



Preliminary filter 0554 3311
Precision measurement chamber 0554 3312
Flow meter 0554 3313

Instruction manual

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Safety and the environment

About this document

- › Please read this documentation through carefully and familiarize yourself with the product before putting it to use. Keep this document to hand so that you can refer to it when necessary. Hand this documentation on to any subsequent users of the product.
- › Pay particular attention to information emphasised by the following symbols:
 - Important.

Avoiding personal injury/damage to equipment

- › Never store the product together with solvents and do not use any dessicants.
- › Only operate the product properly, for its intended purpose and within the parameters specified in the technical data. Do not use force.
- › Only carry out the maintenance and repair work that is described in the documentation. Follow the prescribed steps when doing so. Use only OEM spare parts from Testo.

Protecting the environment

- › Send the product back to Testo at the end of its useful life. We will ensure that it is disposed of in an environmentally friendly manner.

1. System description

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Measuring system for precise trace humidity measurement, for the testo dew point transmitters testo 6721, testo 6740 or testo 6681 with the testo 6615 probe.

There are four circumstances for using the measuring system for precise dew point measurement. These are listed in the following table.

	Compressed air clean	Compressed air contaminated
Pressure level = 7 bar	P (chapter 3)	P + V (chapter 5)
Pressure level ≠ 7 bar	P + D (chapter 4)	P + V + D (chapter 6)

V = Preliminary filter 0554 3311

P = Precision measurement chamber 0554 3312

D = Flow meter 0554 3313

The components (V, P, D) are described in more detail in chapter 2.

2. Components

Precision measurement chamber (0554 3312)



Through the precision measurement chamber, a defined incident flow of the sensor is enabled for all process pressure levels from 1 to 35 bar. Using a fine metering valve, it is possible to set the optimal sensor incident flow of 1 l/min for each different process pressure (1 - 35 bar).

(Factory setting: 1 l/min at 7 bar)

The assembly and dismantling can be carried out under process conditions (quick-release fastener NW 7.2). Protected sensor installation in partial current of the process air.

Pressure-tight screw connection



The pressure-tight screw connection is only required for testo 6681 together with the testo 6615* probe to enable fastening the probe to the precision measurement chamber.

The pressure-tight screw connection is available in two versions:

- 0554 1796 -> up to 6 bar with PTFE ring
- 0554 1795 -> up to 50* bar with cutting ring

* testo 6615 can be used up to 16 bar.

Flow meter for the precision measurement chamber (0554 3313)

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The flow meter is connected downstream of the precision measurement chamber and shows whether the flow is constantly at the required value. The ideal flow is 1 l/min.

Preliminary filter (0554 3311)



The preliminary filter is connected upstream of the precision measurement chamber and helps protect against particles, rust and oil.

3. Clean compressed air at 7 bar

Only the precision measurement chamber is used.

➤ Assembly

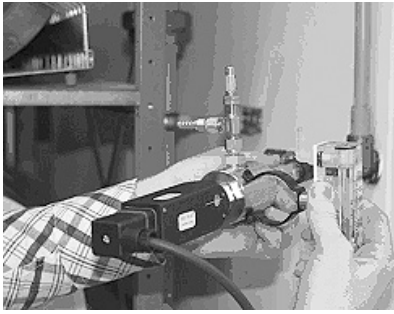
- Insert the dew point transmitter in the precision measurement chamber:
 - **6720 / 6740:** Direct insertion of the thread (G ½ inches) in the measurement chamber. Use a PTFE tape or another suitable sealant when sealing.
 - **6681 with 6615:** Insert pressure-tight screw connection (up to 6 bar -> 0554 1796 with PTFE ring; up to 16 bar -> 0554 1795 with cutting ring) in measurement chamber, then open nut, lead in testo 6615 probe and refasten the screw connection. Tighten the cutting ring screw connection approx. 50-60° (approx. 1/6 of the circumference). If a torque wrench is present, tighten to 45 Nm +/- 5 Nm.

4. Clean compressed air at ≠ 7 bar

The precision measurement chamber and the flow meter for the precision measurement chamber are used.

