

TRH 20 E / TRH 21 E / TRH 22 E / TRH 23 E

EN

OPERATING MANUAL
OIL-FILLED RADIATOR



EN This product is only suitable for well insulated spaces or occasional use.

 TROTEC

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Notes regarding the operating manual

Symbols


 **Warning of electrical voltage**
 This symbol indicates dangers to the life and health of persons due to electrical voltage.


 **Warning of hot surface**
 This symbol indicates dangers to the life and health of persons due to hot surface.

 **Warning**
 This signal word indicates a hazard with an average risk level which, if not avoided, can result in serious injury or death.

 **Caution**
 This signal word indicates a hazard with a low risk level which, if not avoided, can result in minor or moderate injury.

Note
 This signal word indicates important information (e.g. material damage), but does not indicate hazards.

 **Info**
 Information marked with this symbol helps you to carry out your tasks quickly and safely.

 **Follow the manual**
 Information marked with this symbol indicates that the operating manual must be observed.

You can download the current version of the operating manual and the EU declaration of conformity via the following link:



TRH 20 E



<https://hub.trotec.com/?id=41295>

TRH 21 E



<https://hub.trotec.com/?id=43931>

TRH 22 E



<https://hub.trotec.com/?id=41296>

TRH 23 E



<https://hub.trotec.com/?id=43932>

Safety

Read this manual carefully before starting or using the device. Always store the manual in the immediate vicinity of the device or its site of use!



Warning

Read all safety warnings and all instructions.

Failure to follow the warnings and instructions may result in electric shock, fire and / or serious injury.

Save all warnings and instructions for future reference.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.



Warning

Children of less than 3 years should be kept away unless continuously supervised.

Children aged from 3 years and less than 8 years shall only switch on/off the appliance provided that it has been placed or installed in its intended normal operating position and they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children aged from 3 years and less than 8 years shall not plug in, regulate and clean the appliance or perform user maintenance.



Warning

Do not use the device in small rooms if persons are present who cannot leave the room independently and who are not under constant supervision.

- Do not use the device in potentially explosive rooms.
 - Do not use the device in aggressive atmosphere.
 - Set the device up in an upright and stable position.
 - Let the device dry out after a wet clean. Do not operate it when wet.
 - Do not use the device with wet or damp hands.
 - Do not expose the device to directly squirting water.
 - Never insert any objects or limbs into the device.
 - Do not cover or transport the device during operation.
 - Do not remove any safety signs, stickers or labels from the device. Keep all safety signs, stickers and labels in legible condition.
 - Do not sit on the device.
- This appliance is not a toy! Keep away from children and animals. Do not leave the device unattended during operation.
 - Check accessories and connection parts for possible damage prior to every use of the device. Do not use any defective devices or device parts.
 - Ensure that all electric cables outside of the device are protected from damage (e.g. caused by animals). Never use the device if electric cables or the power connection are damaged!
 - The electrical connection must correspond to the specifications in chapter Technical data.
 - Insert the mains plug into a properly secured mains socket.
 - Observe the device's power input, cable length and intended use when selecting extensions to the power cable. Completely unroll extension cables. Avoid electrical overload.
 - Before carrying out maintenance, care or repair work on the device, remove the mains plug from the mains socket. Hold onto the mains plug while doing so.
 - Switch the device off and disconnect the power cable from the mains socket when the device is not in use.
 - Do not under any circumstances use the device if you detect damages on the mains plug or power cable. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard. Defective power cables pose a serious health risk!
 - During the installation of the device observe the minimum distances from walls and other objects as well as the storage and operating conditions specified in the Technical data chapter.
 - Do not use the device in immediate proximity to curtains.
 - Make sure that the air inlet and outlet are not obstructed.
 - Make sure that the suction side is kept free of dirt and loose objects.
 - Do not place the device on combustible ground.
 - Allow the device to cool down before transport and / or maintenance work.
 - Do not use this device near bathtubs, shower trays, swimming pools or other water containers. Risk of electric shock!
 - The device must not be positioned directly beneath a wall socket.
 - The device must be set up in a way that the switches and controllers cannot be touched by a person in a bathtub or shower.

