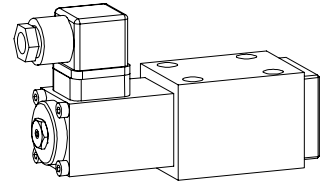


Solenoid operated spool valve

- 4/2-way impulse valve
- 4/3-way with spring centred mid position
- 4/2-way with spring reset
- $Q_{max} = 50 \text{ l/min}$, $p_{max} = 350 \text{ bar}$

NG6
 ISO 4401-03


DESCRIPTION

Spool valve in flange design NG6, interface to ISO 4401-03 with 4 ports. Solenoid to standard VDE 0580. Direct operated solenoid valve in 5 chamber design. Spool detented or with spring reset. Wet pin type solenoid. Precise spool fit, low leakage, long life time. Threaded ports through additional base plate. Spool made from hardened steel, body from high quality cast steel. Wide range of standard and special voltages. The body made of high grade hydraulic casting for long service life is painted. The cover and the solenoid are zinc coated.

FUNCTION

The solenoid shifts the spool into the corresponding position.

- 4/2-way detented spool valve:
 2 solenoids and 2 detented positions. With the solenoids deenergised the spool remains in the last switched position.
- 4/2-way spool valve:
 1 solenoid and 2 spool positions, spring offset. With the solenoid deenergised the spool returns to the offset position.
- 4/3-way spool valve:
 2 solenoids and 3 spool positions, spring centered. With the solenoids deenergised the spool returns to the center position.

APPLICATION

Solenoid operated spool valves are mainly used for controlling direction of movement and stopping of hydraulic cylinders and motors. Direction of movement depends on the position of spool and its flow symbol. Please pay attention to the performance limits and leakage of the valves. Solenoid operated spool valves are suitable for machine tools and handling systems.

CONTENT

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TYPE CODE

			A	E	4		-		#	
International standard interface ISO										
Solenoid SIN35V										
Number of control ports										
Description of symbols acc. to table 1.2-56/2										
Standard-nominal voltage U_N :	12 VDC	<input type="checkbox"/>	G12							
	24 VDC	<input type="checkbox"/>	G24							
	110 VAC	<input type="checkbox"/>	R110							
	115 VAC	<input type="checkbox"/>	R115							
	230 VAC	<input type="checkbox"/>	R230							
Design-Index (Subject to change)										

GENERAL SPECIFICATIONS

Description	4/2-, 4/3-spool valve
Nominal size	NG6 to ISO 4401-03
Construction	Direct operated spool valve
Operations	Solenoid
Mounting	Flange 4 fixing holes for socket head cap screws M5x45
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50°C
Mounting position	any, preferably horizontal
Fastening torque	$M_D = 5,5 \text{ Nm}$ (screw quality 8.8)
Weight:	
4/2-way impuls	$m = 1,75 \text{ kg}$
4/3-way	$m = 1,75 \text{ kg}$
4/2-way (1 solenoid)	$m = 1,3 \text{ kg}$

HYDRAULIC SPECIFICATIONS

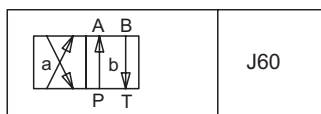
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70°C
Working pressure	
in port P, A, B	$p_{max} = 350 \text{ bar}$
Tank pressure	
in port T	$p_{max} = 100 \text{ bar}$
Max. volume flow	$Q_{max} = 50 \text{ l/min}$
Leakage volume flow	see characteristics

ELECTRICAL CONTROL

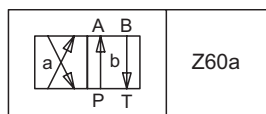
Construction	Solenoid, wet pin push type, pressure tight	Voltage tolerance	±10% of nominal voltage
Standard-nominal voltage	$U_N = 12$ VDC	Protection class	IP 65 to EN 60 529
	$U_N = 24$ VDC	Relative duty factor	100% DF (see data sheet 1.1-430)
	$U_N = 110$ VAC*	Switching cycles	15`000/h
	$U_N = 115$ VAC*	Operating life	10^7 (number of switching cycles, theoretically)
	$U_N = 230$ VAC*	Connection/Power supply	Over device plug connection to ISO 4400/ DIN 43650, (2P+E), other connections on request.
	AC = 50 to 60 Hz	Solenoid versions:	SIN35V (data sheet 1.1-105)
	* Rectifier integrated in the plug, other nominal voltages and nominal performances on request.		

