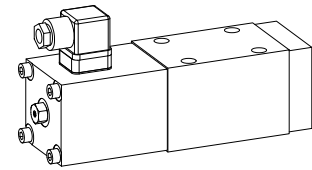


Proportional directional valve

- not pressure compensated
- $Q_{max} = 60$ l/min
- $Q_N = 50$ l/min
- $p_{max} = 315$ bar

NG10
 ISO 4401-05

DESCRIPTION

Direct operated proportional spool valve in flange design NG10 acc. to ISO 4401-05 with 4 ports. The spool valve is designed to the 5 chamber principle. The volume flow is adjusted by a Wandfluh proportional solenoid (VDE standard 0580). Low pressure drop due to the body design and spool profiling. The spool is made of hardened steel. The body made of high grade hydraulic casting for long service life is painted. The cover and the solenoid are zinc coated.

FUNCTION

Proportionally to the solenoid current spool stroke, spool opening and valve volume flow will increase. Proportional directional valves NG10 are not load-compensated. The optimum spool shape and progressive characteristics curve allow fine motion control. To control the valve Wandfluh proportional amplifiers are available (see register 1.13).

APPLICATION

Proportional directional spool valves are well suited for demanding applications where high resolution, high volume flow and low hysteresis are requested. They are implemented in industrial hydraulics as well as in mobile hydraulics for the smooth control of hydraulic actuators. Application examples: pitch control of wind generators, forest and earth moving machines, machine tools and paper production machines with simple position controls, robotics and fan control.

CONTENT

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TYPE CODE

	A	PW	<input type="checkbox"/>	4	<input type="checkbox"/>	-	50	-	<input type="checkbox"/>	#	<input type="checkbox"/>
International mounting interface ISO											
Proportional directional valve											
Control mode acc. to table 1.10-90/2											
Number of control ports											
Description of symbols acc. to table 1.10-90/2											
Nominal flow at 10 bar pressure drop over 2 metering edges = 50 l/min											
Standard nominal voltage U_N :	12 VDC	<input type="checkbox"/>		G12							
	24 VDC	<input type="checkbox"/>		G24							
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	Direct 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
Mounting position	any, preferably horizontal
Ambient temperature	-20...+50°C
Weight: 4/2-way	$m = 4,3$ kg
4/3-way	$m = 5,7$ kg

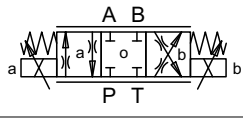
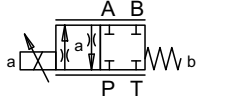
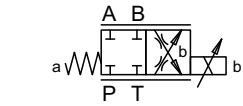
HYDRAULIC SPECIFICATIONS

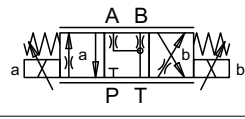
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 18/16/13 (Required filtration grade $\beta_{6..10} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70°C
Working pressure	$p_{max} = 315$ bar (connections P, A, B)
Tank pressure	$p_{max} = 160$ bar (connection T)
Nominal volume flow	$Q_N = 50$ l/min ($Q_{max} = 60$ l/min) at 10 bar pressure drop over 2 metering edges.
Leakage volume flow	on request
Hysteresis	≤ 5 % * * at optimal dither signal

ELECTRICAL SPECIFICATIONS

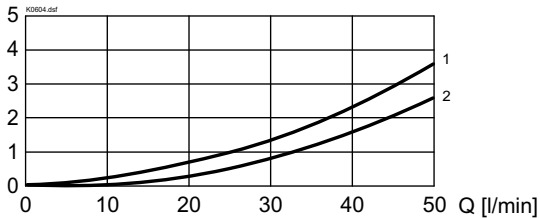
Construction	Proportional solenoid, wet pin push type, pressure tight.	
Standard-Nominal voltage	U = 12 VDC	U = 24 VDC
Limiting current	$I_G = 2300$ mA	$I_G = 1150$ mA
Relative duty factor	100% DF (see data sheet 1.1-430)	
Protection class	IP 65 acc. to EN 60 529	
Connection/Power supply	Over device plug connection to ISO 4400 / DIN 43650 (2P+E)	
Other electrical specifications	see data sheet 1.1-155 (PI60V)	

