Screw-Type Volumetric Flowmeter
for viscous media

- Measuring ranges:
  0.1-10...50-5000 l/min liquid
- Measuring accuracy:
  ± 0.1% of span 1 : 100
  ± 0.3% of span 1 : 150
- \( p_{\text{max}} \): 400 bar; \( t_{\text{max}} \): 200 °C
- Viscosity range: 1 ... \( 1 \times 10^8 \) mm²/s
- Connection: G ½ ... G 6 female, flange DN 15 ... DN 150
- Material: ductile iron or stainless steel
- Output: pulses
- Pulsation-free principle of measurement

Model: ADI-1...

Model: OMG...

KOBOLD companies worldwide:
AUSTRALIA, AUSTRIA, BELGIUM, BULGARIA, CANADA, CHINA, CZECHIA, EGYPT, FRANCE, GERMANY, GREAT BRITAIN, HUNGARY, INDIA, INDONESIA, ITALY, MALAYSIA, MEXICO, NETHERLANDS, PERU, POLAND, REPUBLIC OF KOREA, ROMANIA, RUSSIA, SPAIN, SWITZERLAND, THAILAND, TUNISIA, TURKEY, USA, VIETNAM
Description
The KOBOLD screw-type volumetric flowmeter based on the principle of positive displacement was developed in response to the need to measure and control viscous media. It was specially designed to measure viscous media with non-abrasive properties. Variations in viscosity in the range 1 to 5000 mm²/s have no effect on measurement results within the measuring accuracy.

The KOBOLD screw-type volumetric flowmeter satisfies the stringent demands for greater accuracy, reliability and economic efficiency. Two spindles with cycloidal profiles form the basis of the screw-type volumetric flowmeter.

Spindles manufactured with extreme precision are supported at each end with a ball bearing. The axially forced measuring medium causes the spindles to rotate uniformly.

The rotary motion is picked off with sensors and converted to a frequency signal. An exact measurement of the delivered flow volume is obtained with the volumetrically defined measuring chambers.

Combined with downstream evaluation electronics, the KOBOLD screw-type volumetric flowmeter becomes a flexible measurement and control system for viscous media.

Benefits
- Greater viscosity range (1 ... 1 x 10⁶ mm²/s)
- Greater measuring accuracy (max. 0.3% of span)
- Greater measuring span: (1:100 with 0.1% accuracy) (1:150 with 0.3% accuracy)
- Almost viscosity independent
- Greater flow rate combined with minimum space requirements
- High degree of operational reliability and long service life
- Pulsation-free principle of measurement
- Self-cleaning measuring chambers
- Choice of installation position

Areas of Application
- Furnaces
  EL heating oil, S heating oil, diesel oil
- Hydraulics, test stands
  Hydraulic oil, lubricating oil, gear oil
- Mixing and dosing systems
  Polyhydroxy alcohol, isocyanate
  Additives for gasoline, cement...
- Lacquers and fills, printing inks
- Chemical industry
  Acids and lyes, ethyl alcohol, freon
- Food industry
  Margarine, fats, liqueur, oils
Material
Housing: ductile iron EN-GJS-400
Spindles: steel nitrated
O-rings: FPM
Bearings: steel or hybrid ball bearing
Thread for sensors: M18x1
with O-ring in the case
Viscosity range: 1 - 5000 mm²/s
Flange: steel (material no. 1.7139)
Pole wheel: steel
Operating temperature: -20 ... +200 °C (Please note limitation due to pulse generator.)

