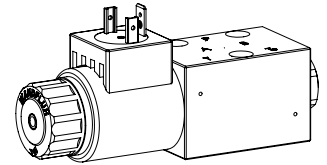


Solenoid operated spool valve

Flange construction

- ◆ 4/2-way impulse execution, detented
- ◆ 4/3-way with spring centered mid position
- ◆ 4/2-way with spring reset
- ◆ $Q_{max} = 30 \text{ l/min}$
- ◆ $p_{max} = 350 \text{ bar}$

NG4-Mini Wandfluh standard



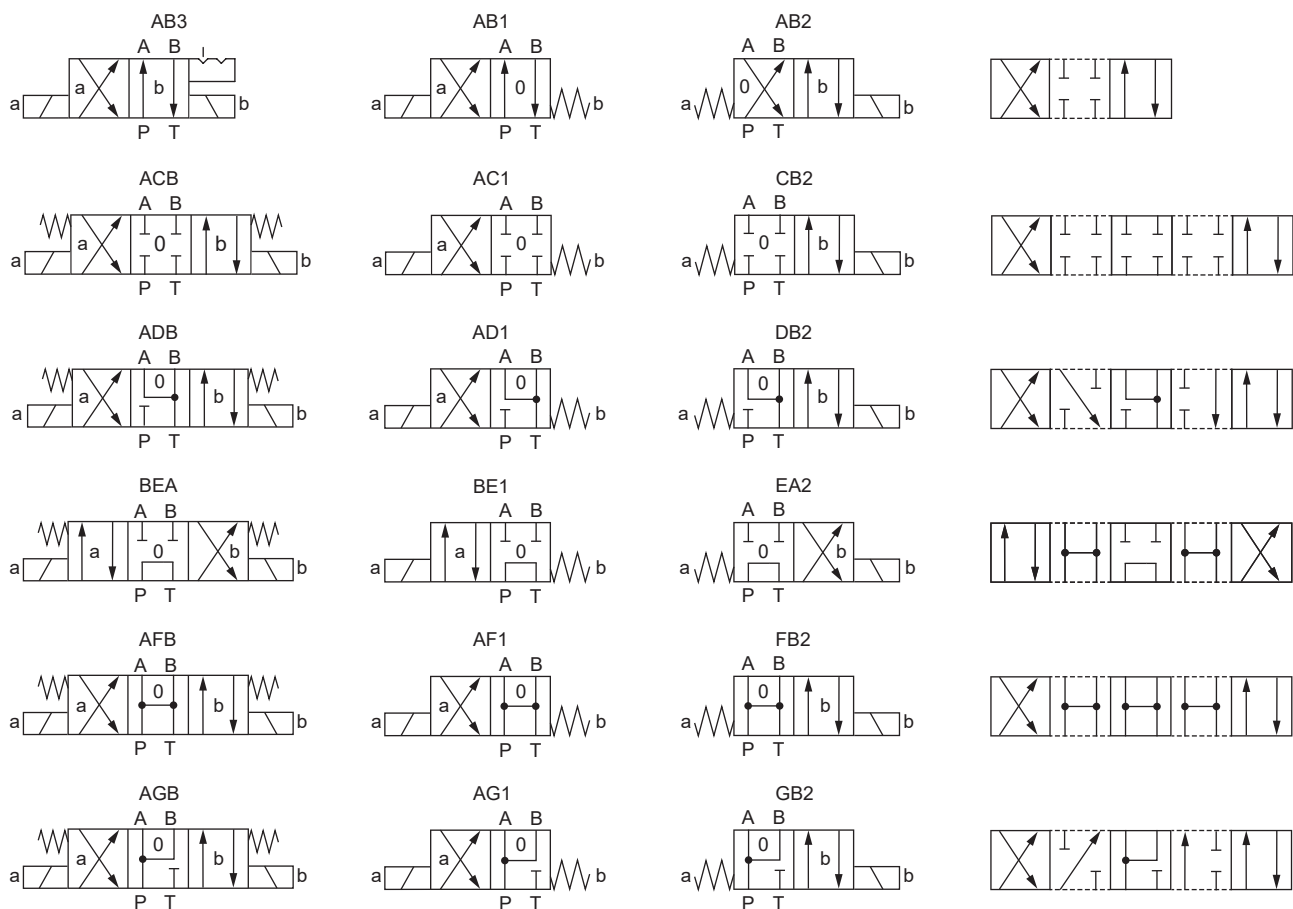
DESCRIPTION

Direct operated solenoid spool valve with 4 connections in 5 chamber design. Spool detented or with spring reset. With the solenoids deenergised, 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, valve body from high quality hydraulic cast steel. Wide range of standard and special voltages.

