

# SMED, SMID, SPMF, SMRD MEASURING FLANGE

### MAINTENANCE

Both Lindinvent's measuring flanges and smart dampers with sensor connections are usually maintenance-free. Exceptionally, in extreme environments, measuring tubes with connections may need to be cleaned. The unit is wiped clean on the outside with a slightly damp cloth.

### CLEANING INTERVAL AND FUNCTION CHECK

Developments in flow sensors have meant that measuring flanges with connections do not require regular inspection and cleaning. Lindinvent recommends function check in connection with other troubleshooting or analysis.

### INSTRUCTIONS FOR CLEANING & CONTROL

See page 2 for the recommended procedure for cleaning and control measurement.

### GUIDELINES FOR CONTROL MEASUREMENT

Duct measurement should be carried out in accordance with European standard SS-EN 16211, which specifies methods for measuring air velocity and calculating air flow from point measurements over the cross-sectional area of the duct. Correct measurement requires a sufficiently long straight section and a stable velocity profile.

Lindinvent recommends that duct measurements be carried out using a Prandtl tube or a hot-wire anemometer. Since the Prandtl tube measures the dynamic pressure in the duct, the velocity should at least exceed 3 m/s (corresponding to approximately 5 Pa) to provide a sufficiently high measuring pressure. Therefore, always use a hot-wire anemometer at lower air velocities.

Lindinvent advises against using a direct-flow meter with a hood, such as Accubalance, when measuring supply air diffusers. This method alters the diffuser's characteristics and yields meaningless measurement values. Lindinvent instead recommends measuring the airflow before and after the supply air diffuser. Measurement is carried out using a Prandtl tube or a hot-wire anemometer, as specified above.

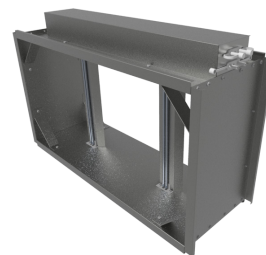
When measuring exhaust air devices (valves and grilles), however, experience has shown that a direct-flow meter with a nozzle works well.

### UNITS WITH MEASURING FLANGE

See the website and Indoor Climate for available dampers and measuring units.



*Circular measuring flange SMED*



*Rectangular measuring flange SMRD.*



*Circular damper with measuring flange SPMF.*

### OPERATIONAL OPTIMISATION AT THE SYSTEM LEVEL

Climate control in buildings can be monitored and operationally optimised using the web tool LINDINSPECT. Equipment and operating conditions can be visualised and analysed via the tool. Patterns in utilisation and trends in energy use can be followed to develop proposals for energy and functional improvement measures. Deviations and measures can be planned, ordered and monitored until the desired functionality is achieved.

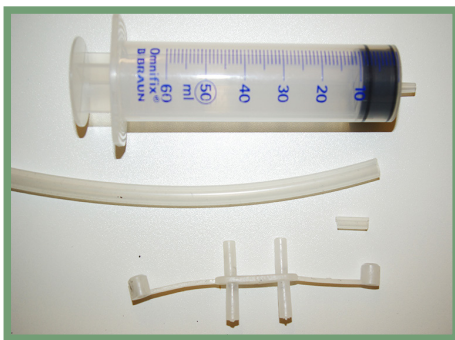
The inspection is recommended as a preventive measure or as a basis for decisions concerning technical maintenance work.

### CONTACT

In the event of error reporting or other questions about climate control in the property, the responsible technician should be contacted.

## EQUIPMENT FOR CLEANING

- A larger syringe (type 60 ml Omnix B. Braun). The syringe is used to push air through the measuring tube with connections: Mount a silicone hose 3-5 (inner 3 mm/outer 5 mm) over the spout, then a flexible silicone hose 5-8 (length approx. 30 cm) to connect the syringe to the measuring nipple of the measuring flange.
- Note: Air must not be pushed through the regulator (sensor) connections. This can damage the sensor.
- A loose measuring socket.
- For control measurement: A calibrated measuring instrument.
- User panel/mobile with LINDINSIDE or LINDINSPECT® for accessing measured values.



### 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

## CLEAN AND MEASURE (STEP 1 TO 6)

### 1. Clean the connections for control measurement

For each measuring nipple: Connect the syringe in its unfolded position. Press and pull strongly 2 to 3 times to simultaneously blow the measuring tube and hose to the measuring nipple.

### 2. Control Measurement 1 (external instrument-based)

Connect your instrument to the cleaned connection on the measuring flange and measure the airflow. Compare the measured flow with the flow indicated by the connected regulator. Note any deviations. Make sure that the caps on the measuring nipples are closed again after the measurement.

### 3. Clean the connections to the controller (sensor)

For the connections (+ and -) on the controller (sensor): Loosen the hose, then temporarily attach the loose measuring socket to it. Connect the syringe tightly to the temporary measuring socket. Press and pull strongly 2 to 3 times to simultaneously blow clean the measuring tube with the connection.

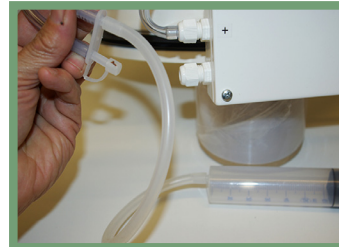
**Always reattach the first cleaned connection to the regulator before loosening the next connection.**

### 4. Check that hoses are correctly reconnected

Check that the connections from the measuring flange are mounted to the correct input on the regulator (+ to +, - to -). Check again that the nipple caps are in place.



Check the initial position: The regulator (sensor) connections must be correctly connected via hoses to the corresponding measuring sockets on the measuring flange (+ to +, - to -). One socket is for connecting a control instrument, while the other socket is for connecting to the sensor.



First - Clean for control measurement: Start by cleaning both connections of the measuring flange, one at a time. Here: The syringe (in the extended position) with the silicone hose connected to the measuring nipple to the measuring tube.

**Note: The sensor hoses must not be disconnected during the control measurement.**

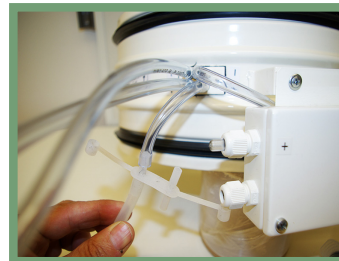


Image sequence with a former flow sensor unit GFI.

Then - Clean the connections to the sensor: The connections of the measuring flange to the sensor must now be cleaned. One by one, the connections at the regulator (sensor) are loosened. The syringe with the silicone hose is connected to the loosened connection, which is equipped with a temporary measuring outlet. Now both the hose and the measuring tube in the measuring flange can be cleaned.

**Avoid confusion: Always refit the first cleaned connection to the regulator before loosening the next connection.**

### 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.**