



testo 570 · Digital manifold

Instruction manual



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2 Safety and the environment

2.1. About this document

Use

- > Please read this documentation through carefully and familiarize yourself with the product before putting it to use. Pay particular attention to the safety instructions and warning advice in order to prevent injuries and damage to the products.
- > 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.

Symbols and writing standards

Representation	Explanation
	Warning advice, risk level according to the signal word: Warning! Serious physical injury may occur. Caution! Slight physical injury or damage to the equipment may occur. > Implement the specified precautionary measures.
	Note: Basic or further information.
1. ...	Action: more steps, the sequence must be followed.
2. ...	
> ...	Action: a step or an optional step.
- ...	Result of an action.
Menu	Elements of the instrument, the instrument display or the program interface.
[OK]	Control keys of the instrument or buttons of the program interface.
... ...	Functions/paths within a menu.
“...”	Example entries

2.2. Ensure safety

- > Do not operate the instrument if there are signs of damage at the housing, mains unit or feed lines.
- > Do not perform contact measurements on non-insulated, live parts.
- > Do not store the product together with solvents. Do not use any desiccants.
- > Carry out only the maintenance and repair work on this instrument that is described in the documentation. Follow the prescribed steps exactly. Use only original spare parts from Testo.
- > Dangers may also arise from the systems being measured or the measuring environment: Note the safety regulations valid in your area when performing the measurements.
- > If the measuring instrument falls or another comparable mechanical load occurs, the pipe sections of the refrigerant hoses may break. The valve positioners may also be damaged, whereby further damage to the interior of the measuring instrument may occur that cannot be identified from the outside. The refrigerant hoses must therefore be replaced with new, undamaged refrigerant hoses every time the measuring instrument falls or following any other comparable mechanical load. Send the measuring instrument to Testo Customer Service for a technical check for your own safety.
- > Electrostatic charging can destroy the instrument. For online measurement (instrument connected to PC/laptop) or when using the mains unit in particular, you should therefore integrate all components (system, valve manifold of the manifold gauge, refrigerant bottle, etc.) into the equipotential bonding (earthing system) prior to measurement. Please see the safety instructions for the system and the refrigerant used.

2.3. Protecting the environment

- > Dispose of faulty rechargeable batteries/spent batteries in accordance with the valid legal specifications.
- > At the end of its useful life, send the product to the separate collection for electric and electronic devices (observe local regulations) or return the product to Testo for disposal.
- > Refrigerant gases can harm the environment. Please note the applicable environmental regulations.

3 Specifications

3.1. Use

The testo 570 is a digital manifold for commissioning, maintenance and service work on refrigeration systems and heat pumps. It can be used for fault diagnose and online measurements on refrigeration systems and heat pumps. The testo 570 is only to be used by qualified expert personnel.

With its functions the testo 570 replaces mechanical manifolds, thermometers and pressure/temperature charts. Pressures and temperatures can be applied, adapted, tested and monitored.

Its scope of functions can be considerably extended by means of extensive, separately available accessories, e.g. various temperature sensors, clamp probe, oil pressure probe, PC software.

The testo 570 is compatible with most of the non-corrosive refrigerants, water and glycol. The testo 570 is not compatible with ammoniac refrigerants.

This product must not be used in explosive environments!

3.2. Technical data


Feature	Values
Measurement parameters	Pressure: kPa/MPa/bar/psi Temperature: °C / °F / K Vacuum: hPa / mbar/ Torr / inH ₂ O / Micron / inHg / Pa Current: A ¹
Measuring sensor	Pressure: 2 x pressure sensor Temperature: 3 x NTC
Measuring cycle	0.75 s
Connections	Pressure connections: 3 x 7/16" UNF+ 1x 5/8" NTC measurement
Interfaces	3x Mini-DIN, 1x Mini-USB, 1 x IR

¹ via clamp probe (optional accessory)

Feature	Values
Measurement ranges	Pressure measurement range HP/LP: -100...5000 kPa / -0.1...5 Mpa / -1...50 bar (rel) / -14.7...725 psi Temperature measurement range: -50...+150 °C / -58...302 °F Measurement range vacuum (rel): -1...0 bar / -14.7...0 psi
Overload	52 bar, 5200 kPa, 5.2 Mpa, 754 psi
Resolution	Resolution pressure: 0.01 bar / 0.1 psi / 1 kPa / 0.001 Mpa Resolution temperature: 0.1 °C / 0.1 °F / 0.1 K Vacuum resolution: 1 hPa / 1 mbar / 0.5 Torr / 0.5 inH ₂ O / 0.02 inHg / 500 Micron / 100 Pa
Accuracy (nominal temperature 22 °C/71.6°F)	Pressure: ±0.5% of final value (±1 digit) Temperature (-40...302 °F/-40...+150 °C): ±0.5 °C (±1 Digit), ±0.9 °F (±1 digit), ±0.5 K (±1 digit) Vacuum: 1% of final value (±1 digit)
No. of refrigerants	40

