Calibration – Flow meters for liquids and gases

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Flow rate calibration

Calibration of flow meters

Due to the requirements of a constant product quality, safety, process optimization and environmental protection, industrial flow rate measurement is becoming increasingly important. Because of the wide range of flow rate devices, measuring principles and fluids, a standard measuring technique is rarely suitable. Consequently, an individual solution is also required for the calibration.

In our calibration laboratory for flow meters we conduct calibrations of devices – independent of manufacturer and fluids. As one of the leading calibration service provider in Europe, we have specialized in high-precision and customized calibrations.

Our expertise – our promise of quality

Our flow calibration team has several years of experience. The combination of unique know-how and the most modern measurement techniques ensure reliable results and smooth processing of your flow rate calibrations.

Christian Knapp, Business Unit Manager for flow rate: „With almost 25 years of experience in the field of flow rate calibration, I am particular pleased to establish the laboratory in Munich/Dachau as a competence center with Testo Industrial Services. With the enlargement of our laboratories, the extension of the accreditations as well as the expansion of the increasing number of employees, we have become your single-sourcing-provider for flow meters“.
Flow rate calibration

Large measuring range with minimal measurement uncertainties

Our laboratory in Dachau near Munich has more than 950 m², so we have ideal conditions for the calibration of your flow meter – regardless of the manufacturer. The DAkkS calibration procedures are accredited according to DIN EN ISO 17025. This means that your measuring devices are being calibrated with the highest accuracy. The versatility of the test equipment requires a wide spectrum of measuring equipment and calibrators. In order to meet the complex range of flow meter devices, we have six customized test benches. This enables a quick calibration of various flow rates and fluids.

Measuring ranges of the calibrations

- Flow meter for liquids: < 0.8 ml/min up to 1,200 l/min*
- Flow meter for gases: from approx. 1 ml/min up to 15,000 l/min

Calibrators and measuring uncertainties of the calibration procedure

- Four test benches for liquids with different viscosity and a measuring uncertainty ≤ 0.05 % of the actual rate
- Two test benches for different kind of gases with a measuring uncertainty ≤ 0.22 % of the actual rate

Applying the liquid calibrations for flow meters we do not calculate the viscosity of the fluid, but we generate the viscosity of a liquid (up to 1,600 mm²/s) according to your requirements. Therefore the calibration can also be conducted with for example alcohol or various oils as well as water.
Flow rate calibrators and calibration ranges at a glance

Piston calibrator < 0.8 ml/min – 40 l/min

Piston calibrator 10 ml/min – 200 l/min

Piston calibrators (2x) 20 ml/min – 1,200 l/min

The liquid calibrator for small flow rates is characterized by its unique piston construction, which ensures a minimal friction loss during the calibration. This enables measurements of smallest flow rates.

The measuring range of the middle calibrator includes flow rates of 10 ml/min up to approximately 200 l/min.

Two identical test benches enable the permanent calibration of various liquids (viscosity up to approximately 1,600 mm²/s).

The regulation takes place by a numerous number of valves. By this a very large measuring range can be achieved.

All four liquid calibrators are based on the volumetric measurement procedure with density measurement for mass conversion. The actual fluid pressure can be varied between 1 to 12 bar and at a standard temperature of approximately 22 °C.

Piston calibrator KKF 80
< 0.8 ml/min – 40 l/min

Piston calibrator KKF 150
10 ml/min – 200 l/min

Piston calibrators KKF 200
20 ml/min – 1,200 l/min

Individual calibration of your flow meter

We can calibrate your flow meter (for liquids) with different fluids. Thereby we generate the viscosity according to your specifications.
Gas calibrators and calibration ranges at a glance

Test bench laminar flow element (LFE) 1 ml/min – 1,000 l/min
Test bench critical nozzles 8 l/min – 15,000 l/min

<table>
<thead>
<tr>
<th>Test bench laminar flow LFG 1 ml/min – 1,000 l/min (standard range)</th>
<th>Test bench critical venturis KDG 8 l/min – 15,000 l/min (standard range)</th>
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<tr>
<td>The test bench enables the calibration of flow meters for air and inert gases. The capillaries inside the individual elements provide a laminar flow of an otherwise turbulent flow rate.</td>
<td>A total of ten pneumatic actuated critical venturis are installed in the test bench for gas flow meters. Thereby the calibration of very small up to very large flow rates at a pressure of up to 12 bar is possible.</td>
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Further test benches are already in the planning phase

Our current calibration portfolio is constantly being expanded.

Please contact Sales International for further information about the current planning.
Various possibilities of the flow rate calibration

Volume flow rate

- Magnetic-inductive flow meter
- Variable area meter
- Turbine flow meter
- Vane flow meter
- Ultra sonic flow meter
  etc.

Effective pressure

- Orifice flowmeter
- Dynamic pressure probe
- Venturi
  etc.

Mass flow rate

- Coriolis mass flow meter
- Thermal mass flow meter
- Vortex flow meter
  etc.

Positive displacement flow meters

- Gear meter
- Piston flow meter
- Bellow-type gasmeter
- Helical flow meter
- Swash plate
- Oval gear meter
  etc.

Calibration ranges:

- Visual inspection
- Cleaning (if required)
- Technical inspection of the device functions
- Calibration certificates with set and actual values as well as measuring uncertainties
- Calibration label

Optional services:

- Programming
- Linearisation
- Scaling
- Adjustment
- Repair
Your advantages:

Independent manufacturer calibrations with short cycle times

✓ The spectrum of test benches enables very wide measuring ranges for your calibrations

✓ With a short cycle time you receive your measuring devices back quickly for operation. On request express service of 48 hours is also possible

✓ Our vendor independence guarantees the necessary objectivity and a single-sourcing-strategy

More safety by highly accurate results

✓ You receive highly accurate calibration results: Testo Industrial Services is a conformity assessment body accredited by DAkkS according to DIN EN ISO / IEC 17025: 2005. The accreditation is valid as listed in the Accreditation Certificate D-K-15070-01-08.

✓ On request, the certificates include a declaration of conformity

PRIMAS

✓ The web-based test equipment management system PRIMAS enables you access to your calibration certificates at any time.