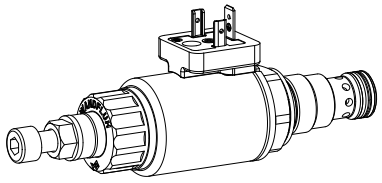
Proportional inverse pressure relief valve
Screw-in cartridge
- **Pilot operated**
- **Nominal pressure adjustable -20 % / +30 %**
- **Q_{max} = 100 l/min**
- **p_{max} = 400 bar**
- **$p_{N\ max}$ = 350 bar**

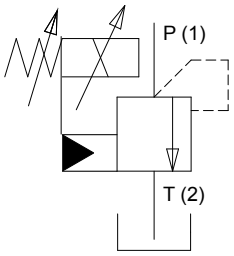
M22x1,5
ISO 7789



DESCRIPTION
Pilot operated proportional pressure relief valve with inverse function. Thread M22x1,5 and cavity according to ISO 7789. The adjustment takes place by means of a Wandfluh proportional solenoid (VDE-standard 0580). The cartridge body made of steel is zinc coated and therefore rust-protected. The solenoid coil is zinc-/nickel-coated.

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. To control the valve, Wandfluh proportional amplifiers are available (see register 1.13).

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. By means of the inverse function, the maximum system pressure is maintained if the electric valve control fails (safety function). In such cases, e.g., the descending of a load is prevented, or cooling ventilators with hydraulic motor drives are kept in operation. 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.

SYMBOLS


TYPE CODE

B V I PM22 - [ ] - [ ] / [ ] [ ] - [ ] # [ ]

Pressure relief valve			
Pilot operated			
Proportional, inverse			
Screw-in cartridge M22x1,5			
Nominal pressure range p_N	20 bar	20	
	63 bar	63	
	100 bar	100	
	160 bar	160	
	200 bar	200	
	275 bar	275	
	350 bar	350	
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
Design-Index (Subject to change)			

* Only available in conjunction with other nominal voltages and connection versions. (See data sheet 1.1-174)

GENERAL SPECIFICATIONS

Description	Pilot operated proportional pressure relief valve with inverse function
Construction	Screw-in cartridge for cavity to ISO 7789
Actuation	Proportional solenoid with spring
Mounting	Screw-in thread M22x1,5
Ambient temperature	-25…+70 °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 = 0,7kg

ELECTRICAL SPECIFICATIONS

Construction	Proportional solenoid, wet pin pull type, pressure tight	
Standard-Nominal voltage	U_N = 12 VDC	U_N = 24 VDC
Limiting current	I_G = 1320 mA	I_G = 660 mA
Relative duty factor	100 % DF (see data sheet 1.1-430)	
Protection class acc. EN 60529	Connection version D: IP 65 J: IP 66 G: IP 67 and IP69K	

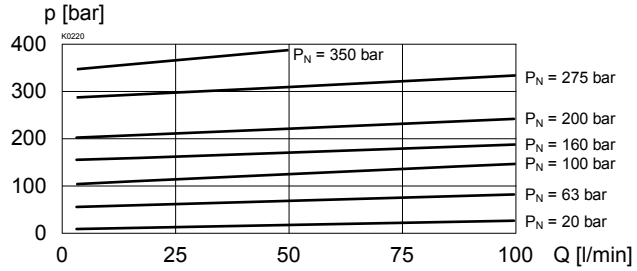
For further electrical specifications see data sheet 1.1-173 (W)
1.1-174 (M)

HYDRAULIC SPECIFICATIONS

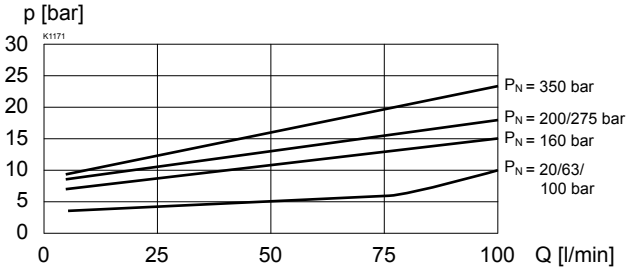
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 18/16/13 (Required filtration grade ß 6…10 ≥ 75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-25…+70 °C
Peak pressure	p_{max} = 400 bar p_{Tmax} = p_P+20 bar
Nominal pressure ranges	p_N =20 bar, 63 bar, 100 bar, 160 bar, 200 bar, 275 bar, 350 bar
Volume flow	Q = 5…100 l/min
Leakage volume flow	see characteristics
Repeatability	≤ 3 % ∗
Hysteresis	≤ 4 % ∗ ∗ at optimal dither signal

