

User and Installation Manual



ODTC

ODTC® 96 | 384 | 96 XL | 384 XL
Part no.: 8100xxx

ODTC® Power & Control Unit
Part no.: 8900035

Company information

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This manual and the information herein have been assembled with due diligence.

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1 About this manual

1.1 General information

- Read the manual completely.
- If the instructions in this manual are not followed, injury or product damage cannot be ruled out.
- Missing or insufficient knowledge of the manual leads to loss of liability against INHECO GmbH.
- This manual is part of the ODTc and must be retained until the device is disposed of or must be passed on with the ODTc to new users.
- Contact INHECO if there are any uncertainty in operation or handling of the ODTc.

Your opinion about this manual provides us with valuable insights on how we can improve this document. Please do not hesitate to direct your comments to **sales@inheco.com**, Contact information.

2 Safety instructions

2.1 Product-specific risks

WARNING



WARNING

Follow the safety instructions given below in order to avoid danger to the user.

General

- The main power switch of the ODTC Power & Control Unit must always be accessible to shut down the system in the event of an emergency.
- The ODTC needs no maintenance on a regular basis → **Maintenance, page 44.**
- The ODTC has to be placed in an upright position.
- Free air supply for the ODTC and its Power & Control Unit must be ensured to prevent malfunction caused by insufficient cooling. Do not cover the ventilation inlet and outlet at the front / rear panel / side panel at any time and keep the ventilation inlet clean. If in doubt, please contact INHECO for further analysis.
- Ensure that there is no other device installed next to the ODTC that increases the inlet air temperature for the ODTC above the specified temperatures. If in doubt, please contact INHECO for further analysis.
- Do not insert any parts into the ventilation inlet or outlet.
- Do not exceed the minimum or maximum ambient temperature and humidity conditions during operation or storage of the ODTC Technical Data.
- The ODTC must not be used in environments with risk of explosion or with explosive liquid samples.
- The ODTC is for indoor use only.
- Operation of the ODTC below ambient temperature:
The operation of the ODTC below ambient temperature has to be limited to 1-2 hours per application. Condensation will be generated when operating the ODTC below ambient temperature. The condensation might have an effect on the thermal performance and lifetime of the ODTC. Condensate can prevent the ODTC from operating properly and can damage the ODTC.

WARNING



Crushing hazard

While the lid of the ODTC is closing, there is a high danger of crushing your fingers, which is why a crushing hazard protection is implemented.

- Never reach into the "disposable area" while the lid is opening or closing.

WARNING



Risk of burns

Hot surfaces, primarily the VCM® and the ODTC lid, can burn your skin. Even after switching off the ODTC Power & Control Unit or after stopping a heating process, the ODTC can still be hot and can seriously burn your skin considering that the mount temperature can reach up to +99 °C [+210 °F] and the ODTC lid temperature up to +115 °C [+239 °F]!

- Let the device cool down after use. It takes a while to cool down after the device has been used. The ODTC lid has no active cooling.

! WARNING



Electrical shock

You can suffer an electric shock and injuries, if the ODTC and the ODTC Power & Control Unit are not connected properly to the wall power outlet or with each other.

- Do not use the ODTC, the Power & Control Unit or the connecting cables if these show visible signs of damage.
- Never open the ODTC housing while it is still connected to the ODTC Power & Control unit. Disconnect the ODTC from the ODTC Power & Control unit before opening the ODTC housing.
- Never open the ODTC Power & Control housing while it is still connected to the wall power outlet. Disconnect the ODTC Power & Control Unit from the power outlet before opening the ODTC Power & Control Unit housing.
- Do not work with wet hands.
- Make sure that the ODTC does not come in contact with liquids while the device is connected to the power outlet.
- Use the original power cable provided by INHECO to ensure safe and proper operation.
- The product must be connected directly to an approved power source, for example to a three-wire grounded socket for the 230 V / 110 V / 90 V line.
- Ungrounded outlets must be replaced with a properly (PE) grounded outlet by a qualified electrician in accordance with local electrical codes.

! CAUTION



Risk of hand injury!

Spinning fans in the ventilation outlet can cause cut and abrasion injuries.

- Never put your hand into the ventilation outlet of the Thermal Cyclor while the ODTC® Power & Control Unit is connected to power.

NOTICE



The product is designed in accordance with Protection Class I (IEC).

The housing of the product is connected to protection earth (PE) by means of a cord.

Make sure that the electrical specification on the device's identification label meets your local situation → **Labels, page 20.**

NOTICE



Biosafety laboratory environment

When using the ODTC in a biosafety laboratory environment, the user is responsible for labeling it according to the WHO Laboratory Biosafety Manual (ISBN 92 4154650 6) and for operating the devices in accordance with the Biosafety Level Regulations of the WHO Laboratory Biosafety Manual.

NOTICE



Electromagnetic field

The ODTC is not designed for use in residential areas. Thus, there is no guarantee of adequate protection of radio reception in this area.

2.2 Technical alterations

- Do not alter the product. Any modification or change not approved by INHECO leads to the loss of warranty and INHECO’s liability → **Return device for repair, page 47.**
- Use only original parts provided by INHECO. Parts provided by other suppliers can impair the functionality of the unit.
- Damage due to the use of non-original parts are excluded from INHECO’s liability.

2.3 Malfunctions

- In case of a malfunction, switch off and disconnect the device immediately. Make sure to inform the authorized person in charge.
- Make sure that the malfunctioning unit is not accidentally re-installed and used before the malfunction is effectively eliminated.
- See → **Troubleshooting & support, page 44.**

2.4 Danger signs



Illustration 1: General danger sign

The general danger sign is used to indicate the danger of personal injury.

Danger sign	Description
	<p>GENERAL DANGER SIGN</p> <p>Failure to observe the warning notices can result in death, severe physical injury or damage to health, as well as severe property damage.</p>
	<p>ELECTRICAL HAZARD</p> <p>Failure to observe the required warnings may result in fatal or serious injury from dangerous electrical voltage.</p>
	<p>BURNING HAZARD</p> <p>Failure to observe the required warning notices could result in serious injury or damage to products if contact is made with a hot surface.</p>
	<p>CRUSHING HAZARD</p> <p>If the required warning notices are not observed, physical injuries can occur from closing mechanical parts of a machine.</p>

Table 1: Danger Signs

2.5 Information symbols

The information symbols listed here may appear in this document.

General Information Symbols

Information symbol	Description
	<p>IMPORTANT NOTE</p> <p>This information symbol indicates important instructions that should be observed in order to avoid problems with the product.</p>
	<p>INFORMATION</p> <p>This information symbol indicates useful notes that should be observed in order to work optimally with the product.</p>

Table 2: Information Symbols

3 Product description

3.1 Intended use

The ODTC is designed for use as an integrated Thermal Cycler in automated liquid handling workstations, to heat and cool labware with biological or chemical samples, e.g. for NGS or PCR. The ODTC is not intended to be used as a stand-alone unit.

The ODTC is designed specifically for use in life science and in vitro diagnostics. The ODTC devices are prepared for easy integration into IVD applications, but the final IVD validation has to be performed by the first marketer (IVD application).

When using the ODTC in a biosafety laboratory environment, the user is responsible for labeling the devices according to the WHO Laboratory Biosafety Manual (ISBN 92 4154650 6) and for operating the devices according to this Biosafety Manual.

For the operation of the ODTC a third-party SiLA capable PMS is necessary → **Communication with ODTC, page 31.**

The ODTC devices are delivered with CE and UL certification.

Scope

This manual explains the following types of ODTC:

- ODTC 96
- ODTC 96 XL
- ODTC 384
- ODTC 384 XL

We offer ODTC left-, ODTC back-, ODTC right-, ODTC down versions which all differ in their ventilation. In addition we have the ODTC 96 XL and ODTC 384 XL available which differ in the space for the gripper and the ODTC 96 XL additional offer to use another type of PCR plates which can be used on top. The ODTC 96 XL allows the handling of low profile and also high profile ODTC 96 XL plates for PCR volumes of up to 100 µl.

In the following ODTC is used for all ODTC configurations (incl. Power & Control Unit). The exact type of ODTC or Power & Control Unit will only be stated when necessary.

The ODTC needs to be installed by a skilled technical integrator, assisted by a system administrator for network settings. The device is made for use in a private local area network without any connection to the global network. In case of an existing connection to the global network, the PC (OS + SW) should implement cybersecurity measures to ensure that the private instrument network cannot be accessed /attacked (one option might be to use different network cards or a password).

The ODTC must be used exclusively by laboratory professionals who are familiar with the instructions of this manual as well as with the instructions of their workstation manual.

Example of sets - Part# 8100100 consists of: ODTC Power & Control Unit (#8900035) and the ODTC® 96 Left (#8100000)

3.2 Components - scope of supply

Before initial operation, make sure that the shipment of your unit and its scope of supply is complete, and no parts are damaged.

In case of parcel or product damages, take photos of the damaged boxes and products and email them to **techhotline@inheco.com** without delay. Transportation damages must be reported to INHECO within 7 days of delivery. The following components should be included in each shipment:

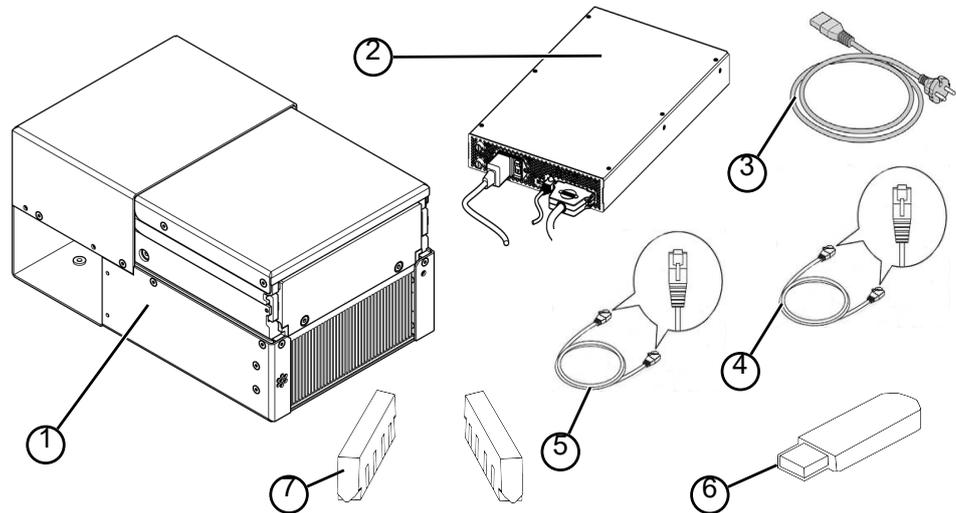


Illustration 2: Components

1	ODTC Incl. hardwired connector cable (shown ODTU type is 1 of various ODTU types available)	2	ODTC Power & Control Unit (PCU)
3	Power cable	4	Yellow Ethernet cable (RJ45)
5	Red Ethernet cross-over cable (RJ45)	6	USB flash drive (contains: this manual and Script Editor Manual, Firmware Command Set, ODTU device finder, ODTU Script Editor (software to create ODTU usable protocols/scripts) → Communication with ODTU, page 31.
7	Only for ODTU 96 XL ejection bars to use high profile plates		

3.3 Functional elements

The ODTC set primarily consist of the Thermal Cycler ② (ODTC) and a Power & Control Unit (PCU) ①, ODTC and Power & Control Unit ① is connected by a maximum 3-m cable ③, which is hard-wired to the ODTC.

