

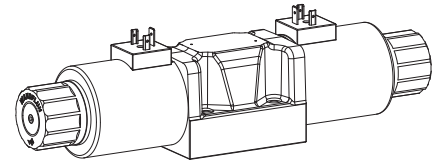
## Solenoid operated spool valve

### Flange construction

- ◆ 4/2-way impulse execution, detented
- ◆ 4/3-way with spring centred mid position
- ◆ 4/2-way with spring reset
- ◆  $Q_{max} = 160 \text{ l/min}$
- ◆  $p_{max} = 350 \text{ bar}$

### NG10

ISO 4401-05



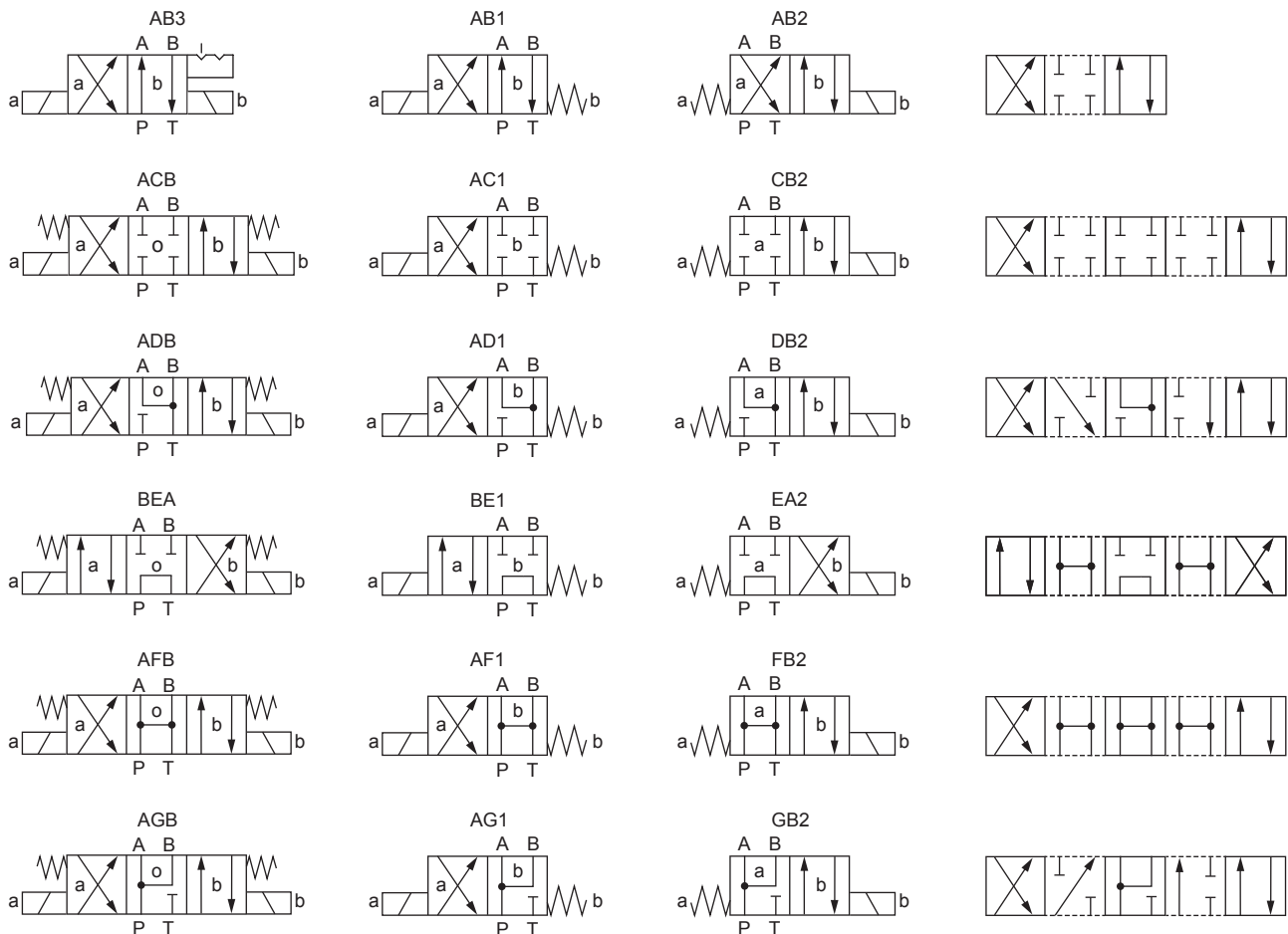
## DESCRIPTION

Direct operated solenoid spool valve with 4 connections in 5 chamber design. Spool detented or with spring. With the solenoids de-energised, the spool is held in the center position by the spring (4/3), or switched back to the offset position (4/2). With the impulse spool (4/2), the spool is held in the switching position by the detent. Precise spool fit, low leakage, long service life time. Spool made from hardened steel, body from high quality hydraulic cast steel.

