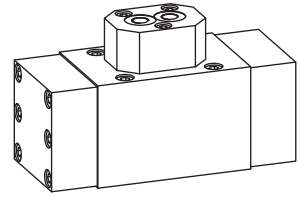


**Spool valve hydraulic operation**

- 4/2-way Impuls version detented
- 4/3-way with spring centered
- 4/2-way with spring reset
- $Q_{max} = 100 \text{ l/min}$ ,  $p_{max} = 350 \text{ bar}$

**NG10**  
 ISO 4401-05

**DESCRIPTION**

Spool valve NG10, flange type in accordance to ISO 4401-05 with 4 connections. Direct hydraulic operation via pilot ports in end covers. 5 chamber system. Spool with spring return or detented. Precise spool fit, low leak, long life. Threaded ports by means of additional connecting plate. Hardened spool. Valve body made of high quality casting. Valve body painted, end covers phos-phated

**FUNCTION**

Pilot pressure shifts spool to end position.

- 4/2-way impulse  
2 pilot ports. 2 detented spool positions. Spool held in position by detent unless opposite pilot port is pressurised to shift back.
- 4/3-way spring centered  
2 pilot ports. 3 spool positions. Spool shifted to center position by spring as pilot pressure decays.
- 4/2-way spring offset  
1 pilot port. 1 drain port on spring side, 2 spool positions. Spool shifted to home position by spring as pilot pressure decays.

**APPLICATION**

Hydraulically 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. Hydraulically operated valves are particularly suitable for use in installations where no electric current is available or for applications in areas with a risk of explosion (chemical industry, tunnel construction).

**CONTENT**

GENERAL SPECIFICATIONS.....	1
HYDRAULIC SPECIFICATIONS.....	1
CONTROL HYDRAULIC.....	1
TYPE CHARTS/SYMBOLS.....	2
CHARACTERISTICS.....	2
DIMENSIONS.....	3
PARTS LIST.....	3
ACCESSORIES.....	3

**TYPE CODE**

	A	P	4	<input type="checkbox"/>	#	<input type="checkbox"/>
International interface ISO						
Hydraulic operation						
No. of control ports						
Type charts/Symbols acc. to table 1.7-40/2						
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
Operations	Hydraulic
Mounting	Flange 4 fixing holes for socket head cap screws M6x65
Connections	Threaded connection plates Multi-flange plates 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	$m = 4 \text{ kg}$

**HYDRAULIC SPECIFICATIONS**

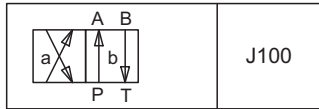
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$ ) refer to data sheet 1.0-50/2
Viscosity range	12 mm <sup>2</sup> /s...320 mm <sup>2</sup> /s
Fluid temperature	-20...+70°C
Operating pressure	$p_{max} = 350 \text{ bar}$
in port P, A, B	
Tank pressure	$p_{max} = 200 \text{ bar}$ resp. 12 bar below $p_{st}$
in port T	
Max. Volume flow	$Q_{max} = 100 \text{ l/min}$
Leakage volume flow	see characteristics

**CONTROL HYDRAULIC**

Minimal pilot pressure (for AP4J100)	$p_{st \text{ min}} = 12 \text{ bar}$
	$p_{st \text{ min}} = 2,5 \text{ bar}$ , higher pilot pressure on request
Maximal pilot pressure	$p_{st \text{ max}} = 315 \text{ bar}$
Control volume	$V_{st} = 1,25 \text{ cm}^3$

