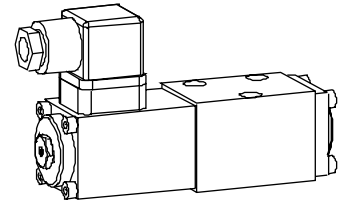


Solenoid operated spool valve

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

NG4-Mini[®]

Cetop RP 121 H-P02


DESCRIPTION

Direct solenoid operated spool valve with a 5 annular chamber body design. Solenoid wet pin oil immersed armature type. Precision honed spool for low leakage. Low pressure drop due to the body design and spool profiling. Spool is of hardened steel, body is of high grade hydraulic cast iron for long service life. The valve is of flange-type design for direct mounting onto threaded subplates or more complex manifolds.

FUNCTION

- 4/2-way detent spool valve:
4 ports directional control valve with 2 position detented spool. With the solenoids deenergised the spool remains in the last switched position.
- 4/2-way spool valve:
4 ports 2 position spool valve, spring offset. With the solenoid deenergised the spool returns to the offset position.
- 4/3-way spool valve:
4 ports 3 position spool valve, spring centered. With the solenoids deenergised the spool returns to the center position.

APPLICATION

These solenoid operated directional control valves are mainly used for diverting and preventing fluids flows in hydraulic systems. There are now many more applications that can be catered for due to the high flow characteristics and low pressure drop of this new directional control valve. Mini-4 valves are used where both, reduced dimensions and weight are important.

CONTENT

GENERAL SPECIFICATIONS	1.2-31/1
HYDRAULIC SPECIFICATIONS	1.2-31/1
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TYPE LIST / DESIGNATION OF SYMBOLS	1.2-31/2
CHARACTERISTICS	1.2-31/2
DIMENSIONS	1.2-31/3
PARTS LIST	1.2-31/3
ACCESSORIES	1.2-31/3

TYPE CODE

Interface	B	<input type="checkbox"/>	4	<input type="checkbox"/>	-	<input type="checkbox"/>	#	<input type="checkbox"/>
Economy-solenoid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medium-solenoid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Number of control ports								
Description of symbols acc. to table 1.2-31/2								
Standard- nominal voltage U_N	12VDC	<input type="checkbox"/>	G12					
	24VDC	<input type="checkbox"/>	G24					
	110VAC	<input type="checkbox"/>	R110					
	115VAC	<input type="checkbox"/>	R115					
	230VAC	<input type="checkbox"/>	R230					
Design-Index (Subject to change)								

GENERAL SPECIFICATIONS

Description	4/2-, 4/3-spool valve
Nominal size	NG4-Mini to Cetop RP 121 H-P02
Construction	Direct operated spool valve
Operation	Solenoid
Mounting	Flange 3 fixing holes for socket head cap screws M5x40
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50°C
Mounting position	any, preferably horizontal
Fastening torque	$M_D = 5,5 \text{ Nm}$ (screw quality 8.8)

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406, classe 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	Economy: $p_{max} = 250 \text{ bar}$ Medium: $p_{max} = 315 \text{ bar}$
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

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

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 DIN 40050
Relative duty factor	100% DF (see data sheet 1.1-430)
Switching cycles	15'000/h
Operating life (number of switching cycles)	10 ⁷
Connection/Power supply	Over device plug connection to ISO 4400/DIN 43650, (2P+E), other connections on request.

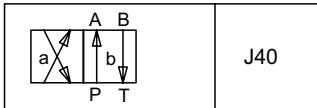
SOLENOID DESCRIPTION

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

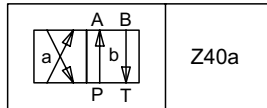
- The solenoid is the most expensive component of the solenoid spool valve.
- For this reason, it is not economical to use the same solenoid for all applications.
- Depending on the application, sales area, and customer, the requirements for solenoid spool valves and solenoids differ very considerably.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

TYPE LIST / DESIGNATION OF SYMBOLS

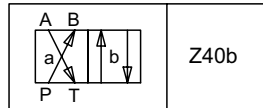
4/2-way valve impulse



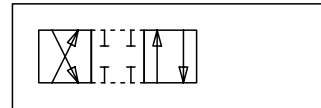
4/2-way valve with spring reset operation A-side



