

9 Cleaning and disinfection

9.1 Cleaning

NOTICE

Incompatible cleaners!



Some device components are made of plastic. Solvents can dissolve plastics. Strong acids or caustic solutions can cause to become brittle of the plastic.

For cleaning plastic components and surfaces, do not use solvents that contain hydrocarbons, solvents with an alcohol content of more than 10% or strong acids or caustic solutions.

Moisture-sensitive components!

Do not spray cleaning agent onto the touchscreen and the control box at the rear of the device. When wiping the device clean, always make sure that moisture does not enter into these components.

Exterior surfaces

Cleaning exterior surfaces:

1. Remove dirt residues and depositions thoroughly using a solution of water and commercial detergent.
2. Wipe the surfaces clean using a clean cloth and clear water.
3. Then, wipe the surfaces dry using a clean cloth.

Cleaning display:

NOTICE

Moisture-sensitive display!

Do not spray or wipe the display with cleaner.

- Clean display using a dry cloth of 100% micro fiber!

9 Cleaning and disinfection

9.2 Decontamination procedures

The operator must prepare hygiene regulations for the decontamination of the device in accordance with the application of the device.

Disinfection procedure

The following disinfection procedures are compatible with the device:

Wipe/spray disinfection:

The wipe/spray disinfection is used as the standardized manual disinfection procedure for the device and for all accessories.

contra-con decontamination routine:

The contra-con decontamination routine uses an automated program cycle to decontaminate the complete work space including the shelf system and the sensors.

9.3 Wipe/spray disinfection

Disinfection stages

The manual wipe/spray disinfection is carried out in three stages:

- Predisinfection,
- cleaning,
- final disinfection.

⚠ CAUTION

Alcoholic disinfectants!



Disinfectants with an alcohol content of more than 10% may form, in combination with air, easily combustible and explosive gas mixtures.

When using such disinfectants, avoid open flames or exposure to excessive heat during the entire disinfection process!

- Use such disinfectants only in adequately ventilated rooms.
- After the disinfectant has been allowed to react, wipe the cleaned device components thoroughly dry.

Observe safety regulations to avoid fire and/or explosion hazard caused by alcohol-containing disinfectants (ZH 1/598).

Chloride-containing disinfectants!



Chloride-containing disinfectants can corrode stainless steel.

- Use only disinfectants that do not affect stainless steel!

9 Cleaning and disinfection

Preparing the manual wipe/spray disinfection:

WARNING

Electric shock!



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

Prior to cleaning and disinfection work, disconnect the device from the power supply!

- Turn the device off using the power switch.
- Unplug the power connector and protect it against accidental reconnection.
- Check to see if the device is deenergized.

Health hazard!



The surfaces of the work space may be contaminated. Contact with contaminated cleaning liquids may cause infections.

Disinfectants may contain harmful substances.



When cleaning and disinfecting, always observe the safety instructions and hygiene regulations!

- Wear safety gloves.
- Wear safety goggles.
- Wear mouth and respiratory system protection gear to protect the mucous membranes.
- Observe the safety instructions of the manufacturer of the disinfectant and of the hygiene experts.

Predisinfection:

Predisinfection

1. Remove all samples from the work space and store them in a safe place.
2. Pump the water off and remove water residues using a cloth.
3. Spray disinfectant onto the surfaces of the work space and of the accessories or wipe the surfaces clean using disinfectant.

NOTICE

Moisture-sensitive components!

Do not spray disinfectant onto the CO₂ sensor in the measuring cell baseplate or onto the O₂/N₂ sensor.

4. Allow the disinfectant to react as specified by the manufacturer.

Removing accessories and shelf system:

1. Remove gas humidification, bottle turning device and/or shelves, then remove the entire shelf system from the work space.
For removal and installation of the shelf system, please refer to Section 5.2.
2. If required, remove the blower wheel and its cover from the baseplate

9 Cleaning and disinfection

of the measuring cell. The wheel and the cover can be autoclaved.

Removing blower wheel and cover:

WARNING

Electric shock!

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

Prior to removing the blower wheel, switch the device off and disconnect it from the power supply system.

