

DH 145 S



EN

OPERATING MANUAL
CONDENSER DRYER

 **TROTEC**
AT WORK.

Table of contents

Notes regarding the operating manual	01
Information about the device	02
Safety	04
Transport	05
Operation	05
Errors and faults	09
Maintenance	10
Disposal	13
Declaration of conformity	13

Notes regarding the operating manual

Symbols

**Hazardous electric current!**

Warns about hazards from electric current which can lead to injuries or even death.

**Danger!**

Warns of a hazard which can lead to personal injury.

**Caution!**

Warns of a hazard which can lead to damage to property.

The current version of the operating manual can be found at:
www.trotec.de

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Information about the device

Description of the device

This device uses the principle of condensation to automatically dehumidify rooms.

The fan sucks damp room air through the air inlet (2), the air filter (9), the evaporator and the condenser located behind it. The air is cooled at the cold evaporator until it is below the dew point. Water vapour contained in the room air precipitates on the evaporator fins as either condensation or frost. The dehumidified, cooled air is rewarmed at the condenser and blown out at a temperature of approx. 5 °C above room temperature. The drier air which is prepared in this way mixes with the air in the room. The humidity in the room where the device is positioned is reduced as air constantly circulates through the device. Depending on the air temperature and the relative humidity, the condensed water either drops continuously or only during the defrost phase into the condensation tray. The condensation is fed through a pressure-resistant pipe connection and out of the device by a condensate pump. To do so, a condensation drain hose is connected to the hose connector (6) and the condensation is diverted.

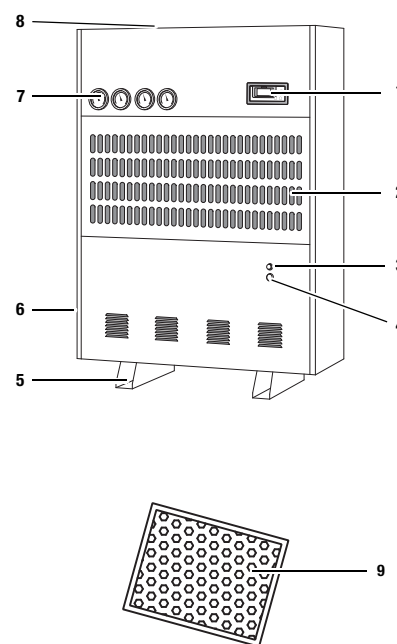
The device has a control panel (1) for operating and controlling the functions.

Because of the heat radiation which is tied up in operation, the room temperature can rise by approx. 1 to 3 °C.

Note!

The condensate pump is fitted with a float switch. It completely switches off the condenser dryer when a critical filling level is reached in the condensation tank (emergency shut-off). A beep is emitted and the condensation tank indicator light (4) is lit. After troubleshooting, the condenser dryer must be switched back on by hand.