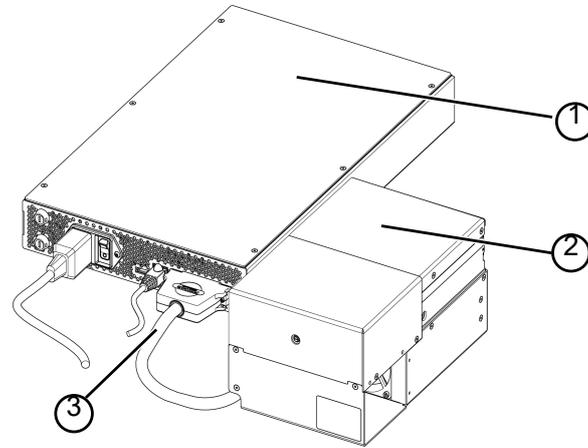


Illustration 3: ODTC® set (Power & Control Unit 8900035 + Thermal Cycler 8100000) from the back showing the connection of both devices

1	Power & Control Unit	2	Thermal Cycler
3	3-m cable		

3.3.1 Functional elements of the ODTC

3.3.1.1 ODTC front

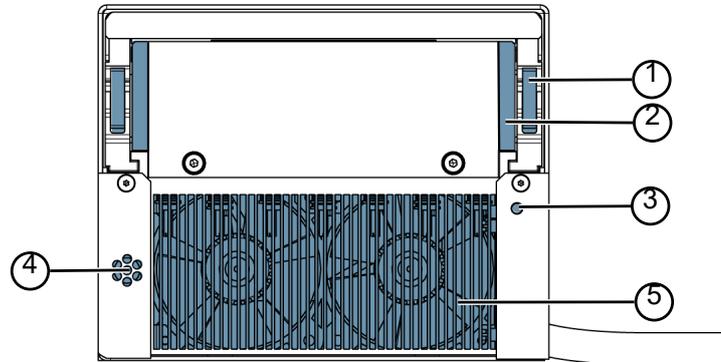


Illustration 4: Functional elements of ODTC® at the front

1	Latches for locking the lid. Open the ODTC lid manually → Manually opening the ODTC lid (90° position), page 37	2	Removable blocks for better gripper access and cable inlet for verification tool → Removable blocks, page 30.
3	Status LED → legend below with the description.	4	Ambient temperature sensor, to ensure that the ODTC runs within its specified operating temperature → Ventilation, page 33 and → Overheated system or fan issue, page 53.
5	Ventilation inlet		

LED color	Status LED	Description of status
No color (off)	Off	Device is off
Green	Steady light	Device is ready for cooperation
Green	Flashing	Initialization, self-test, device ok but not ready yet
Red	Steady light	Malfunction
Red	Flashing	Malfunction of controlling mini PC located on the mainboard of the ODTC Power & Control Unit

Table 3: Legend (Status LED)

3.3.1.2 ODTc ventilation

The ODTc ventilation with free air supply is necessary to ensure sufficient cooling for the device. For optimal ventilation and integration in various workstation layouts INHECO offers 4 ventilation directions for the ODTc device versions (ODTc 96, ODTc 384, ODTc 96 XL and ODTc 384 XL):

ODTc (e.g. #8100000, 8100010): Ventilation outlet on the left

ODTc (e.g. #8100001, 8100011, 8100031): Ventilation outlet at the back

ODTc (e.g. #8100002, 8100012): Ventilation outlet on the right

ODTc (e.g. #8100003, 8100013): Ventilation outlet below the device

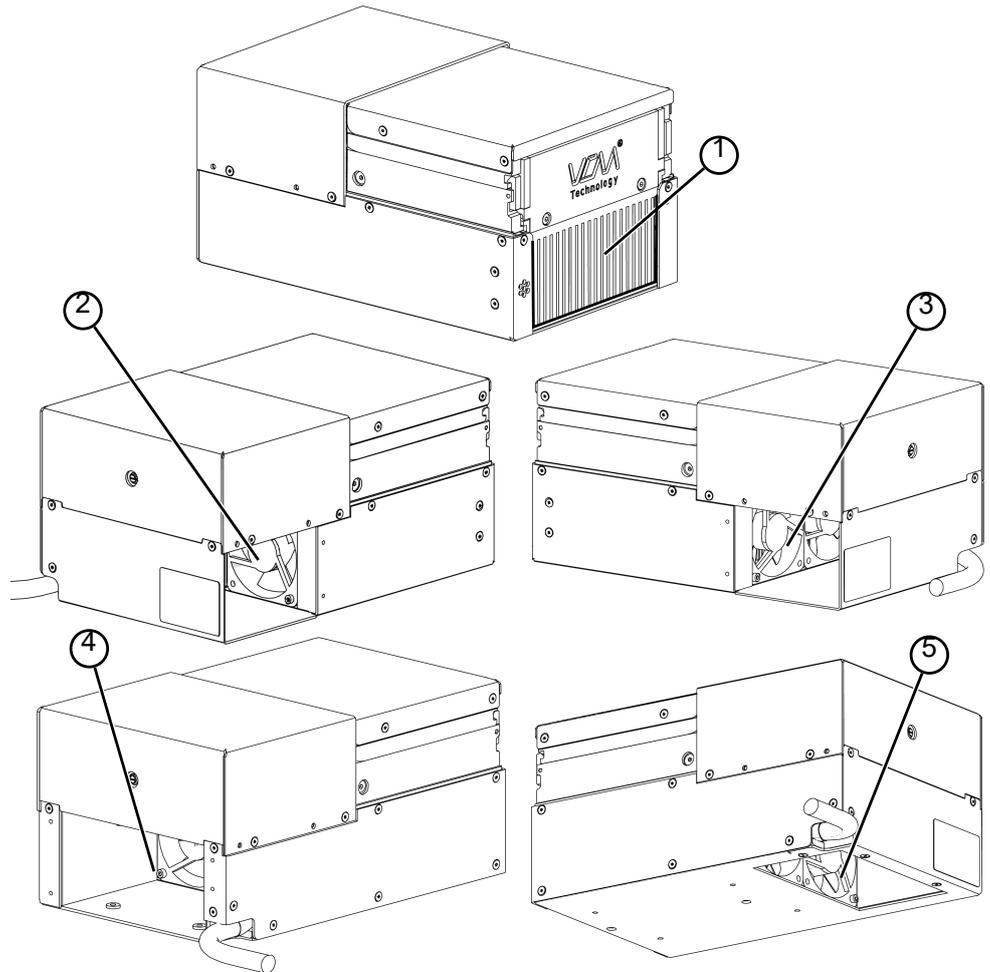


Illustration 5: ODTc® ventilation versions

1	Ventilation Inlet	4	Ventilation outlet at the back
2	Ventilation outlet on the left	5	Ventilation outlet below
3	Ventilation outlet on the right		

3.3.1.3 ODTc lid

The horizontally moving ODTc lid includes a heating and sealing function to prevent evaporation, condensation and possible cross contamination.

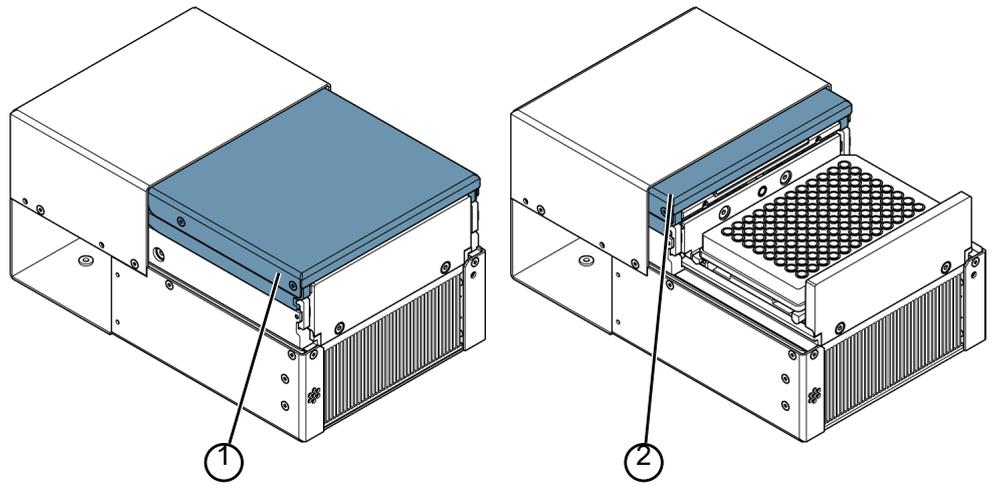


Illustration 6: ODTc® lid

1	Closed position	2	Open position
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NOTICE



The Thermal Cycler can be operated even with the lid open (temperature profiles can be run). Operating the ODTc with open ODTc lid may cause evaporation, condensation, and cross contamination. In this case it is the user’s responsibility to avoid this with other measures.

3.3.1.4 ODTc sealing cover

The ODTc lid has a pre-installed sealing cover ① (removable). The sealing cover ① is used to ensure correct heat transfer from the top and to seal the plates. The use of the integrated sealing Cover ① or as an alternative a suitable automated sealing lid plate provides the best sealing to prevent evaporation, condensation and possible cross contamination.

In case you want to use pre-sealed plates with an integrated sealing cover, please order the ODTc Metal Cover, as some foils tend to stick to the rubber mat of the standard integrated sealing Cover ①.

The sealing cover ① is manually accessible for exchange/maintenance/service & cleaning → **Manually opening the ODTc lid (90° position), page 37**

The sealing cover ① can be replaced by a suitable automation friendly sealing lid → **Removing the pre-installed sealing cover, page 41**

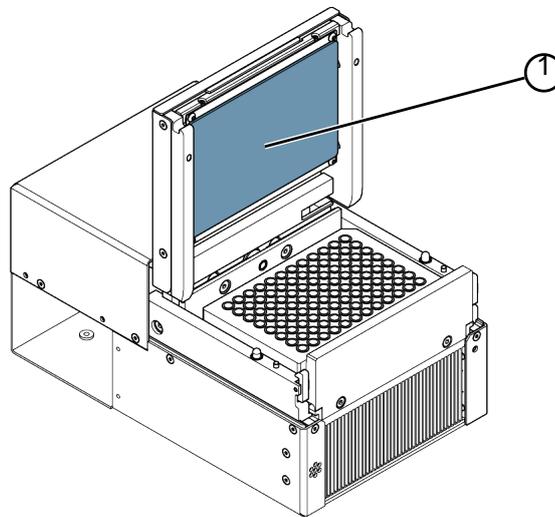


Illustration 7: ODTc® lid with integrated sealing cover

1	Sealing cover
---	---------------

NOTICE



Either the ODTc sealing cover ① **OR** a suitable automation-friendly sealing lid has to be used to ensure correct heat transfer and to seal the plate properly. It is the user's responsibility to find and prove the best sealing option for the process in question.

3.3.1.5 ODTc VCM (Vapor Chamber Mount)

The VCM[®] is the interface between the 96 ^① and 384 well PCR plate and the thermal motor of the ODTc. The VCM[®] allows an optimized heat transfer into the plate.

The VCM[®] or three dimensional 3D "Vapor Chamber Mount" technology is based on heat pipe technology and is as such a further development of a standard 1D heat pipe (often used in laptop computers) and a 2D vapor chamber → detailed information in the technology section on www.inheco.com

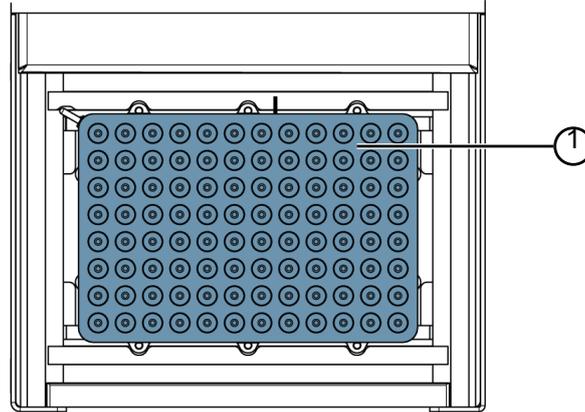


Illustration 8: Example: Functional element inside the ODTc[®] 96: VCM[®] (Vapor Chamber Mount)

1	Vapor Chamber Mount
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NOTICE

For ODTc 96 XL: The maximum volume for PCR applications in high profile plates should not exceed 100 µl/well. Liquid levels above 100 µl will exceed the height of the enclosed wells in the mount.

3.3.1.6 ODTc plate ejection mechanism

Due to the applied pressure and high temperatures (depending on executed temperature profiles), the inserted disposable might get stuck to the VCM[®]. Therefore, the ODTc has a built-in plate ejection mechanism to loosen the PCR plate after the finished process. The plate ejection mechanism is automatically activated when the ODTc lid is opened. The plate ejection mechanism is optimized for specific PCR plates → **Plate ejection mechanism fails, page 54.**

Please contact INHECO if you plan not to use the recommended PCR plates. INHECO will help to determine whether the existing ejection bars (illustration below) are suited or whether custom-designed ejection bars are needed. The scope of supply includes ejection bars for full-skirted PCR plates. Contact INHECO if ejection bars for semi-skirted or non-skirted PCR plates are required.

The ejection bars are loose parts and can be taken off by hand. Ensure that they are in place at first installation and during daily usage of the ODTc.

NOTICE



The thermal block (VCM®) and plate ejection mechanism are optimized for specific PCR plates → **Failures, page 52.**

Do not use other PCR plates without approval from INHECO. The use of other plates might reduce the thermal performance or might not work at all, if:

- The plate does not fit perfectly into the VCM® → insufficient heat transfer
- The plate ejection mechanism does not work properly
- ODTL lid does not close properly

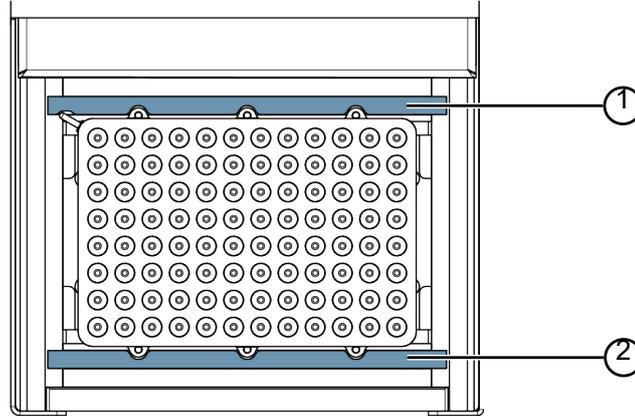


Illustration 9: Functional element inside the ODTL®: plate ejection mechanism

1	Ejection bar, back	2	Ejection bar, front
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NOTICE



For ODTLXL 96/384: The ejection bars for use with high-profile plates differ from the standard ejection bars. The standard ejection bars for low-profile plates are delivered within the ODTL XL 96/384 and the ejection bars are delivered as accessories → **Product description, page 10**

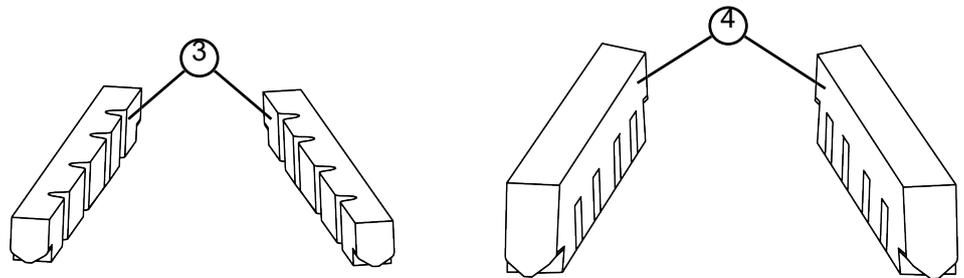


Illustration 10: Ejection bars (A = for ODTL® low-profile plates; B = ODTL® 96 XL high-profile plates)

3	For ODTL® low-profile plates	4	ODTL® 96 XL high-profile plates
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3.3.2 ODTc Power & Control Unit

The ODTc device has to be controlled via the ODTc Power & Control Unit. It can be positioned horizontally or vertically and is connected to the ODTc via a 3-m cable with the ODTc connector (number 6 in the figure below).

