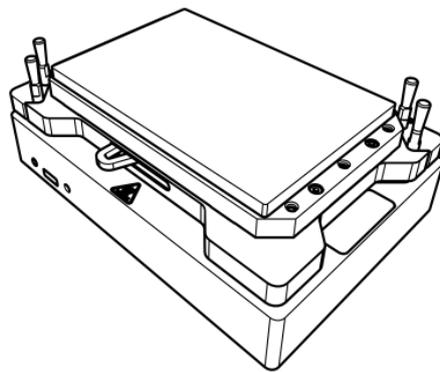


## User and Installation Manual



# Teleshake AC Devices

# Company information

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Technical Support & Trouble Shooting Instructions:	<a href="http://www.inheco.com/tech-support.html">www.inheco.com/tech-support.html</a>

**INHECO Industrial Heating and Cooling GmbH** reserves the right to modify their products for quality improvement. Please note that such modifications may not be documented in this manual.

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

**INHECO Industrial Heating and Cooling GmbH** does not assume liability for any misprints or cases of damage resulting from misprints in this manual. If there are any uncertainties, please feel free to contact [sales@inheco.com](mailto:sales@inheco.com).

The brand and product names within this manual are registered trademarks and belong to the respective titleholders.

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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 device and must be retained until the device is disposed of or must be passed on with the device to new users.
- Contact INHECO if there are any uncertainty in operation or handling of the device.

Images and description in this manual are shown exemplary at the Teleshake AC. This manual is valid for the following devices:

Teleshake 95 AC	7100150
Teleshake AC	7100151
Teleshake 95 AC 180	7100152
Teleshake 95 AC 60	7100153
Teleshake 95 AC 3mm	7100190
Teleshake AC 3mm	7100191

The devices with automated clamping meet the acknowledged rules of technology and comply with today’s standards.

Manual instructions must be followed in order to ensure safe handling of the device.

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](mailto:sales@inheco.com), → **Contact information, page 5.**

## 1.2 Contact information

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Website	<a href="http://www.inheco.com">www.inheco.com</a>

Technical Support & Trouble Shooting Instructions:  
[www.inheco.com/tech-support.html](http://www.inheco.com/tech-support.html)

## 1.3 Abbreviations and glossary

<b>The following acronyms and items are used in this document</b>	
°C	Degree Celsius
°F	Degree Fahrenheit
AC	Auto Clamping
Adc	Ampere direct current
Calibration	Calibration is the validation of specific measurement techniques and equipment. At the simplest level, calibration is a comparison between measurements - one of known magnitude or correctness - made or set with one device and another measurement made in as similar a way as possible with a second device.
CE	Conformité Européenne (European conformity)
dB(A)	Decibel
FDA	Food and Drug Administration
Hz	Hertz [1/s]
in	Inch
IVD	In Vitro Diagnostic
K	Kelvin
kg	Kilogram
lbs	Pounds
mm	Millimeter
MTC	Multi TEC Control controls up to 6 INHECO devices individually
Offset	The difference between the set temperature and actual value once the temperature is stable
PE	Protective Earth
RH	Relative humidity
rpm	Revolutions per minute
STC	Single TEC Control controls 1 INHECO device
TEC	Thermo Electric Cooler (Thermoelectric Module)
UL	Underwriter Laboratories certification
Vdc	Voltage direct current
W	Watt

## 1.4 Warranty

The warranty period starts on the date of shipment. Any damage caused by operating the device outside the specifications and guidelines leads to the loss of warranty. Broken seals on INHECO devices lead to the loss of warranty as well.

INHECO will only accept parts / devices for return that do not pose a threat to the health of our staff. In particular, the devices may not have been used in Biosafety Level 3 and 4 environments or have been exposed to radioactive or radiation materials.

Devices exposed to Biosafety Level 3 and 4 Environments are not accepted by INHECO for return.

## 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 device must be placed in an upright position. On non-observance, it will eventually overheat, causing the temperature fuse to blow.
- The main power switch of the TEC Control Unit must always be accessible.
- Ensure that there is no other device installed next to the device increasing the inlet air temperature for the device above the specified temperatures. In case of doubt, please contact INHECO for further analysis.
- Do not exceed minimum or maximum ambient temperature and humidity conditions during operation or storage of the device → **Technical data, page 18**.
- The device must not be used in environments with risk of explosion.
- The device is for indoor use only.

#### WARNING



#### Burning hazard

Devices can burn your skin. Even after switching off the TEC Control Unit, the connected devices can still be hot and could seriously burn your skin as the material's temperature can reach up to +125 °C [+257 °F]! It takes a while to cool down after the device has been switched off.

#### WARNING



#### Pinching of finger

While the clamp mechanism is closing you might pinch your finger or your glove. Closing or opening takes about 2-5 sec.

**WARNING****Electrical shock**

You can suffer an electric shock and injuries, if the device and the MTC / STC are not connected properly to the wall power outlet or with each other.

- Do not use the device, the MTC / STC or the connecting cables if these show visible signs of damage.
- Never open the device housing while it is still connected to the MTC / STC. Disconnect the device from the MTC / STC before opening the device housing.
- Never open the MTC / STC housing while it is still connected to the wall power outlet. Disconnect the MTC / STC from the power outlet before opening the MTC / STC housing.
- Do not work with wet hands.
- Make sure that the device 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.

**NOTICE****Biosafety laboratory environment**

When using the device 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 device 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.
- 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. → **Trouble Shooting and Support, page 35.**

## 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><b>GENERAL DANGER SIGN</b></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><b>ELECTRICAL HAZARD</b></p> <p>Failure to observe the required warnings may result in fatal or serious injury from dangerous electrical voltage.</p>
	<p><b>BURNING HAZARD</b></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><b>CRUSHING HAZARD</b></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

## Information symbols

### 2.5 The information symbols listed here may appear in this document.

#### General Information Symbols

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

Table 2: Information Symbols

## 3 Product description

### 3.1 Intended use

Combined heater / coolers and shakers add efficiency and precision to liquid handling decks for many life science research applications in molecular biology, biochemistry and clinical chemistry. They give labs more control of the process, and that helps achieve more accurate and repeatable results.