Device depiction

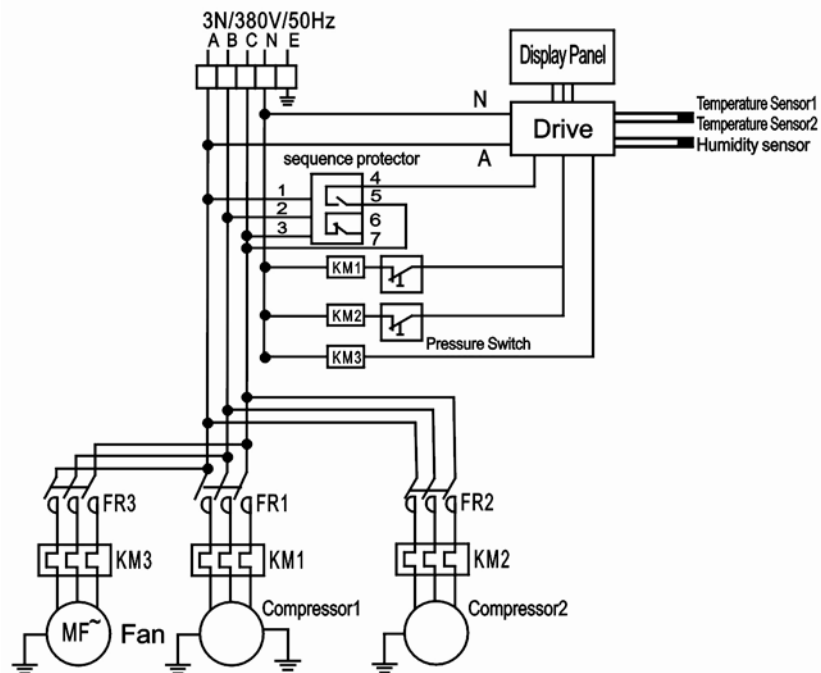


No.	Designation
1	control panel
2	air inlet
3	push switch for draining residual water from the condensation tank
4	indicator light with buzzer for the condensation tank
5	feet
6	hose connector for condensation drain hose
7	pressure indicator
8	air outlet
9	air filter

Technical data

Parameter	Value
Model	DH 145 S
Dehumidifying capacity, max.	480 kg/24 h
Operating temperature	5 °C to 38 °C
Working range for relative humidity	40–90 %
Air flow rate, max.	5000 m ³ /h
Mains connection	3~/N/PE 400 V / 50 Hz with CEE phase inverter
Power input max.	10.1 kW
Nominal input current	15.3 A
Refrigerant	R407C
Amount of cooling agent	4 kg
Weight	265 kg
Dimensions (depth x width x height)	470 x 1190 x 1755 mm
Minimum distance to walls and other objects	A: Top: 50 cm B: Rear: 10 cm C: Side: 10 cm D: Front: 50 cm
Suction pressure	1.0 MPa
Pressure outlet side	2.5 MPa
Noise level (distance 1 m)	70 dB(A)

Circuit diagram



Safety

Read this manual carefully before starting or using the device. Store the manual near the device or its site of use!

- Do not use the device in potentially explosive rooms.
- Do not use the device in aggressive atmosphere.
- Set the device in an upright and stable position.
- The device is designed for indoor use.
- Ensure that the air inlet and outlet are not obstructed.
- Ensure that the side of the device where the air inlet is found is kept free of dirt and loose objects.
- Never insert objects into the device. Never reach into the device.
- Do not cover or transport the device during operation.
- Do not sit on the device.
- Ensure that all electric cables outside of the device are protected from damage (e.g. from animals).
- Only use extensions to the connecting cable which are appropriate to the device power consumption, the length of its cable and its use. Avoid electrical overload.
- Only transport the device in an upright position with an emptied condensate pump and tray.
- Dispose of the collected condensation. Do not drink it. Health hazard!

Intended use

Only use the device DH 145 S as a stationary industrial dryer for drying and dehumidifying room air, while adhering to and following the technical data.

Intended use comprises:

- drying and dehumidifying:
 - production plants, underground rooms
 - store rooms, archives, laboratories
 - rooms and areas after water damages from burst pipes or flooding
- keeping dry of:
 - instruments, devices and files
 - electric control devices, boiler plants, turbines and pipe systems in power plants
 - moisture-sensitive goods, loads, etc.

Improper use

Do not place the device on wet or flooded ground. Do not use the device outdoors. Do not lay any objects, e.g. wet clothing, on the device for drying. 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.
- take measures to protect themselves from direct contact with live parts.
- 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 companies for cooling and air-conditioning or by Trotec.

Residual risks



Hazardous electric current!

Work on the electrical components must only be carried out by an authorised specialist company!



Hazardous electric current!

Before any work on the device, remove the mains plug from the mains socket!



Caution!

To avoid damages to the device, never operate the device without an air filter inserted!



Danger!

Dangers can occur at the device when it is used by untrained people in an unprofessional or improper way! Observe the personnel qualifications!



Danger!

A toppling device can cause you injuries! Always transport the device with the help of another person. Never stand below the device when suspended in the air.

Behaviour in the event of an emergency

1. Disconnect the device from the mains power in an emergency.
2. Do not reconnect a defective device to the mains power.