TYPE CHARTS / DESIGNATIONS OF SYMBOLS

	S 4 D101 S = Symmetrical control mode
	S 4 Z101a S = Symmetrical control mode
	S 4 Z101b S = Symmetrical control mode

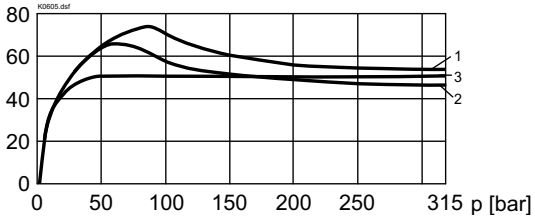
	V 4 D102 V = Meter-in control mode
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CHARACTERISTICS oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $\Delta p = f(Q)$ Pressure loss/flow-characteristics over 2 metering edges

 Δp [bar]


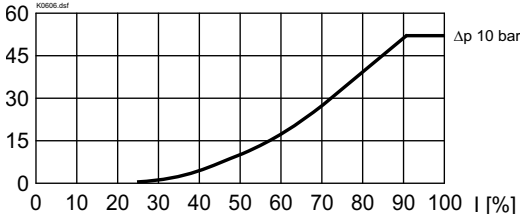
- 1 APWS4.101 P-A / P-B 2 APWV4.102 B-T / A-T
 APWS4.101 B-T / A-T
 APWV4.102 P-A / P-B

 $Q_L = f(p)$ Volume flow-pressure-characteristics

 Q [l/min]


- 1 APWS4.101 3 with 2-way pressure compensator UZFSA10
 2 APWV4.102 (see data sheet 2.5-860)

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

 Q [l/min]

ACCESSORIES

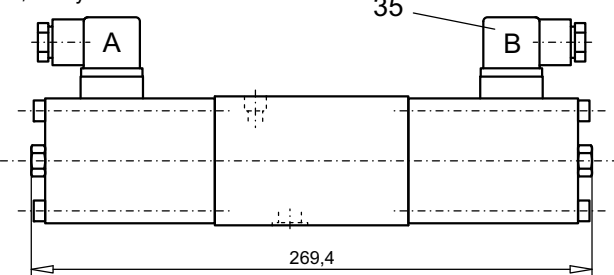
 Sub-plates
 Proportional-amplifier

 Register 1.9
 Register 1.13

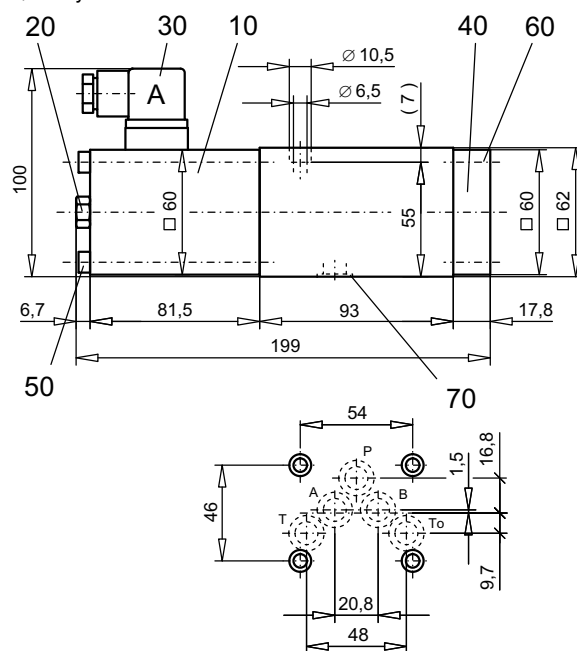
Technical explanation see data sheet 1.0-100E

DIMENSIONS

4/3-way valve



4/2-way valve


PARTS LIST

Position	Article	Description
10	256.5454 256.5418	Proportional solenoid PI60V-G24-M40 Proportional solenoid PI60V-G12-M40
20	253.8002	Plug with integrated manual override HB8,5
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	059.2205	Cover
50	246.3190	Socket head cap screw M6x90 DIN 912
60	246.3121	Socket head cap screw M6x20 DIN 912
70	160.2140	O-ring ID 14,00x1,78