Active clamping (automated labware clamping), using customized clamping rods for different labware, lets you use different format plates without adjustment. That also enables you to shake plates with clamped lids and allows piercing through sealing foils while keeping the plate firmly clamped.

The Teleshake AC is offering the shaking without temperature control. The Teleshake 95 AC is offering heating and shaking control up to 125 °C [+257 F] without cooling. All AC devices have compact size.

The device can be placed on the deck of liquid handling systems with the lowest possible usage of space. The Teleshake 95 AC offers excellent control of temperature and fluid mixing according to their temperature needs. Shaking curve is orbital. Due to the stronger motor the device allows higher shaking rpm than with the standard Thermoshake.

The device can be operated with two types of precise temperature / rpm controllers with integrated power supply (MTC or STC). The units are heating devices with CE and UL certification. They are mainly used on robotic platforms and systems in LabAutomation.

The device is designed specifically for use in Life Science. The device is prepared for easy integration into IVD applications, but the final IVD validation must be performed by the first marketer (IVD application).

When using the device 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 device according to this Biosafety Manual.

The device must be used exclusively by laboratory professionals trained in laboratory techniques with LabAutomation systems and having studied the instructions for use of this instrument as well as the instructions of the workstation the device is used in.

### 3.2 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](mailto:techhotline@inheco.com) immediately. Transportation damages must be reported to INHECO within 7 days of delivery. The following components should be included in each shipment:

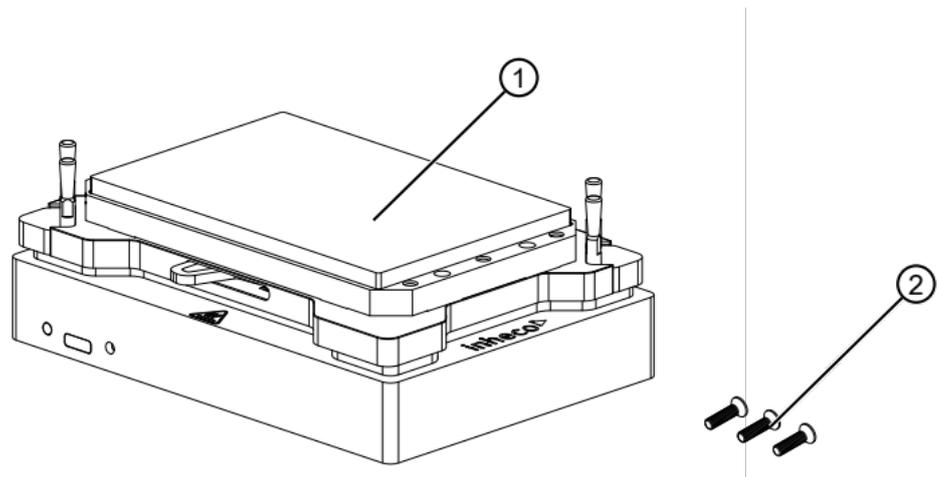


Illustration 2: Scope of Supply

1	Teleshake device incl. Sub-D-Connector Cable	2	3 Allen screws to fix thermal adapters
---	----------------------------------------------	---	----------------------------------------

The Sub-D-Connector Cable is already connected with device and it also needs to be connected to the Yellow Slot Module installed inside the TEC Control Unit (MTC or STC). → **Initial operation, page 26.**

### 3.3 Functional elements

In the following chapters the Teleshake AC is shown, as the clamping mechanism is identical to all Teleshake devices. If there are differences in other functional elements, they are clearly pointed out.

#### 3.3.1 Clamping Mechanism

The automated clamping mechanism is suited for ANSI / SLAS standard plates and it will make sure that the plates will keep in position during shaking. After shaking is stopped the clamp mechanism will automatically open.



#### WARNING

In case the plate is not complying with standard ANSI / SLAS plates the clamping mechanism might not sufficiently fix the plate on the shaker table during shaking.

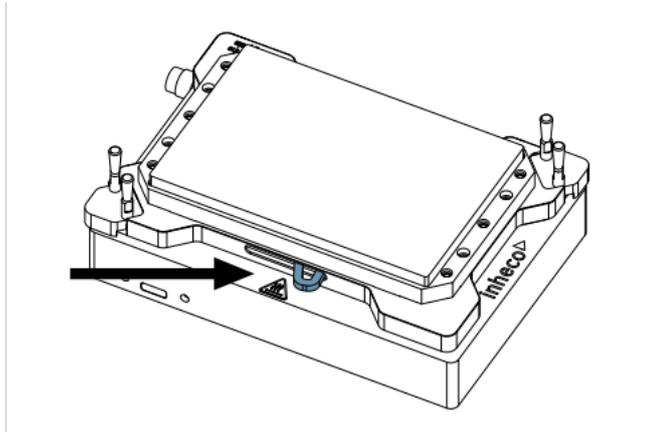


Illustration 3: Clamp mechanism "Open"

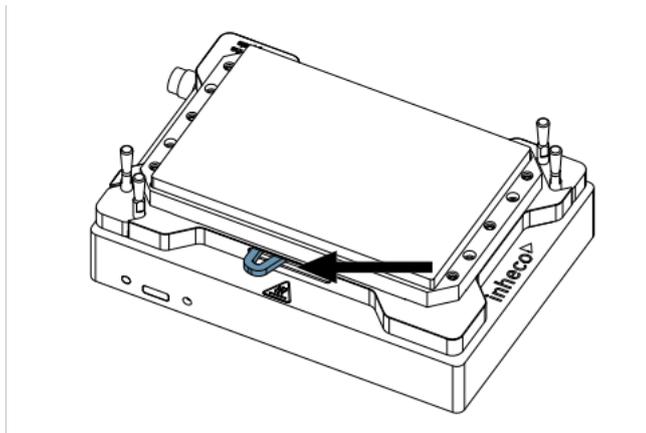


Illustration 4: Clamp mechanism "Closed"

**! WARNING**



**Pinching of finger**

While the clamp mechanism is closing you might pinch your finger or your glove. Closing or opening takes about 2-5 sec.