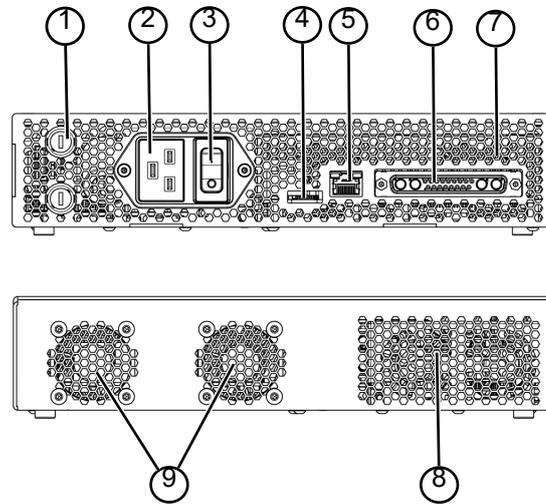


Illustration 11: Functional elements of the ODTc® Power & Control Unit

1	Fuses	2	Power connector
3	Power switch	4	Micro-SD card slot
5	Ethernet connector with 2 status LEDs	6	ODTc connector
7	Ventilation outlet	8	Ventilation inlets of the power supply
9	Ventilation inlets of the controller board		

LED color left/right	Status LED	Description of status
Orange left	Steady/flashing light	Ethernet connection ok
Orange left	Off	Ethernet connection failed, device not on
Green right	Steady light	Device is ready for operation
Green right	Off	Device is in status off or device is re-booting or a SiLA error occurred during boot period

Table 4: Legend – LED status and description of status

NOTICE



The ODTc Power & Control unit contains a micro-SD card. This SD card is used for storing log and trace files. Do not use the PCU while the SD card is not inserted as it is necessary for proper operation (respectively for proper support) of the device.

The micro-SD card can be removed when the PCU is powered off to copy the log and trace files.

3.4 Labels

The identification label with part number and serial number also contains important technical details. The electrical specification on the label must meet your local situation. The label is placed on the back or side of the ODTC and on the side of the ODTC Power & Control Unit. The identification label must not be removed. If it has become illegible or falls off, it has to be replaced by a new identification label. New labels can be ordered from INHECO.

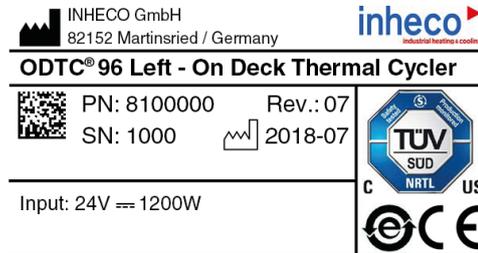


Illustration 12: Example product label on the ODTC®



Illustration 13: Product label on the ODTC® Power & Control Unit

Product number varies on device supplied, e. g.
8100000 for ODTC 96 with ventilation outlet on the left
8100001 for ODTC 96 with ventilation outlet at the back
8100010 for ODTC 384 with ventilation outlet on the left
8100011 for ODTC 384 with ventilation outlet at the back
8100031 for ODTC 96 XL with ventilation outlet at the back
8100035 for ODTC 384 XL with ventilation outlet on the left

Table 5: Product Numbers

NOTICE

The node name shown on the label for the SiLA Service Configuration can be used to ping the device, e.g. "ping ODTC_04E964".

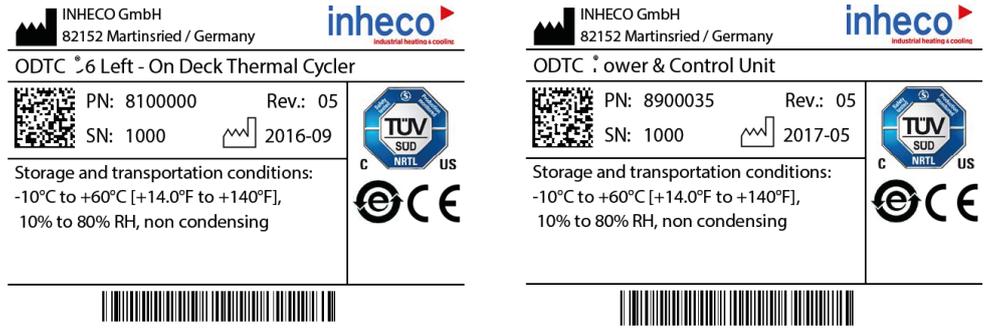


Illustration 14: Example shipment labels on the package (part number varies on device ordered).



Illustration 15: Other labels clearly visible on the housing of the product

3.5 Technical data

General specifications	ODTC® 96 and 384	ODTC® 96 XL and 384 XL
Dimensions (WxDxH)	156.5 mm x 248 mm x 124.3 mm	156.5 mm x 285.2 mm x 129.3 mm
Weight	approx. 7.5 kg	
Plate ejection	automated plate ejection mechanism with exchangeable ejection bars	
ODTC device DC input ¹⁾	24 Vdc / 1200 W	
Protection class	III (according to DIN EN 61140)	
Degree of protection of enclosures	IP 22 (according to IEC 60529-1)	
Pollution degree	2 (laboratory equipment)	
Overvoltage category	1	
EMC device class	Group 1/class A (industrial requirements)	
PCR plates	96 and 384 well VCM® optimized for specific PCR plates → Spare parts and accessories, page 56 (other PCR plate formats only on request)	
Maximum volume during PCR	up to 100 µl/well for 96 well version up to 50 µl/well for 384 well version	
ODTC lid	Opens and closes by moving horizontally and is heated to avoid condensation Running temperature profiles with open ODTC lid are possible	
Lid Pressure	Automated adjustment of lid pressure for different disposable and sealing options	

Table 6: Technical Data – General Specifications

1) ODTC device shall only be powered by the ODTC Power & Control Unit.

Thermal specifications - ODTC®	ODTC® 96/ODTC® 96XL	ODTC® 384/ODTC® 384XL
Temperature range	+4 °C to +99 °C [+39 °F to +210 °F] ²⁾	
Temperature accuracy	±0.30 K at +55 °C [+131 °F]	
Temperature uniformity	±0.20 K at +55 °C [+131 °F] ±0.20 K at +72 °C [+162 °F] ±0.20 K at +95 °C [+203 °F]	
Heating rate average (slope)	Max. 4.4 K/s	Max 5.0 K/s
Cooling rate average (slope)	Max. 2.2 K/s	
Adjustable heating & cooling rate	From 0.1 K to 4.4 K/s	From 0.1 K to 5.0 K/s
ODTC lid temperature	Adjustable between ambient temperature + 5.0 K to +115 °C [+5.0 K to +239 °F]	
ODTC lid default temperature	+110 °C [+230 °F]	+115 °C [+239 °F]

Table 7: Technical Data – Thermal Specifications

2) Operation of ODTC below ambient temperature:

If operation below ambient temperature is planned for longer than two hours or the device shows condensation, run a short heating step with the lid open to remove condensation. If the ODTC is used for cooling more than two continuous hours, lifetime of the device could be reduced.

Depending on the humidity in the atmosphere, condensation will be generated when operating the ODTC below ambient temperature. The condensation might have an effect on the thermal performance and lifetime of the ODTC. Condensate can prevent the ODTC from operating properly and can damage the ODTC. After each use of the ODTC below ambient temperature, a drying step needs to be performed. It can be part of a following method or should follow directly after the cooling period. The drying step needs to be clearly above ambient temperature. The length of the drying step depends on the amount of condensate and should be ended when no condensation is visible on the Mount or its surrounding.

Specifications - ODTC® Power & Control Unit	
Dimensions (WxDxH horizontally placed)	256.5 mm x 414.5 mm x 58 mm ³⁾
Interface	SiLA, Ethernet (RJ45 connector)
Weight	Approx. 5.5 kg
AC input	100 - 240 V/50/60 Hz (1250 W)
DC output	24 VDC 1200 W
Protection class	I (according to DIN EN 61140)
Degree of protection of enclosures	IP 21 (according to IEC 60529-1)
Pollution degree	2 (laboratory equipment)
Overvoltage category	2
Fuses	2 x T12A/250 V

Table 8: Technical Data – Specifications ODTC® Power & Control Unit

3) Note: The ODTC Power & Control Unit can be positioned vertically or horizontally.

Environmental conditions - ODTC® and ODTC® Power & Control Unit		
Tolerable relative humidity	Operation	30-80 %, non-condensing ⁴⁾
	Transportation and storage	30-80 %, non-condensing ⁴⁾
Temperature	Operation	+15 °C to +32 °C [+59 °F to +90 °F]
	Transportation and storage	-10 °C to +60 °C [+14 °F to +140 °F], non-condensing ⁴⁾
Altitude	Max. 3000 m	

Table 9: Technical Data – Environmental Conditions

4) Condensate can prevent the ODTC from operating properly and can damage the ODTC.

4 Installation

WARNING



Risk of injury!

During installation of the ODTc, malfunctions may occur that could result in serious injury.

- The main power switch of the ODTc Power & Control Unit must always be accessible to shut down the system in case of an emergency.

The installation should only be performed by technically trained personnel.

4.1 Scope of supply

WARNING



Risk of injury from falling objects!

If the ODTc falls to the ground, serious injury may result.

- Transport the ODTc carefully.
- When placing the ODTc, make sure that the ODTc is standing securely.
- Before initial operation, make sure that the shipment of your unit is complete and neither packaging nor parts are damaged, → **Components - scope of supply, page 11**.
- Keep original packaging for future shipments.

4.2 ODTc Power & Control Unit (PCU)

The ODTc Power & Control Unit (PCU) is recommended to be used in a horizontal position. In this case no fixation is needed. Installation of the PCU in an upright position requires fixation or protection against tilting over.

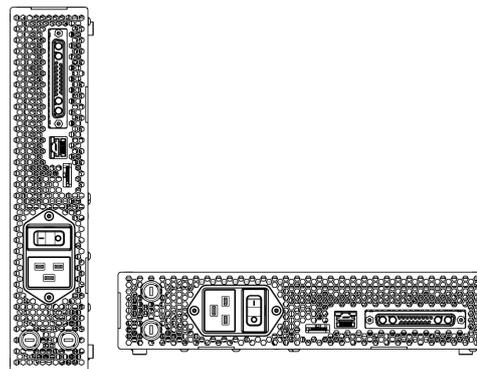


Illustration 16: ODTc® Power & Control unit (PCU), upright and horizontal

4.3 Mechanical integration

The ODTC® is primarily designed for use/integration on liquid handling workstations.

ODTC® fixation

The ODTC® needs to be fixed to the deck of the workstation ① by using 4x M4 screws (4.5 mm holes with thread) in order to guarantee proper operation. For exact positioning use 2x Ø4m6 pins for the fittings in the bottom of the ODTC® ②.

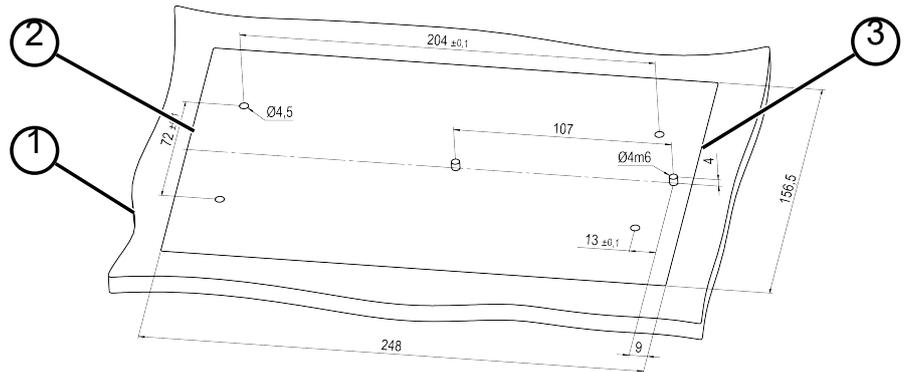


Illustration 17: Drilling scheme for standard ODTC® fixation (distance to front of device: 9 mm)

1	Working table	2	ODTC®
3	Front		

ODTC® XL fixation

The drilling scheme of the ODTC® XL ④ is the same as for the standard ODTC® ② but due to the larger footprint (285.2 mm more in depth), the distance to the front ③ of the ODTC® differs between standard ODTC® ② and ODTC® XL ④.

