

ifm electronic



Operating instructions
Mechatronic flow sensor

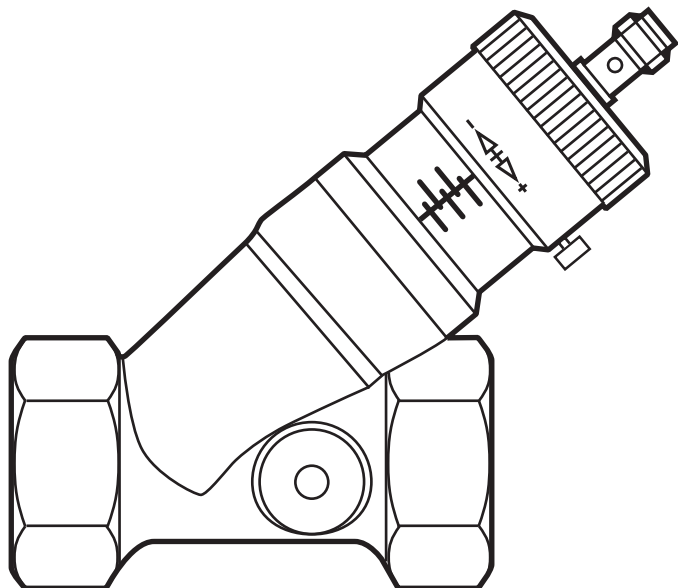
efector300[®]

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UK

03/2011

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1 Safety instructions

- Please read the product description prior to set-up of the unit. Ensure that the product is suitable for your application without any restrictions.
- Improper or non-intended use may lead to malfunctions of the unit or to unwanted effects in your application. That is why installation, electrical connection, set-up, operation and maintenance of the unit must be carried out by qualified personnel authorised by the plant operator.
- Check the compatibility of the product materials (see technical data) with the media to be monitored in all applications.
- The device shall be supplied from an isolating transformer having a secondary Listed fuse rated either
 - a) max 5 amps for voltages 0~20 V (0~28.3 Vpeak), or
 - b) 100/Vp for voltages of 20~30 V (28.3~42.4 Vpeak).
- Flow Operated Switches shall be connected only by using any R/C (CYJV2) cord, having suitable ratings.

2 Functions and features

The unit monitors liquid media (water, glycol solutions, oils).

It detects the volumetric flow quantity to the principle of differential pressure and switches the output:

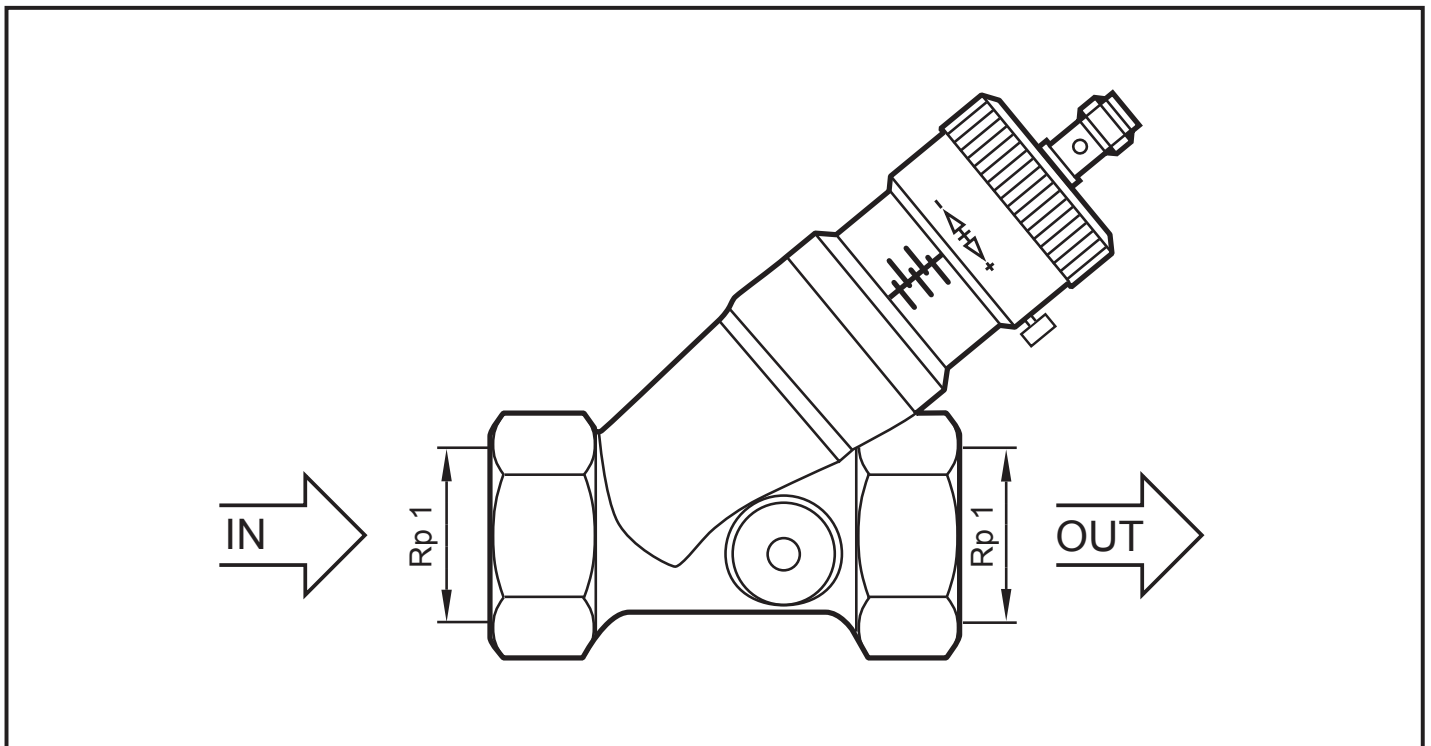
- Output closed (LED = ON), if volumetric flow quantity \geq switch point.
- Output open (LED = OFF), if volumetric flow quantity $<$ switch point.