**3.3.2 Fixation Pins**

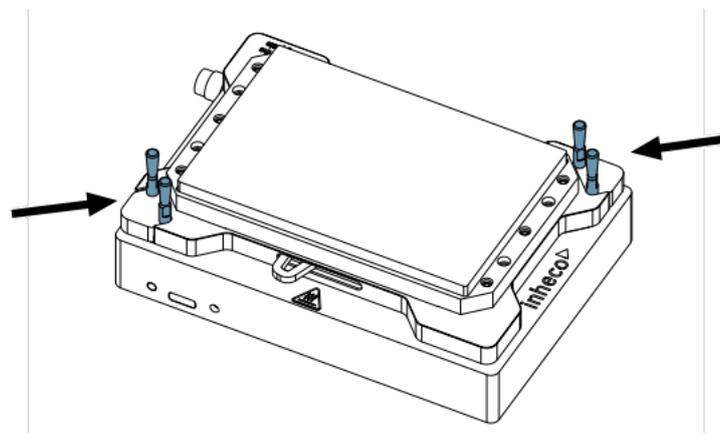


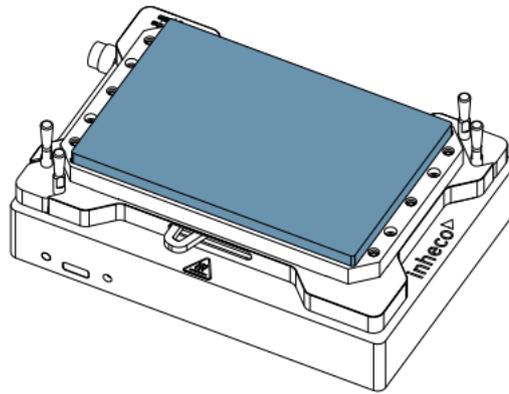
Illustration 5: Fixation Pins of Clamp Mechanism

**! WARNING****Pinching of finger**

While the clamp mechanism is closing you might pinch your finger or your glove. Closing or opening takes about 2-5 sec.

### 3.3.3 Temperature controlled area

(Only for Teleshake 95 AC)



*Illustration 6:* Heated area of the device.

**! WARNING****Burning hazard**

Devices can burn your skin. Even after switching off the TEC Control Unit, the connected devices can still be hot and could seriously burn your skin as the material's temperature can reach up to +125 °C [+257 °F]! It takes a while to cool down after the device has been switched off.

### 3.3.4 Recommended Shaking Frequency

**NOTICE**



**Shaking Frequency**

The Teleshake AC USB is a highly integrated, powerful shaker that can be operated beyond its recommended limits. This has an impact on the expected service life of the device. The maximum possible load and shaking frequency are dependent on many physical factors. Please contact the service department if you wish to exceed the recommended limits, as Inheco is able to find a customized solution. For example, the optimized setting of the internal shaker counterweight to reduce unwanted vibrations.

Shaking diameter 2 mm:

- At 1,000 RPM            max. 1,000 g
- At 2,000 RPM           max. 700 g
- At 3,000 RPM           max. 200 g

Shaking diameter 3 mm:

- At 1,000 RPM            max. 600 g
- At 2,000 RPM           max. 400 g

### 3.4 Status LED and firmware update

The device provides a functionality to check the status at the device itself. Furthermore, there is a microUSB connector and a button for firmware update. How to perform a firmware update will be explained in an additional manual.

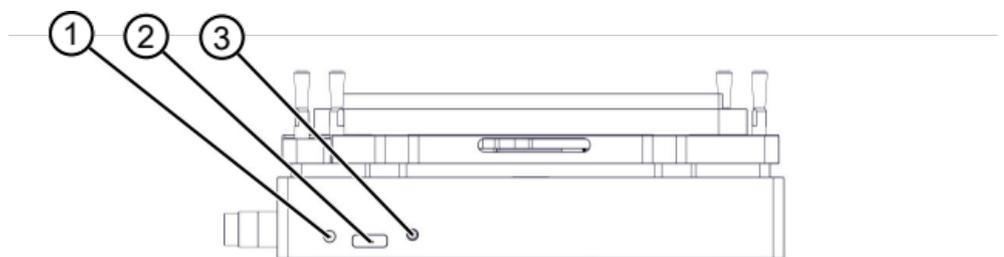


Illustration 7: Funtional Elements

1	Status LED	2	microUSB connector
3	Button for use during firmware update		

Color of LED	State	Description
Red	Steady for 30 sec. shortly off and again 30 sec. steady	Device is booting
Green	Blinking	Device is ready for communication

### 3.5 Labels

The identification label with part number and serial number also contains important technical indications. The electrical specification on the label must meet your local situation. The label is placed on the side or the bottom of the device.

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 at INHECO. In case the label is missing and you do not know the part number and serial number, they can also be read out with the software (Device Manager) which can be downloaded from INHECO’s customer area on [www.inheco.com](http://www.inheco.com).

→ **Trouble Shooting and Support, page 35.**

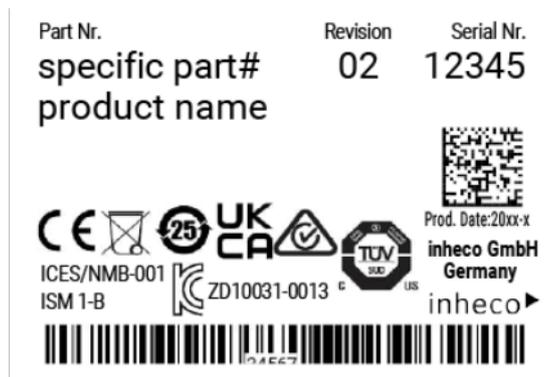


Illustration 8: Example for product label on the device (marking varies depending on the device)



Illustration 9: Example for shipment labels on the package

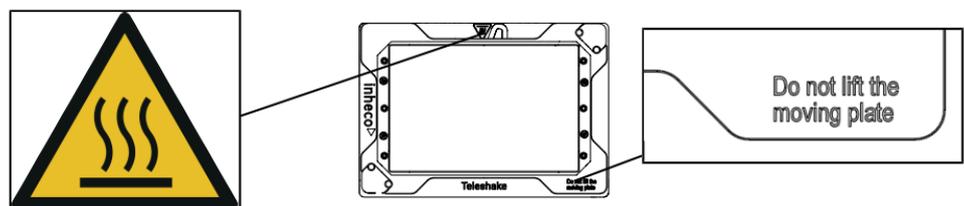


Illustration 10: Additional Labels on the product (depending on device)

