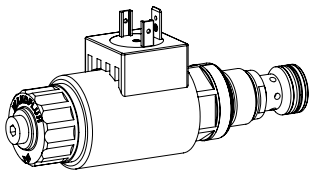
Solenoid operated poppet valve cartridge

- direct operated
- 2/2- and 3/2-way
- Q_{max} = 40 l/min
- p_{max} = 350 bar

M22 x 1,5
ISO 7789



DESCRIPTION

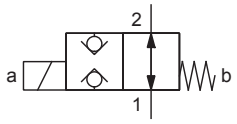
Direct operated 2/2- and 3/2-way solenoid poppet valve in screw-in cartridge construction for cavity according to ISO 7789. By means of the pressure tight switching solenoid, the pressure compensated, metallically sealing poppet spool is either opened or closed. The seat spool guide is sealed by means of an O-ring.

APPLICATION

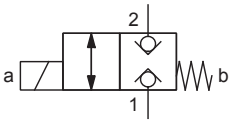
Wandfluh solenoid operated poppet valve cartridges are used where tight closing functions are essential like leakage-free load holding, clamping or gripping. For machining the cartridge cavity in steel and aluminum blocks, cavity tools are available (hire or purchase). Please refer to the data sheets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

SYMBOL

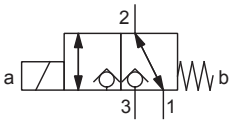
„Normally open" AB

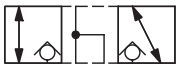


„Normally closed" BA



FG





TYPE CODE

S D S PM22 - ☐ - ☐ / ☐ ☐ - ☐ ☐ # ☐

Poppet valve					
Direct operated					
Solenoid					
Screw-in cartridge M22 x 1,5					
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 with one-sided collar		V		(only G12 and G24)
	Metal housing square with one-sided collar		N		
Connection execution	Connector socket EN 175301-803 / ISO 4400		D		
	Connector socket AMP Junior-Timer		J		(only for $U_N \leq 75$ VDC)
	Connector Deutsch DT04 - 2P		G		(only for $U_N \leq 75$ VDC)
Sealing material	NBR				
	FKM (Viton)		D1		
	NBR 872		Z604		
Armature tube	closed		0		
	with screw plug HB0				
	with manual override		HB4,5		
Design index (subject to change)					

1.11-2061

GENERAL SPECIFICATIONS

Designation	2/2-, 3/2-way poppet valve
Construction	Direct operated
Mounting	Screw-in cartridge construction
Nominal size	M22 x 1,5 according to ISO 7789
Actuation	Switching solenoid
Ambient temperature	-25…+70 °C
Weight	0,56 - 0,60 kg
MTTFd	150 years

HYDRAULIC SPECIFICATIONS

Working pressure	p_{max} = 350 bar
Maximum volume flow	Q_{max} = 40 l/min, see characteristics
Leakage oil	Seat tight, 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
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 1.1-168 (slip-on coil V) and 1.1-175 (slip-on coil N)

ACTUATION

Actuation	Switching solenoid, wet pin push type, pressure tight
Execution	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

SURFACE TREATMENT

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

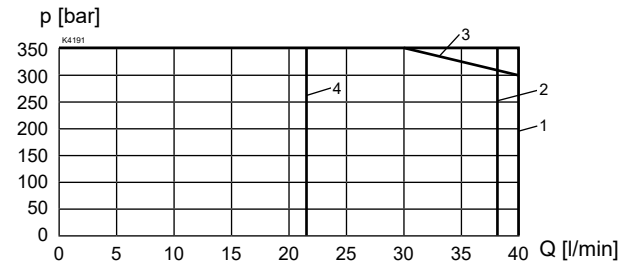
SEALING MATERIAL

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

PERFORMANCE SPECIFICATIONS

Oil viscosity υ = 30 mm²/s

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

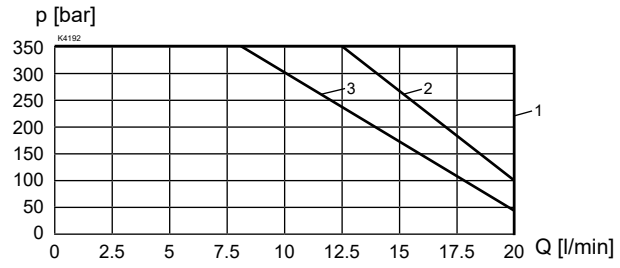


	Flow direction	
Execution	1 → 2	2 → 1
SDSPM22-AB	4	2
SDSPM22-BA	3	1

PERFORMANCE SPECIFICATIONS

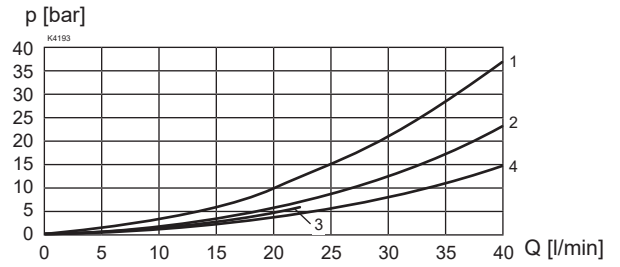
Oil viscosity υ = 30 mm²/s

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



Execution	Flow direction 1 → 2	2 → 1	2 → 3	3 → 2
SDSPM22-FG	2	1	1	3

Δp = f (Q) **Pressure drop volume flow characteristics**



Execution	Flow direction 1 → 2	2 → 1	2 → 3	3 → 2
SDSPM22-AB	3	4	-	-
SDSPM22-BA	2	2	-	-
SDSPM22-FG	3	4	1	1

