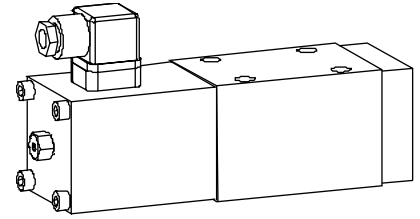


**Solenoid operated spool valve**

- 4/2-way impulse valve
- 4/3-way with spring centred mid position
- 4/2-way with spring reset
- $Q_{max} = 100 \text{ l/min}$ ,  $p_{max} = 350 \text{ bar}$

**NG10**  
**ISO 4401-05**

**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 de-energised 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.

**CONTENT**

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HYDRAULIC SPECIFICATIONS	1.2-71/1
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DIMENSIONS	1.2-71/3
SECTIONAL DRAWING	1.2-71/3
PARTS LIST	1.2-71/3
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**TYPE CODE**

International standard interface ISO	A	□	4	□	-	□	#	□
Medium-solenoid		M						
Super-solenoid		S						
Number of control ports								
Description of symbol refer to table 1.2-71/2								
Standard-Nominal voltage $U_N$	12VDC	G12						
	24VDC	G24						
	110VAC	R110						
	115VAC	R115						
	230VAC	R230						
Design-Index (Subject to change)								

**GENERAL SPECIFICATIONS**

Description	4/2-, 4/3-way spool valve
Nominal size	NG10 to ISO 4401-05
Construction	Direct operated spool valve
Operating method	Solenoid
Mounting	Flange 4 fixing holes for socket head cap screws M6x65
Connections	Threaded connection plates Multi-flange subplates Longitudinal stacking system
Ambient temperature	-20...+50° C
Mounting position	any, preferably horizontal
Fastening torque	$M_D = 9,5 \text{ Nm}$ (screw quality 8.8)
Weight: 4/2-way impuls	$m = 6,0 \text{ kg}$
4/3-way	$m = 6,0 \text{ kg}$
4/2-way (1 solenoid)	$m = 4,5 \text{ kg}$

**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 <sup>2</sup> /s...320 mm <sup>2</sup> /s
Fluid temperature	-20...+70° C
Operating pressure in port P, A, B	$p_{max} = 350 \text{ bar}$
Tank pressure in port T	$p_{max} = 200 \text{ bar}$
Max. volume flow	$Q_{max} = 100 \text{ l/min}$
Leakage volume flow	see characteristics

**ELECTRICAL SPECIFICATIONS**

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 <sup>7</sup>
Connection/Power supply	Over device plug connection to ISO 4400/ DIN 43650, (2P+E), other connections on request

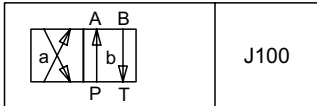
**SOLENOID DESCRIPTION**

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

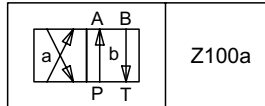
- The solenoid is the most expensive component of the solenoid spool valve.
- For this reason, it is not economical to use the same solenoid for all applications.
- Depending on the application, sales area, and customer, the requirements for solenoid spool valves and solenoids differ very considerably.
- In order to be able to offer the customer an optimum, we can supply our solenoid spool valves NG10 in 2 different versions  
 Solenoid:
  - Medium SIN60V (data sheet 1.1-145)
  - Super SIS60V (data sheet 1.1-150)

**TYPE LIST / DESIGNATION OF SYMBOLS**

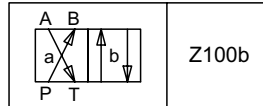
4/2-way valve impulse



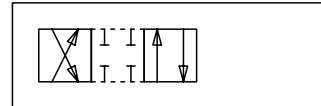
4/2-way valve with spring reset operation A-side