APPLICATION

Spool valves are mainly used for controlling direction of movement and stopping of hydraulic cylinders and motors. Switching performance and leakage of the valves must be taken into account when designing the system. Solenoid spool valves are suitable for machine tools and handling systems of any kind. Miniature valves are used where both, reduced dimensions and weight are important.

SYMBOL



TYPE CODE

WD <input type="text"/> F A04 - <input type="text"/> - <input type="text"/> - <input type="text"/> / <input type="text"/> <input type="text"/> - <input type="text"/> <input type="text"/> <input type="text"/> # <input type="text"/>	
Spool valve, direct operated	
Slip-on coil, Economy	<input type="text"/> E
Slip-on coil, Medium	<input type="text"/> M
Flange construction	
Mounting interface acc. to Wandfluh standard, NG4-Mini	
Designation of symbols acc. to table	
Spool specification	Standard <input type="text"/> Low Leakage <input type="text"/> 1/x
Nominal voltage U _N	12 VDC <input type="text"/> G12 115 VAC <input type="text"/> R115 24 VDC <input type="text"/> G24 230 VAC <input type="text"/> R230 without coil <input type="text"/> X5
Slip-on coil	Metal housing, round with one-sided collar <input type="text"/> V (only G12 and G24) Metal housing, square with one-sided collar <input type="text"/> N
Connection execution	Connector socket EN 175301-803 / ISO 4400 <input type="text"/> D Connector socket AMP Junior-Timer <input type="text"/> J (only G24) Connector Deutsch DT04 - 2P <input type="text"/> G (only for U _N ≤ 75 VDC)
Sealing material	NBR <input type="text"/> FKM (Viton) <input type="text"/> D1
Manual override	Integrated <input type="text"/> Push-button <input type="text"/> HF1 Spindle <input type="text"/> HS1
Surface protection	Standard <input type="text"/> Zinc-nickel <input type="text"/> K8
Design index (subject to change)	

1.2-33

GENERAL SPECIFICATIONS

Designation	4/2-, 4/3-spool valve
Construction	Direct operated
Mounting	Flange construction
Nominal size	NG4-Mini according to Wandfluh standard
Actuation	Switching solenoid
Ambient temperature	-25...+70 °C if > +50 °C, then no undervoltage is admissible
Weight	0,83 kg (1 solenoid Economy) 0,90 kg (1 solenoid Medium) 1,12 kg (2 solenoids Economy) 1,24 kg (2 solenoids Medium)
MTTFd	150 years

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	15'000 / h
Service life time	10 ⁷ (number of switching cycles, theoretically)
Voltage tolerance	± 10 % with regard to nominal voltage
Standard nominal voltage	12 VDC, 24VDC, 115 VAC, 230 VAC AC = 50 to 60 Hz, rectifier integrated in the connector socket

Note!


Other electrical specifications see data sheet 1.1-168 (slip-on coil V) and 1.1-175 (slip-on coil N)

