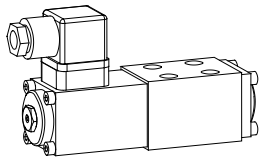
Solenoid operated spool valve
- **4/2-way impulse valve**
- **4/3-way with spring centred mid position**
- **4/2-way with spring reset**
- **Q_{max} = 20 l/min, p_{max} = 350 bar**

NG4
ISO 4401-02



DESCRIPTION
Direct operated solenoid valve with 4 ports in 5 chamber design. Spool deteted or with spring reset. Precise spool fit, low leakage, long life time. Threaded ports through additional base plate. Spool made from hardened steel, body from high quality cast steel. Wide range of standard and special voltages.
The body made of high grade hydraulic casting for long service life is painted. The solenoid and the cover are zinc coated. The socket head screws are zinc coated.

FUNCTION
• 4/2-way detented spool valve:
2 solenoids and 2 detented positions. With the solenoids deenergised the spool remains in the last switched position.
• 4/2-way spool valve:
1 solenoid and 2 spool positions, spring offset. With the solenoid deenergised the spool returns to the offset position.
• 4/3-way spool valve:
2 solenoids and 3 spool positions, spring centered. With the solenoids deenergised the spool returns to the center position.

APPLICATION
Solenoid operated spool valves are mainly used for controlling direction of movement and stopping of hydraulic cylinders and motors. Direction of movement depends on the position of spool and its flow symbol. Please pay attention to the performance limits and leakage of the valves. Solenoid operated spool valves are suitable for machine tools and handling systems. Miniature vales are used where both, reduced dimensions and weight are important.

TYPE CODE

WD ☐ F B04 - ☐ - ☐ # ☐

Spool valve, direct operated		
Economy-solenoid		E
Medium-solenoid		M
Flange construction		
International standard interface ISO, NG4		
Description of symbol refer to table		
Nominal voltage U_N	12 VDC	G12
	24 VDC	G24
	110 VAC	R110
	115 VAC	R115
	230 VAC	R230
Design-Index (Subject to change)		

GENERAL SPECIFICATIONS

Designation	4/2-, 4/3-way directional control valve
Nominal size	4 according to ISO 4401-02
Type	Direct operated spool valve
Operations	Solenoid
Type of mounting	Flange 4 fixing holes for socket head screws M5x40
Connections	Screw fitting connection plates
Ambient temperature	-20…+50 °C
Mounting position	any, preferably horizontal
Fastening torque	M_D= 5,5 Nm (quality 8.8)

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

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, classe 20/18/14 (Required filtration grade ß 10…16≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Operating pressure in port P, A, B	Economy: p_{max} = 250 bar Medium: p_{max} = 350 bar
Tank pressure in port T	p_{max} = 100 bar
Max. volume flow	Q_{max} = 20 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 EN 60529
Relative duty factor	100 % DF (see data sheet 1.1-430)
Switching cycles	15000/h
Operating life	10^7 (number of switching cycles, theoretically)
Connection / Power supply	Over device plug connection to ISO 4400 / DIN 43650, (2P+E), other connections on request

SOLENOID DESCRIPTION

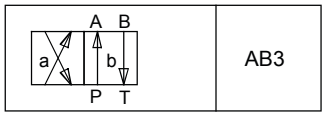
With respect to the selection of the solenoid, the following statements are important:

- 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

Solenoid:	- Economy	BEIIV	(data sheet 1.1-100)
	- Medium	SIN35V	(data sheet 1.1-105)

