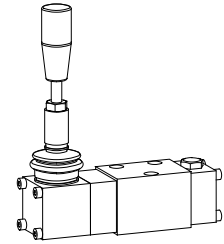


Spool valve
Hand- or roller operated

- 4/2- and 4/3-way detented
- 4/3-way with spring centred mid position
- 4/2-way with spring reset
- $Q_{max} = 20 \text{ l/min}$, $p_{max} = 315 \text{ bar}$

NG4-Mini[®]

DESCRIPTION

Spool valve NG4-Mini, flange type in accordance to Wandfluh standard with 4 connections, directly operated by hand or roller, in 5 chamber system. The hand lever valve is available with locked spool or with spring reset. The dancing roller valve only has a spring reset facility. Precise spool fit, little leakage, long life. Threaded connection by means of additional connecting plate. Hardened steel spool, the valve body being made from a high quality casting suitable for hydraulic applications. The valve body is painted, the end cover and lever housing are phosphatised.

FUNCTION

When actuated, the lever or roller displaces the spool to the corresponding switching position.

- 4/2- and 4/3-way manual valves with spring, 1 lever and 2 or 3 switching positions. The spring presses the spool back into the home position.
- 4/2- and 4/3-way manual lever valve with lock, 1 lever and 2 or 3 switching positions. The lock holds the spool in the last position selected.
- 4/2-way dancing roller valve, 1 dancing roller and 2 switching positions. The spring presses the spool back to the starting position.

APPLICATION

Mechanically operated spool valves are mainly used to control the direction of movement and retain hydraulic cylinders and motors. The direction of movement is determined by the position of the valve spool and its symbol. Mechanically operated valves are particularly suitable for use in installations where no control current is available or for applications in areas where there is a risk of explosion (chemical industry, tunnel construction). Mini-4 valves are used where both, reduced dimensions and weight are important.

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TYPE CODE

	B		4		/		#	
Interface								
Operation:	Hand lever	H						
	Roller	T						
No. of control ports								
Type charts/Symbols with operation	side- a	a						
acc. to table 1.5-20/2	side- b	b						
Spring return	f							
Detented	r	(only by hand lever operation)						
Design-Index (Subject to change)								

GENERAL SPECIFICATIONS

Description	4/2-, 4/3-way valve
Nominal size	NG4-Mini to Wandfluh standard
Construction	Direct operated spool valve
Operations	Hand operated (hand lever) or roller
Mounting	Flange
	3 fixing holes for socket head cap screws M5x40
Connections	Threaded connection plates
	Multi-flange plates
	Longitudinal stacking system
Ambient temperature	-20...50 °C
Mounting position	any, preferable horizontal
Fastening torque	$M_D = 5,5 \text{ Nm}$ (screw quality 8.8)
Weight: Hand lever	$m = 0,87 \text{ kg}$
Roller	$m = 0,85 \text{ kg}$

HYDRAULIC SPECIFICATIONS

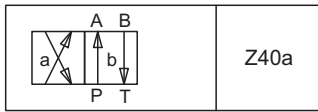
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+70 °C
Operating pressure in port P, A, B	$p_{max} = 315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

CONTROL MECHANICAL

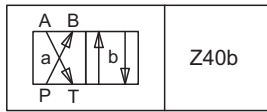
Angle (Hand lever)	$\alpha_b = 5,7^\circ / \text{side}$
Stroke (Roller)	$S_b = 2 \text{ mm}$
Force: Hand lever	$F_b = 15 - 20 \text{ N}$
Roller	$F_b = 90 - 120 \text{ N}$

TYPE LIST / DESIGNATION OF SYMBOLS

4/2-way valve with spring reset or detented

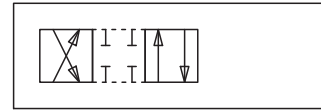


Z40a

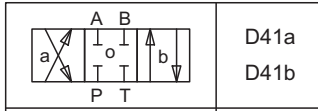


Z40b

Transitional functions

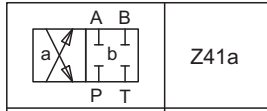


4/3-way valve spring centered or detented (only by hand lever operation)

