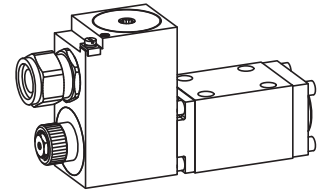


**Solenoid operated spool valve**

- 4/2-way impulse version, detented
- 4/3-way with spring centred centre position
- 4/2-way spring reset
- $Q_{max} = 50 \text{ l/min}$ ,  $p_{max} = 350 \text{ bar}$

**NG6**  
**ISO 4401-03**

**II 2 G Ex d II C**  
**II 2 D Ex tD A21 IP65**

**DESCRIPTION**

Spool valve flange type NG6 with four connections. Direct operated solenoid spool valve in 5-chamber-system. Activated with explosion-proof solenoid. Spool detented or with spring reset. Wet pin solenoid. Precise spool fit, low leak, long service life time. Spool made of hardened steel. Valve body made of high grade hydraulic cast iron. The solenoid coil is zinc-/nickel-coated.

Solenoid coil in accordance with directive 94/9/EC (ATEX, IECEx, GOSTEx) for explosion-hazard zones (see data sheet 1.1-183).

**FUNCTION**

The energised solenoid shifts the spool into the corresponding position.

- 4/2-way impulse valve detented:

Two solenoids and two detented positions. With the solenoid de-energised, the spool remains in the last switched position.

- 4/3-way spool valve:

Two solenoids and three positions, spring centred. With the solenoids de-energised, the spool returns to the centre position by spring force.

- 4/2-way spool valve:

One solenoid and two positions. With the solenoid de-energised the spool returns to the offset position by spring force.

**APPLICATION**

Solenoid operated spool valves are mainly used to control the direction of movement and to hold hydraulic cylinders and motors. The direction of flow through the valve is determined by the spool symbol. The switching performance and the possible leakage must be taken into consideration when designing a system. These valves are suitable for explosion-hazard areas in off-shore and ship-building applications as well as in the chemical-, oil- and gas industry.

**TYPE CODE**

		WD	Y	F	A06	-	-	/	L15	-	Z455	#	
Spool valve direct operated													
Explosion-proof solenoid													
Flange type													
International standard interface ISO nominal size 6													
Description of symbols acc. to table 1.3.50403/2													
Standard	12 VDC								G12				
nominal voltage $U_N$	24 VDC								G24				
	115 VAC								R115				
	230 VAC								R230				
Nominal power $P_N$ :	15W												
Design-Index (Subject to change)													

**GENERAL SPECIFICATIONS**

Description	4/2-, 4/3-way valve
Nominal size	NG6 acc. to ISO 4401-03
Construction	Direct operated spool valve
Operation	Solenoid operated
Mounting	Flange installation 4 attachment holes for cylinder screws M5x50
Connections	Screw connection fixing plates In-line flange plates Longitudinal stacking system
Admissible ambient temp.	Execution L15: -20...+70 °C (operation as T1...T4/T130 °C) In case of $U_N < 20V$ , the max. ambient temperature has to be reduced by 10 °C.
Mounting position	any, preferably horizontal
Fastening torque	$M_D = 5,5 \text{ Nm}$ (quality 8.8)
Weight:	4/2-way impulse
	4/3-way
	4/2-way (1 solenoid)
	$m = 4,6 \text{ kg}$ $m = 4,6 \text{ kg}$ $m = 2,8 \text{ kg}$

**HYDRAULIC SPECIFICATIONS**

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, classe 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
Admissible fluid temp.	Execution L15: -20...+70 °C (operation as T1...T4/T130 °C) $p_{max} = 350 \text{ bar}$
Working pressure in port P, A, B	$p_{Tmax} = 100 \text{ bar}$
Tank pressure in port T	$Q_{max} = 50 \text{ l/min}$
Max. volume flow	see characteristics
Leakage volume flow	



In case of the execution L15 for ambient temperatures of up to 70 °C the characteristic performance values were established at an ambient temperature of 50 °C.

