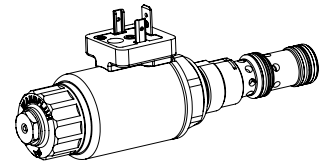


Proportional pressure reducing cartridge

- ◆ pilot operated
- ◆ static < 1 bar adjustable
- ◆ $Q_{max} = 40$ l/min
- ◆ $p_{max} = 400$ bar
- ◆ $p_{N\ red\ max} = 350$ bar

M22 x 1,5
ISO 7789



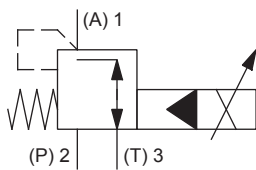
DESCRIPTION

Pilot operated proportional pressure reducing valve in screw-in cartridge construction for cavity according to ISO 7789. Proportionally to the solenoid current, the solenoid force and the pressure in port A (1) rise. The valve functions practically independently of the pressure in port P (2). Pressure increase in the consumer port A (1) to above the adjusted value, e.g. through an active consumer, is avoided by discharging excess oil to the tank T (3). With the solenoid deenergised, the oil flows freely from consumer port A (1) to port T (3). For the control, Wandfluh proportional amplifiers are available (see register 1.13).

APPLICATION

The electrical remote control in conjunction with process controls allows economical solutions with repeatable processes. The screw-in cartridge is perfectly suitable for installation in control blocks and is installed in sandwich- (vertical stacked systems) and in flange plates (corresponding data sheets in this register). For machining the cartridge cavity in steel and aluminum blocks, cavity tools are available (hire or purchase). Please refer to the data sheets in register 2.13.

SYMBOL



ACTUATION

| | |
|------------|--|
| Actuation | Proportional solenoid, wet pin push type, pressure tight |
| Execution | W.S37 / 19 x 50 (Data sheet 1.1-173) M.S35 / 19 x 50 (Data sheet 1.1-174) |
| Connection | Connector socket EN 175301 – 803 Connector socket AMP Junior-Timer Connector Deutsch DT04 – 2P |

STANDARDS

| | |
|--------------------------|-----------------|
| Cartridge cavity | ISO 7789 |
| Solenoids | DIN VDE 0580 |
| Connection execution D | EN 175301 – 803 |
| Protection class | EN 60 529 |
| Contamination efficiency | ISO 4406 |

INSTALLATION NOTES

| | |
|-------------------|--|
| Mounting type | Screw-in cartridge M22 x 1,5 |
| Mounting position | Any, preferably horizontal |
| Tightening torque | $M_D = 60$ Nm Screw-in cartridge $M_D = 5$ Nm knurled nut |

TYPE CODE

| | | | | | | | | | | | | | |
|--|---|------------------------------------|---------|----------------------------------|---|----------------------|---|----------------------|----------------------|---|----------------------|---|----------------------|
| | | M Q P PM22 - | | <input type="text"/> | - | <input type="text"/> | / | <input type="text"/> | <input type="text"/> | - | <input type="text"/> | # | <input type="text"/> |
| Pressure reducing valve | | | | | | | | | | | | | |
| Pilot operated | | | | | | | | | | | | | |
| Proportional | | | | | | | | | | | | | |
| Screw-in cartridge M22 x 1,5 | | | | | | | | | | | | | |
| Nominal pressure range $p_{N\text{red}}$ | 40 bar | <input type="text" value="40"/> | 200 bar | <input type="text" value="200"/> | | | | | | | | | |
| | 63 bar | <input type="text" value="63"/> | 275 bar | <input type="text" value="275"/> | | | | | | | | | |
| | 100 bar | <input type="text" value="100"/> | 350 bar | <input type="text" value="350"/> | | | | | | | | | |
| | 160 bar | <input type="text" value="160"/> | | | | | | | | | | | |
| Nominal voltage U_N | 12 VDC | <input type="text" value="G12"/> | | | | | | | | | | | |
| | 24 VDC | <input type="text" value="G24"/> | | | | | | | | | | | |
| | without coil | <input type="text" value="X5"/> | | | | | | | | | | | |
| Slip-on coil | Metal housing round | <input type="text" value="W"/> | | | | | | | | | | | |
| | Metal housing square | <input type="text" value="M"/> | | | | | | | | | | | |
| Connection execution | Connector socket EN 175301-803 / ISO 4400 | <input type="text" value="D"/> | | | | | | | | | | | |
| | Connector socket AMP Junior - Timer | <input type="text" value="J"/> | | | | | | | | | | | |
| | Connector Deutsch DT04 - 2P | <input type="text" value="G"/> | | | | | | | | | | | |
| Sealing material | NBR | <input type="text"/> | | | | | | | | | | | |
| | FKM (Viton) | <input type="text" value="D1"/> | | | | | | | | | | | |
| Manual override | Manual override | <input type="text" value="HB4,5"/> | | | | | | | | | | | |
| | Screw plug | <input type="text" value="HB0"/> | | | | | | | | | | | |
| Design index (subject to change) | | | | | | | | | | | | | |

