Condair CP3 D

Steam generator for steam baths

TECHNICAL DOCUMENTATION

2538965 EN 0806

condair®

Contents

1 Introduction

1.1 To the very beginning

We thank you for having purchased the **steam generator Condair CP3 D**.

The steam generator Condair CP3 D incorporates the latest technical advances and meets all recognized safety standards. Nevertheless, improper use of the Condair CP3 D may result in danger to the user or third parties and/or impairment of material assets.

To ensure a safe, proper, and economical operation of the steam generator Condair CP3 D, please observe and comply with all information and safety instructions contained in the present technical documentation as well as the instructions given in the manuals for the components used in the humidification system.

If you have questions, which are not or insufficiently answered in this documentation, please contact your Condair supplier. They will be glad to assist you.

1.2 Notes on the technical documentation

Limitation

The subject of this technical documentation is the steam generator Condair CP3 D. The various accessories are only described insofar as this is necessary for proper operation of the equipment. Further information on accessories can be obtained in the respective instructions.

This technical documentation is restricted to the **installation, commissioning, operation**, **servicing** and **trouble shooting** of the steam generator Condair CP3 D and is meant for **well trained personnel being sufficiently qualified for their respective work**.

The technical documentation is supplemented by various separate items of documentation (spare parts list, manuals for accessories, etc.). Where necessary, appropriate cross-references are made to these publications in the technical documentation.

Symbols used in this manual

CAUTION!

The catchword "CAUTION" designates notes in this technical documentation that, if neglected, may cause **damage and/or malfunction of the unit or other material assets** and/or may lead to **injury to persons**.

WARNING!

The catchword "WARNING" used in conjunction with the general caution symbol designates safety and danger notes in this technical documentation that, if neglected, may lead to **severe injury or even lethal violation of persons**.

Safekeeping

Please safeguard this technical documentation in a safe place, where it can be immediately accessed. If the equipment changes hands, the documentation should be passed on to the new operator.

If the documentation gets mislaid, please contact your Condair supplier.

Language versions

This technical documentation is available in various languages. Please contact your Condair supplier for information.

Copyright protection

2 For your safety

General

Every person working with the Condair CP3 D must have read and understood the Technical Documentation before carrying out any work.
Knowing and understanding the contents of the Technical Documentation is a basic requirement for protecting the personnel against any kind of danger, to prevent faulty operation, and to operate the unit safely and correctly.

All ideograms, signs and markings applied to the unit must be observed and kept in readable state.

Qualification of personnel

All actions described in the present Technical Documentation (installation, operation, maintenance, etc.) must be carried out only by **well trained and sufficiently qualified personnel authorised by the owner**.
For safety and warranty reasons any action beyond the scope of this manuals must be carried out only by qualified personnel authorised by the manufacturer.

It is assumed that all persons working with the Condair CP3 D are familiar and comply with the appropriate regulations on work safety and the prevention of accidents.

Intended use

The steam generator Condair CP3 D is intended exclusively for generation of steam for a steam bath within the specified operating conditions (see chapter 10 "Product specifications"). Any other type of application without the express written consent of the manufacturer is considered as not conforming with the intended purpose and may lead to the Condair CP3 D becoming dangerous.
Operation of the equipment in the intended manner requires **that all the information in these instructions is observed (in particular the safety instructions)**.

Danger that may arise from the unit

– **The Condair CP3 D is mains powered.**

⚠ **WARNING!**	**One may get in touch with live parts when the unit is open. Touching live parts may cause severe injury or danger to life.**

Prevention: **Before carrying out any work set the Condair CP3 D out of operation as described in chapter 6.3 (switch off the unit, disconnect it from the mains and stop the water supply) and secure the unit against inadvertent power-up.**

– **The Condair CP3 D produces steam. When producing steam, the steam cylinder inside the steam generator gets very hot (up to 100 °C).**

⚠ **WARNING!**	**If the unit is opened immediately after having produced steam there is danger of burning when touching the steam cylinder.**

Prevention: **Before carrying out any work set the Condair CP3 D out of operation as described in chapter 6.3, then wait until the evaporation unit has cooled down sufficiently thus preventing danger of burning.**

Behaviour in case of danger

If it is suspected that **safe operation is no longer possible**, then the Condair CP3 D should immediately **be shut down and secured against accidental power-up according to chapter 6.3**. This can be the case under the following circumstances:

– if the Condair CP3 D or its mains cable is damaged
– if the Condair CP3 D is no longer operating correctly
– if connections and/or piping are not sealed

All persons working with the Condair CP3 D must report any alterations to the unit that may affect safety to the owner without delay.

Prohibited modifications to the unit

No modifications must be undertaken on the Condair CP3 D without the express written consent of the manufacturer.

For the replacement of defective components use exclusively **original accessories and spare parts** available from your Condair supplier.

3 Product Overview

3.1 Models overview

The steam generators Condair CP3 D are available with **different heating voltages** and **steam capacities ranging from 5 kg/h up to a max. of 45 kg/h**.

Heating voltage *	Max. steam capacity in kg/h	Graduation in kg/h	Model Condair CP3 D	Unit size	
				small	large
400V3 (400V/3~/50...60Hz)	5...15	1	**5...15**	1	
	16...45	1	**16...45**		1
230V3 (230V/3~/50...60Hz)	5...15	1	**5...15**	1	
	16...30	1	**16...30**		1
230V1 (230V/1~/50...60Hz)	5...8	1	**5...8**	1	

***** Other heating voltages on request

The steam generators Condair CP3 D are equipped, as standard, with an exchangeable steam cylinder, a control with an integrated continuous controller, as well as a complete steam bath control (connection and control of: fan, lighting, fragrance pump and remote maintenance and fault indicator).

All models are controlled steplessly via the KTY temperature sensor supplied and the built-in transmitter and the continuous controller.

Note: a special version of the Condair CP3 D without steam bath control is available on demand.

Key model designation

Example:
Condair CP3 D 45 400V3

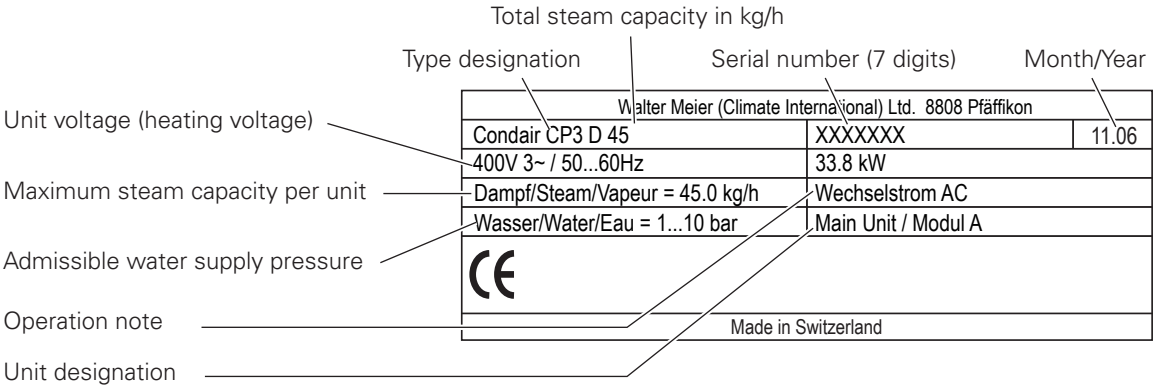
Unit version

Maximum steam capacity in kg/h:

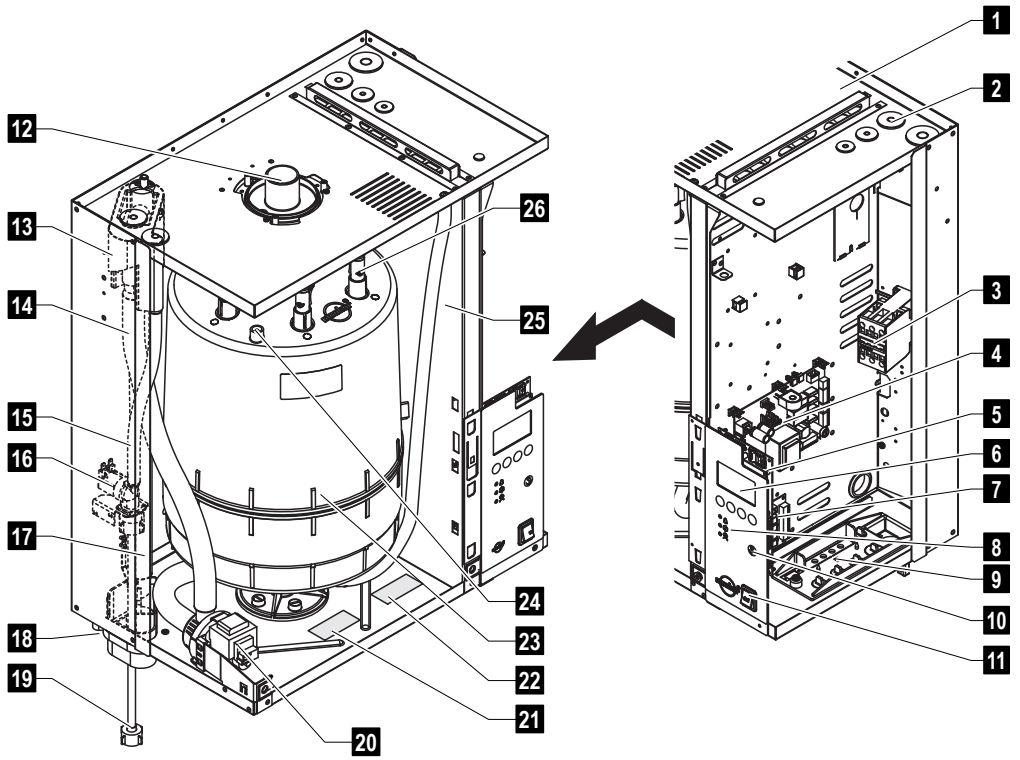
Heating voltage:
400V/3~/50...60Hz: **400V3**
230V/3~/50...60Hz: **230V3**
230V/1~/50...60Hz: **230V1**

3.2 Identification of the unit

The identification of the unit is found on the type plate (for the location of the type plate see unit overview):



3.3 Steam generator construction



The illustration above shows the large unit

1 Housing (small, large)
2 Cable openings, top side
3 Main contactor
4 Power board
5 Control board with CP3 Card
6 Display and control unit
7 Remote operating and fault indication board
8 Operation status indicators
9 Cable openings, bottom side
10 Drain key
11 Unit switch
12 Steam hose connector (option)
13 Water cup
14 Filling hose
15 Water supply hose
16 Inlet valve
17 Overflow hose
18 Drain connection (not visible)
19 Water supply pipe
20 Drain pump
21 Type plate
22 Data plate CP3 Card
23 Steam cylinder
24 Level sensor
25 Auxiliary drain hose
26 Electrode plug

3.4 Functional description

The Condair CP3 D is a pressureless steam generator that utilizes an electrode heating. The Condair CP3 D is designed for steam generation in a steam bath.