**ELECTRICAL CONTROL**

Construction Solenoid, wet pin push type, pressure-proof

Standard-nominal voltage  $U_N = 12 \text{ VDC}, 24 \text{ VDC}, 115 \text{ VAC}, 230 \text{ VAC}$   
 AC = 50 to 60 Hz  $\pm 2\%$ ;  
 with built-in two-way rectifier and recovery diode

Voltage tolerance  $\pm 10\%$  of rated voltage

Protection class IP65/IP67 acc. to EN 60 529

Relative duty factor 100% DF

Switching cycles 12000/h

Operating life  $10^7$  (number of switching cycles, theoretically)

Connection/Power supply Through cable gland for cable diameter 6,5...14 mm

Temperature class: (acc. to EN 60079-0)

Execution L15 T1...T4

Nominal power: 15 W

Execution L15 15 W

For further electrical characteristics, refer to the data sheet of the solenoid coil 1.1-183

**SECURITY OPERATED**


The solenoid coil must only be put into operation, if the requirements of the operating instructions supplied are observed to their full extent.

In case of non-observance, no liability can be assumed.

**INSTALLATION**

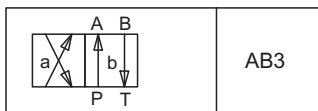
Tightening torque of the coil fixing nut  $M_0 = 15 \text{ Nm}$ . For stack assembly please observe the remarks in the operating instructions.

**DESIGNATION**

Execution L15: II 2 G Ex d IIC T4  $T_a = -25...70^\circ\text{C}$   
 II 2 D Ex tD A21 IP65 T130°C

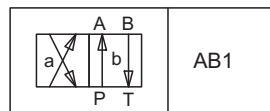
**TYPE LIST / DESIGNATION OF SYMBOLS**

4/2-way valve impulse

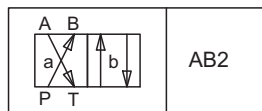


4/2-way valve with spring reset

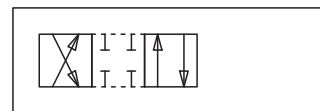
Operation A-side



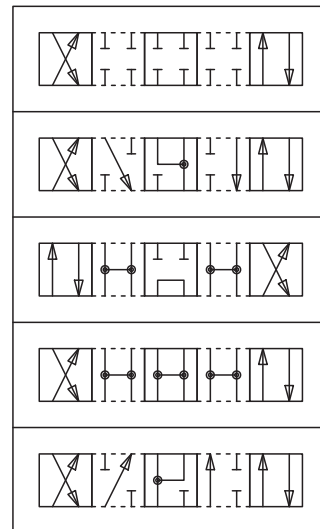
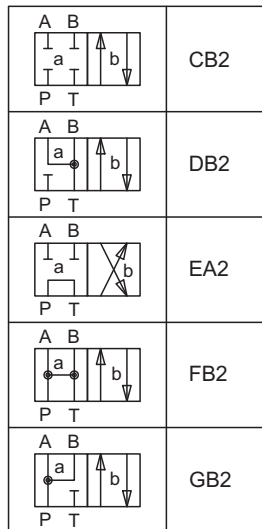
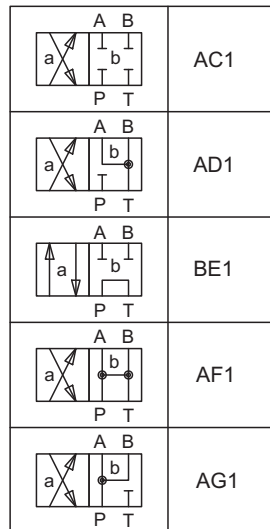
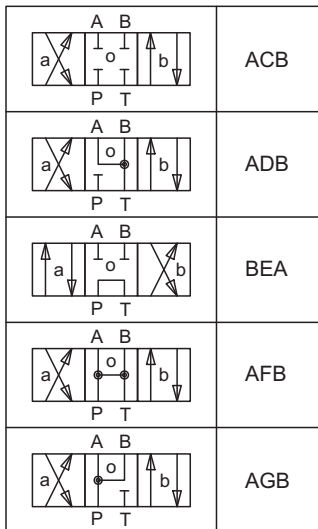
Operation B-side



