

→ Sensors

→ Sensors with display



OVAL GEAR FLOW METERS

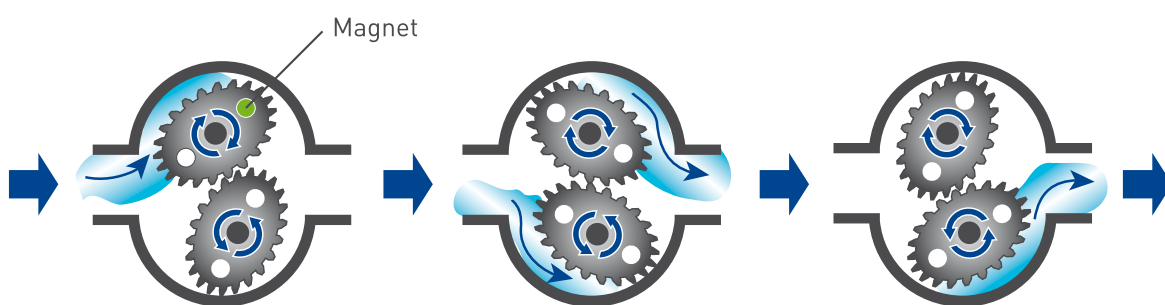




## Oval gear flow meters

### Principle of operation

Oval gear meters are displacement-type volume meters that transport defined incremental volumes in individual measuring chambers. The measuring element consists of two high precision toothed oval gears, which are driven by the flow of the medium and mesh with each other. In this way, a defined volume is transported for each rotation of the pair of oval gears. The number of rotations is a measure of the amount of fluid that has passed through the meter. The rotations are detected by a sensor element.



### **Advantages**

- Positive displacement meter for volumetric flow rate or total flow measurement
- Applicable for fluids such as lubrication oils, mineral oils, hydraulic oils, fuels, liquified gases and others
- No inlet or outlet section required
- High-quality construction for long service life and high reliability
- Long-term stability
- High measurement accuracy and repeatability
- Easy installation

# Oval gear flow meters

## Series V0, Sensor

**Threaded Version**



**Flanged Version**



### Characteristics

- Sensor with pulse output signal, no local display
- Flow rate or total flow indication by local or remote display
- Individual calibration
- Various versions of local displays are available: battery powered (lifetime approx. 3 years) or externally powered version with analogue and pulse output
- Female threaded or flanged process connection
- O-ring material FKM, EPDM or FEP

| Type                                  | V0015           | V006            | V01             | V02             | V05    | V010    | V050     | V0115    |
|---------------------------------------|-----------------|-----------------|-----------------|-----------------|--------|---------|----------|----------|
| <b>Measuring range [l/min]</b>        |                 |                 |                 |                 |        |         |          |          |
| → Oval gears st. steel (V0...VA)      | 0.03...1        | 0.2...5         | 0.4...10        | 1...30          | 2...50 | 4...100 | 15...300 | 35...660 |
| → Oval gears PEEK (V0...VP / AP)      | 0.03...1        | 0.2...7         | 0.4...14        | 1...30          | 2...60 | 3...120 |          |          |
| <b>Process connection</b>             |                 |                 |                 |                 |        |         |          |          |
| → Thread                              | G $\frac{1}{4}$ | G $\frac{1}{2}$ | G $\frac{1}{2}$ | G $\frac{3}{4}$ | G 1    | G 1     | G 2      | G 2      |
| → Flange (according to DIN EN 1092-1) |                 |                 |                 | DN 15           |        | DN 25   | DN 50    | DN 50    |
| <b>Nominal puls rate [1/l]</b>        | 3100            | 333             | 166             | 100             | 40     | 20      | 4        | 1.7      |

