High measuring precision
Together with the housing the screws form the exact measuring chamber. This means that the high measuring precision of ±0.1% is achieved even at a very low flow rate.

No flow conditioning.
Flow conditioning is not required before or after the flowmeter. Pipe bends and tees do not have any influence on the measuring precision.

Return flow detection.
Consisting of flow sensor, flow direction sensor and direction of rotation recognition in the BEM 500. Return flows are recognized with the KRAL evaluation electronics and are taken into consideration for the measured value generation. The measured values are also correct in the case of flow pulsations.

KRAL BEM 500

KRAL Flowmeters for Test Stands.
High-precision measurement of liquids.
Flow Measurement

Technical Data.
Components for the flow measurement in test stands.

Technical data.
Components for the flow measurement in test stands.

Flow Measurement Technology for Test Stands.
KRAL flowmeters have a wide measuring range and measure bi-directional.

- High measurement precision and wide measuring range.
- Precise real-time measurement in both flow directions.
- Cost reduction when measuring in combination with a scale.
- Cost reduction when measuring in combination with a scale.

**Technical data.**
Components for the flow measurement in test stands.

**FlowMeasuring Technology for TestStands.**
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**Technical data.**
Components for the flow measurement in test stands.

**Application Examples.**
KRAL applications.

**Hydraulic test stands.**
Medium: Hydraulic oil.
Flow rate: 7 to 700 l/min.
Pressure: 400 to 750 bar.
Temperature: 20 to 90 °C.
Viscosity: 10 to 30 mm²/s.
KRAL flowmeters: Flow OMG-68.

- Piston pumps and piston motors were tested for their function and load-bearing capacity on hydraulic test stands. The automatically controlled test runs simulate the load points for a long period of time. The test stand control system aborts the test cycle due to an error, measurement is restarted from the beginning.
- High fuel consumption can occur at pressure peaks and therefore return flows in the piping. If the flow detection is not taken into account, large measuring errors can result.

- KRAL flowmeters measure precisely in both directions. Return flows are recognized and the measured value is corrected by the KRAL evaluation electronics.
- Measuring precision of ±0.1% of the measured value is maintained.

**Viscosity: 1 to 200 mm²/s.**
**Temperature: 30 °C.**
**Pressure: 30 bar.**
**Flow rate: 30 to 400 l/min.**
**Medium: Gear oil.**

- Gear oil test stands.

**Test stands for the aerospace and space industry.**
Medium: Aviation fuel.
Flow rate: 3.5 to 525 l/min.
Pressure: 5 bar.
Viscosity: 0.2 to 2 mm²/s.
KRAL flowmeters: OMK, OMG.

- Piston pumps and piston motors were tested for their function and load-bearing capacity on hydraulic test stands. The automatically controlled test runs simulate the load points for a long period of time. The test stand control system aborts the test cycle due to an error, measurement is restarted from the beginning.
- High fuel consumption can occur at pressure peaks and therefore return flows in the piping. If the flow detection is not taken into account, large measuring errors can result.

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**Viscosity: 1 to 200 mm²/s.**
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**Pressure: 30 bar.**
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- Gear oil test stands.
High measuring precision
Together with the housing the screws form the exact measuring chamber. This means that the high measuring precision of ±0.1% is achieved even at a very low flow rate.

No flow conditioning.
Flow conditioning is not required before or after the flowmeter. Pipe bends and tees do not have any influence on the measuring precision.

Return flow detection.
Consisting of flow sensor, flow direction sensor and direction of rotation recognition in the BEM 500. Return flows are recognized with the KRAL evaluation electronics and are taken into consideration for the measured-value generation. The measured-values are also correct in the case of flow pulsations.
Flow Measurement Technology for Test Stands. KRAL flowmeters have a wide measuring range and measure bi-directional.

Technical Data. Components for the flow measurement in test stands.

Typical operating parameters for KRAL test stand flow measuring systems.

- **Test liquids:** Hydraulic oil, gasoline, diesel fuel, ethanol, water/glycerol and many more
  - **Flow range:** 1:10 to 7000 l/min
  - **Temperature range:** -40 °C to 200 °C
  - **Measuring range:** ±0.1%
  - **Pressure:** 0 to 630 bar
  - **Resolution:** ±0.1 ml/pulse
  - **Vibrations:** 10 g up to 50 kHz
  - **Pulsations:** 1:1

Cost reduction when measuring in combination with a scale.

Precise real-time measurement in both flow directions.

Injection of hydraulic pumps can cause pressure peaks and therefore return flows in the piping. If the flow direction is not taken into account, large measuring errors can result.