➤ Assembly

- 1 Insert the dew point transmitter in the measurement chamber.
 - **6720 / 6740:** Direct insertion of the thread (G ½ inches) in the measurement chamber. Use a PTFE tape or another suitable sealant when sealing.
 - **6681 with 6615:** Insert pressure-tight screw connection (up to 6 bar -> 0554 1796 with PTFE ring; up to 16 bar -> 0554 1795 with cutting ring) in measurement chamber, then open nut, lead in testo 6615 probe and refasten the screw connection. Tighten the cutting ring screw connection approx. 50-60° (approx. 1/6 of the circumference). If a torque wrench is present, tighten to 45 Nm +/- 5 Nm.



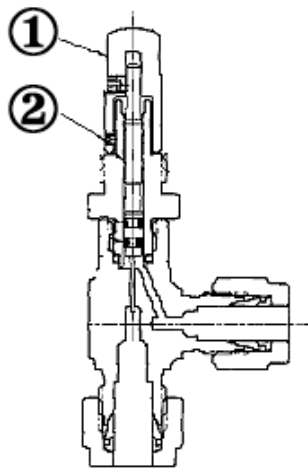
- 2 Attach the flow meter to the measurement chamber. The flow meter must be aligned in such a way that the scale has a vertical position.

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- 3 Now the hose connection from the hose nozzle of the precision measurement chamber is lead to the lower connection of the flow meter.

➤ Adjustment of the fine metering valve



- 1 Loosen locating screw (②) (Allen wrench).
- 2 Set the fine adjustment head (①) so that the flow meter shows 1 litre per minute (1 LPM).
- 3 If the settings are completed and the flow amount was monitored, re-tighten the locating screw (②) to prevent independent changes to the flow rate (Allen wrench).

➤ Maintenance

- Check the hose connection at regular intervals.
- With sustained high humidity: Open the valve of the precision measurement chamber to dry it out.

5. Contaminated compressed air at 7 bar

The precision measurement chamber and the preliminary filter are used.

➤ Assembly

- 1 Attach the preliminary filter to the precision measurement chamber (quick-release compressed-air fastener).
- 2 Insert the dew point transmitter in the measurement chamber.
 - **6720 / 6740:** Direct insertion of the thread (G ½ inches) in the measurement chamber. Use a PTFE tape or another suitable sealant when sealing.
 - **6681 with 6615:** Insert pressure-tight screw connection (up to 6 bar -> 0554 1796 with PTFE ring; up to 16 bar -> 0554 1795 with cutting ring) in measurement chamber, then open nut, lead in testo 6615 probe and refasten the screw connection. Tighten the cutting ring screw connection approx. 50-60° (approx. 1/6 of the circumference). If a torque wrench is present, tighten to 45 Nm +/- 5 Nm.

➤ Maintenance



- In the event of contamination, purge the preliminary filter and the precision measurement chamber, if necessary, or with media containing oil, clean with an ultrasonic bath.
- Before purging the preliminary filter, remove the sintered filter from the preliminary filter (hexagon bolts). After purging, re-insert the sintered filter.
- Ensure that the sintered filter is installed in the flow direction. For this, use the arrow that shows the flow direction through to the measurement chamber.

6. Contaminated compressed air at ≠ 7 bar

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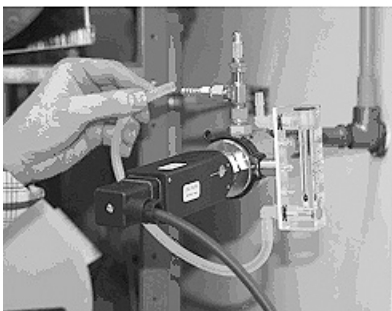
The precision measurement chamber, the flow meter for the precision measurement chamber and the preliminary filter are used.

> Assembly

- 1 First attach the preliminary filter to the precision measurement chamber (quick-release compressed-air fastener).
- 2 Insert the dew point transmitter in the measurement chamber.
 - **6720 / 6740:** Direct insertion of the thread (G ½ inches) in the measurement chamber. Use a PTFE tape or another suitable sealant when sealing.
 - **6681 with 6615:** Insert pressure-tight screw connection (up to 6 bar -> 0554 1796 with PTFE ring; up to 16 bar -> 0554 1795 with cutting ring) in measurement chamber, then open nut, lead in testo 6615 probe and refasten the screw connection. Tighten the cutting ring screw connection approx. 50-60° (approx. 1/6 of the circumference). If a torque wrench is present, tighten to 45 Nm +/- 5 Nm.

