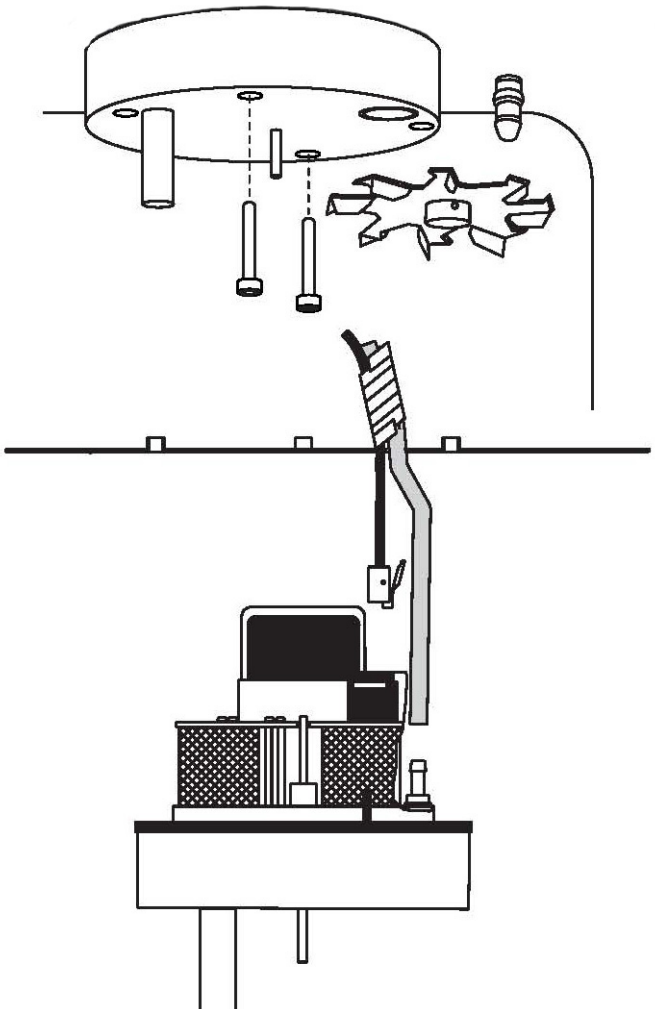
thermoscientific

Installation Instructions

Measuring Cell TCD/IR
HERAcell® 150i/240i



Postal address Germany

Thermo Electron LED GmbH
D - 63505 Langenselbold
Robert-Bosch-Straße 1

Postal address USA

Thermo Fisher Scientific
168 Third Avenue
Waltham, MA 02451
United States

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1. General notes

1.1 Fundamental requirements for service work

Please note that maintenance of the device must be carried out only by adequately skilled personnel. Prior to repairs. please read these installation instructions carefully.

- The replacement of defined spare parts must be performed only by the Technical service of Thermo Fisher Scientific or by authorized service personnel who have been trained by Thermo Fisher Scientific.
- Electrical work must be carried out only by a qualified electrician.
- Work to gas supply lines and to gas supply system components must be carried out only by trained gas and air conditioning expert personnel.
- Service works must be carried out in accordance with the applicable national regulation.
- For any repairs to the device, the operator must prepare clear and concise written instructions in the language of the service personnel based on the operation instructions, applicable safety data sheets, plant hygiene guidelines, and technical regulations, in particular:
  - which decontamination measures are to be applied for the device and accessories,
  - which protective measures apply when gas and gas cylinder are used,
  - which measures are to be taken in the case of an accident.

1.2 Required Tools

- Set of Allen wrenches (hexagon bits)

1.3 Applicability of the instructions

The content of the installation instructions are to subject to change without further notice.

- Concerning translations into foreign languages, the German version of these installation instructions is binding.
- Should you encounter problems that are not detailed adequately in these installation instructions, please contact Thermo Scientific immediately for your own safety.

1.4 Warranty

Thermo Scientific warrants the operational safety and functions of the CO_2 incubator only under the condition that:

- the device is not modified,
- only original spare parts and accessories that have been approved by Thermo Scientific are used.

The warranty is valid from the data of delivery.

1.5 Retrofitting

The device has been factory-configured to allow the thermal conductivity measuring cell (TCD) to be replaced with an infrared cell (IR) or via versa. The measuring cells are plug-in compatible, i.e. no additional installation works are required.