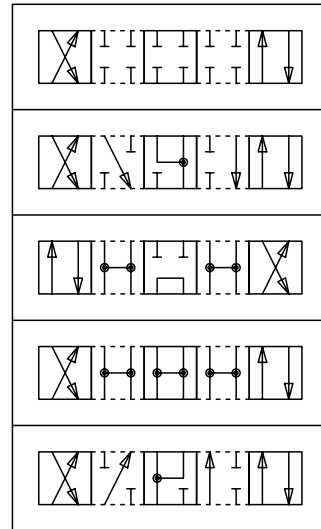
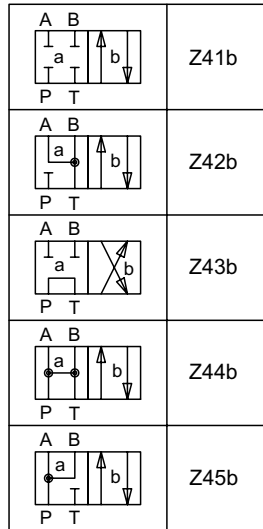
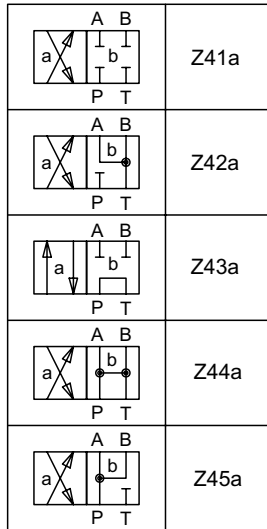
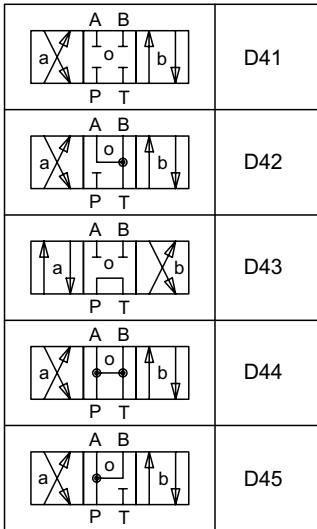
operation B-side

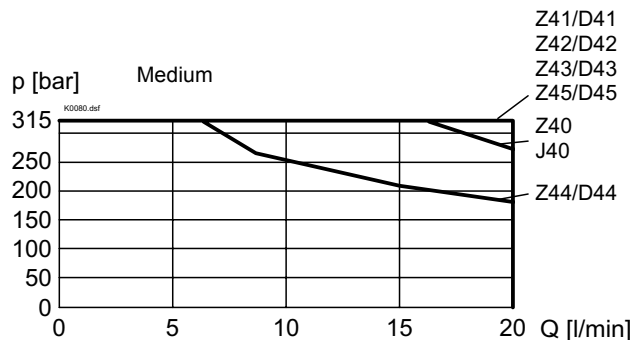
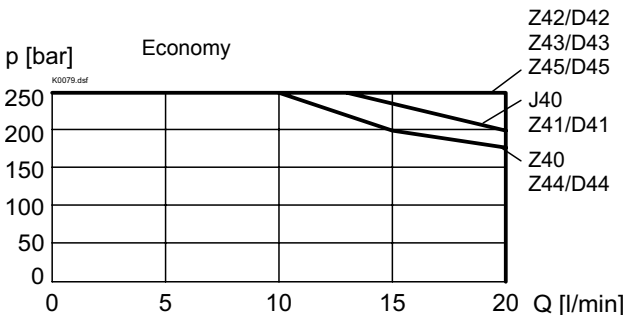