Steam generation

Any time steam is requested, the electrodes are supplied with voltage via main contactor. Simultaneously, the inlet valve opens and water enters the steam cylinder from the bottom via water cup and supply line. As soon as the electrodes come in contact with the water, current begins to flow between the electrodes, eventually heating and evaporating the water. The more the electrode surface is exposed to water, the higher is the current consumption and thus the steam capacity.
Upon reaching the requested steam capacity, the inlet valve closes. If the steam generation decreases below a certain percentage of the required capacity, due to lowering of the water level (e.g. because of the evaporation process or drainage), the inlet valve opens until the required capacity is available again.
If the required steam capacity is lower than the actual output, the inlet valve is closed until the desired capacity is achieved by lowering of the water level (evaporation process).

Level monitoring

A sensor provided in the steam cylinder cover detects when the water level gets too high. The moment the sensor comes in contact with water, the inlet valve closes.

Drainage

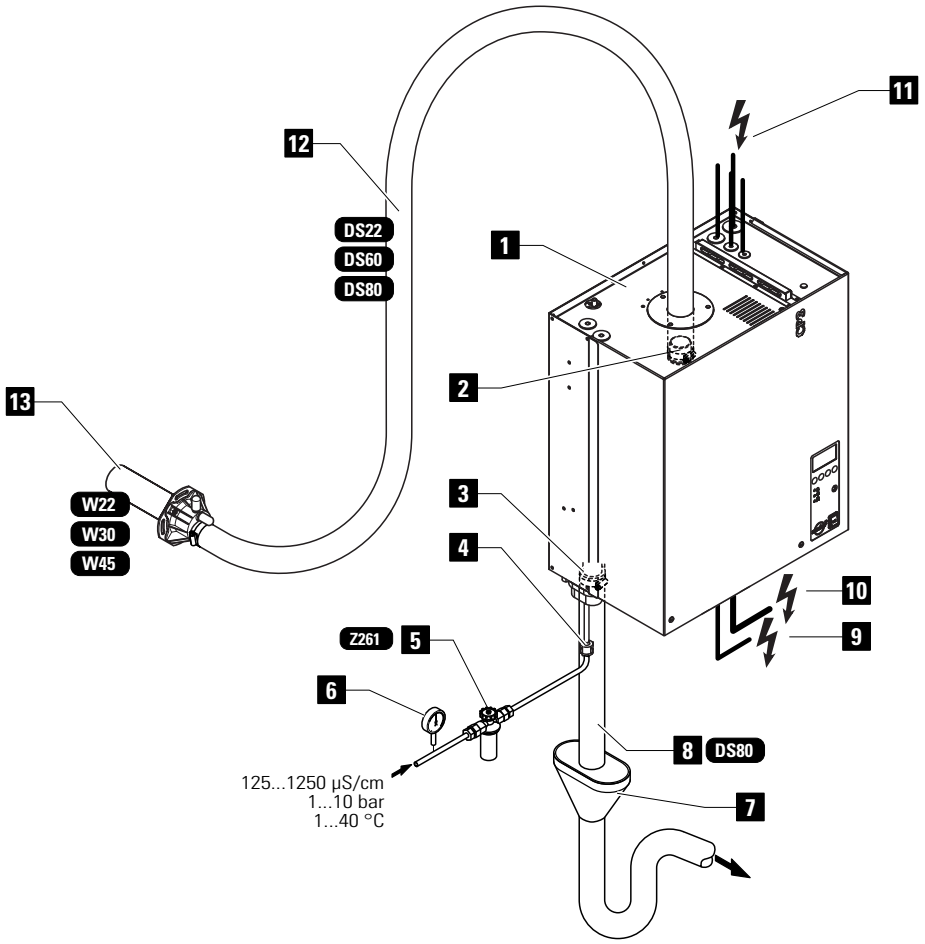
As a result of the evaporation process, the conductivity of the water increases due to an escalating mineral concentration. Eventually, an inadmissibly high current consumption would take place if this concentration process were permitted to continue. To prevent this concentration from reaching a value, unsuitably high for the operation, a certain amount of water is periodically drained from the cylinder and replaced by fresh water.

Control

The steam production is controlled steplessly (continuous control) by the KTY temperature sensor supplied (or an 0-10V temperature sensor) and the integrated continuous controller.

Below a minimum controllable steam output a two-point control (On/Off) is used.

3.5 System overview



1 Steam generator
2 Steam connection
3 Water drain connection
4 Water supply connection
5 Filter valve (accessory "Z261")
6 Manometer (installation recommended)
7 Funnel with siphon (building side)
8 Water drain hose (accessory "DS80")
9 Control voltage supply
10 Heating voltage supply
11 Cable openings
12 Steam hose (accessory "DS..")
13 Steam distributor (accessory "W..")

3.6 Options

3.6.1 Options overview

			Condair CP3 D		
		230V1	5...8		
		400V3	5...8	9...15	16...45
		230V3	5...8	9...15	16...30
D...	**Cleanable steam cylinder** Cleanable steam cylinder as an alternative to the disposable steam cylinder built in as standard (see also chapter 3.6.2).		1x D3..	1x D4..	1x D6..
RFI	**Remote operating and fault indication** PCB with relay contacts for the connection of remote displays for "Operation", "Steam", "Fault" and "Service" as well as an analogue output for remote temperature indication and an analogue output for the temperature-dependent control of an optional flap control system.		1x RFI	1x RFI	1x RFI
THV	**Terminals heating voltage** Separate terminals for systems where direct connection of heating voltage to main contactor (standard version) is not permitted by local regulations.		1x M-THV	1x M-THV	1x L-THV
PG	**Cable gland**		1x PG	1x PG	1x PG
SC..	**Steam hose connector**		1x SC22	1x SC60	1x SC80
MP	**Mounting profile**		1x MP	1x MP	1x MP
CVI	**Internal control voltage**		1x M-CVI	1x M-CVI	1x L-CVI
TRAFO	**Transformer (400V/230V)**		1x M-Trafo	1x M-Trafo	1x L-Trafo

3.6.2 Option details

Steam cylinder

The steam generator is available with **two different types** of steam cylinders:

- **Exchangeable steam cylinder type A... (standard version)**
- **Cleanable steam cylinder type D... (option)**

The following tables present an overview of the steam cylinders used in the different models.

Condair CP3 D...400V3	**5...8**	**9...15**	**16...25**	**26...45**
For water conductivity from 125 to 1250 µS/cm				
Exchangeable steam cylinder	1xA363	1xA464	1xA674	1xA664
Cleanable steam cylinder	1xD363	1xD464	1xD674	1xD664
For low water conductivity				
Exchangeable steam cylinder	1xA343	1xA444	1xA654	1xA654
Cleanable steam cylinder	1xD343	1xD444	1xD654	1xD654

Condair CP3 D...230V3	**5...8**	**9...15**	**16...21**	**22...30**
For water conductivity from 125 to 1250 µS/cm				
Exchangeable steam cylinder	1xA343	1xA444	1xA654	1xA644
Cleanable steam cylinder	1xD343	1xD444	1xD654	1xD674

Condair CP3 D...230V1	**5...8**
For water conductivity from 125 to 1250 µS/cm	
Exchangeable steam cylinder	1xA342
Cleanable steam cylinder	1xD342

If you have questions regarding the steam cylinders please contact your Condair representative.

3.7 Accessories

Accessories for water installation

		Condair CP3 D		
	230V1	5...8		
	400V3	5...8	9...15	16...45
	230V3	5...8	9...15	16...30
Filter valve		**1x Z261**		

Accessories for steam installation

		Condair CP3 D		
	230V1	5...8		
	400V3	5...8	9...15	16...45
	230V3	5...8	9...15	16...30
Steam distributor (Details see chapter 5.4)		**1x W22**	**1x W30**	**1x W45**
Steam hose / meter		**1x DS22**	**1x DS60**	**1x DS80**
Condensate hose / meter		**1x KS10**		
Fragrance pump		**1x SR25 230 VAC**		

Accessories for operation control

		Condair CP3 D		
	230V1	5...8		
	400V3	5...8	9...15	16...45
	230V3	5...8	9...15	16...30
Temperature sensor		**1x KTY**		

3.8 Standard delivery

The standard delivery includes:

- Steam generator Condair CP3 D cpl. equipped with the options ordered according to chapter 3.6 with KTY temperature sensor, water connection pipe G3/4" - 1/2", fixing set, Technical Documentation (this document) and spare parts list, packaged in cardboard box:
  - Unit small (WxHxD): 450 mm x 620 mm x 280 mm, shipping weight: 26 kg
  - Unit large (WxHxD): 559 mm x 667 mm x 350 mm, shipping weight: 31 kg
- Ordered accessories with operating instructions according chapter 3.7, packed separately
- Spare parts list

3.9 Storing/Transportation/Packaging

Storing

Store the unit in a protected area meeting the following requirements:

- Room temperature: 1 ... 40 °C
- Room humidity: 10 ... 75 %rh

Transportation

For optimum protection always transport the unit in the original packaging.

The weight of the small and the large unit is more than 20 kg (weight without packaging: small unit 23 kg, large unit 28 kg). Therefore, always transport the unit with the help of another person or use a forklift or a crane. Always place the unit on its back side.

Packaging

Keep the original packaging of the Condair CP3 D for later use.

In case you wish to dispose of the packaging, observe the local regulations on waste disposal. Never dispose of the packaging to the environment.

4 Notes for the planning engineer

4.1 Selecting the unit version

To select the unit version the following planning steps are required:

1. Calculating the required maximum steam capacity according chapter 4.1.1
2. Selecting the unit version from the table in chapter 4.1.2

4.1.1 Determination of the required steam capacity

The steam capacity required for a particular steam bath can be determined with the following table:

Cabin size	**Required steam capacity**	
in m³	**Plastic cabin**	**brick lined cabin**
4	5 kg/h	8 kg/h
8	8 kg/h	12 kg/h
12	10 kg/h	15 kg/h
16	12 kg/h	18 kg/h
20	13 kg/h	21 kg/h
24	15 kg/h	24 kg/h
28	17 kg/h	26 kg/h
32	18 kg/h	29 kg/h
36	20 kg/h	31 kg/h
40	21 kg/h	34 kg/h
44	23 kg/h	36 kg/h
48	24 kg/h	38 kg/h
52	26 kg/h	41 kg/h
56	27 kg/h	43 kg/h
60	29 kg/h	45 kg/h

4.1.2 Selecting the unit

Condair CP3 D **45** **400V3**

Heating voltage *	Max. steam capacity in kg/h	Graduation in kg/h	Model Condair CP3 D	Unit size	
				small	large
400V3 (400V/3~/50...60Hz)	5...15	1	**5...15**	1	
	16...45	1	**16...45**		1
230V3 (230V/3~/50...60Hz)	5...15	1	**5...15**	1	
	16...30	1	**16...30**		1
230V1 (230V/1~/50...60Hz)	5...8	1	**5...8**	1	

***** Other heating voltages on request

4.2 Selecting the options an accessories

For selecting the options and accessories see chapters 3.6 and 3.7.

