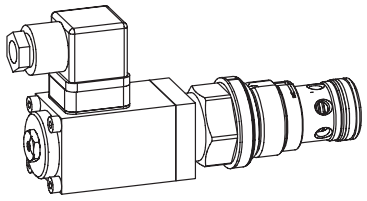
Proportional pressure relief valve
Screw-in cartridge
- **Pilot operated**
- **Q_{max} = 230 l/min**
- **p_{max} = 400 bar**
- **$p_{N\ max}$ = 315 bar**

M33x2
ISO 7789



DESCRIPTION
Pilot operated, proportional pressure relief valve, as screw-in cartridge with a thread M33x2 for cavity according to ISO 7789. 3 standard pressure levels are available: 100 bar, 200 bar and 350 bar. 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
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 remote control and signal processing from process control systems enable elegant, comfortable solutions to problems. The screw-in cartridge is very suitable for mounting in control blocks, flange bodys and sandwich plates size NG10. Cavity tools are available for machining cavities in steel and aluminium (hire or purchase). Please refer to the data sheets in register 2.13.

CONTENT

TYPE CODE

B V P PM33 - ☐ - ☐ # ☐

Pressure relief valve		
Pilot operated		
Proportional		
Screw-in cartridge M33x2		
Standard nominal pressure ranges:	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	Pilot operated pressure relief valve
Construction	Screw-in cartridge for cavity acc. to ISO 7789
Operations	Proportional solenoid
Mounting	Screw-in thread M33x2
Ambient temperature	-20…+50 °C
Mounting position	any
Fastening torque	M_D = 80 Nm for screw-in cartridge M_D = 2,6 Nm (Qual. 8.8) for solenoid screws
Weight	m = 0,9 kg

HYDRAULIC SPECIFICATIONS

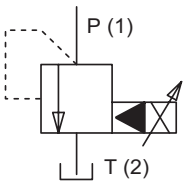
Fluid	Mineral oil, other fluid on request
Contamination	ISO 4406:1999, class 18/16/13
efficiency	(Required filtration grade ß 6...10 ≥ 75) see data sheet 1.0-50/2
Viscosity range	12 mm²/s...320 mm²/s
Fluid temperature	-20...+70 °C
Peak pressure	p_{max} = 400 bar $p_{Tmax} = p_P$+15 bar
Nominal pressure ranges	p_N= 100 bar, 200 bar and 315 bar
Volume flow	Q = 5...230 l/min
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	U_N = 24 VDC
Limiting current	I_G = 1250 mA	I_G = 680 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 43650 (2P+E)	

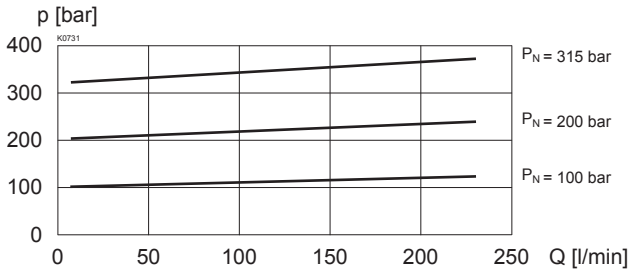
Other electrical specifications see data sheet 1.1-115 (PI35PV)

SYMBOLS

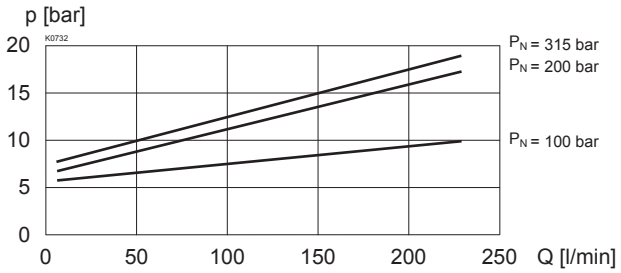


CHARACTERISTICS Oil viscosity υ = 30 mm²/s

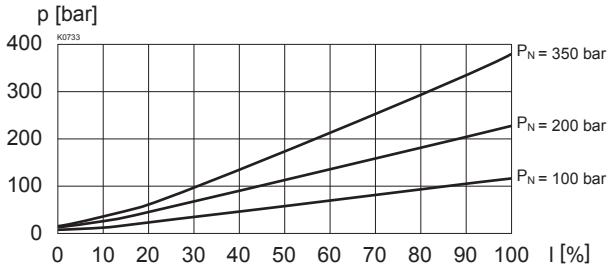
p = f (Q) Pressure volume flow characteristics
(Maximal adjustable pressure)



