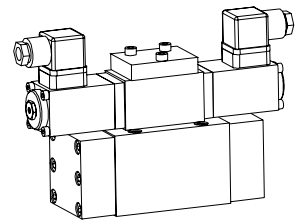


**Proportional directional valve**

- pilot operated
- not pressure compensated
- $Q_{max} = 220$  l/min
- $Q_N = 80$  l/min
- $p_{max} = 315$  bar

**NG10**  
 ISO 4401-05

**DESCRIPTION**

Pilot controlled spool valve, in five chamber design actuated by a Wandfluh proportional solenoid (VDE standard 0580). Wet solenoid in oil. Spool with precisely machined notches on control edges produce a progressive volume flow characteristic similar to proportional flow valves. The valve body, the covers and the solenoids are zinc coated.

**FUNCTION**

Depending on selected spool, the valve controls flow symmetrically or in meter-in or in meter-out mode. The spool is piloted by a proportional pressure relief valve. Set-up, function and interaction of main and pilot stage are shown with the hydraulic diagram. To control the valve Wandfluh proportional amplifiers are available (see register 1.13).

**APPLICATION**

High flow capacity and stiffness of the pilot system make this valve an ideal device for fast acceleration and deceleration, high speed, and sensitive adjustment of motion of an actuator. Application: Tooling machines, lifting and haulage systems, textile and plastic industry, mobile applications.

**CONTENT**

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**TYPE CODE**

International mounting interface ISO	A	V	P	W	<input type="checkbox"/>	4	<input type="checkbox"/>	- 80 -	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>
Pilot operated proportional spool valve													
Control mode:													
Symmetrical	<input type="checkbox"/>												
Meter-in	<input type="checkbox"/>												
Meter-out	<input type="checkbox"/>												
		(see control mode on page 2)											
Number of control ports													
Description of symbols acc. to table 1.10-95/2													
Nominal flow at 10 bar pressure drop over 2 metering edges													
$Q_N = 80$ l/min													
Pilot pressure supply and drain:													
Pressure supply (x) and drain (y) internal	<input type="checkbox"/>												
Pressure supply (x) and drain (y) external	<input type="checkbox"/>												
Pressure supply (x) internal drain (y) external	<input type="checkbox"/>												
Pressure supply (x) external drain (y) internal	<input type="checkbox"/>												
Standard nominal voltage $U_N$ :	12 VDC	<input type="checkbox"/>											
	24 VDC	<input type="checkbox"/>											
Design-Index (Subject to change)													

**GENERAL SPECIFICATIONS**

Nominal size	NG10 acc. to ISO 4401-05
Designation	4/2-, 4/3-way proportional-control valve
Construction	Pilot operated spool valve
Mounting	Flange, 4 fixing holes for socket head cap screws M6x65
Fastening torque	$M_D = 9,5$ Nm (screw quality 8.8)
Pipe connection	Connection plates, Multi-station flange subplate, Longitudinal stacking system any, preferably horizontal
Mounting position	
Ambient temperature	-20...+50°C
Weight: 4/2-way	m = 4,9 kg
4/3-way	m = 5,3 kg

**HYDRAULIC SPECIFICATIONS**

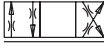
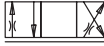

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 18/16/13 (Required filtration grade $\beta_{6...10} \geq 75$ ) refer to data sheet 1.0-50/2
Viscosity range	12 mm <sup>2</sup> /s...320 mm <sup>2</sup> /s
Fluid temperature	-20...+70°C
Working pressure	$p_{max} = 315$ bar (connection P, A, B)
Tank pressure in T	$p_{max} = 160$ bar (te,pi) $p_{max} = 5$ bar (ti,pe)
Nominal volume flow	$Q_N = 80$ l/min ( $Q_{max} = 220$ l/min) at 10 bar pressure drop over 2 metering edges
Pilot pressure	$p_V = 25...315$ bar
Leakage volume flow	on request
Hysteresis	≤ 5 % *
	* by optimal dithersignal



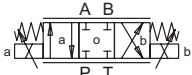
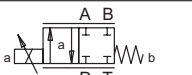
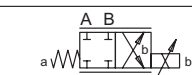

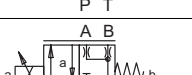

**ELECTRICAL SPECIFICATIONS**

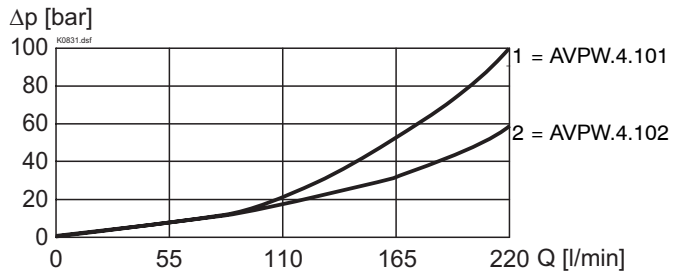
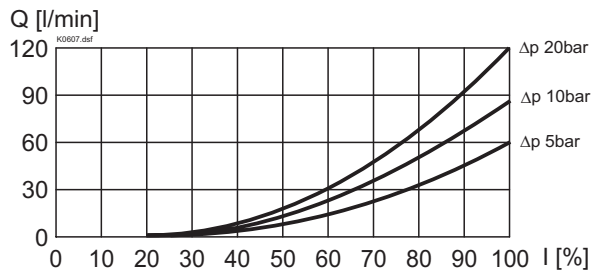
Construction	Proportional solenoid, wet pin push type, pressure tight.	
Standard-Nominal voltage	U = 12 VDC	U = 24 VDC
Limiting current	I <sub>G</sub> = 1250 mA	I <sub>G</sub> = 680 mA
Relative duty factor	100% DF (see data sheet 1.1-430)	
Protection class	IP 65 acc. to EN 60 529	
Connection / Power supply	Over device plug connection to ISO 4400 / DIN 43650 (2P+E)	
Other electrical specifications	see data sheet 1.1-116 (PI35V-M40)	