ACTUATION

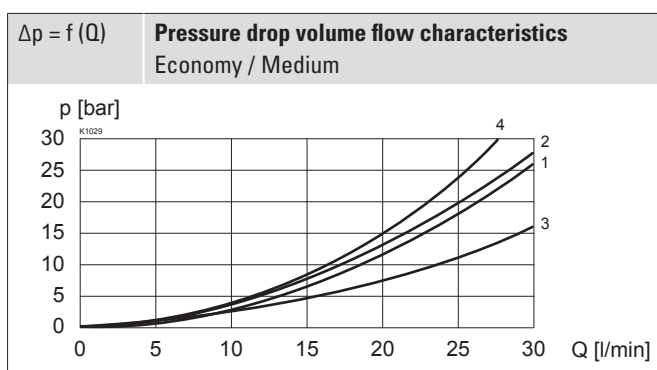
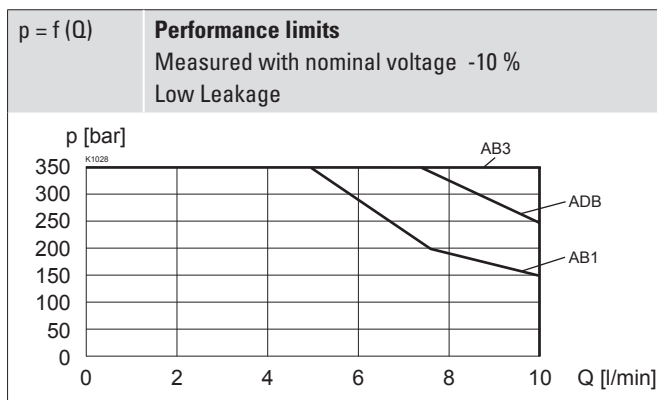
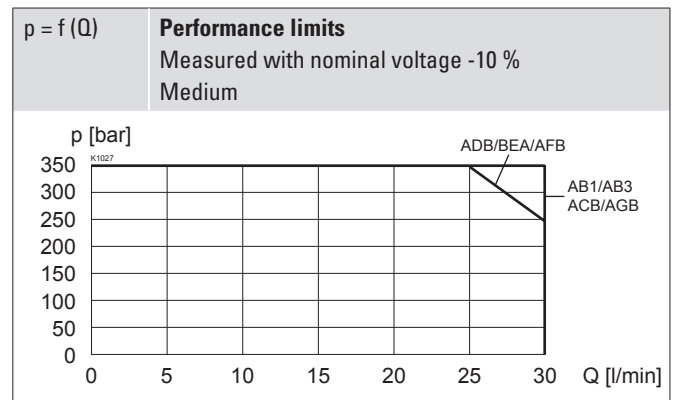
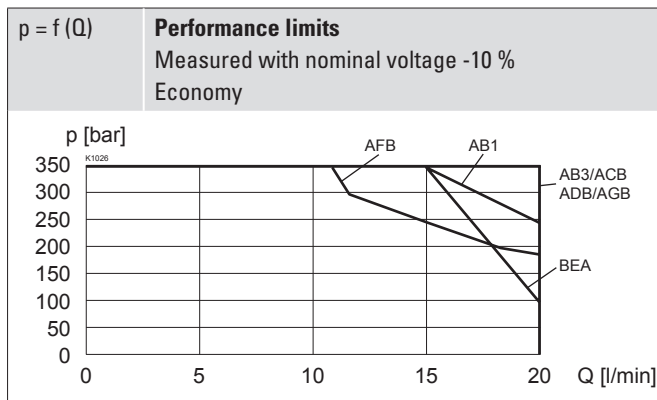
Actuation	Switching solenoid, wet pin push type, pressure tight
Execution	Economy: V.E37 / 19 x 40 (Data sheet 1.1-168) Medium: V.E37 / 19 x 50 (Data sheet 1.1-168) N.S35 / 19 x 50 (Data sheet 1.1-175)
Connection	Connector socket EN 175301 – 803 Connector socket AMP Junior-Timer Connector Deutsch DT04 – 2P

HYDRAULIC SPECIFICATIONS

Working pressure	$p_{max} = 350 \text{ bar}$ ($P_T < 20 \text{ bar}$) $p_{max} = 315 \text{ bar}$ ($P_T > 20 \text{ bar}$)
Tank pressure	$p_{Tmax} = 100 \text{ bar}$
Maximum volume flow	$Q_{max} = 30 \text{ l/min}$, see characteristics
Leakage oil	See characteristics
Fluid	Mineral oil, other fluid on request
Viscosity range	12 mm ² /s...320 mm ² /s
Temperature range fluid	-25...+70 °C (NBR) -20...+70 °C (FKM)
Contamination efficiency	Class 20 / 18 / 14
Filtration	Required filtration grade $\beta_{10...16} \geq 75$, see data sheet 1.0-50