## 3.6 Technical data

	Teleshake AC	Teleshake 95 AC	Teleshake 95 AC 180	Teleshake 95 AC 60	Teleshake 95 AC 3mm	Teleshake AC 3mm
Product number	7100150	7100151	7100152	7100153	7100190	7100191
Height (bottom to contact surface)	47.3 mm [1.862 in]					
Height with standard fixation pins	53.7 mm [2.144 in]					
Length x width	144 mm x 101 mm [5.669 in x 3.976 in]					
Temperature range	---	Ambient +5K up to +125°C [Ambient +5K up to +257°F]				---
Maximum temperature difference in cooling mode $\Delta T$ (=Tambient-Ttarget)	---					
Noise	Max. 42 dB(A)					
Protection category	IP 20					
Weight including cables	2.2 kg [4.85 lbs]					
Maximum load	1 kg [2.2 lbs]					
Shaker frequency	300 to 3000 rpm <sup>*1)</sup>				300 to 2000 rpm <sup>*1)</sup>	
Shaking amplitude	2 mm [0.07874 in]				3 mm [0.118 in]	
Shaking pattern	Orbital					

Table 3: Technical Data including dimensions

<sup>\*1)</sup> Depending on the load, as otherwise liquid might get spilled or adapter might not be hold tight to the clamp mechanism. We recommend testing the speed you want to use with a microtiter plate and water to test the behavior first.

Tolerable relative humidity	Operation	10-80% RH (non condensing)
	Transportation and storage	10-80% RH (non condensing)
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

Table 4: Environmental Conditions

## 4 Installation

### 4.1 Hardware installation

#### 4.1.1 Hardware inspection

Before initial operation, make sure that the shipment of your unit is complete and neither packaging nor parts are damaged → **Scope of supply, page 12.**

#### 4.1.2 Fixation of microplates

A proper positioning of the microplate is essential to avoid uncontrolled motions of the plate, and to achieve the desired shaker frequency.

##### Info



Please test your requested shaking frequency with only a microplate first, then with the microplate filled with water to make sure that the frequency is not set too high for your set up.

##### Info



The Labware needs to be SBS size, if labware is too small or too big the clamping mechanism will not close correctly and might get damaged.

Tubes, reservoirs, and plates without flat bottom require a thermal adapter (insert, nest), → **Installation of adapter plates, page 22.** A flat bottom plate can be placed directly onto the contact surface and is positioned by the holder at two corners of the device.

A custom-fit thermal adapter plate (insert, nest) for the temperature transfer into the tube or plate also ensures a proper positioning of the plate. The holder at the four corners can be taken off in case the standard holder is not suitable for your set up. → **Removal of fixation pins, page 21.** Visit [www.inheco.com](http://www.inheco.com) to find the custom-fit adapter for your microplate and contact [sales@inheco.com](mailto:sales@inheco.com) in case you need a custom-fit holder.

##### Info



Optimized temperature settings require a temperature off-set value adjusted to the thermal characteristics of the microplate. → Manual MTC / STC for further details.

### 4.1.3 Removal of fixation pins

Use an open-end wrench to unscrew the pins and replace them with the custom-fit pins provided by INHECO.

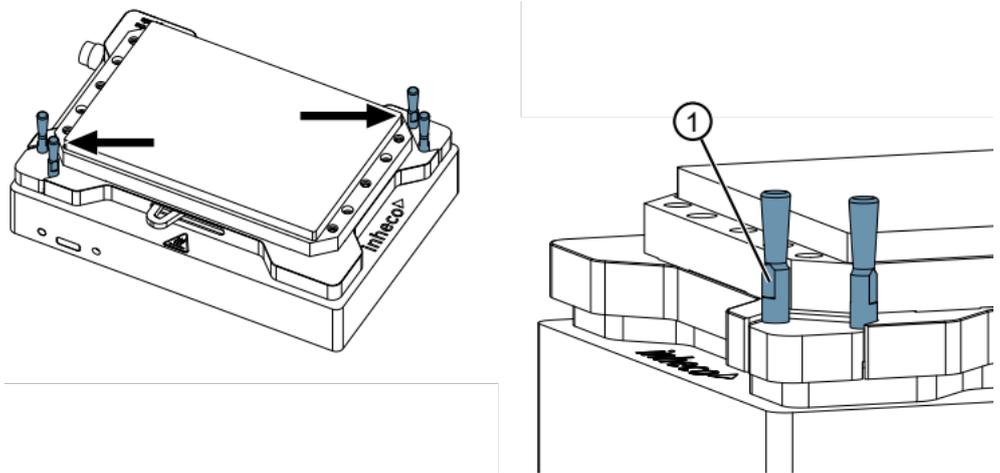


Illustration 11: Removal of Fixation Pins

1	Access for open-end wrench (3 mm)
---	-----------------------------------

**Step 1:** Use the open-end wrench to screw the new pins back in position.

**Info**



In case the standard fixation pins don't work with your plate please contact INHECO ([sales@inheco.com](mailto:sales@inheco.com)) for customized fixation pins.

### 4.1.4 Installation of adapter plates

A thermal adapter is not needed for microplates with flat bottoms. Such plates can be placed directly onto the temperature contact surface of the device.

Custom-fit adapters are required for all tubes, reservoirs and plates without flat bottoms, to ensure temperature transfer into the microplate / assay. The adapter may facilitate accurate positioning for easy robotic handling plate.

Visit [www.inheco.com](http://www.inheco.com) to find the adapter which fits your tube, reservoir or plate. In case you do not find your microplate on the list of adapters, ask [sales@inheco.com](mailto:sales@inheco.com) for a custom design.

There are two orientations possible for the installation of the adapter plates.