1. Remove the two retaining screws of the cover using the supplied Allen wrench (3 mm) and remove the cover.
2. The blower wheel is secured to the axle by a set screw. Remove the set screw using the Allen wrench (2 mm) and pull the blower wheel off.

Cleaning the work space and accessories:

1. Thoroughly remove dirt residues and deposits using a solution of tepid water and dishwashing agent.
2. Wipe the surfaces clean using a clean cloth and plenty of clear water.
3. Remove the cleaning liquid from the water tray and wipe all surfaces of the work space thoroughly dry.
4. Wipe accessories thoroughly dry.

Final disinfection:

Final disinfection

1. Spray disinfectant again onto the work space, the shelf system, and the removed components and wipe them clean.
2. Allow the disinfectant to react as specified by the manufacturer.
3. Reinstall the shelf system and the removed components.

NOTE

Functional check:

After the installation, check to see if the blower wheel is securely attached to the axle and if it can rotate freely, then secure cover using the screws.

9
Cleaning and disinfection
contra-con process
9.4 contra-con decontamination routine

The entire program run of the decontamination routine takes approximately 25 hours.

During this routine, a hot and humid atmosphere at 90 °C with highly decontaminating effect is created in the work space. The effectiveness of the contra-con decontamination routine has been certified by independent institutes. Information on these tests is available from Thermo Scientific upon request.

After the run has been completed, the device must be started up again using the auto-start routine.

NOTE

Conditions that prevent the start of the contra-con decontamination routine:

The contra-con routine cannot be started if one of the following failure conditions exists.

Temperature control loop:

- Sensor breakage,
- actual value above set value (excessive deviation),
- actual value below set value (excessive deviation),
- set value not plausible,
- calibration values too high or too low,
- sensor communication failure,
- sensor parameter not plausible,
- no communication with LM 75.

Control loop for CO₂ gas supply:

- No communication with sensor.

In this case, the contra-con key is dimmed and its function is not available.

Overtemperature protection:

If the overtemperature protection was enabled on the device, the contra-con decontamination routine cannot be started before the fault has been corrected or reset.

No gas is supplied during the contra-con decontamination routine on versions with the optional gas monitoring system:

If the error „no gas“ occurs during the contra-con decontamination routine, the audible alarm is triggered. The alarm can be confirmed by pressing on any position on the display. In this case, the contra-con decontamination routine is not cancelled. The alarm relay remains switched until the gas monitoring system detects a full gas cylinder again.

9 Cleaning and disinfection

contra-con procedure

Optional bottle turning device:

Before starting the contra-con decontamination routine, all rollers must be removed from the incubator. The electrical connection sockets must then be sealed with the protecting caps.

The rack that supports the rollers may be left in place for the duration of the cycle.

Procedure of a contra-con decontamination routine:

1. After cleaning, reinstall the shelf system components into the work space.
2. Fill the floorpan with 350 ml processed water.
3. Turn the device on using the power switch.
4. Activate and start the decontamination routine.
5. After the decontamination routine has been completed, remove the remaining water using a sterile cloth.
6. Turn the device off or resume operation.

CAUTION

Hot surfaces!



The handle and the screen of the glass door, the interior panel of the outer door as well as the surfaces of the shelf system and of the work space become extremely hot during the contra-con decontamination routine.

During the routine run or immediately after completion of the run, always wear safety gloves when touching these surfaces!

NOTICE

Damage to the samples!

During the contra-con decontamination routine, the work space is heated up to 90 °C.

Make sure that:

- all samples are removed from the work space,
- all accessories are removed from the work space.

9
Cleaning and disinfection
Operating phases of contra-con decontamination:

The remaining run time of the contra-con decontamination routine describes the time between the start or the current time status to the end of the drying phase. The indicated remaining run times are not measured values but merely used for orientation. The routine is divided into five phases:

1. Heating phase,
2. decontamination phase,
3. condensation,
4. cool-down,
5. drying.

Heating phase: Remaining run time approx. 25 hours. The work space is heated to a temperature of 90° C while an elevated relative humidity is created.

Decontamination phase: Remaining run time approx 23 hours.

After the decontamination atmosphere has been created, the decontamination phase of approx. 9 hours is started. The temperature is maintained at 90°C.