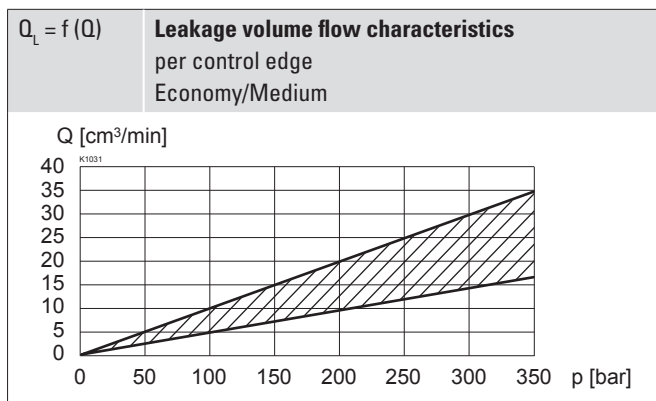
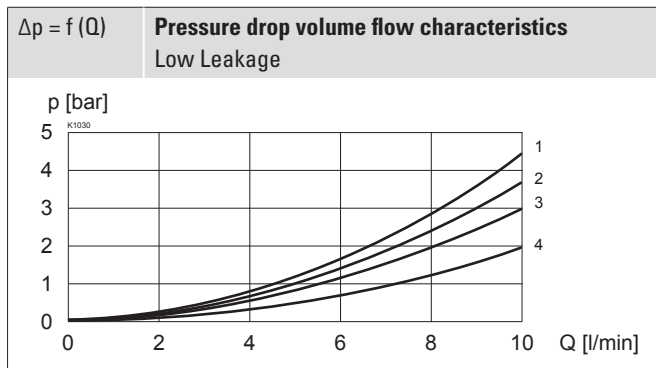
PERFORMANCE SPECIFICATIONS

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

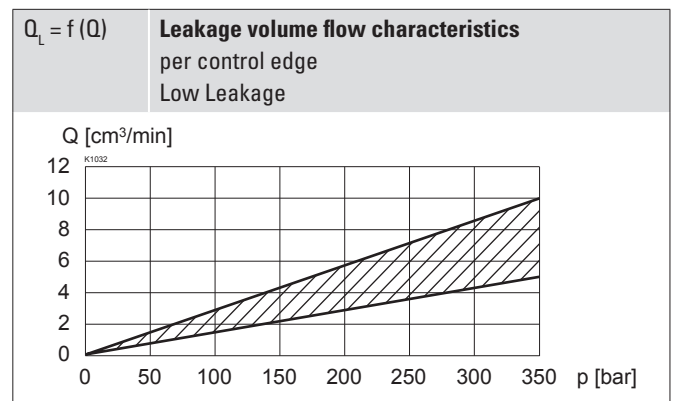


Symbol	Volume flow direction				
	P - A	P - B	P - T	A - T	B - T
AB1 / AB2 / AB3	2	2	-	1	1
ACB / AC1 / CB2	2	2	-	1	1
ADB / AD1 / DB2	2	2	-	1	1
BEA / BE1 / EA2	1	1	4	1	1
AFB / AF1 / FB2	1	1	3	1	1
AGB / AG1 / GB2	1	1	-	1	1

PERFORMANCE SPECIFICATIONS

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


Symbol	Volume flow direction				
	P - A	P - B	P - T	A - T	B - T
AB1 / AB2 / AB3	1	1	-	1	2
ADB / AD1 / DB2	1	1	-	4	3



STANDARDS

Mounting interface	Wandfluh standard
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

SURFACE TREATMENT

Standard:

- The valve body is painted with a two component paint
- The armature tube, the slip-on coil and the plug screw are zinc-nickel coated

Optionally (K8):

- All external parts are zinc-nickel coated
- ISO 9227 (800 h) salt spray test

INSTALLATION NOTES

Mounting type	Flange mounting 3 fixing holes for socket head screws M5 x 40
Mounting position	Any, preferably horizontal
Tightening torque	Fixing screws $M_D = 5,2 \text{ Nm}$ (screw quality 8.8, zinc coated) $M_D = 5 \text{ Nm}$ knurled nut

Note!