The device control automatically recognizes the type of measuring cell installed and will carry out configuration automatically.

1.6 Explanation of safety information and symbols

1.6.1. Safety information and symbols used in the installation instructions

Warning
Indicates a hazardous situation which, if not avoided, could result in death or serious injuries.

Caution
Indicates a hazardous situation which, if not avoided, could result in minor or moderate injurie.

Notice
Indicates a situation which, if not avoided, could result in property damage.

Note
Is used for applicational hints and useful information.

1.6.2. Additional symbols for safety informations

Contamination hazard!

Electric shock!

Fire hazard!

Suffocation hazard!

1.7 Overview safety notes

The general safety instructions point out potential hazards during repairs. To prevent constant repetitions, the following safety instructions are not mentioned explicitly in the individual sections; instead, the sections contain only references to the general safety instructions.

Prior to repairs, read the safety instructions carefully.

For any repair works at the device the particular ambient conditions, listed as location requirements, apply (see operating instructions).

Warning

Contamination hazard!

The incubator can be used for the permanent or temporary storage of toxic or infectious substances or materials. Therefore, the device or device components may be contaminated. Always observe the hygiene regulations of the operator!

- Infectious or toxic substances or residues thereof must always be removed completely from the work space.
- Prior to repairs, make sure that the device has been cleaned and disinfected to exclude infection hazards.
- The operator must provide a declaration of non-objection.

Electric shock!

Contact with current-carrying components may cause a lethal electric shock.

Prior to repairs, disconnect the device from the power supply system:

- Isolate the device electrically.
- Protect the device from accidental reconnection.
- Make sure, the device is de-energized.
- Ground and short the device.
- Isolate adjacent components or components to repair that are under voltage.

Dangerous gases!

Released oxygen (O_2) promotes combustion and may explode in combination with oils, greases, and lubricants.

Large amounts of carbon dioxide (CO_2) and nitrogen (N_2) released into the room atmosphere may cause suffocation. Prior to repairs disconnect gas supply:

- Close the CO_2/O_2/N_2 supply system shut-off valves.
- Disconnect the gas pressure hoses from the sleeve at the rear of the device.

Notice

Handling electrical components!

The electrical components must be handled only in compliance with the guidelines of IEC-61340 Electrostatic, Handling ESD (electrostatic discharge). Observe ESD safety measures during:

- packing and storage,
- unpacking,
- installation.

Note

Start-Up:

If safety appliances were removed or disabled during repairs, the device must not be started up before the safety appliances have been reinstalled and checked for proper operation! Before the incubator is started up and operated, a test run must be performed.

Recycling:

All components of the device can be recycled.

If toxic or infectious substances were used in the device, the components must be decontaminated as required before they are discarded or shipped. For shipped components, a certificate of decontamination must be attached.