Condensation: Remaining run time approx. 14 hours. The floor heating is switched off, the temperature is maintained only by the sidewall heating. This function is activated to reduce the created moisture before the cool-down and to collect it at the work space floor.

Cool-down phase: Remaining run time approx. 8 hours.

The device cools down until the originally set temperature set value is reached.

Postheating phase: Remaining run time approx. 1 hour

During the postheating phase, condensate within the device is eliminated as far as possible; remaining condensate accumulates at the bottom of the work space.

End of the decontamination routine: Remaining run time 0 hours

When the remaining run time has elapsed to 0 hours, the device has reached the originally set working temperature again (e.g. 37 °C). The contra-con decontamination routine must then be stopped by pressing the appropriate key.

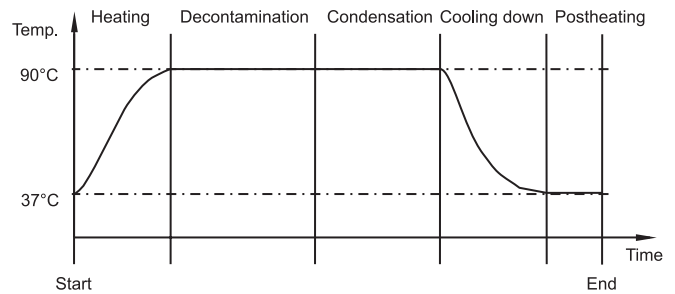


Fig. 66: Decontamination routine phases

9 Cleaning and disinfection

9.4.1 Activating the contra-con routine

Fig. 67: The contra-con decontamination routine is used to decontaminate the complete work space .

1. Press the **CONTRA-CON** key [1].
 - The contra-con-instruction menu [2] is displayed.
2. To exit the contra-con-instruction menu and contra-con:
 - Press the **END** key [4].
 - The system returns to the main menu.
3. To activate contra-con:
 - Press the **START** key [3].
 - The contra-con-instruction menu [2] is displayed.
4. To air the work space, open both device doors when the audible alarm sounds after 30 seconds.
5. Remove all samples from the work space.
6. Pump the water out of the floorpan and wipe off water residues.
7. Fill the floorpan of the work space with 350 ml processed water.
8. Close both device doors.
 - The run of the contra-con decontamination routine starts.
 - **Fig. 68:** While the contra-con decontamination routine is running, the display shows the current status [5] and outputs the following information:
 - Temperature,
 - start time,
 - phase,
 - remaining run time.

9.4.2 Interrupting contra-con

Fig. 67: The contra-con decontamination routine can be interrupted at any time.

