

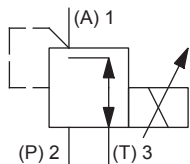
### Proportional pressure reducing cartridge

- ◆ direct operated
- ◆  $Q_{max} = 6 \text{ l/min}$
- ◆  $p_{max} = 210 \text{ bar (350 bar)}$
- ◆  $p_{N \text{ red max}} = 100 \text{ bar}$

### DESCRIPTION

Direct operated proportional pressure reducing valve in screw-in cartridge construction for cavity according to Wandfluh standard. 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). The pressure tight encapsulated Ex-protection solenoid coil prevents an explosion on the inside penetrating to the outside as well as an ignitable surface temperature.

### SYMBOL

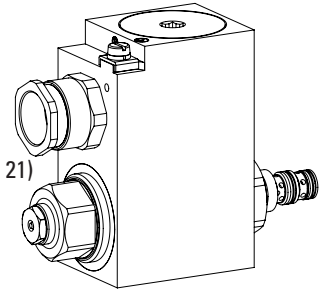


### GENERAL SPECIFICATIONS

|                     |  |
|---------------------|--|
| Designation         | Proportional pressure reducing valve         |
| Construction        | Direct operated                              |
| Mounting            | Screw-in cartridge construction              |
| Nominal size        | M16 x 1,5 according to Wandfluh standard     |
| Actuation           | Proportional solenoid                        |
| Ambient temperature | <b>Operation as T4</b><br>-25...+70 °C (L15) |
| Weight              | 2,2 kg                                       |
| MTTFd               | 150 years                                    |

### M16 x 1,5 Wandfluh standard

Ex db IIC T6, T4 Gb (Zone 1)  
 Ex tb III C T80 °C, T130 °C Db (Zone 21)  
 Ex db I Mb  
 ⓧ II 2 G Ex db IIC T6, T4  
 ⓧ II 2 D Ex tb III C T80 °C, T130 °C  
 ⓧ I M2 Ex db I Mb  
 Class I, Division 1, Group A, B, C, D T4  
 Class II & III, Division I, Group E, F, G T4



### APPLICATION

These valves are suitable for applications in explosion-hazard areas, open cast and also in mines. The electrical remote control in conjunction with process controls allows economical solutions with repeatable processes. 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.

### CERTIFICATES

|              | Surface | Mining | Standard<br>-25 °C<br>to... | M248<br>Electronic |
|--------------|---------|--------|-----------------------------|--------------------|
| ATEX / UKEX  | x       | x      | x                           | x                  |
| IECEx        | x       | x      | x                           | x                  |
| CCC          | x       | x      | x                           | x                  |
| EAC          | x       | x      | x                           | x                  |
| Australia    | x       | x      | x                           |                    |
| MA           |         | x      | x                           | x                  |
| USA / Canada | x       |        | x                           | x                  |
| PESO         | x       |        | x                           | x                  |

The certificates can be found on [www.wandfluh.com](http://www.wandfluh.com)

### ACTUATION

|            |  |
|------------|--|
| Actuation  | Proportional solenoid, wet pin push type, pressure tight |
| Execution  | MKY45 / 18x60 (Data sheet 1.1-183)                       |
| Connection | Cable gland for cable Ø 6,5... 14 mm                     |

**Attention!** The UC execution is always supplied without cable gland



**TYPE CODE**

|  |  |   |   |
|--|--|---|---|
|  |  | M G B PM16 - 100 - <input type="text"/> / <input type="text"/> / <input type="text"/> - <input type="text"/> <input type="text"/> <input type="text"/> # <input type="text"/> |   |
| Pressure reducing valve                      |  |   |   |
| Direct operated                              |  |   |   |
| Proportional, explosion proof execution Ex d |  |   |   |
| Screw-in cartridge M16 x 1,5                 |  |   |   |
| Nominal pressure range $p_{N,red}$           | 100 bar  |   |   |
| Nominal voltage $U_N$                        | 12 VDC   | <input type="checkbox"/> G12  |   |
|  | 24 VDC   | <input type="checkbox"/> G24  |   |
| Nominal power $P_N$                          | 15 W   | <input type="checkbox"/> L15  | Ambient temperature up to:<br>70 °C                             |
| Certification                                | ATEX, UKEX, IECEx, EAC, CCC<br>Australia<br>MA | <input type="checkbox"/>  | USA / Canada<br>India   |
|  |  | <input type="checkbox"/> AU   |   |
|  |  | <input type="checkbox"/> MA   |   |
| Sealing material                             | NBR  | <input type="checkbox"/>  | <input type="checkbox"/> UC-M187<br><input type="checkbox"/> PE |
|  | FKM (Viton)                                    | <input type="checkbox"/> D1   |   |
| Options                                      | without amplifier                              | <input type="checkbox"/>  |   |
|  |  | <input type="checkbox"/> M248   |   |
|  | System pressure max. 210 bar                   | <input type="checkbox"/>  |   |
|  | System pressure max. 350 bar                   | <input type="checkbox"/> Z406   |   |

