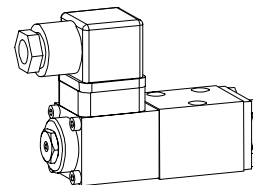


Solenoid operated spool valve

- 4/2-way impulse valve
- 4/3-way with spring centred mid position
- 4/2-way with spring reset
- $Q_{\max} = 15 \text{ l/min}$, $p_{\max} = 315 \text{ bar}$

NG3-Mini®



DESCRIPTION

Spool valve in flange design NG3-Mini. Interface to Wandfluh standard 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 is phosphated and the solenoid is 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. Mini-3 valves are used where both, reduced dimensions and weight are important.

CONTENT

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TYPE CODE

Interface	B	M	4		-		#	
Medium-solenoid								
Number of control ports								
Description of symbols acc. to table 1.2-26/2								
Standard- nominal voltage U_N :	12 VDC	G12						
	24 VDC	G24						
	110 VAC	R110						
	115 VAC	R115						
	230 VAC	R230						
Design-Index (Subject to change)								

GENERAL SPECIFICATIONS

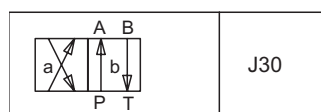
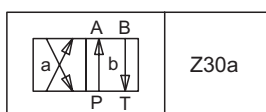
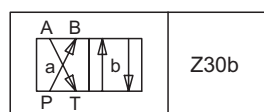
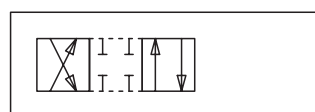
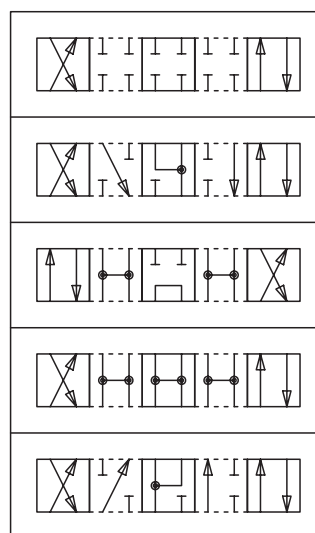
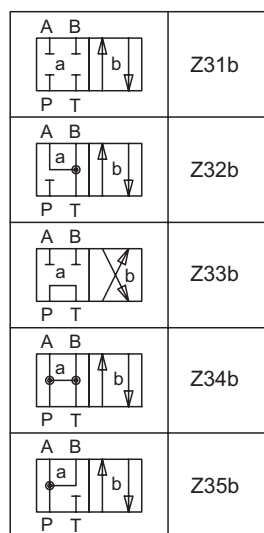
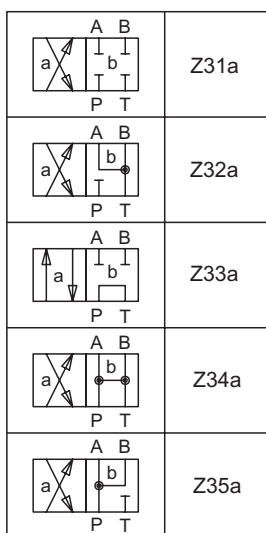
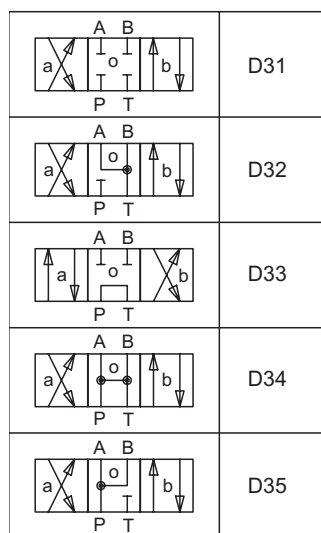
Description	4/2-, 4/3-spool valve
Nominal size	NG3-Mini to Wandfluh standard
Construction	Direct operated spool valve
Operation	Solenoid
Mounting	Flange
	3 fixing holes for socket head cap screws M4x30
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50°C
Mounting position	any, preferably horizontal
Fastening torque	$M_D = 2,8 \text{ Nm}$ (screw quality 8.8)
Weight: 4/2-way impulse	$m = 0,65 \text{ kg}$
4/3-way	$m = 0,65 \text{ kg}$
4/2-way (1 solenoid)	$m = 0,50 \text{ kg}$

HYDRAULIC SPECIFICATIONS

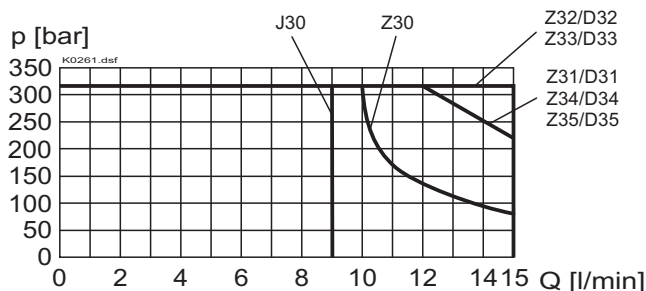
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, classe 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70°C
Working pressure	
in port P, A, B	$p_{\max} = 315 \text{ bar}$
Tank pressure	
in port T	$p_{\max} = 100 \text{ bar}$
Max. volume flow	$Q_{\max} = 15 \text{ l/min}$, see characteristics
Leakage volume flow	see characteristics

