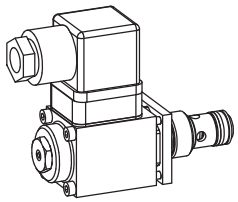
Proportional pressure relief valve
Screw-in cartridge
- **Direct operated**
- **Q_{max} = 8 l/min**
- **p_{max} = 350 bar**
- **$p_{N\,max}$ = 315 bar**

M18x1,5
ISO 7789



DESCRIPTION
Direct operated proportional pressure relief valve as a screw-in cartridge with a thread M18x1,5 for cavity according to ISO 7789. Four standard pressure ranges are available: 20, 100, 200 and 315 bar. Good flow performance thanks to the differential area principle. Small leak along the poppet guide. Adjustmend by a Wandfluh proportional solenoid (VDE standard 0580). The cartridge and the solenoid made of steel are zinc coated and therefore rust-protected.

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 (2) 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 remote control and signal processing from process control systems enable elegant, comfortable solutions to problems. 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 NG3-Mini 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.

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TYPE CODE

B D P PM18 - ☐ - ☐ # ☐

Pressure relief valve		
Direct operated		
Proportional		
Screw-in cartridge M18x1,5		
Standard nominal pressure range:	p_N = 20 bar	20
	p_N = 100 bar	100
	p_N = 200 bar	200
	p_N = 315 bar	315
Standard nominal voltage:	U_N = 12 VDC	G12
	U_N = 24 VDC	G24
Design-Index (Subject to change)		

GENERAL SPECIFICATIONS

Description	Direct operated proportional pressure relief valve
Construction	Screw-in cartridge for cavity to ISO 7789
Operations	Proportional solenoid
Mounting	Screw-in thread M18x1,5
Ambient temperature	-20…50°C
Mounting position	any
Fastening torque	M_D = 30 Nm for screw-in cartridge M_D = 1,2 Nm (qual. 8.8) for solenoid screws
Weight	m = 0,25 kg

ELECTRICAL SPECIFICATIONS

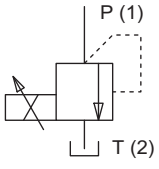
Construction	Proportional solenoid, wet pin push type, pressure tight.	
Standard-Nominal voltage	U_N = 12 VDC	U_N = 24 VDC
Limiting current	I_G = 1080 mA	I_G = 540 mA
Relative duty factor	100% DF (see data sheet 1.1-430)	
Protection class	IP 65 acc. to EN 60 529	
Connection/Power supply	Over device plug connection to ISO 4400 / DIN 43 650 (2P+E)	

Other electrical specifications see data sheet 1.1-90 (PI29V)

HYDRAULIC SPECIFICATIONS

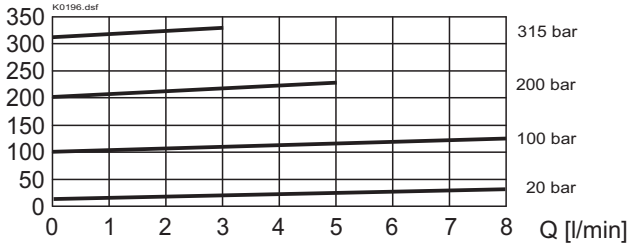
Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 18/16/13 (Required filtration grade ß 6…10≥75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70°C
Peak pressure	p_{max} = 350 bar
Nominal pressure ranges	p_N = 20 bar, p_N = 100 bar, p_N = 200 bar, p_N = 315 bar
Min. volume flow	Q_{min} = 0,1 l/min
Max. volume flow	Q_{max} = 8 l/min für p_N = 20 / 100 bar Q_{max} = 6 l/min für p_N = 200 bar Q_{max} = 3 l/min für p_N = 315 bar
Leakage volume flow	see characteristics
Repeatability	≤ 1 % ∗
Hysteresis	≤ 2 % ∗
	∗ at optimal dither signal