Transport

Always transport the device with the help of another person. To lift the device, use a fork lift or an elevating truck.

Before transporting the device, proceed as follows:

1. Wait until the condensate pump stops pumping condensate.
2. Press the power button (11) to switch off the device.
3. Press the push switch for draining the condensation tank (3) to drain the condensation tank.
4. Remove the mains plug from the mains socket. Do not use the power cable to drag the device!
5. Detach the condensation drain hose and drain it.

After transporting the device, proceed as follows:

1. Set the device in an upright position after transport.
2. **Wait one hour** before switching the device on!

Storage

When out of use, store the device as follows:

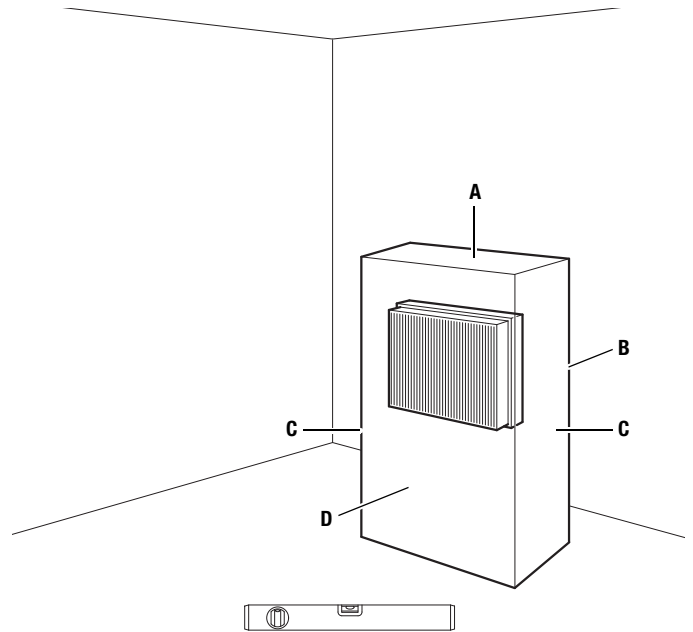
- Dry,
- Under roof,
- In an upright position where it is protected from dust and direct sunlight,
- With a plastic cover to protect it from invasive dust, if necessary.
- The storage temperature is the same as the range given for the operating temperature in the chapter Technical data.

Operation

- After being switched on, the device operates fully automatically.
- The fan runs permanently until the set nominal value is reached or the device switched off.
- Avoid open doors and windows.

Positioning

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



- Set the device in a level and stable position.
- When positioning the device, keep a sufficient distance away from sources of heat.
- When positioning the device, particularly in wet areas, secure it locally with an RCD (residual current device) which complies with the respective regulations.
- Ensure that extension cords are completely unrolled.

Notes regarding the dehumidification performance

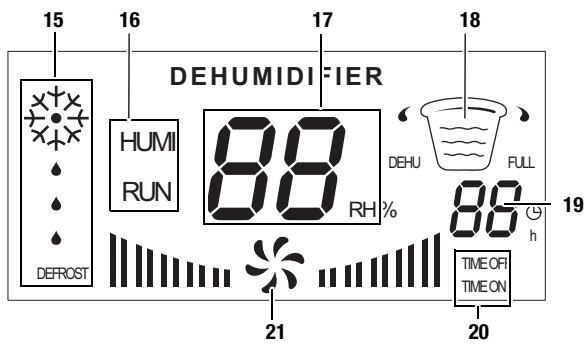
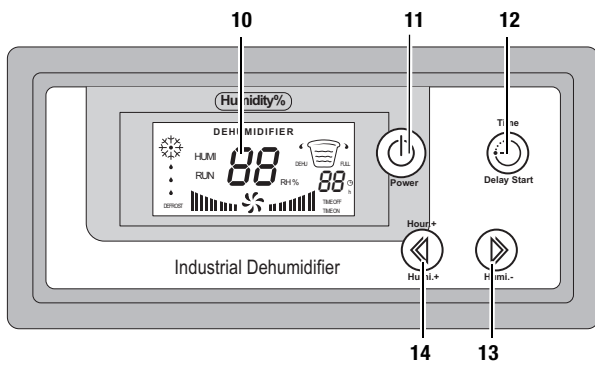
Dehumidification performance depends on:

- the spatial composition of the room
- the room temperature
- the relative humidity

The higher the room temperature and relative humidity, the greater the dehumidification performance.

