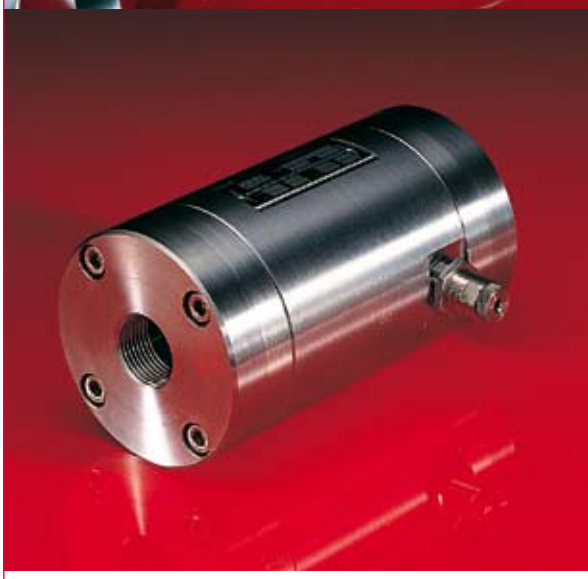
# KRAL Volumeter® - OMK Series.
# Chemical Resistant Flowmeters.

KRAL

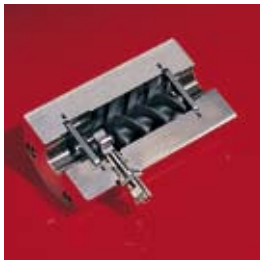


# OMK - Chemically Resistant

**OMK**
**Performance Impervious to Change.**

## Operating Conditions and Materials.

| | |
|---|---|
| ☐ Flow range: | 0,2 to 150 l/min. |
| ☐ Max. Pressure: | 40 bar. |
| ☐ Temperature range: | -20 to 100 °C. |
| ☐ Viscosity range: | 1 to 1 x $10^6$ $mm^2/s$. |
| ☐ Casing: | CrNi – steel. |
| ☐ Spindles: | PTFE with 15% graphite. |
| ☐ Bearings: | Slide bearing. |
| ☐ O-rings: | Viton® or Silicone with chemically resistant coating. |



**KRAL Volumeter®– Precision flow measurement for tough industrial use! Is that possible?**

For precision control or billing, flow measurement needs to be highly accurate. That is true even in difficult operating conditions such as mechanical vibrations or pulsating flow. As a solution to the chemical and process industries, the KRAL Volumeter OMK combines the otherwise mutually exclusive properties of measuring accuracy and sturdiness in one measuring instrument.

**What about material compatibility?**

In selecting a flowmeter there is always the question of material compatibility. Over time, liquid processes change composition due to improved fluids arriving on the market. Also environmental regulations force the change of process liquids.

KRAL uses extremely resistant materials in the KRAL Volumeter OMK. As a service to the customers, KRAL will contact liquid suppliers directly to ensure material compatibility. This means extra security in your decision making process.

**What happens if liquid properties change?**

Many other flowmeters are only suitable for a narrow range of operating parameters. This makes them ineffective in applications such as batching or additive injection. The KRAL Volumeter OMK is a positive-displacement flowmeter. Because of this principle they measure accurately in a wide range of viscosity, density and flow rate.

**The OMK guarantees careful handling of the liquid.**

Chemical fluids must be handled carefully in order to avoid changing their characteristics or those of the end products.

KRAL Volumeter are in-line flowmeters. Due to the spindle design, liquid is neither accelerated or compressed. Flow is gently divided as it moves through the meter.

**With temperature compensation, the OMK measures volume and mass flowrate.**

# The Solution.

As an in-line flowmeter, the OMK gently divides the liquid for careful handling of your products.

The spindles respond quickly and accurately to fast changes in flow velocity and direction, such as during pulsating flow conditions.

The PTFE spindles have low friction for measurement of non-lubricating liquids and increased chemical resistance for a wide range of compatible liquids.

OMK has a ball bearing-less design to handle aggressive and non-lubricating liquids.

High meter accuracy comes from our competence in spindle profiling.

The spindles continually separate the fluid into precise volumetric portions.

The robust casing easily withstands harsh environments.

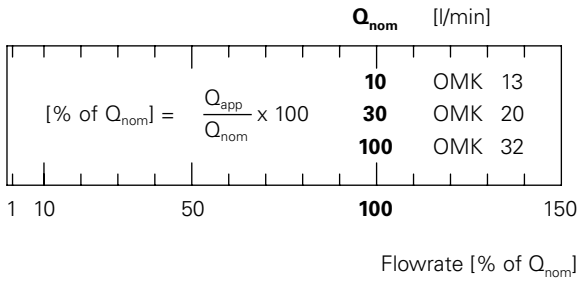
Several industry standard signals are available for easy processing.