## APPLICATION

Spool valves are mainly used for controlling direction of movement and stopping of hydraulic cylinders and motors. The direction of movement is determined by the position of the spool and its symbol. Switching performance limits and leakage of the valves must be taken into account when designing the system. Solenoid operated spool valves are suitable for machine tools and handling systems of any kind.

## SYMBOL



**TYPE CODE**

		W D M F A10 - <input type="text"/> - <input type="text"/> / <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> # 1	
Spool valve, direct operated			
Slip-on coil, medium			
Flange construction			
International standard interface ISO, NG10			
Designation of symbols acc. to table			
Nominal voltage $U_N$	12 VDC <input type="text" value="G12"/> 24 VDC <input type="text" value="G24"/> without coil <input type="text" value="X5"/>	115 VAC <input type="text" value="R115"/> 230 VAC <input type="text" value="R230"/>	
Slip-on coil	Metal housing, round <input type="text" value="W"/> Metal housing, square <input type="text" value="M"/>	(only G12 and G24)	
Connection execution	Connector socket EN 175301-803 / ISO 4400 <input type="text" value="D"/> Connector socket AMP Junior-Timer <input type="text" value="J"/> Connector Deutsch DT04 - 2P <input type="text" value="G"/>	(only for $U_N \leq 75$ VDC) (only for $U_N \leq 75$ VDC)	
Sealing material	NBR <input type="text"/> FKM (Viton) <input type="text" value="D1"/>		
Manual override	Integrated <input type="text"/> Push-button <input type="text" value="HF1"/> Spindle <input type="text" value="HS1"/>		

Design index (subject to change)

1.2-76

**GENERAL SPECIFICATIONS**

Designation	4/2-, 4/3-spool valve
Construction	Direct operated
Mounting	Flange construction
Nominal size	NG10 according to ISO 4401-05
Actuation	Switching solenoid
Ambient temperature	-25...+70 °C (NBR) -20...+70 °C (FKM) if > +50 °C, then no undervoltage is admissible
Weight	3,90 kg (1 solenoid) 5,40 kg (2 solenoids)
MTTFd	150 years

**INSTALLATION NOTES**

Mounting type	Flange mounting 4 fixing holes for socket head screws M6 x 40
Mounting position	Any, preferably horizontal
Tightening torque	Befestigungsschrauben $M_D = 10,2 \text{ Nm} \pm 10\%$ (Qualität 8.8) max. Tankdruck 80 bar $M_D = 13,5 \text{ Nm} \pm 10\%$ (Qualität 10.9) $M_D = 5 \text{ Nm}$ Griffmutter

**Tip!**


The length of the fixing screw depends on the base material of the connection element.

**ACTUATION**

Actuation	Switching solenoid, wet pin push type, pressure tight
Execution	W.E64 / 31 x 72 (Data sheet 1.1-190) M.S60 / 31 x 72 (Data sheet 1.1-193)
Connection	Connector socket EN 175301 – 803

**ACCESSORIES**

Mating connector grey (A)	Article no. 219.2001
Mating connector black (B)	Article no. 219.2002
Fixing screws	Data sheet 1.0-60
Threaded subplates	Data sheet 2.9-40
Multi-station subplates	Data sheet 2.9-70
Horizontal mounting blocks	Data sheet 2.9-110
Technical explanations	Data sheet 1.0-100
Hydraulic fluids	Data sheet 1.0-50
Filtration	Data sheet 1.0-50
Relative duty factor	Data sheet 1.1-430

## ELECTRICAL SPECIFICATIONS

Protection class	Connection execution D: IP65 Connection execution J: IP66 Connection execution G: IP67 and IP69K
Relative duty factor	100 % DF
Switching frequency	6'000 / h
Service life time	10 <sup>7</sup> (number of switching cycles, theoretically)
Voltage tolerance	± 10 % with regard to nominal voltage
Standard nominal power	12 VDC, 24 VDC, 115 VAC, 230 VAC