**CONTROL MODE**

Symmetrical	S	
Meter-in	V	
Meter-out	R	

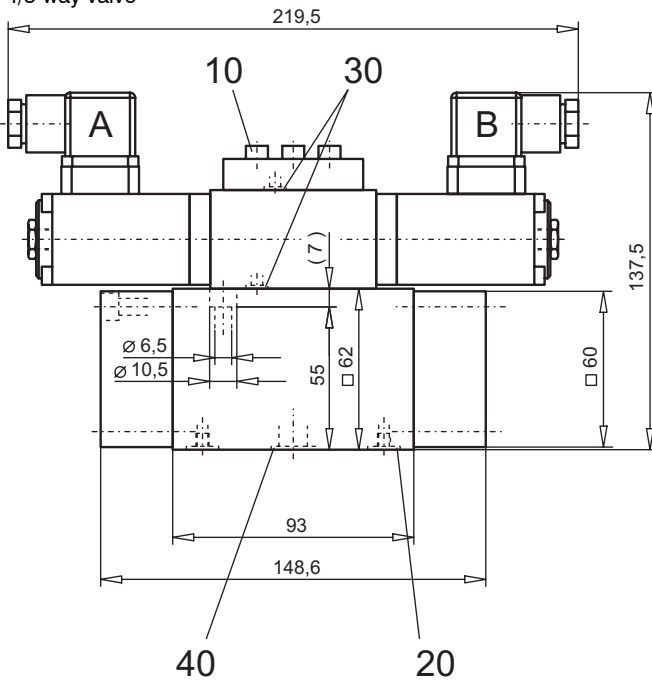
**TYPE CHARTS / DESIGNATIONS OF SYMBOLS**

	S V R .D101
	S V R .Z101a
	S V R .Z101b
	v .D102
	v .Z102a
	v .Z102b

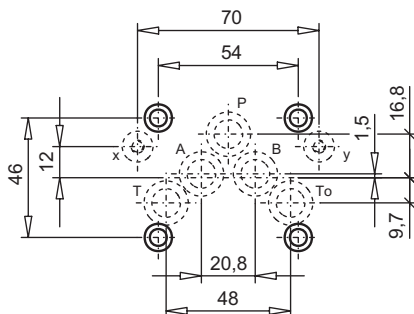
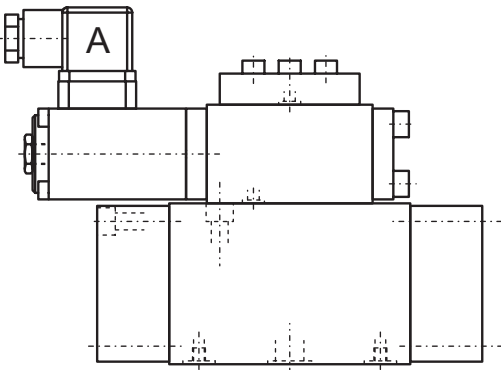
**CHARACTERISTICS** oil viscosity  $\nu = 30 \text{ mm}^2/\text{s}$ 
 $\Delta p = f(Q)$  Pressure loss/flow-characteristic over 2 metering edges

 $Q = f(I)$  Volume flow-signal-characteristics


**DIMENSIONS**

4/3-way valve



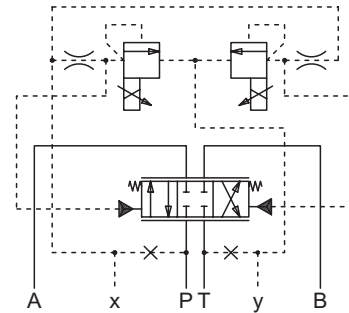
4/2-way valve


**Mounting instruction**

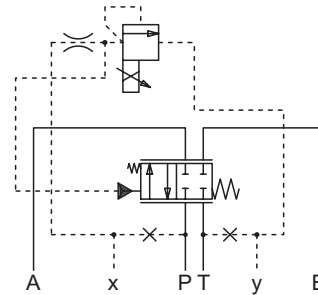
To screw the main valve body ( $M_D = 9,5$  Nm, quality 8.8) to the base plate the pilot valve ( $M_D = 5,5$  Nm, quality 8.8). must be taken off.

**HYDRAULIC DIAGRAM**

4/3-way valve



4/2-way valve


**PARTS LIST**

Position	Article	Description
10	246.2155	Cyl. screw M5x55 DIN 912
20	160.2093	O-ring ID 9,25x1,78
30	160.2052	O-ring ID 5,28x1,78
40	160.2140	O-ring ID 14,00x1,78

**ACCESSORIES**

Sub-plates Register 1.9  
 Proportional-amplifier Register 1.13

Technical explanation see data sheet 1.0-100E