For use in living rooms, a relative humidity of approx. 50 to 60 % is sufficient. In store rooms and archives, the humidity should not exceed approx. 50 %.

Operating elements



4

No.	Operating elements
3	push switch for draining residual water from the condensation tank
4	condensation tank indicator: Lights up and emits an acoustic signal when the condensation tank is full.
10	display
11	power button: Switches the device on or off and enables the automatic mode.
12	timer button: Enables the programming mode for start and stop times of the automatic mode.
13	minus button: Decreases the nominal value for relative humidity in per cent. In timer programming mode, start and stop times of the automatic mode are decreased in steps of one hour.
14	plus button: Increases the nominal value for relative humidity in steps of one per cent. In timer programming mode, start and stop times of the automatic mode are increased in steps of one hour.
15	DEFROST icon: Is permanently lit. Is animated if automatic defrost is enabled.
16	operation indicator: RUN (yellow): The device is ready for operation. HUMI (blue): The nominal dehumidification value has been reached.
17	display of relative humidity in per cent nominal value: The display flashes during programming. actual value: constant value
18	operation indicator dehumidification, animated
19	hours display: Displays the programmed hours of start and stop times of the timer for automatic mode.
20	timer on/of indicator: TIME OFF: Lights up when the shut-off time for the automatic mode is enabled. TIME ON: Lights up when the switch-on time for the automatic mode is enabled.
21	operation indicator fan, animated

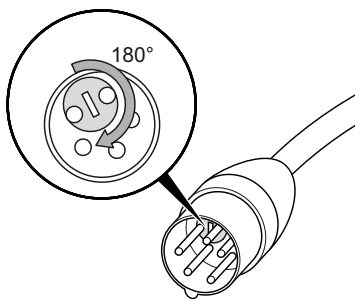
Mains connection

A 3/N/PE three-phase socket with clockwise rotating field is required to connect the DH 145 S. The device is delivered with a CEE phase inverter, 32 A, 6 h.

- Plug the plug into the respective CEE socket.

Should the device not start up automatically and the *E3 — Wrong rotating field* error message reads on the display, proceed as follows to correct the rotating field in the phase inverter:

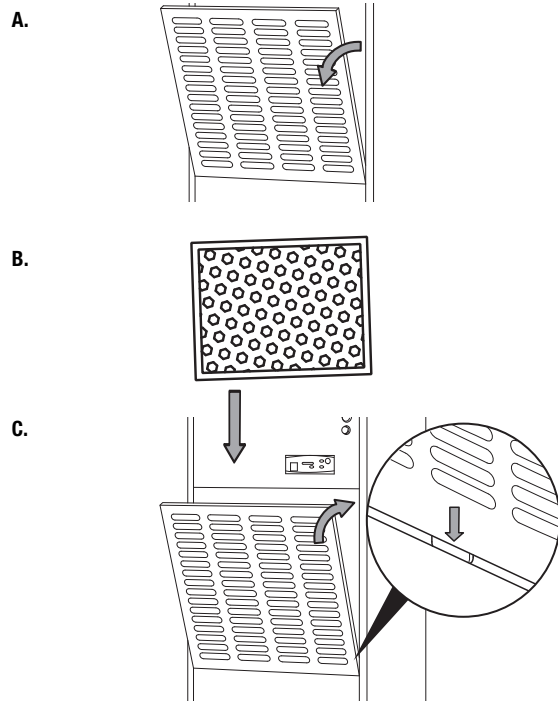
1. Pull the plug from the mains socket.
2. Use a suitable flat-head screwdriver.
3. Turn the commutator slot in the CEE plug 180°.
 - Phases are now inverted.



