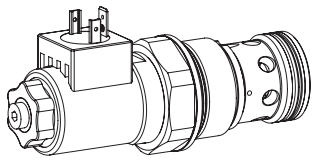
Solenoid operated poppet valve cartridge

- solenoid operated
- pilot operated
- normally open and normally closed
- 2/2-way
- Q_{max} = 300 l/min
- p_{max} = 350 bar

M42 x 2
ISO 7789



DESCRIPTION

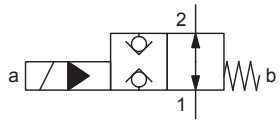
Pilot operated 2/2-way solenoid poppet valve in screw-in cartridge construction for cavity according to ISO 7789. The AB and CB execution is closed in the energised position, the BA and BC execution in the de-energised position. In this, the main spool closes practically leakage-free by means of the applied pressure.

APPLICATION

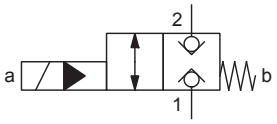
Wandfluh solenoid operated poppet valve cartridges are used where tight closing functions are essential like leakage-free load holding, clamping or gripping. For machining the cartridge cavity in steel and aluminum blocks, cavity tools are available (hire or purchase). Please refer to the data sheets in register 2.13.

SYMBOL

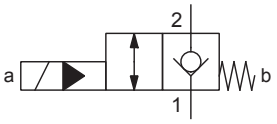
„Normally open" AB



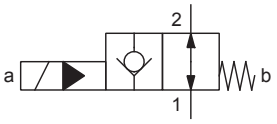
„Normally closed" BA



„Normally closed" BC



„Normally open" CB



TYPE CODE

S V S PM42 - [ ] - [ ] / [ ] [ ] - [ ] [ ] # [ ]

Poppet valve

Pilot operated

Solenoid, Super

Screw-in cartridge M42 x 2

Designation of symbols acc. to table

Nominal voltage U_N	12 VDC	G12	115 VAC	R115
	24 VDC	G24	230 VAC	R230
	without coil	X5		

Slip-on coil	Metal housing, round	W	(only G12 and G24)
	Metal housing, square	M	

Connection execution	
Connector socket EN 175301-803 / ISO 4400	D
Connector socket AMP Junior-Timer	J
Connector Deutsch DT04-2P	G

Sealing material	NBR	
	FKM (Viton)	D1
	NBR 872	Z604

Armature tube	with screw plug HB0		
	with manual override	HB4,5	(only AB, CB)

Design index (subject to change)

1.11-2091

GENERAL SPECIFICATIONS

Designation	2/2-way poppet valve
Construction	Pilot operated
Mounting	Screw-in cartridge construction
Nominal size	M42 x 2 according to ISO 7789
Actuation	Switching solenoid
Ambient temperature	-25…+70 °C
Weight	0,95 kg
MTTFd	150 years

ACTUATION

Actuation	Proportional solenoid, wet pin pull and push type, pressure tight.
Execution	W.E37 / 16 x 40 (Data sheet 1.1-169) M.E35 / 16 x 40 (Data sheet 1.1-171)
Connection	Connector socket EN 175301 – 803 Connector socket AMP Junior-Timer Connector Deutsch DT04 – 2P

HYDRAULIC SPECIFICATIONS

Working pressure	p_{max} = 350 bar
Opening pressure	2 bar 1 → 2 version AB / BA 2 bar 2 → 1 version AB / BA 1,5 bar 1 → 2 version BC / CB 1,5 bar 2 → 1 version BC / CB
Maximum volume flow	Q_{max} = 300 l/min, see characteristics
Leakage oil	Poppet type, max. 0,15 ml / min (approx. 3 drops / min) at 30 cSt
Fluid	Mineral oil, other fluid on request
Viscosity range	12 mm²/s…320 mm²/s
Temperature range fluid	-25…+70 °C (NBR) -20…+70 °C (FKM)
Contamination efficiency	Class 20 / 18 / 14
Filtration	Required filtration grade ß 10…16 ≥ 75, see data sheet 1.0-50