Feature	Values		
Selectable refrigerants in the instrument	R12	R408A	R434A
	R123	R409A	R437A
	R1233zd	R410A	R438A
	R1234yf	R414B	R448A
	R1134a	R416A	R449A
	R22	R420A	R450A
	R290	R421A	R452A
	R401A	R421B	R455A
	R401B	R422B	R502
	R402A	R421B	R503
	R402B	R422B	R507
	R404A	R422D	R513A
	R407A	R424A	R600a
	R407C	R427A	R718 (H2O)
	R744 (CO2) please note the permissible pressure measuring range		

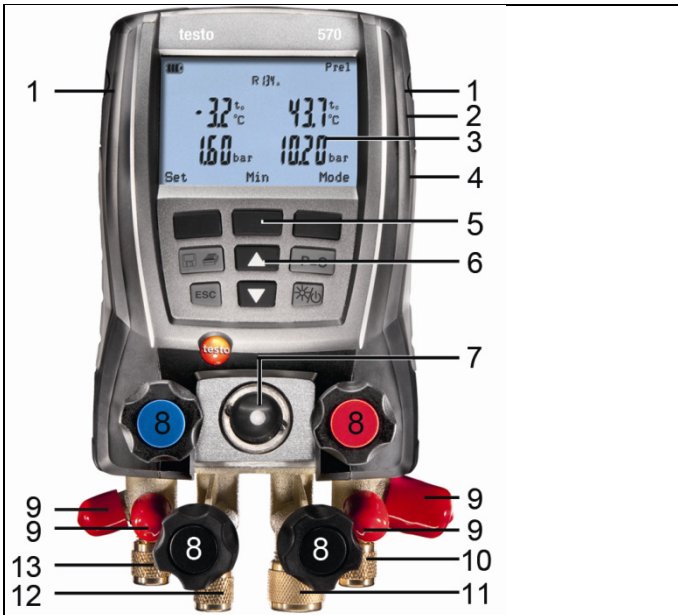
Feature	Values		
Refrigerants that can be updated via Software Easycool	R11	R227	R417B
	FX80	R23	R417C
	I12A	R236fa	R422A
	R114	R245fa	R444B
	R1150	R32	R452B
	R1234ze	R401C	R453a
	R124	R4 6 ^a	R454A
	R125	R407B	R454B
	R1270	R407D	R454C
	R13	R407f	R458A
	R13B1	R407H	R500
	R14	R41	R508A
	R142B	R411A	R508B
	R152a	R412A	R600
	R161	R413A	RIS89
R170	R417A	SP22	
Memory capacity	10000 single measurements or 50 series measurements (each with a measuring cycle of 2 s, measurement period 100 h)		
Measuring cycle	2s..59min 59s (freely selectable)		
Measurable media	Measurable media: all media that are stored in the testo 570. Not measurable: ammonia (R717) and other refrigerants which contain ammonia		
Ambient conditions	Operating temperature: -20 to 50 °C / -4 to 122°F Storage temperature: -20...60 °C / -4...140 °F Humidity in area of use: 10 ... 90 %RH		
Housing	Material: ABS / PA / TPE Dimensions approx. 280 x 135 x 75 mm Weight: approx. 1200 g (without batteries)		
IP-class	42 (position in use hanging down)		

Feature	Values
Power supply	Current source: 4 x 1.5 V rechargeable/non-rechargeable batteries Type AA / Mignon / LR6 Battery life: > 40h (display light off)
Display	Type: Illuminated LCD Response time: 0.5 s
Directives, standards and tests	EU Directive: 2014/30/EU  The EU Declaration of Conformity can be found on the testo homepage www.testo.com under the product specific downloads.





4 Product description


4.1. Overview

Display and control elements





- 1 Sensor socket Mini-DIN for NTC-temperature sensor, with socket cover.
- 2 Suspension attachment, foldable (backside).
- 3 Display Instrument status icons:

Icon	Meaning
	Battery capacity: >75% / >50% / >25% / <10%
	
	
	
no battery indication	Instrument is operated with power supply unit.