Intended use

This product is only designed for use inside well insulated rooms or for occasional use.

The device is only intended to be used as additional heating device in dry, closed rooms whilst adhering to the technical data. For intended use it must only be positioned on the ground.

Improper use

- Do not place the device on wet or flooded ground.
- Do not place any objects, e.g. clothing, on the device.
- Do not use this device in the vicinity of fuel, solvents, varnishes or other easily inflammable vapours or in rooms where these substances are stored.
- Do not use the device outdoors.
- Do not use the device for heating vehicles.
- The device must not be used near swimming pools.
- Do not use this device in the immediate vicinity of sinks, bathtubs or other water containers.
Never immerse the device in water.
- Never heat rooms with a cubature of less than 4 m³. Risk of overheating!
- Any operation other than as described in this manual is prohibited. Non-observance renders all claims for liability and guarantee null and void.
- Please bear in mind that our devices are not designed for the application in business, craft or industrial enterprises. We do not accept any liability if the device is used in business, craft or industrial enterprises as well as for similar applications.
- Any unauthorised modifications, such as alterations or structural changes to the device, are forbidden.


Personnel qualifications

People who use this device must:









- be aware of the dangers that occur when working with electric devices in damp areas.
- have read and understood the operating manual, especially the Safety chapter.

Maintenance tasks which require the housing to be opened must only be carried out by specialist electrical companies or by Trotec.

Symbols on the device

Symbols	Meaning
	This symbol located on the device indicates that it is prohibited to place objects (such as towels, clothes etc.) above or directly in front of the device. In order to avoid overheating and fire hazards, the heater must not be covered.

Residual risks

-  **Warning of electrical voltage**
Work on the electrical components must only be carried out by an authorised specialist company!
-  **Warning of electrical voltage**
Before any work on the device, remove the mains plug from the mains socket!
Hold onto the mains plug while pulling the power cable out of the mains socket.
-  **Warning of hot surface**
Some parts of this product can become very hot and cause burns. Particular attention has to be given where children and vulnerable people are present!
-  **Warning**
Dangers can occur at the device when it is used by untrained people in an unprofessional or improper way!
Observe the personnel qualifications!
-  **Warning**
The device is not a toy and does not belong in the hands of children.
-  **Warning**
Risk of suffocation!
Do not leave the packaging lying around. Children may use it as a dangerous toy.
-  **Warning**
Improper installation entails a risk of fire.
Do not place the device on combustible ground.
Do not place the device on high-pile carpets.
-  **Warning**
In order to avoid overheating and fire hazards, the device must not be covered!

Behaviour in the event of an emergency

1. Switch off the device.
2. In an emergency, disconnect the device from the mains feed-in: Hold onto the mains plug while pulling the power cable out of the mains socket.
3. Do not reconnect a defective device to the mains.

Overheating protection

The device is provided with a safety thermostat which is activated by overheating of the device (when exceeding the operating temperature).

Investigate the cause of overheating.

If the safety thermostat does not switch in the event of overheating, the overheating protection will be tripped. In that case the device switches off completely. If so, please contact the customer service to have the overheating protection replaced.

Tilt protection

The device comes equipped with a tilt protection. The tilt protection is a safety device intended to minimize the risk of fire in case the device is tipped over inadvertently. The device will be switched off when knocked over (or if its upright position is changed in any other manner).

The tilt protection switches the device off when it is inclined by a few degrees out of its vertical position. The device can again be used as usual only a few seconds after placing it back in vertical position and on solid ground.

Information about the device

Device description

The oil-filled radiator TRH 20 E / TRH 21 E / TRH 22 E / TRH 23 E is used to generate warm air for interior spaces.

The device TRH 20 E / TRH 22 E comes with 3 heating levels of up to 2,000 W and an infinitely variable thermostat.

The device TRH 21 E / TRH 23 E comes with 3 heating levels of up to 2,500 W and an infinitely variable thermostat.

