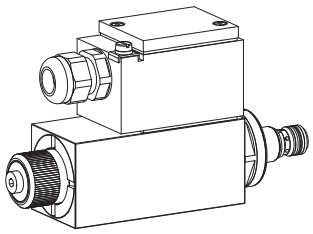
Solenoid operated poppet valve cartridge

- direct operated
- intrinsically safe
- 2/2- and 3/2-way
- Q_{max} = 8 l/min
- p_{max} = 250 bar

M18 x 1,5
ISO 7789

Ex ia I Ma
Ex ia II T5 / T6 Ga
Ex II 1 G Ex ia II C T6, T5
Ex I M1 Ex ia I Ma



DESCRIPTION

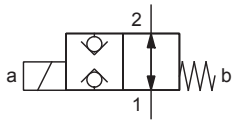
Direct operated 2/2- and 3/2-way solenoid poppet valve in screw-in cartridge construction for cavity according to ISO 7789. By means of the pressure tight control solenoid, the pressure compensated, metallically sealing poppet spool is either opened or closed. The seat spool guide is sealed by means of an O-ring. The rotable, easy exchangable slip-on coil can be supplied in two different executions.

APPLICATION

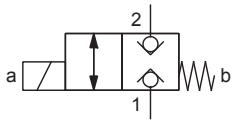
Wandfluh solenoid operated poppet valve cartridges are used where tight closing functions are essential like leakage-free load holding, clamping or gripping. For machining the cartridge cavity in steel and aluminum blocks, cavity tools are available (hire or purchase). Please refer to the data sheets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

SYMBOL

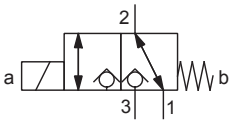
„Normally open" AB

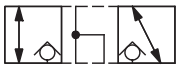


„Normally closed" BA



FG





TYPE CODE

S D Z PM18 - ☐ - ☐ / ☐ / ☐ - ☐ # ☐

Poppet valve		
Direct operated		
Explosion proof, Ex ia		
Screw-in cartridge M18 x 1,5		
Designation of symbols acc. to table		
Coil resistance	100 Ohm	100
	152 Ohm	152
Equipment group	II (Surface)	/ T6
	I (Mining)	-M233 only in combination with coil resistance 100 Ohm
Connection execution		D
		K
Sealing material	NBR	
	FKM (Viton)	D1
Design index (subject to change)		

1.11-2054

CERTIFICATE

according to	Surface gas + dust	Mining
ATEX	x	x
IECEx	x	x

Note! The certificates can be found on www.wandfluh.com

ACTUATION

Actuation	Switching solenoid, wet pin push type, pressure tight
Execution	M.Z45 (Data sheet 1.1-185) rotatable in steps of 90 ° and easy exchangeable
Connection	Through cable gland for cable Ø 6…12 mm two phase conductors +/- as well as one ground conductor

GENERAL SPECIFICATIONS

Designation	2/2-, 3/2-poppet valve
Construction	Direct operated
Mounting	Screw-in cartridge construction
Nominal size	M18 x 1,5 according to ISO 7789
Actuation	Ex-protection switching solenoid
Ambient temperature	-20…+45 °C (operation as T6) -20…+60 °C (operation as T1…T5)
Weight	2,32 kg
MTTFd	150 years

HYDRAULIC SPECIFICATIONS

Working pressure	p_{max} = 250 bar
Maximum volume flow	Q_{max} = 8 l/min, see characteristics
Leakage oil	Seat tight
Fluid	Mineral oil, other fluid on request
Viscosity range	12 mm²/s…320 mm²/s
Temperature range fluid	-20…+45 °C (operation as T6) -20…+60 °C (operation as T1…T5)
Contamination efficiency	Class 20 / 18 / 14
Filtration	Required filtration grade ß 10…16 ≥ 75, see data sheet 1.0-50