Order Details (Example: OMG-15F1516/xx) xx = pulse generator see page 7

<table>
<thead>
<tr>
<th>Flow rate [l/min]</th>
<th>p_{max} [bar]</th>
<th>Pulses/L²</th>
<th>Frequency [Hz]</th>
<th>Order No.</th>
<th>G</th>
<th>Order No.</th>
<th>DN</th>
<th>p_{max} [bar]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 - 10</td>
<td>250</td>
<td>1216</td>
<td>2.0 - 203</td>
<td>OMG-15R15</td>
<td>½</td>
<td>OMG-15F15</td>
<td>15</td>
<td>16/40/64/100/160/250</td>
</tr>
<tr>
<td>0.3 - 30</td>
<td>250</td>
<td>640</td>
<td>3.2 - 320</td>
<td>OMG-20R20</td>
<td>¾</td>
<td>OMG-20F15</td>
<td>15</td>
<td>64/100/160/250</td>
</tr>
<tr>
<td>1 - 100</td>
<td>250</td>
<td>234</td>
<td>3.9 - 390</td>
<td>OMG-25R25</td>
<td>1</td>
<td>OMG-25F25</td>
<td>25</td>
<td>64/100/160/250</td>
</tr>
<tr>
<td>3.5 - 350</td>
<td>160</td>
<td>71</td>
<td>4.1 - 414</td>
<td>OMG-40R40</td>
<td>1½</td>
<td>OMG-40F40</td>
<td>40</td>
<td>16/40/64/100/160</td>
</tr>
<tr>
<td>7 - 700</td>
<td>100</td>
<td>39.8</td>
<td>4.6 - 464</td>
<td>OMG-50R50</td>
<td>2</td>
<td>OMG-50F50</td>
<td>50</td>
<td>16/40/100</td>
</tr>
<tr>
<td>20 - 2000</td>
<td>40</td>
<td>16.8</td>
<td>4.6 - 560</td>
<td>OMG-1HR1H</td>
<td>4</td>
<td>OMG-1HF1H</td>
<td>100</td>
<td>16/40</td>
</tr>
<tr>
<td>50 - 5000</td>
<td>40</td>
<td>8.85</td>
<td>7.4 - 738</td>
<td>OMG-1FR1F</td>
<td>6</td>
<td>OMG-1FF1F</td>
<td>150</td>
<td>16/40</td>
</tr>
</tbody>
</table>

1) Please note limitations due to pulse generator
2) Pulse generator 44 and 45 have higher Pulse/l and output frequency (for values see type plate and on request)
3) Please specify the desired nominal pressure when placing your order (e.g. F15/16 = flange DN 15 PN 16)

Accuracy Diagram
The measuring error refers to the actual flow rate. The diagram shows the characteristic for the OMG-...
screw-type volumetric flowmeter. A test certificate is available because every device delivered is different.

Pressure Loss Diagram

No responsibility taken for errors; subject to change without prior notice.
Stainless Steel Version

Model OMK

Material

Housing: standard: st. steel (material no. 1.4301)
option: st. steel (material no. 1.4401)
Spindles: PTFE
O-rings: FPM or silicone with FEP jacket
Bearings: sliding-contact bearings between spindle and case
Thread for sensors: M18 x 1
with O-ring in the case
Measuring accuracy: ± 0.3% of span 1 : 100
Viscosity range: 1 - 5000 mm²/s
Flange: st. steel (material no. 1.4301 or 1.4401)
Pole wheel: steel, chemically nickel-plated
Operating temperature: -20...+40°C or
(-20...+100°C on request)
(Please note limitation due to pulse generator)

Order Details (Example: OMK-15F1516/xx) xx = pulse generator see page 7

<table>
<thead>
<tr>
<th>Flow rate [l/min]</th>
<th>P_{max} [bar]</th>
<th>Pulses/l</th>
<th>Frequency [Hz]</th>
<th>Order no.</th>
<th>G</th>
<th>Order no.</th>
<th>DN</th>
<th>P_{max} [bar]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2 - 10</td>
<td>40</td>
<td>1200</td>
<td>4.0 - 200</td>
<td>OMK-15R15</td>
<td>½</td>
<td>OMK-15F15</td>
<td>15</td>
<td>16/40</td>
</tr>
<tr>
<td>0.6 - 30</td>
<td>40</td>
<td>640</td>
<td>6.4 - 320</td>
<td>OMK-20R20</td>
<td>¼</td>
<td>OMK-20F20</td>
<td>20</td>
<td>16/40</td>
</tr>
<tr>
<td>2 - 100</td>
<td>40</td>
<td>230</td>
<td>7.7 - 383</td>
<td>OMK-25R25</td>
<td>1</td>
<td>OMK-25F25</td>
<td>25</td>
<td>16/40</td>
</tr>
</tbody>
</table>

1) Please specify the desired nominal pressure when placing your order (e.g. F20/16 = flange DN 20 PN 16).