The heat electrically generated by the heating elements within the device is absorbed by the heating medium oil. The heating medium oil offers the advantages of quick heat-up and long-term heat storage capacity. On these grounds the heating medium oil can guarantee a continuous heat emission. The radiator's 9 or 11 ribs increase the heat radiating surface and so enhance its effectiveness.

The devices are further equipped with an overheating protection and a tilt protection.

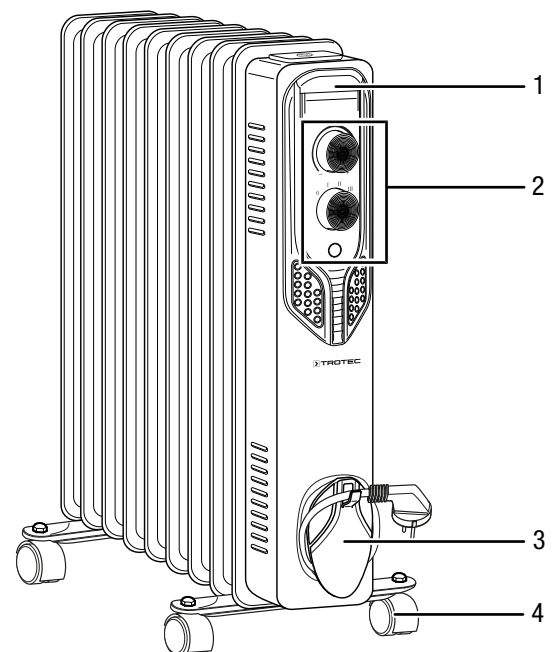
The device TRH 22 E / TRH 23 E is further provided with a turbo function. Accordingly a turbo blower with additional PTC heating element ensures the quick and effective initial room heating.

The devices TRH 20 E and TRH 21 E are structurally identical except for the number of ribs. The device TRH 20 E comes with 9 ribs, the device TRH 21 E has 11 ribs.

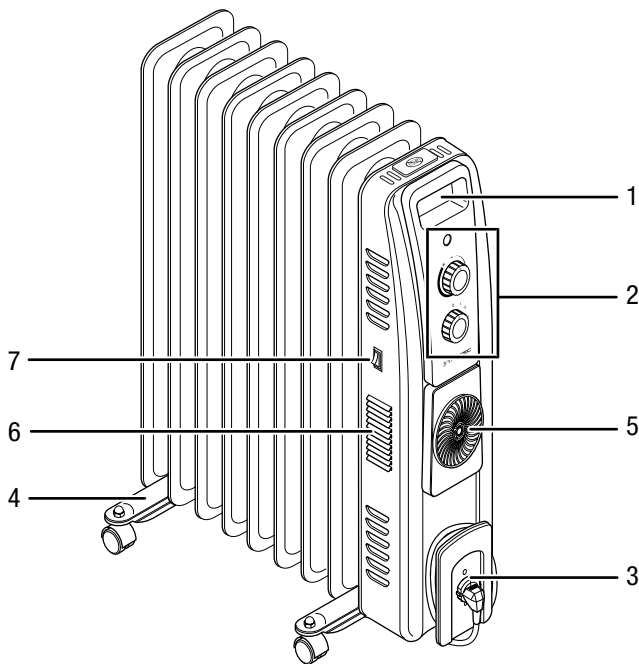
The devices TRH 22 E and TRH 23 E are structurally identical except for the number of ribs. The device TRH 22 E comes with 9 ribs, the device TRH 23 E has 11 ribs.

Device depiction

TRH 20 E / TRH 21 E



TRH 22 E / TRH 23 E



No.	Designation
1	transport handle
2	control panel
3	cable winder (TRH 22 E / TRH 23 E with plug holder)
4	foot with castors
5	air inlet (blower)
6	air outlet (blower)
7	flip switch (blower)

Transport and storage

Note

If you store or transport the device improperly, the device may be damaged.
 Note the information regarding transport and storage of the device.

Transport

To make the device easier to transport, it is fitted with wheels.