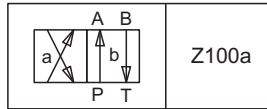
**TYPE LIST / DESIGNATION OF SYMBOLS**

4/2-way valve impulse

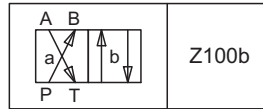


J100

4/2-way valve with spring reset

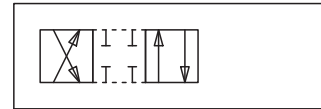


Z100a

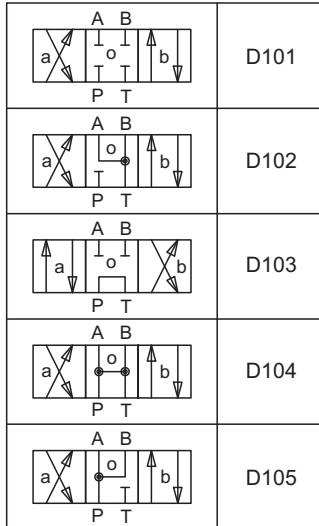


Z100b

Transitional functions



4/3-way valve spring centered or detented



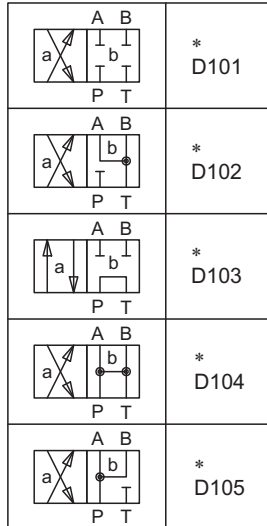
D101

D102

D103

D104

D105



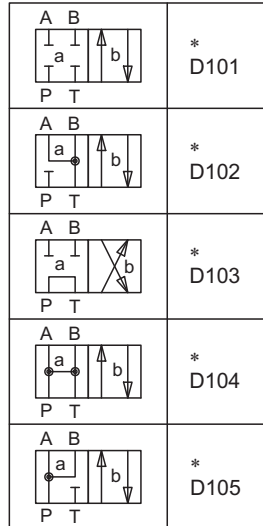
\* D101

\* D102

\* D103

\* D104

\* D105



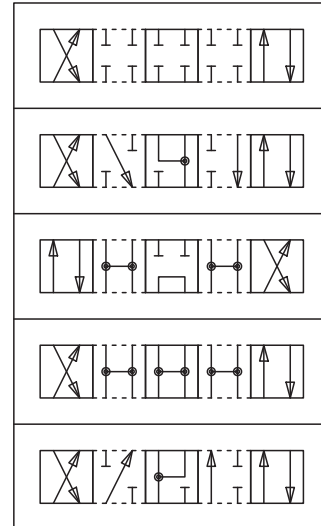
\* D101

\* D102

\* D103

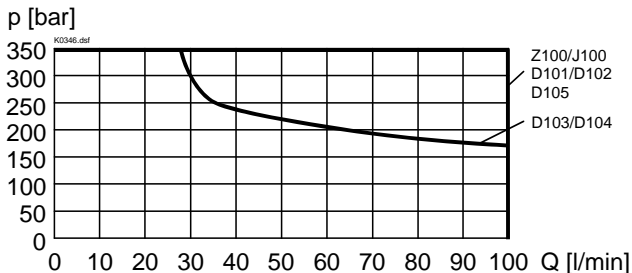
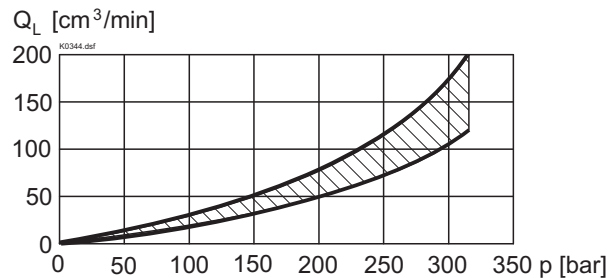
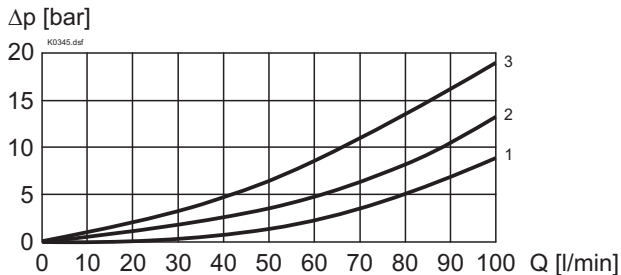
\* D104