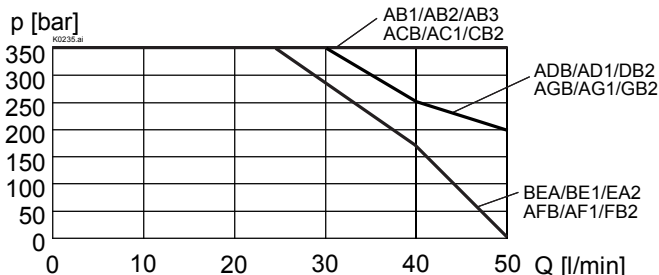
Transitional functions

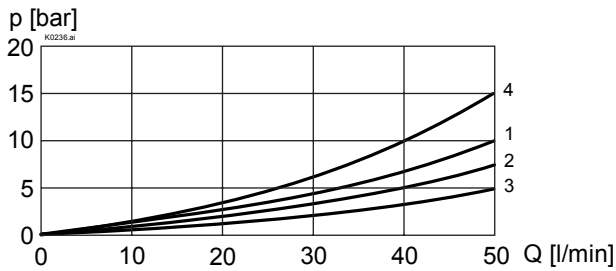


4/3-way valve spring centred


**CHARACTERISTICS** Oil viscosity  $\nu = 30 \text{ mm}^2/\text{s}$ 
 $p = f(Q)$  Performance limits with standard voltage -10%

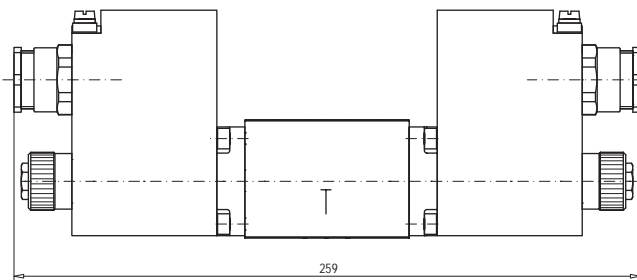
Execution L15

 (measured at  $50^\circ\text{C}$ )


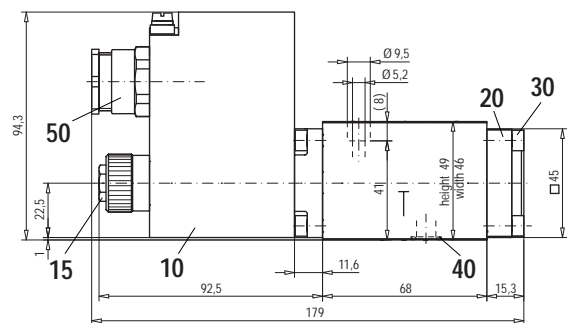
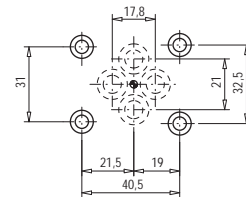
$\Delta p = f(Q)$  Pressure drop volume flow characteristics


Symbol	Pressure drop Curve no.	Volume flow direction				
		P - A	P - B	P - T	A - T	B - T
AB1/AB2/AB3	2	2	2	-	1	1
ACB/AC1/CB2	2	2	2	-	1	1
ADB/AD1/DB2	2	2	2	-	2	2
BEA/BE1/EA2	2	2	4	2	2	2
AFB/AF1/FB2	3	3	3	-	2	2
AGB/AG1/GB2	3	3	3	-	1	1

**DIMENSIONS**

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


4/2-way valve (spring offset)


 Dimensions of the solenoid coil,  
 refer to data sheet 1.1-183

**PARTS LIST**

Position	Article	Description
10	263.6....	Spool MKY45/18 x 60-...
15	253.8001	Plug with integrated manual override HB6
20	058.4211	Cover
30	246.2117	Socket head cap screw M5x16 DIN 912
40	160.2093	O-ring ID 9,25x1,78
50	111.1080	Cable gland brass M20

**ACCESSORIES**

 Threaded connecting plates, Multi-flange subplates and longitudinal stacking system see reg. 2.9

Technical explanation see data sheet 1.0-100