Accuracy Diagram

The measuring error refers to the actual flow rate. The diagram shows the characteristic for the OMK...
screw-type volumetric flowmeter.
A test certificate is available because every device delivered is different.

Pressure Loss Diagram

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High Pressure Version Model OMH

Material
Housing: ductile iron
Spindles: nitrated steel
O-rings: FPM
Bearings: deep-grooved ball bearings with metal retainers
Thread for sensors: M18 x 1 with O-ring in the case
Viscosity range: 1 ... 1 x 10⁶ mm²/s
Flange: steel (material no. 1.7139)
Operating temperature: -20 ... +200 °C (Please note limitation due to pulse generator.)

Order Details
(Example: OMH-15F1515/xx) xx = pulse generator see page 7

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 - 10</td>
<td>420</td>
<td>2432</td>
<td>4.1 - 405</td>
<td>OMH-15R15</td>
<td>½</td>
<td>OMH-15F15</td>
<td>15</td>
<td>400</td>
</tr>
<tr>
<td>0.3 - 30</td>
<td>420</td>
<td>1280</td>
<td>6.4 - 640</td>
<td>OMH-20R20</td>
<td>¾</td>
<td>OMH-20F15</td>
<td>15</td>
<td>400</td>
</tr>
<tr>
<td>1 - 100</td>
<td>420</td>
<td>468</td>
<td>7.4 - 780</td>
<td>OMH-25R25</td>
<td>1</td>
<td>OMH-25F25</td>
<td>25</td>
<td>400</td>
</tr>
<tr>
<td>3.5 - 350</td>
<td>420</td>
<td>142</td>
<td>8.3 - 828</td>
<td>OMH-40R40</td>
<td>1½</td>
<td>OMH-40F40</td>
<td>40</td>
<td>400</td>
</tr>
<tr>
<td>7 - 700</td>
<td>420</td>
<td>79,6</td>
<td>9.3 - 929</td>
<td>OMH-50R50</td>
<td>2</td>
<td>OMH-50F50</td>
<td>50</td>
<td>400</td>
</tr>
<tr>
<td>20 - 2000</td>
<td>250</td>
<td>33,6</td>
<td>11.2 - 1120</td>
<td>OMH-1HR1H</td>
<td>4</td>
<td>OMH-1HF1H</td>
<td>100</td>
<td>250</td>
</tr>
</tbody>
</table>

1) Please note limitations due to pulse generator.
2) Pulse generator 45 has higher Pulse/l and output frequency (for values see type plate and on request)
3) Please specify the desired nominal pressure when placing your order (e.g. F40/16 = flange DN 40 PN 16).

Accuracy Diagram
The measuring error refers to the actual flow rate.
The diagram shows the characteristic for the OMH-screw-type volumetric flowmeter.
A test certificate is available because every device delivered is different.

Pressure Loss Diagram

No responsibility taken for errors; subject to change without prior notice.
**Method of Operation**

The rotor of the screw-type volumetric flowmeter rotates at a precisely defined distance in front of the pulse generator. The pulse generator generates a pulse for every pole that moves past it.

The screw-type volumetric flowmeter is checked and delivered with a built-in dry sleeve. The transmitter insert for the pulse generator can be replaced online in a full line, without having to re-adjust the clearance to the rotor.

**Selection Table for Pulse Generators**

<table>
<thead>
<tr>
<th>Order No.</th>
<th>System</th>
<th>Voltage</th>
<th>$t_{\text{max}}$</th>
<th>$P_{\text{max}}$ face</th>
<th>Material dry sleeve</th>
<th>Electrical connection</th>
<th>Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMG.../43</td>
<td>inductive PNP</td>
<td>10...30 V DC</td>
<td>-20...+100 °C (-25...+90 °C)</td>
<td>250 bar</td>
<td>arcap/ceramics</td>
<td>right-angle plug with LED and 3 m cable</td>
<td>IP 65</td>
</tr>
<tr>
<td>OMG.../45</td>
<td>Hall-effect PNP</td>
<td>10...30 V DC</td>
<td>-40...+150 °C</td>
<td>420 bar</td>
<td>arcap</td>
<td>3 m PTFE cable</td>
<td>IP 67</td>
</tr>
<tr>
<td>OMG.../44</td>
<td>magnetic PNP</td>
<td>10...30 V DC</td>
<td>-40...+250 °C (0...+50 °C)</td>
<td>420 bar</td>
<td>arcap</td>
<td>cable box/1 m PTFE cable</td>
<td>IP 65</td>
</tr>
</tbody>
</table>