**Note!** Other electrical specifications see data sheet 1.1-190 (slip-on coil W) and 1.1-193 (slip-on coil M)

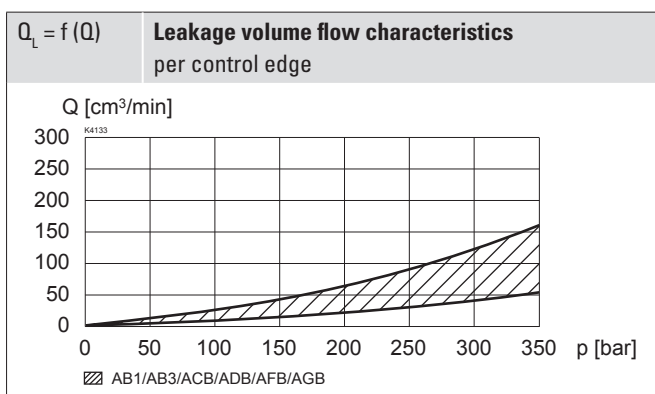
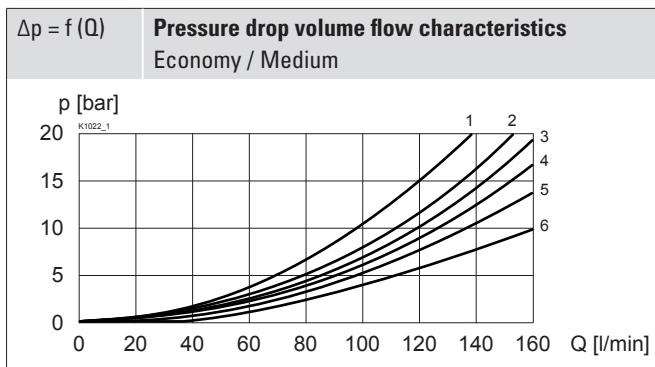
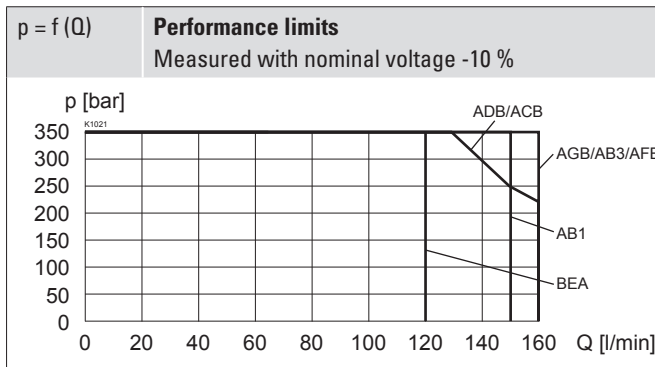


## HYDRAULIC SPECIFICATIONS

Working pressure	$p_{max} = 350$ bar
Tank pressure	$p_{Tmax} = 160$ bar
Maximum volume flow	$Q_{max} = 100$ l/min, see characteristics
Leakage volume flow	See characteristics
Fluid	Mineral oil, other fluid on request
Viscosity range	12 mm <sup>2</sup> /s...320 mm <sup>2</sup> /s
Temperature range fluid	-20...+70 °C
Contamination efficiency	Class 20 / 18 / 14
Filtration	Required filtration grade $\beta_{10...16} \geq 75$ , see data sheet 1.0-50