| Type  | V0...VA   | V0...VP**   | V0...AP**   |
|---|---|---|---|
| <b>Accuracy*</b>                                      | ±0.5 % of reading                                     |   |   |
| <b>Repeatability*</b>                                 | < 0.05 %  |   |   |
| <b>Pressure rating</b>                                | PN 40 (PN 25 with FEP O-ring)                         |   |   |
| <b>Temperature range</b>                              |   |   |   |
| <b>Standard</b>                                       | -10...70 °C   |   |   |
| <b>High temperature sensor</b>                        | -10...130 °C  |   |   |
| <b>Materials***</b>                                   |   |   |   |
| <b>Housing</b>  | Stainless steel                                       | Stainless steel                                       | Aluminium   |
| <b>Oval gears</b>                                     | Stainless steel                                       | PEEK  | PEEK  |
| <b>O-ring</b>   | FKM (standard)<br>or EPDM (option)<br>or FEP (option) | FKM (standard)<br>or EPDM (option)<br>or FEP (option) | FKM (standard)<br>or EPDM (option)<br>or FEP (option) |
| <b>Medium</b>   |   |   |   |
| <b>Allowable Viscosity</b>                            | 0.3...350 mPa s                                       |   | 0.3...50 mPa s  |
| <b>Max. particle size</b>                             | 25...100 µm   |   |   |
| <b>Electrical data</b>                                |   |   |   |
| <b>Supply voltage</b>                                 |   |   |   |
| → Standard  | 10...30 VDC   | 10...30 VDC   | 10...30 VDC   |
| → High temperature sensor                             | 18...30 VDC   |   |   |
| <b>Electrical connection (Sensor without display)</b> | M12 x 1 connector                                     |   |   |
| <b>Signal output</b>                                  |   |   |   |
| <b>Standard</b>                                       | NPN, PNP  |   | NPN, PNP  |
| <b>High temperature sensor</b>                        | PNP   |   |   |
| <b>Degree of protection EN 60529</b>                  | IP67  |   |   |

\* Test conditions:

→ Viscosity >3 mPa s

→ Media temperature 20 °C

\*\* Not available for V050 and V0115

\*\*\* Other material combinations on request

## Series V0, Display

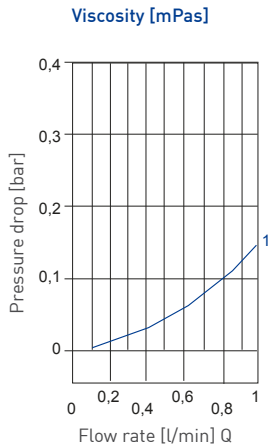


### General description – displays

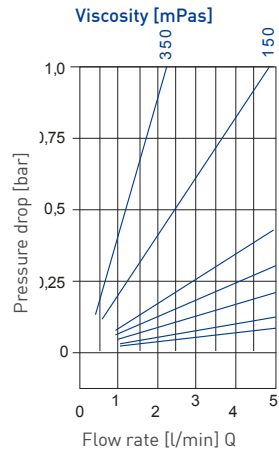
- Choice of three display models
- Actual flow rate indication
- Total flow indication, password protected counter
- Mass indication (temperature-dependent)
- Up to two V0 sensors can be connected; configurable for differential measurement (Display 2 and 3)
- Impulse output (Display 2 and 3)
- Optionally available for wall mounting with bracket (for media temperatures up to 70 °C)

| Type                                       | Display 1   | Display 2                          | Display 3  |
|--|-------------|------------------------------------|--|
| Display                                    | 8 digit     |                                    |  |
| <b>Electrical data</b>                     |             |                                    |  |
| Power supply                               | Battery     | Battery                            | 10...30 VDC  |
| Power consumption                          |             |                                    | 100 mA, 28 V   |
| Signal outputs                             |             | Pulse output<br>NPN open collector | Pulse output<br>NPN open collector<br>Analogue output 4...20 mA / 2-wire |
| Degree of protection EN 60529              | IP65        |                                    |  |
| Electrical connection                      |             | Terminal block / cable gland       |  |
| Cable length (remote type / wall mounting) |             | 2000 mm                            |  |
| <b>Temperature range</b>                   |             |                                    |  |
| Medium temperature                         | -10...70 °C |                                    |  |
| Ambient temperature                        | -20...70 °C |                                    |  |
| Storage temperature                        | 10...55 °C  |                                    |  |
| <b>Type</b>                                |             |                                    |  |
| Local (meter mounted)                      | ✓           | ✓                                  | ✓  |
| Remote (wall mounting)                     |             | ✓                                  | ✓  |