4. Plug the plug back into the socket.
Avoid trip hazards from the cable.

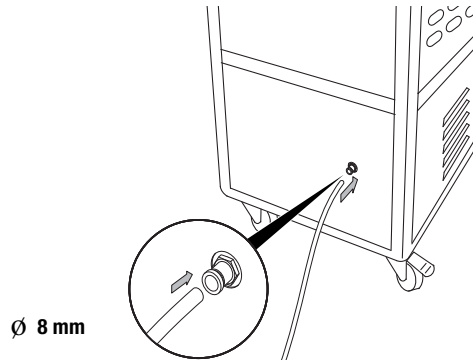
Start-up

Inserting the air filter



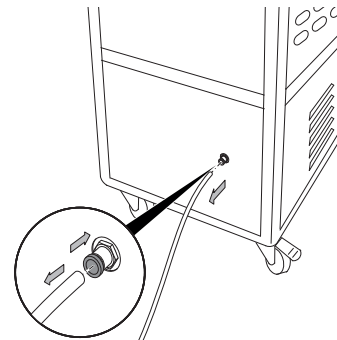
Connecting the condensation drain hose

- Plug the hose into the quick coupling.
 - It automatically locks into place.



Removing the condensation drain hose

- Press the blue ring on the outside of the quick coupling together and at the same time pull the hose.



Switch-on of the device

1. Ensure that the condensation drain hose has been laid and connected properly. Do not create tripping hazards.
2. Ensure that the condensation drain hose is not bent or jammed and that there are no objects on the condensation drain hose.
3. Ensure that the condensation can run off properly.
4. Empty any condensate from the device by pressing the push switch for draining residual water from the condensation tank (3).
5. Press the power button (11) to switch on the device.
6. Check if the operation indicator *RUN* is illuminated.
 - Should the E3 error be displayed, follow the instructions in chapter Mains connection.
7. Adjust the room air humidity using the plus (14) and minus (13) button.

Continuous operation mode

In continuous operation mode, the device continuously dehumidifies the air — depending on the humidity, until switch-off or until the programmed switch-off time.

To start continuous operation, set a humidity nominal value < 30 %.

Setting the timer

There are two ways to use the timer:

- The device switches on automatically after a specified operating time.
- The device switches off automatically after a specified operating time.

Proceed as follows if the device shall automatically switch on after a set time:

1. Press the timer button (12) once.
2. Adjust the time until automatic switch-on in steps of one hour using the plus (14) and minus (13) button.
3. Press the timer button again to program the automatic switch-off time. Press again to exit the menu.
4. Press the power button (11) to switch over to automatic mode.
5. After the set time, the device switches on. It runs until the set time until switch-off is up or until the device is manually switched off.

Proceed as follows if the device shall automatically switch off after a set time:

1. Press the timer button (12) twice.
2. Adjust the time until automatic switch-off in steps of one hour using the plus (14) and minus (13) button.
3. Press the timer button (12) again to exit the timer settings.

Automatic defrost

At low ambient temperatures, ice may form at the evaporator during dehumidification. The device then carries out an automatic defrost. The duration of the defrost can vary.

Do not turn off the device during the automatic defrost. Do not remove the mains plug from the mains socket.

Memory function

During short power failures, the device memorises the programmed nominal value for relative humidity.

Programmed start and stop times for the automatic mode are not memorised.

Shutdown

1. Press the power button (11).
2. Press the push switch for draining the condensation tank (3).
3. Do not touch the mains plug with wet or damp hands.
4. Remove the mains plug from the mains socket.
5. Remove the condensation drain hose and any residual fluid from it.
6. Clean the device, and especially the air filter, as described in chapter Maintenance.
7. Store the device according to chapter Storage.

Errors and faults

The accurate functionality of the device was tested during production a number of times. However, if functionality faults do occur, then check the device according to the following list.

Note!

The device is provided with a safety timer. Switch-on and switch-off can be up to 3 minutes delayed.

The device does not start:

- Check the power connection.
- Check the mains plug for damages.
- If the fault indicator for the condensate pump lights up or a beep is emitted, have the error repaired by a specialist company for cooling and air-conditioning or by Trotec.
- Have the electrics checked by a specialist company for cooling and air-conditioning or by Trotec.

