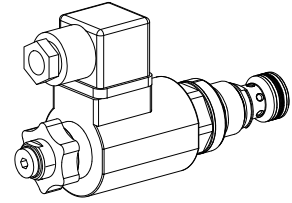


**Solenoid poppet valve cartridge  
 2/2- and 3/2-way version**

- Direct operated
- $Q_{max} = 40 \text{ l/min}$
- $p_{max} = 350 \text{ bar}$

**M22x1,5**  
 ISO 7789

**DESCRIPTION**

Direct operated 2/2- and 3/2-way poppet valve in screw-in cartridge with thread M22x1,5 for cavity to ISO 7789. The 2/2-way type can be supplied in a „normally closed“ and „normally open“ version. There are two versions of the slip-on coil. The coil type „M“ with steel housing and the more economical type „K“ with plastic moulded coil and a somewhat reduced performance compared to the steel type. The coil may be exchanged without opening the hydraulic circuit. The outside of the armature tube and the valve body are zinc coated for surface protection.

**FUNCTION**

The pressure tight switching solenoid and in turn the spring on the opposite side shift the guided poppet into an either open or closed position. Due to the equal-area- and balanced- poppet-design there are no undesired opening or closing forces. Fluid may pass the poppet valve in both directions. The poppet piston is sealed by an o-ring. The seat with metallic seal closes leak free in both directions.

**APPLICATION**

Wandfluh solenoid operated poppet valves are applied where an absolutely leak free closing of the valve is essential like in load holding, clamping or gripping functions. The solenoid operated screw-in cartridges are mainly used in mobile or stationary integrated blocks and in size NG4 and NG6 flange and sandwich bodies. To machine the cavities in steel or aluminium blocks cavity tools may be supplied (hire or purchase). Please refer to the data sheets in register 2.13

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**TYPE CODE**

		S D S PM22 -		[ ] - [ ] / [ ] [ ] 35 # [ ]	
Poppet valve					
Direct operated					
Super					
Screw-in cartridge M22x1,5					
2/2-way, „normally closed“		BA			
2/2-way, „normally open“		AB			
3/2-way		FG			
Standard-nominal voltage $U_N$ :	12 VDC	G12	110 VAC	R110	
	24 VDC	G24	115 VAC	R115	
			230 VAC	R230	
Slip-on coil:	Plastic moulded	K	(only for 12 VDC and 24 VDC available)		
	Steel	M			
Connector socket:	ISO 4400 / DIN 43650	D			
	AMP Junior-Timer	J			
Coil types					
Design-Index (Subject to change)					

**GENERAL SPECIFICATIONS**

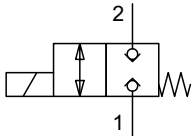
Description	Direct operated 2/2- and 3/2-way solenoid poppet valve
Construction	Screw-in cartridge for cavity to ISO 7789
Operation	Solenoid with exchangeable slip-on coil
Mounting	Screw-in thread M22x1,5
Ambient temperature	-20...+50°C
Mounting position	any
Fastening torque	$M_D = 50 \text{ Nm}$ for cartridge $M_{Dmax} = 5 \text{ Nm}$ or coil retaining nut
Masse	$m = 0,49 \text{ kg}$ 2/2-way valve with plastic coil $m = 0,63 \text{ kg}$ 2/2 valve with steel coil $m = 0,51 \text{ kg}$ 3/2-way valve with plastic coil $m = 0,65 \text{ kg}$ 3/2-way valve with steel coil
Volume flow	any (note performance limits)

**HYDRAULIC SPECIFICATIONS**

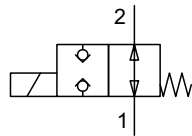
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, classe 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$ ) see data sheet 1.0-50/2
Viscosity range	12 mm <sup>2</sup> /s...320 mm <sup>2</sup> /s
Fluid temperature	-20...+70° C
Working pressure	$p_{max} = 350 \text{ bar}$
Nominal flow	$Q_N = 20 \text{ l/min}$
Max. volume flow	$Q_{max} = \text{up to } 40 \text{ l/min}$
Pressure drop	$\Delta p = < 7 \text{ bar}$ with 20 l/min

**SYMBOLS**

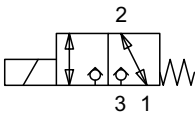
SDSPM22-BA...