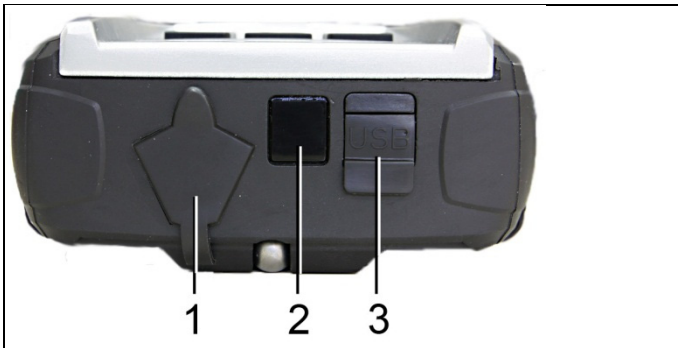
Icon	Meaning
	The measurement value is saved; in case of a single measurement the inner circle flashes once, with serial measurements the circle flashes with each save procedure.

- 4 Battery compartment. Charging rechargeable batteries inside the instrument is not possible!
- 5 Multi-function keys: The relevant function appears in the display.
- 6 Control keys:

Key	Function
	Save or print measurement data.
[ESC]	Exit the menu option.
[▲]	Up-key: Change display view.
[▼]	Down-key: Change display view.
[p=0]	Zero the pressure sensor in the range +1 to -1.3 bar.
	Switch instrument on / off; short actuation during operation: switches illumination on / off.

- 7 Inspection glass for refrigerant flow.
- 8 4 x valve actuators.
- 9 4 x hose brackets for refrigerant hoses.
- 10 Connection 7/16" UNF, brass.
High pressure, for refrigerant hoses with quick release screw fitting, passage for valve actuator lockable.
- 11 Connection 5/8" UNF, brass, for vacuum pump.
- 12 Connection 7/16" UNF, brass, for e.g. refrigerant cylinders, with screw cap.
- 13 Connection 7/16" UNF, brass.
Low pressure for refrigerant hoses with quick release screw fitting, passage for valve actuator lockable.

Interfaces



- 1 Mini-DIN connection for optional temperature sensors, testo 552 and accessories
- 2 IR-interface for testo protocol printer
- 3 Mini-USB connection for power supply unit and connection to PC

CAUTION

Risk of injury from infrared beam!

- > Do not direct infrared beam at human eyes!

5 First steps


Inserting batteries/rechargeable batteries

1. Unfold the suspension attachment and open the battery compartment (clip lock).
2. Insert the batteries (scope of delivery) or rechargeable batteries (4 x 1.5 V, type AA / NiMH / AA) into the battery compartment. Observe the polarity!
3. Close the battery compartment.

i When not in use for long period: Take out the batteries / rechargeable batteries.

i Recharge the rechargeable batteries completely before using the instrument.

Switching the instrument on

- > Press .
- Initializing phase:
 - All display segments light up (duration: 2s).

- Measurement view is opened.

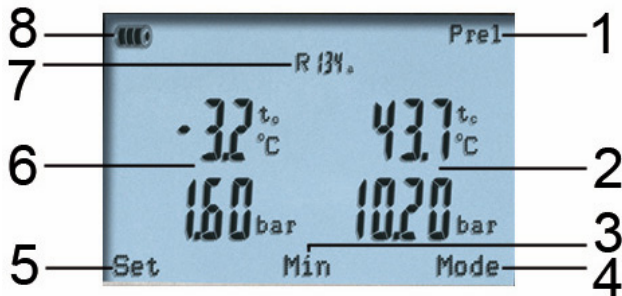
When switching on for the first time, the following factory settings are stored:

- Language: English UK
- Date: 01.01.2011
- Time: 12:00

To change the default settings:

See Fehler! Verweisquelle konnte nicht gefunden werden., page Fehler! Textmarke nicht definiert..

Display



- 1 Selected pressure mode
 - 2 Condensation temperature/ acc. to temperature sensor right / subcooling / differential temperature sensor left&right. The display reading of measurement values varies in dependence on the set mode
 - 3 **[Min/Max/Mean/Normal]** (exemplary for pressure/temperature mode): The middle multi-function key can be used to display the minimum, maximum and mean values.
 - 4 **[Mode]** selectable via the right multi-function key
- See also Performing the measurement, page 21.*
- 5 **[Set]** selectable via the left multi-function key
 - 6 Evaporation temperature / acc. to temperature sensor A / superheating
 - 7 Chosen refrigerant
 - 8 Battery status indication/rech. batt. charge indication

Making settings

1. Press **[Set]**.
- The configuration menu is opened.

2. Select function and set parameters:

Key functions

Representation	Explanation
[▲] or [▼]	Choose function/setting
[Ok]	Activate function or confirm parameter/setting
[ESC]	Exit the configuration menu

Adjustable parameters

Refrigerant: Select the refrigerant from the list:

Representation	Explanation
R...	Refrigerant number of refrigerant acc. to ISO 817
T...	Special Testo designation for certain refrigerants
---	no refrigerant selected.