SYMBOL

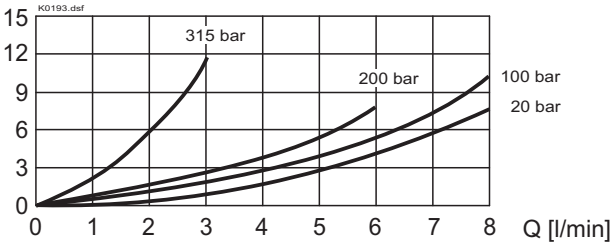


CHARACTERISTICS oil viscosity υ = 30 mm²/s

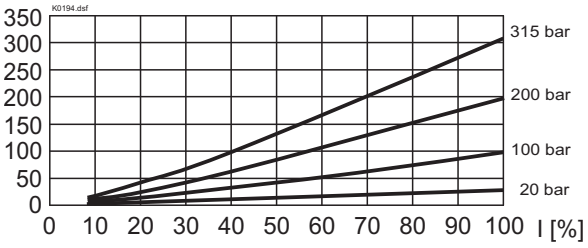
p = f (Q) Pressure volume flow characteristics (Maximum adjustable pressure)



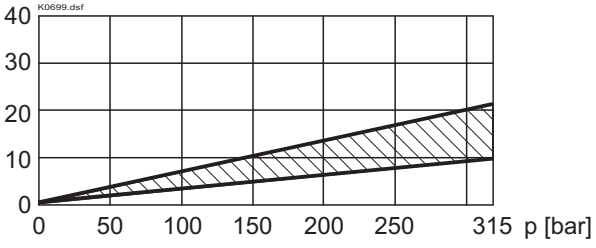
p= f (Q) Pressure volume flow characteristics (Minimum adjustable pressure)



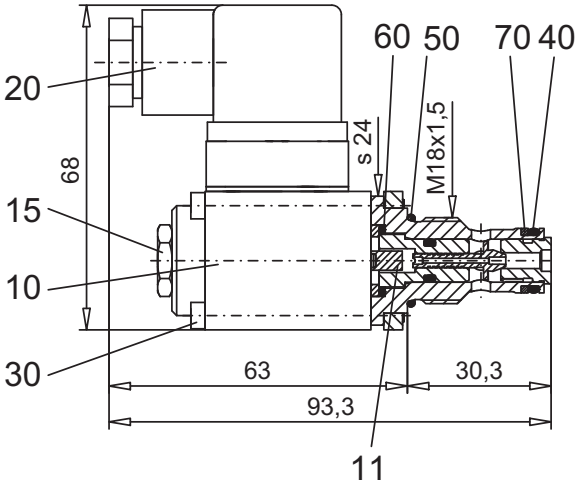
p = f (I) Pressure adjustment characteristics (Q = 1 l/min)



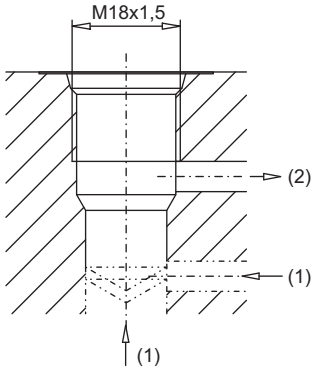
Q_L = f (p) Leakage volume flow characteristics



DIMENSIONS / SECTIONAL DRAWINGS



Cavity drawing according to ISO 7789–18–02–0–98



For detailed cavity drawing and cavity tools see data sheet 2.13-1001

PARTS LIST

Position	Article	Description
10	256.2453 256.2418	Proportional solenoid PI29V-G24 Proportional solenoid PI29V-G12
11	034.0111	Pin RD 4x10,1
15	253.8000	Mounted screw with integrated manual override HB4,5
20	219.2002	Plug (black)
30	249.0006	Socket head cap screw M3x42
40	160.2093	O-ring ID 9,25x1,78
50	160.2156	O-ring ID 15,60x1,78
60	160.2120	O-ring ID 12,42x1,78
70	49.3137	Back up ring RD 10,6x13,5x1,4

ACCESSORIES

Cartridge built-in flange- or sandwich body
Flange-/sandwich plate — Register 2.3
Proportional amplifier — Register 1.13

Technical explanation see data sheet 1.0-100E