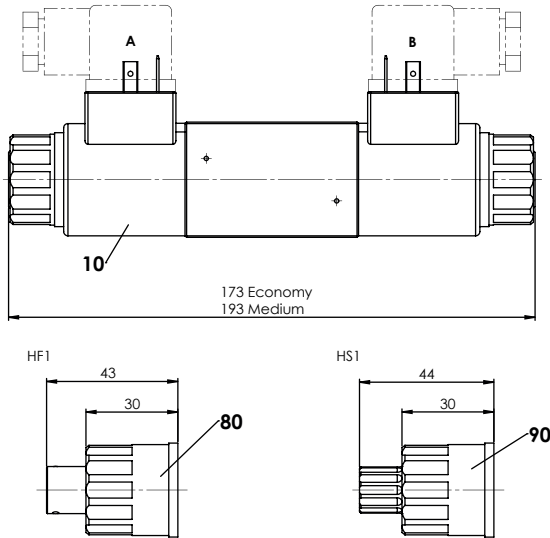


The length of the fixing screw depends on the base material of the connection element.

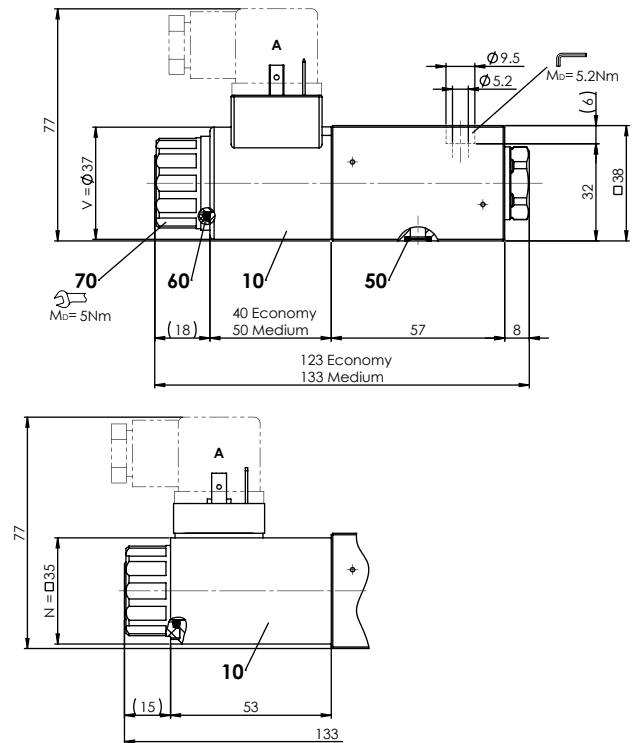
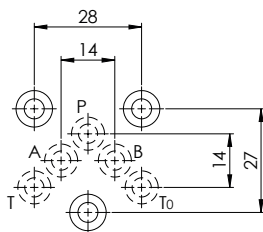
DIMENSIONS

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:

- 40 bar Integrated (-)
- 40 bar Push-button (HF1)
- 100 bar Spindle (HS1)


PARTS LIST

Position	Article	Description
10	206.2...	V.E37 / 19 x 40 V.E37 / 19 x 50
	260.5...	N.S35 / 19 x 50
70	154.2700	Knurled nut
80	253.7001	HF1-M19
90	253.7000	HS1-M19
	251.0814	Seal kit WD.FA04
	251.0816	Seal kit WD.FA04-D1

Seal kit consisting of:

50	O-Ring	ID 5,28 x 1,78
60	O-Ring	ID 18,72 x 2,62

ACCESSORIES

Mating connector grey (A)	Article no. 219.2001
Mating connector black (B)	Article no. 219.2002
Mounting screws	Data sheet 1.0-60
Threaded subplates	Data sheet 2.9-10
Multi-station subplates	Data sheet 2.9-50
Horizontal mounting blocks	Data sheet 2.9-90
Technical explanations	Data sheet 1.0-100
Filtration	Data sheet 1.1-50
Relative duty factor	Data sheet 1.1-430