5 Mounting and installation work

5.1 Important notes for mounting and installation work

Qualification of personnel

All mounting and installation work must be carried out only by **well qualified personnel authorised by the owner**. It is the owner's responsibility to verify proper qualification of the personnel.

General note

Strictly observe and comply with all information given in the present Technical Documentation regarding the location of the unit and the installation of water, steam and electricity.

Observe and comply with all local regulations dealing with water, steam and electrical installations.

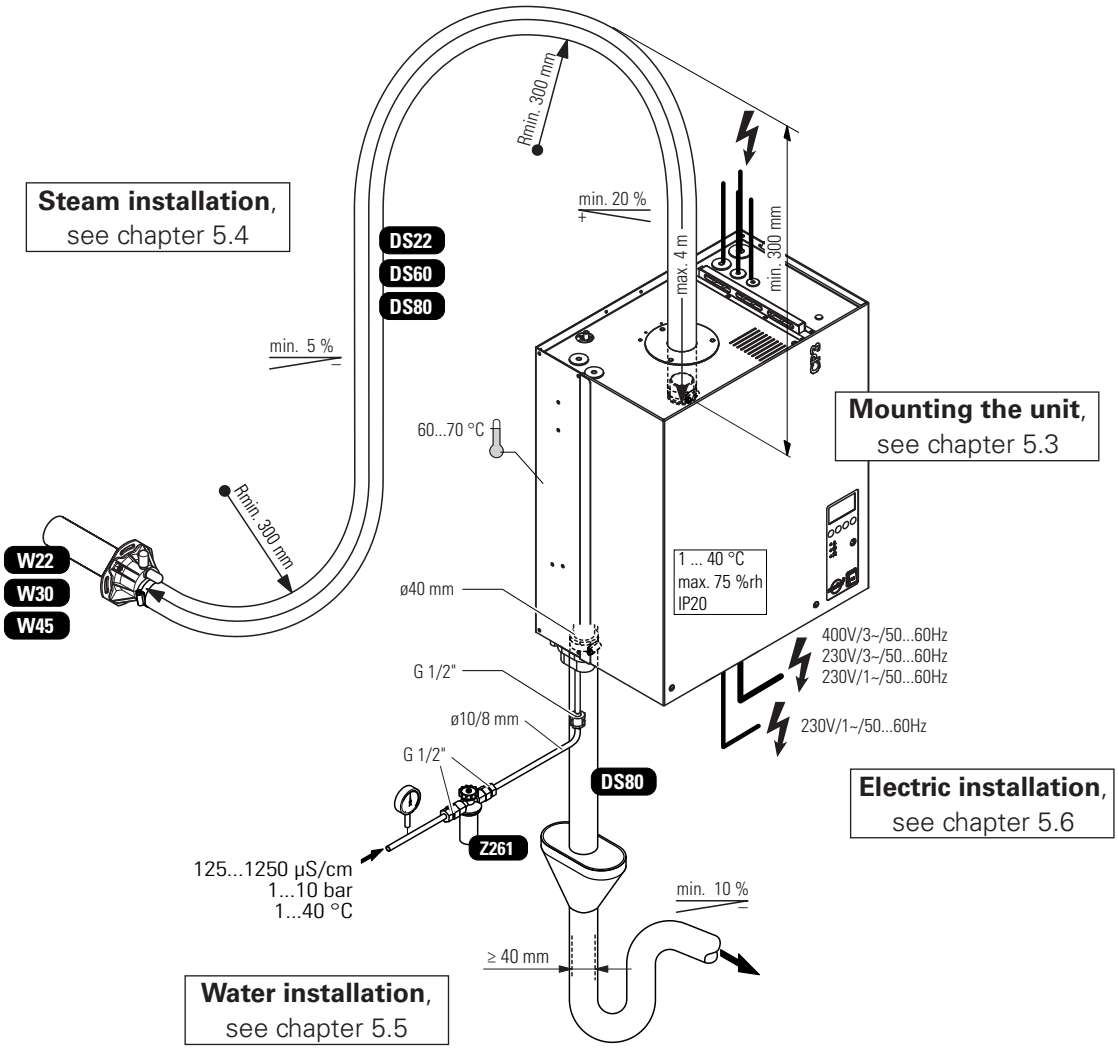
Safety

Some installation work requires removal of the unit cover. Please note the following:

⚠ **WARNING!**	**Danger of electrical shock! You may get in touch with live parts when the unit is open. The steam generator must be connected to the mains only after all mounting and installation work has been completed and the cover has been relocated properly.**

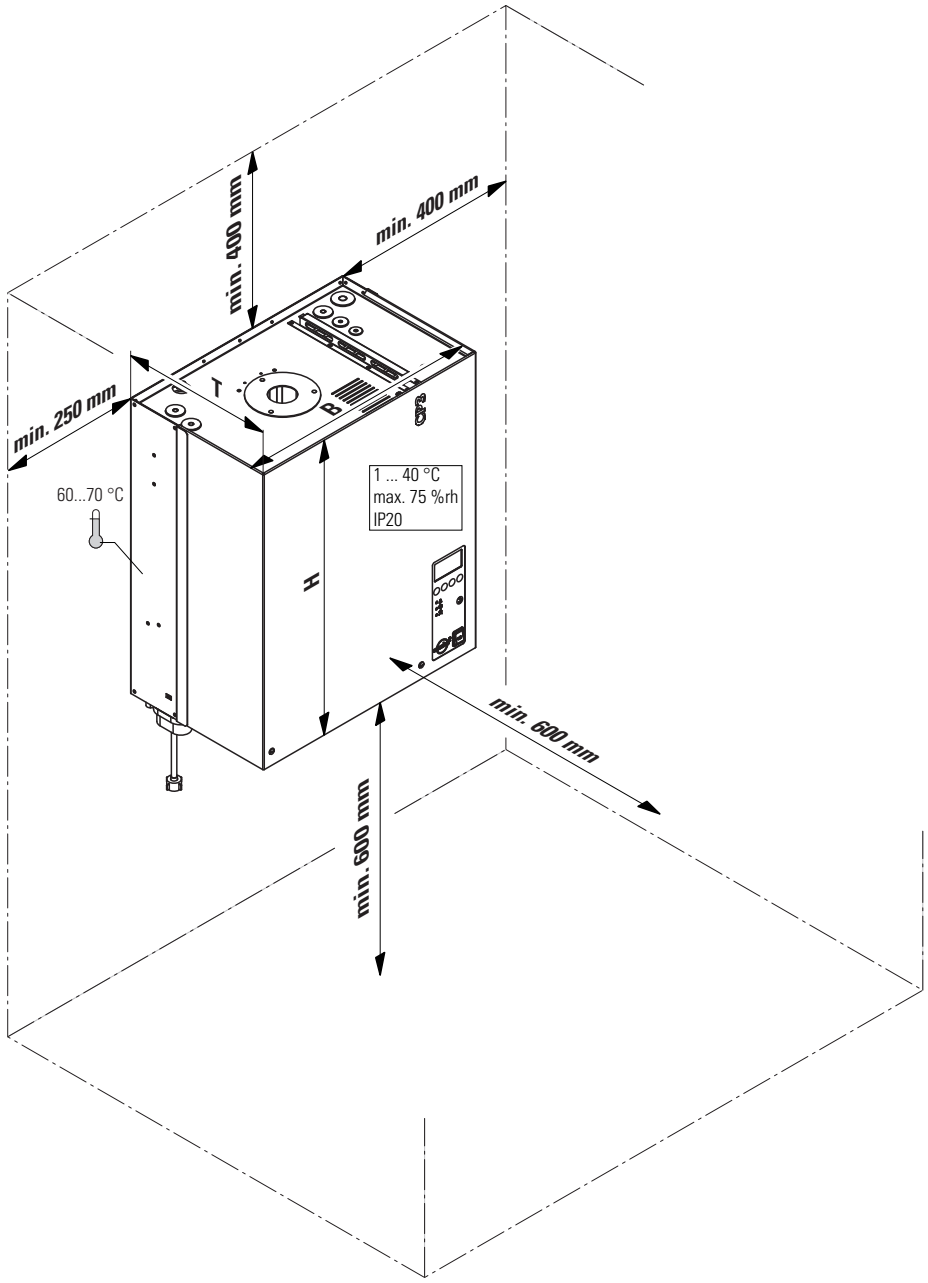
CAUTION!	The **electronic components** inside the steam generator are **very sensitive to electrostatic discharge**. When the unit is open for installation work, appropriate measures must be taken to protect these components against damage caused by electrostatic discharge (ESD protection).

5.2 Installation overview



5.3 Mounting the unit

5.3.1 Notes on locating the unit



Condair CP3 D ... 230V1		**5...8**			
Condair CP3 D ... 230V3		**5...8**	**9...15**	**16...21**	**22...30**
Condair CP3 D ... 400V3		**5...8**	**9...15**	**16...25**	**26...45**
Dimensions					
Housing (BxHxT) in mm	456x620x280	1	1		
	559x667x350			1	1
Weights					
Netweight in kg		21	21	21	28
Operating weight in kg		26	32	32	65

The installation site of the steam generator depends largely on the location of the steam distributor (see chapter 5.4). To **ensure proper functioning** of the steam generator and to **obtain an optimal efficiency**, the following points must be considered and observed when choosing the location for the steam generator:

– Install the steam generator so that the **length of the steam** hose is kept as short as possible (**max. 4 m**) and that the **minimum bend radius (R= 300 mm)** and **up-slope (20 %)** or **down-slope (5 %)** of the steam hose is observed (see chapter 5.4.5).

– The steam generators Condair CP3 D are designed for wall-mounting. Make sure that the construction (wall, pillar, floor-mounted console, etc.) to which the steam generators are to be mounted, offers a **sufficiently high load-bearing capacity** (take notice of the weight information found in the dimension sand weights table above), and is suitable for the installation.

– The back panel of the Condair CP3 D is retaining heat during operation (max. surface temperature of the metal housing approx. 60 - 70 °C). Make sure, therefore, that the construction (wall, pillar, etc.) to which the units are to be mounted, does not consist of heat-sensitive material.

– Install the steam generator in such a manner that it is **freely accessible** with sufficient space available for maintenance purposes (refer to the above illustration for minimum distances).

– The Condair CP3 D is protected according to **IP20**. Make sure the units are installed in a drip-proof location and the admissible ambient conditions are complied with.