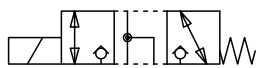
SDSPM22-AB...



SDSPM22-FG...



Transitional function „FG“


**ELECTRICAL CONTROL**

Construction solenoid, wet pin, push type, pressure tight with exchangeable slip-on coil

 Standard nominal voltage:  $U_N = 12 \text{ VDC}, 24 \text{ VDC}$   
 $U_N = 110 \text{ VAC}^*, 115 \text{ VAC}^*, 230 \text{ VAC}^*$   
 $AC = 50 \text{ up to } 60 \text{ Hz}$ 

- \* Rectifier integrated in connector socket
- Other nominal voltages and wattages on request

 Voltage tolerance  $\pm 10\%$  of nominal voltage

Protection class IP 65 acc. to EN 60 529

(if correctly mounted)

Relative duty cycle 100% DF (see data sheet 1.1-430)

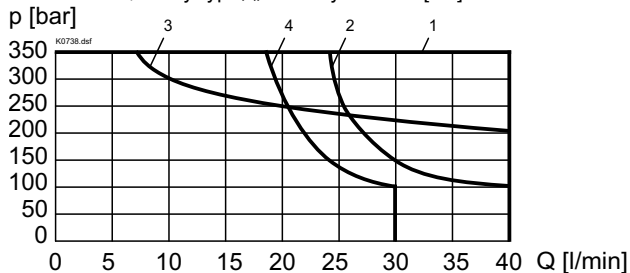
Switching cycles 5'000/h

 Operating life  $10^7$  (number of switching cycles, theoretically)

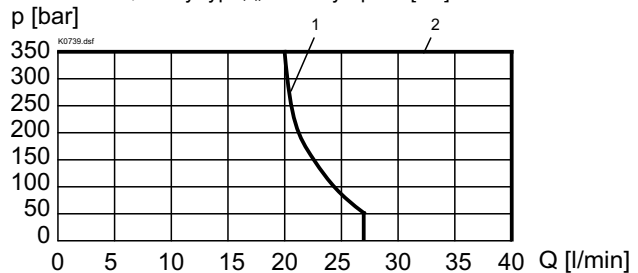
Connections/Power supply Versions see type code

Solenoid type:

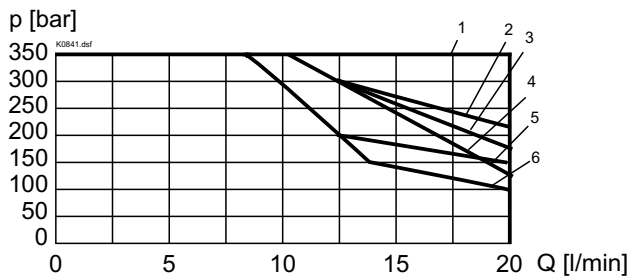
- Steel coil (M.35/16) data sheet 1.1-170
- Plastic coil (K.35/16) data sheet 1.1-172

**CHARACTERISTICS** oil viscosity  $\nu = 30 \text{ mm}^2/\text{s}$ 
 $p = f(Q)$  Performance limits at 10% under voltage and max. ambient temperature  
 2/2-way type, „normally closed“ [BA]


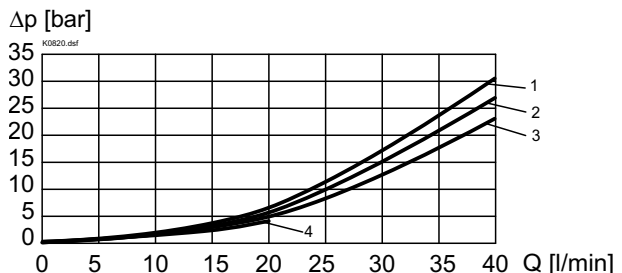
Version	Flow direction	
	1 → 2	2 → 1
SDSPM22-BA-.../„M“	1	2
SDSPM22-BA-.../„K“	3	4

 $p = f(Q)$  Performance limits at 10% under voltage and max. ambient temperature  
 2/2-way type, „normally open“ [AB]


Version	Flow direction	
	1 → 2	2 → 1
SDSPM22-AB-.../„M“	1	2
SDSPM22-AB-.../„K“	1	2