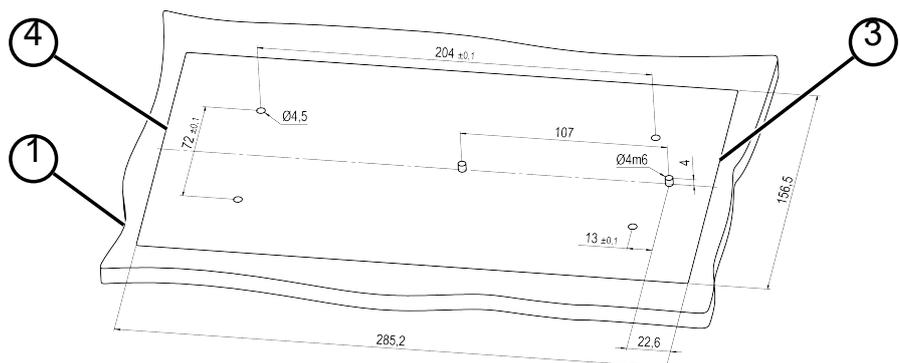


Illustration 18: Drilling scheme for ODTC® XL fixation (distance to front of device: 22.6 mm)

1	Working table	4	ODTC® XL
3	Front		

Orientation to each other

NOTICE



- Make sure that a free air flow into and out of the ODT[®] is guaranteed and avoid that the ODT[®] takes in preheated air.
- Make sure that the waste heat generated by the ODT[®] device is properly dissipated, e.g. using exhaust pipes to move the waste heat off deck.

Free air supply (minimum 50 mm to adjacent wall or device) for the ventilation inlet of ODT[®] and its Power & Control Unit must be ensured to prevent malfunction caused by insufficient cooling. Do not cover the ventilation inlet at the front at any time. In case of doubt, please contact INHECO for further analysis.

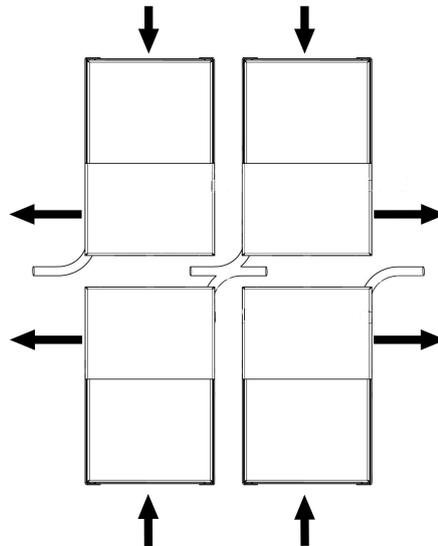


Illustration 19: Orientation example on workstation deck to ensure correct airflow (black arrows)

Cable position

The position of the hard-wired connector cable  outlet varies depending on the ventilation position of the different ODT[®] versions.

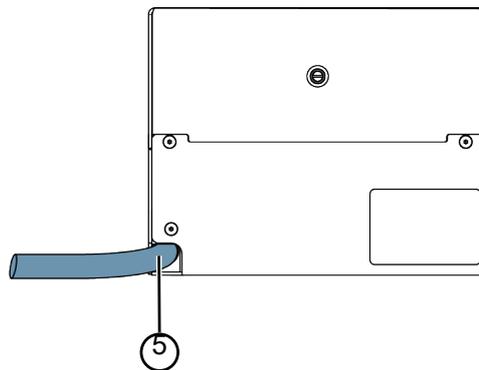


Illustration 20: Example: Connector cable position for left ventilation versions (side view)

5	Connector cable
---	-----------------

4.4 Initial operation

4.4.1 Connect the ODTC Power & Control Unit

Safety instructions

NOTICE



Risk of damage to the device!

If you unplug the ODTC from the ODTC Power & Control Unit while the Power & Control Unit is switched on, the device may be destroyed.

- Never unplug the connector of the ODTC from the ODTC Power & Control Unit while the Power & Control Unit is switched on.

Overview

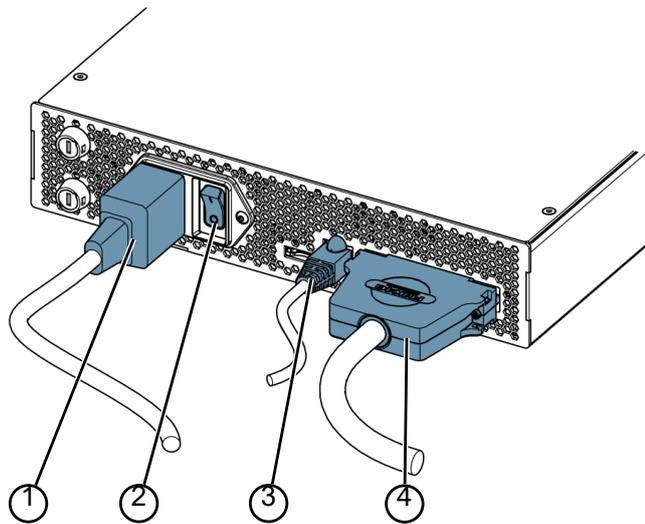


Illustration 21: Connecting the ODTC® Power & Control Unit with PC and ODTC®

1	Power cord	2	Power switch
3	Ethernet cable	4	Connector

Connecting the ODTC Power & Control Unit

Step 1: Plug in the connector ④ of the ODTC to the ODTC Power & Control Unit and screw the connector tightly to the ODTC Power & Control Unit.

Step 2: Connect the yellow Ethernet cable (RJ45) ③ to the ODTC Power & Control Unit and to the Ethernet socket of your PC or robotic system.

Step 3: Connect the power cord ① to the ODTC Power & Control Unit and the wall power outlet.

Step 4: Switch on the power of the ODTC Power & Control Unit ②.

⇒ The ODTC Power & Control Unit will be initialized and the lid will open.

Further notes

NOTICE



The red Ethernet cable (cross over RJ45 cable) only has to be used if the ODTc is connected to a PC with a local network connection and an Ethernet LAN adapter (network adapter) with less than 1 Gbit/s.

NOTICE



The output of the wall power outlet has to be at least 1250 W and must have a ground connection.

4.4.2 Removing the protection insert

NOTICE



Keep the protection insert for future shipments as it is part of the original packaging.

The ODTc is delivered with a protection insert to ensure that the ejection bars stay in the correct position during transportation. This insert must be removed before operation.

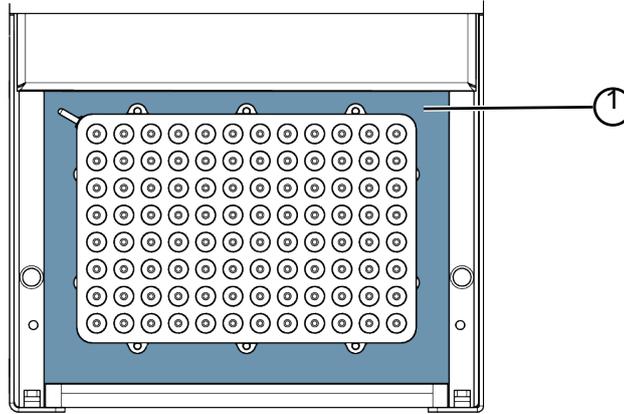


Illustration 22: Protection insert inside the ODTc®

1	Protection insert
---	-------------------

4.4.3 Removing the pre-installed ODTc sealing cover when a suitable automation-friendly sealing lid will be used instead

Automation-friendly sealing lids (→ **Spare parts and accessories, page 56**) can only be used after removal of the pre-installed ODTc sealing cover, → **Removing the pre-installed sealing cover, page 41**.

NOTICE



If a suitable automation-friendly sealing lid is used while the ODTc sealing cover is still installed, the thermal performance of the ODTc lid will be impacted.

4.4.4 Checking the ejection bars position

NOTICE



Risk of damage to the device!

If the ejection bars are not in the correct position, they may get jammed between the VCM® and ODTc lid during movement of the lid, causing severe damage.

- Check that the ejection bars are in the correct position.

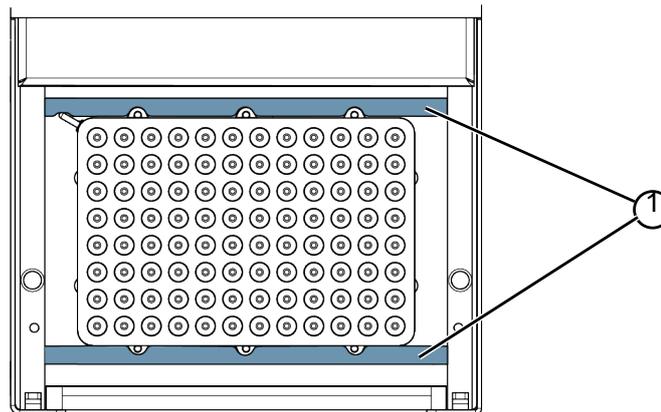


Illustration 23: Correct position of plate ejection bars

1	Ejection bars
---	---------------

Step 1: Ensure that the ejection bars ① are in the correct position, also referring to Chapter → **Exchanging the ejection bars, page 54**.

4.4.5 Removable blocks

The removable blocks ① are magnetic. For gripper access from the front, the blocks at the front are removable. The blocks may also be removed for the cable of a temperature verification tool.

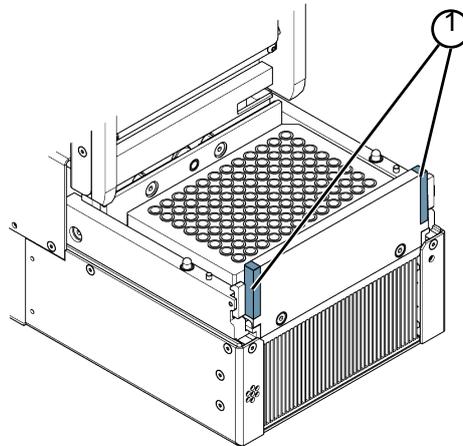


Illustration 24: Removable blocks for ODTc® 96 and ODTc® 384

1	Removable blocks
---	------------------

Take the left block with your fingers and pull it out to the left and take the right block and pull it out to the right. If you need access on one side only, you may remove only one block.

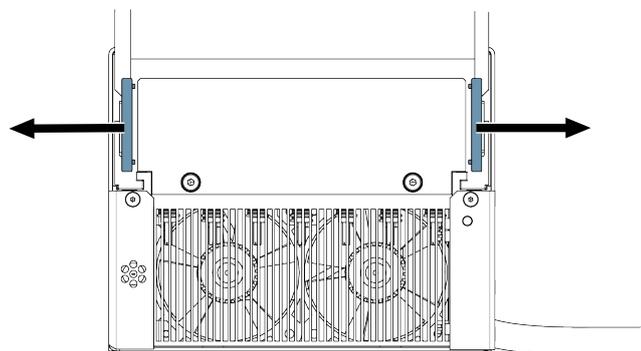


Illustration 25: Block removal

They should be stored carefully after removal, e.g. during OVT verification.

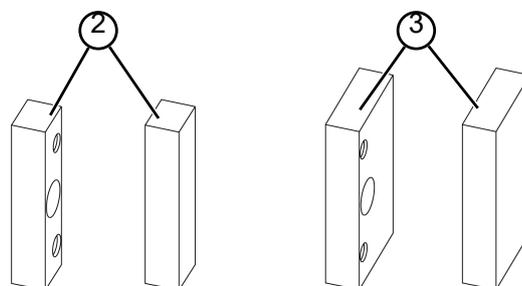


Illustration 26: Removed blocks

2	For ODTc® 96 and 384	3	For ODTc® 96 XL and 384 XL
---	----------------------	---	----------------------------

4.5 Communication with ODTC

A system administrator must install and integrate the ODTC control software.

The ODTC has a SiLA communication interface. Ideally, the ODTC should be addressed by a SiLA PMS (Standardization in Laboratory Automation Process Management System) for operation.

For non-SiLA-based workstations, an additional driver must be written that translates the workstation protocol into a SiLA-based protocol. The ODTC command set and the SiLA communication standard are stored on a USB flash drive, which is part of the scope of delivery. Please contact your workstation provider for the integration.

4.5.1 Communication via Device Finder

For communication with the ODTC the IP address of the ODTC has to be determined. The delivered "Device Finder"-tool helps you to get the IP address, assigned by the network DHCP server. The "Device Finder" is stored on the USB flash drive (→ **Components - scope of supply, page 11**).