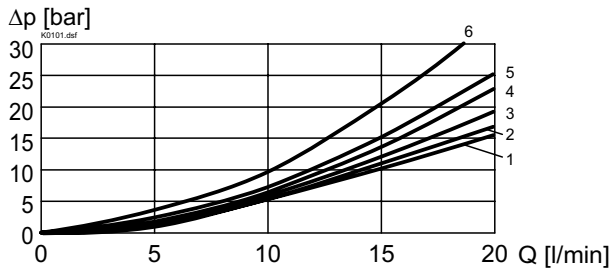
Transitional functions



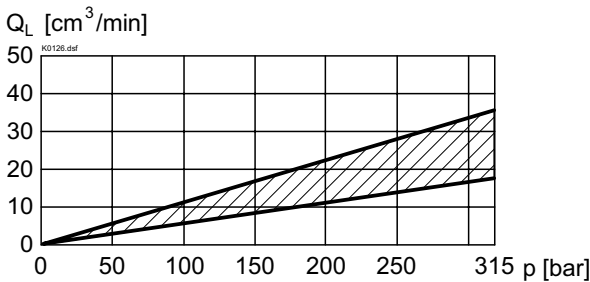

4/3-way valve spring centered


CHARACTERISTICS Oilviscosity $\nu = 30$ mm²/s

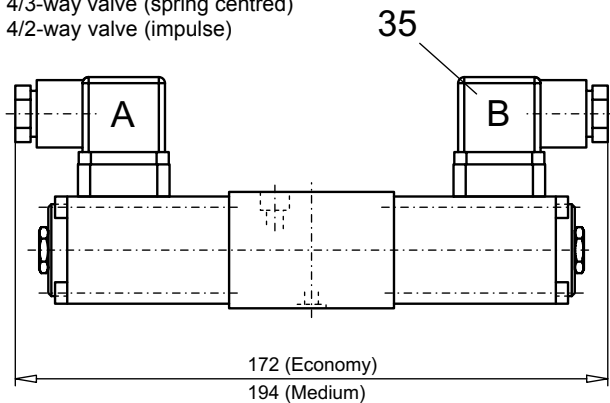
 $p = f(Q)$ Performance limits with standard voltage -10%


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


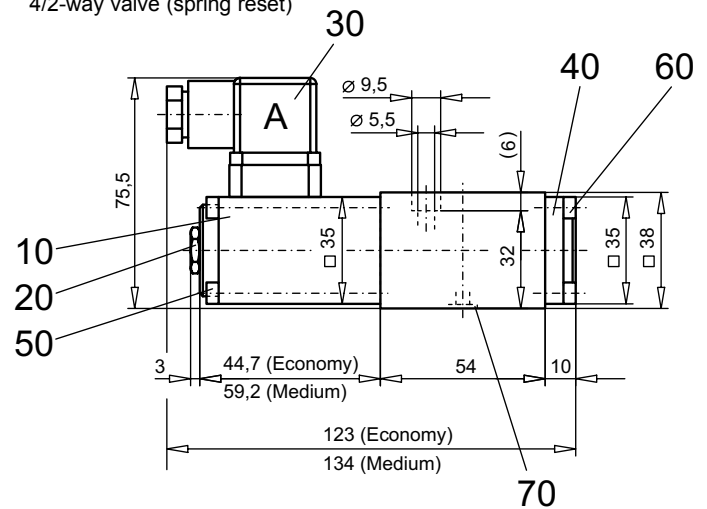
Symbol	Pressure drop Curve no.	Volume flow direction				
		P - A	P - B	P - T	A - T	B - T
Z40/J40	5	5	5	-	2	2
D41/Z41	5	5	5	-	2	2
D42/Z42	5	5	5	-	1	1
D43/Z43	4	4	4	6	2	2
D44/Z44	4	4	4	3	2	2
D45/Z45	4	4	4	-	2	2

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

 Leakage envelope J40/Z40/D41/Z41/D42/Z42/D44/Z44/D45/Z45

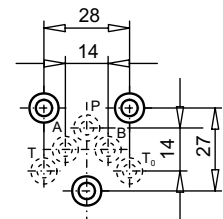
DIMENSIONS

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


4/2-way valve (spring reset)


PARTS LIST

Position	Article	Description
10	260.1... 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	246.1145 246.1160	Socket head cap screw M4x45 (BEIIV) Socket head cap screw M4x60 (SIN35V)
60	246.1112	Socket head cap 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 1.0-100E