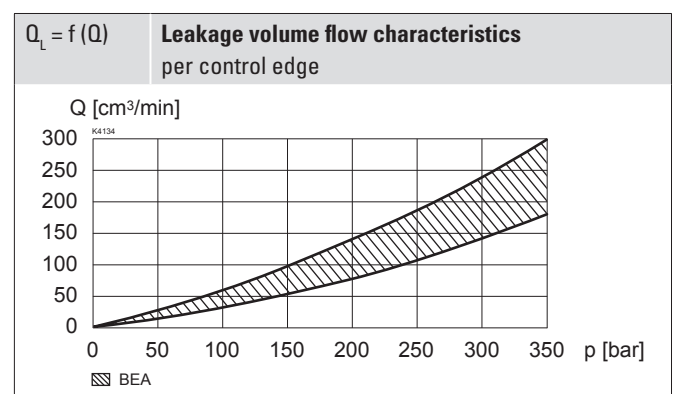
## PERFORMANCE SPECIFICATIONS

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



Volume flow direction

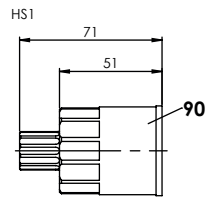
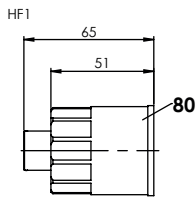
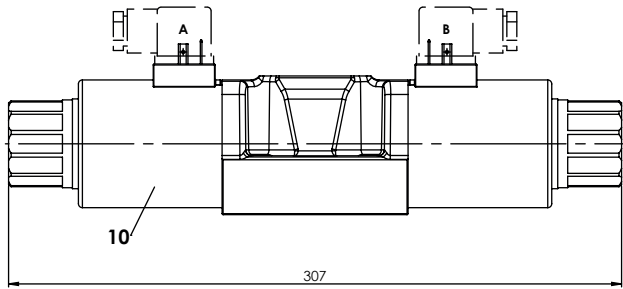
Symbol	P - A	P - B	P - T	A - T	B - T
AB1	5	5	-	3	2
AB3	5	5	-	3	2
ACB	5	5	-	3	2
ADB	5	5	-	5	4
BEA	3	3	1	3	2
AFB	6	6	6	5	4
AGB	6	6	-	3	2



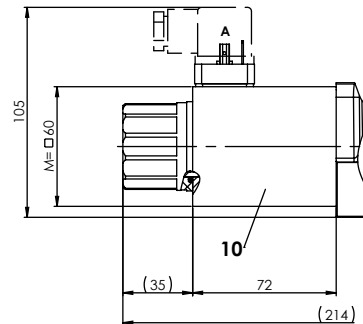
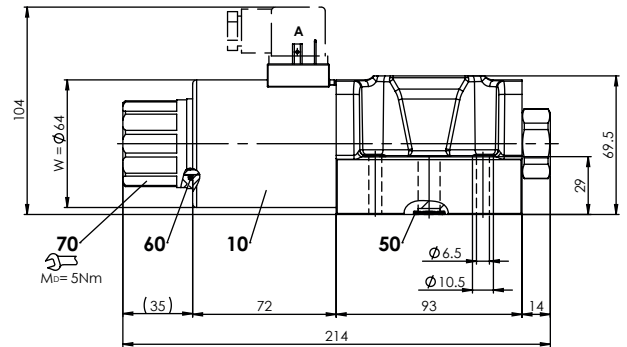
## DIMENSIONS

4/3-way valve (spring centred)

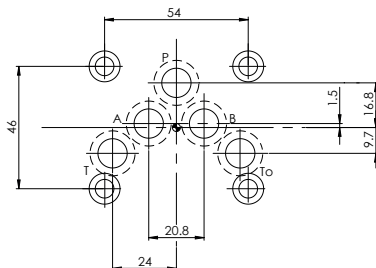
4/2-way valve (impulse)



4/2-way valve (spring reset)



## HYDRAULIC CONNECTION



## MANUAL OVERRIDE

- ◆ Integrated (-) Actuation pin integrated in the armature tube. Actuation by pressing the pin
- ◆ Push-button (HF1) Integrated in the knurled nut. Actuation by pressing the push-button
- ◆ Spindle (HS1) Integrated in the knurled nut. Actuation by turning the spindle (continuously variable valve actuation)

**Attention!** The actuation of the manual override is possible up to a tank pressure of:

- 20 bar Integrated (-)
- 20 bar Push-button (HF1)
- 80 bar Spindle (HS1)

## OBERFLÄCHENBEHANDLUNGEN

- ◆ Der Ventilkörper ist mit Zweikomponentenlack gespritzt
- ◆ Die Verschlusschraube ist galvanisch verzinkt
- ◆ Die Steckspule und das Ankerrohr sind Zink-Nickel beschichtet

## PARTS LIST

Position	Article	Description
10	206.3...	W.E64 / 31 x 72
	260.9...	M.S60 / 31 x 72
50	160.2120	O-ring ID 12,42 x 1,78 (NBR)
	160.8124	O-ring ID 12,42 x 1,78 (FKM)
60	160.2282	O-ring ID 28,24 x 2,62 (NBR)
70	154.2706	Knurled nut
80	253.7006	Push-button
90	253.7005	Spindle

## STANDARDS

Mounting interface	ISO 4401-05
Solenoids	DIN VDE 0580
Connection execution D	EN 175301 – 803
Protection class	EN 60 529
Contamination efficiency	ISO 4406

## SEALING MATERIAL

NBR or FKM (Viton) as standard, choice in the type code

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