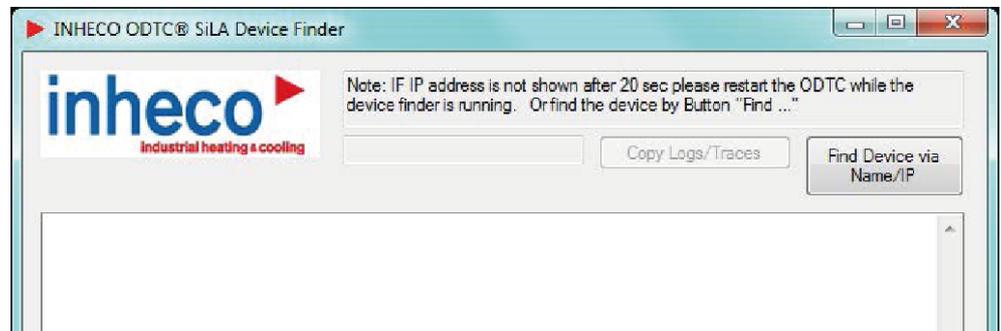


Illustration 27: Screenshot of Device Finder before ODTC® is located

Step 1: Open the file DeviceFinder.exe with a double click and follow the instructions:

- ⇒ As soon as the ODTC is initialized (green light at right Ethernet connector → **ODTC Power & Control Unit, page 19**) the IP address is shown:



Illustration 28: Screenshot of Device Finder after ODTC® is located

Step 2: Use the shown IP address (here 10.0.0.41) to communicate with the ODTC

NOTICE

The Device Finder shows all ODTC units which are connected to the network or to the PC you are using. To distinguish several ODTC devices shown in this Device Finder use the Node Name (here: ODTC_04E966) → → **Labels, page 20.**

Depending on the network (DHCP server) the IP address might change after a restart of the ODTC . Please contact your system administrator for further assistance.

4.5.2 Communication via ODTC Device Manager

For communication via the ODTC Device Manager, see the ODTC Device Manager Manual.

4.5.3 Prepare communication for temperature methods

Temperature profiles must be transferred to the ODTC in an xml format.

The Script editor is used to edit temperature profiles and create ODTC compatible xml formats.

For creating and uploading temperature profiles, see → Script Editor Manual on www.inheco.com.

5 Operation

The ODTC is designed for the use/integration with robotic platforms and can only be operated through the PMS of the liquid handling workstation. The ODTC must be used exclusively by laboratory professionals who are familiar with the instructions of this manual as well as with the instructions of their workstation.

NOTICE



The thermal block (VCM[®]) and plate ejection mechanism are optimized for specific PCR plates → **Failures, page 52.**

Do not use other PCR plates without approval from INHECO. The use of other plates might reduce the thermal performance or might not work at all, if:

- The plate does not fit perfectly into the VCM[®] → insufficient heat transfer
- The plate ejection mechanism does not work properly
- ODTC lid does not close properly

5.1 Safety instructions for operation

5.1.1 Ventilation

WARNING



Risk of injury!

If you touch the ODTC or the VCM[®] while it is in operation, you may be injured.

- Keep your hands away from the ventilation outlet as the moving fan could lead to skin injuries.
- Keep your hands away from the heated VCM[®] and from the opened heated ODTC lid while the unit is connected to power as the temperature of the mount and ODTC lid might be extremely hot (up to 115 °C [239 °F]), which could lead to severe burns.
- Do not insert anything into the ventilation outlet or inlet.

For optimal ventilation and integration in various workstation layouts, INHECO offers 4 ventilation directions with different ODTC versions for the 96 well and 384 well ODTC, i.e. in total there are 6 ODTC types:

- ODTC (e.g. #8100000, 8100010): Ventilation outlet on the left side
- ODTC (e.g. #8100001, 8100011): Ventilation outlet at the back
- ODTC (e.g. #8100002, 8100012): Ventilation outlet on the right side
- ODTC (e.g. #8100003, 8100013): Ventilation outlet at the bottom
- ODTC XL (e.g. #8100031): Ventilation at the back (also available with other vents)

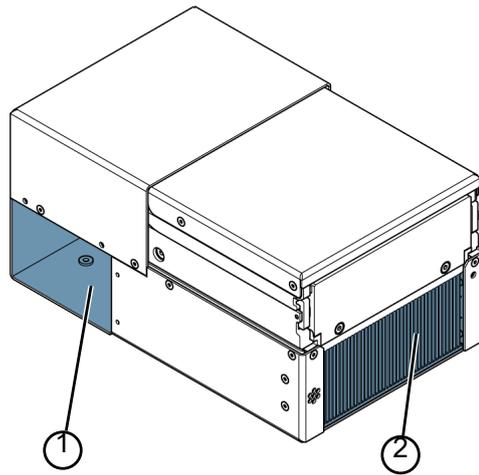


Illustration 29: Example: Showing ODT[®] #8100000: Ventilation outlet on the left side

1	Ventilation outlet on the left	2	Ventilation inlet
---	--------------------------------	---	-------------------

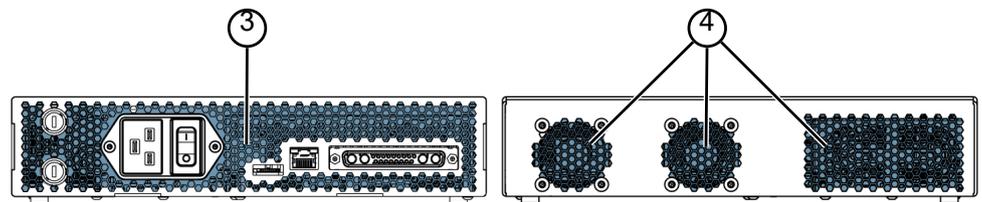


Illustration 30: Ventilation openings of ODT[®] Power & Control Unit

3	Ventilation outlet	4	Ventilation inlets
---	--------------------	---	--------------------

5.1.2 Protection of the filling tube of the VCM

The VCM[®] has a filling tube ① at the upper left corner (as shown in figure below) needed for the production of the VCM[®]. Be sure not to damage or break off the tube, as this will lead to complete loss of the VCM[®] performance.

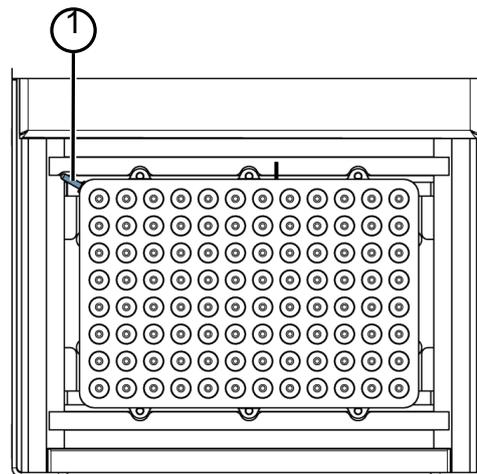


Illustration 31: VCM[®] filling tube at the corner

1	Filling tube of VCM [®]
---	----------------------------------

5.1.3 Ejection bars in the correct position

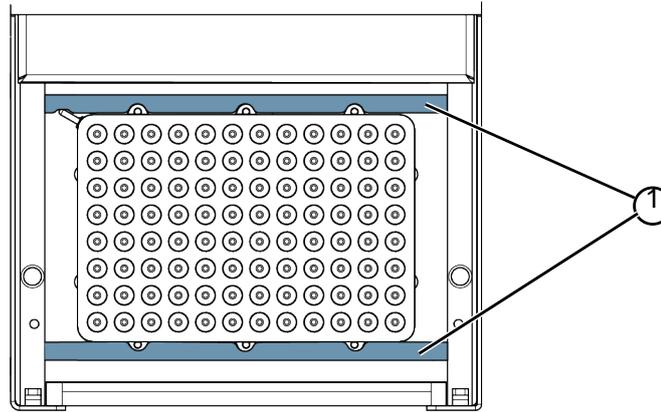


Illustration 32: Correct position of the plate ejection bars

1	Ejection bar
---	--------------

Step 1: Ensure that the ejection bars ① are in the correct position, also referring to Exchanging the ejection bars, Chapter → **Plate ejection mechanism fails, page 54.**

NOTICE



Risk of damage to the device!

If the ejection bars are not in the correct position, they may get jammed between the VCM® and ODTC lid during movement of the lid, causing severe damage.

- Check that the ejection bars are in the correct position.

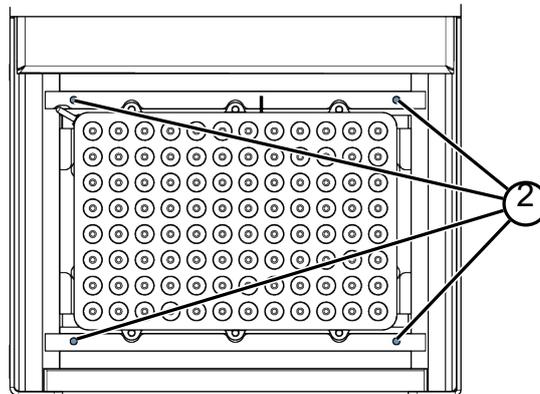


Illustration 33: Positioning holes for the plate ejection bars

2	Positioning holes for ejection bars
---	-------------------------------------

5.2 Use the ODTC

5.2.1 Automated operation of ODTC lid

Safety instructions



Crushing hazard

While the lid of the ODTC is closing, there is a high danger of crushing your fingers, which is why a crushing hazard protection is implemented.

- Never reach into the "disposable area" while the lid is opening or closing.

Overview and description

The ODTC has to be controlled by a PMS which contains the SiLA and ODTC specific command set.

The automated horizontal movement of the ODTC lid is controlled by the PMS commands for opening and closing the lid.

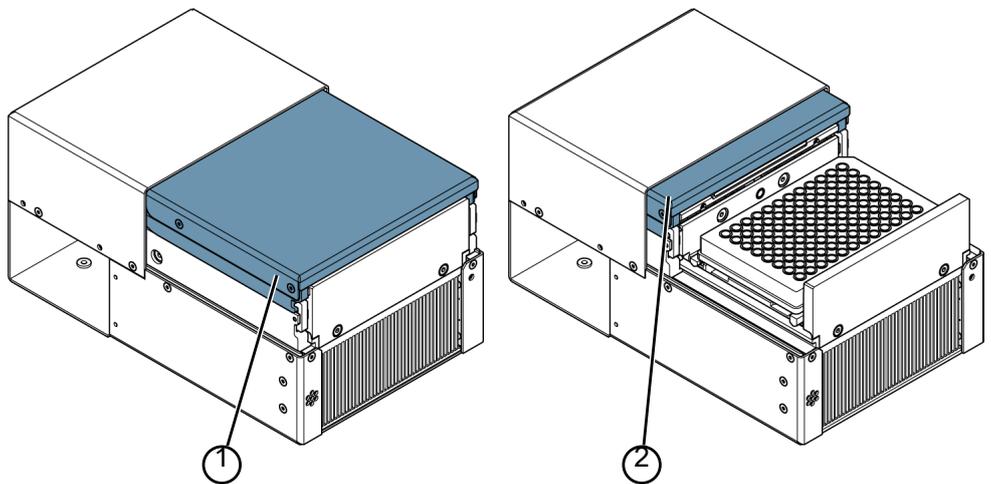


Illustration 34: ODTC lid

1	lid closed	2	lid opened
---	------------	---	------------

Further notes

If the lid does not open, please check whether the latches are locked correctly.
The exact position of the ODTC lid is tracked by the ODTC

The Thermal Cycler can be operated even if the ODTC lid is open (temperature profiles can be run). In this case, it is the user's responsibility to prevent evaporation, condensation and possible cross contamination with other measures.

The lid might not close exactly flush with the front. This is normal, as long as the lid is above the front part of the ODTC and there is no visible gap to the inside.
This especially occurs when labware and lids are inserted.



5.2.2 Manually opening the ODTc lid (90° position)

Safety instructions

! WARNING



Risk of burns

Hot surfaces, primarily the VCM® and the ODTc lid, can burn your skin. Even after switching off the ODTc Power & Control Unit or after stopping a heating process, the ODTc can still be hot and can seriously burn your skin considering that the mount temperature can reach up to +99 °C [+210 °F] and the ODTc lid temperature up to +115 °C [+239 °F]!

- Let the device cool down after use. It takes a while to cool down after the device has been used. The ODTc lid has no active cooling.

Overview and description

The ODTc lid can be opened manually for maintenance/service & cleaning or in case of a malfunction. The ODTc lid may not be opened manually during operation.

Before the lid can be opened manually, it must be fully closed at the end position. The lid can be moved into the end position by sending the command "CloseDoor" via the PMS.

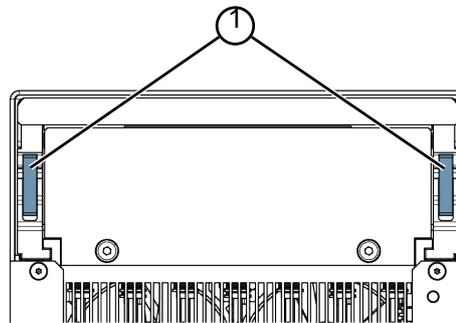


Illustration 35: Chrome latches

1	Latches for locking the lid
---	-----------------------------

Step 1: Press the 2 latches ① simultaneously to unlock the lid.