Before transporting the device, observe the following:

- Switch the device off.
- Hold onto the mains plug while pulling the power cable out of the mains socket.
- Do not use the power cable to drag the device.
- Allow the device to cool down sufficiently.

Storage

Before storing the device, proceed as follows:

- Hold onto the mains plug while pulling the power cable out of the mains socket.
- Allow the device to cool down sufficiently.

When the device is not being used, observe the following storage conditions:

- dry and protected from frost and heat
- in an upright position where it is protected from dust and direct sunlight
- with a cover to protect it from invasive dust, if necessary
- Place no further devices or objects on top of the device to prevent it from being damaged.

Assembly and installation

Scope of delivery

- 1 x Oil-filled radiator
- 2 x Mounting plate for castors
- 4 x Castor
- 4 x Cap nut
- 4 x Wing nut
- 2 x U-bolt
- 1 x Manual

Unpacking the device

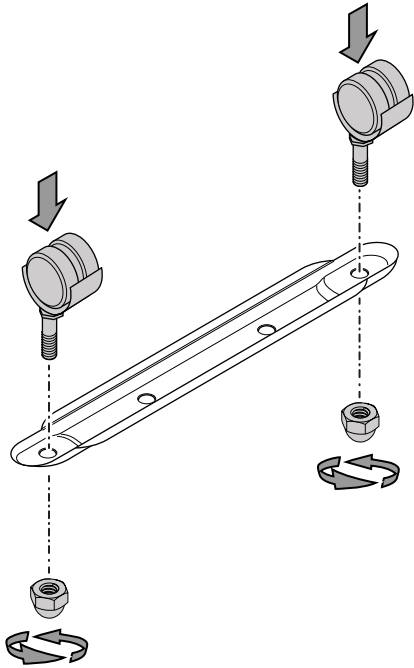
1. Open the cardboard box and take the device out.
2. Completely remove the packaging.
3. Fully unwind the power cable. Make sure that the power cable is not damaged and that you do not damage it during unwinding.

Assembly

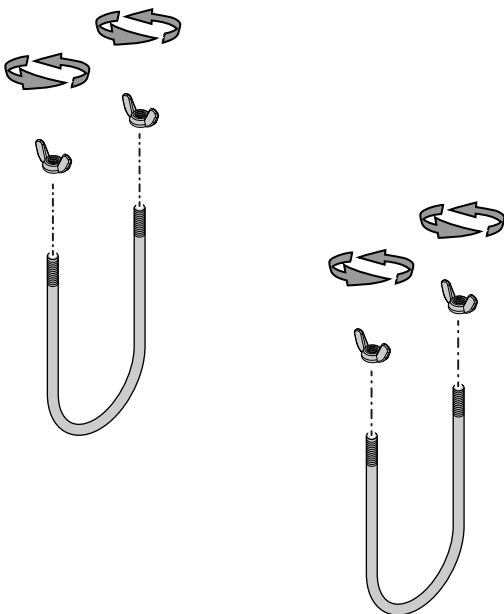
Mounting the castors

Make sure to mount the castors before you set the device up.

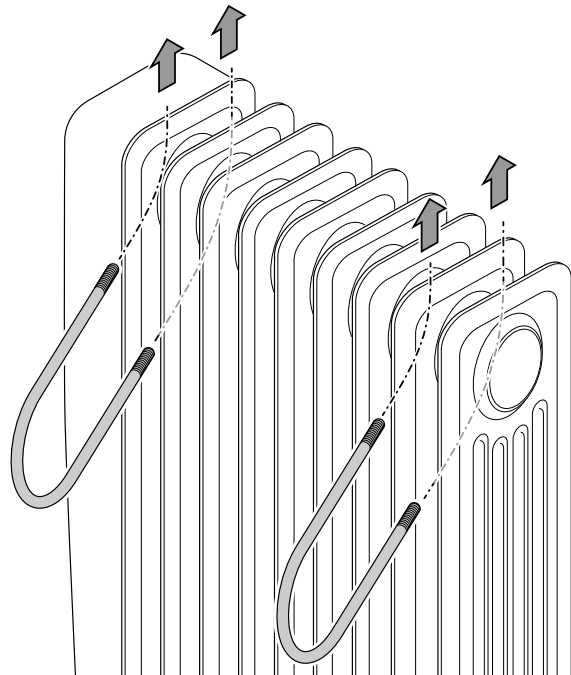
1. Place the device upside down on a scratch-proof, even surface and in a stable position.
2. Screw respectively two of each of the castors and cap nuts to one of the mounting plates.