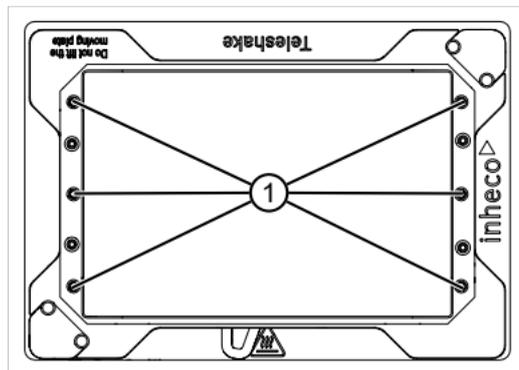


Illustration 12: Threaded holes to fix or unfix the adapter plates

**NOTICE**



**Tightening torque for adapter screws**

- The recommended maximum tightening torque for the adapter screws is **10 Ncm**. Overtightening may cause damage to the shaker.

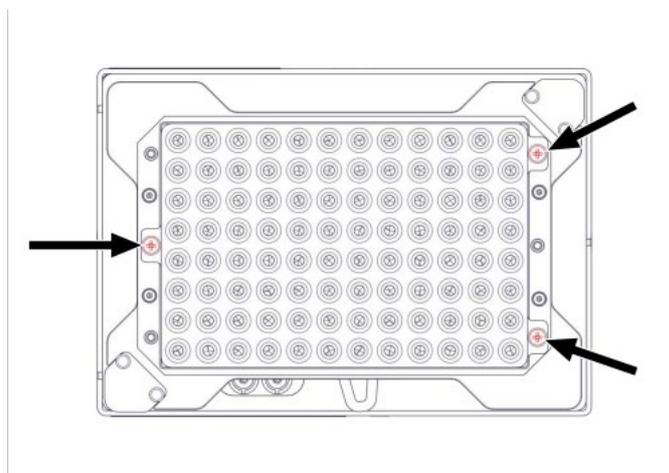


Illustration 13: Device with installed PCR adapter plate (3 screw holes used)

### 4.1.5 Mechanical integration

The Shaking device is usually integrated into liquid handling workstations. The way of fixation depends on the hardware provided by the automation platform manufacturer. When the Shaking devices are placed on a bench top, they must be fixed to the ground with two M4 screws via the thread holes of the units. The ground must be firm and even.

#### NOTICE



#### Transporting the device

For transportation of the device the shaker needs to be in closed position.

Drilling schematic for secure mounting of the device.

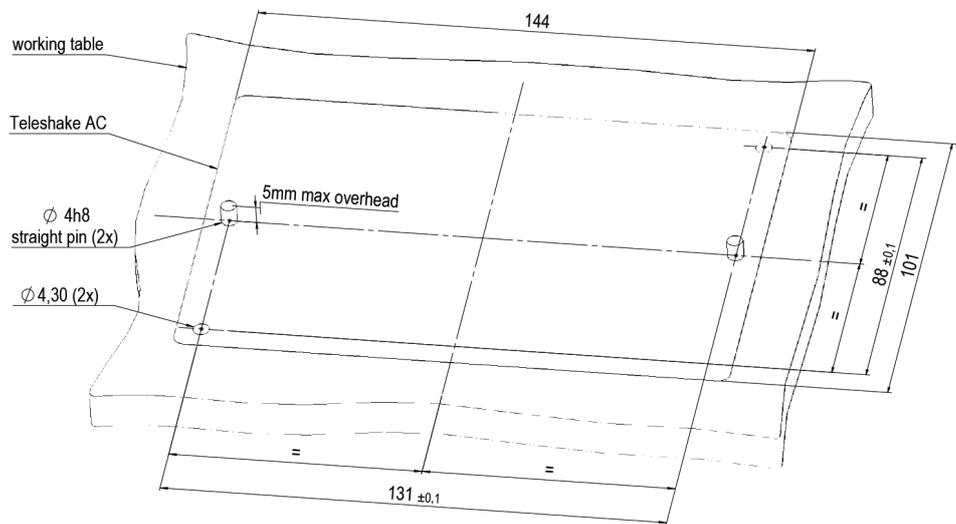


Illustration 14: Drilling Scheme

#### NOTICE



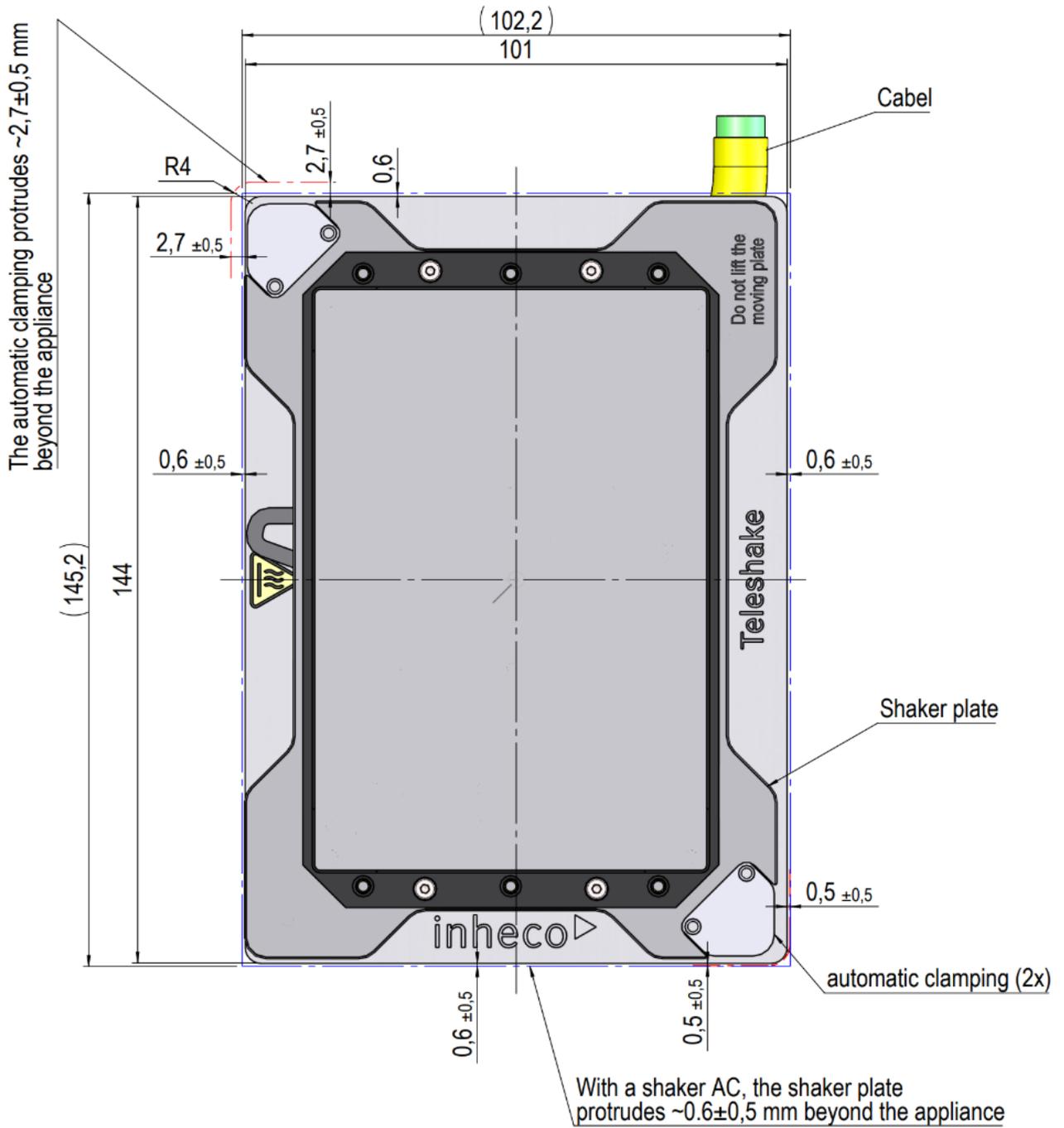
The Shaker always needs to be fixed to the ground for proper shaking performance.