\* D105

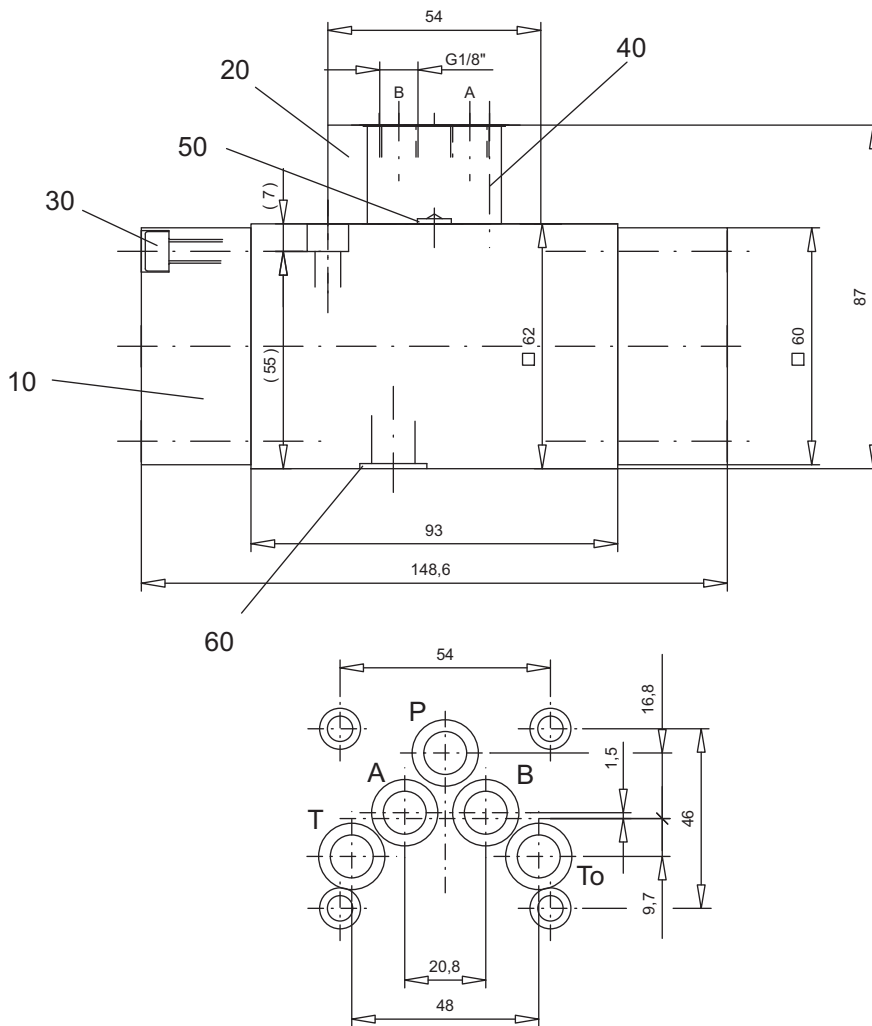


On all 4/2-way valves with spring reset the spring side must be connect to a tank or drain line.

\* The 4/2-way valves with spring reset are being delivered as 4/3-way valves.

**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

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


Pressure drop curve no. Symbol	Volume flow direction				
	P - A	P - B	P - T	A - T	B - T
Z100/J100	1	1	-	1	2
D101	1	1	-	1	2
D102	1	1	-	1	2
D103	1	1	3	1	2
D104	1	1	-	1	2
D105	1	1	-	1	2

**DIMENSIONS**

**PARTS LIST**

Position	Article	Description
10	059.2206	Cover
20	173.1503	Pilot plate NG4-Mini
30	246.3130	Socket head cap screw M6x30 DIN 912
40	246.2125	Socket head cap screw M5x25 DIN 912
50	160.2052	O-ring ID 5,28x1,78
60	160.2140	O-ring ID 14,00x1,78

**ACCESSORIES**

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

register 2.9

Technical explanation see data sheet 1.0-100E