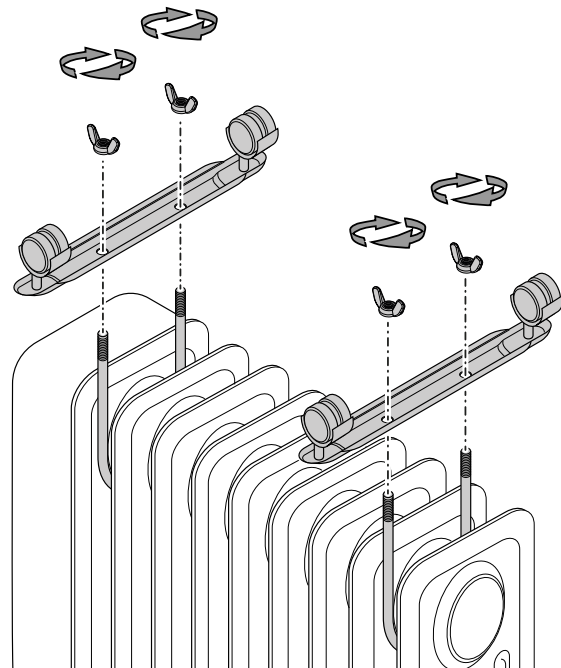
3. Detach the wing nuts from the U-bolts.



4. Position the respective U-bolt between either the first or the last two ribs at the device bottom.



5. Attach the mounting plates with the castors to the U-bolts. In doing so, observe the position of the cut-outs at one side of the mounting plates. They should be directed towards the device front (control panel).



6. Bolt the mounting plates, wing nuts and U-bolts together. Ensure the tight fit of the mounting plates. They should rest evenly on the ribs to ensure the upright position of the device.
7. Turn the device over and set it down on the castors. If necessary, use a spirit level to check the correct positioning. Adjust the screw connection if required.

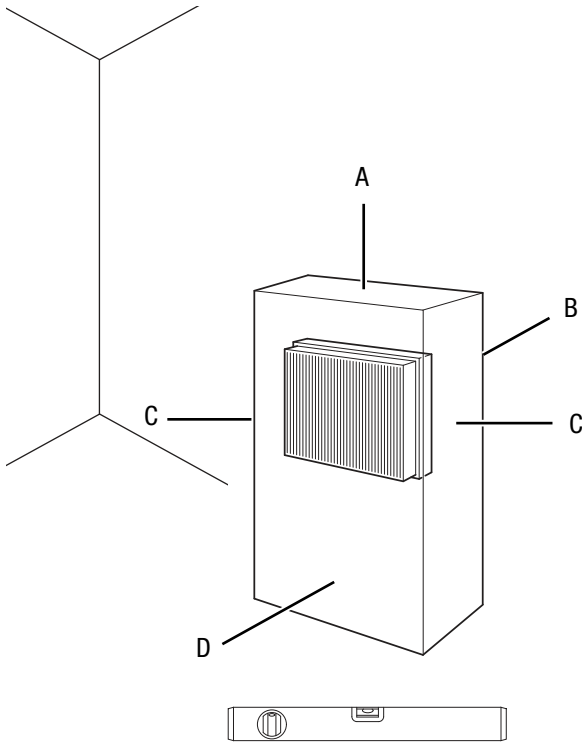
Start-up



Info

Odours might arise upon initial start-up or after a longer period of non-use.

When positioning the device, observe the minimum distance from walls or other objects as described in the Technical data chapter.