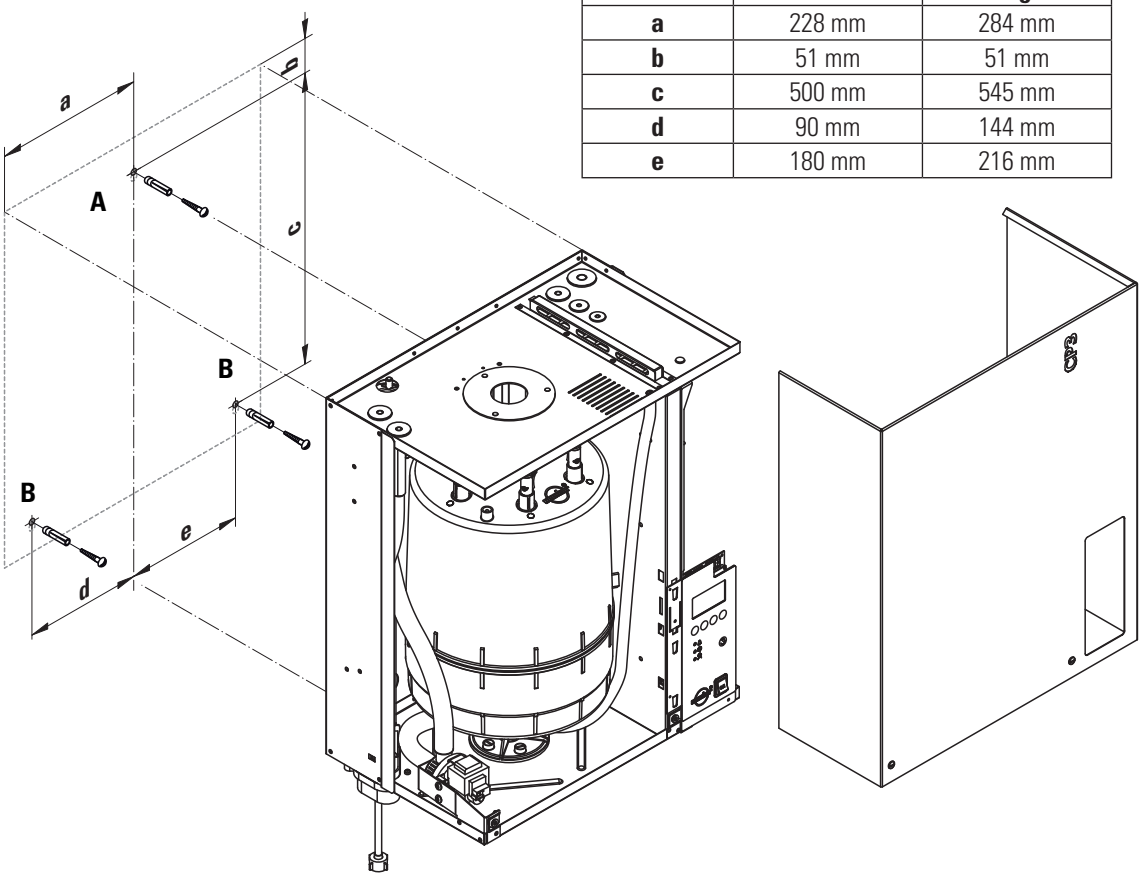
– The steam generator Condair CP3 D may only be installed in rooms with a floor drain.

CAUTION!	If for some reason the Condair CP3 D must be installed in a location without floor drain, it is mandatory to provide a leakage monitoring device to safely interrupt the water supply in case of leakage.

– When fixing the Condair CP3 D use **only the fixing materials supplied with the unit**. If fixing with the materials supplied is not possible in your particular case, select a method of fixing that is of similar stability.

5.3.2 Mounting the unit

Dimension	Housing size	
	small	large
a	228 mm	284 mm
b	51 mm	51 mm
c	500 mm	545 mm
d	90 mm	144 mm
e	180 mm	216 mm



Procedure

1. Mark the attachment point “A” on the wall.
2. Drill hole for attachment point “A” (diameter: 8 mm, depth: 40 mm).
3. Insert the supplied plastic plug, and tighten the screw until the distance between the wall and the screw head is 4 mm.
4. Unlock the two screws fixing the front panel to the unit, then remove the front panel.
5. Hang up the unit onto the screw and adjust it horizontally and vertically using a spirit level. Then, mark the fixing points “B”.
6. Drill the holes for the fixing points “B” (diameter: 8 mm, depth: 40 mm).
7. Insert the supplied plastic plugs, and tighten the screws until the distance between the wall and the screw head is 4 mm.
8. Hang the unit up onto the screws. Before tightening the screws, readjust the unit with the spirit level.
9. Reattach the front panel and secure it with the two screws.

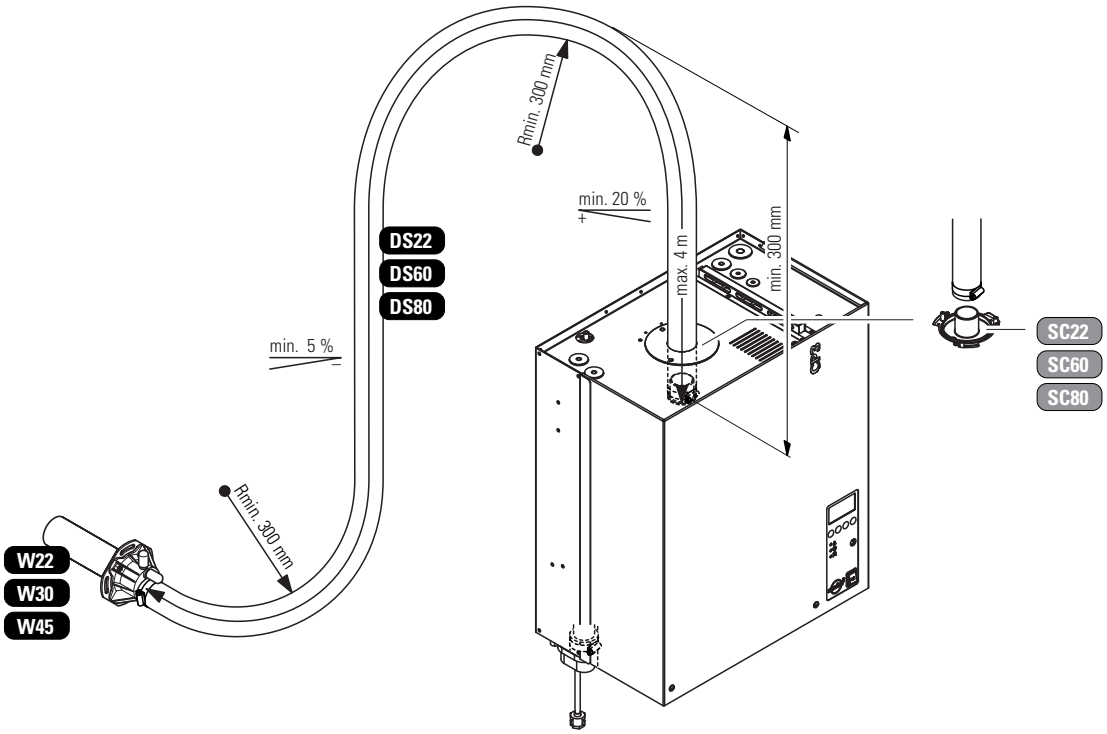
5.3.3 Inspecting the installed unit

Check the following points:

- ☐ Is the unit installed in the correct place (see chapter 5.3.1)?
- ☐ Is the supporting surface stable enough?
- ☐ Is the unit correctly aligned, vertically and horizontally?
- ☐ Is the unit properly secured (see chapter 5.3.2)?
- ☐ Has the front panel of the unit been relocated and correctly fixed with the two screws?

5.4 Steam installation

5.4.1 Overview steam installation

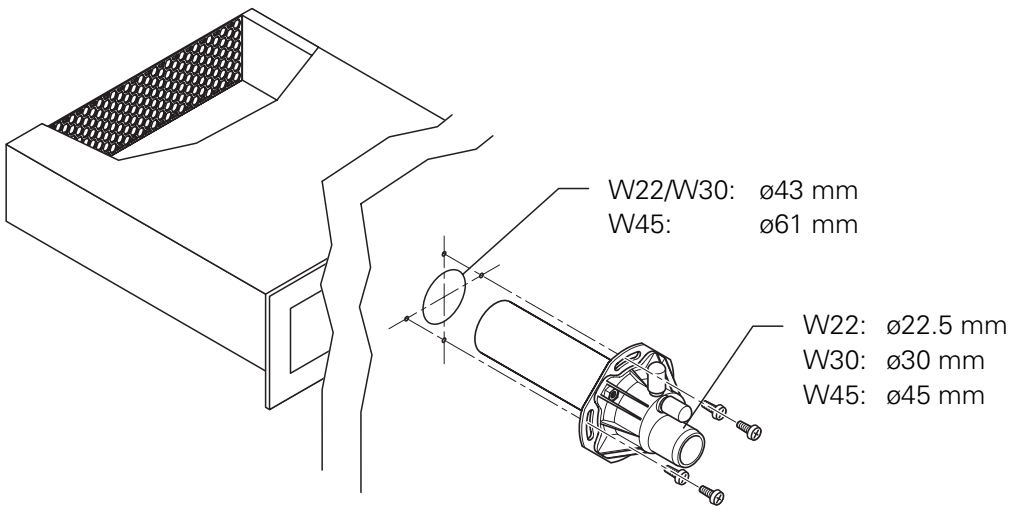


5.4.2 Positioning/mounting the steam distributor

It's the responsibility of the customer to correctly position the steam distributor (e.g. W..) in the steam bath cabin.

The steam distributor must be installed horizontally into the steam bath cabin.

⚠ **WARNING!**	Shield the steam outlet of the steam distributor with corresponding measures to make sure steam bath users can not be burned by the steamflow.

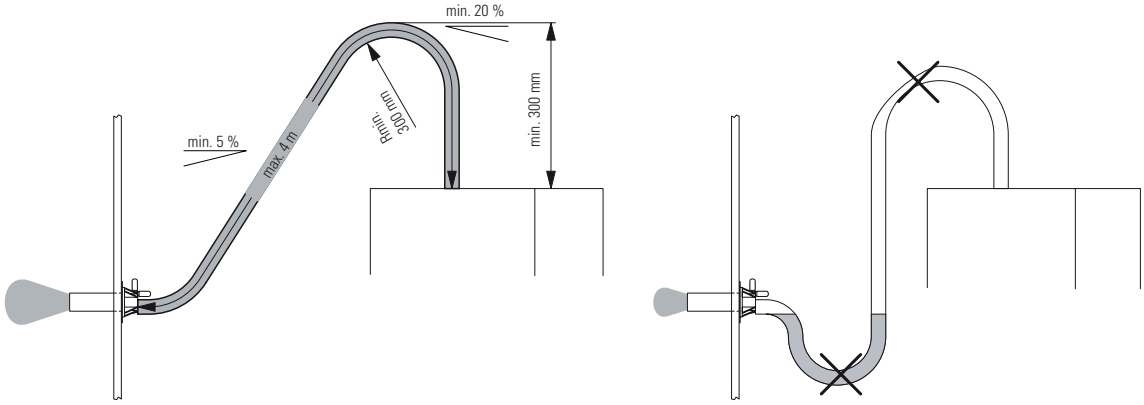


5.4.3 Installing the steam hose

Important! Use original Condair steam hose exclusively. Other types of steam hoses can cause undesired operational malfunctions.

Instructions for the hose layout

– Initially, the steam hose is led with an **upslope of at least 20 % over a minimum height of 300 mm** above the top edge of the steam generator and then down to the steam distribution pipe with a **minimum slope of 5 %**.