2.3-641

GENERAL SPECIFICATIONS

| | |
|---------------------|--------------------------------------|
| Designation | Proportional pressure reducing valve |
| Construction | Pilot operated |
| Mounting | Screw-in cartridge construction |
| Nominal size | M22 x 1,5 according to ISO 7789 |
| Actuation | Proportional solenoid |
| Ambient temperature | -25...+70 °C |
| Weight | 0,53 kg |
| MTTFd | 150 years |

ELECTRICAL SPECIFICATIONS

| | |
|---------------------------|--|
| Protection class | Connection execution D: IP65 Connection execution J: IP66 Connection execution G: IP67 and IP69K |
| Relative duty factor | 100 % DF |
| Standard nominal voltage | 12 VDC, 24 VDC |
| Limiting current at 50 °C | $I_G = 1360 \text{ mA}$ ($U_N = 12\text{VDC}$) $I_G = 680 \text{ mA}$ ($U_N = 24\text{VDC}$) |

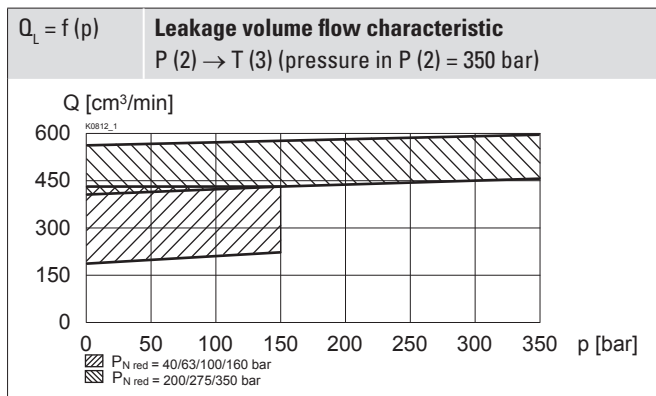
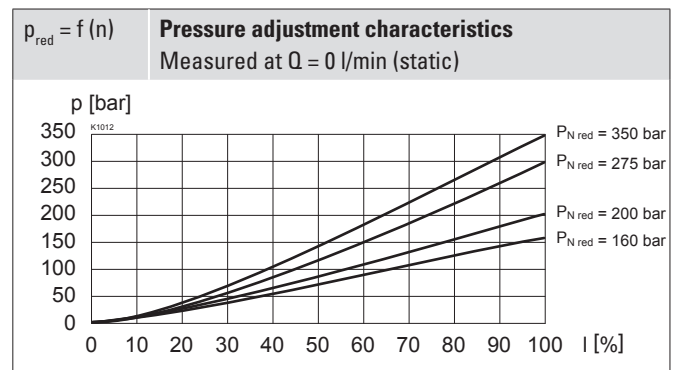
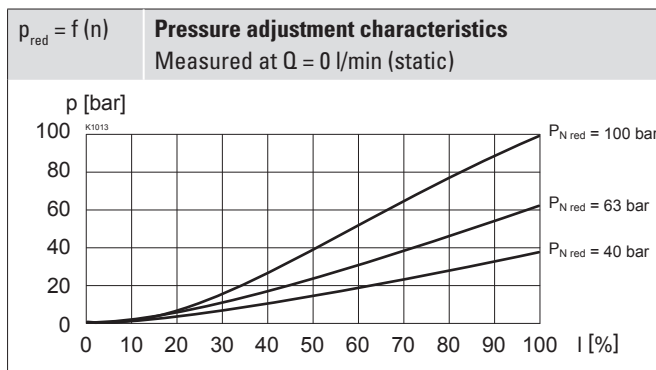
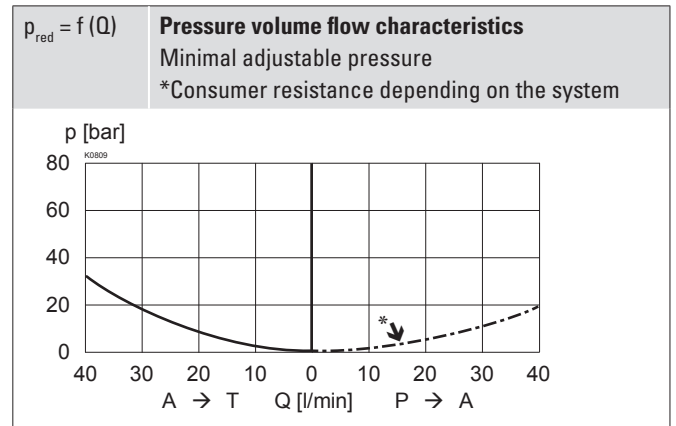
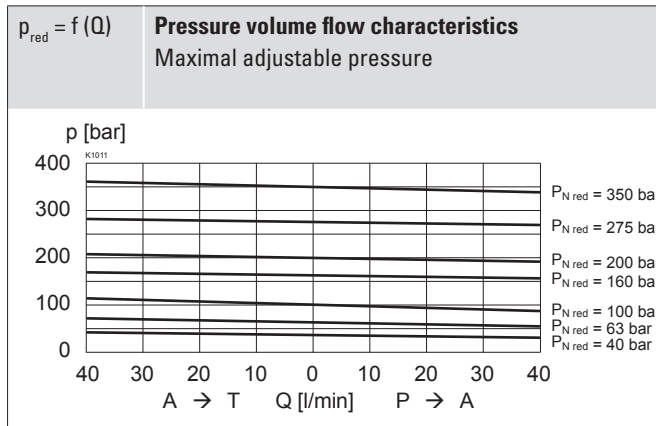
Note!


Other electrical specifications see data sheet 1.1-173 (slip-on coil W) and 1.1-174 (slip-on coil M)