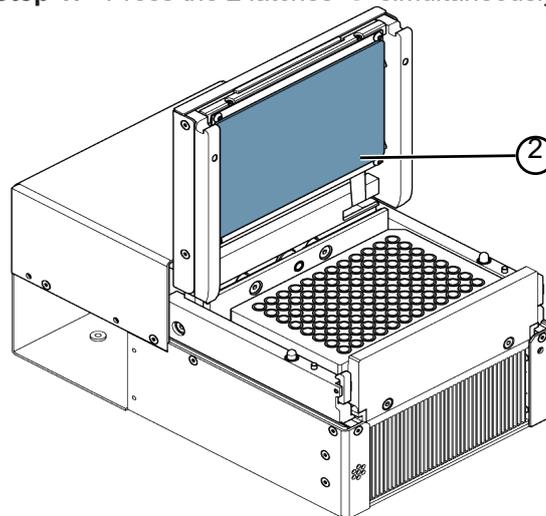


Illustration 36: ODTc® opened for maintenance/service & cleaning in 90° position

2	Correct position of heating foil
---	----------------------------------

Step 2: Now the lid can be opened to the maintenance / service & cleaning position (90°) ②.

5.2.3 Manually closing the ODTc lid after maintenance/ service & cleaning

Safety instructions



Risk of injury!

The ODTc lid is locked in the 90° position to prevent it from falling back down. There is no locking mechanism during manual lid closing. There is a risk that you will pinch your fingers.

- Close the ODTc lid carefully and make sure to hold it with your hands until it is completely in the horizontal position.

Overview and description

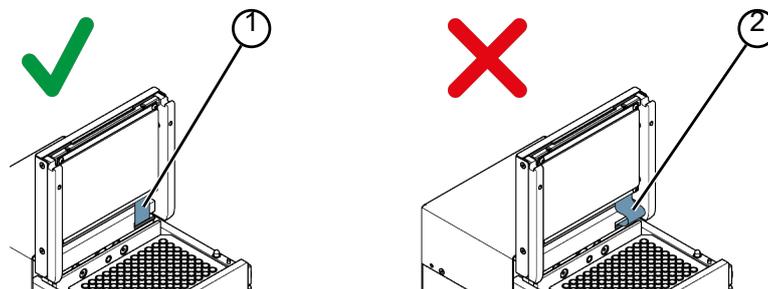


Illustration 37: Correct position vs. incorrect position (bending is not allowed)

1	Correct position of the ribbon cable: flat against the back wall	2	Incorrect position of the ribbon cable: bent
---	------------------------------------------------------------------	---	----------------------------------------------

Step 1: Before closing the lid, make sure that the ribbon cable of the heated lid is in the correct position.

Step 2: Close the lid until it is nearly seated at the front.



Risk of damage to the device!

The ribbon cable will be damaged if it is not in the correct position when closing the lid.

- Make sure that the ribbon cable is in the correct position.



Risk of damage to the device!

Pressing the bar back when the sealing cover is attached while it is still in the 90° position can cause damage to the device if, the ribbon cable gets caught behind the sealing cover and is bent. This will eventually lead to a heating foil failure.

- Do not push back the bar with the attached sealing cover while it is still in the 90° position.

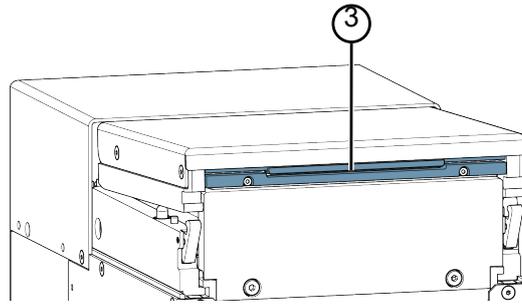


Illustration 38: Closing procedure

3	Pushing back the bar
---	----------------------

Step 3: Push back the bar ③ and hold it in this position.

Step 4: Push down the lid until the latches are locked ④.

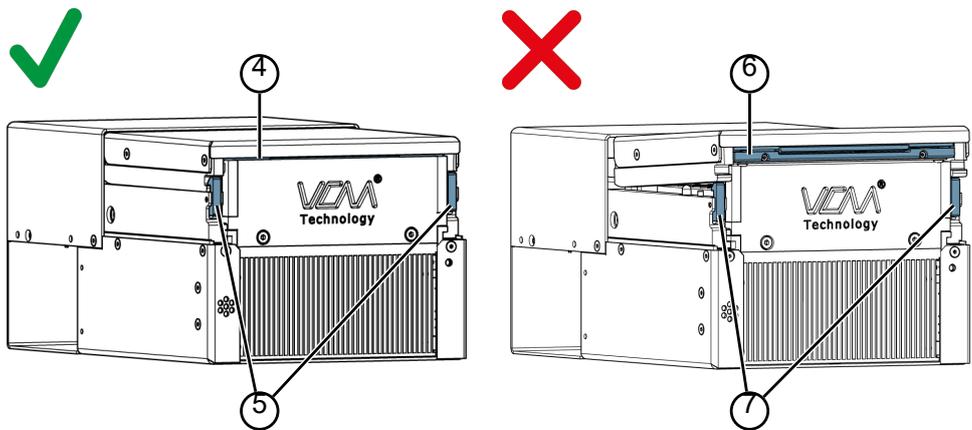


Illustration 39: Correctly closed lid vs. incorrectly closed lid

4	Bar pushed back	5	Latches locked
6	Bar not pushed back	7	Latches not locked

Further notes

NOTICE



Risk of damage to the device!

Even when the lid is not closed correctly after maintenance/service, the ODC will still function in heating and cooling mode, but not properly. Evaporation and condensation may not be prevented, and the thermal performance might be impacted. The ODC will be damaged when the lid is moved horizontally if the lid is not in the horizontal position and when the latches are not locked.

- Always check whether the lid is closed and locked correctly.

5.3 Sealing with the ODTC lid

The ODTC offers 2 options to seal the plates:

- Use of pre-installed ODTC sealing cover.
- Use of automation-friendly sealing lid.

Both options are suited for pre-sealed disposables. Pre-sealing is strongly recommended to avoid cross contamination.

Each automation-friendly sealing lid should only be used once when used for plates without pre-sealing; otherwise, cross contamination and evaporation cannot be ruled out.

The ODTC sealing cover needs to be decontaminated each time the ODTC lid is opened when used for plates without pre-sealing; otherwise, cross contamination cannot be ruled out.

It is the user’s responsibility to find and use the best sealing option for the process in question.

NOTICE



Either the product sealing cover **OR** the automation-friendly sealing lid (or a suitable automation-friendly lid) has to be used to apply sufficient pressure on the plate and to seal the plate properly. This also applies when a pre-sealed plate is used.

NOTICE



For unsealed plates, there is a risk of evaporation and cross contamination when opening the heater ODTC for loading a plate or pipetting. Therefore, we recommend using pre-sealed plates or setting the temperature during opening and closing as close as possible to the ambient temperature to minimize evaporation of the sample.

5.3.1 Using a pre-installed sealing cover

No adjustments of the ODTC are necessary. The pre-installed ODTC sealing cover is not ideal for use with unsealed plates as cross contamination and evaporation will very likely occur. May be reused up to 50 times.

5.3.2 Using automation-friendly sealing lids

Automation-friendly sealing lids (→ **List of approved automatable sealing lids, page 57**) can only be used after removal of the pre-installed ODTC sealing cover chapter → **Removing the pre-installed sealing cover, page 41**.

NOTICE



The design of the ODTC is optimized for the use of automation-friendly lids (list of approved lids chapter → **List of approved automatable sealing lids, page 57**). Other automatable sealing lids might also work, but have not been tested by INHECO. It is the user’s responsibility to find and use the best sealing option for the process in question.

NOTICE



For ODTC 96 XL: The maximum volume for PCR applications in high-profile plates should not exceed 100 µl/well. Liquid levels above 100 µl will exceed the height of the enclosed wells in the mount.

5.3.3 Removing the pre-installed sealing cover

Safety instructions

CAUTION



Risk of injury!

The ODTc lid is locked in the 90° position to prevent it from falling back down. There is no locking mechanism during manual lid closing. There is a risk that you will pinch your fingers.

- Close the ODTc lid carefully and make sure to hold it with your hands until it is completely in the horizontal position.

Overview

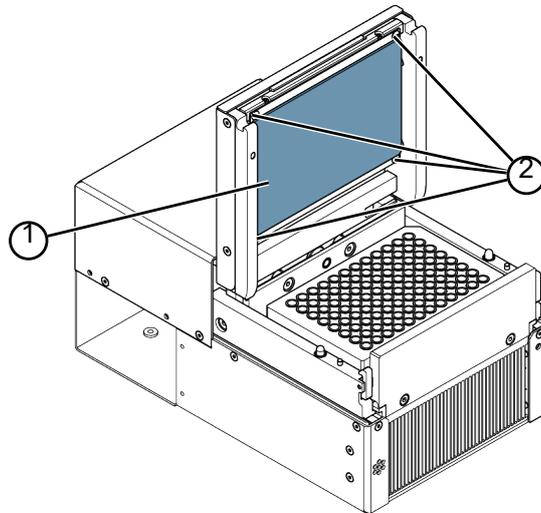


Illustration 40: ODTc lid with integrated sealing cover

1	Sealing cover	2	Screws (4x)
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Removing the pre-installed sealing cover

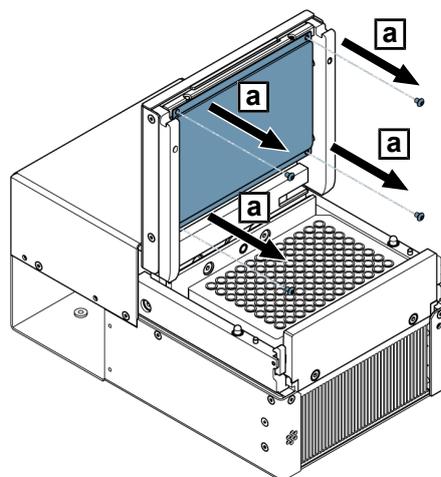


Illustration 41: Four screws of the sealing cover

Step 1: Open the ODTc lid for maintenance/service & cleaning → **Manually opening the ODTc lid (90° position), page 37** and remove the four screws of the sealing cover **a**.

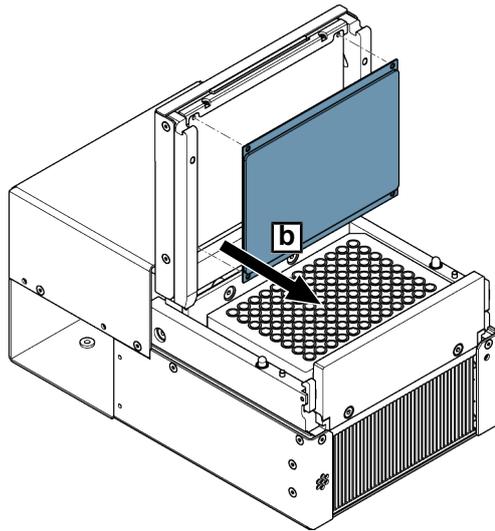


Illustration 42: Sealing cover removed

Step 2: Remove the sealing cover **b**.

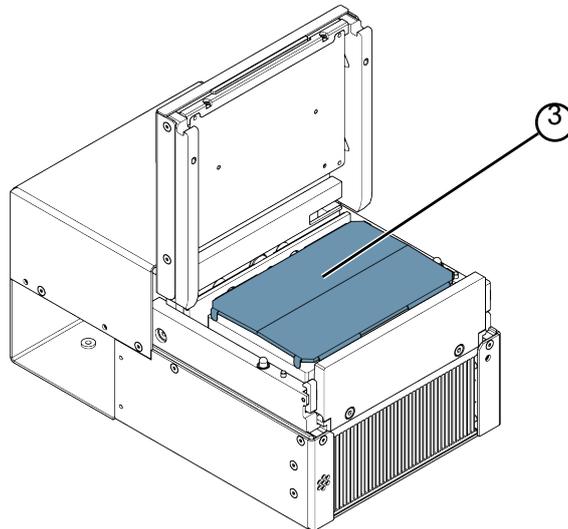


Illustration 43: ODTC® with automation-friendly sealing lid 3 on top of disposable, with INHECO sealing cover removed

3	Automation-friendly sealing lid
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5.3.4 Inserting the ODTc sealing cover in the ODTc lid

Step 1: Open the lid for maintenance/service & cleaning by pressing the two chrome latches simultaneously while the ODTc lid is closed. To open the lid chapter → **Manually opening the ODTc lid (90° position)**, page 37.

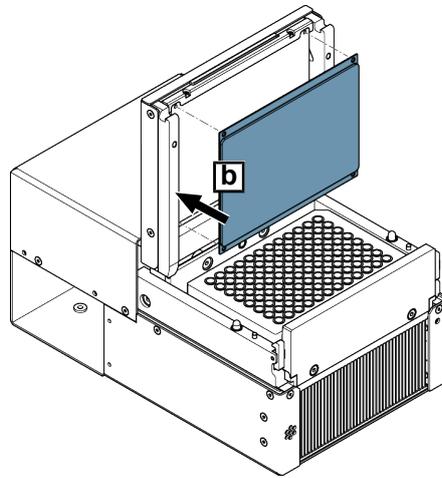


Illustration 44: Screw position for the Sealing Cover

Step 2: Screw the sealing cover back onto the lid **b**.

Step 3: Close the lid correctly, see chapter → **Manually closing the ODTc lid after maintenance/service & cleaning**, page 38.

5.3.5 Removable "blocks"

Two blocks can be removed from the front plate (with VCM® logo) for gripper access and for the cable of a temperature verification tool → **Removable blocks**, page 30.