Design index (subject to change)

2.3-608

**ELECTRICAL SPECIFICATIONS**

|                           |                                       |
|---------------------------|---------------------------------------|
| Protection class          | IP65 / 66 / 67                        |
| Relative duty factor      | 100 % DF                              |
| Voltage tolerance         | ± 10 % with regard to nominal voltage |
| Standard nominal voltage  | 12 VDC, 24 VDC                        |
| Limiting current at... °C | <b>L15, 50 °C</b>                     |
|                           | $I_G = 950 \text{ mA}$ (12 VDC)       |
|                           | $I_G = 450 \text{ mA}$ (24 VDC)       |
|                           | <b>L15, 70 °C</b>                     |
|                           | $I_G = 910 \text{ mA}$ (12 VDC)       |
|                           | $I_G = 420 \text{ mA}$ (24 VDC)       |
| Standard nominal power    | 15 W                                  |
| Temperature class         | Nominal power 15 W: T1...T4           |

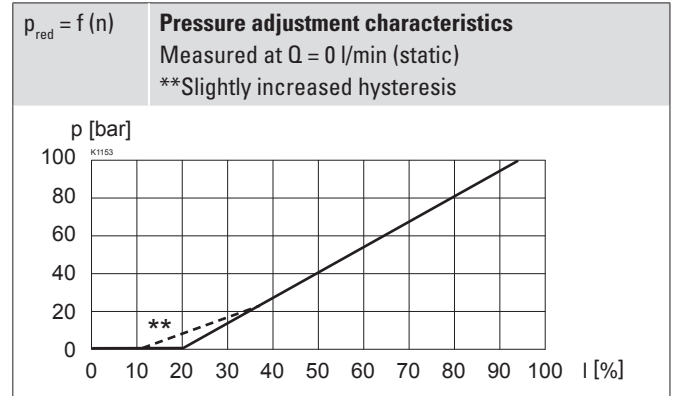
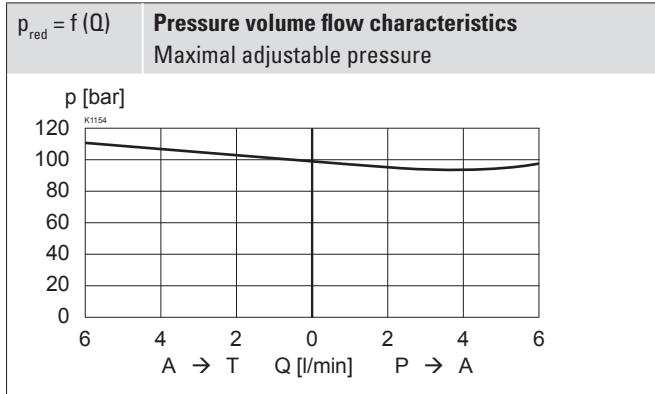
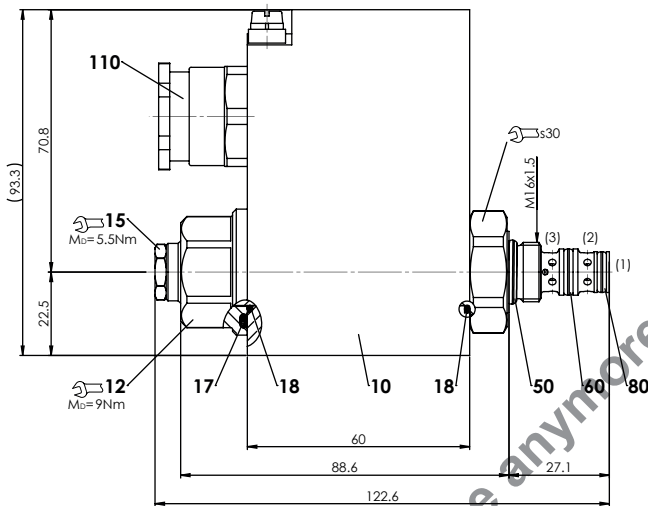
**Note!**