**NOTICE**



**Installation situation**

The Shaker requires a minimum distance to the adjacent appliances, otherwise a collision may occur when using the shake function. Please note the installation tolerances of your carrier rack.



**Information for teaching your robotic system:**

The closed position of the clamps can be adjusted via firmware commands to ensure a proper clamping force. The open position is not adjustable and the device will always fully open when prompted.

## 4.2 Software Installation

INHECO offers a software called Demo Tool to provide limited functional control (also possible via touchscreen of the MTC / STC) and the opportunity to send manually entered firmware commands to the devices.

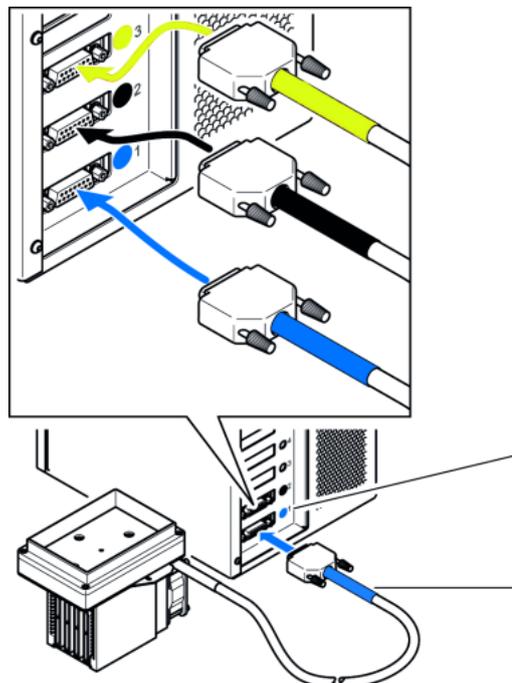
We recommend contacting your workstation provider for integration (including software integration) of the MTC / STC with devices into your workstation.

# 5 Initial operation

## 5.1 Connecting devices to the MTC / STC

In order to connect an INHECO heating / cooling / shaking device, the TEC Control Unit has to be equipped with the corresponding Slot Module. There are blue, black, and yellow Slot Modules available. The following table shows the appropriate Slot Module for each heating / cooling / shaking devices.

Product	Color	Article No.	Heating / cooling / shaking Device
Black Slot Module	black	● 2400125	CPAC HT 2-TEC, HeatPAC, CPLC, Heated Lid, Thermoshake
Blue Slot Module	blue	● 2400128	CPAC (only 7000190 & 7000179)
Yellow Slot Module	yellow	● 2400211	Thermoshake AC, Thermoshake AC 180, Thermoshake AC LC, Teleshake 95 AC



For clear identification, all Slot Modules and connectors are marked in blue, black or yellow.

When connecting a new device, the color code has to be strictly respected.

In case of wrong connection, interaction will not be possible, and an error message will be issued.

The color coding of the Slot Modules is visible from the outside through small round windows.

At the connectors, the sleeve must be marked in the same color as the Slot Module.

Illustration 15: Example of connected heating / cooling / shaking device (image shows CPAC)

**Step 1:** Disconnect the power cord of the TEC Control Unit.

**Step 2:** Connect the Shaking device to the appropriate Slot Module and lock the connector.

✓ The Shaking device must be connected to a Yellow Slot Module.

**Step 1:** Connect the power cord of the TEC Control Unit.

**Step 2:** Switch the TEC Control Unit on.

⇒ The touch-screen display of the TEC Control Unit shows the name (or abbreviation) of the currently connected device. When multiple devices are installed, you can switch between the devices by touching the arrow left or arrow right button of the touch screen.

**NOTICE**

Never plug in or plug out a device while the Controller is running. Always turn off the Controller before disconnecting or connecting the device.

## 5.2 Programming the movement Pattern

The only movement pattern of the device is orbital and anticlockwise.

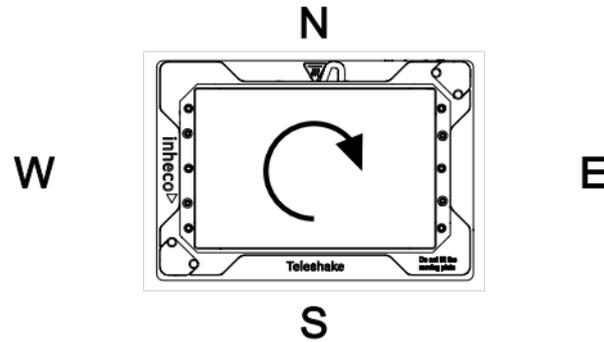


Illustration 16: Shaking pattern

# 6 Operation

The devices can be operated by touchscreen at the front panel of the MTC / STC, by the Demo Tool available as download from the customer area at [www.inheco.com](http://www.inheco.com) or by the software of your liquid handling workstation.