The device runs but forms no condensation:

- Check the condensation drain hose is positioned correctly.
- Check that the condensate pump functions properly. Check for abnormal vibrations and sounds. Remove external dirt.
- Check the room temperature. Check the device's permissible operating range complies with the technical data.
- Ensure that the relative humidity complies with the technical data.
- Check that the selected relative humidity is realistic. Relative humidity in the room where the device is positioned shall be at least 3 % above the nominal value. If necessary, reduce the set relative humidity.
- Check the air filter is not dirty. If necessary, clean or replace the air filter.
- From the outside, check the condenser and the condensate pump are not dirty (see Maintenance chapter). If the inside of the device is dirty, have it cleaned by a specialist company for cooling and air-conditioning or by Trotec.

The device is loud or vibrates; condensate is leaking:

- Check whether the device is standing upright and on an even surface.

The device gets very warm, is loud or is losing performance:

- Check the air inlets and air filter are not dirty. Remove external dirt.
- From the outside, check the inside of the device and especially the fan, the fan housing, the evaporator, the condenser and the condensate pump for dirt (see Maintenance chapter). If the inside of the device is dirty, have it cleaned by a specialist company for cooling and air-conditioning or by Trotec.

Possible error numbers

Error numbers	Meaning
E1	Temperature error: The temperature is outside the tolerances. The device operates automatically in dehumidification and defrosting cycle until the temperature is within the tolerance range again.
E2	Error message of the humidity sensor: The relative humidity is outside the specified values. The device operates in continuous operation mode until the value is within the tolerance range again.
E3	Wrong rotating field: Correct the rotating field on the CEE phase inverter.
E4	Phase missing: Check mains voltage.
E5	Communication fault
E6	Undervoltage protection Check mains voltage.

Your device still does not operate correctly after these checks? Is there an error number shown in the display for your device?

Bring the device to a specialist company for cooling and air-conditioning or to Trotec for repair.

Maintenance

Maintenance intervals

Maintenance and care interval	before every start	as needed	at least every 2 weeks	at least every 4 weeks	at least every 6 months	at least annually
Emptying of condensate pump, condensation tray and/or condenser dryer		X				
Check of air inlets and outlets for dirt and foreign objects and cleaning if necessary	X			X		
Cleaning of housing		X				X
Visual check of the inside of the device for dirt		X		X		
Check of air inlet grid and air filter for dirt and foreign objects and cleaning or replacement if necessary	X		X			
Air filter replacement					X	
Check for damage	X					
Check of attachment screws		X				X
Test run						X

Maintenance and care log

Device type: Device number:

Maintenance and care interval	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Check air inlets and outlets for dirt and foreign objects and clean if necessary																
Clean housing																
Visual check of the inside of the device for dirt																
Check air inlet grid and air filter for dirt and foreign objects and clean or replace if necessary																
Replace air filter																
Check for damages																
Check attachment screws																
Carry out a test run																
Remarks:																

1. Date: Signature:	2. Date: Signature:	3. Date: Signature:	4. Date: Signature:
5. Date: Signature:	6. Date: Signature:	7. Date: Signature:	8. Date: Signature:
9. Date: Signature:	10. Date: Signature:	11. Date: Signature:	12. Date: Signature:
13. Date: Signature:	14. Date: Signature:	15. Date: Signature:	16. Date: Signature:

Activities required before starting maintenance

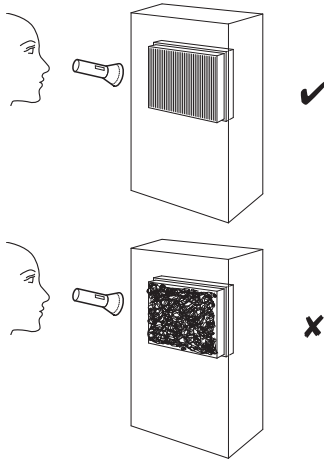
1. Do not touch the mains plug with wet or damp hands.
2. Before any work, detach the mains plug!



