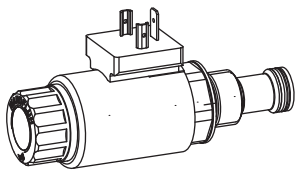
Proportional pressure relief valve
Screw-in cardridge
- **Direct operated**
- **Q_{max} = 25 l/min**
- **p_{max} = 400 bar**
- **$p_{N\ max}$ = 350 bar**

M22x1,5
ISO 7789



DESCRIPTION

Direct operated proportional pressure relief valve as a screw-in cartridge with a thread M22x1,5 for cavity according to ISO 7789. Five standard pressure ranges are available: 20, 100, 200, 315 and 350 bar. Good flow performance thanks to the differential area principle.The guide of the tapered spool has a lower leakage rate. 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

The valve limits the pressure in port P (1) and reliefs the volume flow to tank port T (2). The back pressure in T influences the pressure in P (1). When the operating pressure set by the proportional solenoid is reached, the poppet spool opens and connects the protected line to the tank T (2). These pressure relief valves are built according to the differential spool principle and are therefore very sensitive adjustable over the whole pressure range and also suitable for systems with extremely low minimum pressures. Wandfluh proportional amplifiers are available to control the proportional pressure relief valve (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. Installation of the screw-in cartridge in control blocks as well as in the Wanfluh sandwich plates (vertical stacked systems) and flange valves of the NG4-Mini and NG6 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.

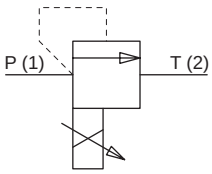
TYPE CODE

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

Pressure relief valve		
Direct operated		
Proportional		
Screw-in cartridge M22 x1,5		
Standard nominal pressure range p_N	20 bar	20
	100 bar	100
	200 bar	200
	315 bar	315
	350 bar	350
Standard nominal voltage U_N	12 VDC	G12
	24 VDC	G24
	without solenoid coil	X5
Slip-on coil	Metal housing, round	W
	Metal housing, square	M*
Electric connection	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	Armature tube closed (standard)	
	With screwed sealing plug	HB0
	With manual emergency actuation	HB4.5
Design-Index (Subject to change)		

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

SYMBOLS



GENERAL SPECIFICATIONS

Description	Direct operated proportional pressure relief valve
Construction	Screw-in cartridge for cavity to ISO 7789
Actuation	Proportional solenoid
Mounting	Screw-in thread M22 x1,5
Ambient temperature	-20…+70 °C
Mounting position	any
Fastening torque	M_D = 50 Nm for screw-in cartridge M_D = 5 Nm for knurled nut
Weight	m = 0,6 kg

ELECTRICAL SPECIFICATIONS

Construction	Proportional solenoid, wet pin push 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% ED / DF (see data sheet 1.1-430)	
Protection class acc. to EN 60 529	Connection version D: IP 65 J: IP 66 G: IP 67 and 69 K	

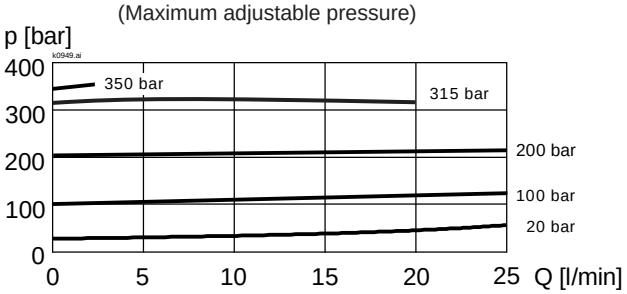
For further electrical specifications see data sheet 1.1-173 (W)
1.1-174 (M)

HYDRAULIC SPECIFICATIONS

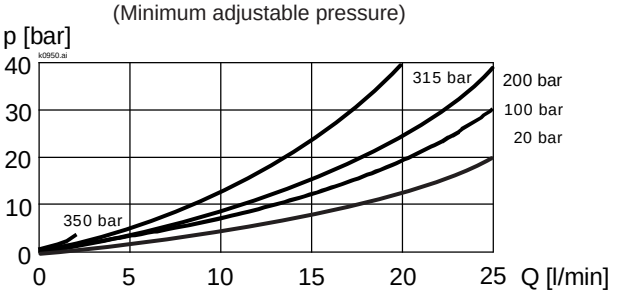
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 18/16/13 (Required filtration grade ß 6…10 ≥ 75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Peak pressure	p_{max} = 400 bar
Nominal pressure ranges	p_N= 20 bar, 100 bar, 200 bar, 315 bar, 350 bar
Min. volume flow	Q_{min} = 0,1 l/min
Max. volume flow	Q_{max} = 25 l/min for p_N = 20/100/200 bar Q_{max} = 20 l/min for p_N = 315 bar Q_{max} = 2 l/min for p_N = 350 bar
Leakage volume flow	see characteristics
Repeatability	≤ 1,5 % ∗
Hysteresis	≤ 3 % ∗
	∗ at optimal dither signal