 $p = f(Q)$  Performance limits at 10% under voltage and max. ambient temperature  
 3/2-way type [FG]


Version	Flow direction			
	1 → 2	2 → 1	2 → 3	3 → 2
SDSPM22-FG-.../„M“	4	1	2	3
SDSPM22-FG-.../„K“	4	1	5	6

 $\Delta p = f(Q)$  Pressure volume flow characteristics


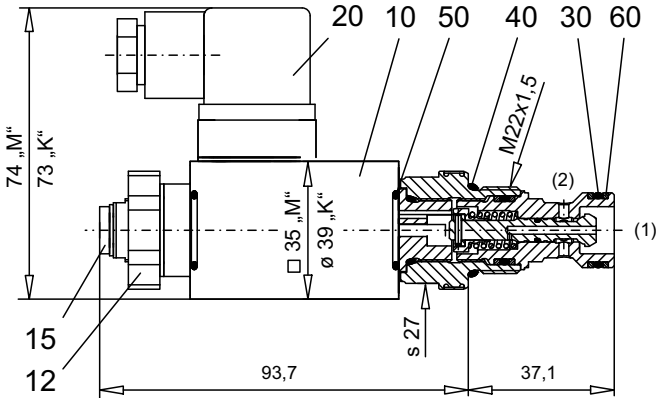
Version	Flow direction			
	1 → 2	2 → 1	2 → 3	3 → 2
SDSPM22-BA-...	1	2	-	-
SDSPM22-AB-...	3	4	-	-
SDSPM22-FG-...	-	4	1	1

**REMARK!**

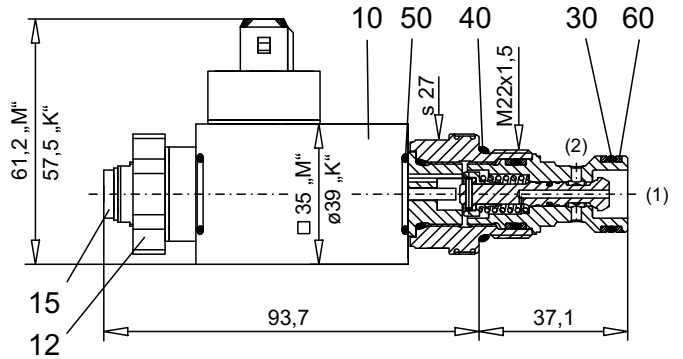
 Depending on application the volume flow may be increased but during shifting the total volume flow (3 → 2 and 2 → 1) must not be higher than  $Q = 30 \text{ l/min}$

**DIMENSIONS/SECTIONAL DRAWING**

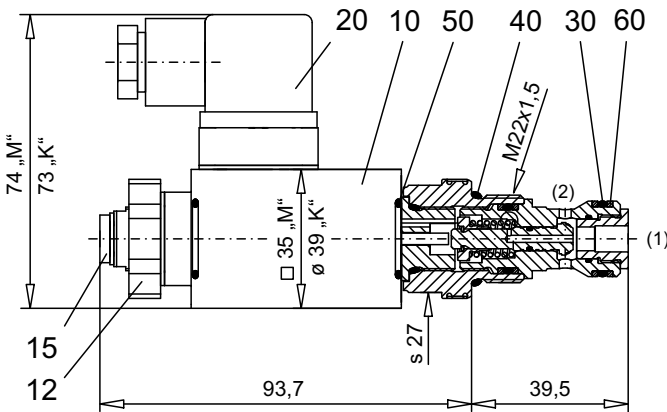
2/2-way version, „normally closed“ [BA]  
with DIN connector socket



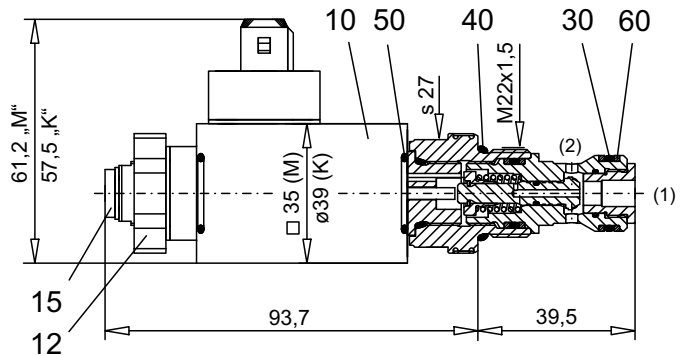
2/2-way version, „normally closed“ [BA]  
with Junior-Timer connector socket