- Before restarting the device, check the condition of the power cable. If there are doubts as to the sound condition, contact the customer service.
- The device may only be operated when fully assembled and set up in a vertical position on a stable surface. Operation on instable ground is prohibited.
- Set the device up in an upright and stable position.
- Do not create tripping hazards when laying the power cable or other electric cables, especially when positioning the device in the middle of the room. Use cable bridges.
- Make sure that extension cables are completely unrolled.
- Make sure that no curtains or other objects interfere with the air flow.
- Do not position the device directly below a wall socket.

- Make sure that the device cannot come into contact with moisture or water.

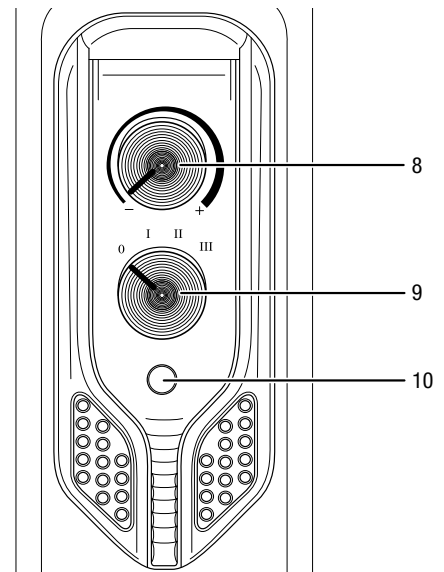
Connecting the power cable

- Insert the mains plug into a properly secured mains socket.
- Make sure that the power cable is guided along the back of the device. Never guide the power cable along the front of the device!

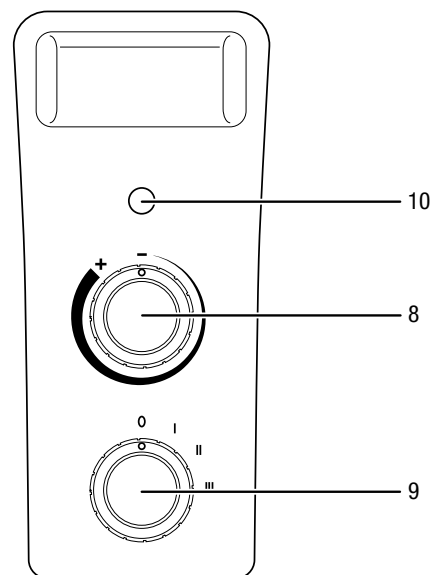
Operation

- Avoid open doors and windows.

Operating elements TRH 20 E / TRH 21 E



Operating elements TRH 22 E / TRH 23 E



No.	Designation
8	rotary switch room thermostat
9	rotary switch for heating level selection
	TRH 20 E / TRH 22 E level 1: 800 W level 2: 1,200 W level 3: 2,000 W
10	TRH 21 E / TRH 23 E level 1: 1000 W level 2: 1,500 W level 3: 2,500 W
	operating control lamp

Switching the device on

Once you have completely installed the device as described in the Start-up chapter, you can switch it on.



Info

The device will not be switched on until the room temperature falls below the temperature set at the room thermostat.

Setting the heating level

1. Set the rotary switch for heating level selection (9) to the desired heating level.

Setting the room thermostat

1. Select the desired temperature via the infinitely variable rotary switch (8) of the room thermostat.
 - ⇒ When the room thermostat is switched on the operating control lamp (10) will be illuminated.
 - ⇒ After approx. 10 min the device TRH 20 E / TRH 22 E will have reached the set heat output.
 - ⇒ After approx. 8 min the device TRH 21 E / TRH 23 E will have reached the set heat output.

To find the ideal thermostat setting, please proceed as follows:

- Set the thermostat control to maximum.
- As soon as the desired temperature has been reached, slowly turn the thermostat control back until the operating control lamp (10) goes out.
- The device now automatically maintains the desired temperature level.

The room thermostat controls the room temperature automatically:

- Upon reaching the set value in heating level 2 and 3 the device reduces its heating performance to level 1.
- When falling below the set value, the heating will automatically switch back over to level 2 or level 3.

When the device is set to heating level 1, the room temperature will not be controlled automatically.