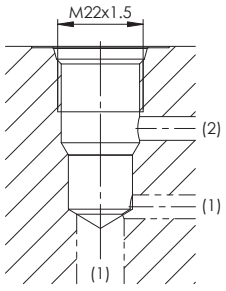
Swichting times

	Type	Flow direction	Switching on	Switching off
SDSPM22	AB	1 → 2	approx. 40 ms	approx. 20 ms
		2 → 1	approx. 40 ms	approx. 10 ms
	BA	1 → 2	approx. 30 ms	approx. 30 ms
		2 → 1	approx. 40 ms	approx. 30 ms
	FG	1 → 2	approx. 40 ms	approx. 10 ms
		2 → 1	approx. 40 ms	approx. 10 ms
		2 → 3	approx. 40 ms	approx. 40 ms
		3 → 2	approx. 40 ms	approx. 20 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.

HYDRAULIC CONNECTION

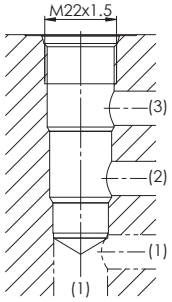
Cavity drawing according to ISO 7789–22–01–0–98



Note! For detailed cavity drawing and cavity tools see data sheet 2.13-1008

HYDRAULIC CONNECTION

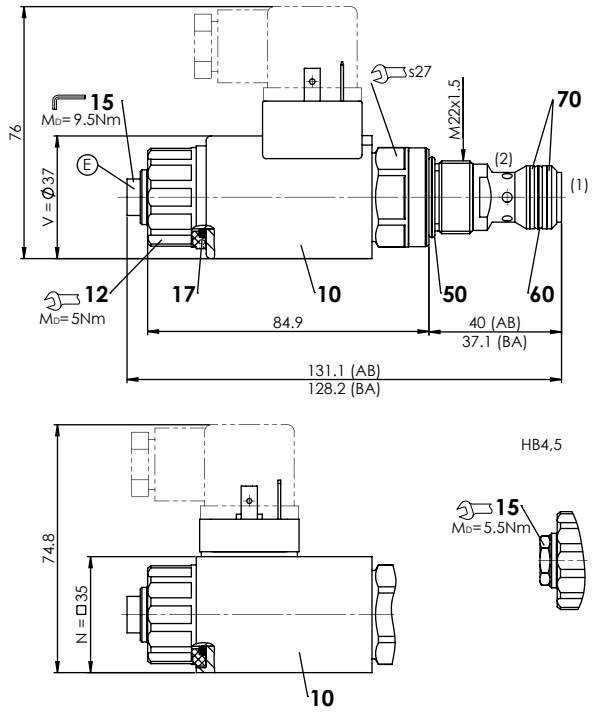
Cavity drawing according to ISO 7789–22–04–0–98



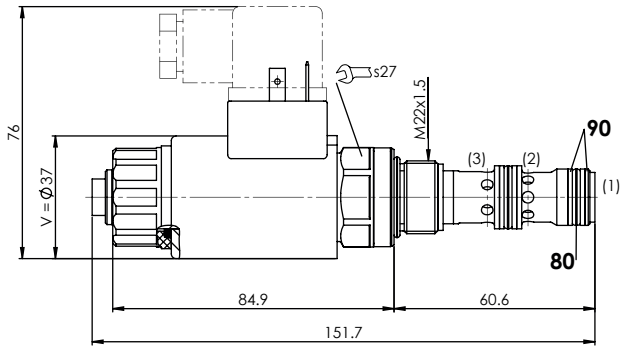
Note! For detailed cavity drawing and cavity tools see data sheet 2.13-1004

DIMENSIONS

SDSPM22-AB / BA



SDSPM22-FG



PARTS LIST

Position	Article	Description
10	206.2... 260.5...	V.E37 / 19 x 50 N.S35 / 19 x 50
	154.2700	Knurled nut
	253.8000 239.2033	HB4,5 manual override HB0 Screw plug
	251.3030	Seal kit SDSPM22-BA/AB
	251.3032	Seal kit SDSPM22-FG

Seal kit consisting of:

17	O-ring	ID 18,72 x 2,62
50	O-ring	ID 18,77 x 1,78
60	O-ring	ID 15,60 x 1,78
70	Backup ring	PTFE rd 16,1 x 19 x 1,4
80	O-ring	ID 14,00 x 1,78
90	Backup ring	PTFE rd 14,1 x 17 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: HB4,5, HN(K) or HR(K)
→ See data sheet 1.1-311

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 M22 x 1,5
Mounting position	Any, preferably horizontal
Tightening torque	M_D = 60 Nm Screw-in cartridge M_D = 5 Nm knurled nut M_D = 9,5 Nm HB0 M_D = 5,5 Nm HB4,5