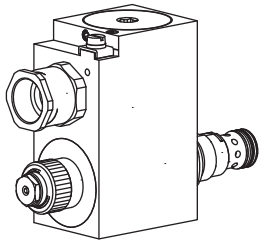
Proportional pressure relief valve
Screw-in cartridge
- **Pilot operated**
- **Q_{max} = 100 l/min**
- **p_{max} = 400 bar**
- **$p_{N\ max}$ = 350 bar**

M22x1,5
ISO 7789

II 2 G Ex d II C
II 2 D Ex tD A21 IP65



DESCRIPTION
Pilot operated proportional pressure relief valve as a screw-in cartridge with a thread M22x1,5 for cavity according to ISO 7789. Activated with Wandfluh-explosion-proof-solenoid. The cartridge body made of steel is zinc coated for corrosion protection.
The solenoid coil is certified in accordance with:
ATEX (directive 94/9/EC)
IEC Ex
Gost Ex
The solenoid coil is encapsulated pressure-proof and designed for applications in the zones 1 + 2 (gas) as well as 21 + 22 (dust). In doing so, it fulfils the requirements of the gas group IIC and can be utilised up to the temperature class T6.
The zinc-/nickel coating serves as an excellent corrosion protection.
Details of the solenoid coil: refer to data sheet 1.1-183.
Type test certification:
ATEX: PTB 07 ATEX 1023
IEC Ex: 010.0020
Gost Ex: CH.HO06.B00365

FUNCTION
When the operating pressure set by the proportional solenoid is reached, the main spool opens and connects the protected line with the return line to the tank. The back pressure in T (2) influences the pressure in P (1). This pilot operated proportional pressure relief valve can be adjusted very sensitively and is suitable for large volume flows and high pressures.

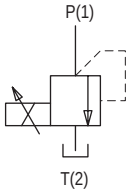
APPLICATION
The valve has its application in hydraulic systems, in which the pressure frequently has to be changed. The facility for electric remote controlling of the valve in conjunction with process control systems enables economic problem solutions with repeatable sequences. Installation of the screw-in cartridge in control blocks as well as in the Wandfluh sandwich plates (vertical stacked systems) and flange valves of the NG4-Mini, NG6 and NG10 types. (Please note the separate data sheets in register 2.3). Cavity tools are available for machining the cavities in steel and aluminium (hire or purchase). Please refer to the data sheets in register 2.13.

TYPE CODE

B V B PM22 - ☐ - ☐ / ☐ - ☐ # ☐

Pressure relief valve			
Pilot operated			
Proportional explosion proof, execution Ex d II C			
Screw-in cartridge M22x1,5			
	Execution:	L15	L9
Nominal pressure range p_N: [bar]		20	20
		63	50
		100	80
		200	160
		275	220
		350	280
Standard nominal voltage U_N:	12 VDC		G12
	24 VDC		G24
			Ambient temp. by:
Execution:	9W		L9 40 °C
	15W		L15 70 °C
Sealing material	NBR		
	FKM (Viton)		D1
Design-Index (Subject to change)			

SYMBOLS



GENERAL SPECIFICATIONS

Description	Pilot operated proportional pressure relief valve
Construction	Screw-in cartridge for cavity according to ISO 7789
Operations	Proportional solenoid
Mounting	Screw-in thread M22x1,5
Admissible ambient temp.	Execution L9 -20…+40°C (operation as T1…T6/T80°C) Execution L15 -20…+70°C (operation as T1…T4/T130°C)
Mounting position	any, preferably horizontal
Fastening torque	M_D = 50 Nm for screw-in cartridge M_D = 5 Nm for knurled nut
Weight	m = 2,2 kg

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 18/16/13 (Required filtration grade ß 6…10 ≥ 75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Admissible fluid temp.	Excecution L9 -20…+40°C (operation as T1…T6/T80°C) Excecution L15 -20…+70°C (operation as T1…T4/T130°C)
Peak pressure	p_{max} = 400 bar
Nominal pressure ranges	Excecution L9: p_N = 20 bar, 50 bar, 80 bar, 160 bar, 220 bar, 280 bar Excecution L15: p_N = 20 bar, 63 bar, 100 bar, 200 bar, 275 bar, 350 bar
Volume flow range	Q = 0,3...100 l/min
Pilot- and leakage volume flow	see characteristics
Repeatability	≤ 3% **
Hysteresis	≤ 4% **
	** at optimal dither signal

