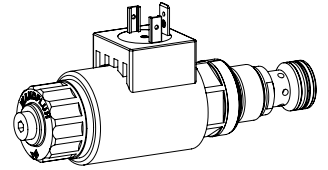


**Solenoid operated poppet valve cartridge**

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

**M22 x 1,5**  
**ISO 7789**

**DESCRIPTION**

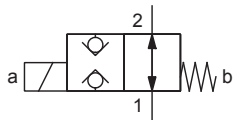
Direct operated 2/2- and 3/2-way solenoid poppet valve in screw-in cartridge construction for cavity according to ISO 7789. By means of the pressure tight switching solenoid, the pressure compensated, metallically sealing poppet spool is either opened or closed. The seat spool guide is sealed by means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

**APPLICATION**

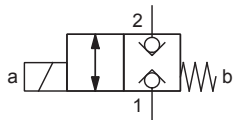
Wandfluh solenoid operated poppet valve cartridges are used where tight closing functions are essential like leakage-free load holding, clamping or gripping. For machining the cartridge cavity in steel and aluminum blocks, cavity tools are available (hire or purchase). Please refer to the data sheets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

**SYMBOL**

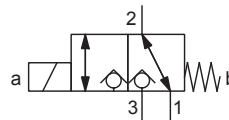
„Normally open“ AB



„Normally closed“ BA



FG


**TYPE CODE**

Poppet valve		S		D		S		PM22		-	-	/	-	-	#
Direct operated															
Solenoid															
Screw-in cartridge M22 x 1,5															
Designation of symbols acc. to table															
Nominal voltage $U_N$	12 VDC	<input type="checkbox"/>	G12	115 VAC	<input type="checkbox"/>	R115									
	24 VDC	<input type="checkbox"/>	G24	230 VAC	<input type="checkbox"/>	R230									
	without coil	<input type="checkbox"/>	X5												
Slip-on coil	Metal housing round with one-sided collar	<input type="checkbox"/>	V	(only G12 and G24)											
	Metal housing square with one-sided collar	<input type="checkbox"/>	N												
Connection execution	Connector socket EN 175301-803 / ISO 4400	<input type="checkbox"/>	D												
	Connector socket AMP Junior-Timer	<input type="checkbox"/>	J	(only for $U_N \leq 75 \text{ VDC}$ )											
	Connector Deutsch DT04 - 2P	<input type="checkbox"/>	G	(only for $U_N \leq 75 \text{ VDC}$ )											
Sealing material	NBR	<input type="checkbox"/>													
	FKM (Viton)	<input type="checkbox"/>	D1												
	NBR 872	<input type="checkbox"/>	Z604												
Armature tube	closed	<input type="checkbox"/>	0												
	with screw plug HB0	<input type="checkbox"/>													
	with manual override	<input type="checkbox"/>	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 mm <sup>2</sup> /s...320 mm <sup>2</sup> /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

**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 <sup>7</sup> (number of switching cycles, theoretically)
Voltage tolerance	$\pm 10$ % 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

**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

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


**SURFACE TREATMENT**

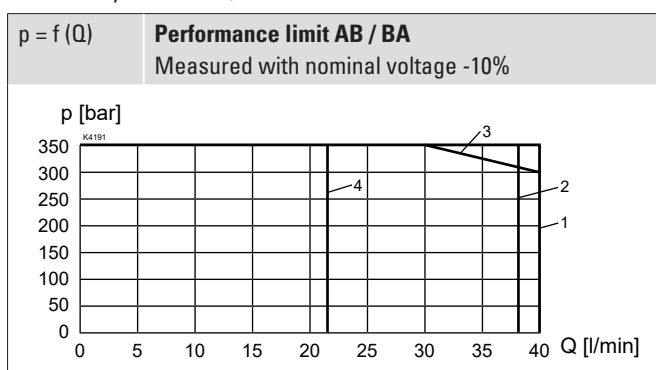
- ◆ The cartridge body, the slip-on coil and the armature tube are zinc-nickel coated

**SEALING MATERIAL**

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

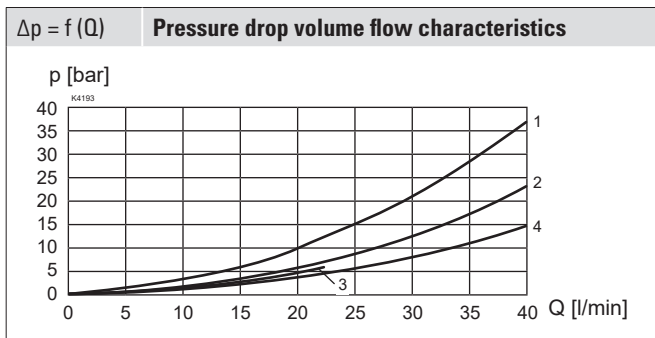
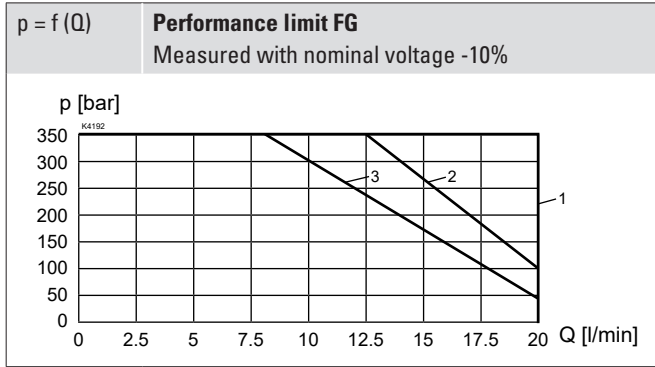
**PERFORMANCE SPECIFICATIONS**