## OMK selection of meter size.

Select the meter size from the first diagram. Using the second and third diagrams, verify that your selection will operate within the expected parameters of your application. If an adjustment is necessary, please select another meter size.

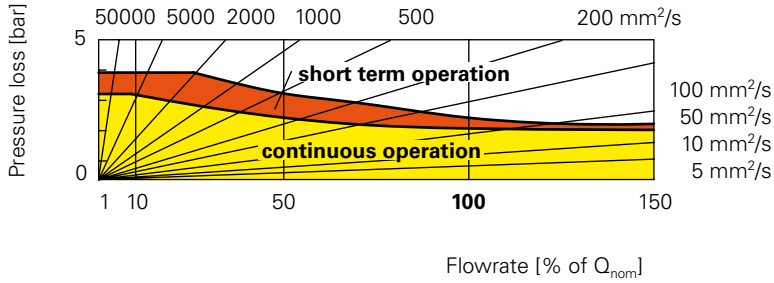
## Meter Size.

Start with the application flowrate, $Q_{app}$ [l/min]. Select a size from the table and calculate the flowrate [% of $Q_{nom}$]. This value is required for the following diagrams.




## Load Rating.

With the viscosity [mm²/s] and flowrate [% of $Q_{nom}$], you obtain service life and pressure loss. By selecting a larger unit, service life is increased and pressure loss is reduced.

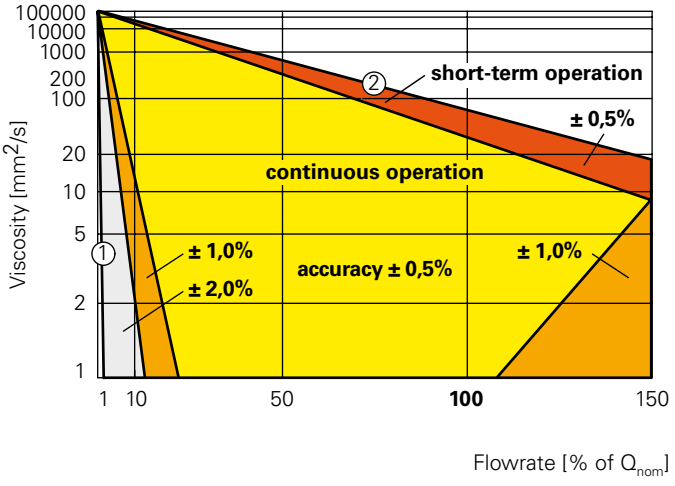



## Measuring Range.

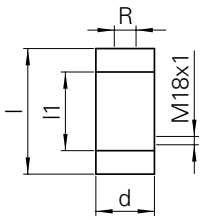
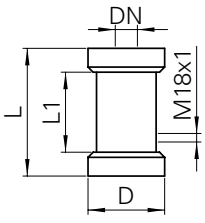
With the viscosity [mm²/s] and the flowrate [% of $Q_{nom}$], you obtain a visual impression of the rangebility of the unit selected. The yellow and orange areas mark the application range of the OMK. The red area can be utilized briefly or serve as load reserve.

① This is where accurate operation of the OMK starts.

② The OMK can be operated continuously up to this area.



| Technical data. | | OMK 13 | OMK 20 | OMK 32 |
|---|---|---|---|---|
| **Flow rate** | | | | |
| $Q_{max}$ | l/min | 15 | 45 | 150 |
| **$Q_{nom}$** | **l/min** | **10** | **30** | **100** |
| $Q_{min}$ | l/min | 0,2 | 0,6 | 2 |
| **Max. discharge pressure** $p_{max}$ | bar | 40 | 40 | 40 |
| **Temperature** $t_{min}...t_{max}$ | °C | - 20 to + 40 or +20 to +100 | - 20 to + 40 or +20 to +100 | - 20 to + 40 or +20 to +100 |
| **Viscosity** $\nu_{min}...\nu_{max}$ | mm²/s | 1 to 1x10⁶ | 1 to 1x10⁶ | 1 to 1x10⁶ |
| **K-faktor** K | Imp/l | 1200 | 640 | 230 |
| **Frequency** f at $Q_{nom}$ | Hz | 200 | 320 | 383 |

| Dimensions / weights. | | OMK 13 | OMK 20 | OMK 32 |
|---|---|---|---|---|
|  | | | | |
| **R** **inch** | | **1/2“** | **3/4“** | **1“** |
| **p** | bar | 40 | 40 | 40 |
| **l** | mm | 110 | 125 | 180 |
| **d** | mm | 59 | 69 | 104 |
| **l1** | mm | 69 | 75 | 112 |
| **m** | kg | 2,0 | 3,0 | 11 |
|  | | | | |
| **DN** **mm** | | **15** | **20** | **25** |
| **PN** | bar | 40 | 40 | 40 |
| **L** | mm | 110 | 115 | 160 |
| **D** | mm | 95 | 105 | 115 |
| **L1** | mm | 69 | 75 | 112 |
| **m** | kg | 3,2 | 4,0 | 10 |