ELECTRICAL SPECIFICATIONS

Construction	Proportional solenoid, wet pin push type, pressure tight		
Standard nominal voltage	U_N = 12 VDC, 24 VDC		
		12VDC	24VDC
Limiting current	L15/50 °C	I_G = 950 mA	450 mA
	L15/70 °C	I_G = 910 mA	420 mA
	L9/40 °C	I_G = 625 mA	305 mA
Voltage tolerance	+10% of rated voltage		
Relative duty factor	100% ED		
Protection class	IP65 / IP67 acc. to EN 60 529		
Connection / Power supply	Through cable gland for cable ∅ 6,5…14 mm		
Temperature class:	(acc. to EN 60079-0)		
Execution L9:	T1…T6		
Execution L15:	T1…T4		
Nominal power:			
Execution L9	9W		
Execution L15	15W		

For further electrical characteristics, refer to the data sheet of the solenoid coil: 1.1-183

SECURITY OPERATED

The solenoid coil must only be put into operation, if the requirements of the operating instructions supplied are observed to their full extent.
In case of non-observance, no liability can be assumed.

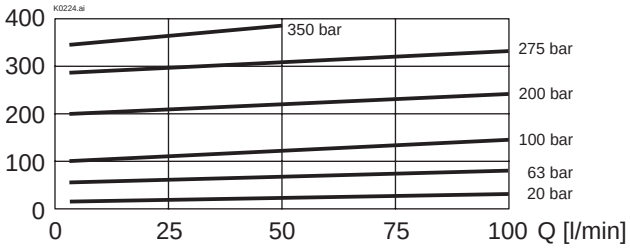
INSTALLATION

For stack assembly please observe the remarks in the operating instructions.

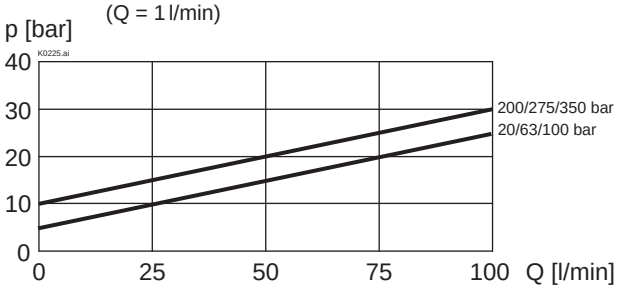
CHARACTERISTICS oil viscosity υ = 30 mm²/s

Execution L15 (measured at 50 °C)

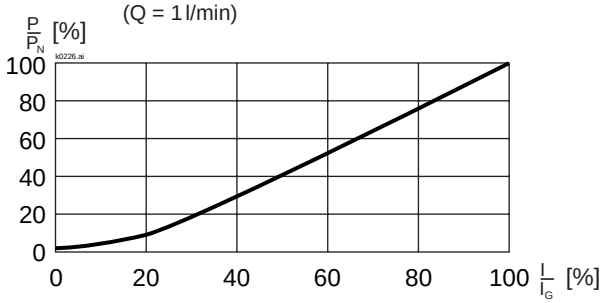
p_{red} = f (Q) Pressure volume flow characteristics (Maximum adjustable pressure)



p = f (I) Pressure signal characteristics (Q = 1 l/min)

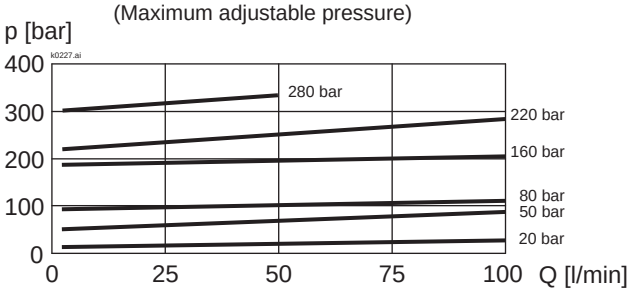


p = f (I) Pressure signal characteristics (Q = 1 l/min)

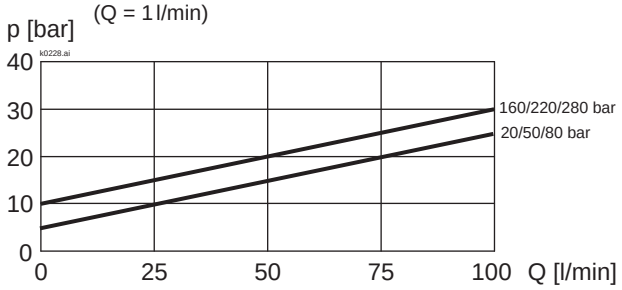


Execution L9 (measured at 40 °C)