The switch point is adjustable.

3 Installation



- ▶ Ensure that the system is free of pressure during installation.
- ▶ Ensure that no media can leak at the mounting location during installation.
- ▶ Install the unit according to the marked flow direction into a pipe Rp 1 and tighten firmly.



IN = inlet

OUT = outlet

4 Electrical connection

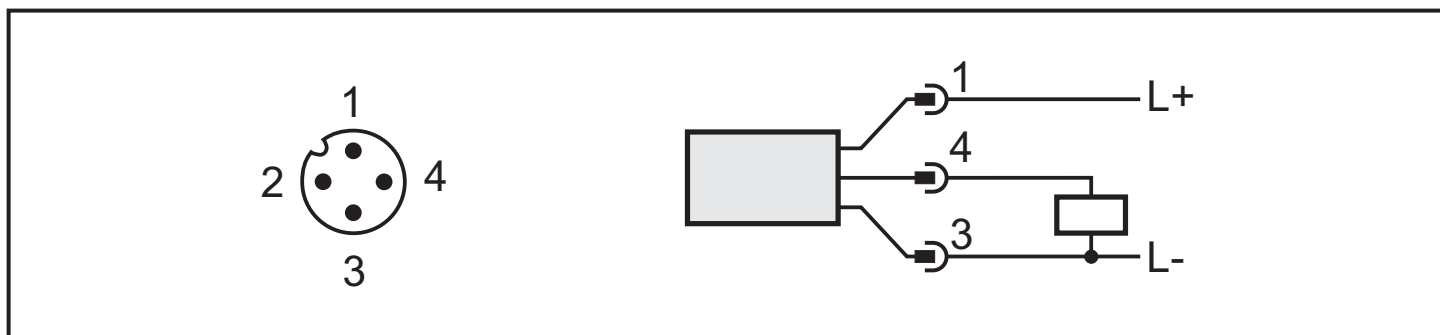


The unit must be connected by a qualified electrician.

The national and international regulations for the installation of electrical equipment must be adhered to.

Voltage supply to EN 50178, SELV, PELV.

- ▶ Disconnect power.
- ▶ Connect the unit as follows:



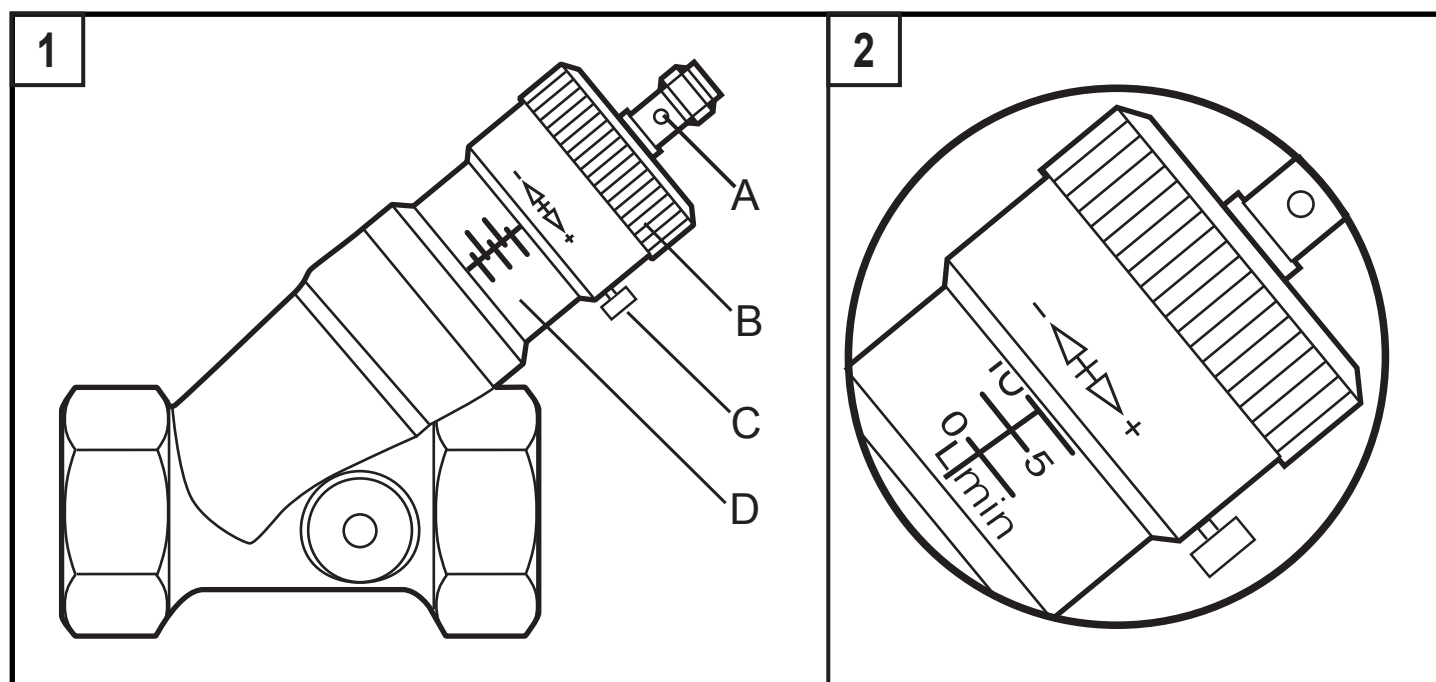
For information about available sockets/connectors see:

www.ifm.com → Products → Accessories

5 Switch point setting

There are 2 possibilities:

- Definition of requested value → 5.1.
- Adjustment to existing flow → 5.2.



A: LED; B: setting screw; C: lock screw; D: setting scale



Do not turn the setting screw beyond the maximum value of the setting range (→ Technical data) to avoid faulty switching.