– The steam hose should be kept as short as possible (**max. 4 m**) while observing the **minimum bend radius of 300 mm**. **Important!** Allowance must be made for a **pressure loss of 10 mm water column (approx. 100 Pa)** per meter steam hose.
Note: If your particular installation exceeds the maximum steam hose length of 4 m contact your Condair representative. In any case, steam hoses longer than 4 m must be insulated in their entire length.
– Reductions in the cross section such as kinks should be avoided throughout the entire length of the hose. The installation of a stop cock in the steam hose is not permissible.
– Steam hoses must be prevented from sagging (condensate pockets); if necessary, support with pipe clamps, trough, or wall brackets, or install a condensate drain in the steam hose.
– **Important!** When deciding on the length and layout of the hose, it should be noted that the steam hose may become somewhat shorter with progressive ageing.

Securing the hose

The steam hose must be secured to the steam distribution pipe and the steam outlet of the steam generator by means of **hose clamps**.
Caution! Do not overtighten the hose clamp on the steam connector of the steam generator.

Steam line with fixed piping

For steam lines with fixed piping, the same instructions apply to the laying of the piping as already described. The following additional notes should be observed:

- The **minimum internal diameter of 22 mm, 30 mm or 45 mm** respectively should be applied over the whole length of the piping.
- Use exclusively Cu pipe or stainless steel (min. DIN 1.4301).
- To minimize the condensate formation (=loss), the steam pipes must be insulated.
- The **minimum bend radius** for solid pipes is **4-5 x internal diameter**.
- Connection of the steam pipes to the steam distribution pipe and steam generator is effected by means of short lengths of steam hose secured with hose clamps.
- **Important!** Allowance must be made for a **pressure loss of 10 mm water column (approx. 100 Pa)** per meter length or per 90° bend.

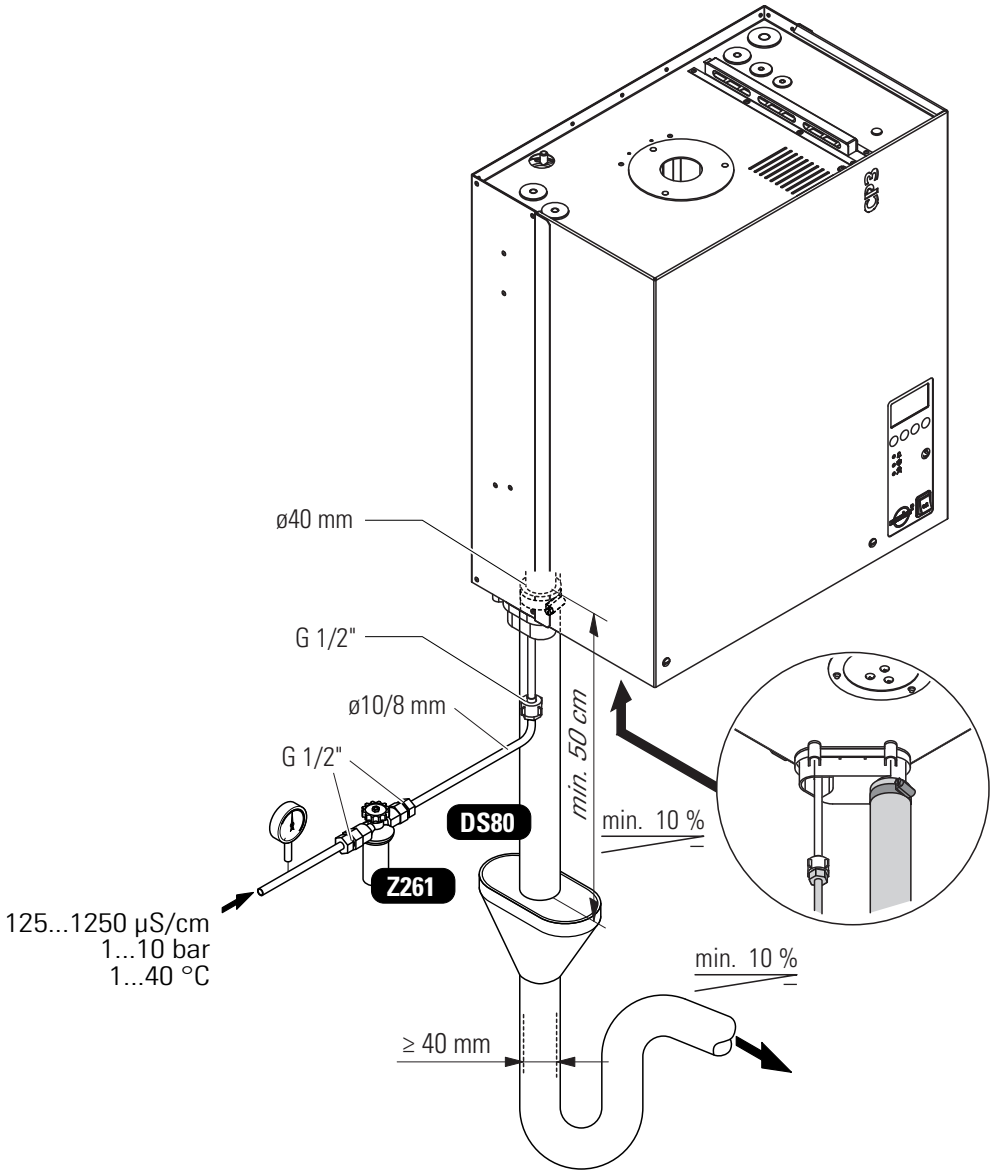
5.4.4 Inspecting the steam installation

Use the following check list to ascertain that the steam installation was performed correctly:

- Steam distribution pipe
  - ☐ Steam distributor correctly positioned and secured (screws tightened)?
  - ☐ Steam outlet of the steam distributor with corresponding measures shielded to make sure steam bath users can not be burned by the steamflow.
- Steam hose
  - ☐ Maximum length of 4 m?
  - ☐ Minimum bend radius of 300 mm (4-5 x internal diameter with fixed piping)?
  - ☐ Have the instructions for hose positioning been followed?
  - ☐ Steam hose: no sagging (condensate pocket) or condensate drain with siphon (hose bend with a minimum diameter of 200 mm) installed at the lowest point?
  - ☐ Rigid steam lines: properly insulated? Correct installation material used? Minimum internal diameter maintained?
  - ☐ Steam hose(s) securely attached with clamps?
  - ☐ Heat expansion during operation and shortening of the hose with ageing taken into consideration?

5.5 Water installation

5.5.1 Overview water installation



5.5.2 Notes on water installation

Water supply

The water supply is to be carried out according to the figure found in chapter 5.5.1 and the applicable local regulations for water installations. The indicated connection specifications must be observed.

- The installation of the **filter valve** (accessory "Z261", alternatively a shut-off valve and a 5 µm water filter can be used) should be made as close as possible to the steam generator.
- Admissible mains pressure **1.0 to 10.0 bar (hammer-free system)**
  For mains pressures >10 bar, the connection must be made via a pressure reducing valve (adjusted to 1.0 bar). For mains pressures <1.0 bar please contact your Condair supplier.
- **Notes on water quality**:
  - For the water supply of the Condair CP3 D, use exclusively **untreated drinking water**.
  - The use of **additives** such as corrosion inhibitors, disinfectants, etc. is **not allowed**, since these additives may endanger health and affect proper operation.
  - If the Condair CP3 D shall be operated with softened or partly softened water, please contact your Condair supplier.
- The connection material must be **pressure-proof** and **certified for use in drinking water systems**.
- **Important!** Before connecting the water line**, the line should be well flushed out**.

CAUTION!	The thread at the unit connection is made of plastic. To avoid overtightening, the union nut of the water pipe must be **tightened by hand** only.

Water drain

The water drain is to be carried out according to the figure found in chapter 5.5.1 and the applicable local regulations for water installations. The indicated connection specifications must be observed.

- Make sure that the drain pipe is correctly fixed and easily accessible for inspections and cleaning purposes.
- The draining temperature is: **80…90 °C** (approx. 70...80 °C with activated drain water cooling). Use temperature-resistant installation materials only!

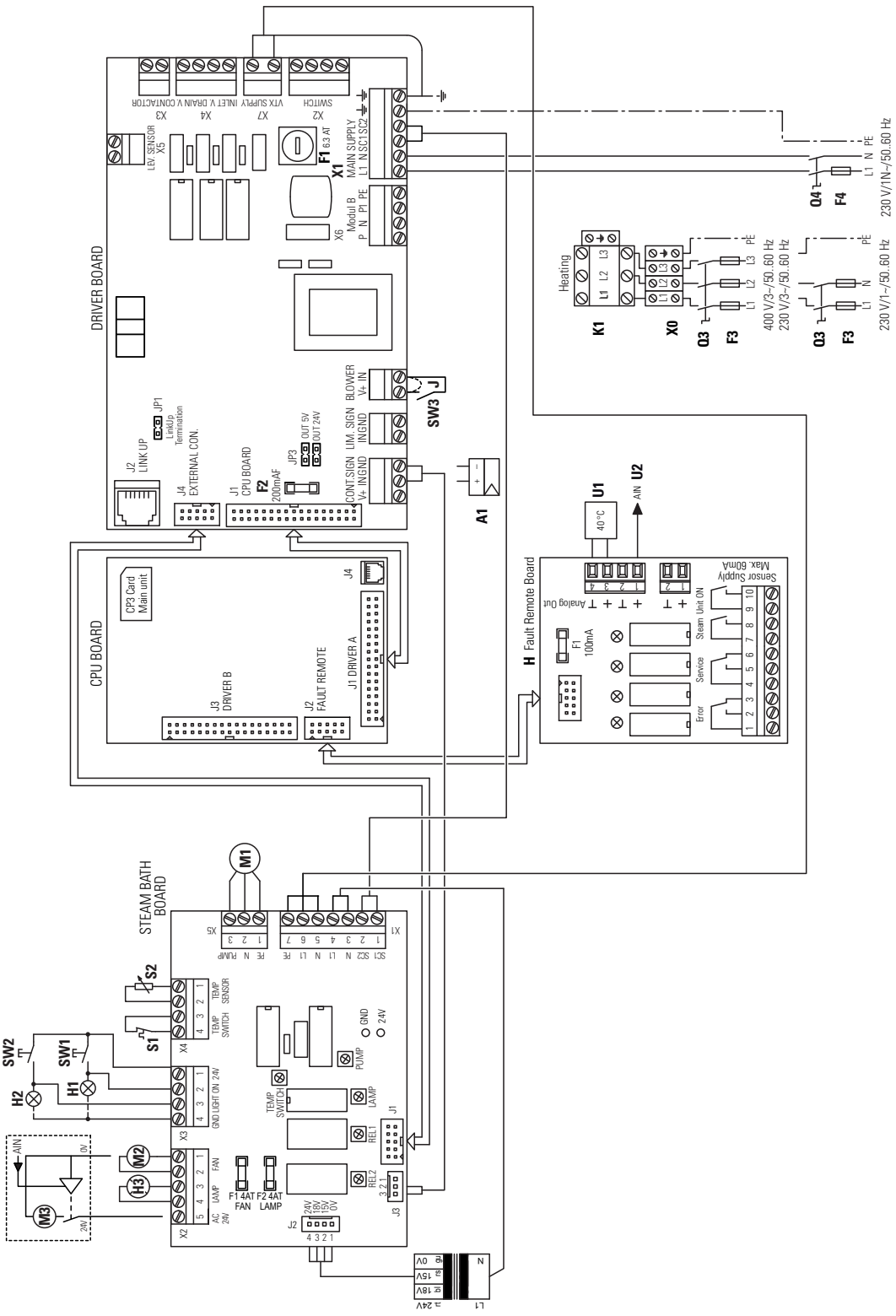
5.5.3 Inspecting the water installation

Check the following topics:

– Water supply
  - ☐ Has filter valve (accessory "Z261") or shut-off valve and 5 µm water filter respectively been installed in supply line?
  - ☐ Have admissible water pressure (1 – 10 bar) and admissible temperature (1 – 40 °C) been observed?
  - ☐ Does the supply capacity match the steam generator and is the minimum inside diameter of the supply pipe maintained throughout the entire length?
  - ☐ Are all components and pipes properly secured and are all threaded connections securely tightened?
  - ☐ Is the water system properly sealed?
  - ☐ Does the water supply installation meet the requirements of the local regulations for water installations?
– Water drain
  - ☐ Is the minimum inside diameter of the drain pipe of 40 mm maintained throughout the entire length?
  - ☐ Has drain pipe been installed with a downslope of at least 10 %?
  - ☐ Has the heat resistance of the material used been verified to be at least 100 °C?
  - ☐ Is the drain hose properly secured (hose clamps at unit connection tightened)?
  - ☐ Does the water drain installation meet the requirements of the local regulations for water installations?

5.6 Electric installation

5.6.1 Wiring diagram Condair CP3 D



A1 Temperature sensor (0-10V)
F1 Internal fuse "Driver board" (6.3 A, slow acting)
F2 Internal fuse "Driver board" control signal (200 mA, fast acting)
F1 Fuse fan "Steam bath board" (4 A, slow acting)
F2 Fuse lightning "Steam bath board" (4 A, slow acting)
F3 External fuse heating voltage supply
F4 External fuse control voltage supply
H Remote operating and fault indication
H1 Control lamp steam bath On/Off
H2 Control lamp lightning steam bath On/Off
H3 Lightning steam bath (24VAC, max. 2x 25W)
J Short circuited, if no door switch is connected
K1 Main contactor (for connecting the heating voltage supply to the unit)
M1 Fragrance pump (1x230VAC)
M2 Fan steam bath cabin (24VAC, max. 50W)
M3 Flap actuator (alternatively to the fan)
Q3 External service switch heating voltage supply
Q4 External service switch control voltage supply
S1 Temperature sensor (KTY)
S2 Max. temperature switch 72 °C
SW1 On/Off switch steam bath
SW2 On/Off switch lightning steam bath
SW3 Door switch steam bath (option)
U1 Analogue output temperature 0-10V (=0-100°C)
U2 Analogue output temperature signal for the control of the flap actuator M3
X0 Connection terminal heating voltage
X1 Connection terminal control voltage

5.6.2 Notes on electric installation

- The electric installation must be carried out according to the wiring diagram in chapter 5.6.1 and the applicable local regulations. All information given in the wiring diagram must be followed and observed.
- All cables must be lead into the unit via the cable openings equipped with cable glands (e.g. option "PG-cable gland"). The cable for the heating voltage supply must be lead into the unit from the bottom via the cable opening equipped with the clamp strap. Fix the cable with the clamp strap.
- Make sure the cables do not scrub on any components.
- Maximum cable length and required cross section per wire must be observed.
- The supply voltages for heating and control must match the respective voltages stated in the wiring diagram.

Heating voltage supply "Up"

⚠ **Caution!** Before connecting, ensure that the mains voltage corresponds with the **heating voltage for the unit (see mains code on the type label)**.

The heating voltage supply is connected to the corresponding terminals of the main contactor according to the wiring diagram. In the supply line a **service switch "Q1"** (an all-pole disconnecting device with a minimum contact opening of 3 mm is an essential requirement) and a **fuse group "F1"** (essential requirement: fuses are to be as detailed in the following table) must be installed (by the client).

Heating voltage	Max. steam capacity [kg/h]	Model Condair CP3 D	Nominal power [kW]	Nominal current [A]	Main fuses F3 [A]
400V3 (400V/3~/50...60Hz)	5...8	**5...8**	6.0	8.7	3x 10
	9...12	**9...12**	9.0	13.0	3x 16
	13...15	**13...15**	11.3	16.3	3x 20
	16...20	**16...20**	15.0	21.7	3x 25
	21...25	**21...25**	18.8	27.1	3x 35
	26...30	**26...30**	22.5	32.5	3x 40
	31...42	**31...42**	31.5	45.5	3x 50
	43...45	**43...45**	33.8	48.8	3x 63
230V3 (230V/3~/50...60Hz)	5...8	**5...8**	6.0	15.8	3x 20
	9...15	**9...15**	11.3	29.6	3x 40
	16...21	**16...21**	15.8	41.4	3x 50
	22...30	**22...30**	22.5	59.1	3x 63
230V1 (230V/1~/50...60Hz)	5	**5**	3.8	16.3	20
	6...8	**6...8**	6.0	26.1	35

Note: The minimum cross section of the supply cable must comply with the local regulations.

Control voltage supply "Uc"

⚠ **Caution!** Before connecting, make sure that the mains voltage corresponds with the **control voltage of the unit (220…240 V, 50…60 Hz)**.

The control voltage supply is connected to the terminals L1 and N according to the wiring diagram. In the supply line a **service switch "Q2"** (an all-pole disconnecting device with a minimum contact opening of 3 mm is an essential requirement) and a **fuse "F2" (max. 10 A, slow acting, essential requirement)** must be installed (by the client).

Note: The minimum cross section of the supply cable must comply with the local regulations.

Remote indicator board H

The remote operating and fault indicators must be connected to the respective potential-free relay contacts of the remote indicator board according to the wiring diagram:

– "Error": This relay is activated if a fatal error occurs.
– "Maintenance": This relay is activated after the maintenance interval time has expired.
– "Steam": This relay is activated as soon as the CP3 D produces steam.
– "Unit on": This relay is activated as soon as the CP3 D is switched on.

⚠ **Caution!** The maximum contact load is: 250V/1A.

⚠ **Caution!** Appropriate suppressor modules are to be used for the switching of relays and miniature contactors.

Remote temp. indication U1: Temperature signal 0...10V (0...100%) for remote temp. indication
Temperature signal U2: Temperature signal for the control of the flap actuator

Fragrance pump M1 (230VAC)

The fragrance pump is connected to **terminals X5-1, X5-2 and X5-3** on the steam bath board according to the wiring diagram.

Note: The cross-section of the cable must comply with the applicable local regulations.

Steam bath lighting H3 (24VAC, max. 2x 25 W)

The steam bath lighting is connected to **terminals X2-3 and X2-4** on the steam bath board according to the wiring diagram

Note: The cross-section of the cable must comply with the applicable local regulations.

Steam bath fan M2 (24VAC, max. 50 W)

The steam bath fan is connected to **terminals X2-1 and X2-2** on the steam bath board according to the wiring diagram.

Note: The cross-section of the cable must comply with the applicable local regulations.

Flap actuator M3 (24 VAC, max. 50 W), alternatively to the steam bath fan M2

The flap actuator is connected to **terminals X2-1 and X2-5** on the steam bath board according to the wiring diagram. The control signal to control the flap motor is always active.

Note: The cross-section of the cable must comply with the applicable local regulations.

Temperature sensor KTY S1

The supplied temperature sensor KTY is connected to terminals **X4-1 and X4-2** according to the wiring diagram. The steam bath board is ready for the connection of the supplied temperature sensor, hence not further adjustments are required.

The temperature sensor must be installed in a appropriate location inside the steam bath (away from the steam exit).
Please refer the separate installation instructions for proper location and connection of the temperature sensor.

5.6.3 Inserting the CP3 Card

All important operating parameters such as the maximum steam capacity, the heating voltage, the number of base units as well as the differentiation between main and extension unit are permanently stored on the CP3 Card.
Before you start the electrical installation, **check whether the CP3 Card is installed**. If it is not, **check whether the type designation on the CP3 Card supplied corresponds with the type designation on the data plate of the unit (the data plate is located inside the unit)**. If the designations match, place the CP3 Card in the card holder on control print . Then cover the data plate inside the unit beside the type plate with the data plate supplied (self-adhesive).
If the type designation on the CP3 Card and the data plate do not match, the CP3 Card must not be installed. If this is the case, contact your Condair supplier.

5.6.4 Inspecting the electrical installation

Check the following points:

- ☐ Do the supply voltages for heating and control comply with the relevant voltages given in the wiring diagram?
- ☐ Is the correct CP3 Card inserted?
- ☐ Are the voltage supplies (heating and control voltage) correctly fused?
- ☐ Is the service switch "Q.." installed in the supply line for to the heating and control voltage?
- ☐ Are all components correctly connected according to the wiring diagram?
- ☐ Are all connecting cables fastened?
- ☐ Are the connecting cables free of tension (passed through cable glands?)
- ☐ Does the electric installation meet the applicable local regulations for electric installations?
- ☐ Is the front panel mounted and correctly fixed with the two screws?

6 Operation

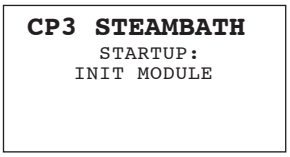
6.1 Commissioning

Proceed as follows when putting the unit into operation:

1. **Examine the steam generator and installation for possible damage**.

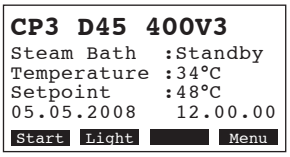
⚠ **WARNING!**	Damaged devices or devices with damaged installation may present danger to human life or cause severe damage to material assets. **Damaged units and/or units with damaged or faulty installation must not be operated.**

2. Check whether the front panel is mounted and fixed with the two screws.
3. Open the **filter valve** (or the shut-off valve, respectively) in the water supply line.
4. **Switch on the service switches** for mains supplies (heating and control voltage).
5. **Actuate the unit switch** of the steam generator. **Switch lights up**.

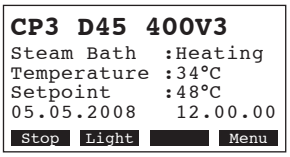


The steam generator carries out a **system test**, during which all the LEDs light up and the opposite display is shown.

If a failure occurs on the system test, a corresponding error message is shown in the display.



After the system test the **operating display** is shown.
Note: The contents of the operating display and the setting of the keys depend on the actual operating status and on the configuration of the Condair CP3 D and can differ from the opposite display.

