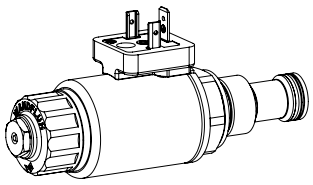
Proportional pressure relief cartridge

Seat tight

- direct operated
- Q_{max} = 2 l/min
- p_{max} = 500 bar
- $p_{N\,max}$ = 450 bar

M22 x 1,5
ISO 7789



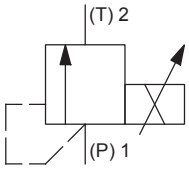
DESCRIPTION

Direct operated, practically leakage-free proportional pressure relief valve in screw-in cartridge construction for cavity according to ISO 7789. When the operating pressure adjusted by means of the proportional solenoid is reached, the valve opens and connects the protected line with the drain to the tank. The back pressure in T (2) affects the pressure in P (1). This proportional valve is very sensitively adjustable and suitable for high pressures. For the control, Wandfluh proportional amplifiers are available (see register 1.13).

APPLICATION

The electrical remote control in conjunction with process controls allows economical solutions with repeatable processes. The screw-in cartridge is perfectly suitable for installation in control blocks and is installed in sandwich- (vertical stacked systems) and in flange plates (corresponding data sheets in this register). 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



ACTUATION

Actuation	Proportional solenoid, wet pin push type, pressure tight
Execution	W.S37 / 19 x 50 (Data sheet 1.1-173) M.S35 / 19 x 50 (Data sheet 1.1-174)
Connection	Connector socket EN 175301 – 803 Connector socket AMP Junior-Timer Connector Deutsch DT04 – 2P

TYPE CODE

B S P PM22 - [ ] - [ ] / [ ] [ ] - [ ] [ ] # [ ]

Pressure relief valve			
Direct operated, leakage-free			
Proportional			
Screw-in cartridge M22 x 1,5			
Nominal pressure range p_N	350 bar	350	
	450 bar	450	
Nominal voltage U_N	12 VDC	G12	
	24 VDC	G24	
	without coil	X5	
Slip-on coil	Metal housing round		W
	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	
Manual override	Manual override		HB4,5
	Screw plug		HB0
Design index (subject to change)			

2.3-571

GENERAL SPECIFICATIONS

Designation	Proportional pressure relief valve
Construction	Direct operated
Mounting	Screw-in cartridge construction
Nominal size	M22 x 1,5 according to ISO 7789
Actuation	Proportional solenoid
Ambient temperature	-25…+70 °C
Weight	0,6 kg
MTTFd	150 years

HYDRAULIC SPECIFICATIONS

Working pressure	p_{max} = 500 bar
Nominal pressure range	P_N = 450 bar
Maximum volume flow	Q_{max} = 2 l/min
Minimum volume flow	Q_{min} = 0,1 l/min
Leakage oil	Seat tight, max. 0,15 ml / min (approx. 3 drops / min) at 30 cSt
Hysteresis	≤ 3 % at optimal dither signal
Repeatability	≤ 1,5 % at optimal dither signal
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 18 / 16 / 13
Filtration	Required filtration grade ß 6…10 ≥ 75, see data sheet 1.0-50

ELECTRICAL SPECIFICATIONS

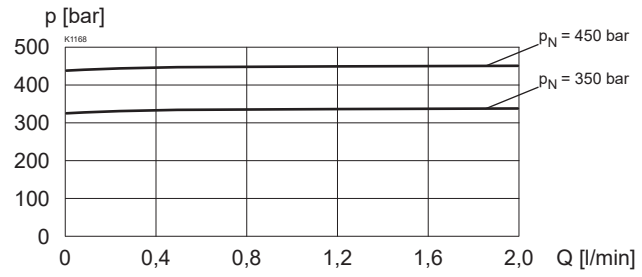
Protection class	Connection execution D: IP65 Connection execution J: IP66 Connection execution G: IP67 and IP69K
Relative duty factor	100 % DF
Standard nominal voltage	12 VDC, 24 VDC
Limiting current at 50 °C	I_G = 1320 mA (U_N = 12VDC) I_G = 660 mA (U_N = 24VDC)

Note! Other electrical specifications see data sheet 1.1-173 (slip-on coil W) and 1.1-174 (slip-on coil M)