ELECTRICAL SPECIFICATIONS

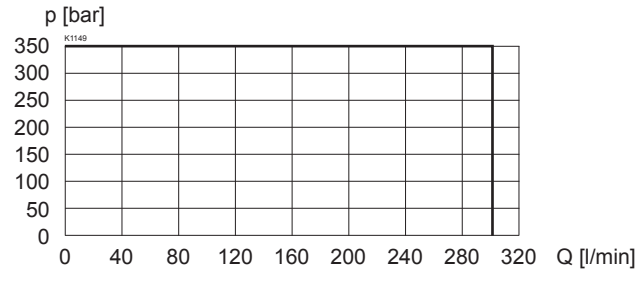
Protection class	Connection execution D: IP65 Connection execution J: IP66 Connection execution G: IP67 and IP69K
Relative duty factor	100 % DF, W.E37 only up to 50 °C
Switching frequency	5'000 / h
Service life time	10^7 (number of switching cycles, theoretically)
Voltage tolerance	± 10 % with regard 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 1.1-169 (slip-on coil W) and 1.1-171 (slip-on coil M)

PERFORMANCE SPECIFICATIONS

Oil viscosity υ = 30 mm²/s

p = f (Q) — **Performance limit**
Measured with nominal voltage -10%



Switching times

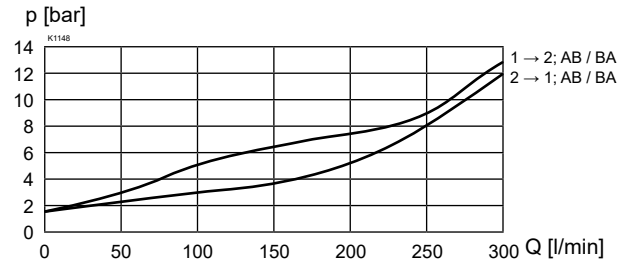
	Type	Flow direction	Energised	De-energised
SVSPM42	AB	1 → 2	approx. 200 ms	approx. 35 ms
		2 → 1	approx. 250 ms	approx. 35 ms
	BA	1 → 2	approx. 35 ms	approx. 200 ms
		2 → 1	approx. 35 ms	approx. 250 ms
	BC	2 → 1	approx. 35 ms	approx. 300 ms
	CB	2 → 1	approx. 300 ms	approx. 40 ms

Note! The switching times depend on the volume flow, pressure and viscosity. In case of very large volume flows, the switching time for closing can get considerably longer.