With the software testo Easy Kool you can feed additional refrigerants into the instrument, see separate operating instructions.

Efficiency calc.: Select the procedure (COP heat pump) and enter the required parameters (may vary in dependence on selected procedure). The inputs have an effect on the measuring mode efficiency calc.

See also Performing the measurement, page 21.

See also Basis of calculation COP, page 32.

Temperature unit: Select the desired unit.

Pressure unit: Select the desired unit.

Vacuum unit: Set pressure unit for vacuum.

Pressure mode: Depending on the chosen unit for pressure: Change between absolute and relative pressure displays.

Vacuum pressure mode: Select the pressure mode for the evacuation mode.

See also Performing the measurement, page 21.

Weight unit: Select the desired unit from the list.

Measuring mode: Select normal mode, combi mode

Display	Mode	Function
none	Normal mode	Normal function of the digital manifold

Display	Mode	Function
Auto	Combi mode	When combi mode is activated the digital manifold testo 570 automatically reverses the display of high and low pressure. This automatic reversal occurs when the pressure in the low pressure side is 1 bar higher than the pressure in the high pressure side. This switching over is indicated by ---- flashing in the display. This mode is particularly suitable for air conditioning systems that provide cooling and heating.

Date/Time: Adjust the flashing number with [**▲**] and [**▼**] and press [**◀**] and [**▶**] to go to the next numerical block. Confirm the input with [**OK**].

Language (This setting influences the date format): Select the language from the list and press [**OK**] to confirm.


Probe type: Select the desired probe type from the list.

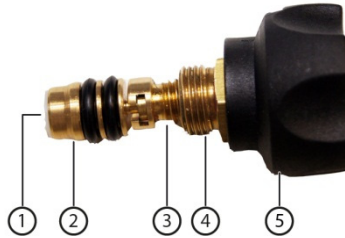
Device info: Show serial number and firmware version.

Operating the valve actuators

With respect to the refrigerant flow path the digital manifold behaves just like a conventional four-way manifold. The passages are opened by opening the valves. The applied pressure is measured with the valves closed and the valves opened.

- > Open valve: Turn valve actuator anticlockwise.
- > Close valve: Turn valve actuator clockwise.

 WARNING
<p>Tighten the valve actuator only hand-tight. Do not use any tools for tightening, this could damage the thread.</p>



⚠ WARNING

Valve positioner tightened too tightly.

- Damage to the PTFE seal (1).
- Mechanical deformation of the valve piston (2) leading to the PTFE seal (1) falling out.
- Damage to the thread of the threaded spindle (3) and the valve screw (4).
- Broken valve knob (5).

Tighten the valve positioner only hand-tight. Do not use any tools to tighten the valve positioner.

6 Using the product

6.1. Preparing for measurement

6.1.1. Connecting temperature probe, Testo 552 and accessories

i Sensors must be connected before the measuring instrument is switched on, so that they are recognised by the instrument.

i • In combination with the testo 570, the testo 552 can be used as an external high-precision vacuum probe, if connected to the front of the testo 570 using the connection cable 0554 5520. The firmware version 1.09 or later must be installed for this.

- Before connecting both devices, the testo 552 must be switched on.
 - The testo 570 will only connect to the testo 552 once **Evacuation** mode has been activated.
 - The required pressure unit display must be set in the testo 570.
 - In order to be able to use the readings from the testo 552 via the testo 570 in the EasyKool software, you need EasyKool software version 4.0 or later.
 - (See testo 552 instruction manual.)
-

Surface temperature sensor

An NTC temperature sensor (accessory) must be connected for measuring the pipe temperature and for automatic calculation of superheating and subcooling.

Deactivating the surface compensation factor for immersion and air temperature probe

A surface compensation factor has been set in the measuring instrument to reduce the measuring errors in the main field of applications. This reduces measuring errors when using surface temperature probes.

If the measuring instrument testo 570 is used in combination with insertion or air temperature probes (accessories), this factor must be deactivated:

1. Press **[Set]**.
 2. Select the **Probe type**.
 3. Select **Immersion probe**.
 4. Press **[Esc]**.
- The surface compensation factor has been deactivated in the device.
-



For measurements with a surface temperature probe the probe type must be reset to surface probe.

Each time the device is switched on the surface compensation factor is activated again as standard.

Accessories

Clamp probe and oil pressure probe can only plugged to connection (1).