HYDRAULIC SPECIFICATIONS

| | |
|-----------------------------|---|
| Working pressure | $\$p_{\text{max}} = 400 \text{ bar}$ (connection P) $p_{\text{max}} = 100 \text{ bar}$ (connection T) |
| Tank pressure | $p_{T\text{max}} = p_p + 20 \text{ bar}$ |
| Supply pressure | $p_p \geq p_{\text{red}} + 10 \text{ bar}$ (static) $p_p \geq p_{\text{red}} + 80 \text{ bar}$ (at 40 l/min) |
| Nominal pressure range | $p_{N\text{red}} = 40; 63; 100; 160; 200; 275; 350 \text{ bar}$ |
| Minimum adjustable pressure | Static < 1 bar adjustable |
| Volume flow range | $Q = 0 \dots 40 \text{ l/min}$ |
| Leakage oil | See characteristics |
| Hysteresis | $\leq 4 \%$ at optimal dither signal |
| Repeatability | $\leq 1 \%$ at optimal dither signal |
| Fluid | Mineral oil, other fluid on request |
| Viscosity range | $12 \text{ mm}^2/\text{s} \dots 320 \text{ mm}^2/\text{s}$ |
| Temperature range fluid | -25...+70 °C (NBR) -20...+70 °C (FKM) |
| Contamination efficiency | Class 18 / 16 / 13 |
| Filtration | Required filtration grade $\beta_{6 \dots 10} \geq 75$, see data sheet 1.0-50 |

