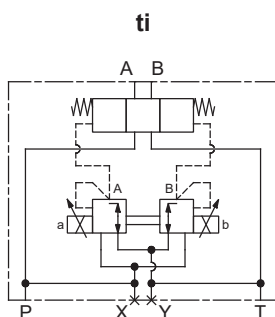
Symmetrical control



Meter-in control



Types of pilot operation



**TYPE CODE**

		WVP F A10 - <input type="text"/> - 90 - <input type="text"/> - <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> # <input type="text"/>			
Spool valve, pilot operated, proportional					
Flange construction					
International standard interface ISO NG10					
Designation of symbols acc. to table					
Nominal volume flow					
Type of pilot operation:					
Control oil supply (x) and drain (y)	(x) and (y) internally	<input type="text"/>			
	(x) and (y) externally	<input type="text"/>			
	(x) internally (y) externally	<input type="text"/>			
	(x) externally (y) internally	<input type="text"/>			
Nominal voltage U <sub>N</sub>		12 VDC	<input type="text"/>		
		24 VDC	<input type="text"/>		
Slip-on coil		Metal housing round	<input type="text"/>		
		Metal housing square	<input type="text"/>		
Connection execution		Connector socket EN 175301-803/ISO 4400	<input type="text"/>		
		Connector socket AMP Junior-Timer	<input type="text"/>		
		Connector Deutsch DT04-2P	<input type="text"/>		
Sealing material		NBR	<input type="text"/>		
		FKM (Viton)	<input type="text"/>		
Design index (subject to change)					

1.10-3500

**GENERAL SPECIFICATIONS**

Designation	Proportional spool valve
Construction	Pilot operated
Mounting	Flange construction
Nominal size	NG10 according to ISO 4401-05
Actuation	Electrical
Ambient temperature	-25...+70 °C (NBR) -20...+70 °C (FKM) if >50 °C, I <sub>G</sub> is only conditionally achievable
Weight	3,5 kg (1 solenoid) 3,9 kg (2 solenoids)
MTTFd	150 years

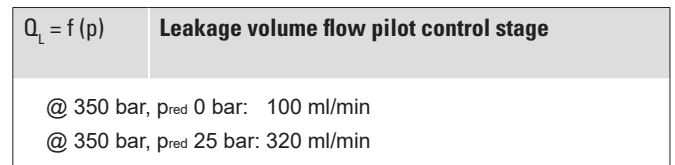
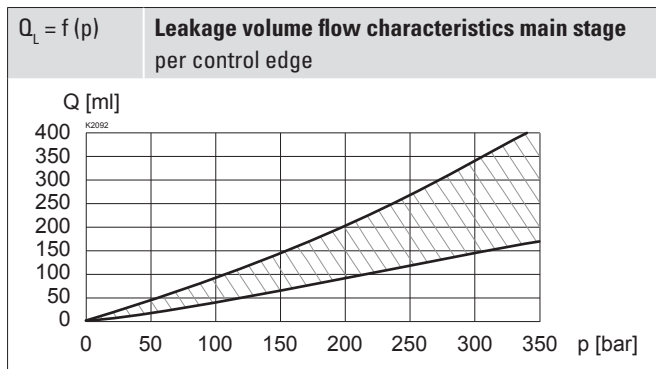
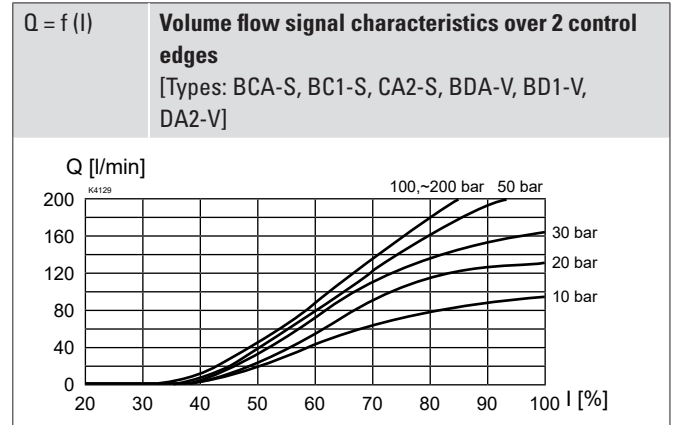
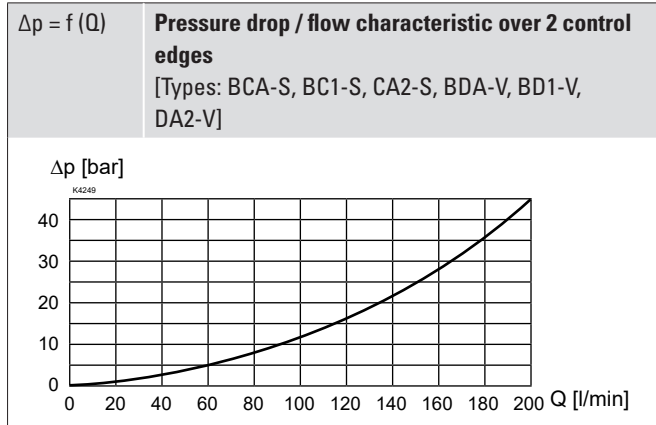
**ACTUATION**

