

SMED, SMID, SPMF, SMRD MEASURING FLANGE

CLEANING & CONTROL MEASUREMENT

This instruction includes the measuring flange cleaning procedure and general guidelines on control measurement, including recommendations on methods and equipment.

CLEANING INTERVAL AND FUNCTION CONTROL

Inspection once a year is recommended.

EQUIPMENT

- A large syringe (type 60 ml Omnix B. Braun) is prepared to push air through the measuring tube in the measuring flange:
First, mount a silicone hose 3-5 (inner 3 mm/outer 5 mm) over the syringe spout, then a flexible silicone hose 5-8 (length approx. 30 cm). The flexible hose is used to connect the syringe to the measuring flanges measuring nipple.
Note: Air must not be pushed through the sensor connections on the regulator. This can damage the sensor.
- A measurement socket
- A calibrated instrument for control measurement.
- A user panel to connect to the controller or LINDINSPECT® for accessing the measured values/set values.

PROCEDURE 1-6

1. Clean the connections for control measurement

For each measuring nipple on the measuring flange: Connect the syringe in the unfolded position. Press and pull the syringe firmly 2 to 3 times to simultaneously blow clean the measuring tube and the hose to the measuring nipple.

2. Control Measurement 1 (external instrument-based)

Connect your instrument to the cleaned connection and measure the air flow. Compare the measured airflow to the airflow indicated by the connected controller. Note any deviations. Make sure that the caps on the measuring nipples are back in place after measuring.

3. Clean the connections to the controller (sensor)

For the connections (+ and –) on the controller (sensor): Disconnect the hose, then mount the loose measuring socket temporarily onto the hose. Connect the syringe tightly to the nipple. Press and pull the syringe firmly 2 to 3 times to simultaneously blow clean the measuring tube in the measuring flange and the hose to the connected measuring nipple. Connect the hose to the controller (sensor) again before disconnecting the next hose for cleaning (to avoid mix-ups). Note: With older regulators/sensors, care is required when disconnecting and reconnecting the hose to the controller (sensor) so that the protruding measuring tube from the sensor does not come loose from the sensor when the hose, which is often tight, is disconnected.



Air Syringe with Accessories.

Air Syringe with Accessories

- 1 syringe (60+ ml)
- 1 silicone tube 5-8 (30 cm)
- 1 silicone tube 3-5 (1 cm)
- 1 measurement socket

4. Check that hoses are correctly reconnected

Check that the hoses from the measuring flange have been reconnected to the correct connections on the controller (sensor). Check again that the caps on the measuring nipples are in place.

5. Control Measurement 2 (controller-based)

Read the flow indicated by the connected controller (sensor) after cleaning. If the measured airflow (control measurement 1), via the external instrument, deviates from the value that the controller sensor now indicates, further methodical troubleshooting and verification are required. That correctly measured values are being compared must be established before a defective flow sensor is considered a possible cause of the deviation.

6. Note and compare damper angles

The ventilation system may adjust its total airflow as a direct result of the actions taken for a more accurate flow measurement. With decreased air demand, the damper angle will decrease in relation to the reduced airflow. Lindinvent's system displays the current damper angle as an actual value. Worth noting as a check of units with dampers and damper motors: Damper blades should move to the outermost position when a sensor hose is reconnected.

NOTE: Only the measuring flange with measurement sockets, measuring tubes and their connecting hoses should be cleaned. The sensor must not be blown with the syringe.

GUIDELINES FOR CONTROL MEASUREMENT

When checking airflow from supply air diffusers, Lindinvent recommends that duct measurements be made in accordance with the European standard SS-EN 16211, which specifies methods for measuring air velocity and calculating airflow from point measurements over the duct's cross-sectional area. Correct measurement requires a sufficiently long straight section and a stable velocity profile.

Recommended methods are traversing with a Prandtl tube or traversing with a hot-wire anemometer as described below.

Since the Prandtl tube measures the dynamic pressure in the duct, the speed should exceed at least 3 m/s (corresponding to about 5 Pa) to provide sufficiently high measurement pressure. Therefore, always use a hot-wire anemometer at lower speeds.

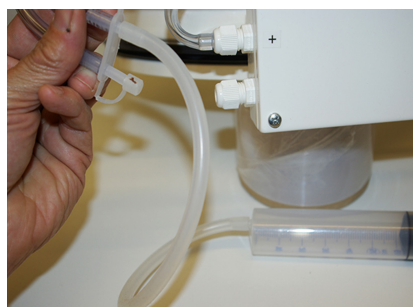
Lindinvent advises against using direct flow meters with a hood, such as Accubalance, when measuring at supply terminals. This method affects the diffusers characteristics and does not provide relevant measurements. See the report on measurement uncertainty of direct flow meters published by Lokum, Nozzle Report 2014.

When measuring extract air devices (valves and grilles), direct flow meters with a hood generally work well.

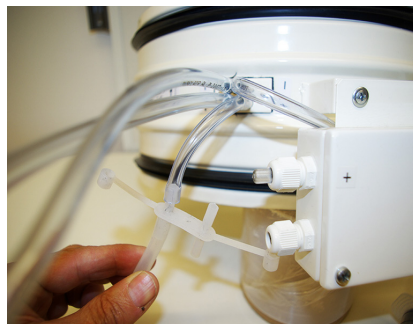
CLEANING THE MEASURING FLANGE IN PICTURES



Starting Position:
The controller (sensor) connections (+ and -) are correctly connected via hoses to the corresponding measuring sockets on the measuring flange. The measuring flange is equipped with two measuring sockets. One socket is for connecting to the sensor, while the other is for control measurement. The picture shows an older sensor unit.



Start by cleaning the measuring sockets (+ and -) for control measurement. Here: The syringe (in the extended position) with the silicone hose connected to one of the measuring flange nipples for control measurement. Note: The sensor hoses must not be disconnected during control measurement.



Here: The measuring flange sockets (+ and -) for connection to the sensor are to be cleaned. One of the hoses is disconnected from the regulator (sensor). The syringe with silicone hose is connected to the disconnected sensor hose, which is equipped with a temporary measuring socket. Now both the hose and the measuring tube in the measuring flange can be cleaned.

Image Sequence from Lindinvent's System Solution with the External Flow Sensor GFI.

To avoid confusion when reconnecting hoses, please always connect the first cleaned sensor hose to the regulator before disconnecting the next hose.