ELECTRICAL SPECIFICATIONS

Protection class	IP65
Relative duty factor	Continuous operation
Switching frequency	1'800 / h
Service life time	10^7 (number of switching cycles, theoretically)
Voltage tolerance	± 10 % with regard to nominal voltage
Limiting current at 50 °C	I_{min} = 90 mA (100 Ω execution) I_{min} = 64 mA (152 Ω execution)
Temperature class	T1…T6
Coil resistance	100 Ω, 152 Ω
Minimum power consumption	P_{min} = 0,81 W (100 Ω execution) P_{min} = 0,62 W (152 Ω execution)

Note! Other electrical specifications see data sheet 1.1-185

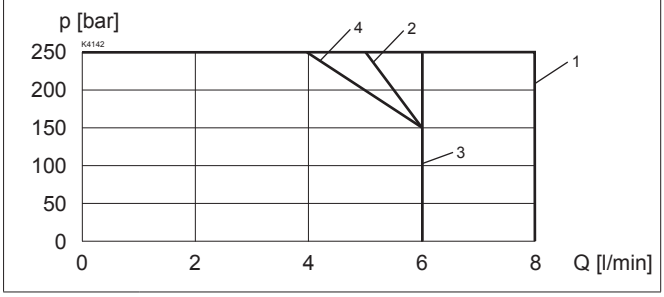
ACCESSORIES

Technical explanations	Data sheet 1.0-100
Hydraulic fluids	Data sheet 1.0-50
Filtration	Data sheet 1.0-50
Relative duty factor	Data sheet 1.1-430

PERFORMANCE SPECIFICATIONS

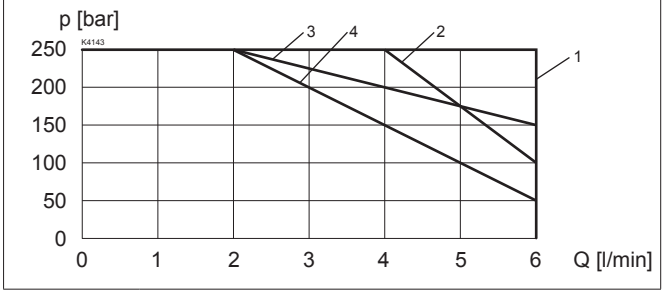
Oil viscosity υ = 30 mm²/s

p = f (Q) **Performance limits**
Measured with nominal voltage -10 %
Measured at 50 °C
P ≥ 0,81 W (90 mA, 100 Ohm)



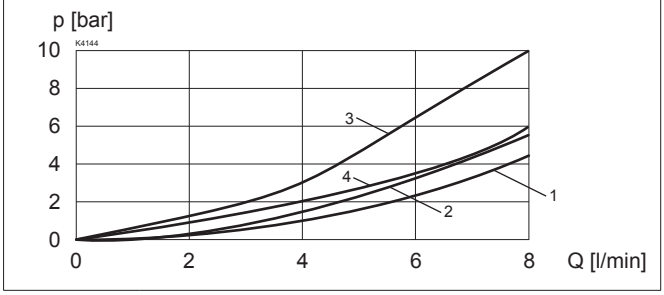
	Flow direction			
Execution	1 → 2	2 → 1	2 → 3	3 → 2
SDZPM18-AB	1	1	-	-
SDZPM18-BA	1	1	-	-
SDZPM18-FG	2	3	3	4

p = f (Q) **Performance limits**
Measured with nominal voltage -10 %
Measured at 50 °C
P ≥ 0,62 W (64 mA, 152 Ohm)



	Flow direction			
Execution	1 → 2	2 → 1	2 → 3	3 → 2
SDZPM18-AB	1	1	-	-
SDZPM18-BA	1	1	-	-
SDZPM18-FG	2	1	3	4

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



	Flow direction		
Execution	1 → 2	2 → 1	3 → 2
SDZPM18-AB	2	1	-
SDZPM18-BA	1	1	-
SDZPM18-FG	-	4	3

Note!

