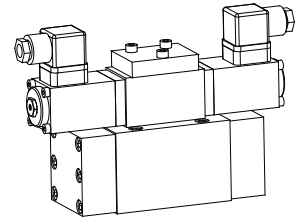


Proportional directional valve

- 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.

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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"/>												
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 M6 x 65
Fastening torque	$M_D = 9,5$ Nm (screw quality 8.8)
Pipe connection	Connection plates, Multi-station flange subplate, Longitudinal stacking system
Mounting position	any, preferably horizontal
Ambient temperature	-20...+50 °C
Weight: 4/2-way	m = 4,9 kg
4/3-way	m = 5,3 kg


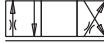

HYDRAULIC SPECIFICATIONS

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 ² /s...320 mm ² /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 on request
Leakage volume flow	$\leq 5\%$ *
Hysteresis	* by optimal dithersignal

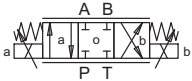
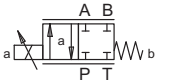
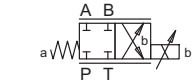
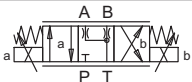
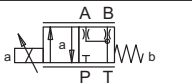
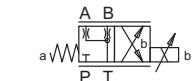
ELECTRICAL SPECIFICATIONS

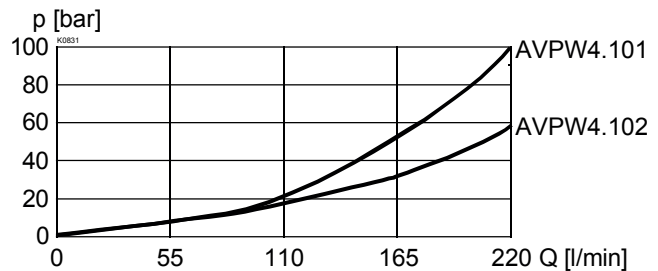
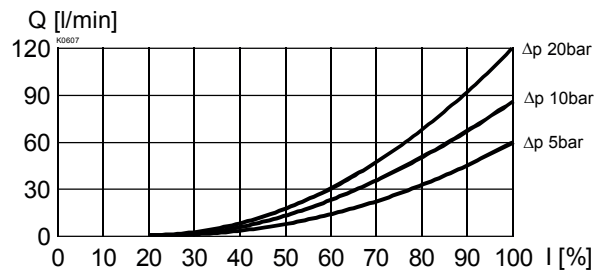
Construction	Proportional solenoid, wet pin push type, pressure tight.	
Standard-Nominal voltage	U = 12 VDC	U = 24 VDC
Limiting current	I _G = 1250 mA	I _G = 680 mA
Relative duty factor	100% DF (see data sheet 1.1-430)	
Protection class	IP 65 acc. to EN 60529	
Connection/Power supply	Over device plug connection to ISO 4400/DIN 43650 (2P+E)	
Other electrical specifications	see data sheet 1.1-116 (PI35V-M40)	

CONTROL MODE

Symmetrical		
Meter-in	V	
Meter-out	R	

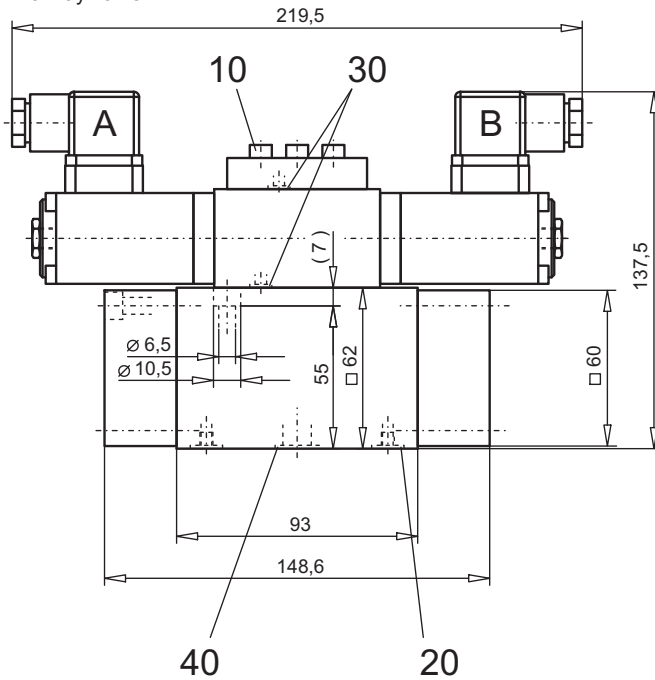
TYPE CHARTS / DESIGNATIONS OF SYMBOLS

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

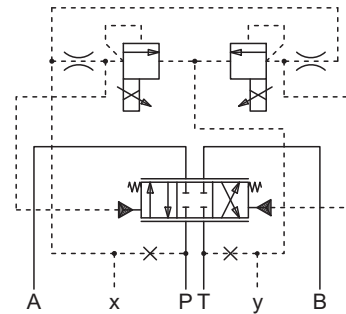
CHARACTERISTICS oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $\Delta p = f(Q)$ Pressure loss/flow-characteristic over 2 metering edges

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


DIMENSIONS

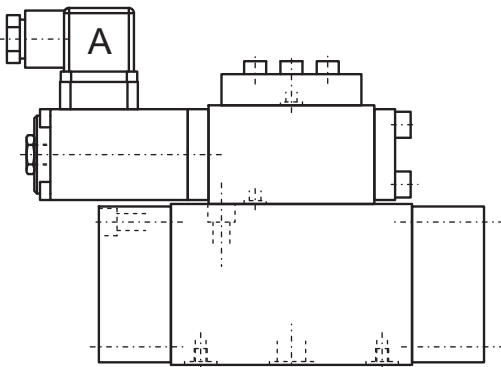
4/3-way valve


HYDRAULIC DIAGRAM

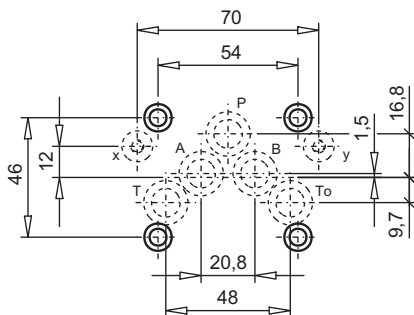
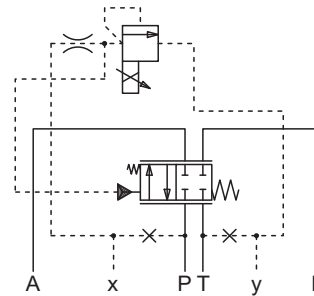
4/3-way valve



4/2-way valve



4/2-way valve


PARTS LIST

Position	Article	Description
10	246.2156	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

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.

ACCESSORIES

Sub-plates
 Proportional-amplifier

Register 2.9
 Register 1.13

Technical explanation see data sheet 1.0-100