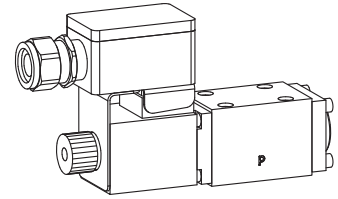


Solenoid operated spool valve

- 4/2-way impulse valve
- 4/3-way with spring centred mid position
- 4/2-way spring reset
- $Q_{max} = 60 \text{ l/min}$ $p_{max} = 350 \text{ bar}$

NG6

ISO 4401-03


II 2 G
EEx me II

DESCRIPTION

Spool valve flange type NG6 with 4 con-nections. Direct solenoid operated spool valve with a 5 annular chamber body design. Activated with explosion proof solenoid. Spool detented or with spring reset. Wet pin solenoid. Precise spool fit, low leak, long service life. Spool made from hardened steel. Valve body made from high grade hydraulic cast iron.

EEx: in accordance with european standards EN 50014, EN 50019, EN 50028

m: encapsulation

e: increased safety

Group II:

for all applications except mining

Zone 1: (and 2) explosive mixtures

present intermittently

EC-type examination certificate:

BASEEFA 02 ATEX 0199 X

FUNCTION

The energised solenoid shifts the spool into the corresponding position.

- 4/2-way impulse valve detented:

Two solenoids and 2 detented positions. With the solenoid deenergised the spool remains in the last switched position.

- 4/3-way spool valve:

Two solenoids and 3 positions, spring centered. With the solenoids deenergised the spool re- turns to the center position by spring force.

- 4/2-way spool valve:

One solenoid and 2 positions, spring offset. With the solenoid deenergised 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 retain hydraulic cylinders and motors. The direction of flow through the valve is determined by the spool symbol. Switching performance and possible leakage must be taken into consideration when designing a system. These valves are suitable for hazardous areas in off-shore and ship-building applications as well as in chemical, oil and gas industry.

TYPE CODE

		WD	X	F	A06	-	-	/	#	
Spool valve direct operated										
Explosion proof type										
Flange type										
International standard interface ISO nominal size 6										
Description of symbols acc. to table 1.3-35/2										
Standard-nominal voltage U_N :	24 VDC	<input type="checkbox"/>	<input type="checkbox"/>	115 VAC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	230 VAC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Execution	T1...T4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Design-Index (Subject to change)										

GENERAL SPECIFICATIONS

Description	4/2-, 4/3-way spool valve
Nominal size	NG6 to ISO 4401/7790
Construction	Direct operated spool valve
Operation	Solenoid
Mounting	Flange
Connections	4 fixing holes for cyl. screw M5x50 Threaded connection plates Multi-flange subplates Longitudinal stacking system
Admissible ambient temp. *:	-20...+60°C
Mounting position	any, preferably horizontal
Fastening torque	$M_D = 5,5 \text{ Nm}$ (quality 8.8)
Weight: 4/2-way impulse	$m = 4,1 \text{ kg}$
4/3-way	$m = 4,1 \text{ kg}$
4/2-way (1 solenoid)	$m = 3,75 \text{ kg}$

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 ² /s...320 mm ² /s
Admissible fluid temp. *:	-20...+60°C
Working pressure in port P, A, B	$p_{max} = 350 \text{ bar}$
Tank pressure in port T	$p_{max} = 160 \text{ bar}$
Max. volume flow	$Q_{max} = 60 \text{ l/min}$, see characteristics

* Deviating pressure medium - or ambient temperatures are possible for special arrangements after checking and authorisation by a responsible inspector. Measures for the prevention of the exceeding of the admissible solenoid surface - and internal temperatures can be: a good ventilation, low ambient temperatures (for higher pressure medium temperatures), limitation of the maximum possible power supply voltage, a short switching-on duration, installation on large heat dissipating blocks, etc. The responsibility in all cases lies with the operator, resp. with his inspector.