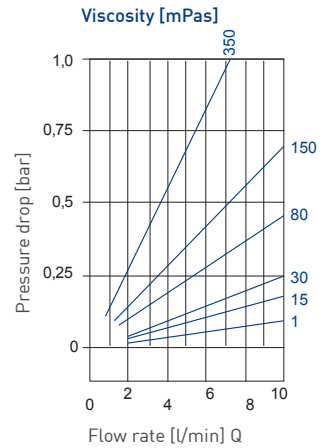
Typical pressure drop V0015



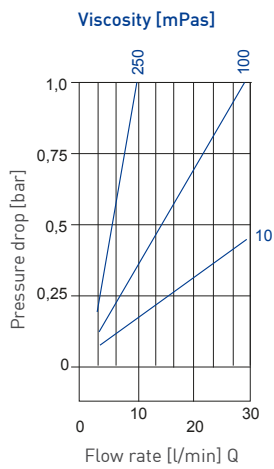
Typical pressure drop V006



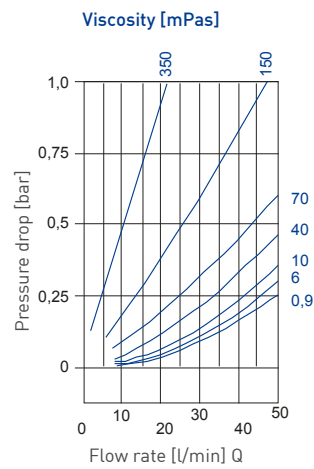
Typical pressure drop V01



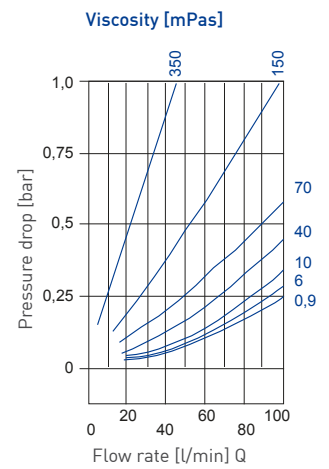
Typical pressure drop V02



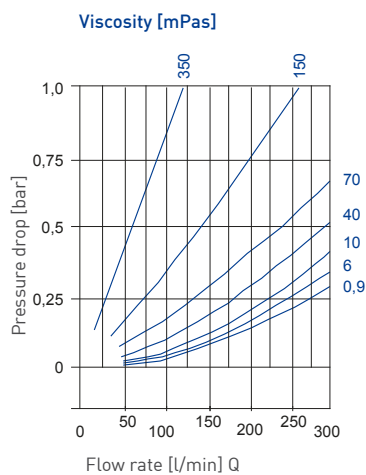
Typical pressure drop V05



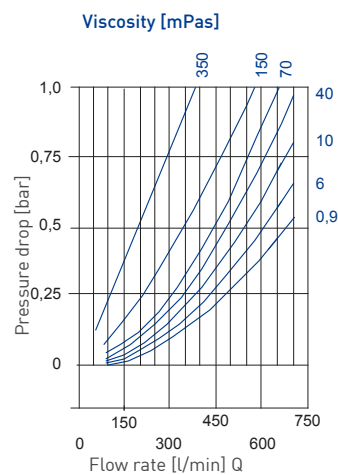
Typical pressure drop V010



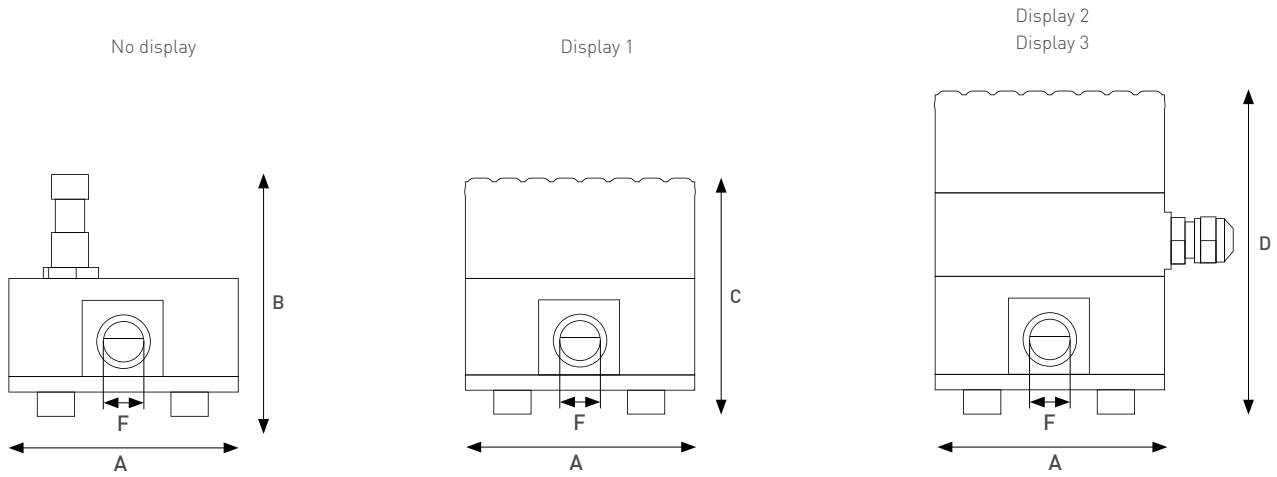
Typical pressure drop V050



Typical pressure drop V0115



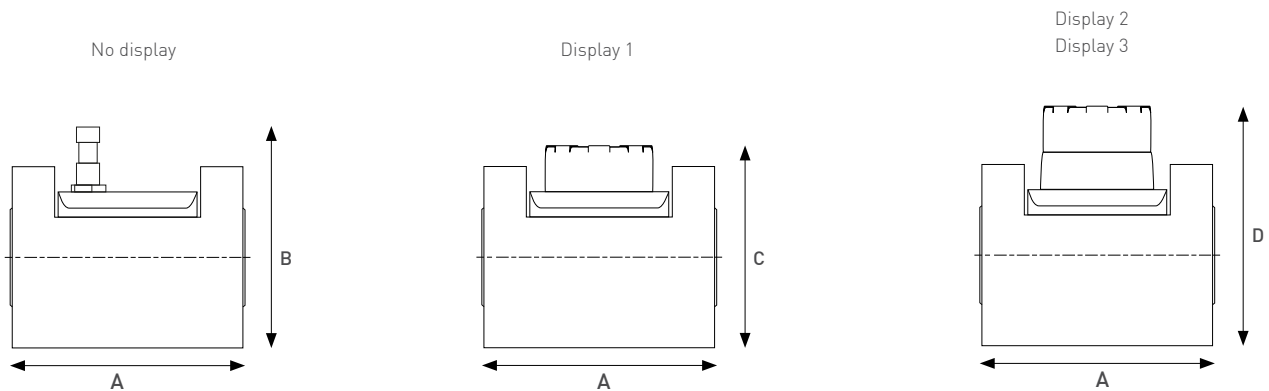
### Process connection threaded



| Size                            | V0015                         | V006                          | V01                           | V02                           | V05 | V010 | V050 | V0115 |
|---------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-----|------|------|-------|
| <b>A [mm]</b>                   | 78                            | 78                            | 78                            | 99                            | 112 | 112  | 220  | 260   |
| <b>C [mm]</b>                   | 70                            | 75                            | 85                            | 93                            | 98  | 125  | 187  | 245   |