2/2-way version „normally open“ [AB]  
with DIN connector socket

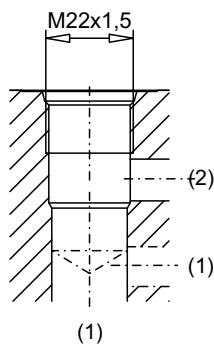


2/2-way version „normally open“ [AB]  
with Junior-Timer connector socket



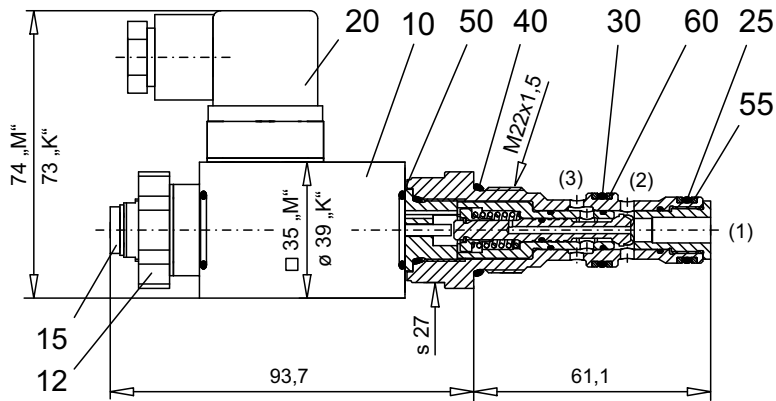
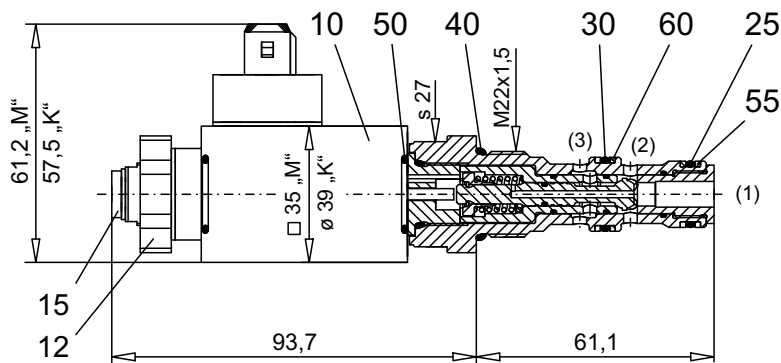
**CAVITY**

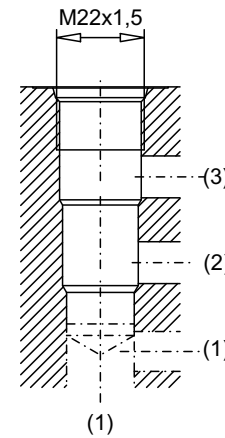
Cavity drawing for 2/2-way version  
to ISO 7789-22-01-0-98



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

**DIMENSIONS/SECTIONAL DRAWING**

 3/2-way version  
 with DIN connector socket

 3/2-way version  
 with Junior-Timer connector socket

**CAVITY**

 Cavity drawing for 3/2-way version  
 to ISO 7789-22-04-0-98

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

**PARTS LIST**

Position	Article	Description
10	260.4... 260.4... 206.23... 206.23...	Coil complete MD35/16-... Coil complete MJ35/16-... Coil complete KD35/16-... Coil complete KJ35/16-...
12	154.2601	Knurled nut M16x1x18
15	239.2033	Plug HB0 (incl. seal)
20	219.2002	Plug
25	160.2140	O-ring ID 14,00x1,78
30	160.2156	O-ring ID 15,60x1,78
40	160.2188	O-ring ID 18,77x1,78
50	160.6156	O-ring viton ID 15,60x1,78
55	049.3176	Back-up ring RD 14,1x17x1,4
60	049.3196	Back-up ring RD 16,1x19x1,4

**ACCESSORIES**

Cartridge built-in flange- or sandwich body

Flange valve

Sandwich valve

register 1.11

register 1.11

Technical explanation see data sheet 1.0-100E