

# DATASHEET APPLICATION NOTE A092-GP99 - CALIBRATION SETUP FOR MASS FLOW DEVICES

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## APPLICATION NOTE

### Onsite calibration setup for flow meters

How do you know for sure that the gas flow that you measure or set is the right one? The answer is quite simple: make sure that the flow instrument you are using to measure the gas flow gives the real value. Therefore, calibration (and adjusting) of the flow meter once a while is necessary.

#### What is calibration?

Calibration is comparing the measurement value of a device under test - DUT - with a known (reference) quantity. Results of a calibration are stored in a calibration certificate.

In this case, Bronkhorst has developed a **mobile calibration setup** for a customer in the chemical industry who uses a lot of mass flow meters and flow controllers. This customer was interested in **onsite calibration equipment** for his flow meters, because it would reduce the downtime of his installation and he would be more flexible in choosing the moment for this performance check.



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#### Application requirements

In order to calibrate mass flow meters **onsite**, the customer requested **mobile calibration setup** with a set of calibrated flow devices to use as a reference. In this setup the customer preferred an open, mechanical and compact design without any electronic control or power adapters.

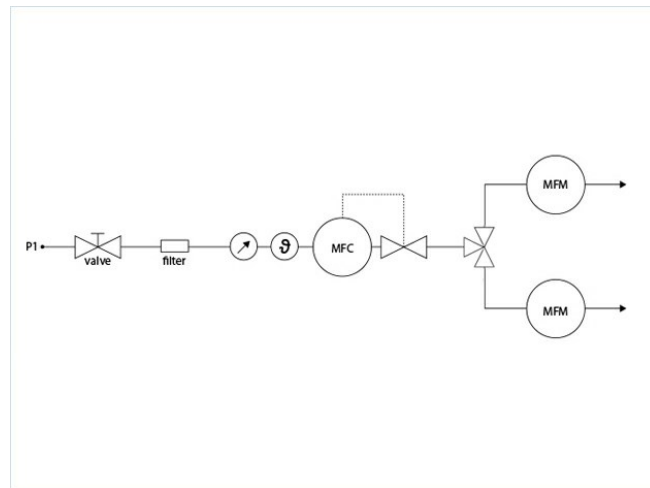
#### Important topics

- Accurate calibration of large series
  - Fast, time-saving calibration
  - Mobile calibration onsite
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## Process solution

At the gas inlet, a shut-off valve and a filter are used to prevent dust or other particles from passing. Next is a pressure meter to set and read out the correct pressure. Then we have a thermometer followed by the mass flow **device under test -DUT-**, which can be a mass flow meter or flow controller. Finally, the setup consists of **two reference mass flow meters in parallel**. In this case one for small gas flows up to 20 l<sub>n</sub>/min of air ([EL-FLOW Prestige](#) or [EL-FLOW Select](#) series) and one for large gas flows up to 1200 l<sub>n</sub>/min of air ([EL-FLOW Select](#) series), that have been calibrated to national standards.

In this setup you test whether the mass flow device is suitable and good enough in terms of **accuracy** and **function**. When the deviation between the test device (DUT) and the reference device is within the permissible tolerance, no further action is required. When the deviation is outside the permissible tolerance, it is recommended that you send the flow meter to Bronkhorst in order to have the deviation corrected.



Flow scheme

## Onsite calibration setup

In addition to companies that use many flow meters, a similar **onsite calibration setup** can be of interest for (governmental) institutes and companies in many different industries, that need to be sure to have highly accurate flow meters at all times. If the calibration intervals are to be short or for companies that have to carry out many projects under time pressure, a onsite calibration setup can be a good solution. Bronkhorst can offer you an onsite calibration service or a onsite calibration setup which will be tailored to your needs.

## Portable calibrators

Another possibility for onsite use is the [Fluical portable calibrator](#). In this case, you can leave the flow instruments which need calibration in the installation. With the portable calibrator you can check the flow & pressure instruments.

Many customers use calibration setups for calibration only. However, adjustment is also possible using our [FLUICAL software](#). FLUICAL® is developed by Bronkhorst for use by our customers.



Portable calibrator

## Calibration training

More and more users of Bronkhorst instruments are trained at our training centre, or even onsite, to perform their own calibration and adjustment activities.

## Calibration services at Bronkhorst

Need help for calibration of your devices? To guarantee the performance of your flow meters, we recommend to send the devices to Bronkhorst on a yearly base for calibration and adjustment. We have service offices available around the globe.

In our calibration centre in the Netherlands, we are capable of calibrating and adjusting Bronkhorst flow devices and also third party instruments within our scope. Besides that, we can also offer **ISO 17025** calibrations.

## Recommended Products



**EL-FLOW PRESTIGE FG-111B**

Min. flow 0,14...7 mln/min  
Max. flow 0,4...20 l/min  
Pressure rating 100 bar  
100 selectable gases  
Customized I/O configurations



**EL-FLOW SELECT F-111AC**

Min. flow 0,4...20 l/min  
Max. flow 0,6...100 l/min  
Pressure rating 100 bar  
Compact design  
High accuracy



**EL-FLOW SELECT F-113AC**

Min. flow 4...200 l/min  
Max. flow 8...1670 l/min  
Pressure rating 100 bar  
Compact design  
High accuracy

## Would you like to learn more about flow technology?

Stay up to date with the latest developments in flow technology with our newsletter.



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