Pressure reducing valve  
 MDPFA04-P / AB-25 for BCA-S / BDA-V  
 MDPFA04-P / B-25 for BC1-S / BD1-V  
 MDPFA04-P / A-25 for CA2-S / DA2-V  
 Connector socket EN 175301 – 803

**HYDRAULIC SPECIFICATIONS**

Working pressure	p <sub>max</sub> = 350 bar
Tank pressure	p <sub>Tmax</sub> = 160 bar (type of pilot operation ae and xi) p <sub>Tmax</sub> = 100 bar (type of pilot operation ti and xe)
Pilot pressure	p <sub>v</sub> = 25...350 bar Connection X: p <sub>v</sub> = 25...200 bar
Pressure pilot oil drain	Minimum 25 bar lower than p <sub>v</sub>
Maximum volume flow	Q <sub>max</sub> = 200 l/min, see characteristics
Leakage oil	See characteristics
Fluid	Mineral oil, other fluid on request
Viscosity range	12 mm <sup>2</sup> /s...320 mm <sup>2</sup> /s
Temperature range fluid	-20...+70 °C
Contamination efficiency	Class 18 / 16 / 13
Filtration	Required filtration grade β 6...10 ≥ 75, see data sheet 1.0-50

## PERFORMANCE SPECIFICATIONS

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


### Note!



All values were measured over two control edges. The connections A and B were short-circuited.

## 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

Mounting interface	ISO 4401-05
Solenoids	DIN VDE 0580
Connection execution D	EN 175301 – 803
Protection class	EN 60 529
Contamination efficiency	ISO 4406