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



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

**PERFORMANCE SPECIFICATIONS**

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

**Switching 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	1 → 2	approx. 40 ms	approx. 10 ms
		2 → 1	approx. 40 ms	approx. 10 ms
	2 → 3	2 → 3	approx. 40 ms	approx. 40 ms
		3 → 2	approx. 40 ms	approx. 20 ms

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

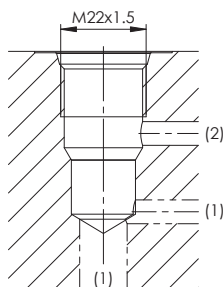
Execution	Flow direction			
	1 → 2	2 → 1	2 → 3	3 → 2
SDSPM22-AB	3	4	-	-
SDSPM22-BA	2	2	-	-
SDSPM22-FG	3	4	1	1

**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**

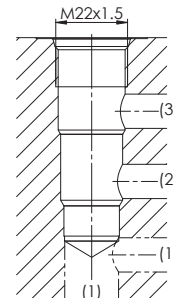
Cavity drawing according to ISO 7789-22-01-0-98


**Note!**


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

**HYDRAULIC CONNECTION**

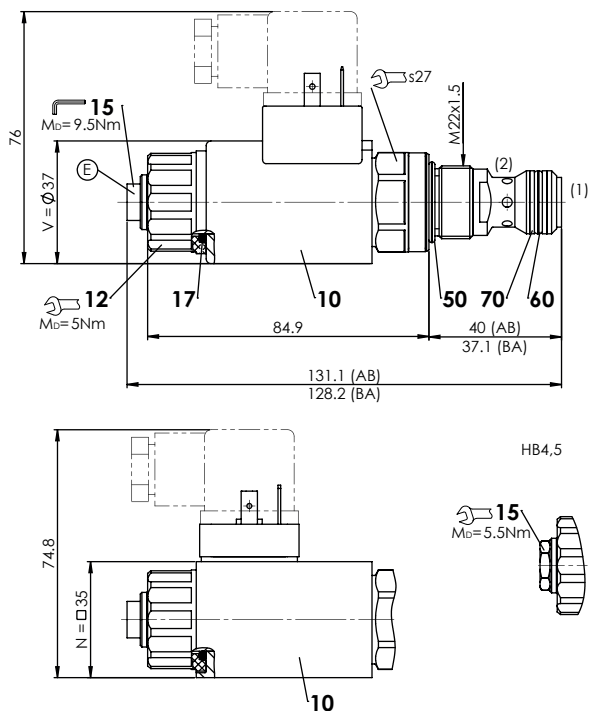
Cavity drawing according to ISO 7789-22-04-0-98


**Note!**

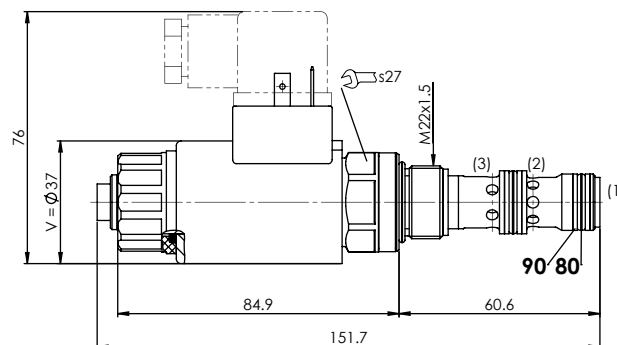

For detailed cavity drawing and cavity tools see data sheet 2.13-1004

**DIMENSIONS**

SDSPM22-AB / BA



SDSPM22-FG


**PARTS LIST**

Position	Article	Description
10	206.2...	V.E37 / 19 x 50
	260.5...	N.S35 / 19 x 50
12	154.2700	Knurled nut
15	253.8000	HB4,5 manual override
	239.2033	HB0 Screw plug
17	160.2187	O-ring ID 18,72 x 2,62 (NBR)
50	160.2188	O-ring ID 18,77 x 1,78 (NBR)
	160.6188	O-ring ID 18,77 x 1,78 (FKM)
60	160.2156	O-ring ID 15,60 x 1,78 (NBR)
	160.6156	O-ring ID 15,60 x 1,78 (FKM)
70	049.8196	Backup ring PTSM rd 14,5 x 17,4 x 1,4
80	160.2140	O-ring ID 14,00 x 1,78 (NBR)
	160.6141	O-ring ID 14,00 x 1,78 (FKM)
90	049.8176	Back-up ring PTSM rd 12,7 x 15,6 x 1,4

**STANDARDS**

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

**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

**INSTALLATION NOTES**

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