KRAL flowmeters ensure precise in both directions. Return flows are recognised, and the measured value is corrected by the KRAL evaluation electronics.

Measuring precision of ±0.1% of the measured value is maintained.

Application Examples. KRAL applications.

**Hydraulic test stands.**
- **Medium:** Hydraulic oil
- **Flow rate:** 7 to 700 l/min
- **Pressure:** 420 bar
- **Temperature:** 20 to 80 °C
- **Viscosity:** 10 to 30 mm²/s

Piston pumps and piston motors were tested for their function and load-bearing capacity on hydraulic test stands. The automatically controlled test runs simulate the entire performance curve of the test specimens over very short times. In addition, different sizes are measured on the same test stand. This requires a wide measuring range.

KRAL flowmeters have a high-precision measuring range in extreme pressure pulsations. They measure with a precision of ±0.1%.

**Technical data.**

ISO 9001:2008 guarantees maximum quality and on time delivery. Every KRAL flowmeter is tested and calibrated on our in-house test stand.

ISO/IEC 17025 is carried out. The factory calibration is KRAL standard. Special customer requirements, such as the inclusion of further measurement and/or functional points are possible. The accredited calibration is carried out to ISO/IEC 17025 and realised in accordance with the national standard to the test specimen is specified.

Flows can be measured and returned in accordance with the national standard or an accredited calibration. The measuring points are possible. The accredited calibration is carried out to ISO/IEC 17025 and realised in accordance with the national standard to the test specimen is specified.

Components for the flow measurement in test stands. KRAL flowmeters have a wide measuring range and measure bi-directional.
Flow Measurement Technology for Test Stands. KRAL flowmeters have a wide measuring range and measure bi-directional.

Technical Data. Components for the flow measurement in test stands.

Application Examples. KRAL applications.

KRAL flowmeters are very high in production test stands. Precise real-time measurement is measured at every load point for a long period of time. The test stand control system adopts the test cycle due to an error, measurement is restarted from the beginning.

KRAL flowmeters of the OMG series are extremely high in the automotive brake in order to ensure the functional capability.

Cost reduction when measuring in combination with a scale.

Injection of hydraulic pumps can cause pressure peaks and therefore return flows in the piping. If the flow detection is not taken into account, large measuring errors can result.

KRAL flowmeters measure precisely in both directions. Return flows are recognized, and the measured value is connected to the KRAL evaluation electronics.

Flow rate: 7 to 700 l/min. Pressure: 420 bar. Temperature: 20 to 90 °C. Medium: Hydraulic oil. viscosities: 0.9 to 2.0 mm²/s.

The low viscosity, the high pressure load, low flow pulsation and the high measurement precision are not taken into account, other values and the high measuring stability are not have any influence.

The installation of KRAL flowmeters guarantees in every gear test stand.

Our OMH 68 units are integrated in our test stands. The automatically measuring precision across a measuring range of 1:1.

The requirements placed on the measuring precision of flowmeters are very high in the case of development and production test stands. Precise measurement has to be ensured even at the lowest flow quantities because the entire performance curve of the test specimen is tested.

In addition, different series are to be measured on the same measuring system. This requires a wide measuring range.

Flowmeters: OME, OMG. Temperature: 0 to 70 °C. Pressure: 5 bar. Viscosity: 0.2 to 200 mm²/s. Flow range: 3.5 to 525 l/min.

KRAL flowmeters are very high in the automotive brake in order to ensure the functional capability.

KRAL, flowmeters of the OME series are extremely high in the automotive brake in order to ensure the functional capability.

Cost reduction when measuring in combination with a scale.

Injection of hydraulic pumps can cause pressure peaks and therefore return flows in the piping. If the flow detection is not taken into account, large measuring errors can result.

KRAL flowmeters measure precisely in both directions. Return flows are recognized, and the measured value is connected to the KRAL evaluation electronics.

Measuring precision of a 0.1 % of the measured value is maintained.

Technical data. Components for the flow measurement in test stands.

Application Examples. KRAL applications.

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Technical data. Components for the flow measurement in test stands.

Application Examples. KRAL applications.
High measuring precision
Together with the housing the screws form the exact measuring chamber. This means that the high measuring precision of ±0.1% is achieved even at a very low flow rate.

No flow conditioning.
Flow conditioning is not necessary neither before nor after the flowmeter. Holes and bends do not have any influence on the measuring precision.

Return flow detection.
Consisting of flow sensor, flow direction sensor and direction of rotation recognition in the BEM 500. Return flows are recognized with the KRAL evaluation electronics and are taken into consideration for the measured-value generation. The measured values are also correct in the case of flow pulsations.