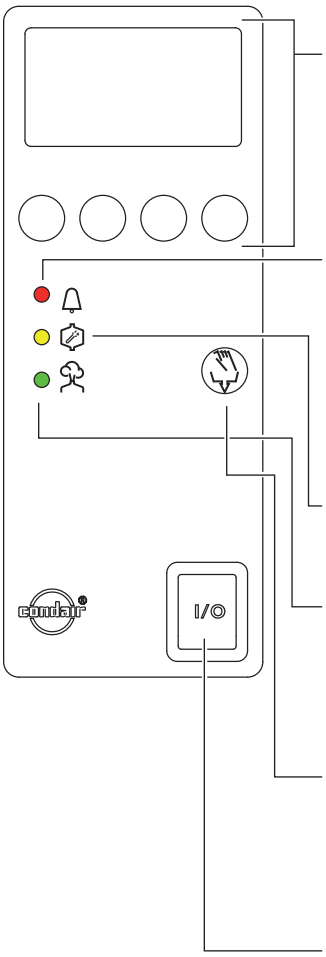


Depending on the selected operating mode of the Condair CP3 D, the steam generator must manually be started via the Start/Stop button of the display and control unit or via an external Start/Stop button or the operation runs time-controlled via the day timer or the week timer. As soon as the steam generator is started, the heating current is switched on. The inlet valve opens (slight delay) and the steam cylinder fills with water. As soon as the submerged electrodes heat the water up the green LED lights up and after a few minutes (approx. 5–10 minutes, depending on the conductivity of the water) steam is produced and the steam bath cabin is heated up. As soon as the set temperature in the steam bath cabin is achieved, the light is switched on and the bath phase starts. During the bath phase the fragrance pump (if available) is controlled in accordance with the selected operating mode and the fan (or the flap actuator) is controlled in accordance with the set temperature and the actual temperature in the steam bath cabin.

Note: If the Condair CP3 D is operated with water of low conductivity it may happen that the maximum steam capacity is not reached in the first few hours of operation. This is normal. As soon as the conductivity has reached a sufficient level (due to the vaporisation process) the steam generator will reach the maximum steam capacity.

6.2 Notes on operation

6.2.1 Function of the display and operating elements



Display and control unit
Function: Configuration of the Condair CP3 D.
Indication of operating parameters.
Reset of maintenance counter and error indication.

red LED "Error"
Function: The LED lights in case of a malfunction of the unit. The type of malfunction is shown in the display, see chapter 8).
The LED flashes alternately with the green LED if the maximum temperature switch has triggered.

yellow LED "Warning"
Function: The LED lights if the cylinder maintenance is due.

green LED "Steam"
Function: The LED lights if the unit produces steam.
The LED flashes alternately with the red LED if the maximum temperature switch has triggered.

Drain key
Function: Manual draining of the steam cylinder. After having pressed the drain key, the draining is controlled via the display and control unit.

Unit switch
Function: Switches the unit on and off. The switch is illuminated when the unit is running.

6.2.2 Remote operating and fault indication

Via the operating and fault indication the following operating status are shown remotely:

Activated remote indication relay	When?	Display on unit
H1 "Error"	A malfunction is present, further operation is not possible, the heating voltage is interrupted	Red LED lights An error message is shown in the display
H2 "Service"	Steam cylinder maintenance is due. The unit remains operational for a certain time	Yellow LED lights The service warning message is shown in the display
H3 "Steam demand"	Steam demand/ Steam production	Green LED lights The standard operating display is shown.
H4 "Unit on"	Unit ready for operation	Unit switch lights The standard operating display is shown.

6.2.3 Inspections during operation

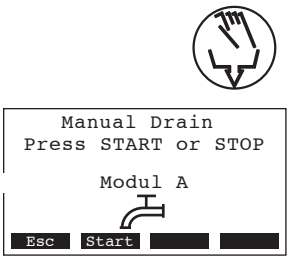
During operation the Condair CP3 D and the humidification system have to be inspected weekly. On this occasion check the following:

- the water and steam installation for any leakage.
- the steam generator and the other system components for correct fixing and any damage.
- the electric installation for any damage.

If the inspection reveals any irregularities (e.g. leakage, error indication) or any damaged components take the Condair CP3 D out of operation as described in chapter 6.3. Then, contact your Condair representative.

6.2.4 Carrying out manual draining

Proceed as follows to drain the unit manually:



1. **Briefly press the drain key**. The drain dialogue appears in the display.
2. Press the **<Start>** key. The heating voltage is interrupted and the drain pump starts. The **yellow LED flashes**.
   To stop the drain cycle press the **<Stop>** key.

   Note: By pressing the **<Esc>** key the unit returns to the indication level. A drain cycle in progress will be stopped automatically.

6.3 Taking the unit out of operation

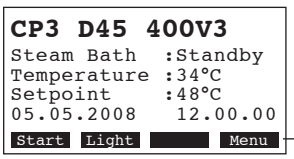
In order to take the steam generator out of operation, perform the following steps:

1. If the unit has to be switched off because of a malfunction, please note the error code of the actual error message shown in the display.
2. Close the shut-off valve in the water supply line
3. Start manual draining (see chapter 6.2.4) and wait until the steam cylinder is empty.
4. **Actuate the unit switch**
5. **Disconnect steam generator from the mains**: Switch off all service switches to mains supplies (heating and control voltage) and secure switches in "off" position against accidentally being switched on, or clearly mark the switches.

⚠ **WARNING!**	**If steam was produced just before the unit is taken out of operation, wait before opening the unit and let the steam cylinder cool down to prevent danger of burning.**

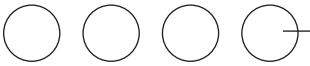
6.4 Overview and operating of the menu

Operating



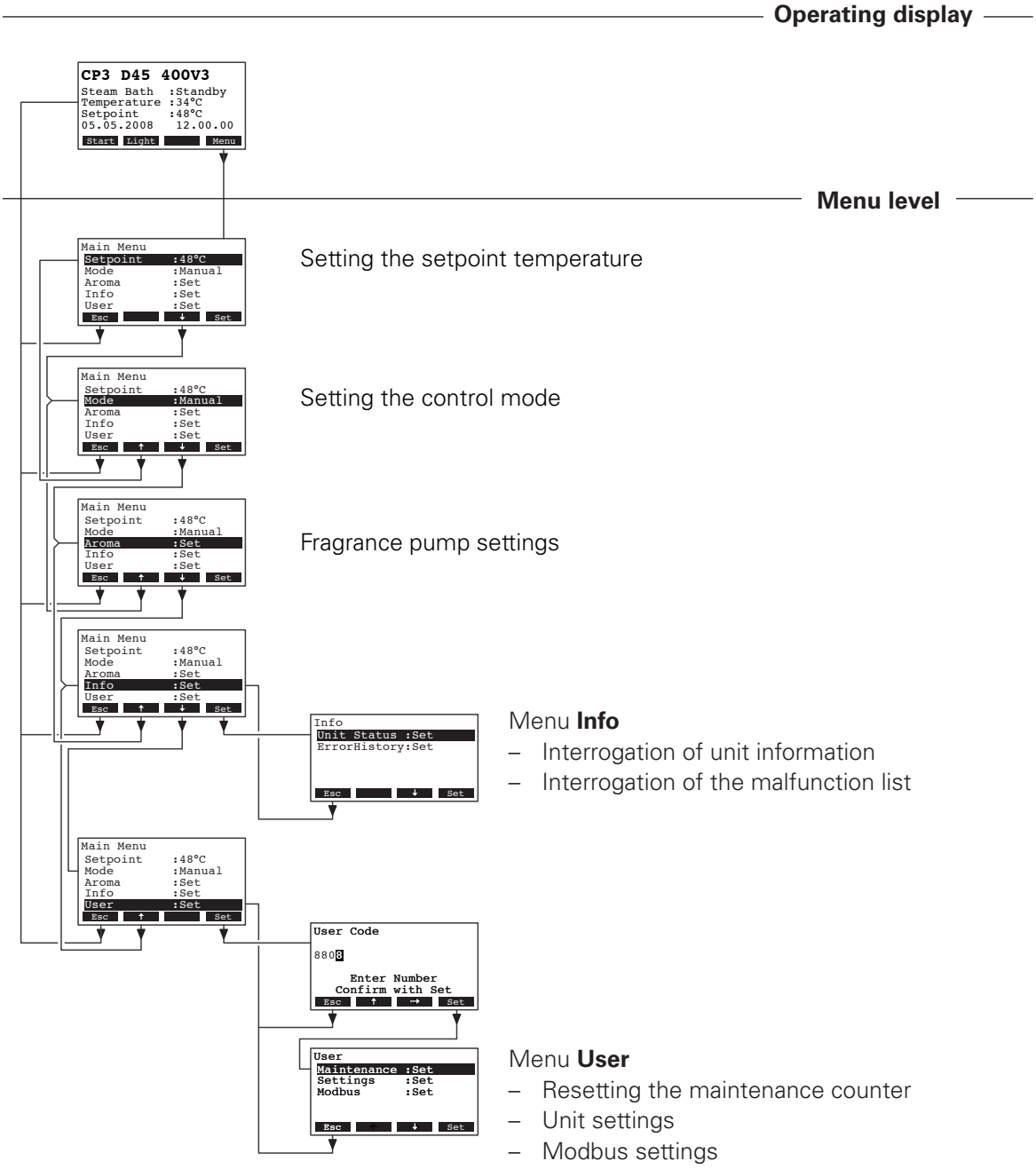
The operating and display unit is operated via the four keys located just below the display. The 4 status fields at the bottom of the display show the active keys the functions assigned to them.

actual key setting



keys

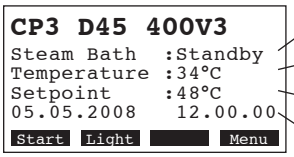
Menu overview



6.5 Interrogation functions

6.5.1 Information in the operating display

The following information are shown in the operating display:



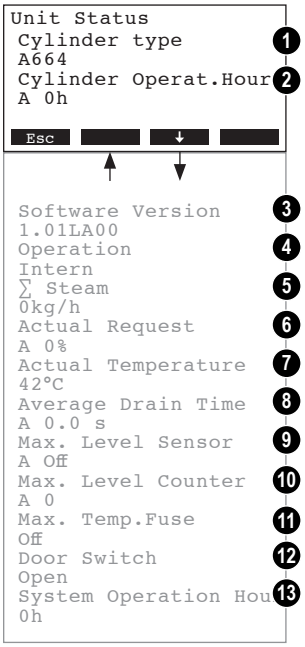
Operating status of the steam generator (Standby, Heating or Drying)

Actual temperature in the steam bath cabin

Set nominal steam bath temperature

Date (dd.mm.yyyy) and time (hh.mm.ss)

6.5.2 Interrogation of unit information



Select the list with the unit information:
Path: **Main menu > *Info* > *Unit Status***

Press **<↓>** and **<↑>** keys, in order to select the unit information available in the list:

1 Type designation of the steam cylinder type

2 Total operating hours of the steam cylinder

3 Software version (1.00)/language version (LA00)

4 Operating mode of the steam generator

5 Actual steam capacity of the unit in kg/h

6 Actual request in %

7 Actual temperature in the steam bath in °C

8 Calculated mean drain time of the unit in seconds

9 Actual status of the maximum level sensor in the steam cylinder

10 Counter showing the number of times the maximum level in the steam cylinder has been exceeded

11 Actual status of the maximum temperature switch

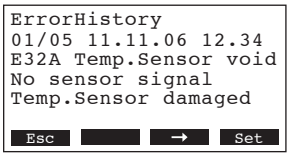
12 Actual status of the door switch of the steam bath cabin

13 Total operating hours since the initial commissioning

Press the **<Esc>** key several times to quit the unit information list and to return to the standard operating display.