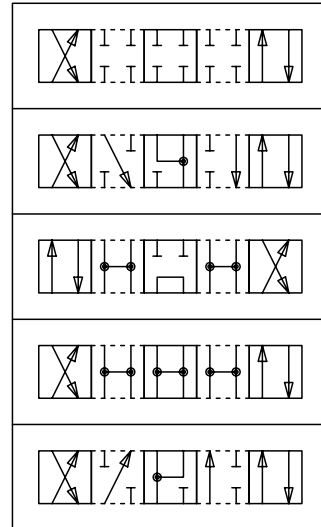
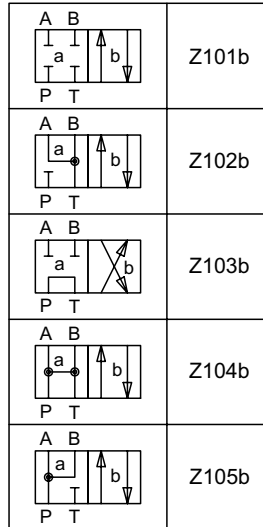
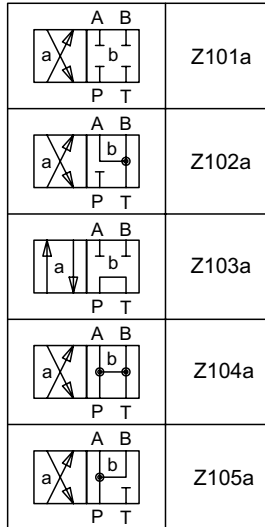
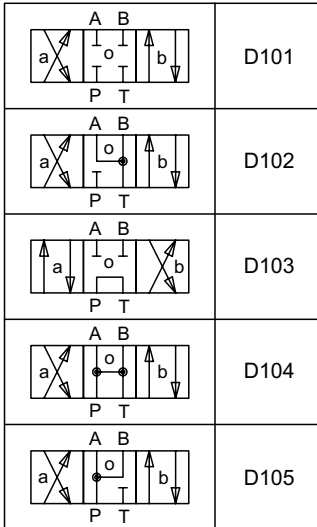
operation B-side



Transitional functions

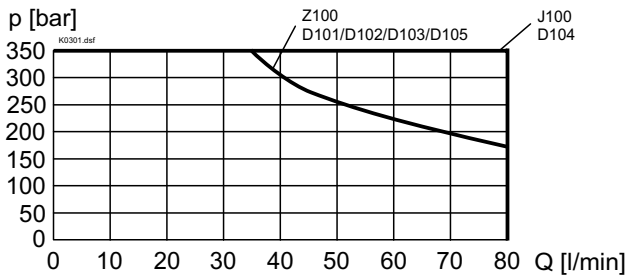


4/3-way valve spring centered

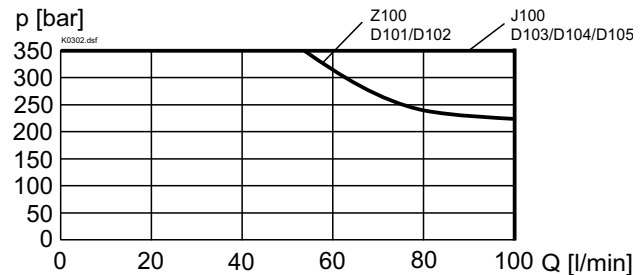

**CHARACTERISTICS** Oil viscosity  $\nu = 30$  mm<sup>2</sup>/s

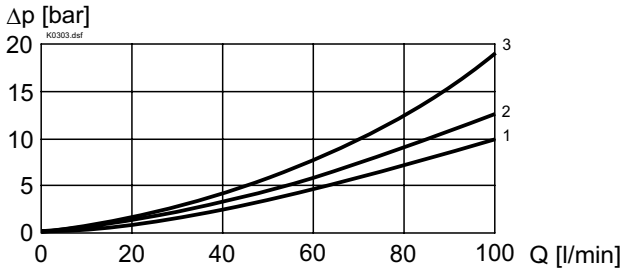
$p = f(Q)$  Performance limits with standard voltage -10%