2. Installing the measuring cell

2.1 Installing/Removing the blower wheel cover

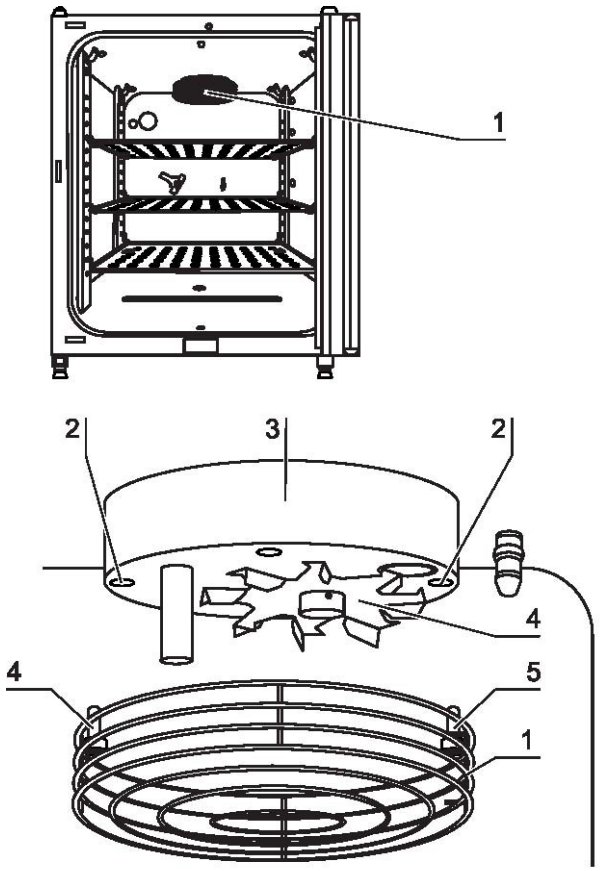

Fig. 1. Wire cage installation

The wire cage [1] that covers the blower wheel [4] is attached with two screws [5] to the measuring cell an [3]. Each screw has a sealing ring that protects it from getting lost.

2.1.1. Removing the wire cage

1. Disconnect the device from the power supply.
2. Remove the two retaining screws Die [5] that secure the wire cage [1].
3. Remove the wire cage.

2.1.2. Installing the wire cage

1. Install the retaining rings with sealing rings to the wire cage guide tabs.
2. Align the wire cage so that the retaining screws [5] are seated at the threaded holes [2] of the measuring cell [3].
3. Tighten the two retaining screws [5] hand-tight. The retaining screws must be flush with the measuring cell.

Note
Functional test:
After installation, check to see of the blower wheel can rotate freely.

2.2 Installing/Removing the TC measuring cell

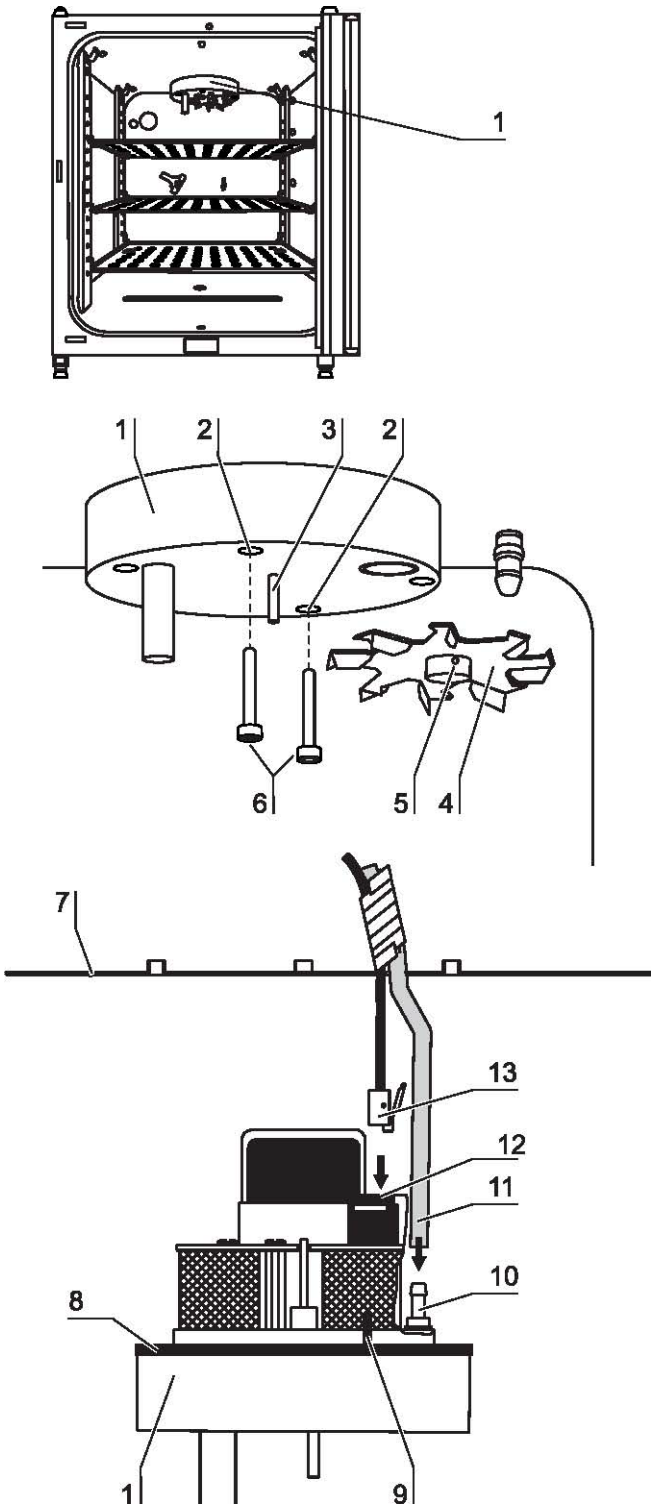

Fig. 2. Measuring cell installation (Example: TCD type)

The measuring cell [1] is attached with two screws [6] to the device ceiling [7].