Depending on the application, the volume flow «Q» can be increased. But the total volume flow (connection 3 → 2 and 2 → 1) must not be more than Q = 30 l/min while switching

STANDARDS

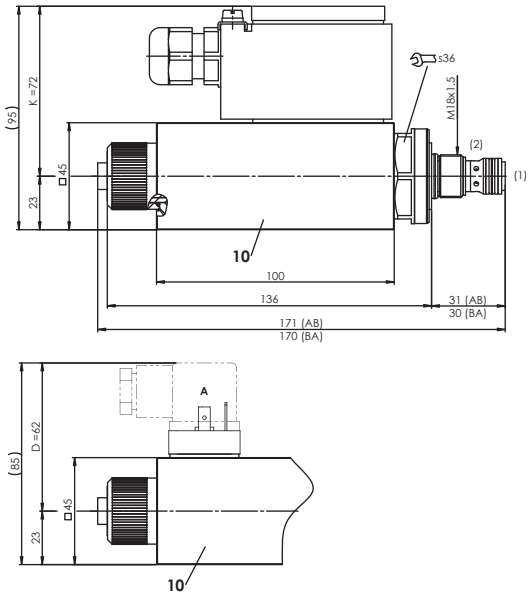
Cartridge cavity	ISO 7789
Explosion protection	Directive 2014 / 34 / EU (ATEX)
Flameproof enclosure	EN / IEC 60079-1 / 31
Cable entry	EN 60079-0
Protection class	EN 60 529
Contamination efficiency	ISO 4406

INSTALLATION NOTES

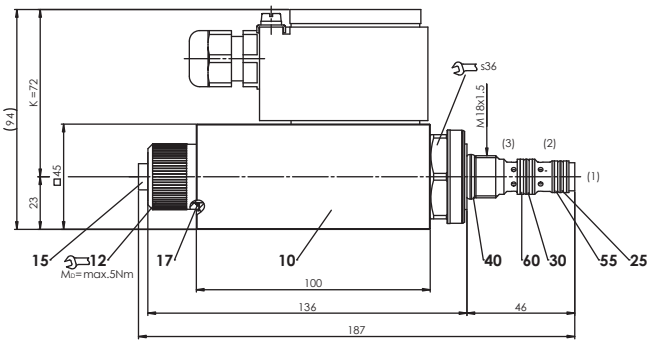
Mounting type	Screw-in cartridge M18 x 1,5
Mounting position	Any, preferably horizontal
Tightening torque	M_D = 30 Nm Screw-in cartridge M_D = 5 Nm knurled nut

DIMENSIONS

SDZPM18-AB / BA



SDZPM18-FG

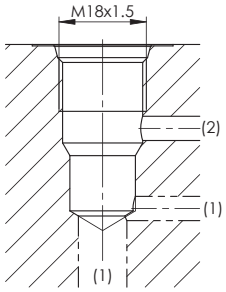


SEALING MATERIAL

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

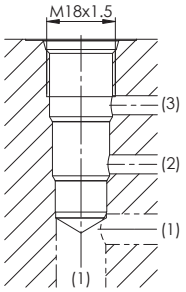
HYDRAULIC CONNECTION

Cavity drawing according to ISO 7789–18–01–0–98



Note! For detailed cavity drawing and cavity tools see data sheet 2.13-1002

Cavity drawing according to Wandfluh standard



Note! For detailed cavity drawing and cavity tools see data sheet 2.13-1020

PARTS LIST

Position	Article	Description
10	263.66..	Solenoid coil M.Z45-...
12	032.9614	Knurled nut M22x1x22
15	239.2033	Screw plug HB0 (incl. seal)
17	160.2204	O-ring ID 20,35 x 1,78 (NBR)
25	160.2093 160.6092	O-ring ID 9,25 x 1,78 (NBR) O-ring ID 9,25 x 1,78 (FKM)
30	160.2111 160.6111	O-ring ID 11,11 x 1,78 (NBR) O-ring ID 11,11 x 1,78 (FKM)
40	160.2156 160.6156	O-ring ID 15,60 x 1,78 (NBR) O-ring ID 15,60 x 1,78 (FKM)
55	049.3137	Backup ring rd 10,6 x 13,5 x 1,4
65	049.3156	Backup ring rd 12,1 x 15 x 1,4

SURFACE TREATMENT

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

COMMISSIONING

Attention! Intrinsically safe valves must be controlled only by a suitable, certified power supply from out of the hazardous area (see Operating Instructions). The selection of the power supply and the wiring must be carried out by qualified personnel. Recommended power supplies and safety-related limit values according to data sheet 1.1-185

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