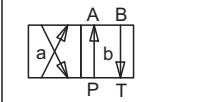
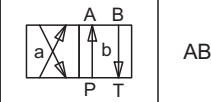
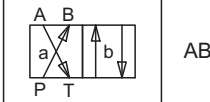
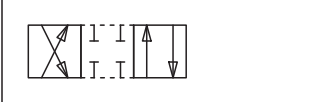
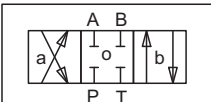
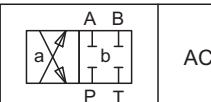
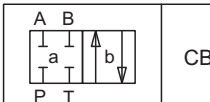
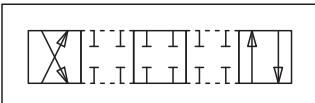
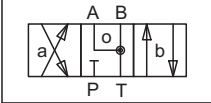
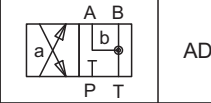
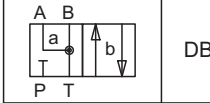
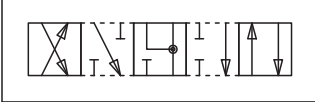

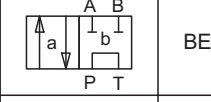
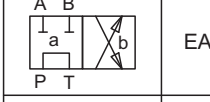
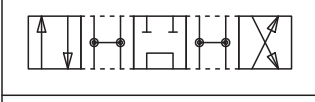
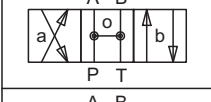
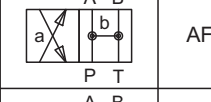
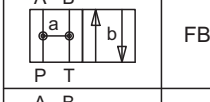
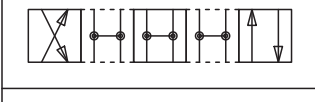
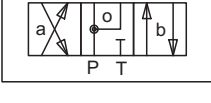
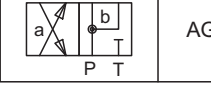
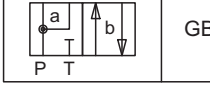
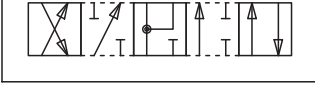
ELECTRICAL CONTROL

Construction	Solenoid, wet pin push type, pressure tight
Standard-nominal voltage	U _N = 24 VDC U _N = 115 VAC, U _N = 230 VAC AC = 50 Hz; with integrated full wave rectifier and free wheeling diod
Voltage tolerance	±10 % of rated voltage
Protection class	IP 65 to EN 60 529
Relative duty factor	100 % DF
Switching cycles	12'000/h
Operating life (number of switching cycles)	10 ⁷
Connection/power supply	Through cable entry for cable diameter 11...14 mm
Execution	T4 (to EN 50 014)
Nominal power	25 W (DC)

START-UP

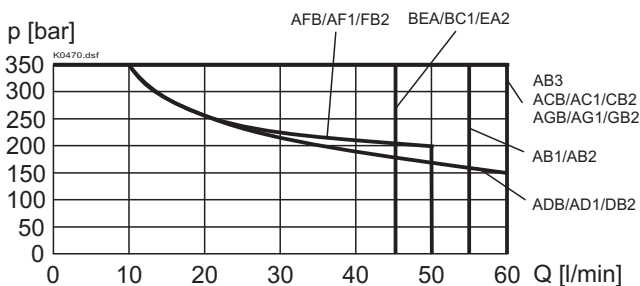
1. In the power supply of each solenoid a short circuit protection must be installed. The size of the fuse must be selected according to the solenoid current (max. 15 A) and has to comply with B588 or IEC269.
2. The solenoid coils must only be operated on the valve belonging to them. More information concerning the installation and commissioning is contained in the operating instructions supplied together with the solenoid coil.
3. DC solenoids:
High voltages may be generated on interruption of the supply and appropriate measures may be required to protect other connected apparatus from the voltage peaks.