2.2.1. Removing the TC measuring cell

1. Remove the blower wheel cover.

2. Remove the blower wheel [4] by removing the Allan screw [5] and sliding the blower wheel off the shaft [3].
3. Remove the two retaining screws [6] from the measuring cell.
4. Carefully lower the measuring cell [1] from the ceiling opening, then:
   – Disconnect the bus cable connector [13] from the socket [12].
   – Disconnect the CO_2-hose [11] from the sleeve [10].

Notice
Supply line breakage!

The bus cable and the CO_2-hose are unable to bear loads. Do not allow the measuring cell to hang by its supply lines!

5. Remove the measuring cell.

2.2.2. Installing the TC measuring cell

1. Clean the sealing surface around the opening in the device ceiling [7].
2. Check the seal [8] at the measuring cell mounting surfaces.
3. Align the measuring cell so that the positioning pin [9] iis oriented toward the mounting groove at the device ceiling.
4. Connect the supply lines:
   – Connect the bus cable connector [13] to the measuring cell socket [12] .
   – Connect the CO_2-hose [11] to the sleeve [10].
5. Place the measuring cell into the ceiling opening while making sure that the supply lines are not bent and that the seal [8] is level with the device ceiling.
6. Install the two retaining screws [6].
7. Slide to blower wheel [4] onto the shaft all the way to the stopand secure it with the Allan screw [5].
8. Install the blower wheel cover.