Position the accessory as appropriate for the measurement task:

Measurement task (measurement channel)	Position
Superheating	At the end of the evaporator / inlet of compressor
Subcooling	At the end of the condenser / inlet of expansion valve
Differential temperature	On the measurement object
Current measurement	On the electrical consumers
Charging/emptying	On the system
Oil lubrication of the compressor	On compressor oil measurement fitting

6.1.2. Switching the instrument on

> Press *****.

Zeroing the pressure sensors

Zero the pressure sensors before every measurement.

✓ All connections must be pressureless (ambient pressure).

> Press **[P=0]** to execute zeroing.

Connecting the refrigerant hoses

i Before each measurement check whether the refrigerant hoses are in flawless condition.

✓ The valve actuators are closed.

1. Connect the refrigerant hoses for low-pressure side (blue) and high-pressure side (red) to the measuring instrument.
2. Connect the refrigerant hoses to the system.

 **WARNING**

The measuring instrument dropping down or any other comparable mechanical load can cause breakage of the pipe pieces in the refrigerant hoses. The valve actuators may also suffer damage, which in turn could result in further damage inside the measuring instrument, which may not be detectable from outside.

- > For your own safety you should return the measuring instrument to the Testo Service for technical inspection.
- > You should therefore always replace the refrigerant hoses with new ones after the measuring instrument has dropped down or after any comparable mechanical loading.

6.1.3. Choosing the measuring mode

1. Press **[Mode]**.
 - The configuration menu is opened.
2. Choose the measuring mode.

Key functions

Representation	Explanation
[▲] or [▼]	Select measuring mode
[Ok]	Enable measuring mode
[ESC]	Exit the menu

Selectable functions

- **Pressure/Temperature**
- **Tightness test**
- **Evacuation**
- **Charging**
- **Emptying**
- **Pressure/Compressor**
- **Current**
- **Efficiency calc.**

See also *Performing the measurement*, page 21.

6.2. Performing the measurement

WARNING

Risk of injury caused by pressurized, hot, cold or toxic refrigerants!

- > Wear protective goggles and safety gloves.
- > Before applying pressure to the measuring instrument: Always fasten the measuring instrument on the suspension attachment to prevent it from falling down (danger of breakage)
- > Before each measurement check the refrigerant hoses for flawless condition and correct connection. Do not use any tools to connect the hoses, tighten hoses only hand-tight (max. torque 5.0 Nm / 3.7ft*lb).
- > Comply with the permissible measuring range (-1...50 bar). Pay particular attention in systems with refrigerant R744, since these are frequently operated with higher pressures.

6.2.1. Measuring

- ✓ The actions described in the chapter "Preparing for measurement" have been performed.



The mode **Pressure/Temperature** is set as standard when starting the device.

1. Apply pressure to the measuring instrument.
2. Read the measurement values.



With zeotropic refrigerants, the evaporation temperature t_{Ev} is displayed after the complete evaporation / the condensation temperature t_{Co} is displayed after complete condensation.

The measured temperature must be assigned to the superheating or subcooling side ($t_{\text{oh}} \leftrightarrow t_{\text{cu}}$). Dependent on this assignment, the display will show $t_{\text{oh}}/T1$ resp. $\Delta t_{\text{oh}}/\text{SH}$ or $t_{\text{cu}}/T2$ resp. $\Delta t_{\text{cu}}/\text{SC}$, depending on the selected display.

- Reading and display illumination are flashing.
 - 1 bar before the critical pressure of the refrigerant is reached,
 - when the max. permissible pressure of 49 bar is acceded.

Key functions

> **[▲]** or **[▼]**: Change the readings display.

Possible display combinations:

Evaporation pressure Refrigerant evaporation temperature t_{o}/Ev	Condensation pressure Refrigerant condensation temperature t_{c}/Co
--	--

or (only with inserted temperature sensor)

Evaporation pressure Measured temperature $t_{oh}/T1$	Condensation pressure Measured temperature $t_{cu}/T2$
--	---

or (only with inserted temperature sensor)

Evaporation pressure Superheating $\Delta t_{oh}/SH$	Condensation pressure Subcooling $\Delta t_{cu}/SC$
---	--

or (only with third inserted temperature sensor T3)

	Condensation pressure Measured temperature $T3/T3$
--	---

or (only with plugged on clamp probe)

Evaporation pressure	Condensation pressure Measured current value
-----------------------------	---

or (only with inserted oil pressure probe)

Evaporation pressure	Condensation pressure Measured oil pressure P_{ext}
-----------------------------	--

With two inserted NTC sensors (T1/T2) Δt is additionally displayed.