TYPE LIST / DESIGNATION OF SYMBOLS

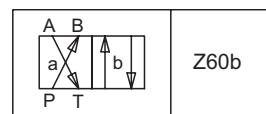
4/2-way valve impulse



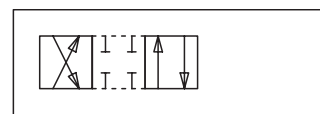
4/2-way valve with spring reset operation A-side



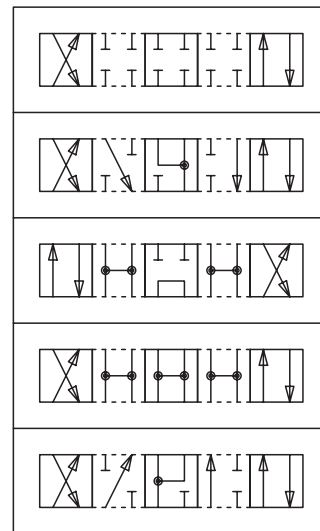
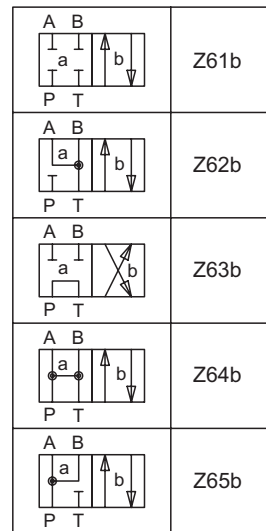
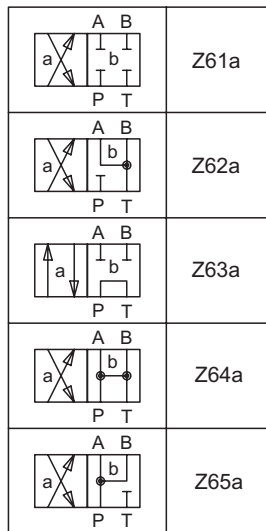
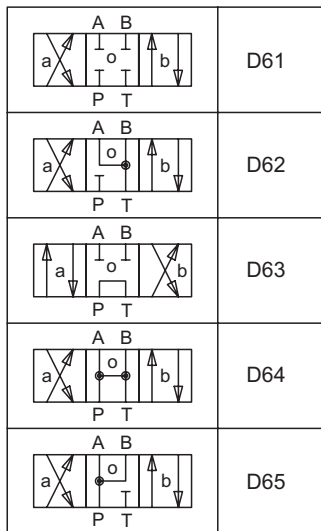
operation B-side

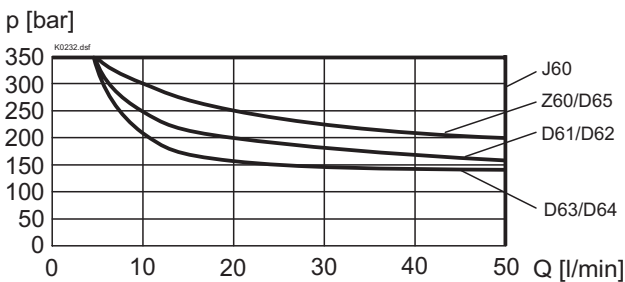
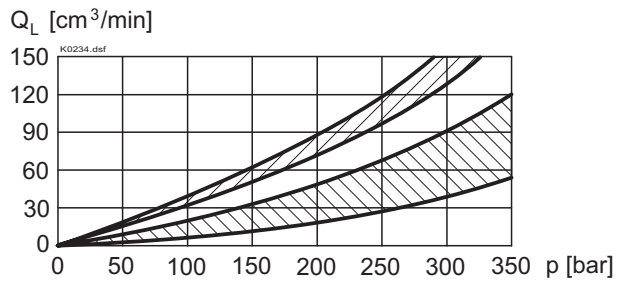