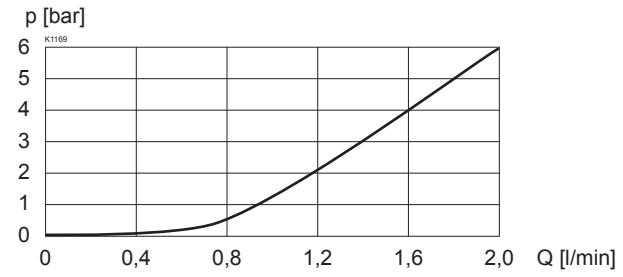
PERFORMANCE SPECIFICATIONS

Oil viscosity υ = 30 mm²/s

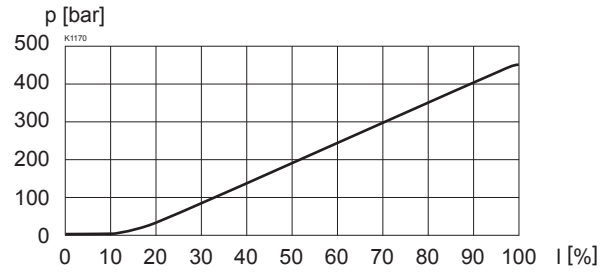
p_{red} = f (Q) **Pressure volume flow characteristics**
Maximal adjustable pressure



p_{red} = f (Q) **Pressure volume flow characteristics**
Minimal adjustable pressure



p_{red} = f (n) **Pressure adjustment characteristics**
Measured at Q = 1 l/min



ACCESSORIES

Proportional amplifier	Register 1.13
Electric plug B (black)	Article no. 219.2002
Flange body / sandwich plate NG4-Mini	Data sheet 2.3-720
Flange body / sandwich plate NG6	Data sheet 2.3-740
Flange body / sandwich plate NG10	Data sheet 2.3-760
Threaded body	Data sheet 2.9-200
Technical explanations	Data sheet 1.0-100
Filtration	Data sheet 1.0-50

SEALING MATERIAL

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

SURFACE TREATMENT

- The cartridge body made of steel and the slip-on coil are zinc-nickel coated

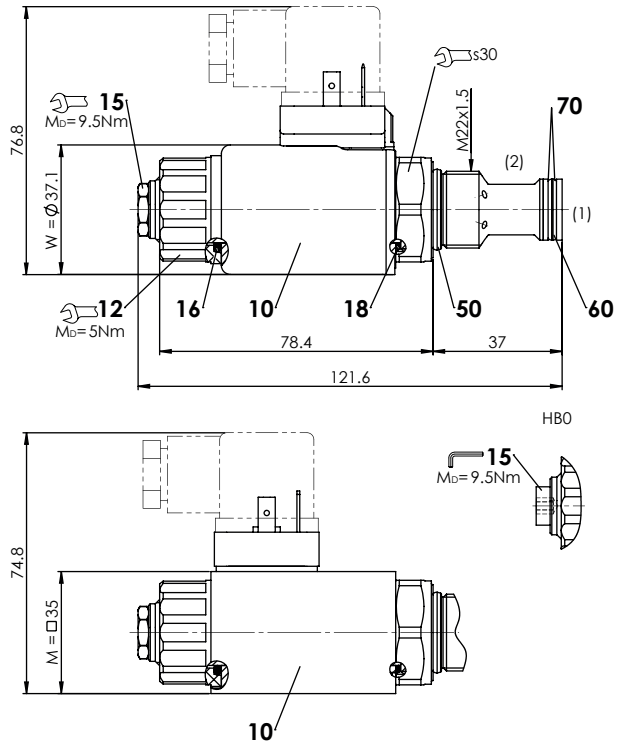
STANDARDS

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

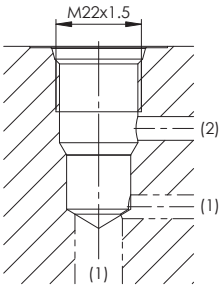
Mounting type	Screw-in cartridge M22 x 1,5
Mounting position	Any, preferably horizontal
Tightening torque	M_D = 60 Nm Screw-in cartridge M_D = 5 Nm knurled nut M_D = 9,5 Nm HB0 M_D = 5,5 Nm HB4,5

DIMENSIONS



HYDRAULIC CONNECTION

Cavity drawing according to ISO 7789–22–02–0–98



Note! For detailed cavity drawing and cavity tools see data sheet 2.13-1003

PARTS LIST

Position	Article	Description
10	206.2… 260.5…	W.S37 / 19 x 50 M.S35 / 19 x 50
12	154.2700	Knurled nut
15	253.8000 239.2033	HB4,5 manual override HB0 Screw plug
	251.5917	Seal kit
	251.5918	Seal kit D1

Seal kit consisting of:

16	O-ring	ID 18,72 x 2,62
18	O-ring	ID 17,17 x 1,78
50	O-ring	ID 18,77 x 1,78
60	O-ring	ID 14,00 x 1,78
70	B.up ring	PTFE rd 14,6 x 17,5 x 1,4

MANUAL OVERRIDE

HB4,5

Optionally: Screw plug (HB0), no actuation possible