> **[Min/Max/Mean/Normal]**: Show Min. / Max. measurement values, mean values (since switching on).

6.2.2. Tightness test / pressure drop test



The temperature compensated tightness test can be used to check the leak tightness of systems. For this purpose both the system pressure and the ambient temperature are measured over a defined period of time. For this purpose a temperature sensor to measure the ambient temperature may be connected (recommendation: Deactivate the surface compensation factor and use NTC air sensors Art.-No. 0613 1712).

See also Deactivating the surface compensation factor for immersion and air temperature probe, page 18.

This provides information about the temperature compensated differential pressure and about the temperature at the beginning/end of the test as a result. If no temperature sensor is connected, you may also perform the tightness test without temperature compensation.

- ✓ The actions described in the chapter “Preparing for measurement” have been performed.
- 1. Press **[Mode]**.
- 2. Select **[Tightness test]**.
 - The tightness test view is opened. **ΔP** is displayed.
- 3. Start the tightness test: Press **[Start]**.
- 4. End the tightness test: Press **[Stop]**.
 - The result is displayed.

6.2.3. Evacuation / vacuum display

i The measurement takes place in the low pressure side.

- ✓ The actions described in the chapter “Preparing for measurement” have been performed.
- ✓ The vacuum pump is connected to the 5/8” connection on the valve block.
- 1. Press **[Mode]**.
- 2. Select **[Evacuation]**.
 - The evacuation view is opened. The current pressure and the evaporation temperature of water (H₂O) is displayed.

6.2.4. Vacuum measurement

In order to achieve optimal measuring accuracy in vacuum measurement, the measuring instrument must be zeroed at ambient pressure.

i Zeroing at ambient pressure must be performed for each vacuum measurement.

- i**
 - In combination with the testo 570, the testo 552 can be used as an external high-precision vacuum probe, if connected to the front of the testo 570 using the connection cable 0554 5520. The firmware version 1.09 or later must be installed for this.
 - Before connecting both devices, the testo 552 must be switched on.
-

- The testo 570 will only connect to the testo 552 once **Evacuation** mode has been activated.
 - The required pressure unit display must be set in the testo 570.
 - In order to be able to use the readings from the testo 552 via the testo 570 in the EasyKool software, you need EasyKool software version 4.0 or later.
 - (See testo 552 instruction manual.)
-

✓ The actions described in the chapter “Preparing for measurement” have been performed.

✓ The desired units have been set.

See Making settings, page 14.

1. Press **[*C]**.
2. Press **[Mode]**.
3. Select **[Evacuation]**.
 - The evacuation view is displayed.
4. Zero the measuring instrument at ambient pressure **[p=0]**.
5. Start evacuation of the system.

6.2.5. Charging

✓ The actions described in the chapter “Preparing for measurement” have been performed.

1. Press **[Mode]**.
2. Select **[Charging]**.
 - The charging view is opened.
3. Enter the value read on the refrigerant scales: Press **[Change]**.
4. Adjust the flashing number with **[▲]** and **[▼]** and press **[◀]** and **[▶]** to go to the next number.
5. Confirm the input with **[OK]**.
6. Choose the memory location.
7. Press **[Save]**.

6.2.6. Emptying

✓ The actions described in the chapter “Preparing for measurement” have been performed.

1. Press **[Mode]**.
2. Select **[Emptying]**.
 - The emptying view is opened.
3. Enter the value read on the refrigerant scales: Press **[Change]**.

4. Adjust the flashing number with [▲] and [▼] and press [◀] and [▶] to go to the next number.
5. Confirm the input with [OK].
6. Choose the memory location.
7. Press [Save].

6.2.7. Pressure/Compressor

- ✓ Oil pressure probe connected to the upper Mini-DIN connection.

 1. Press [Mode].
 2. Select [Pressure/Compressor].

 - The measurement values for low pressure side and oil pressure (P_{ext}) are displayed.

6.2.8. Current

- ✓ Clamp probe connected to the upper Mini-DIN connection.

 1. Press [Mode].
 2. Select [Current].

 - The measurement value of the current measurement is displayed.

6.2.9. Efficiency calculation

1. Press [Mode].
 2. Select [Efficiency calc.].
- The efficiency calculation is displayed.
- See also Basis of calculation COP, page 32.

6.3. Saving measurement values

The testo 570 is able to record a series measurement of up to 999 h.

The testo 570 is able to save up to:

- 10000 single measurements or
- 50 series measurements in a measuring cycle of 2 seconds over a maximum period of 100 hours.

Depending on the selected measuring cycle, only a certain measurement period can be set. Here is an overview of the possible settings.