## SURFACE TREATMENT

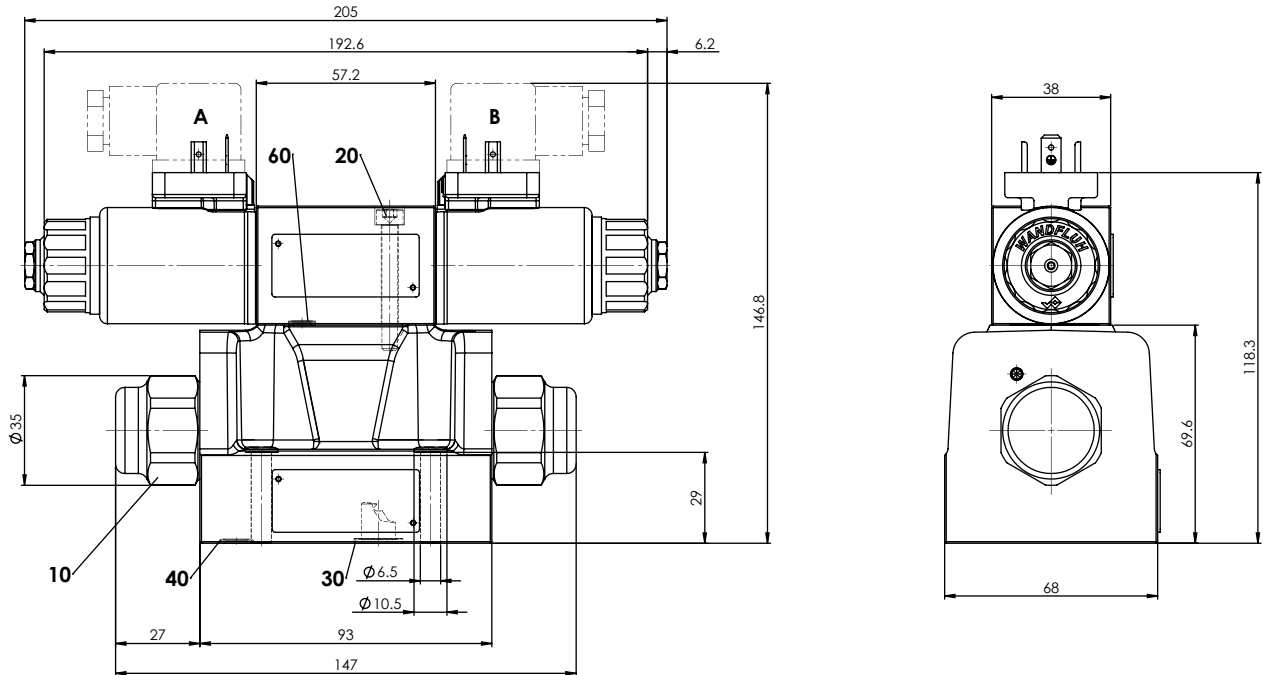
- ◆ The main valve body, the screw plugs, the slip-on coil and the armature tube are zinc-nickel coated
- ◆ The pilot valve body is coated with a two component paint

## SEALING MATERIAL

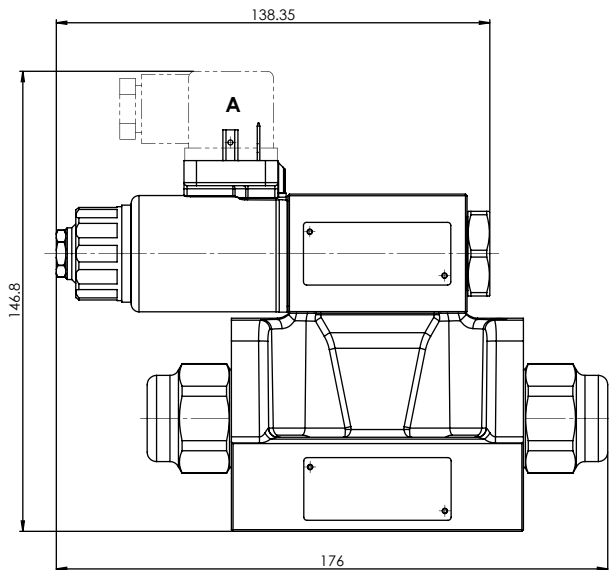
NBR or FKM (Viton) as standard, choice in the type code

**DIMENSIONS**

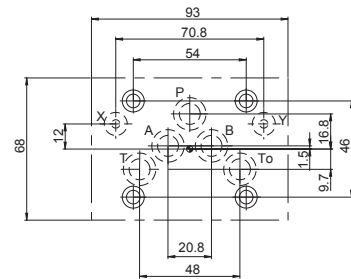
4/3-way spool valve (spring centring)



4/2-way spool valve (spring reset)


**PARTS LIST**

Position	Article	Description
10	239.7203	Screw plug
20	246.2146	Socket head screw M5 x 45 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)

**HYDRAULIC CONNECTION**

**INSTALLATION NOTES**

Mounting type	Flange mounting 4 fixing holes for socket head screws M6 x 40
Mounting position	Any, preferably horizontal
Tightening torque	$M_D = 13.5 \text{ Nm} \pm 10 \%$ , quality min. 10.9

 $M_D = 10.5 \text{ Nm} \pm 10 \%$ , 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.

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