Solenoid operated spool valve
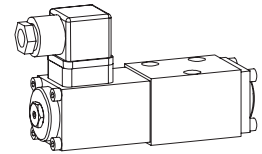- 4/2-way impulse valve
- 4/3-way with spring centred mid position **NG4-Mini**®
- 4/2-way with spring reset
- Q_{max} = 20 l/min, p_{max} = 350 bar

DESCRIPTION

Direct operated solenoid valve with 4 ports in 5 chamber design. Spool deteted or with spring reset. 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 solenoid and the cover are zinc coated. The socket head screws are zinc coated.

FUNCTION

• 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. Miniature vales are used where both, reduced dimensions and weight are important.

TYPE CODE

| | | B | | 4 | | - | | # | |

Interface acc. to Wandfluh standard

Economy-solenoid ... E
Medium-solenoid ... M

Number of control ports

Description of symbols acc. to table

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	NG4-Mini to Wandfluh standard
Construction	Direct operated spool valve
Operation	Solenoid
Mounting	Flange
	3 fixing holes for
	socket head screws M5x40
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 Nm (screw quality 8.8)

Weight	Economy	Medium
4/2-way impulse	m = 1,2 kg	m = 1,4 kg
4/3-way	m = 1,2 kg	m = 1,4 kg
4/2-way (1 solenoid)	m = 0,83 kg	m = 0,93 kg

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, classe 20/18/14
	(Required filtration grade ß 10…16≥75)
	refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70°C
Working pressure	
in port P, A, B	Economy: $p_{T\,max}$ = 250 bar
	Medium: p_{max} = 350 bar (p_T <20 bar)
	p_{max} = 315 bar (p_T >20 bar)
Tank pressure	
in port T	$p_{T\,max}$ = 100 bar
Max. volume flow	Q_{max} = 20 l/min, see characteristics
Leakage volume flow	see characteristics

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Postfach   *Fax* +41 33 672 72 12   *Internet:* www.wandfluh.com   *Data subject to change*   **1.2-31E** *1/3*
CH-3714 Frutigen   *Edition 08 30*

ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal voltage	U_N = 12 VDC
	U_N = 24 VDC
	U_N = 110 VAC∗
	U_N = 115 VAC∗
	U_N = 230 VAC∗
	AC = 50 to 60 Hz
	∗ Rectifier integrated in the plug, other nominal voltages and nominal performances on request
Voltage tolerance	±10% of nominal voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15'000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection/Power supply	Over device plug connection to EN175301-803 (DIN43650) ISO 4400, form A, (2P+E), other connections on request.

SOLENOID DESCRIPTION

With respect to the selection of the solenoid, the following statements are important:

- The solenoid is the most expensive component of the solenoid spool valve.
- For this reason, it is not economical to use the same solenoid for all applications.
- Depending on the application, sales area, and customer, the requirements for solenoid spool valves and solenoids differ very considerably.
- In order to be able to offer the customer an optimum, we can supply our solenoid spool valves NG4 in 2 different versions:
  - Economy   BEllV   (data sheet 1.1-100)
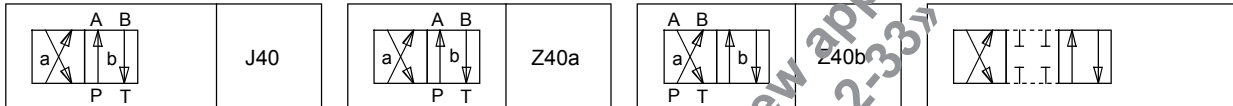 - Medium   SIN35V   (data sheet 1.1-105)