ELECTRICAL CONTROL

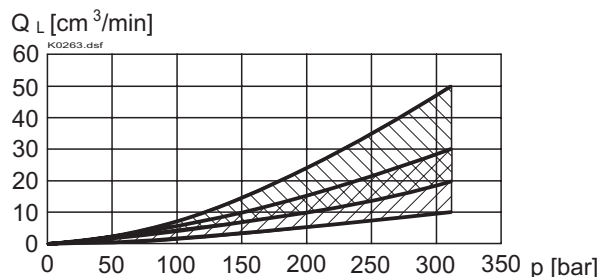
Construction	Solenoid, wet pin push type, pressure tight	Voltage tolerance	±10% of nominal voltage
Standard-nominal voltage	$U_N = 12 \text{ VDC}$	Protection class	IP 65 to EN 60529
	$U_N = 24 \text{ VDC}$	Relative duty factor	100% DF (see data sheet 1.1-430)
	$U_N = 110 \text{ VAC}^*$	Switching cycles	15'000/h
	$U_N = 115 \text{ VAC}^*$	Operating life	10^7 (number of switching cycles, theoretically)
	$U_N = 230 \text{ VAC}^*$	Connection/Power supply	Over device plug connection to ISO 4400/DIN 43650, (2P+E), other connections on request.
	AC = 50 bis 60 Hz		SIN29V (data sheet 1.1-80)
	* Rectifier integrated in the plug, other nominal voltages and nominal performances on request	Solenoid connection:	

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

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



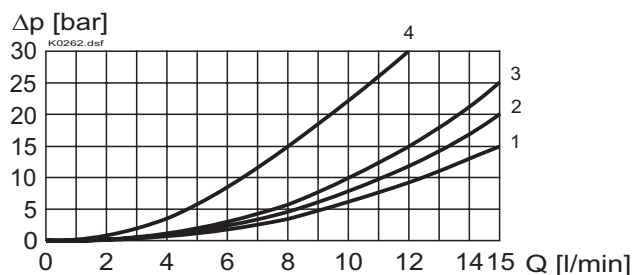
$Q_L = f(p)$ Leakage volume flow characteristics per control edge



 Leakage envelope J30/Z30/D31/D32/D34/D35

 Leakage envelope D33

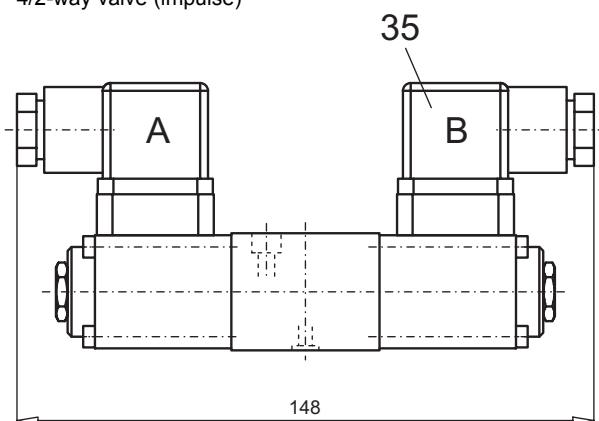
$\Delta p = f(Q)$ Pressure drop volume flow characteristics



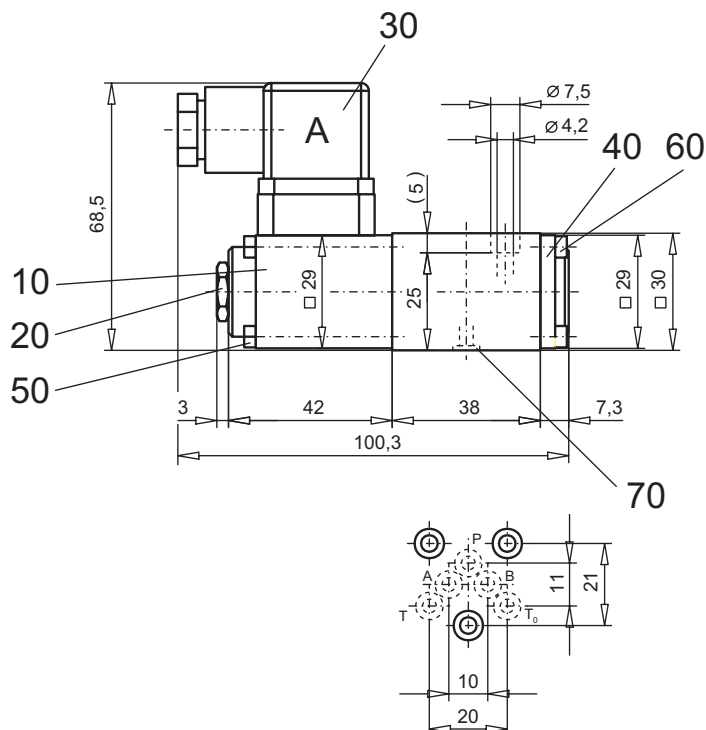
Symbol	Pressure drop Curve no.	Volume flow direction				
		P - A	P - B	P - T	A - T	B - T
Z30/J30	3	3	3	-	2	2
D31/Z31	3	3	3	-	2	2
D32/Z32	3	3	3	-	1	1
D33/Z33	4	4	4	3	4	4
D34/Z34	4	4	4	3	1	1
D35/Z35	2	2	2	-	2	2

DIMENSIONS

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



4/2-way valve (spring reset)



PARTS LIST

Position	Article	Description
10	260.2 ...	Solenoid SIN29V
20	253.8000	Plug with integr. manual override HB4,5
30	219.2001	Electric plug A (grey)
35	219.2002	Electric plug B (black)
40	56.4200	Cover
50	246.0141	Socket head cap screw M3x40 DIN 912
60	246.0108	Socket head cap screw M3x8 DIN 912
70	160.2045	O-ring ID 4,50x1,50

ACCESSORIES

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

Technical explanation see data sheet 1.0-100E