Measurement period (hh:mm)	Minimum possible measuring cycle
000:00...099:59	2 seconds

Measurement period (hh:mm)	Minimum possible measuring cycle
100:00...240:59	10 seconds
241:00...999:59	30 seconds




i If the selected measurement duration is not a multiple of the set measuring cycle, it is reduced to the next possible measurement duration. In this case, the instrument displays the automatically adjusted measurement duration at the start of the measurement.

Measurements can be assigned to the individual categories Customer, Measurement place, Installation and Component and saved, already in the device.

i In the device the following standard categories have been pre-set: **Customer** / **Measplace** / **Installation** / **Component**.

These categories can be changed (e.g. testo / Cellar 1 / Office building 1 / Compressor) and supplemented via the testo software Easy Kool, see separate operating instructions.





Saving a single measurement

- ✓ The desired measuring mode has been selected.
- 1. Press .
- 2. Select **Single measurement**.
- 3. Select **Save**.
- 4. Select the desired memory location: Press **[▲]** and **[▼]** to set the desired value and press **[◀]** and **[▶]** to toggle between **Customer** / **Measplace** / **Installation** / **Component**.
 - The set measurement view is displayed. The memory symbol  is displayed.
- 5. Press **[Save]**.
 - The memory symbol  flashes and disappears after the measurement data have been saved.

Saving a serial measurement



i Depending on the duration of the serial measurement electric power supply via power supply unit may be required.

- ✓ The desired measuring mode has been selected.



1. Press  .
2. Select **Serial measurement**.
3. Setting the measuring cycle: Adjust the flashing number with **[▲]** and **[▼]** and press **[◀]** and **[▶]** to go to the next number. Confirm the input with **[OK]**.
4. Set measurement period: Adjust the flashing number with **[▲]** and **[▼]** and press **[◀]** and **[▶]** to go to the next number. Confirm the input with **[OK]**.
5. Select the desired memory location: Press **[▲]** and **[▼]** to set the desired value and press **[◀]** and **[▶]** to toggle between **Customer / Measplace / Installation / Component**.
 - The set measurement view is displayed. The memory symbol  is displayed.
6. Press **[Start]**.
 - The memory symbol  flashes in the set measuring cycle when saving the measurement values. Clock (**00:00:00**) shows the remaining measuring duration.
7. Press **[Stop]**.
 - The serial measurement was stopped. Clock (**00:00:00**) shows the residual measuring duration.
 - The measurement view is displayed.

6.4. Printing measurement values

From the measuring mode

- ✓ The desired measuring mode has been selected.
 - ✓ The testo printer (0554 0549) has been switched on.
1. Press  .
 2. Select **Single measurement**.
 3. Align IR interfaces testo 570 and testo printer.
 4. Select **Print**.
 - The set measurement view and **printing...** is displayed.
 - The printout is generated.

From the device memory

1. Press  .
2. Select **Memory**.
3. Navigate to the saved measuring protocol.
4. Align IR interfaces testo 570 and testo printer.
5. Select **Print**.
 - The printout is generated.

i The saved measuring protocols can be viewed through the software Easy Kool.

7 Maintaining the product

Cleaning the instrument

- > If the housing of the instrument is dirty, clean it with a damp cloth.

Do not use any aggressive cleaning agents or solvents! Weak household cleaning agents and soap suds may be used.

Keeping connections clean

- > Keep screw connections clean and free of grease and other deposits, clean with a moist cloth as required.

Removing oil residues

- > Carefully blow out oil residues in valve block using compressed air.

Ensuring the measuring accuracy

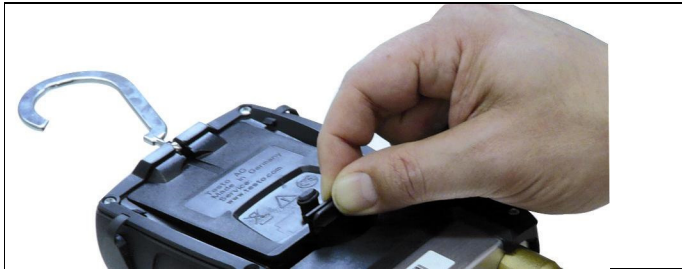
Testo Customer Service would be glad to further assist you if you so wish.

- > Check instrument regularly for leaks (recommended: annually). Keep to the permissible pressure range!
- > Calibrate instrument regularly (recommended: annually).

Changing batteries/rechargeable batteries

i When the battery/rechargeable battery is changed, customer-specific settings such as date/time are reset to the factory settings.

- ✓ Instrument is switched off.