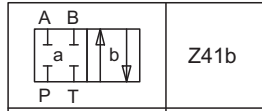


D41a

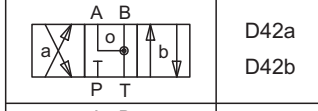
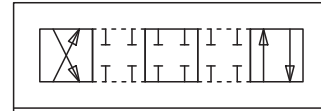
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Z41a

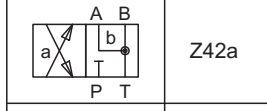


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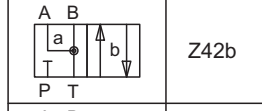


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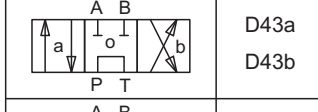
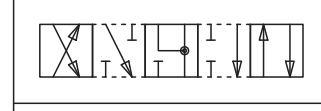
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Z42a

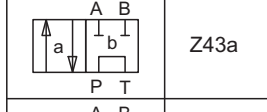


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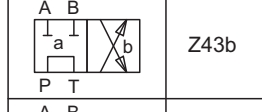


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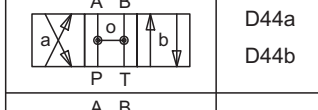
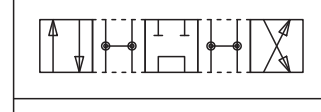
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Z43a

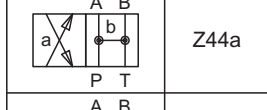


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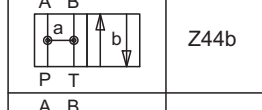


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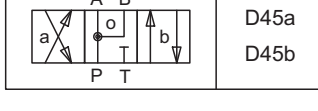
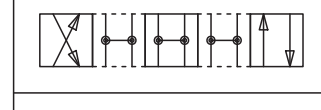
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Z44a

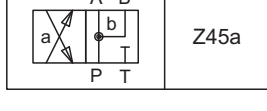


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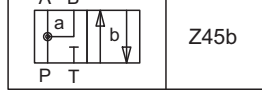


D45a

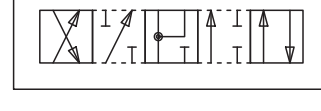
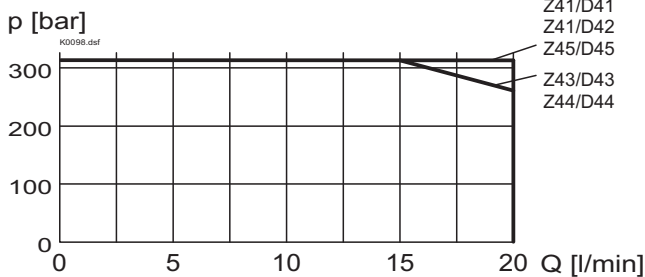
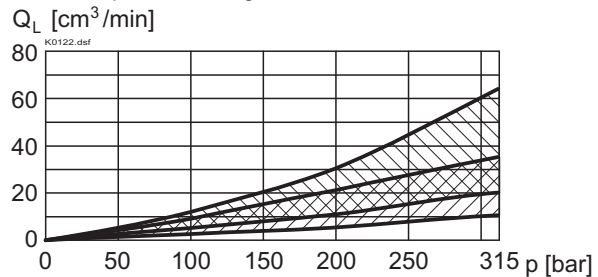
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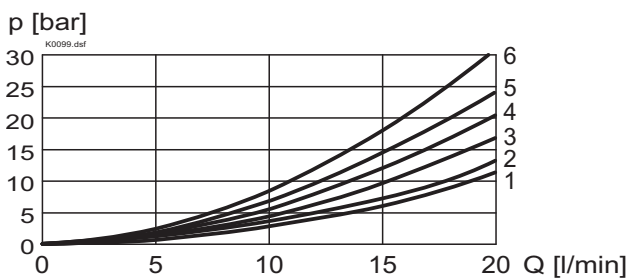
Z45a



Z45b


CHARACTERISTICS Oilviscosity $\nu = 30 \text{ mm}^2/\text{s}$
 $p = f(Q)$ Performance limits