The INHECO Demo Tool software and the touchscreen allow programming basic temperature and shaking sequences. More complex control sequences can be performed with the software of your robotic platform provider or if you write your own software based on our Firmware Command Set and DLL.

For more information consult the following documents:

- for touch-screen operation: MTC / STC Manual
- for software operation: Demo Tool Manual
- for firmware commands: MTC / STC Firmware Command Set

These documents can be downloaded from INHECO's customer area on [www.inheco.com](http://www.inheco.com).

## 6.1 Safety instructions for operation

### NOTICE



Do not operate the device in an ambient temperature of more than 32°C [90°F]. Otherwise, the devices may not work properly or may even get damaged.

Free air supply of the ventilation opening must be ensured to avoid damage to the unit (only for Thermoshake AC).

### WARNING



#### Burning hazard

Devices can burn your skin. Even after switching off the TEC Control Unit, the connected devices can still be hot and could seriously burn your skin as the material's temperature can reach up to +125 °C [+257 °F]! It takes a while to cool down after the device has been switched off.

### WARNING



#### Pinching of finger

While the clamp mechanism is closing you might pinch your finger or your glove. Closing or opening takes about 2-5 sec.

### WARNING



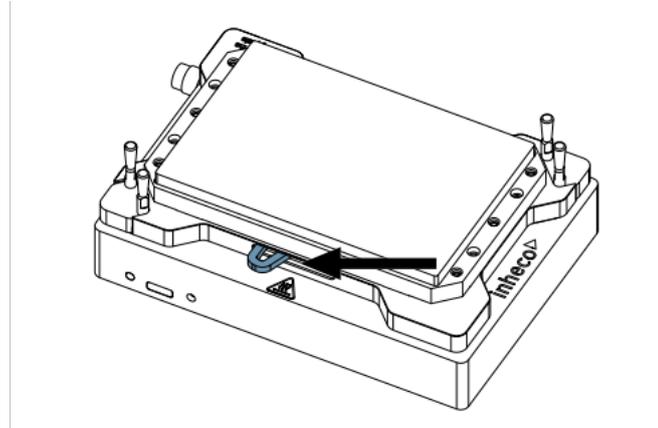
#### Warning

Not ANSI / SLAS complying standard plates or too high speeds can result in injuries due to hot spilling liquids.

- Test the desired load - speed configuration with a microtiter plate and water beforehand.

## 6.2 Getting the device in closed position

For transportation of the Shaking device the shaker needs to be in closed position. There are several ways to do so.



*Illustration 17: Clamp mechanism "Closed"*

### With commands

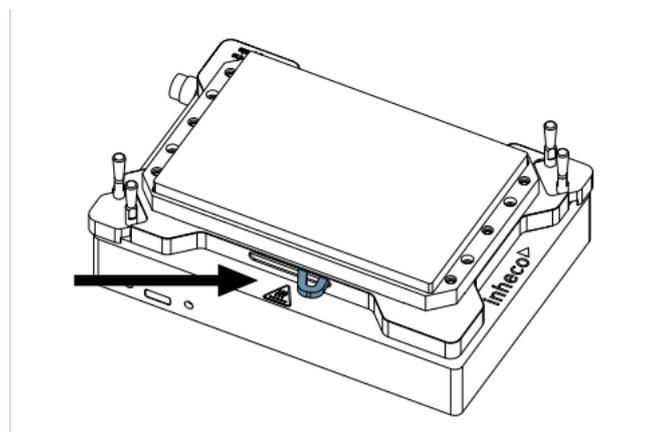
Use the commands `xSSR0` and `xASE1`. As the clamp mechanism closes as soon as the shaking starts.

### Using the MTC / STC controller

Restart the controller and power the controller of as soon as the lever is in closed position.

## 6.3 Getting the device in opened position

In case the clamp mechanism has a problem to open there are several ways to open it:



*Illustration 18: Clamp mechanism "Open" with lever (Arrow)*

### With commands via Demotool

Use the commands `xSSR0` and `xASE0` (x= slot ID) as soon as the shaking is stopped.

### By restarting the controller

After restarting the computer, the clamp mechanism is opened and in zero-position.

### Using the lever

If sending the commands or the restart is not successful, you can use the lever to open the clamp mechanism.

# 7 Maintenance

## 7.1 Software updates

For updates of the Demo Tool Software, contact: sales@inheco.com.

### 7.1.1 Installation of the Software "MTC / STC Demo Tool"

The Demo Tool can be downloaded from INHECO’s customer area on www.inheco.com.

In this section you will also find the Demo Tool Manual with detailed instructions of the software.

Download the MTC / STC Demo Tool and the DLL file into the same folder. Both files must be saved into the same folder, otherwise it is impossible to run the Demo Tool.

### 7.1.2 Serial Numbers via Demo Tool

Start the Demo Tool and click on the button “find MTC” (or “find STC”). The software scans all Com-Ports and subsequently displays the connected MTC / STC as well as connected devices.

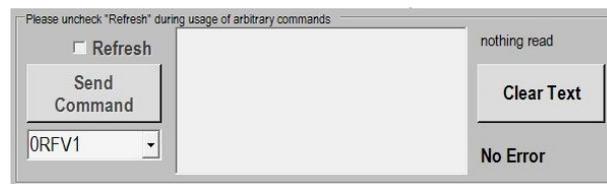


Illustration 19: Command section of the user interface

- Step 1:** Make sure the Refresh Box is unchecked (as shown above).
- Step 2:** Enter your command into the command field (overwrite the last command shown in this field e.g. last command was 0RFV1).
- Step 3:** Select button “Send Command”.
- Step 4:** Enter following Commands:
  - ⇒ for MTC / STC Mainboard serial number: 0RFV2
  - ⇒ for Slot Module serial number: xRFV2 (x=slotID: 1-6)
  - ⇒ for external connected device: RSNx (x=slotID: 1-6)

### 7.1.3 Error Code Report generated with "MTC / STC Demo Tool"

**Step 1:** Start the Demo Tool.

**Step 2:** Click on the button "find MTC" (or "find STC").

⇒ The software scans all Com-Ports and subsequently displays the connected MTC / STC as well as connected devices.