Maintenance tasks which require the housing to be opened must only be carried out by specialist companies for cooling and air-conditioning or by Trotec.

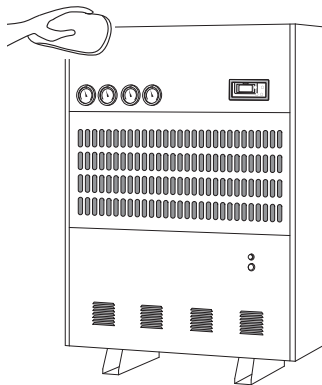
Visual check of the inside of the device for dirt

1. Remove the air filter (see chapter Cleaning the air inlets and the air filter).
2. Shine a torch through the openings of the device.
3. Check the inside of the device for dirt.
4. If you see a thick layer of dust, have the inside of the device cleaned by a specialist company for cooling and air-conditioning or by Trotec.
5. Put the air filter back in.



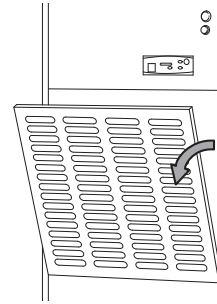
Cleaning the housing

1. Use a soft, lint-free cloth for cleaning.
2. Dampen the cloth with clean water. Do not use sprays, solvents, alcohol-based or abrasive cleaners to dampen the cloth.

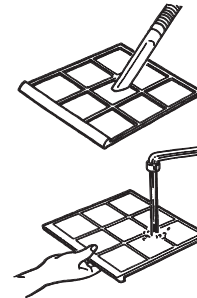


Cleaning the air inlets and the air filter

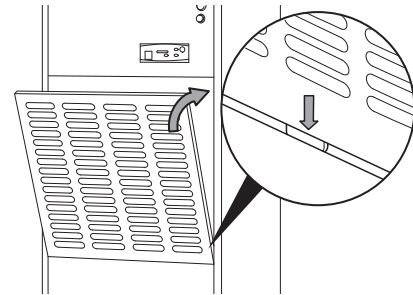
A.



B.



C.



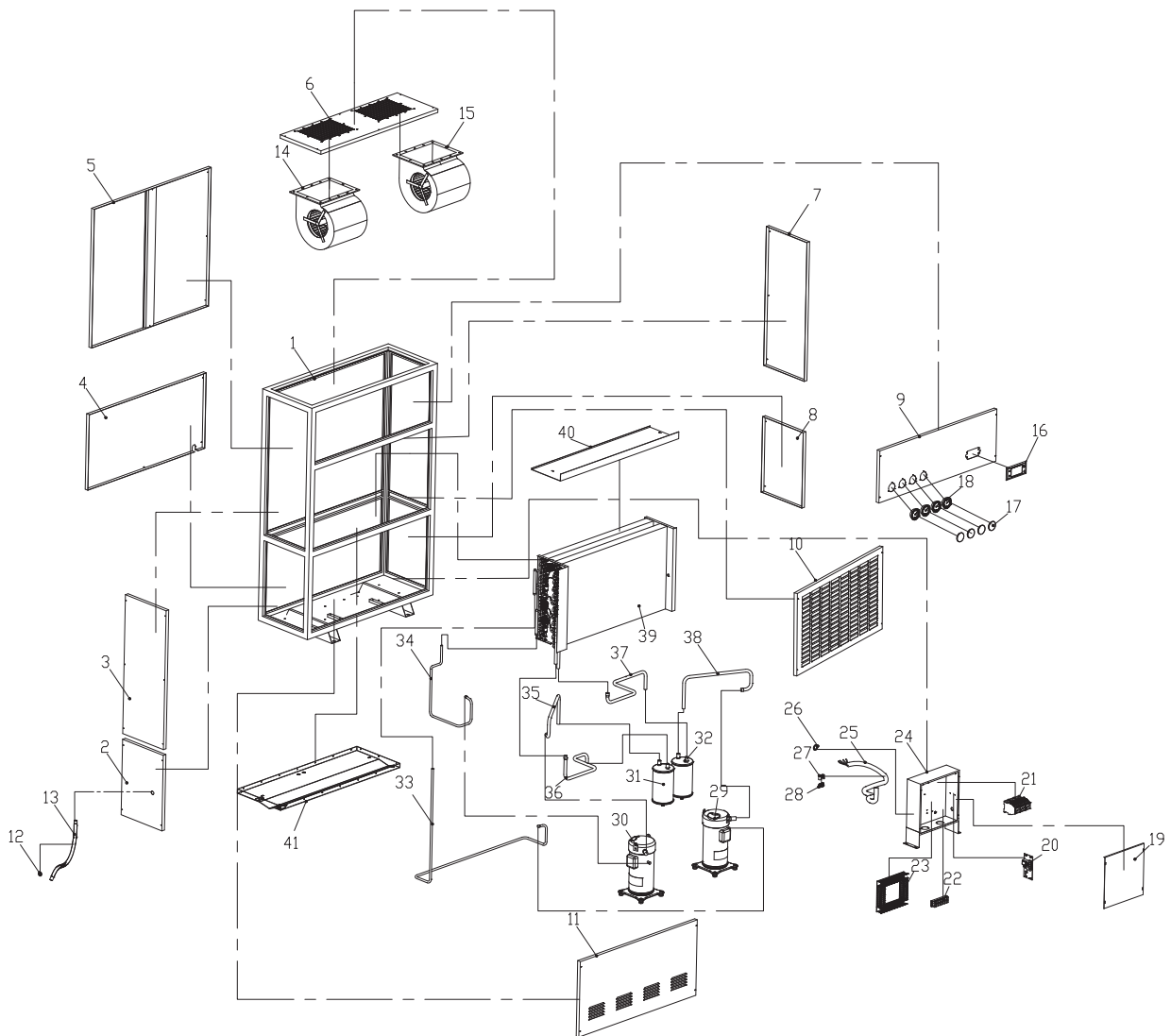
Caution!