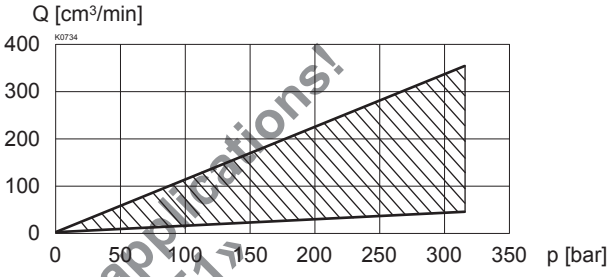
p = f (Q) Pressure volume flow characteristics
(Minimal adjustable pressure)



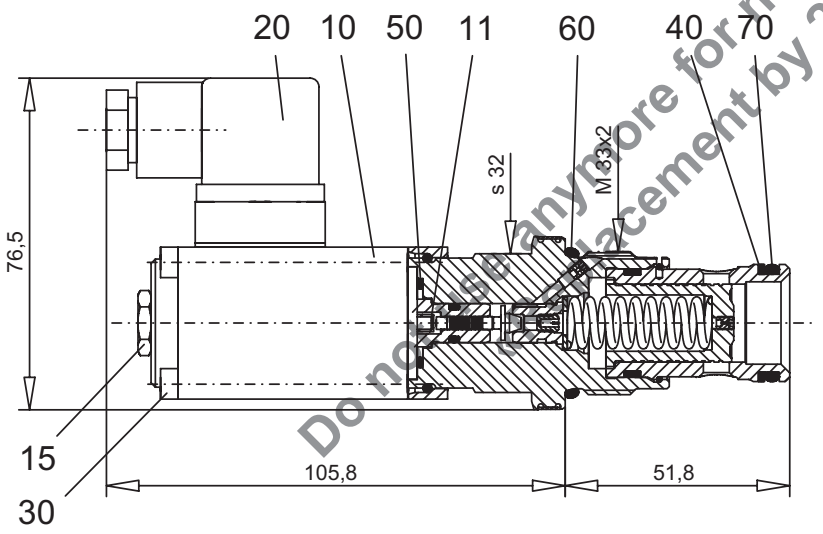
p = f (I) Pressure adjustment characteristics
[at Q = 30 l/min (static)]



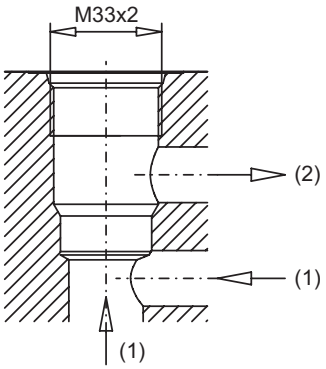
Q_L = f (p) Leakage volume flow characteristics



DIMENSIONS / SECTIONAL DRAWING



Cavity drawing acc. to
ISO 7789–33–02–0–98



For detailed cavity drawing and
cavity tools see data sheet 2.13-1041

PARTS LIST

Position	Article	Description
10	256.3505 256.3443	Proportional solenoid PI35MV-G24 Proportional solenoid PI35MV-G12
11	034.0116	Pin RD 4x8
15	253.8000	Mounted screw with integrated manual override HB4,5
20	219.2002	Plug (black)
30	246.1161	Socket head cap screw M4x60 DIN 912
40	160.2219	O-ring ID 21,89x2,62
50	160.2170	O-ring ID 17,17x1,78
60	160.2298	O-ring ID 29,82x2,62
70	049.3277	Back-up ring RD 22,5x27x1,4

ACCESSORIES

Proportional amplifier register 1.13

Technical explanation see data sheet 1.0-100