**Step 3:** Click on the button "report error codes".

⇒ An additional window appears to save the error report as a .txt file.

**Step 4:** Save the .txt file.

⇒ An additional window appears where all the error codes are displayed.

**Step 5:** Email the .txt file along with all other required information to [techhotline@inheco.com](mailto:techhotline@inheco.com)

## 7.2 Cleaning

### CAUTION



#### CAUTION

Before cleaning the device, disconnect power and make sure the temperature at the heated area is below +50°C.

The contact surface should be cleaned regularly to ensure optimum heat transfer into the microplate and assay. Always clean the contact surface after a spillage. Use a cloth with a 50:50 water / isopropanol solution and make sure that no deposits are left on the surface. Liquids must not enter into the unit.

Do not use aggressive cleaning fluids such as acetone, or abrasive cleaners.

Contact INHECO in case you prefer other cleaning liquids or methods as they might be harmful for the material of the devices.

## 7.3 Decontamination

Decontamination is required before return of a device to INHECO in case it has been exposed to human or animal blood / fluid / tissue or has been exposed to biological, chemical, or radioactive materials.

The surface decontamination should include a wipe-down of the housing surface with a decontaminating solution. A solution of 70 % alcohol, bleach (5 %-12 %) or Microside SQ can be used where effective for the respective target material (organism). Otherwise, the appropriate decontamination method and solution to eliminate any risk must be applied. Fumigation (e.g., with toxic formaldehyde or ethylene oxide gas) might be required if decontamination of inaccessible areas is needed but ensure to take precautions when using toxic gases or fluids for decontamination.

### Info



Contact INHECO if you are not sure whether the used decontamination method or solution could damage the device or its surface material. → **Contact information, page 5**

**NOTICE**

In case of decontamination with gas, make sure that no liquid enters inside the device. Usually, the device is in operation and connected to the power outlet, as ventilation is needed for an effective decontamination with gas.

## 7.4 Calibration / Verification

For proper performance of the device, it is recommended to verify the thermal and shaking performance at least once a year. Depending on the application, shorter verification intervals may be required. INHECO recommends to use the INHECO Measurement Plate (IMP) to perform the verification.

Contact [techhotline@inheco.com](mailto:techhotline@inheco.com) in case of performance deviations from set values.

## 7.5 Return for Repair only with RMA Number

INHECO devices must be repaired by INHECO only. Parts must not be exchanged by the user. Exchange of parts or broken seals can lead to the loss of warranty. Spare Parts must be ordered from INHECO.

INHECO only accepts decontaminated devices for repair, firmware update, maintenance etc., in case the devices were exposed to blood, to other body fluids or tissues, to biological, chemical or radioactive materials.

→ **Cleaning, page 32** and → **Decontamination, page 32**.

Devices which were exposed to biosafety level 3 and 4 environments are not accepted by INHECO for return.

Ask [techhotline@inheco.com](mailto:techhotline@inheco.com) or visit [www.inheco.com/service/returns-rma.html](http://www.inheco.com/service/returns-rma.html) for the return procedure before you return a device to INHECO. Do not return any devices without INHECO's RMA number. INHECO's RMA number must be shown on the outside of the return package.

Returns without RMA number are not being processed by INHECO.

Devices should ideally be returned in the original packaging. If not possible, make sure that devices are sufficiently protected and cannot move within the package to avoid transportation damage.

**NOTICE**

Do NOT return the device in open position as otherwise the shaker motor will get damaged. For information about how to close the device refer to the Device Manager Manual which can be downloaded at [www.inheco.com](http://www.inheco.com).

## 7.6 Transportation and Storage

It is recommended to keep the original packaging. INHECO devices should be shipped and stored in their original packaging. Adhere to required environmental conditions for transportation and storage, → **Technical data 18**.

## 7.7 Shut Down and Disposal

The device must be disposed of in accordance with environmental and biosafety directives. You must arrange for correct electric waste disposal following current safety regulations of your country.

All INHECO devices are RoHS and WEEE compliant.

## 8 Trouble Shooting and Support

In case of an operation failure follow the trouble-shooting instructions of this chapter. INHECO needs the below mentioned information to help you troubleshooting the operation failure.

Provide the following when contacting INHECO for support:

- INHECO product number of the device (shown on device label)
- INHECO product name of the device (shown on device label)
- INHECO serial number of the device (shown on device label or via software)
- Detailed error description
- Error code report (generated with software "MTC / STC Demo Tool")
- Information about setup of devices:
  - integrated in workstation
  - controlled by MTC or STC (incl. part number and serial number)
  - controlled by workstation software or INHECO software

Serial numbers are shown on the device labels of the TEC Control Unit and connected devices, but you can also read them out by using INHECO's software "MTC / STC Demo Tool" (Demo Tool).

The Demo Tool must also be used to generate the above-mentioned report of error codes for the TEC Control Unit and all connected devices. → Demo Tool Manual

Based on the above information, INHECO's TechHotline decides about the requirement of a return. → **Return for Repair only with RMA Number 33.**

Our Return process is explained here: <https://www.inheco.com/rma-process.html>

## 9 Accessories

### TEC Control

Product name	Description	Part number
Multi TEC Control (MTC)	Controls up to 6 INHECO devices individually	8900030
Single TEC Control (STC)	Controls 1 INHECO device	8900031

### Slot Modules

Product	Color		Article No.	Heating / cooling / shaking Device
Black Slot Module	black	●	2400125	CPAC HT 2-TEC, HeatPAC, CPLC, Heated Lid, Thermoshake
Blue Slot Module	blue	●	2400128	CPAC (only 7000190 & 7000179)
Yellow Slot Module	yellow	●	2400211	Thermoshake AC, Thermoshake AC 180, Thermoshake AC LC, Teleshake 95 AC

### Thermal Adapter

A list of adapters (inserts, nests) can be downloaded from INHECO's webpage [www.inheco.com](http://www.inheco.com) or requested from [sales@inheco.com](mailto:sales@inheco.com).