6 Maintenance

The ODTC must be used exclusively by laboratory professionals who are familiar with the instructions of this manual as well as with the instructions of their workstation.

6.1 Software updates

For updates of the Script Editor, please contact **sales@inheco.com** → Contact INHECO → **Company information, page 2.**

6.2 Troubleshooting & support

In case of a malfunction, follow the trouble-shooting instructions of this chapter. Please provide the following information when contacting INHECO for support:

- INHECO product name of ODTC **and** Power & Control Unit (shown on device label)
- INHECO part number of ODTC **and** Power & Control Unit (shown on device label)
- INHECO serial number of ODTC **and** Power & Control Unit (shown on device label)
- Detailed error description, LED status, error description of workstation software
 - Send the log and trace files extracted with the help of the Device Finder → **Via ODTC Device Finder, page 44**
- Information about setup of ODTC
 - ODTC is installed on which workstation, name of manufacturer?

6.2.1 Copying the log and trace files

The log and trace files are located on the Micro-SD card in the PCU → **Functional elements of the ODTC® Power & Control Unit, page 19.**

There are several copying options, as shown in the following chapters.

6.2.1.1 Via ODTC Device Finder

To copy the log and trace files via the ODTC Device Finder, which is stored on the USB flash drive (→ **Scope of supply, page 24**). These files contain status information and errors of the ODTC.

Step 1: Copy the DeviceFinder.exe file onto your PC.

Step 2: Open with a double click and follow the instructions:

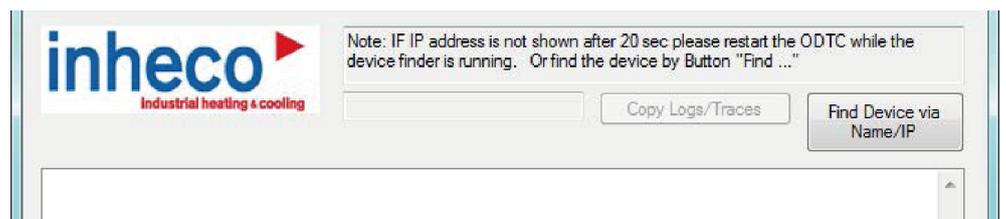


Illustration 45: Screenshot of “Device Finder” showing no device

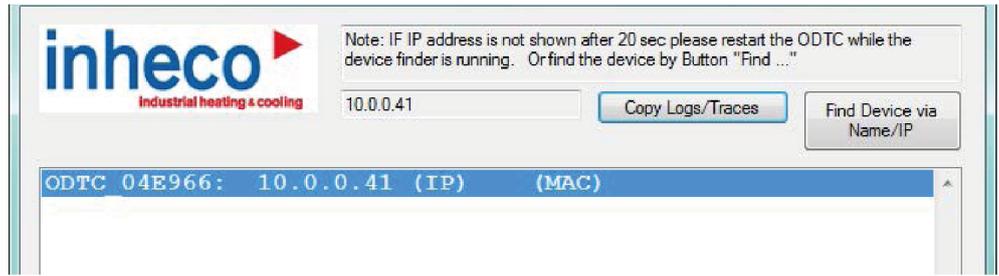


Illustration 46: Screenshot of “Device Finder” with ODTC®

If the ODTC is not shown after initialization (green light at right Ethernet connector → **ODTC Power & Control Unit, page 19**), restart the ODTC or use the Find Device via Node Name/IP button.

NOTICE



Node Name/IP can be found on the ODTC label → **Labels, page 20**.

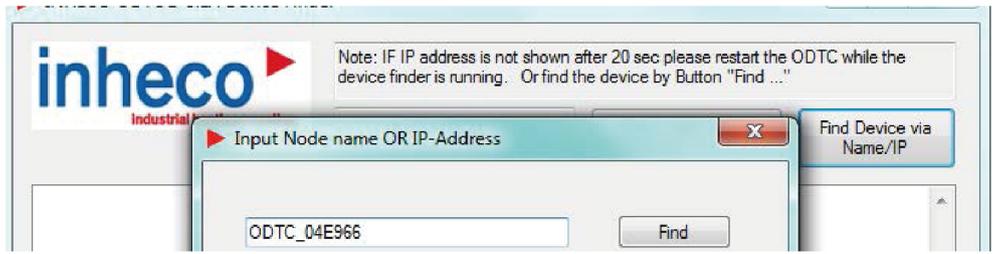


Illustration 47: Input of device name (Node Name). In this case ODTC_04E966.

NOTICE



If the ODTC is still not shown please deactivate all other network devices including WiFi and restart the ODTC and Device Finder.

- Step 3:** Select the ODTC (in this case the ODTC_04E966).
- Step 4:** Copy Logs/Traces is activated.
- Step 5:** Mouse click on Copy Logs/Traces → the following window will open.

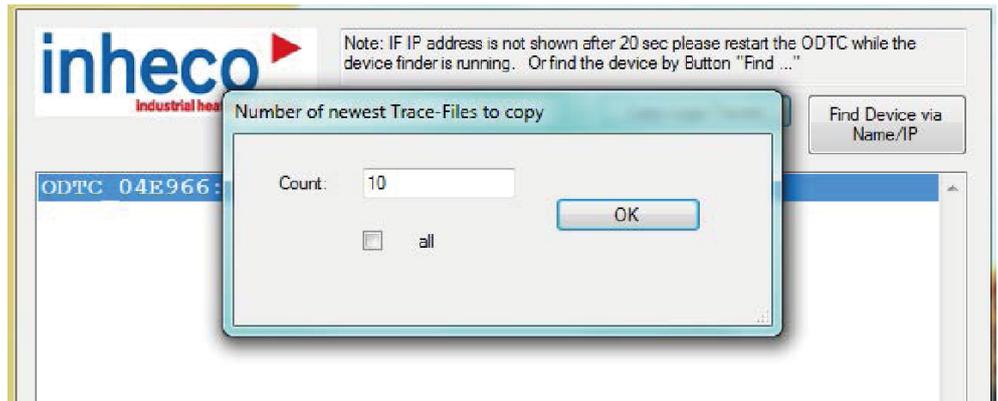


Illustration 48: Screenshot of Copy Logs/Traces

Step 6: Select all and click on OK.

Step 7: A dialog window (Windows Explorer) appears. Create a new folder and save.

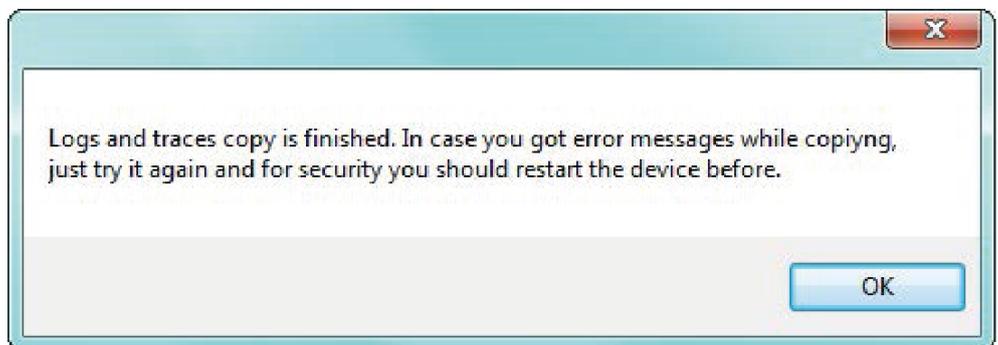


Illustration 49: Copy of log and trace files successful

The first lines in a log or trace file show information such as the serial numbers of devices, firmware version and SiLA settings:

```
* ODTc Temperature trace = pre1 = 2015-07-30T15:28:06Z
* Firmware: BUILD:5689.24096,DEVICE:ODTC_214_BOOT_001_HWV5_002 / Serial: ArticleNo PCU: 860007, SerialNo PCU: 1234567, SerialNo PCU PC
```

Illustration 50: Device information row (serial numbers, firmware, etc.) within the trace file

6.2.1.2 Via ODTc Device Manager

To copy the log and trace files via the ODTc Device Manager, see ODTc Device Manager Manual.

6.2.1.3 Via network connection

To access the log and trace files via a network connection, access the ODTc® with the computer.

To do so enter “ftp://ip-address” in your browser, whereas “ip-address” must be the device Ip address.

6.2.1.4 Via Micro-SD card

To copy the log and trace files via the Micro-SD card:

Step 1: Remove the Micro-SD card from the ODTc PCU (see → **Functional elements of the ODTc® Power & Control Unit, page 19**)

Step 2: Insert the Micro-SD card into a computer. Use a Micro-SD card adapter if necessary.

Step 3: Copy and save the files from the Micro-SD card to the computer.

Step 4: Insert the Micro-SD card back into the ODTc PCU.

6.2.2 Feasibility of .xml files

The INHECO Script Editor (→ Script Editor Manual) checks all programmed steps of a method (see definition below) and only allows steps which the ODTc is capable of handling. However, if you have issues with running a method on the ODTc or if you need assistance with programming the xml files, please contact **techhotline@inheco.com**. Please send us your requirements and temperature profiles needed for testing your application on the ODTc to INHECO. If this information should contain proprietary data, please send us an NDA to cover this. INHECO will check whether the ODTc is capable of performing the desired or programmed temperature steps.

6.3 Return device for repair

With the Information of → **Troubleshooting & support, page 44** the INHECO Support will try to solve your issue without the need to return the device. However, this is not always possible.

When you do need to organize a return for your device, please complete the RMA request form in the login section of **www.inheco.com**. We will then provide further instructions along with your RMA number.

- Step 1:** Make sure your device is cleaned and decontaminated. During the process you will be asked to confirm that your device does not pose a threat to the health of our staff.
- Step 2:** Register or login on **https://www.inheco.com/login/**. If you do not wish to register, contact **techhotline@inheco.com** to receive a pdf version of this form.
- Step 3:** Fill out the form. With completion it will be send to **techhotline@inheco.com**. If you use the pdf version, send the form via email manually.
- Step 4:** INHECO will issue an RMA number and provide you with shipping information.
- Step 5:** Return your device according to the received shipping information.

NOTICE



Devices exposed to Biosafety level 3 and 4 environments or radioactive Materials are not accepted by INHECO for return.

NOTICE



A shipment with RMA number guarantees that we can handle the import to Germany correctly and our warehouse handles these devices with priority. Shipping without RMA number might be rejected during import or at our warehouse

NOTICE



Device should ideally be returned in the original packaging, including the protection insert.

If this is not possible ensure that the devices are protected and cannot move inside the package to avoid transportation damage. Consider the weight of the devices (see → **Technical data, page 22**) when deciding on sturdy packaging material and sufficient padding. If the protection insert is missing, please use a PCR plate instead. Never ship the ODTC with an open lid.

6.4 Transportation and storage

It is recommended to keep the original ODTC packaging, along with the protection insert. The ODTC should be shipped and stored in its original packaging. Adhere to required environmental conditions for transportation and storage Chapter → **Technical data, page 22.**

6.5 Cleaning

WARNING



Risk of burns!

The temperature on the VCM® and on the ODTC lid can burn your skin.

- Disconnect the power supply before cleaning the ODTC. Make sure that the temperatures at the VCM® (disposable contact surface) and on the ODTC are below 50 °C.

Step 1: If device shows condensation start a short heating step with the lid open to remove condensation.

Step 2: Close the lid horizontally.

Step 3: Open the Lid in maintenance position.

Step 4: Use compressed air to clean the wells from dust.

Step 5: Use a lint free cloth with a 50:50 Water/isopropanol solution to wipe the surfaces.

Step 6: Use cotton swabs with a 50:50 Water/isopropanol solution to wipe the wells.

Step 7: Remove the ejection bars.

Step 8: Use cotton swabs with a 50:50 Water/isopropanol solution to clean the bars and the area beneath.

Step 9: Reinsert the injection bars.

Step 10: Close the lid.

NOTICE



Risk of damage!

When closing the lid, make sure the cable from the heating foil is in correct, see → **Correct position vs. incorrect position (bending is not allowed), page 38.**

NOTICE



Notice:

Do not spill liquids during cleaning process.

NOTICE



Notice:

Do not use aggressive cleaning fluids such as acetone, or abrasive cleaners. The nickel Teflon coating of the VCM and coatings of other components could get damaged.

Contact INHECO in case you prefer other cleaning liquids or methods to learn whether they might be harmful for the device material.

NOTICE



Operation ODTc below ambient temperature: The operation of the ODTc below ambient temperature has to be limited to 1-2 hours per application. Depending on the humidity in the atmosphere, condensation will be generated when operating the ODTc below ambient temperature. Especially when using the option "keep temperature after method" the risk for excessive condensation is very high.

The condensation might have an effect on the thermal performance and lifetime of the ODTc. Condensate can prevent the ODTc from operating properly and can damage the ODTc.

After each use of the ODTc below the ambient temperature a drying step needs to be performed. It can be part of a subsequent method or should follow directly after the cooling period. The drying step needs to be clearly above the ambient temperature. The duration of the drying step depends on the amount of condensate and should be ended when no condensation is visible on the Mount or its surroundings.