## KRAL Electronic.

**Sensor Selection.**

You have the choice between a PNP sensor for standard applications and an Ⓔx-sensor for use in explosive areas.

**Industry Standard Signals.**

The BEG 46D sensor supplies a PNP square wave signal, the Ⓔx-sensor BEG 47D a Namur signal. These can be processed by standard industrial interfaces.

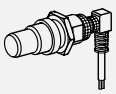
**Flow Management.**

The BEM 300 and BEM 500 electronic units are especially matched to the KRAL Volumeter program. As with the flowmeters, the electronic units are also precise, robust and fail-safe.

**The ideal compliment for the OMK.**


As a flowmeter manufacturer, KRAL has designed many systems using the combination of our KRAL Volumeter and the BEM 300 and BEM 500 for

- ☐ High measurement accuracy.
- ☐ Simple operation.
- ☐ 2-channels, i.e for differential measurement.
- ☐ Numerous setup options.

| **Sensors.** | | **BEG 46D** | **BEG 47D** |
|---|---|---|---|
| **Design**<br>M18x1 | |  |  Ⓔx |
| **Signal** | | PNP square wave<br>Inductive | Namur sine wave<br>Inductive |
| **Material** | | 1.4401/ceramic | 1.4401/ceramic |
| **Pressure**<br>$p_{max}$ | bar | 40 | 40 |
| **Temperature**<br>$t_{min} \ldots t_{max}$ | °C | -20 to +100 | -25 to +100 |

## Success with the KRAL Volumeter® OMK.

**OMK - Application Examples .**

### Batching.

Batching process begins or ends at 0. Up to the maximum batching rate, the flow follows a ramp. That's why the flowmeters must be high accuracy and measure starting from 0.

In a batching application, the OMK's spindles will follow every movement of the liquid. Due to the precision machining of the spindles and meter casing, the OMK allows virtually no liquid slippage regardless of flowrate. This ensures no loss in accuracy or function during the entire batch phase.

### Additive Mixture in Fuels.

Liquid: Gasoline additives from different manufacturers .
Flow: 0,5 to 16 l/min.
Pressure: 2 to 16 bar.
Temperature: -20 to 40 °C.
Viscosity: 1 to 40 mm²/s.
Measuring instrument: OMK 20 Ex.

When filling tanker trucks, additives are added to the fuel. The high price of additives requires that the addition must be accurate. Also additive compositions change frequently, so the material of the flowmeter must be compatible with many substances. When measuring several additives with one flowmeter, a small unit volume minimizes inadvertent mixing of dissimilar products.

For years, the OMK has been reliably used in many oil depots for measuring fuel additives.

### Volume Check in the Manufacture of Beer Vats.

Liquid: Water.
Flow: 0,6 to 45 l/min.
Pressure: 6 bar.
Temperature: 10 to 30 °C.
Viscosity: 1 mm²/s.
Measuring instrument: OMK 20.

The sale of beer is a regulated transaction. The volume of beer vats must therefore be checked during construction. Testing systems are available for this purpose. Government authorities must approve such testing systems. In order to protect the consumer, the authorities place high demands on the long-term stability of the vats over a large range of conditions. Volumetric testing of the beer vats is carried out by filling them with water. The OMK is approved by the authorities for measuring this precise water volume.

**Quality Assurance.**

### Traceable Calibrations.

Each KRAL Volumeter is tested and calibrated on our company-owned test bed. Depending on customer requirements, we perform either a factory calibration or a calibration in compliance to ÖKD (Austrian Calibration Service). The factory calibration is KRAL Standard. Special customer demands are possible, for example, by adding further measurement points. ÖKD calibrated Volumeters are delivered to ISO IEC EN 17025 standards. The measured values are traceable to national standards. The measurement uncertainty of national standard to test unit is specified. Our certified QA-system, in accordance with EN ISO 9001:2000, guarantees the highest quality and delivery reliability.

KRAL

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