CHARACTERISTICS Oil viscosity υ = 30 mm²/s

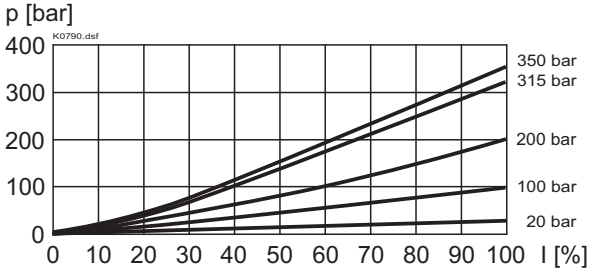
p = f (Q) Pressure volume flow characteristics (Maximum adjustable pressure)



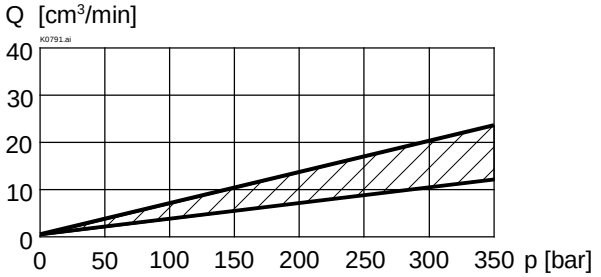
p= f (Q) Pressure volume flow characteristics (Minimum adjustable pressure)



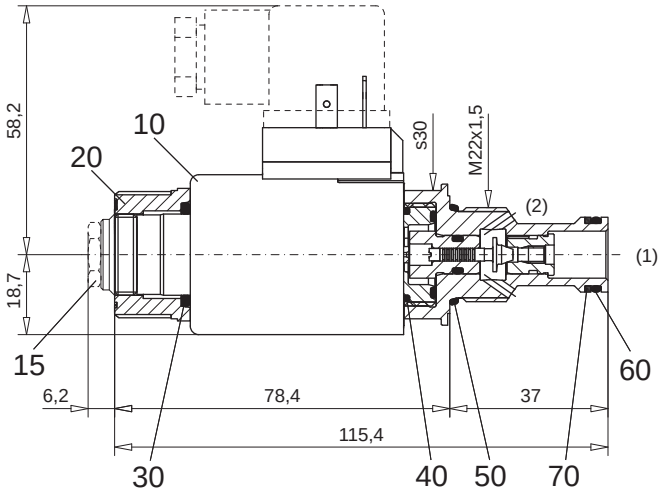
p = f (l) Pressure adjustment characteristics (Q = 1 l/min)



Q_L = f (p) Leakage volume flow characteristics

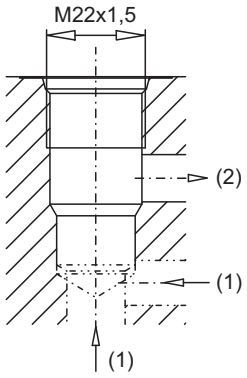


DIMENSIONS / SECTIONAL DRAWINGS



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

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		EN 175301
	206.2201	Solenoid coil WD37 / 19 x 50-G24
	206.2200	Solenoid coil WD37 / 19 x 50-G12
		Junior-Timer
	206.2203	Solenoid coil WJ37 / 19 x 50-G24
	206.2202	Solenoid coil WJ37 / 19 x 50-G12
		Deutsch
	206.2205	Solenoid coil WG37 / 19 x 50-G24
	206.2204	Solenoid coil WG37 / 19 x 50-G12
15	253.8000	HB 4,5 Manual override (data sheet 1.1-300)
	239.2033	HB 0 Plug screw (data sheet 1.1-300)
20	154.2700	Knurled nut
30	160.2187	O-ring ID 18,72 x 2,62 (NBR)
	160.6187	O-ring ID 18,72 x 2,62 (FKM)
40	160.2170	O-ring ID 17,17 x 1,78 (NBR)
	160.6172	O-ring ID 17,17 x 1,78 (FKM)
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	Register 2.3
Line mount body	Data sheet 2.9-200
Proportional amplifier	Register 1.13
Mating connector EN 175301-803	Article Nr. 219.2002

Technical explanation see data sheet 1.0-100