6.6 Decontamination

Decontamination is required before the device is returned to INHECO in case it has been exposed to human or animal blood/fluid/tissue or has been exposed to potentially harmful biological or chemical materials.

Step 1: Clean device as explained in → **Cleaning, page 48.**

Step 2: Use a lint free cloth and cotton swabs with a 70% alcohol, bleach (5%-12%) or Microside SQ solution to clean the surfaces and well.

Step 3: If these are not sufficient for decontamination of the used target material, use the appropriate decontamination method and solution to eliminate any risk.

! WARNING



Risk of intoxication by toxic gases or fluids!

- When working with toxic gases or fluid always wear safety gear such as protective clothing and a respirator.
- When using toxic gases or fluids always follow the safety instructions provided by the manufacturer.

Step 4: Decontaminate inaccessible areas using fumigation (e.g. with toxic formaldehyd or ethylene gas)

NOTICE



Contact INHECO if you are not sure whether the decontamination method or solution applied could damage the device or its surface material.

NOTICE

Infectious materials must be handled and disposed of according to local safety guidelines.

6.7 Thermal verification

The ODTC is delivered calibrated and adjusted.

To verify that the ODTC is working within the specifications, INHECO recommends performing a thermal verification at least once a year.

INHECO has developed the ODTC verification tool (OVT) for this purpose. See <https://www.inheco.com/ovt.html>.

6.8 Shut down and disposal

The device has to be disposed of in accordance with environmental and biosafety directives. Arrange for correct electric waste disposal in accordance with the current safety regulations for your country.

All INHECO devices are RoHS and WEEE compliant.

NOTICE



Notice:

The PCU has a C2032 battery which needs to be disposed of separately. For information how to remove the battery contact techhotline@inheco.com

7 Failures

If you receive a failure message without clear remedy instructions, please contact the support of your workstation provider.

Ask a technical skilled user (e.g. service technician) to follow the instructions below.

7.1 ODTc lid failure (in error codes: drawer failure)



Crushing Hazard

While the lid is closing, there is a high danger of crushing your fingers.

- Never reach into the "disposable area" while the lid is opening or closing.

If you receive a failure message regarding a drawer failure (ODTC lid), please check the whether:

- The pre-installed ODTc sealing cover is dismantled. It has to be removed before an automation-friendly sealing lid is used.
- The PCR plate slides correctly into the VCM® and is not too high → **Technical data, page 22.**
- The PCR plate is missing.
- There is anything blocking the ODTc lid.
- Correct ejection bars are installed for the inserted full/semi/non-skirted plates.

Also, if the ODTc sealing cover is used, check how often it was in usage. We recommend changing the cover every 50 runs.

7.2 Opening a blocked ODTc lid

If the ODTc lid cannot be closed or opened electrically, the lid can be moved manually by turning the shaft at the back of the ODTc with an appropriate screwdriver.

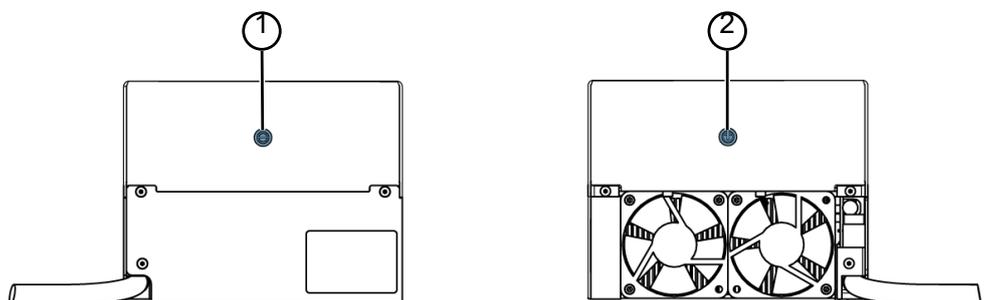


Illustration 51: Shaft at the back of ODTc® ventilation, left ① and back ②

1	Shaft of automated lid for closing manually	2	Shaft of automated lid for closing manually
---	---------------------------------------------	---	---------------------------------------------

7.3 Overheated system or fan issue

WARNING



Risk of injury!

Keep your hands away from the ventilation outlet, from the VCM® mount and from the heated ODTC lid while the unit is connected to power to avoid injuries or severe burns.

- Do not insert anything into the ventilation outlet or inlet.

If you receive a failure message regarding malfunctioning fans or an overheated system, please check whether:

- The fans are running.
- Anything is blocking the ventilation inlet or outlet.
- There is enough free space in front of the ventilation opening.
- There is another device installed next to the ODTC that increases the temperature near the ODTC.

7.4 Evaporation of sample

If you observe significant evaporation of your sample during operation with the lid closed, please contact techhotline@inheco.com.

7.5 Communication issues

There are several possible root causes why the it is not possible to communicate with the ODTC:

- Incorrect TCP/IPv4 Settings
- Firewall port is not opened
- Other Firewall then from windows is installed
- Wrong EventReceiverURI
- PCU Ethernet Port is defective
- Software timing problem, e.g., software is not waiting long enough for the answer of the ODTC
- Windows update reset PC settings back to default, e.g., TCP/IPv4 or Firewall port settings
- Defective Router
- Error 102 (0x66) / Error 103 (0x67)
- Hardware defect (Status LED of ODTC is red)
- Defective ethernet cable

Solution:

To get more information about the root cause you need to access the log files, see → **Copying the log and trace files, page 44**.

You can either:

- Provide log files along with the information requested in → **Troubleshooting & support, page 44** to techhotline@inheco.com
- Visit the log in section of www.inheco.com, to get more information within the knowledge base and error list for the ODTC. You will find instructions to change specific communication settings there.

In case these solutions are not solving the issue, your problem might be related to the Robotic System Software. Contact the support hotline of your robotic system. Please send a copy to techhotline@inheco.com, too, as we might be able to support in this case.

7.6 Plate ejection mechanism fails

If you observe:

- A broken or bent ejection bar → exchange ejection bars.
- A microplate got stuck in the VCM® → check whether an incompatible plate is inserted and check whether correct ejection bars are installed for the inserted full/semi/non-skirted plate Spare parts and accessories (compatible plates) and Chapter → **Exchanging the ejection bars, page 54.**

7.6.1 Exchanging the ejection bars

Safety instructions



Risk of burns

Hot surfaces, primarily the VCM® and the ODTc lid, can burn your skin. Even after switching off the ODTc Power & Control Unit or after stopping a heating process, the ODTc can still be hot and can seriously burn your skin considering that the mount temperature can reach up to +99 °C [+210 °F] and the ODTc lid temperature up to +115 °C [+239 °F]!

- Let the device cool down after use. It takes a while to cool down after the device has been used. The ODTc lid has no active cooling.

Overview and description

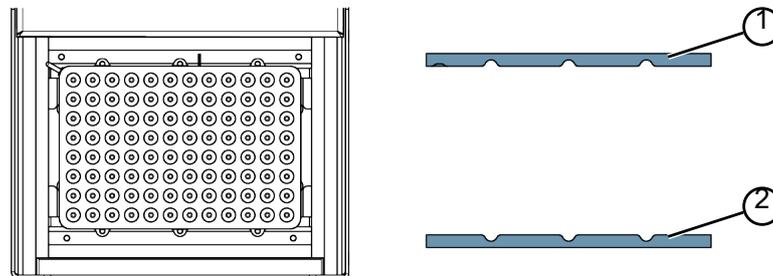


Illustration 52: Ejection bars of ODTc® removed

1	Ejection bar, back	2	Ejection bar, front
---	--------------------	---	---------------------

Step 1: Take the plate ejection bar ① / ② at both ends and pull it out.



The front and back ejection bars are slightly different. A mix-up of the front and back ejection bars is not possible due to unique positioning pins.

The ejection bars for high-profile plates differ in the ODTc 96, ODTc 384 and ODTc 96 XL chapter → **Spare parts and accessories, page 56.**

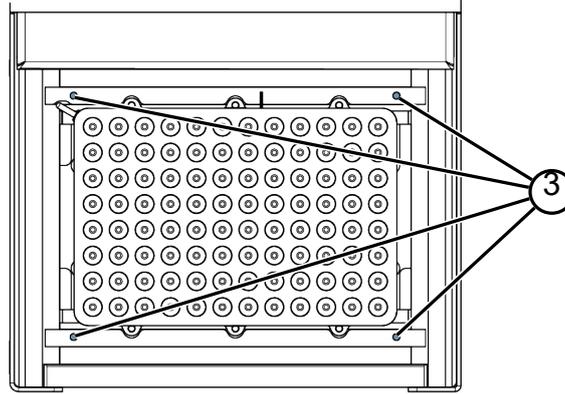


Illustration 53: Positioning holes for the plate ejection bar.

3	Positioning holes for ejection bars
---	-------------------------------------

Step 2: Insert the pins of the new ejection bar into the positioning holes ③.

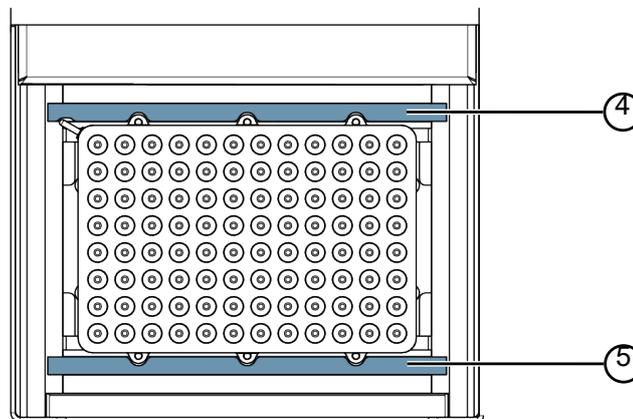


Illustration 54: Correctly inserted ejection bars

4	Ejection bar, back		5	Ejection bar, front
---	--------------------	--	---	---------------------

Further notes

NOTICE



If the ejection bars are not in the correct position, they may get jammed between the VCM® and ODTC lid when the lid is moved, causing severe damage.

NOTICE



The ejection bar from the standard ODTC 96 can also be used for the ODTC 96 XL if low-profile plates are used.

8 Spare parts and accessories

Spare parts

Product name	Description	Part number
ODTC Power & Control Unit	Controls one ODTC	8900035
Sealing Cover	One of the sealing options sealing with ODTC lid For installation in ODTC lid → Inserting the ODTC sealing cover in the ODTC lid, page 43	5000066
Metal Sealing Cover	Recommended cover to be used for sealed plates, if integrated Sealing Cover is needed.	3201467
Ejection bars	Optimized for specific full-skirted PCR plates → List of approved PCR plates for all ODTC 96, page 56 (ejection bars for semi- or non-skirted PCR plates only on request)	For standard ODTC 96 and also for use with ODTC 96 and XL with low-profile plates: 3200485 back bar 3200484 front bar ODTC 384 and 384 XL with low-profile plates 3200528 back bar 3200527 front bar ODTC 96 XL only needed for high-profile plates 3200643 back bar 3200642 front bar

Table 10: Spare parts

For full- or semi-skirted plates, which are not compatible with the standard ejection bars, INHECO offers the design and manufacturing of customized ejection bars.

8.1 List of approved PCR plates for all ODTC 96

Description	Manufacturer's part number
BioRad Hard-Shell® Low-Profile Thin-Wall 96-Well Skirted PCR plate (all frame & well colors)	HSP-9xxx; e.g. HSP-9601
4titude FrameStar 96 PCR plate (clear frame & clear wells)	4ti-0960/C
Hamilton 96 PCR FramePlate	814302

Table 11: List of approved PCR plates for all ODTC® 96

8.2 List of approved PCR plates for ODTc 96 XL optimized for high-profile plates

Description	Manufacturer's part number
MicroAmp™ EnduraPlate™ Optical 96-Well Clear	4483352
Eppendorf twin.tec® PCR plates semi skirted	0030128508
BioRad Hard-Shell high-profile 96 well semi-skirted PCR plates	HSS-9641 (HSS-9xxx)

Table 12: List of approved PCR plates for ODTc® 96 XL

NOTICE



For ODTc 96 XL: The maximum volume for PCR applications in high-profile plates should not exceed 100 µl/well. Liquid levels above 100 µl will exceed the height of the enclosed wells in the mount.

8.3 List of approved PCR plates for ODTc 384 and ODTc® 384 XL

Description	Manufacturer's part number
BioRad Hard-Shell® Low-Profile Thin-Wall 384-Well Skirted PCR plate (all frame & well colors)	HSP-3xxx; e.g. HSP-3801
4titude FrameStar 384 PCR plate (all frame & all well colors)	4ti-0384 to 4ti-0387 (all color versions)
Hamilton 384 PCR FramePlate	814305

Table 13: List of approved PCR plates for ODTc® 384 and ODTc® 384 XL

8.4 List of approved automatable sealing lids

Description	Manufacturer's part number
BioRad Auto-Sealing lid for PCR Plates	MSL2022 and MSL2032
Hamilton Comfort lid	814300
4titude Auto-Sealing PCR Plate lid	4ti-0291

Table 14: List of approved automatable sealing lids

NOTICE



The listed plates are explicitly tested by Inheco for leak tightness and fitting accuracy. Different plates can be used but should be tested for the mentioned criteria.

If you are uncertain, please contact presales@inheco.com. We can possibly offer you a custom solution.

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