2.3 Installing/Removing the IR measuring cell

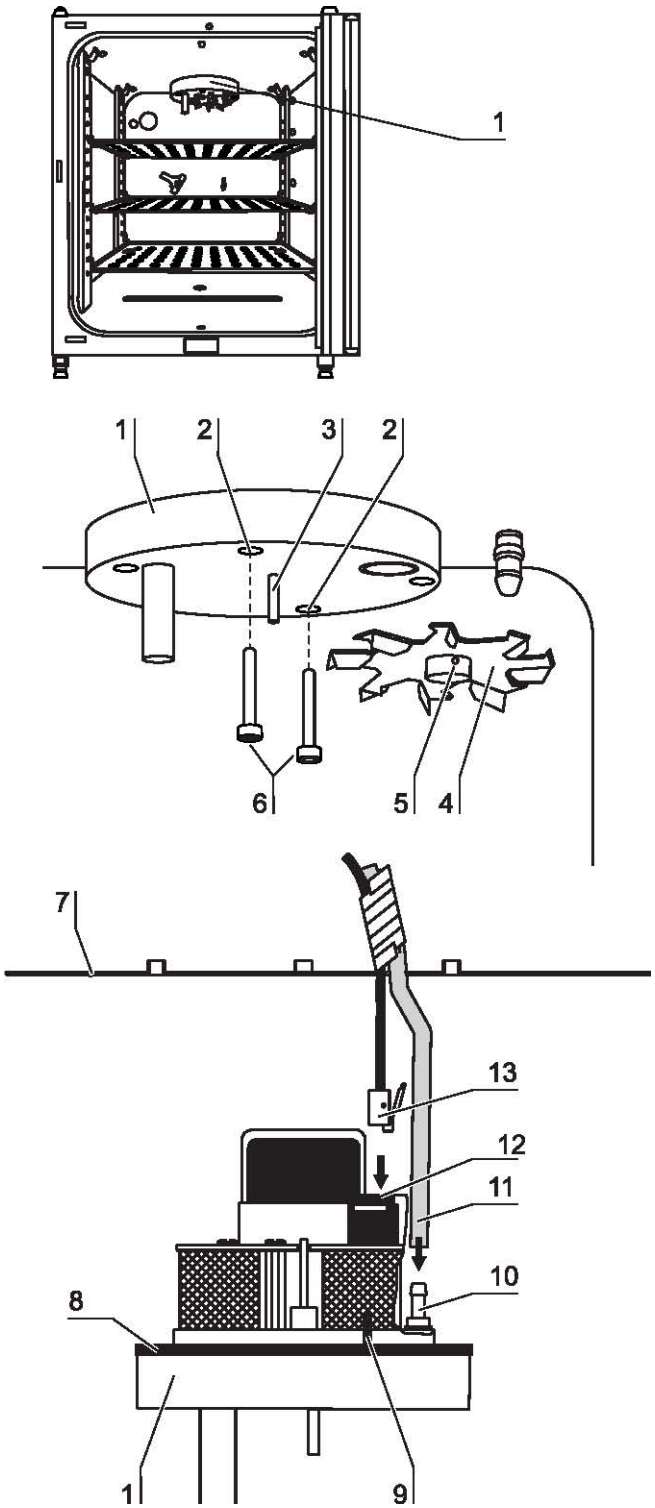

Fig. 3. IR measuring cell

The measuring cell [1] is attached with two screws [6] to the device ceiling [7].

2.3.1. Removing the IR measuring cell

1. Remove the blower wheel cover.

2. Remove the blower wheel [4] by removing the Allan screw [5] and sliding the blower wheel off the shaft [3].
3. Remove the two retaining screws [6] from the measuring cell.
4. Carefully lower the measuring cell [1] from the ceiling opening, then:
   – Disconnect the bus cable connector [13] from the socket [12].
   – Disconnect the CO_2-hose [11] from the sleeve [10].

Notice
Supply line breakage!

The bus cable and the CO_2-hose are unable to bear loads. Do not allow the measuring cell to hang by its supply lines!

5. Remove the measuring cell.

2.3.2. Installing the IR measuring cell

1. Clean the sealing surface around the opening in the device ceiling[7].
2. Check the seal [8] at the measuring cell mounting surfaces.
3. Align the measuring cell so that the positioning pin [9] is oriented toward the mounting groove at the device ceiling.
4. Connect the supply lines:
   – Connect the bas cable connector [13] to the measuring cell socket [12].
   – Connect the CO_2-hose [11] to the sleeve[10].
5. Place the measuring cell into the ceiling opening while making sure that the supply lines are not bent and that the seal [8] is level with the device ceiling.
6. Install the two retaining screws [6].
7. Slide to blower wheel [4] onto the shaft all the way to the stop and secure it with the Allan screw [5].
8. For installation, use the blower wheel supplied with the IR measuring cell.

2.4 Conversion of Auto-Zero TC to measuring cell 50077891

2.4.1. Removing the Auto-Zero measuring cell

1. Disassemble the measuring cell as described in section 2.2.
2. Disconnect the auto-zero hoses (yellow and black), connect them together and push them onto the insulation box.

2.4.2. Installation of the standard measuring cell

1. Install the WLD measuring cell 50077891 as described in section 2.2.
2. Disconnect the auto-zero pump from the mainboard (JP11).

2.4.3. Configuration

1. Go to service mode via the "Cal + i-alarm + auto-start" buttons.
2. In FL 10, set sublevel 1 to "0".
3. Leave the service level by pressing any key.

2.5 Device calibration/Start-up

The start-up of the device after the measuring cell has been replaced requires adjustment work as described in the following instructions:

Temperature configuration/service level	Service instructions
Temperature and CO_2-calibration/user level	Operating instructions

1. Connect the device to the power supply system.
2. Perform a power reset by switching the device on.

2.5.1. TCD type measuring cell (without O_2 control)

- Temperature test field calibration/service level (see service instructions)
- CO_2 calibration/user level (see operating instructions)

2.5.2. TCD type measuring cell (with O_2 control)

- Temperature test field calibration/service level (see service instruction)
- CO_2 calibration/user level (see operating instructions)
- if required, O_2 calibration and correction off cross-compensation/service lever (see service instructions)

2.5.3. IR measuring cell

- Temperature test field calibration/service level (see service instructions)
- CO2 calibration/user level (see operating instructions)

3. Perform a test run and start the device up.

Note
Functional test:
If the display shows the correct actual values for the temperature and CO_2 control loops after the heat-up phase has been completed, the device is ready for operation.