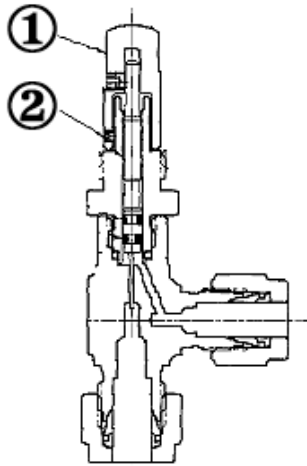


- 3 Attach the flow meter to the measurement chamber. The flow meter must be aligned in such a way that the scale has a vertical position.



- 4 Lead the hose connection from the hose nozzle of the precision measurement chamber to the lower connection of the flow meter.

> Adjustment of the fine metering valve

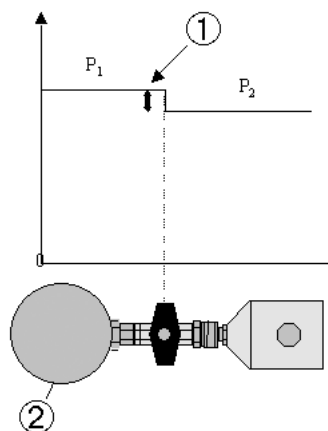


- 1 Loosen locating screw (2) (Allen wrench).
- 2 Set the fine adjustment head (1) so that the flow meter shows 1 litre per minute (1 LPM).
- 3 If the settings are completed and the flow amount was monitored, re-tighten the locating screw (2) to prevent independent changes to the flow rate (Allen wrench).

i If it is presumed that a significant pressure drop occurred, the dew point limit value in the instrument or the controls should be set 2 to 4 Kelvin lower to ensure a timely alert.

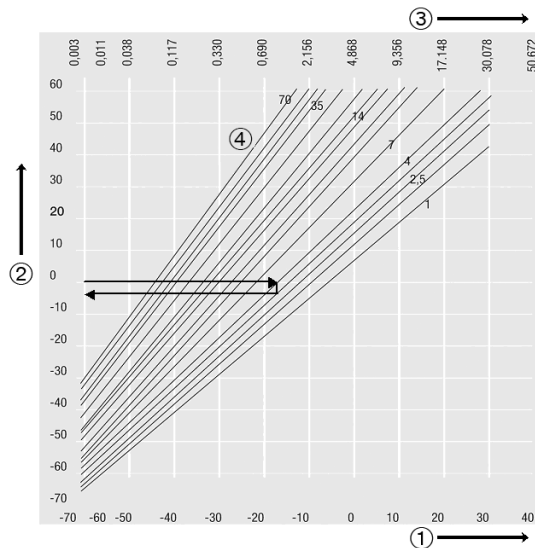
Pressure drop with preliminary filter and the effects:

If a preliminary filter is used for contaminated media, a pressure drop can develop from the process to the precision measurement chamber. A pressure drop affects the dew point reading as this is pressure-dependent. Therefore, the pressure drop should not exceed 20 hPa. This circumstance is shown in the following figures.



- ① Clean filter: $P_1 - P_2 : \rightarrow \text{max. } 20 \text{ hPa}$
Contaminated filter: $P_1 - P_2 : \rightarrow > 20 \text{ hPa} \rightarrow$
Cleaning necessary
- ② Pipe (cross-section)

Example of the dependence of the dew point on the process pressure:



- ① Atmospheric dew point [°CtdA]
- ② Dew point [°Ctd]
- ③ Absolute humidity [g/m³] at 1 bar abs / 25 °C
- ④ Process pressure p_0 [bar]

A process pressure of 4 bar and a dew point of 0 °Ctd leads to a reading of 5.8 °Ctd with a pressure drop of 2.5 bar.

Significantly fewer pressure drops occur via the preliminary filter, though these sources of error should be eliminated through cleaning.

Counter measures

- regular readjustment of the sensor incident flow
- regular cleaning of the preliminary filter (see "Maintenance" section)

➤ Maintenance



- In the event of contamination, purge the preliminary filter and the precision measurement chamber, if necessary, or with media containing oil, clean with an ultrasonic bath.
- Before purging the preliminary filter, remove the sintered filter from the preliminary filter (hexagon bolts). After purging, re-insert the sintered filter.
- Ensure that the sintered filter is installed in the flow direction. For this, use the arrow that shows the flow direction through to the measurement chamber.
- Check the hose connection at regular intervals.
- With sustained high humidity: Open the valve of the precision measurement chamber to dry it out.



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