Frost monitor function:

1. Set the heating level to level 1.

2. Turn the rotary switch for the room thermostat (8) to a position just above -. In this position, the room thermostat switches on the heating automatically if the room temperature drops below the frost protection temperature.

Switching on the turbo blower (TRH 22 E / TRH 23 E)

1. Set the flip switch for the blower (7) to I.
 - ⇒ The lamp at the flip switch will be illuminated.
 - ⇒ The blower will start to run when the device produces heat.
 - ⇒ The blower will turn off when the room thermostat switches off the heating.

Shutdown



Warning of electrical voltage

Do not touch the mains plug with wet or damp hands.

- Set both rotary switches (8, 9) to position 0 or -.
- Hold onto the mains plug while pulling the power cable out of the mains socket.
- Allow the device to cool down completely.
- Clean the device according to the Maintenance chapter.
- Store the device according to the Storage chapter.

Errors and faults



Warning of electrical voltage

Tasks which require the housing to be opened must only be carried out by authorised specialist companies or by Trotec.

The device has been checked for proper functioning several times during production. If malfunctions occur nonetheless, check the device according to the following list.

The device makes noises after switch-on:

- The heating medium oil expands due to heating. This is what causes the noise. It is a perfectly normal process. No measures are required.

The device does not start:

- Check the power connection.
- Check the power cable and mains plug for damages.
- Check the on-site fusing.
- Check the room temperature. The room thermostat may have switched off, because the desired room temperature has been reached.
- Check whether the device is standing upright and on level ground. The tilt protection may have been tripped owing to the fact that the device was knocked over. Always put up the device in an upright position on a suitable, sufficiently dimensioned surface.
- The room thermostat might be defective. Have a defective room thermostat replaced by a specialist electrical company.
- Check whether the overheating protection has tripped, see chapter Safety.
- Wait for 10 minutes before restarting the device. If the device is not starting, have the electrics checked by a specialist company or by Trotec.

The device is switched on, but the heating is not operating:

- Check the room temperature. The room thermostat may have switched off, because the desired room temperature has been reached.
- Check whether the overheating protection has tripped, see chapter Safety.
- The heating resistor might have blown. Have a defective heating resistor replaced by a specialist electrical company.
- The room thermostat might be defective. Have a defective room thermostat replaced by a specialist electrical company.

The blower is not running (TRH 22 E / TRH 23 E only):

- Check whether the device is switched on.
- Check the power connection.
- Check the power cable and mains plug for damages.

- Check the room temperature. When the room thermostat switches off, the blower turns off as well.
- The fan motor might be defective. Have a defective fan motor replaced by a specialist electrical company.

The air current is reduced (TRH 22 E / TRH 23 E only):

- Check the air inlet and outlet. Make sure that air inlet and outlet are not obstructed. Remove any dirt. Observe the minimum distance from walls or other objects according to the technical data.

Note

Wait for at least 3 minutes after maintenance and repair work. Only then switch the device back on.

Your device still does not operate correctly after these checks?

Please contact the customer service. If necessary, bring the device to an authorized specialist electrical company or to Trotec for repair.

Maintenance

Activities required before starting maintenance



Warning of electrical voltage

Do not touch the mains plug with wet or damp hands.

- Switch the device off.
- Hold onto the mains plug while pulling the power cable out of the mains socket.
- Allow the device to cool down completely.



Warning of electrical voltage

Tasks which require the housing to be opened must only be carried out by authorised specialist companies or by Trotec.

Note

The device is filled with the heating medium oil. Tasks which require the oil tank to be opened must only be carried out by Trotec. In case of oil leakage please contact the customer service.

Cleaning the housing



Warning of electrical voltage

Never immerse the device in water!

Clean the housing with a soft, damp and lint-free cloth. Ensure that no moisture enters the housing. Protect electrical components from moisture. Do not use any aggressive cleaning agents such as cleaning sprays, solvents, alcohol-based or abrasive cleaners to dampen the cloth.

Wipe the housing dry after cleaning.