| <b>B<sub>max</sub>*, D [mm]</b> | 96                            | 101                           | 111                           | 120                           | 125 | 152  | 213  | 271   |
| <b>Installation [mm]</b>        | 73                            | 73                            | 73                            | 90                            | 102 | 102  | 184  | 196   |
| <b>F / Process connection</b>   | G <sup>1</sup> / <sub>4</sub> | G <sup>1</sup> / <sub>2</sub> | G <sup>1</sup> / <sub>2</sub> | G <sup>3</sup> / <sub>4</sub> | G 1 | G 1  | G 2  | G 2   |

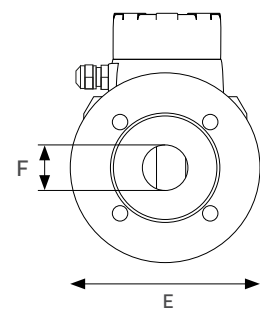
\* Depends on sensor

### Process connection flanged according to DIN EN 1092-1



| Size                            | V0 2  | V0 10 | V0 50 | V0 115 |
|---------------------------------|-------|-------|-------|--------|
| <b>A / Installation [mm]</b>    | 140   | 170   | 184   | 196    |
| <b>C [mm]</b>                   | 108   | 153   | 165   | 243    |
| <b>B<sub>max</sub>*, D [mm]</b> | 135   | 180   | 192   | 270    |
| <b>E [mm]</b>                   | 95    | 130   | 220   | 260    |
| <b>F / Process connection</b>   | DN 15 | DN 25 | DN 50 | DN 50  |