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

 Leakage envelope Z40/D41/D42/D44/D45

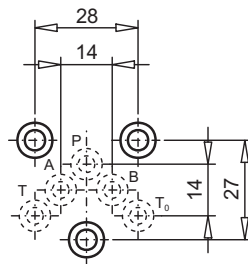
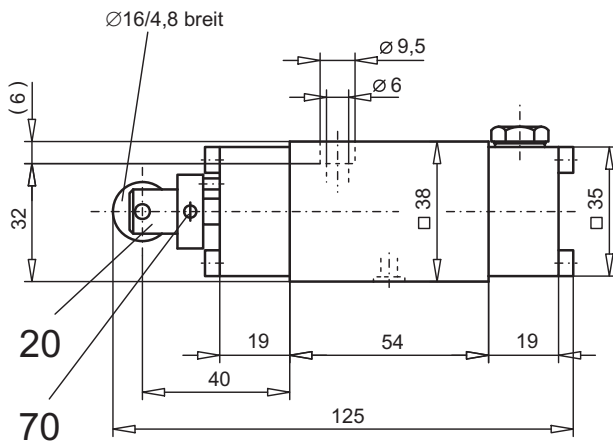
 Leakage envelope Z43

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


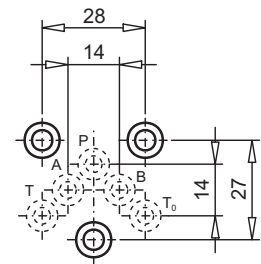
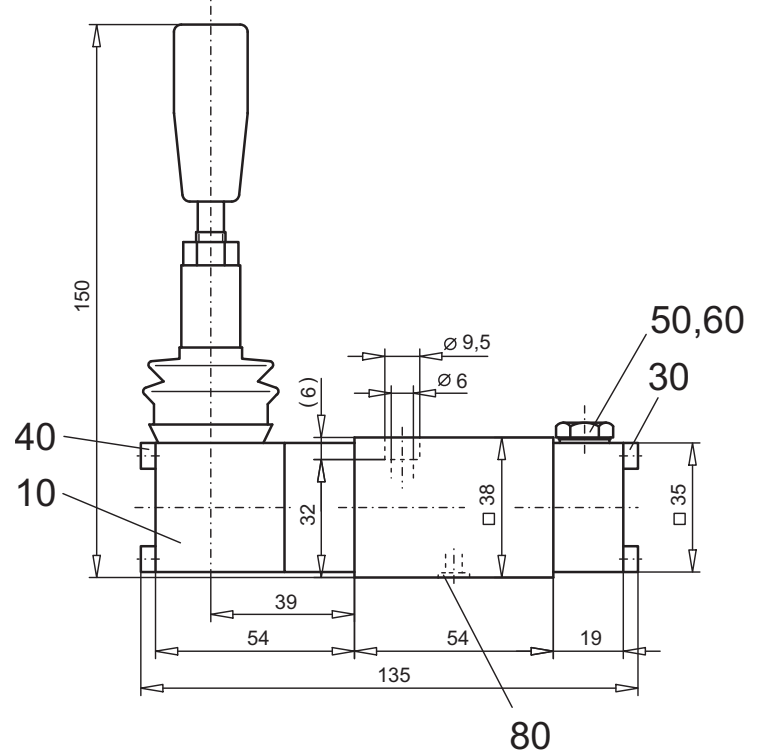
Symbol	Volume flow direction				
	P - A	P - B	P - T	A - T	B - T
Z40	5	5	-	2	2
D41/Z41	5	5	-	2	2
D42/Z42	5	5	-	2	2
D43/Z43	4	4	6	1	1
D44/Z44	4	4	3	1	1
D45/Z45	4	4	-	2	2

DIMENSIONS

Roller operated



Hand operated


PARTS LIST

Position	Article	Description
10	253.2000	Hand control head BH II
20	253.2100	Mechanical control head BT II
30	246.1125	Socket head cap screw M4 x 25 DIN 912
40	246.1160	Socket head cap screw M4 x 60 DIN 912
50	238.1100	Plug screw galv. M10x1 DIN 7604A (by spring centred version)
	239.1102	Plug screw (by dedented version)
60	049.1100	Cop. seal ring NG10x13,5x1 DIN 7603 (only by dedented version)
70	221.2272	Spring tension pin Ø3x16 DIN 1481
80	160.2052	O-ring ID5,28x1,78

ACCESSORIES

 Threaded connection plates, Multi-flange plates
 and longitudinal stacking system

register 2.9

Technical explanation see data sheet 1.0-100