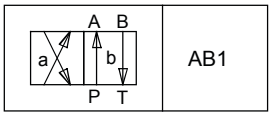
TYPE LIST / DESIGNATION OF SYMBOLS

4/2-way valve impulse



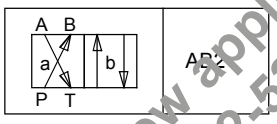
AB3

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



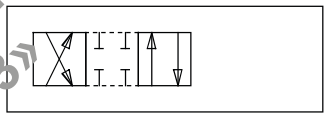
AB1

operation B-side

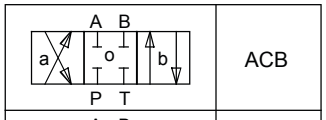
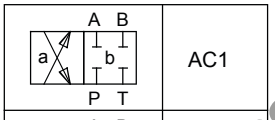
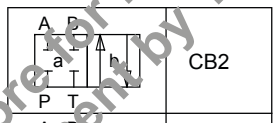
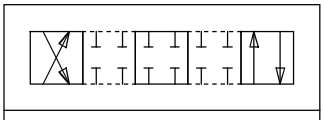
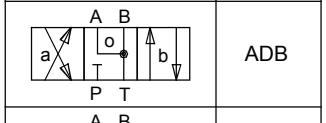
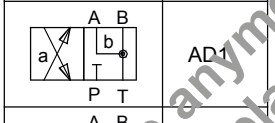
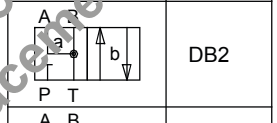
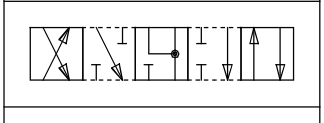
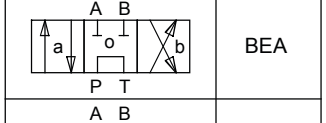
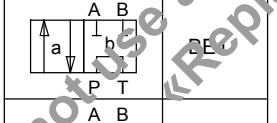
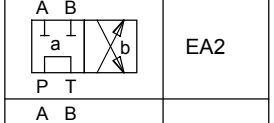
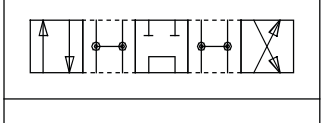
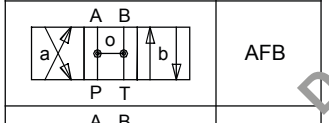
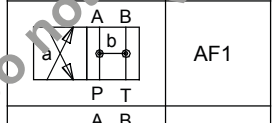
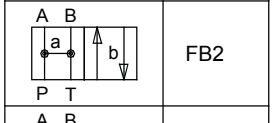
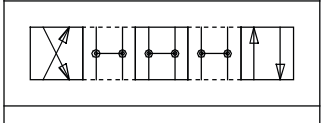
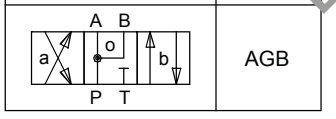
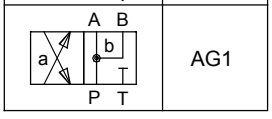
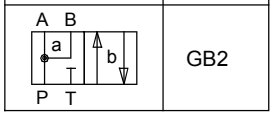
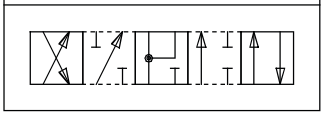


AB2

Transitional functions

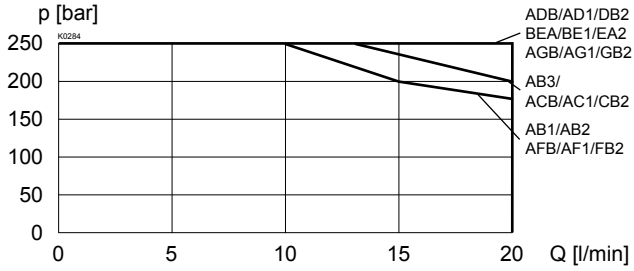


4/3-way valve spring centered

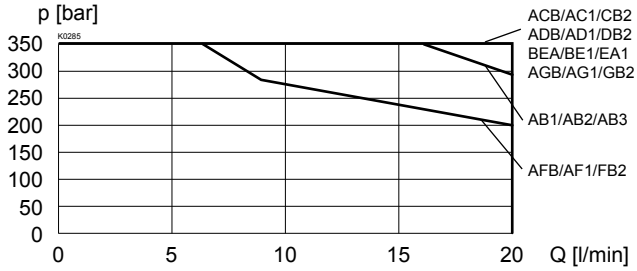
	ACB		AC1		CB2	
	ADB		AD1		DB2	
	BEA		BE1		EA2	
	AFB		AF1		FB2	
	AGB		AG1		GB2	

CHARACTERSISTICS Oilviscosity υ = 30 mm²/s

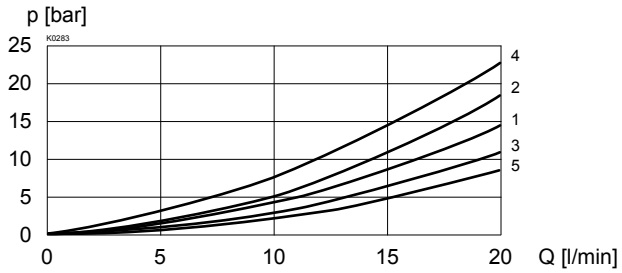
p = f (Q) Performance limits with standard voltage -10%
Economy