1. Fold out the suspension device, loosen the clip and remove the cover of the battery compartment.
2. Remove empty batteries/rechargeable batteries and insert new batteries/rechargeable batteries (4x 1.5 V, type AA, Mignon, LR6) in the battery compartment. Observe the polarity!
3. Set on and close cover of the battery compartment (clip must engage).
4. Switch the instrument on.
5. Check factory settings, and change if necessary:
See Making settings, page 14.


Changing the valve or valve positioner handle

WARNING

Change of the valve positioners and valves by the customer is not permissible.
> Send the measuring instrument to the Testo Customer Service.

8 Tips and assistance

8.1. Questions and answers

Question	Possible causes / solution
 flashes	Batteries are almost empty. > Change batteries.
The device switches itself off.	Residual capacity of batteries too low. > Change batteries.
uuuu lights instead of the measurement parameter display	The permissible measuring range has been fallen short of. > Keep to the permitted measuring range.
oooo lights instead of the measurement parameter display	The permissible measuring range has been exceeded. > Keep to the permitted measuring range.

8.2. Measurement parameters

Designation		Description
Δt_{oh}	SH	Superheating, evaporation pressure
Δt_{cu}	SC	Subcooling, condensation pressure
t_o	Ev	Refrigerant evaporation temperature
t_c	Co	Refrigerant condensation temperature
t_{oh}	T1	Measured temperature, evaporation
t_{cu}	T2	Measured temperature, condensation
T3	T3	Measured temperature

8.3. Error reports

Question	Possible causes/solution
---- lights up instead of the temperature display (T1/T2 or toh/tcu)	Sensor or cable faulty > Please contact your dealer or Testo Customer Service
---- lights up instead of the display for superheating / subcooling (SH/SC or Δ toh/ Δ tcu)	- No actual superheating / subcooling. - No theoretical condensation or evaporation temperature can be calculated based on the pressure measured.
Display EEP FAIL	Eeprom defective > Please contact your dealer or Testo Customer Service
Display BT ERR	No BT module connected or BT module defective. > Please contact your dealer or Testo Customer Service
Display ERR 2 - 5	Damaged vacuum sensor > Please contact your dealer or Testo Customer Service

If you have any questions, please contact your dealer or Testo Customer Service. The contact details can be found on the back of this document or on the Internet at www.testo.com/service-contact.

8.4. Accessories and spare parts

Description	Article no.
Clamp probe for temperature measurement on pipes	0613 5505
The pipe wrap probe with Velcro tape for pipes with a diameter of up to 75 mm, Tmax. +75 °C, NTC	0613 4611
Water tight NTC surface probe	0613 1912
Sturdy precision NTC air probe	0613 1712
Pipe wrap probe for pipe diameters from 5 to 65 mm	0613 5605

Description	Article no.
Clamp probe for measuring current consumption on compressors with switchable measuring range	0554 5607
Oil pressure probe to check the oil filling level in the compressor	0638 1742
Power supply unit, 5 VDC 500 mA with Euro plug, 100-250 VAC, 50-60 Hz	0554 0447
Software EasyKool	0554 5604
High speed Testo printer with wireless infrared interface, 1 roll of thermal paper and 4 AA-batteries	0554 0549
USB connecting cable Device-PC	0449 0047
Transport case for measuring instrument, probes and hoses	0516 0012
Connecting cable	0554 5520
Testo 552	0560 5520

For a complete list of all accessories and spare parts, please refer to the product catalogues and brochures or look up our website www.testo.com

9 Appendix

9.1. Basis of calculation COP

Heat pump

The heating power and the efficiency calculation. COP heat pump are calculated by the testo 570 as follows:

- Heating power = Volumetric flow rate x density of medium x specific heat capacity x ΔT (K) / 3600
- COP = Heating power / power consumption

The following values can be entered via **[Set]** | **[Efficiency calc.]**:

Designation	Unit	Input range	Factory setting	Description
Power consumption	kW	0,000–9,999	2,000	Electric power consumption of system (e.g. compressor)
Volume flow	m ³ /h	00.0-99.9	20.0	Volumetric flow rate of fluid in the secondary circuit of the heat pump (e.g. brine circuit)
Density of medium	kg/m ³	0000.0-9999.9	1000.0	Density of medium in secondary circuit (e.g. water, brine, etc.)
Specific heat capacity	kJ/(kg x K)	0,000-9,999	4,182	Specific heat capacity of medium in secondary circuit (e.g. water, brine, etc.)

The display of the testo 570 shows the following values:

- **COP**
- Heating power (**kW**)
- Feed temperature secondary circuit (e.g. brine circuit) **T1 (°C)**
- Return temperature secondary circuit (e.g. brine circuit) **T2 (°C)**