TYPE LIST / DESIGNATION OF SYMBOLS

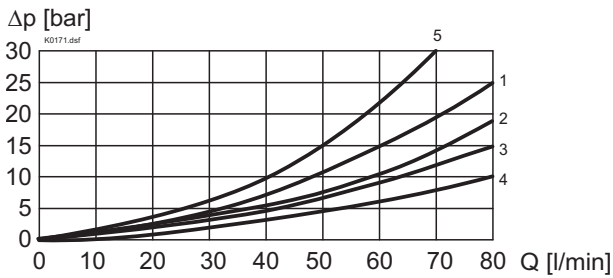
4/2-way valve impulse	4/2-way valve with spring reset Operation A-side	Operation B-side	Transitional functions
 AB3	 AB1	 AB2	
4/3-way valve spring centred			
 ACB	 AC1	 CB2	
 ADB	 AD1	 DB2	
 BEA	 BE1	 EA2	
 AFB	 AF1	 FB2	
 AGB	 AG1	 GB2	

CHARACTERISTICS Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$

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



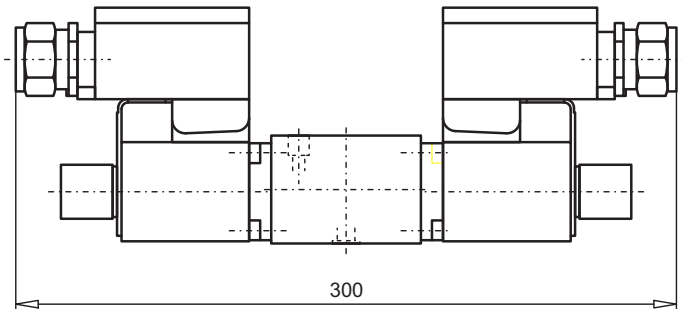
$\Delta p = f(Q)$ Pressure drop volume flow characteristics



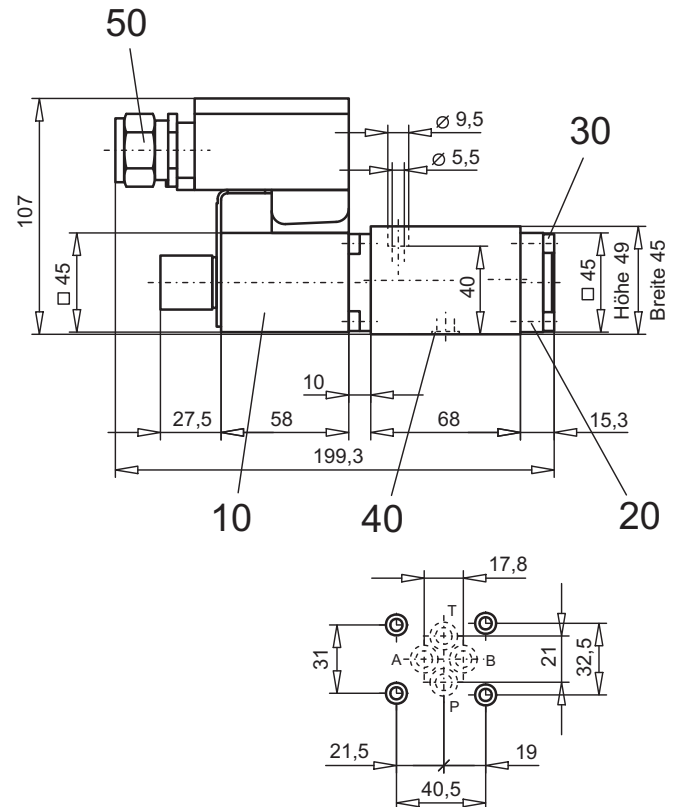
Symbol	Pressure drop curve no. Volume flow direction				
	P-A	P-B	P-T	A-T	B-T
AB1/AB2/AB3	2	2	-	1	1
ACB/AC1/CB2	2	2	-	1	1
ADB/AD1/DB2	2	2	-	3	3
BEA/BE1/EA2	2	2	5	2	2
AFB/AF1/FB2	4	4	-	3	3
AGB/AG1/GB2	4	4	-	1	1

DIMENSIONS

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



4/2-way valve (spring reset)



PARTS LIST

Position	Article	Description
10	207.5 . . .	Coil type EExme
20	58.4211	Cover
30	246.2117	Cyl. screw M5x16 DIN 912
40	160.2093	O-ring ID 9,25x1,78
50	111.1080	Cable entry brass M20

ACCESSORIES

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

Technical explanation see data sheet 1.0-100E