Other electrical specifications see data sheet 1.1-183

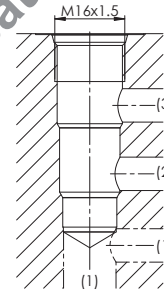

**HYDRAULIC SPECIFICATIONS**

|                             |  |
|-----------------------------|--|
| Working pressure            | $p_{max} = 210 \text{ bar}$ (350 bar)  |
| Nominal pressure range      | $p_{N,red} = 100 \text{ bar}$  |
| Minimum adjustable pressure | < 0,5 bar  |
| Volume flow range           | $Q = 0 \dots 6 \text{ l/min}$  |
| Leakage oil                 | <b><math>p_{sys} = 160 \text{ bar}</math></b>                                  |
|                             | $p_{red} = 0 \text{ bar}$ : < 15 ml/min  |
|                             | $p_{red} = 0,5 \times p_{N,red}$ : < 60 ml/min                                 |
| Hysteresis                  | ≤ 4 % at optimal dither signal   |
| Repeatability               | ≤ 1 % at optimal dither signal   |
| Fluid                       | Mineral oil, other fluid on request  |
| Viscosity range             | 12 mm <sup>2</sup> /s...320 mm <sup>2</sup> /s                                 |
| Temperature range fluid     | <b>Operation as T4</b>   |
|                             | NBR -25...+70 °C (L15)   |
|                             | FKM -20...+70 °C (L15)   |
| 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  $\nu = 30 \text{ mm}^2/\text{s}$ 

**DIMENSIONS**

**HYDRAULIC CONNECTION**

Cavity drawing according to Wandfluh standard


**Attention!** For detailed cavity drawing and cavity tools see data sheet 2.13-1051

**PARTS LIST**

| Position | Article  | Description                   |
|----------|----------|-------------------------------|
| 10       | 263.6... | Solenoid coil MK.45 / 18 x 60 |
| 12       | 154.2603 | Knurled nut Ex M18 x 1,5 x 18 |
| 15       | 253.8000 | Manual override HB4,5         |
| 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       | 160.2140 | O-ring ID 14,00 x 1,78 (NBR)  |
|          | 160.8140 | O-ring ID 14,00 x 1,78 (FKM)  |
| 60       | 160.2093 | O-ring ID 9,25 x 1,78 (NBR)   |
|          | 160.8092 | O-ring ID 9,25 x 1,78 (FKM)   |
| 80       | 160.2076 | O-ring ID 7,65 x 1,78 (NBR)   |
|          | 160.8076 | O-ring ID 7,65 x 1,78 (FKM)   |
| 110      | 111.1080 | Cable gland M20 x 1,5         |

**ACCESSORIES**

|                        |                    |
|------------------------|--------------------|
| Proportional amplifier | Register 1.13      |
| Technical explanations | Data sheet 1.0-100 |
| Filtration             | Data sheet 1.0-50  |

**MANUAL OVERRIDE**

HB4,5 as standard


## SURFACE TREATMENT

- ◆ The cartridge body is gas-nitro carburised
- ◆ The slip-on coil and the armature tube are zinc-nickel coated

## STANDARDS

|                          |                                 |
|--------------------------|---------------------------------|
| Cartridge cavity         | Wandfluh standard               |
| Explosion protection     | Directive 2014 / 34 / EU (ATEX) |
| Flameproof enclosure     | EN / IEC / UL 60079-1, 31       |
| Cable entry              | EN 60079-0, 1, 7, 15, 31        |
| Protection class         | EN 60 529                       |
| Contamination efficiency | ISO 4406                        |

## COMMISSIONING

**Attention!**  The solenoid coil must only be put into operation, if the requirements of the operating instructions supplied are observed to their full extent. In case of non-observance, no liability can be assumed.

## SEALING MATERIAL

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

## INSTALLATION NOTES

|                   |  |
|-------------------|--|
| Mounting type     | Screw-in cartridge type M16 x 1,5                            |
| Mounting position | Any, preferably horizontal                                   |
| Tightening torque | $M_D = 30$ Nm screw-in cartridge<br>$M_D = 9$ Nm Knurled nut |

Do not use anymore for new applications!