TYPE LIST / DESIGNATION OF SYMBOLS
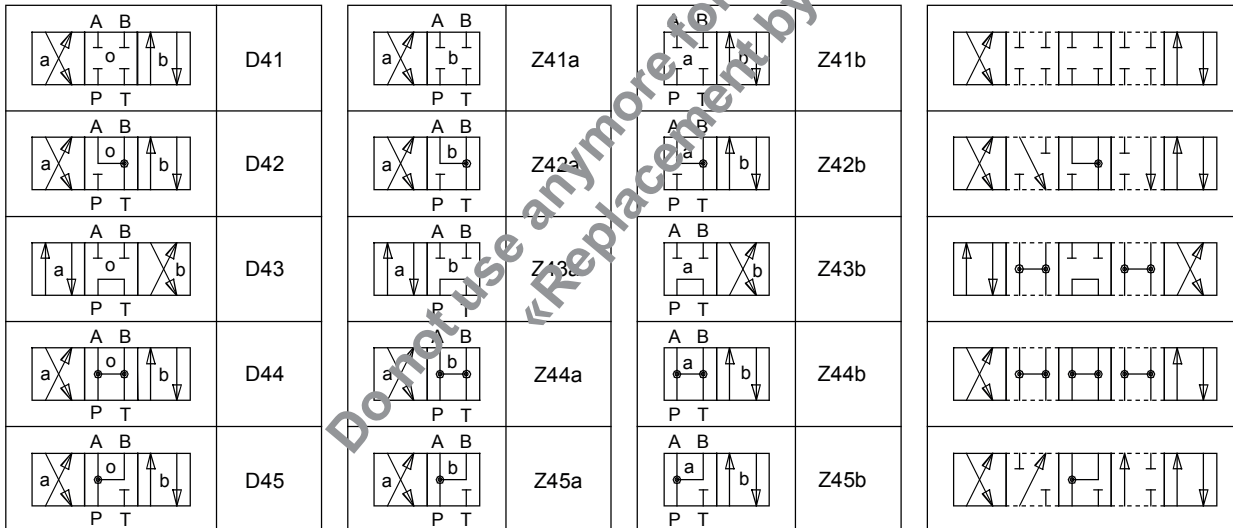
4/2-way valve impulse

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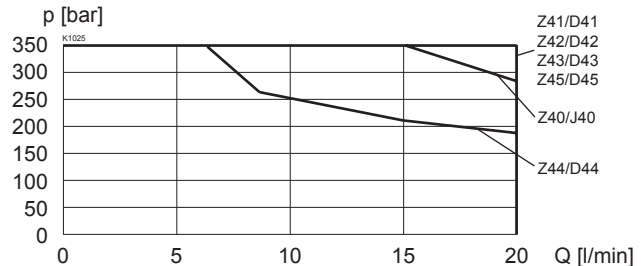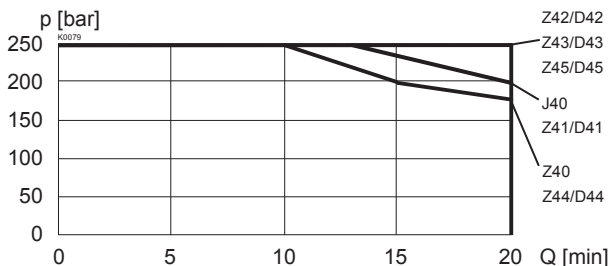operation A-side   operation B-side

Transitional functions

J40	Z40a	Z40b	

4/3-way valve spring centered

D41	Z41a	Z41b	
D42	Z42a	Z42b	
D43	Z43a	Z43b	
D44	Z44a	Z44b	
D45	Z45a	Z45b	

«Do not use anymore for new applications! Replacement by 1.2-33»

CHARACTERSISTICS Oilviscosity υ = 30 mm²/s

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

Z42/D42
Z43/D43
Z45/D45
J40
Z41/D41
Z40
Z44/D44

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

Z41/D41
Z42/D42
Z43/D43
Z45/D45
Z40/J40
Z44/D44

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Δp = f (Q) Pressure drop volume flow characteristics

p [bar]

30	6
25	5
20	4
15	3
10	2
5	1
0	

0   5   10   15   20   Q [l/min]
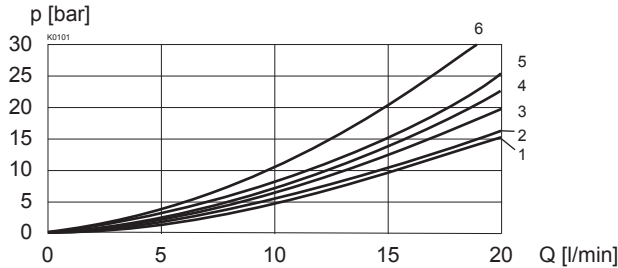
Symbol	Pressure drop Curve no.	Volume flow direction				
		P - A	P - B	P - T	A - T	B - T
Z40/J40		5	5	-	2	2
D41/Z41		5	5	-	2	2
D42/Z42		5	5	-	1	1
D43/Z43		4	4	6	2	2
D44/Z44		4	4	3	2	2
D45/Z45		4	4	-	2	2