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

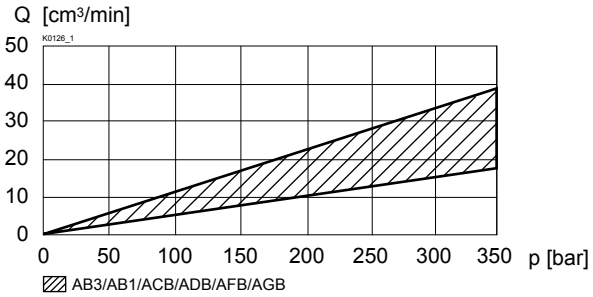


Δp = f (Q) Pressure drop volume flow characteristics



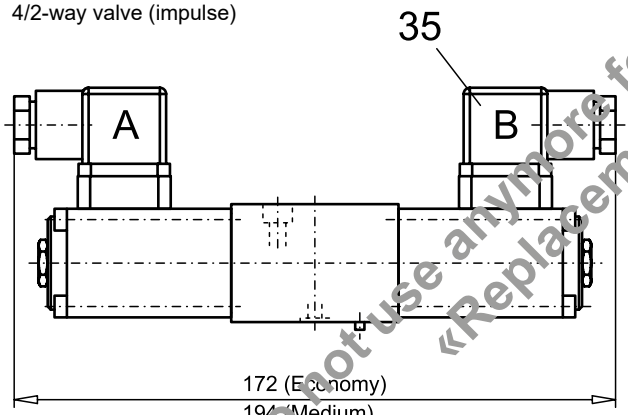
Symbol \ Pressure drop Curve no.	Volume flow direction P - A	P - B	P - T	A - T	B - T
AB1/AB2/AB3	1	1	-	2	2
ACB/AC1/CB2	1	1	-	2	2
ADB/AD1/DB2	1	1	-	2	2
BEA/BE1/EA2	3	3	4	2	2
AFB/AF1/FB2	3	3	5	2	2
AGB/AG1/GB2	3	3	-	2	2

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

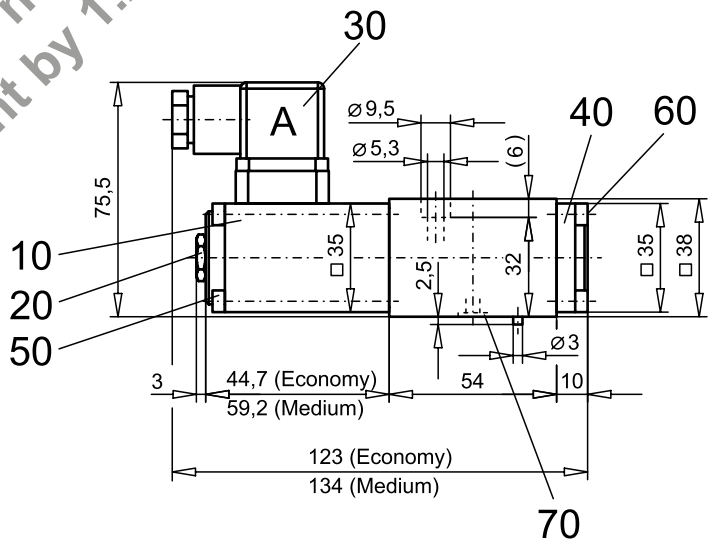


DIMENSIONS

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

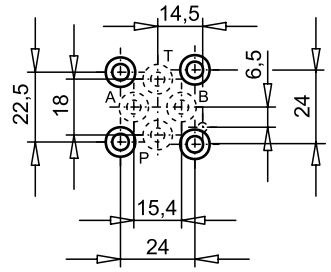


4/2-way valve (spring reset)



PARTS LIST

Position	Article	Description
10	260.1... 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	246.1146 246.1161	Socket head screw M4 x 45 (BEIIV) Socket head screw M4 x 60 (SIN35V)
60	246.1113	Socket head screw M4 x 12 DIN 912
70	160.2060	O-ring ID 6,07x1,78



ACCESSORIES

Threaded connecting plates — see Reg. 2.9

Technical explanation see data sheet 1.0-100