5.1 Definition of requested value

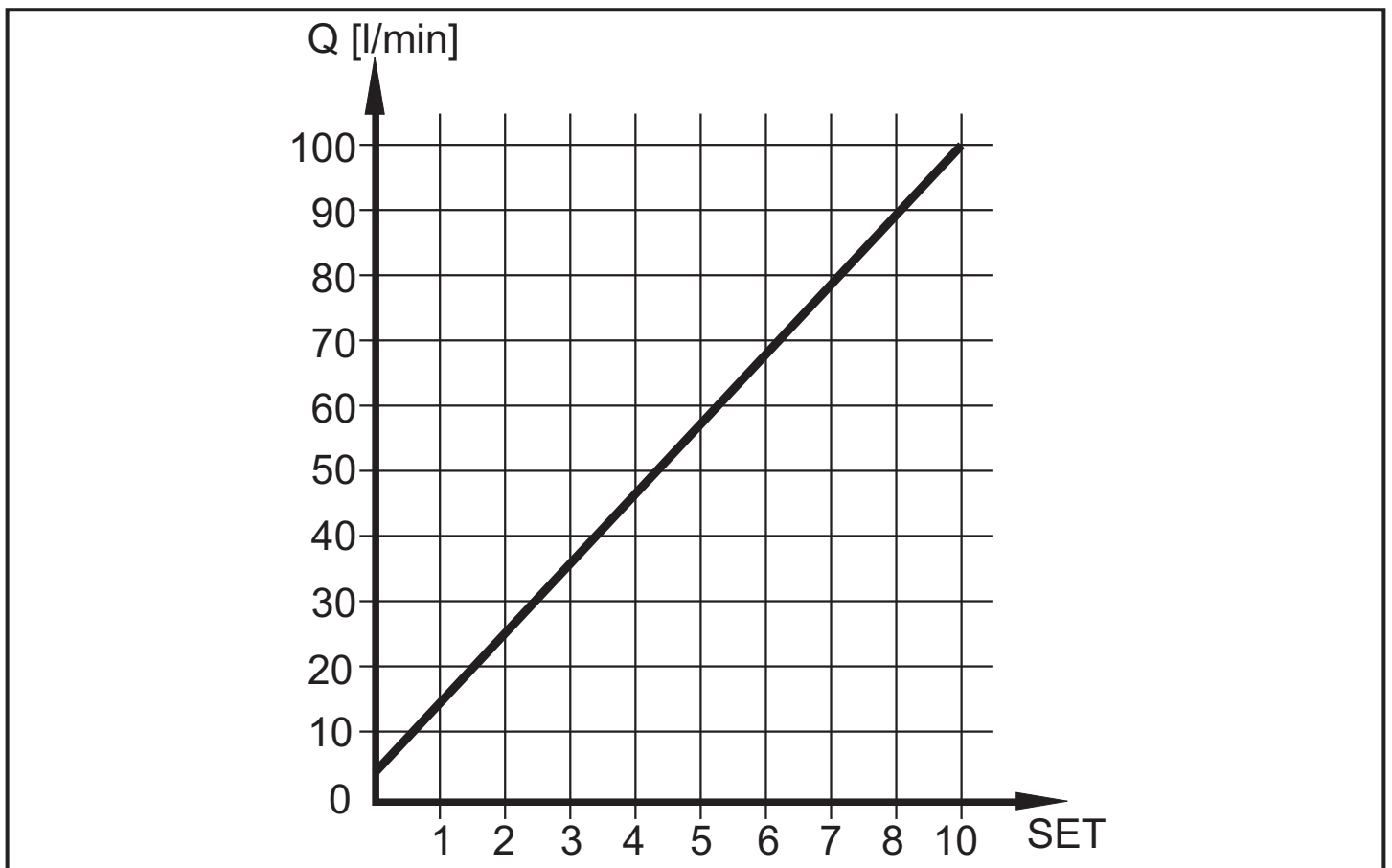
- ▶ Loosen the lock screw.
- ▶ Turn the setting screw until the requested value just becomes visible on the setting scale. → Example in figure 2: requested value = 10 l/min.
- ▶ Tighten the lock screw.

5.2 Adjustment to existing flow

- ▶ Let the normal flow circulate in the installation.
- ▶ Loosen the lock screw.
- ▶ Set the switch point with the setting screw.
 - If the LED lights before setting: turn the setting screw in the direction [+] until the LED goes out. Then turn in the opposite direction [-] until the LED lights.
 - If the LED does not light before setting: turn the setting screw in the direction [-] until the LED lights.
- ▶ Tighten the lock screw.

Correlation between number of the turns of the setting screw (SET) and switch point in l/min:

One complete turn corresponds to	approx. 12.5 l/min
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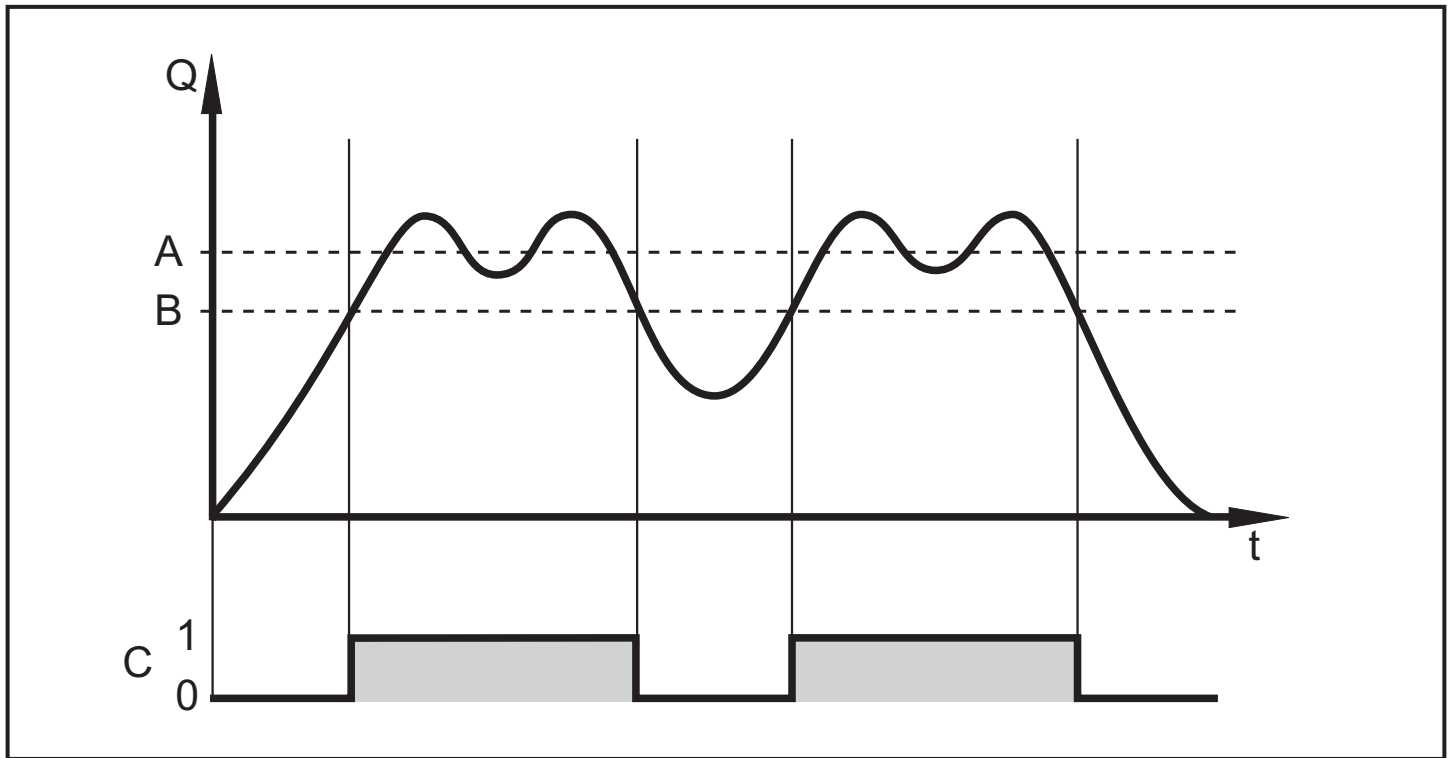


The diagram shows the typical course of the measurement curves for water at 20 °C.

6 Operation

After power on the unit is ready for operation. It detects the volumetric flow quantity and switches the output according to the setting.

Function diagram



A = requested flow; B = switch point; C = switching output

7 Maintenance, repair and disposal

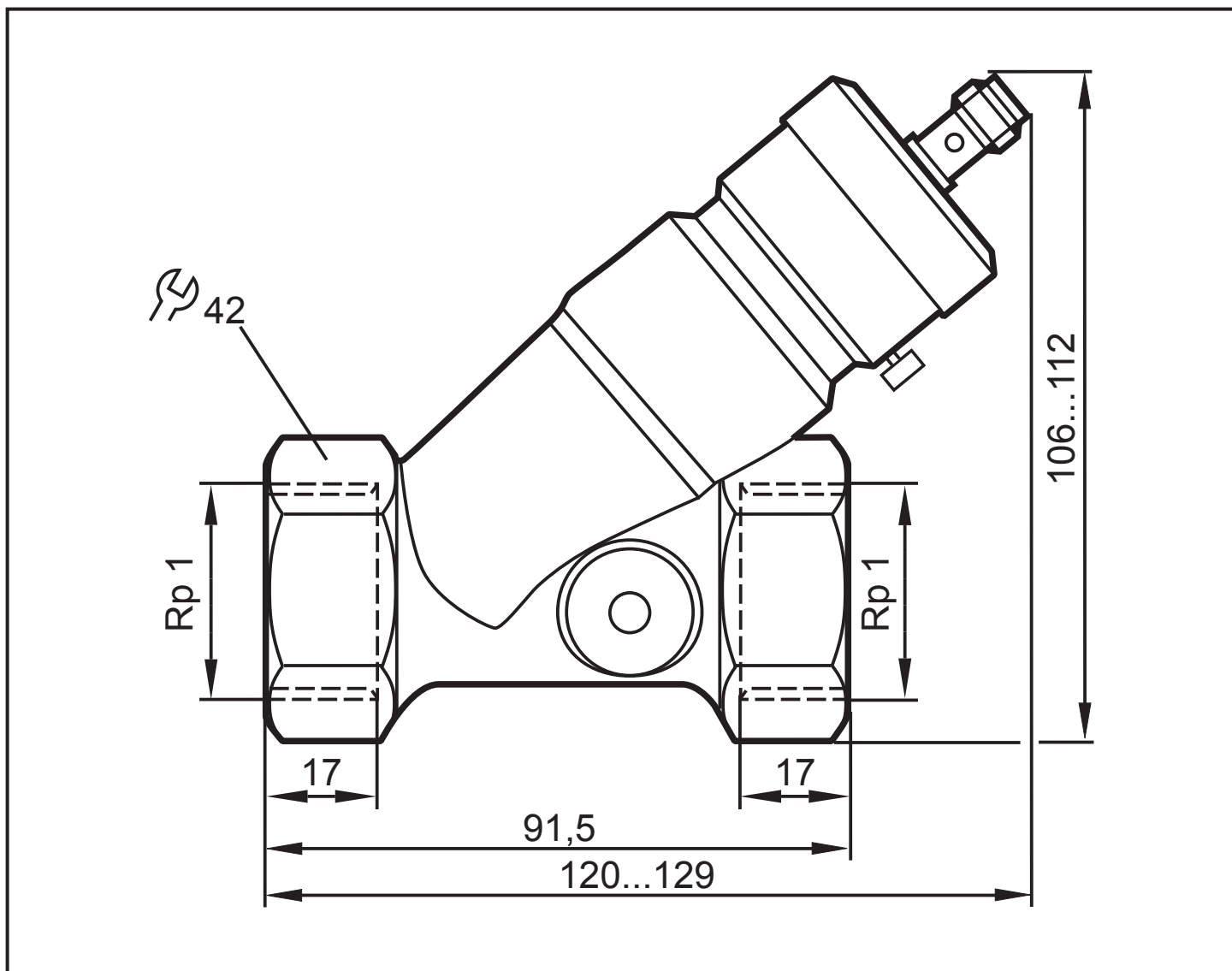
In case of correct use no maintenance and repair measures are necessary.