1) Connector
2) Transmitter

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No responsibility taken for errors; subject to change without prior notice.
## Dimensions

### OMG

<table>
<thead>
<tr>
<th>Model</th>
<th>DN [inch]</th>
<th>Pressure stage [bar]</th>
<th>L [mm]</th>
<th>D [mm]</th>
<th>L1 [mm]</th>
<th>TK [mm]</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMG 15</td>
<td>½</td>
<td>250</td>
<td>145</td>
<td>130</td>
<td>94</td>
<td>90</td>
<td>6.0</td>
</tr>
<tr>
<td>OMG 20</td>
<td>¾</td>
<td>250</td>
<td>195</td>
<td>130</td>
<td>145</td>
<td>90</td>
<td>8.1</td>
</tr>
<tr>
<td>OMG 25</td>
<td>1</td>
<td>250</td>
<td>275</td>
<td>150</td>
<td>215</td>
<td>105</td>
<td>19.0</td>
</tr>
<tr>
<td>OMG 40</td>
<td>1½</td>
<td>160</td>
<td>295</td>
<td>150</td>
<td>240</td>
<td>125</td>
<td>23.0</td>
</tr>
<tr>
<td>OMG 50</td>
<td>2</td>
<td>100</td>
<td>355</td>
<td>195</td>
<td>295</td>
<td>145</td>
<td>37.0</td>
</tr>
<tr>
<td>OMG 100</td>
<td>4</td>
<td>40</td>
<td>460</td>
<td>235</td>
<td>400</td>
<td>190</td>
<td>70.0</td>
</tr>
</tbody>
</table>

### OMH

<table>
<thead>
<tr>
<th>Model</th>
<th>DN [inch]</th>
<th>Pressure stage [bar]</th>
<th>L [mm]</th>
<th>D [mm]</th>
<th>L1 [mm]</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMH 15</td>
<td>½</td>
<td>400</td>
<td>150</td>
<td>145</td>
<td>94</td>
<td>7</td>
</tr>
<tr>
<td>OMH 20</td>
<td>¾</td>
<td>400</td>
<td>185</td>
<td>145</td>
<td>115</td>
<td>13</td>
</tr>
<tr>
<td>OMH 25</td>
<td>1</td>
<td>400</td>
<td>255</td>
<td>180</td>
<td>175</td>
<td>27</td>
</tr>
<tr>
<td>OMH 40</td>
<td>1½</td>
<td>400</td>
<td>320</td>
<td>220</td>
<td>240</td>
<td>57</td>
</tr>
<tr>
<td>OMH 50</td>
<td>2</td>
<td>400</td>
<td>385</td>
<td>235</td>
<td>295</td>
<td>76</td>
</tr>
<tr>
<td>OMH 100</td>
<td>2</td>
<td>250</td>
<td>500</td>
<td>300</td>
<td>400</td>
<td>155</td>
</tr>
</tbody>
</table>

### OMK

<table>
<thead>
<tr>
<th>Model</th>
<th>DN [inch]</th>
<th>Pressure stage [bar]</th>
<th>L [mm]</th>
<th>D [mm]</th>
<th>L1 [mm]</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMK 15</td>
<td>½</td>
<td>40</td>
<td>110</td>
<td>95</td>
<td>94</td>
<td>3.2</td>
</tr>
<tr>
<td>OMK 20</td>
<td>¾</td>
<td>40</td>
<td>115</td>
<td>145</td>
<td>105</td>
<td>4</td>
</tr>
<tr>
<td>OMK 25</td>
<td>1</td>
<td>40</td>
<td>160</td>
<td>180</td>
<td>115</td>
<td>10</td>
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