1. To interrupt contra-con:
 - Press the **STOP** key [6].

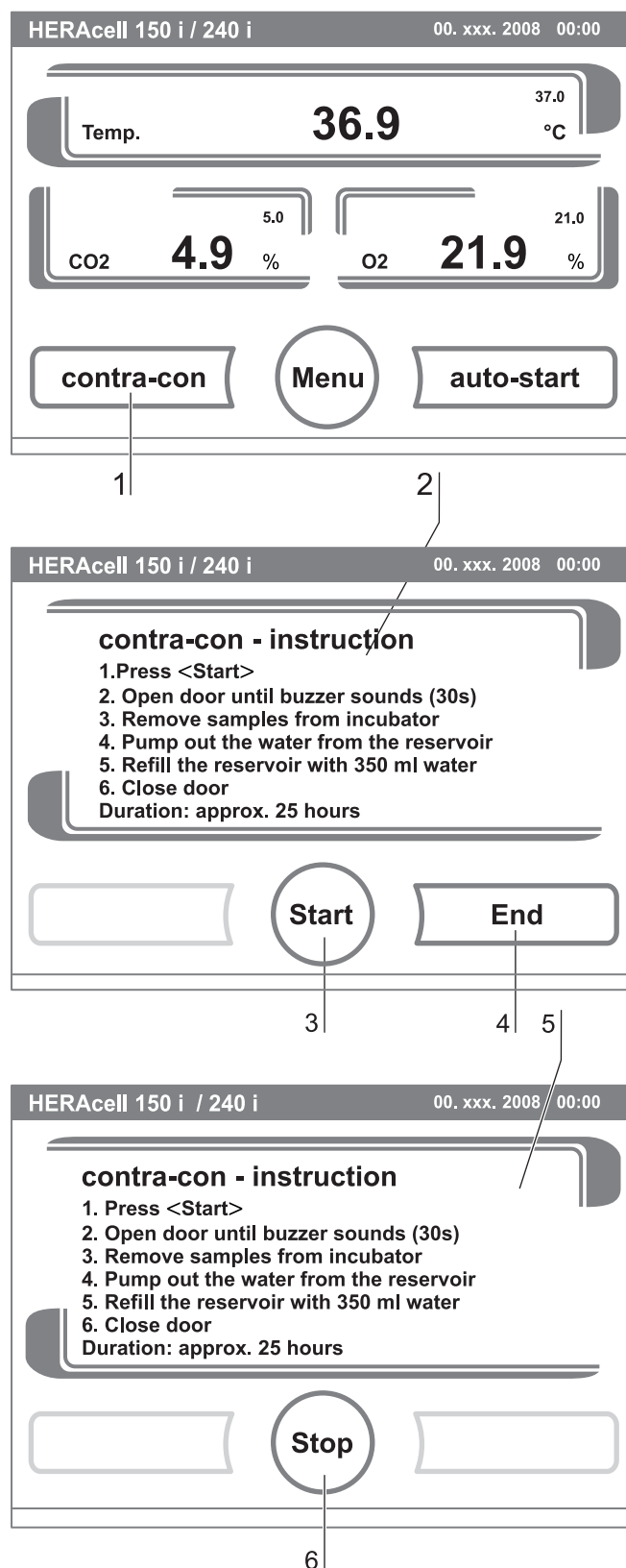


Fig. 67: Activating contra-con

9 Cleaning and disinfection

If the **STOP** key is pressed, the routine is interrupted and the contra-con Stop dialog box is opened as a security request. The routine can now be ultimately cancelled or resumed.

2. To cancel contra-con:

- ▶ Press the **END** key [2].
- ▶ The error message is displayed.
- ▶ If the error message is confirmed, the system returns to the main menu.

3. To resume contra-con:

- ▶ Press the **BACK** key [1].
- ▶ The system returns to the status display, and the decontamination routine is resumed.

4. To interrupt contra-con from the status display:

- ▶ Press the **STOP** key [4].
- ▶ The contra-con Stop dialog box is displayed as a security request (see above). Proceed with work step 2. (see section above).

9.4.3 contra-con interruption due to error

If an error occurs while the decontamination routine is run, an error message [3] is displayed and the following actions are initiated:

- The decontamination routine automatically changes to the cool-down phase,
- the audible alarm sounds.

1. To confirm the audible alarm:

- ▶ Press any position on the display.
 - ▶ The audible alarm is switched off. The **END** key is displayed.
- If the decontamination routine is not cancelled after this, cool-down to the set temperature occurs.

2. To cancel contra-con:

- ▶ Press the **END** key [2].
- ▶ The error message is displayed.
- ▶ If the error message is confirmed, the system returns to the main menu.