Medium

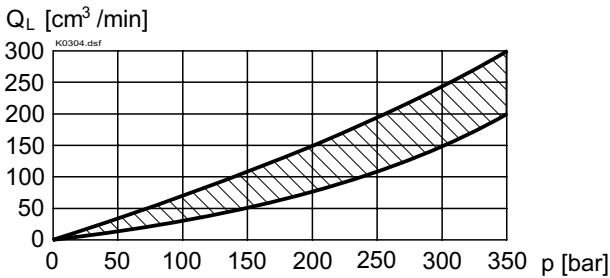


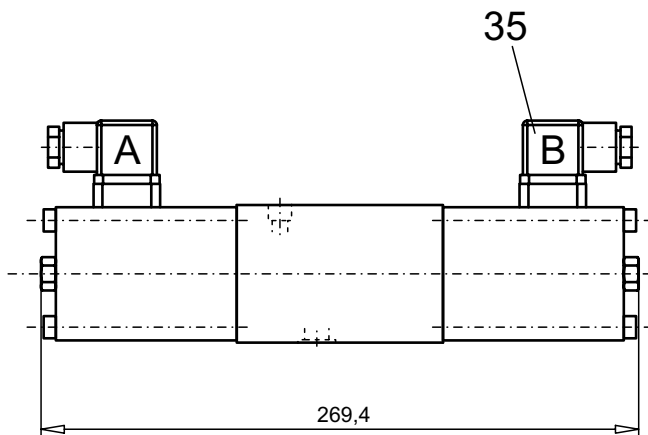
Super



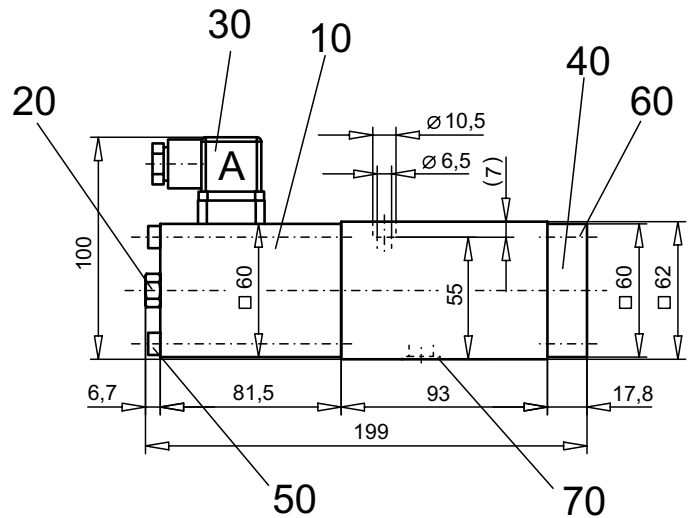
$\Delta p = f(Q)$  Pressure drop volume flow characteristics


Symbol	Pressure drop Curve no.	Volume flow direction				
		P - A	P - B	P - T	A - T	B - T
Z100/J100		2	2	-	2	2
D101/Z101		2	2	-	2	2
D102/Z102		2	2	-	1	1
D103/Z103		2	2	3	2	2
D104/Z104		1	1	-	1	1
D105/Z105		1	1	-	2	2

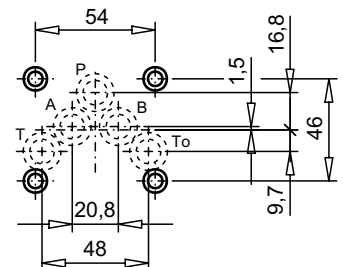
 $Q_L = f(p)$  Leakage volume flow characteristics per control edge

**DIMENSIONS**

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


4/2-way valve (spring reset)


**PARTS LIST**

Position	Article	Description
10	260.8... 260.9...	Medium-solenoid SIN60V Super-solenoid SIS60V
20	253.8002	Plug with integrated manual override HB4,5
30	219.2001	Electric plug A (grey)
35	219.2002	Electric plug B (black)
40	059.2201 059.2203	Cover Medium Cover Super
50	246.3190	Socket head cap screw M6x90 DIN 912
60	246.3120	Socket head cap screw M6x20 DIN 912
70	160.2140	O-ring ID 14,00x1,78


**ACCESSORIES**

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

Technical explanation see data sheet 1.0-100E