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

Q [cm³/min]

50	
40	
30	
20	
10	
0	

0   50   100 150 200 250 300 350   p [bar]

▨ J40/Z40/D41/D42/D44/D45
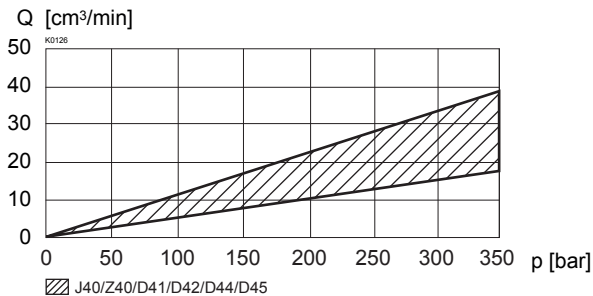
DIMENSIONS

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

35

A   B

172 (Economy)
194 (Medium)

4/2-way valve (spring reset) 30

A   Ø 9,5   Ø 5,5   40   60

75,5   □ 35   (6)   32   □ 35   □ 38

10
20
50

3   44,7 (Economy)   54   10
59,2 (Medium)

123 (Economy)
134 (Medium)

70

28
14

P
A   B
T   T₀

14
27

Do not use anymore for new applications!
«Replacement by 1.2-33»
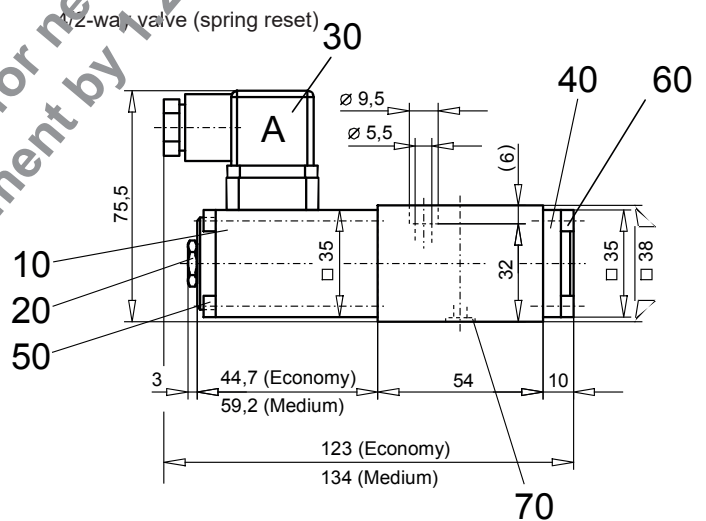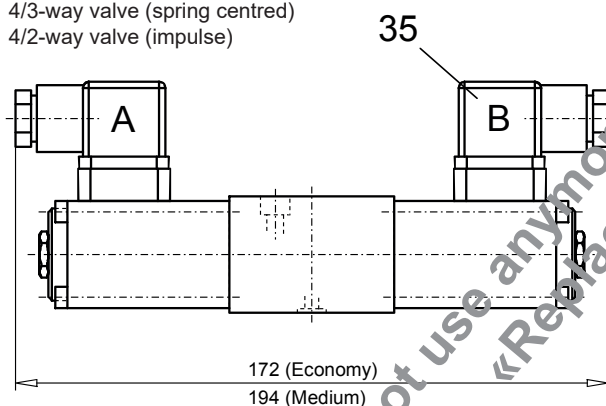
PARTS LIST

Position	Article	Description
10	260.1... 260.4...	Economy-solenoid BEIIV Medium-solenoid SIN35V
20	253.8000	Plug with integrated manual override HB4,5
30	219.2001	Electric plug A (grey)
35	219.2002	Electric plug B (black)
40	057.4202	Cover
50	246.1146 246.1161	Socket head screw M4x45 (BEIIV) Socket head screw M4x60 (SIN35V)
60	246.1113	Socket head screw M4x12 DIN912
70	160.2052	O-ring ID 5,28x1,78
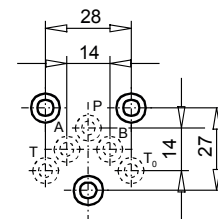
ACCESSORIES

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

Technical explanation see data sheet 1.0-100