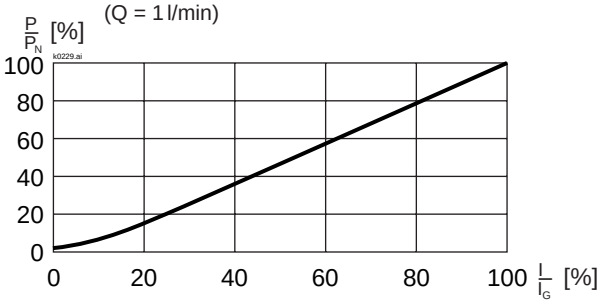
p_{red} = f (Q) Pressure volume flow characteristics (Maximum adjustable pressure)



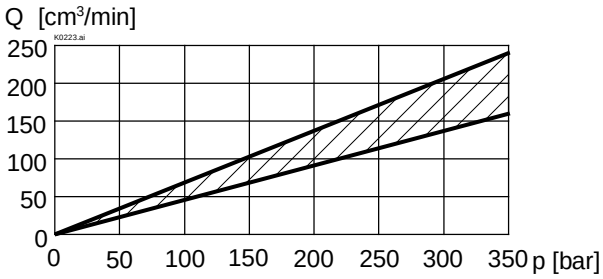
p = f (I) Pressure signal characteristics (Q = 1 l/min)



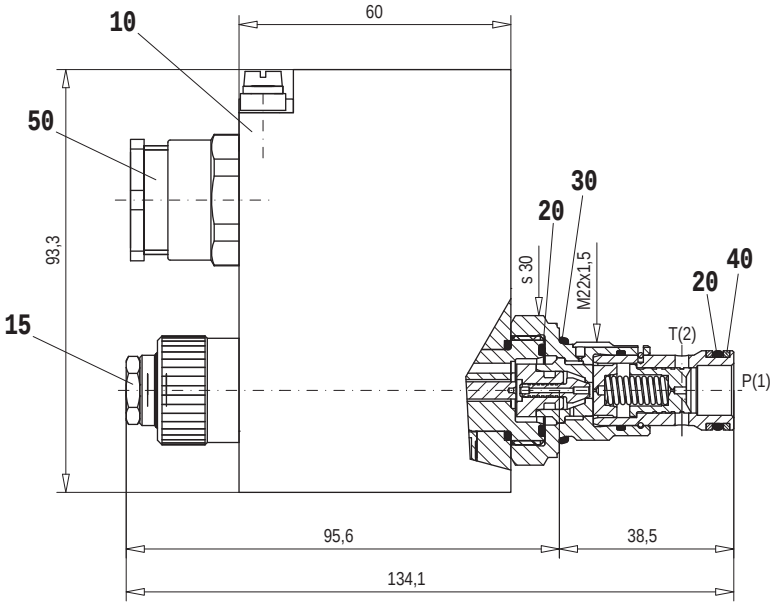
p = f (I) Pressure signal characteristics (Q = 1 l/min)



$Q_L = f(p)$ Leakage volume flow characteristics

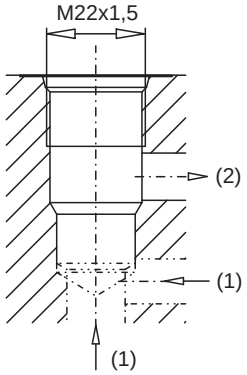


DIMENSIONS / SECTIONAL DRAWING



Dimensions of the solenoid coil,
refer to data sheet 1.1-183

Cavity drawing acc. to
ISO 7789–22–02–0–98



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

PARTS LIST

Position	Article	Description
10	263.6...	Slip-on coil MKY45/18 x 60-...
15	253.8000	Plug with integrated manual override HB4,5
20	160.2140 160.8140	O-ring ID 14,00 x 1,78 (NBR) O-ring ID 14,00 x 1,78 (FKM)
30	160.2188 160.8188	O-ring ID 18,77 x 1,78 (NBR) O-ring ID 18,77 x 1,78 (FKM)
40	049.3177	Back-up ring RD 14,6x17,5x1,4
50	111.1080	Cable gland brass M20

ACCESSORIES

Cartridge built into flange- or sandwich body
Flange- /sandwich plate register 2.3

Technical explanation see data sheet 1.0-100