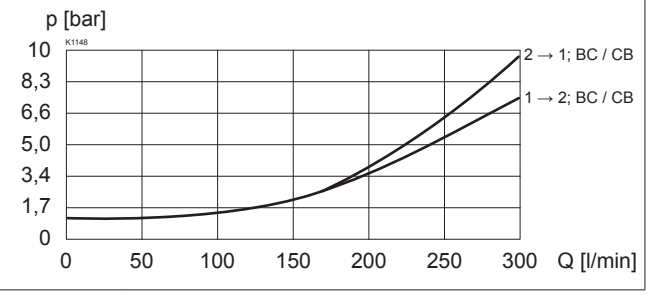
PERFORMANCE SPECIFICATIONS

Oil viscosity υ = 30 mm²/s

Δp = f (Q)	Pressure drop volume flow characteristics

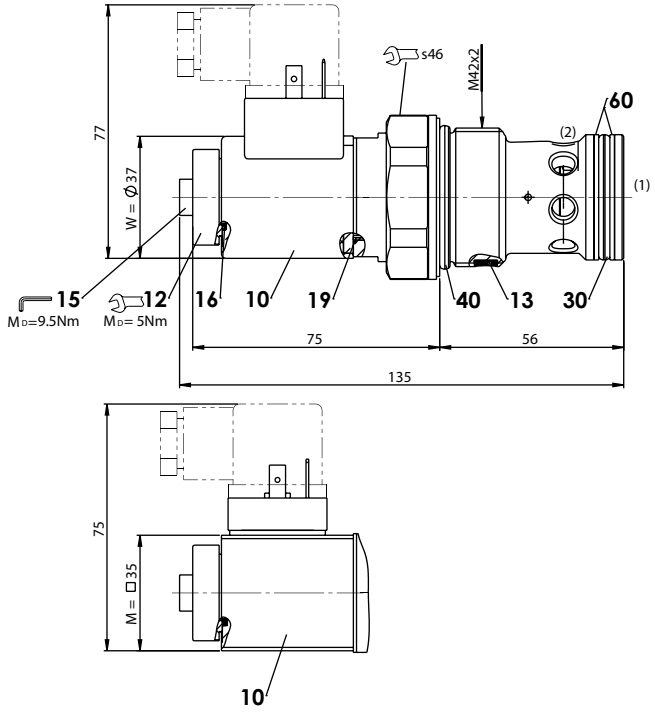


Δp = f (Q)	Pressure drop volume flow characteristics



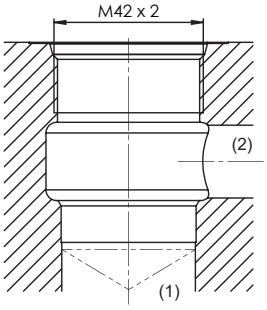
Attention! Measured with cavity according to data sheet 2.13-1059 (annular groove)

DIMENSIONS



HYDRAULIC CONNECTION

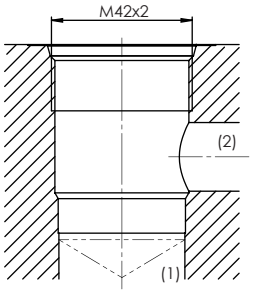
Cavity drawing according to ISO 7789–42–01–0–07 (with annular groove) recommended for minimum delta p values



Note! Detailed cavity drawing refer to data sheet 2.13-1059

HYDRAULIC CONNECTION

Cavity drawing according to ISO 7789–42–01–0–07



Note! Detailed cavity drawing refer to data sheet 2.13-1050

PARTS LIST

Position	Article	Description
10	206.2...	W.E37 / 16 x 40
	260.4...	M.E35 / 16 x 40
12	154.2600	Knurled nut M16 x 1 x 9
13	212.0013	Plastic disc rd 7 x 1,5
15	239.2033	Screw plug HB0 (incl. seal)
-	251.3017	Seal kit SV.PM42 NBR
	251.3041	Seal kit SV.PM42 D1
	251.3020	Seal kit SV.PM42 Z604

Seal kit consisting of

16	O-ring	ID 15,60 x 1,78
19	O-ring	ID 26,00 x 1,00
30	O-ring	ID 32,99 x 2,62
40	O-ring	ID 37,77 x 2,62
60	Back. ring	PTFE rd 33,5 x 38 x 1,4

ACCESSORIES

Threaded body	Data sheet 2.9-2xx
Technical explanations	Data sheet 1.0-100
Filtration	Data sheet 1.0-50
Relative duty factor	Data sheet 1.1-430

MANUAL OVERRIDE

Screw plug (HB0), no actuation possible.
Optionally HN (K) or HG (K) (pushing) resp. HZ (K) (pulling)
→ See data sheet 1.1-311

Attention! The manual override HZ (K) can neither be dismantled nor retrofitted

SEALING MATERIAL

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

SURFACE TREATMENT

◆ The cartridge body, the slip-on coil and the armature tube are zinc-nickel coated

STANDARDS

Cartridge cavity	ISO 7789
Solenoids	DIN VDE 0580
Connection execution D	EN 175301 – 803
Protection class	EN 60 529
Contamination efficiency	ISO 4406

INSTALLATION NOTES

Mounting type	Screw-in cartridge M42 x 2
Mounting position	Any, preferably horizontal
Tightening torque	M_D = 420 Nm Screw-in cartridge M_D = 5 Nm knurled nut

Note! Without varying pressure load in connection 2, a tightening torque reduced by 15% is sufficient

Wandfluh AG Postfach CH-3714 Frutigen
Tel. +41 33 672 72 72 Fax +41 33 672 72 12 sales@wandfluh.com