Technical annex
Technical data

Parameter	Value			
	TRH 20 E	TRH 21 E	TRH 22 E	TRH 23 E
Heating capacity				
level 1:	800 W	1000 W	800 W	1000 W
level 2:	1200 W	1500 W	1200 W	1500 W
level 3:	2000 W	2500 W	2000 W	2500 W
Mains connection	220 – 240 V / 50 – 60 Hz	220 – 240 V / 50 – 60 Hz	220 – 240 V / 50 – 60 Hz	220 – 240 V / 50 – 60 Hz
Max. power consumption	2000 W	2500 W	2400 W	2900 W
Nominal current consumption	8.7 A	10.9 A	10.4 A	12.6 A
Fusing	16 A	16 A	16 A	16 A
Plug type	VDE plug CEE 7/7	VDE plug CEE 7/7	VDE plug CEE 7/7	VDE plug CEE 7/7
Cable length	1.4 m	1.4 m	1.4 m	1.4 m
Dimensions (depth x width x height)	120 x 400 x 500 mm	120 x 480 x 500 mm	125 x 410 x 500 mm	125 x 490 x 580 mm
Minimum distance to walls and other objects				
top (A):	90 cm	90 cm	90 cm	90 cm
rear (B):	90 cm	90 cm	90 cm	90 cm
sides (C):	90 cm	90 cm	90 cm	90 cm
front (D):	90 cm	90 cm	90 cm	90 cm
Weight	7 kg	8 kg	8.5 kg	10 kg

Information requirements for electrical local space heaters

Parameter	Value / item			
	TRH 20 E	TRH 21 E	TRH 22 E	TRH 23 E
Model				
Heat output				
Nominal heat output P_{nom}	0.8274 kW	0.9003 kW	1.0477 kW	1.0917 kW
Minimum heat output (indicative) P_{min}	0 kW	0 kW	0 kW	0 kW
Maximum continuous heat output $P_{max,c}$	0.8274 kW	0.9003 kW	1.0477 kW	1.0917 kW
Auxiliary electricity consumption				
At nominal heat output $e_{l,max}$	NA	NA	NA	NA
At minimum heat output $e_{l,min}$	NA	NA	NA	NA
In standby mode $e_{l,sb}$	NA	NA	NA	NA
Type of heat input				
Manual heat charge control, with integrated thermostat	NA	NA	NA	NA
Manual heat charge control with room and/or outdoor temperature feedback	NA	NA	NA	NA
Electronic heat charge control with room and/or outdoor temperature feedback	NA	NA	NA	NA
Fan assisted heat output	NA	NA	NA	NA
Type of heat output/room temperature control				
Single-stage heat output, no room temperature control	NO	NO	NO	NO
Two or more manual stages, no room temperature control	NO	NO	NO	NO
With mechanic thermostat room temperature control	YES	YES	YES	YES
With electronic room temperature control	NO	NO	NO	NO
With electronic room temperature control plus day timer	NO	NO	NO	NO
With electronic room temperature control plus week timer	NO	NO	NO	NO
Other control options				
Room temperature control, with presence detection	NO	NO	NO	NO
Room temperature control, with open window detection	NO	NO	NO	NO
With distance control option	NO	NO	NO	NO
With adaptive start control	NO	NO	NO	NO
With working time limitation	NO	NO	NO	NO
With black bulb sensor	NO	NO	NO	NO
Contact details	Trotec GmbH Grebbeener Straße 7 D-52525 Heinsberg			

NA: not applicable

Disposal



The icon with the crossed-out waste bin on waste electrical or electronic equipment stipulates that this equipment must not be disposed of with the household waste at the end of its life. You will find collection points for free return of waste electrical and electronic equipment in your vicinity. The addresses can be obtained from your municipality or local administration. For further return options provided by us please refer to our website www.trotec24.com.

The separate collection of waste electrical and electronic equipment aims to enable the re-use, recycling and other forms of recovery of waste equipment as well as to prevent negative effects for the environment and human health caused by the disposal of hazardous substances potentially contained in the equipment.

Heating medium oil

The heating medium oil must be drained from the device and collected.

The heating medium oil is to be disposed of according to the national regulations.

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