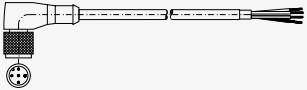

\* Depends on sensor





| Order code  |                           | Example → V0 | 01 | VA    | P | N | I1K |
|---|---------------------------|--------------|----|-------|---|---|-----|
| <b>Type</b>   |                           |              |    |       |   |   |     |
| Oval gear meters, series V0                           |                           | V0           |    |       |   |   |     |
| <b>Size</b>   | <b>Process connection</b> |              |    |       |   |   |     |
| 015   | G 1/4 female              | 01           |    |       |   |   | I1K |
| 06  | G 1/2 female              | 06           |    |       |   |   | I3K |
| 1   | G 1/2 female              | 1A           |    |       |   |   | I3K |
| 2   | G 3/4 female              | 2A           |    |       |   |   | I4K |
| 5   | G 1 female                | 5A           |    |       |   |   | I5K |
| 10  | G 1 female                | 10           |    |       |   |   | I5K |
| 50  | G 2 female                | 50           |    | [VA]* |   |   | I8K |
| 115   | G 2 female                | 11           |    | [VA]* |   |   | I8K |
| 2   | DN 15 flange              | 2A           |    |       |   |   | F3K |
| 10  | DN 25 flange              | 10           |    |       |   |   | F5K |
| 50  | DN 50 flange              | 50           |    | [VA]* |   |   | F8K |
| 115   | DN 50 flange              | 11           |    | [VA]* |   |   | F8K |
| <b>Materials</b>                                      |                           |              |    |       |   |   |     |
| <b>Body</b>   | <b>Oval gears</b>         |              |    |       |   |   |     |
| Stainless steel                                       | Stainless steel           |              |    | VA    |   |   |     |
| Stainless steel                                       | PEEK                      |              |    | VP    |   |   |     |
| Aluminium   | PEEK                      |              |    | AP    |   |   |     |
| <b>O-rings</b>  |                           |              |    |       |   |   |     |
| FKM (standard)  |                           |              |    |       | V |   |     |
| EPDM  |                           |              |    |       | E |   |     |
| FEP   |                           |              |    |       | P |   |     |
| <b>Sensor pulse output without display</b>            |                           |              |    |       |   |   |     |
| NPN   |                           |              |    |       |   | N |     |
| PNP   |                           |              |    |       |   | P |     |
| PNP (high temperature)                                |                           |              |    |       |   | H |     |
| <b>Sensor with display</b>                            |                           |              |    |       |   |   |     |
| <b>Display 1</b>                                      |                           |              |    |       |   |   |     |
| Battery powered, local display                        |                           |              |    |       |   | D |     |
| <b>Display 2</b>                                      |                           |              |    |       |   |   |     |
| Battery powered, local display and pulse output       |                           |              |    |       |   | C |     |
| Battery powered, remote display and pulse output      |                           |              |    |       |   | B |     |
| <b>Display 3</b>                                      |                           |              |    |       |   |   |     |
| Local Display, pulse and analogue output (4...20 mA)  |                           |              |    |       |   | T |     |
| Remote display, pulse and analogue output (4...20 mA) |                           |              |    |       |   | A |     |

\* Preset

| Accessories  | Length             | Order code                    |   |
|--|--------------------|-------------------------------|---|
| <b>Connection cable with 4-pin cable socket M12 x 1, angle type molded lead, sheathing material PUR, shielded, (T<sub>max</sub> = 80 °C) - UL-approval</b> | 3 m<br>5 m<br>10 m | XVT2053<br>XVT2009<br>XVT2070 |  |
| <b>4 pin cable socket M12x1 angle type, unassembled</b>  |                    | VT1331                        |  |
| <b>3.6 V lithium battery for Display 1 and Display 2</b>   |                    | VO1036                        |   |

**techniCAL**  
*eXpanding possibilities*

866-327-8731  
[www.techniCAL-sys.com](http://www.techniCAL-sys.com)