Transitional functions

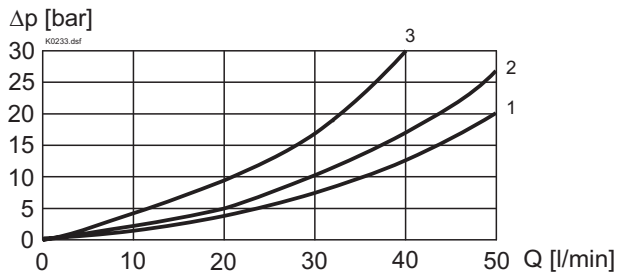


4/3-way valve spring centered


CHARACTERISTICS Oilviscosity $\nu = 30$ mm²/s

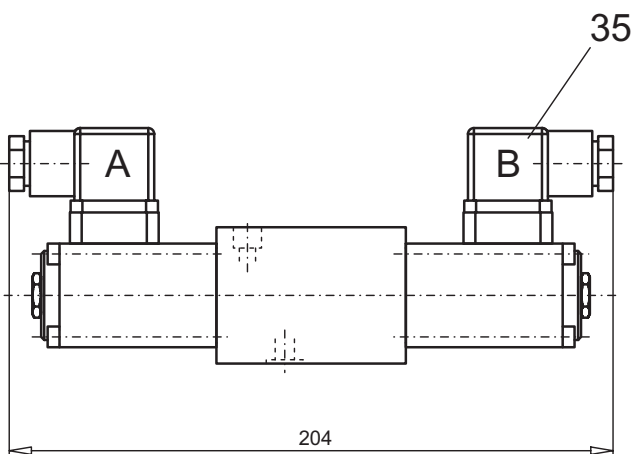
 $p = f(Q)$ Performance limits with standard voltage -10%

 $Q_L = f(p)$ Leakage volume flow characteristics per control edge


 Leakage envelope Nr.3
 Leakage envelope, the others envelopes

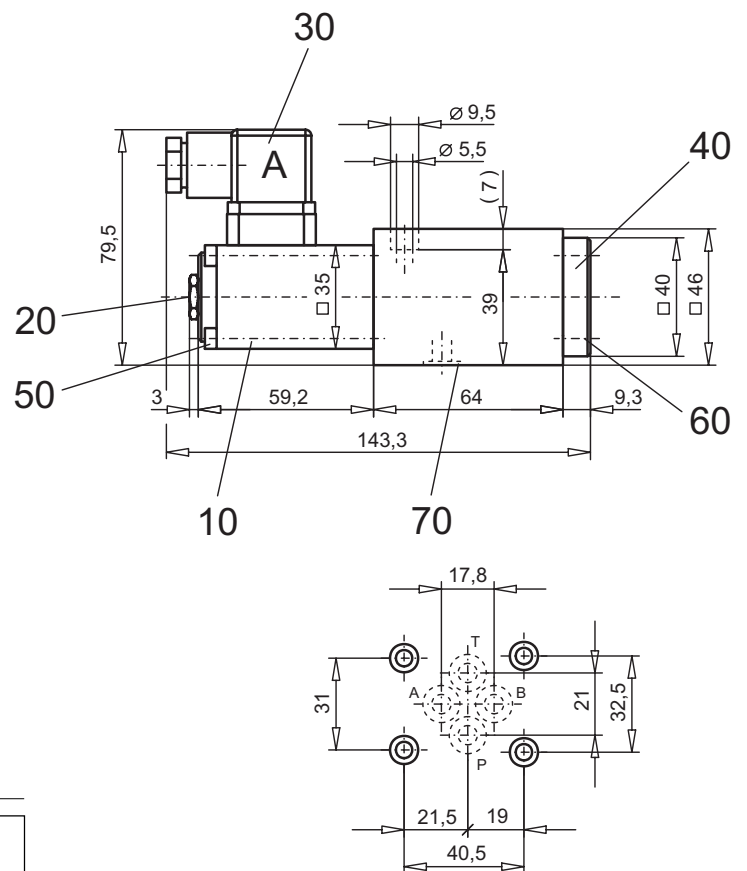
$\Delta p = f(Q)$ Pressure drop volume flow characteristics


Pressure drop Curve no.	Volume flow direction				
	P - A	P - B	P - T	A - T	B - T
Z60/J60	2	2	-	2	2
D61/Z61	2	2	-	2	2
D62/Z62	2	2	-	2	2
D63/Z63	2	2	3	2	2
D64/Z64	1	1	-	1	1
D65/Z65	1	1	-	2	2

DIMENSIONS

 4/3-way valve (spring centred)
 4/2-way valve (impulse)


4/2-way valve (spring reset)


PARTS LIST

Position	Article	Description
10	260.4 ...	Solenoid SIN35V
20	253.8000	Plug with integr. manual override manual override HB4,5
30	219.2001	Electric plug A (grey)
35	219.2002	Electric plug B (black)
40	060.2208	Cover
50	246.1161	Socket head cap screw M4x60 DIN 912
60	246.1111	Socket head cap screw M4x10 DIN 912
70	160.2093	O-ring ID 9,25x1,78

ACCESSORIES

Threaded connecting plates, Multi-flange subplates and Longitudinal stacking system see Reg. 2.9

Technical explanation see data sheet 1.0-100E