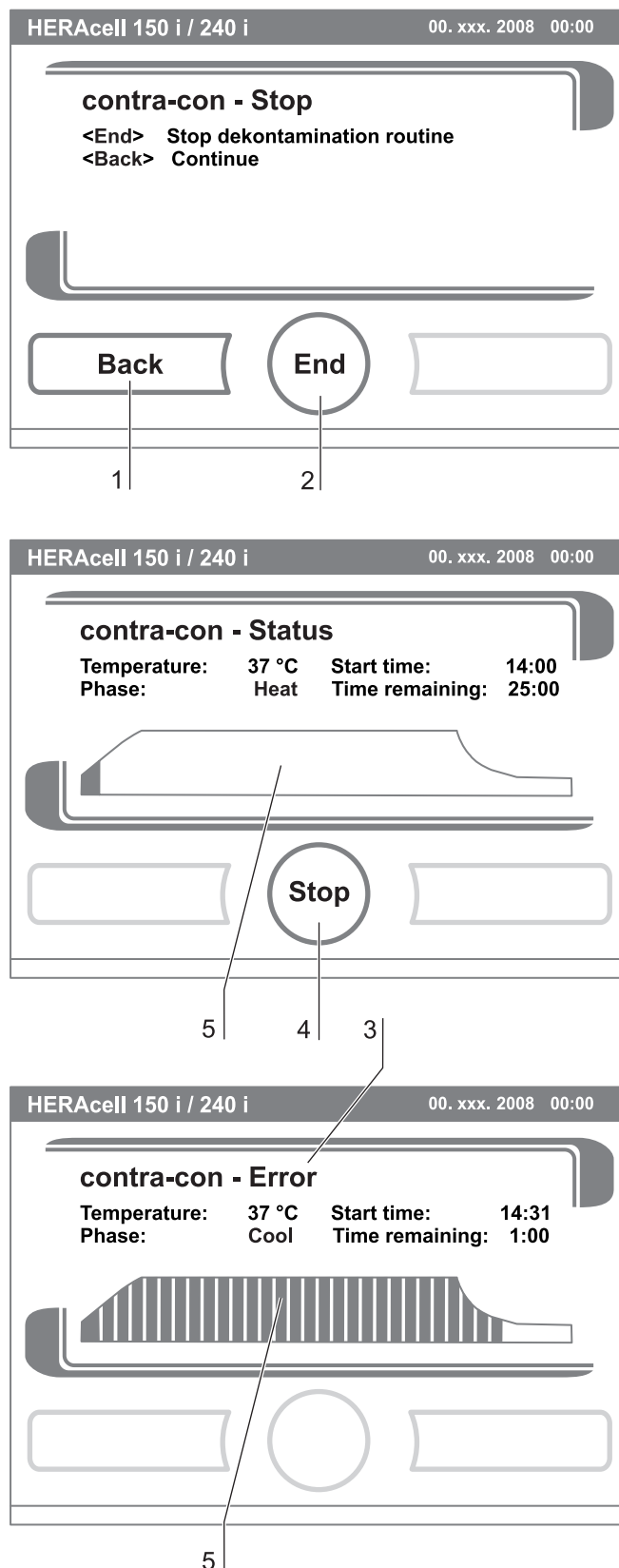


Fig. 68: Interrupting / cancelling contra-con

9 Cleaning and disinfection

9.4.4 Completing contra-con

After the five phases have been completed, the Stop CONTRA-CON DECONTAMINATION ROUTINE dialog box [1] is displayed.

The decontamination routine must be stopped manually.

- To stop contra-con:
 - ▶ Press the **END** key [2].
 - ▶ The system returns to the main menu.

NOTE

Opening door during contra-con decontamination:

If the door will be opened and closed again whilst contra-con decontamination is running, the routine returns to a phase which will ensure a continuation without faults.

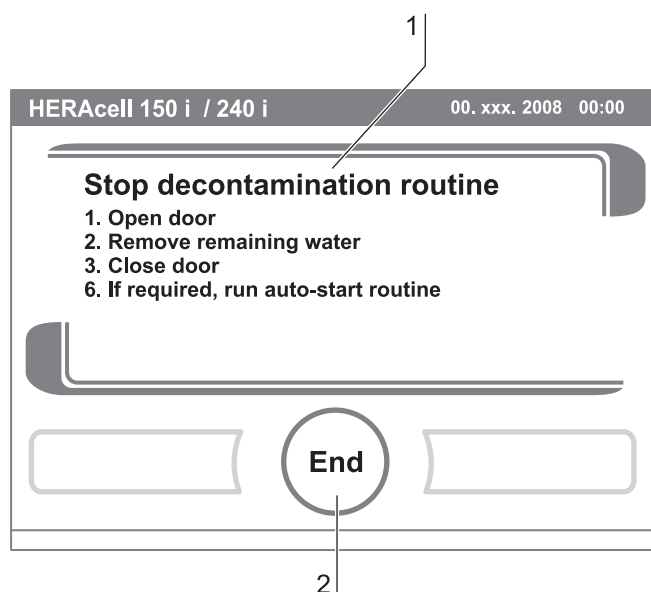


Fig. 69: contra-con completion