CHARACTERISTICS Oil viscosity υ = 30 mm²/s

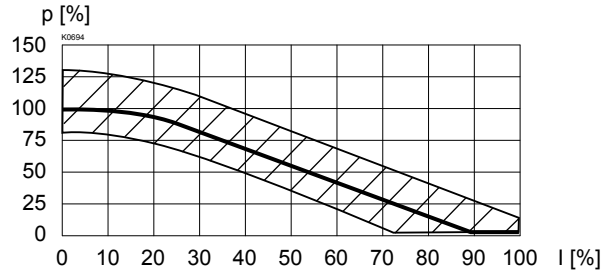
p = f (Q) Pressure volume flow characteristics (Maximum adjustable pressure)



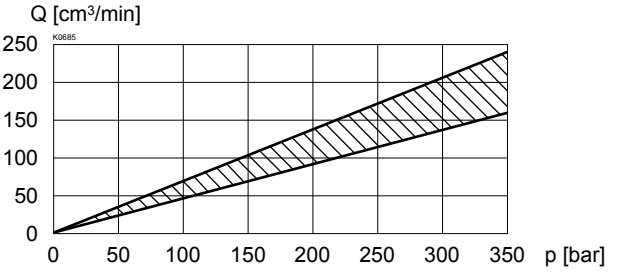
p= f (Q) Pressure volume flow characteristics (Minimum adjustable pressure)



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



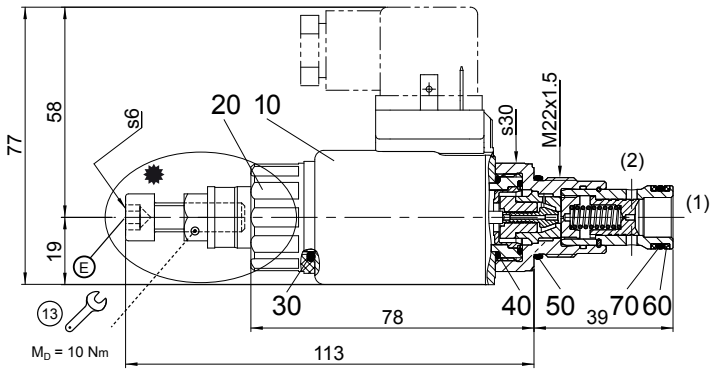
Q_L = f (p) Leakage volume flow characteristics

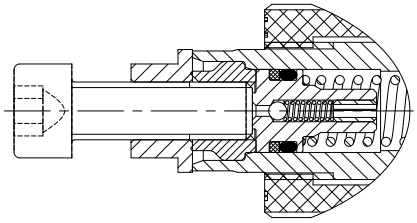


Adjustable range of nomial pressure, adjusted with set screw..

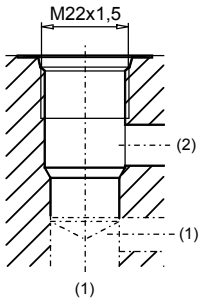
DIMENSIONS / SECTIONAL DRAWINGS

✹ Adjusting screw for setting the nominal pressure (-20 % / +30 %)





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



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

E: Venting
- Release locknut
- Remove screw
- Press check-valve (with a pin or with allen key < 1,3 mm)
- Screw the screw back in
- Set the required pressure and tighten the lock nut

Under pressure oil shoot out!
Cover with a cloth.

Dimensions of the other connection versions see data sheet 1.1-173

PARTS LIST

Position	Article	Description
10		EN 175301
	206.2201	Solenoid coil WDS37 / 19 x 50-G24
	206.2200	Solenoid coil WDS37 / 19 x 50-G12
		Junior-Timer
	206.2203	Solenoid coil WJS37 / 19 x 50-G24
	206.2202	Solenoid coil WJS37/ 19 x 50-G12
		Deutsch
	206.2205	Solenoid coil WGS37 / 19 x 50-G24
	206.2204	Solenoid coil WGS37 / 19 x 50-G12
20	154.2700	Knurled nut
30	160.2187	O-ring ID 18,72 x 2,62 (NBR)
40	160.2170	O-ring ID 17,17 x 1,78 (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	160.2140	O-ring ID 14,00 x 1,78 (NBR)
	160.6141	O-ring ID 14,00 x 1,78 (FKM)
70	049.3177	Backup ring RD 14,6 x 17,5 x 1,4

ACCESSORIES

Flange-/sandwich plate NG4-Mini	Data sheet 2.3-720
Flange-/sandwich plate NG6	Data sheet 2.3-740
Flange-/sandwich plate NG10	Data sheet 2.3-760
Line mount body	Data sheet 2.9-200
Proportional amplifier	Register 1.13
Mating connector EN 175301-803	Article no. 219.2002

Technical explanation see data sheet 1.0-100