PERFORMANCE SPECIFICATIONS

 Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$

ACCESSORIES

| | |
|---------------------------------------|----------------------|
| Proportional amplifier | Register 1.13 |
| Electric plug B (black) | Article no. 219.2002 |
| Flange body / sandwich plate NG4-Mini | Data sheet 2.3-820 |
| Flange body / sandwich plate NG6 | Data sheet 2.3-840 |
| Flange body / sandwich plate NG10 | Data sheet 2.3-860 |
| Threaded body | Data sheet 2.9-210 |
| Technical explanations | Data sheet 1.0-100 |
| Hydraulic fluids | Data sheet 1.0-50 |
| Filtration | Data sheet 1.0-50 |

MANUAL OVERRIDE

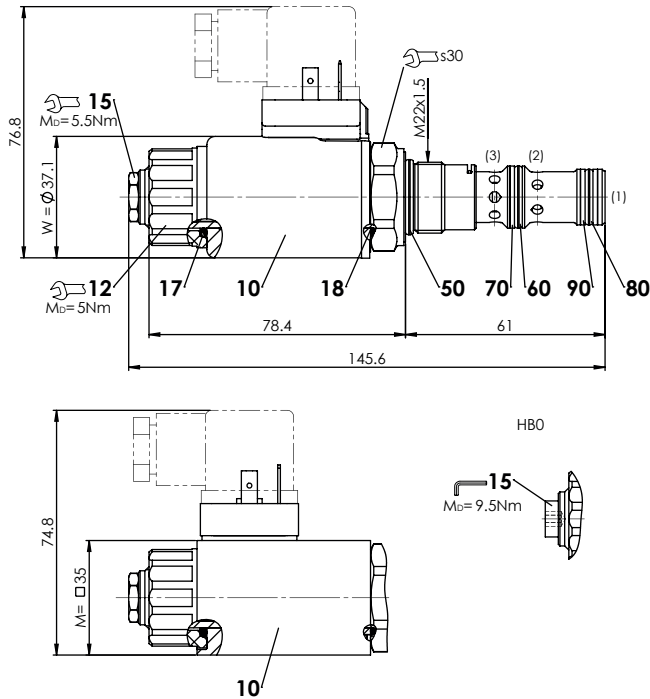
 HB4,5
 Optionally: Screw plug (HB0), no actuation possible

SEALING MATERIAL

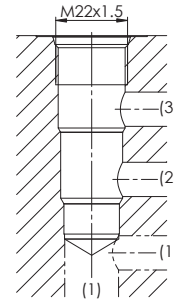
NBR or FKM (Viton) as standard, choice in the type code

SURFACE TREATMENT

♦ The cartridge body, the slip-on coil and the armature tube are zinc-nickel coated

DIMENSIONS

HYDRAULIC CONNECTION

Cavity drawing according to ISO 7789-22-04-0-98


Note!


For detailed cavity drawing and cavity tools see data sheet 2.13-1004

PARTS LIST

| Position | Article | Description |
|----------|----------|--------------------------------|
| 10 | 206.2... | W.S37 / 19 x 50 |
| | 260.5... | M.S35 / 19 x 50 |
| 12 | 154.2700 | Knurled nut |
| 15 | 253.8000 | HB4,5 manual override |
| | 239.2033 | HB0 Screw plug |
| 17 | 160.2187 | O-ring ID 18,72 x 2,62 (NBR) |
| 18 | 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 | 160.2156 | O-ring ID 15,60 x 1,78 (NBR) |
| | 160.6156 | O-ring ID 15,60 x 1,78 (FKM) |
| 70 | 049.3196 | Backup ring rd 16,1 x 19 x 1,4 |
| 80 | 160.2140 | O-ring ID 14,00 x 1,78 (NBR) |
| | 160.6141 | O-ring ID 14,00 x 1,78 (FKM) |
| 90 | 049.3176 | Backup ring rd 14,1 x 17 x 1,4 |