In case of strongly polluted media: mount a filter in front of the inlet (IN). Recommendation: use a 50-micron filter.

Only the manufacturer is allowed to repair the unit.

After use dispose of the unit in an environmentally friendly way in accordance with the applicable national regulations.

8 Scale drawing



dimensions are in millimeters

9 Technical data

Setting range [l/min].....	5... 100																												
Flow range max. [l/min]	100																												
Operating voltage [V].....	24 DC (-15 % / +10 %)																												
Current rating [mA]	100																												
Protected against short circuits, reverse polarity and overload																													
Voltage drop [V]	< 2.5																												
Current consumption [mA].....	< 15																												
Hysteresis [l/min]	3...6																												
Repeatability [% of value of measuring range]	1																												
Accuracy [% of value of measuring range]	± 5																												
Response time [s].....	< 0.01																												
Pressure loss (dP) / flow rate (Q)																													
<table border="1"> <caption>Approximate data points from the pressure loss graph</caption> <thead> <tr> <th>Flow rate (Q) [l/min]</th> <th>Pressure loss (dP) [bar]</th> </tr> </thead> <tbody> <tr><td>0</td><td>0.00</td></tr> <tr><td>5</td><td>0.12</td></tr> <tr><td>10</td><td>0.13</td></tr> <tr><td>20</td><td>0.15</td></tr> <tr><td>30</td><td>0.18</td></tr> <tr><td>40</td><td>0.22</td></tr> <tr><td>50</td><td>0.26</td></tr> <tr><td>60</td><td>0.30</td></tr> <tr><td>70</td><td>0.34</td></tr> <tr><td>80</td><td>0.39</td></tr> <tr><td>90</td><td>0.45</td></tr> <tr><td>100</td><td>0.52</td></tr> <tr><td>110</td><td>0.62</td></tr> </tbody> </table>		Flow rate (Q) [l/min]	Pressure loss (dP) [bar]	0	0.00	5	0.12	10	0.13	20	0.15	30	0.18	40	0.22	50	0.26	60	0.30	70	0.34	80	0.39	90	0.45	100	0.52	110	0.62
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Housing materials.....	brass chemically nickel-plated; aluminium anodised; PP																												
Materials (wetted parts).....	stainless steel (304S15); brass chemically nickel-plated; PP; O-ring: FPM (Viton)																												
Protection	IP 67 III																												
Switching cycles min.	10 million																												
Medium temperature [°C]	0...85																												
Operating temperature [°C]	0...60																												
Pressure resistance [bar].....	25																												

Further information at www.ifm.com