Ensure that the air filter is not worn or damaged. The corners and edges of the air filter must not be rounded or misshaped. Before reinserting the air filter, ensure that it is dry and is not damaged! Read the chapter Maintenance intervals and replace the air filter in due time!

Overview and list of spare parts

Note!

The position numbers of the spare parts differ from those describing the positions of other parts mentioned in this operating manual.



No.	Spare part	No.	Spare part	No.	Spare part
1	frame	15	250 fan	29	compressor
2	lower left cover	16	control panel	30	compressor
3	top left cover	17	pressure gauge cover	31	gas-liquid separator
4	lower back cover	18	pressure gauge	32	gas-liquid separator
5	back top cover	19	electricity box cover	33	pipe 1
6	top cover	20	circuit board	34	pipe 2
7	top right cover	21	AC relay	35	pipe 3
8	lower right cover	22	terminal	36	pipe 4
9	front top cover	23	power slot	37	pipe 5
10	front middle cover	24	electricity box	38	pipe 6
11	front lower cover	25	power cord	39	3+3 heat exchanger
12	coil	26	coil	40	heat exchanger cover
13	water pipe	27	wire slot	41	water tray
14	250 fan	28	wire slot		

Disposal



In the European Union, electronic equipment must not be treated as domestic waste, but must be disposed of professionally in accordance with Directive 2002/96/EC of the European Parliament and Council of 27th January 2003 concerning old electrical and electronic equipment. At the end of its life, please dispose of this device according to the valid legal requirements.

The device uses an environmentally friendly and ozone-neutral cooling agent (see chapter Technical data).

Make sure the refrigerant is not released to the environment.

Dispose of the refrigerant appropriately and according to the national regulations.

Declaration of conformity

in accordance with the EC Low Voltage Directive 2006/95/EC, Annex III, Section B and the EC Directive 2004/108/EC about electromagnetic compatibility.

Herewith, we declare that the condenser dryer DH 145 S was developed, constructed and produced in compliance with the named EC directives.

Applied harmonised standards:

IEC 60335-1:2001/A2:2006

IEC 60335-2-40:2002/A1:2005

IEC 62233:2005

The CE marking is found on the device nameplate.

Manufacturer:

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