6.5.3 Interrogation of the malfunction list

The error messages generated by the last 20 malfunctions that occurred are saved in the malfunction list of the Condair CP3 D and can be interrogated.



Select the error history list:
Path: ***Main menu > Info > ErrorHistory***

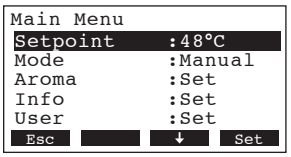
The last error that occurred is shown with:
- running number of the error
- date and time of occurrence (version Pro only)
- error code (Warning: W..., Error: E...
- error message
- additional info text regarding the error

Press **<↓>** and **<↑>** keys, in order to select further error messages in the list.

Press the **<Esc>** key several times to quit the error history list and to return to the standard operating display.

6.6 Unit settings

6.6.1 Setting the setpoint temperature

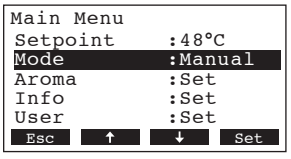


Select "**Setpoint**" in the main menu, then press the **<Set>** key.
In the upcoming modification dialogue set the desired nominal temperature for the steam bath.

Factory setting: **48 °C**
Setting range: **25 °C ... 55 °C**

6.6.2 Setting the control mode

Note: This setting is available only if the setting "Operation" in the steam bath settings (see chapter 6.6.4.3) is set to "Intern".

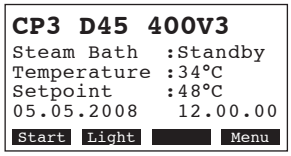


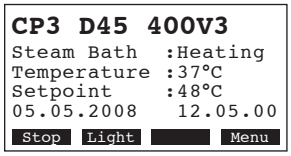
Select "**Mode**" in the main menu, then press the **<Set>** key.
In the upcoming modification dialogue set the desired control mode.

Factory setting: **Manual**
Options: **Manual**, **Timer**

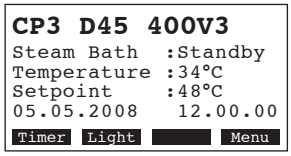
Description of the control mode settings

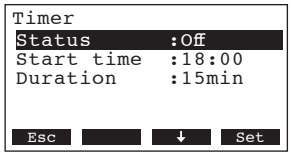
– **Manual**: The steam generator must be switched on and off via the Start/Stop key in the operating display.





– **Timer**: The steam generator is switched on and off time controlled via the day timer. The timer settings can be accessed by pressing the **<Timer>** key in the operating display.



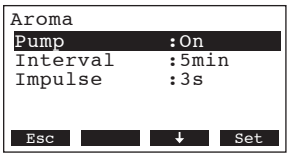


– **Status**: activate (On) or deactivate (Off) timer function

– **Start time**: set starting time (format: hh:mm)

– **Duration**: Set heating time in minutes

6.6.3 Setting the fragrance pump settings



Select "**Aroma**" in the main menu, then press the **<Set>** key. The fragrance pump settings appear. Press the **<↓>** and **<↑>** keys in order to select the individual settings and press the **<Set>** key to call up the modification dialogue for the selected setting.

Description of the fragrance pump settings

– **Pump**: Activating and deactivating the fragrance pump.

Factory setting: **On**
Options: **On** (Pump activated)
Off (Pump deactivated)

– **Interval**: Setting the interval time in minutes for the pump impulses.

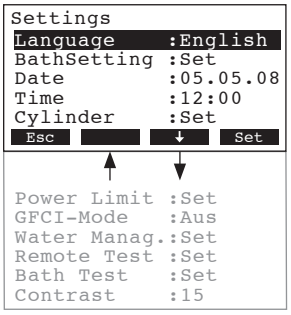
Factory setting: **5 min**
Setting range: **2 ... 20 min**

– **Impulse**: Setting the duration for a pump impulse in seconds.

Factory setting: **3 s**
Setting range: **2 ... 10 s**

6.6.4 Unit settings in the settings menu

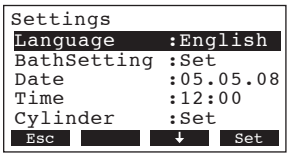
6.6.4.1 Launching the settings menu



Select the settings menu:
Path: ***Main menu > User > Password entry: 8808 > Settings***

Press the **<↓>** and **<↑>** keys in order to select the individual settings in the settings menu.
Detailed information on the different settings are found in the following chapters.

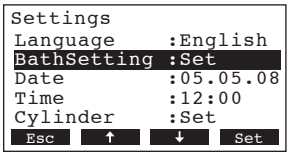
6.6.4.2 Selecting the dialogue language



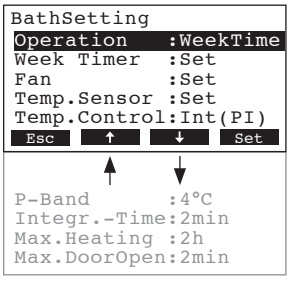
Select "**Language**" in the settings menu, then press the **<Set>** key.
In the upcoming modification dialogue select the desired dialogue language. After confirmation, the unit automatically switches to the selected dialogue language.

Factory setting: **country specific**
Options: **divers languages**

6.6.4.3 Steam bath control settings



Select "**BathSetting**" in the settings menu, then press the **<Set>** key.



The steam bath control settings appear. Press the **<↓>** and **<↑>** keys in order to select the individual settings and press the **<Set>** key to call up the modification dialogue for the selected setting.

Note: The settings available depend on the current settings of the individual parameters. The opposite display shows the maximum number of settings available.

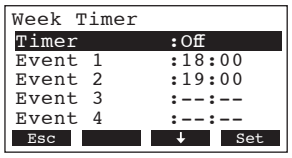
Description of the steam bath control settings

– **`Operation`**: Setting the operating mode.

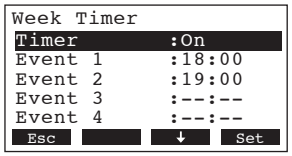
Factory setting: **Intern**
Options: **Intern** (switching the unit on and off the Start/Stop key of the display and control unit or via the day timer, see chapter 6.6.2 " Setting the control mode")
Extern (switching the unit on and off via an external On/Off switch)
WeekTime (the operation of the unit is time controlled via the week timer, see following settings "WeekTimer")

– **Wochen Timer**: With the settings in the submenu "Week Timer" you can configure the week timer for the time controlled operation of the steam generator.
Note: This menu item is available only if the operating mode (see previous menu item "Operation") is set to "WeekTime".

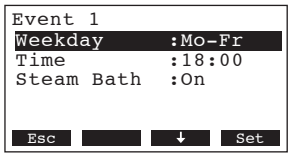
– Week timer **deactivated**:



– Week timer **activated**:



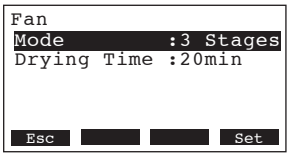
If the timer is activated, up to eight switching points (events 1 - 8) can be defined to switch the steam generator On or Off.



Each switching point is defined by a weekday or weekday range, the switching point and the desired operating status of the steam generator.

Configuration notes:
– the settings of an event remain active up to the next event.
– the software does not check the plausibility of the timer settings. Therefore, make sure your settings make sense.

– **Fan**: With the settings in the submenu "Fan" you can determine the operating mode of the fan as well as the post-operational time of the fan for drying the steam bath cabin.



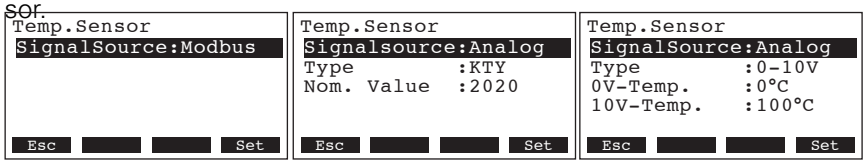
– **Mode**: Setting the operating mode of the fan.

Factory setting: **3 Stages**
Options: **3 Stages** (Operation of the fan with three performance levels 15/18/24VAC, which are controlled in dependency of the temperature in the steam bath cabin)
1 Stage (Operation of the fan with only one performance level 24VAC)
Off (Fan off)

– **Drying time**: Setting the post-operational time of the fan for drying the steam bath cabin.

Factory setting: **20 min**
Setting range: **1 ... 60 min**

– **Temp.Sensor**: With the settings in the submenu "Temp.Sensor" you can determine the signal source as well as the type and the signal sizes of the used sensor.



– **SignalSource**: Setting the signal source.
  Factory setting: **Analog**
  Options: **Analog, Modbus**

– **Type**: Setting the type of the sensor in use (this menu item is available only if signal source is set to "Analog").
  Factory setting: **KTY**
  Options: **KTY (included in the delivery), 0...10V**

– **Nom. Value**: Set the nominal value of the KTY sensor in Ohm.
  Note: this setting is available only if sensor type "KTY" is selected.
  Factory setting: **2020**
  Setting range: **1900...2100**

– **0V-Temp.**: Setting the temperature value in °C which equals to 0 V for a 0-10V temperature sensor.
  Note: this setting is available only if sensor type "0-10V" is selected.
  Factory setting: **0°C**
  Setting range: **-50 ... +20°C**

– **100V-Temp.**: Setting the temperature value in °C which equals to 10 V for a 0-10V temperature sensor.
  Note: this setting is available only if sensor type "0-10V" is selected
  Factory setting: **100°C**
  Setting range: **+80 ... +200 °C**

– **Temp.Control**: Setting the type of temperature control.
  Factory setting: **Int.(P)**
  Options: **Int. (P)** (Internal P controller)
  Int. (PI) (Internal PI controller)

– **P-Band**: Setting the proportional range in °C for the internal P/PI controller.
  Note: This setting is available only if the internal P or PI controller is activated.
  Factory setting: **4°C**
  Setting range: **1...60°C**

– **Integr.-Time**: Setting the integral time in minutes for the internal PI controller.
  Note: This setting is available only if the internal PI controller is activated.
  Factory setting: **2 minutes**
  Setting range: **1...60 minutes**

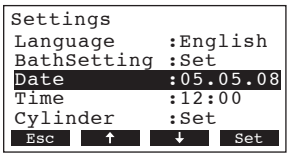
– **Max.Heating**: Setting the maximum heating time for the steam generator. As soon as the maximum heating time is reached, the steam production is interrupted and the drying phase begins (if the fan is activated). After the drying phase the light is switched off automatically.

Factory setting: **2 h**
Setting range: **1 ... 24 h**

– **Max.Door Open**: Setting the maximum time the door of the steam bath cabin can be open, before the steam production is interrupted.

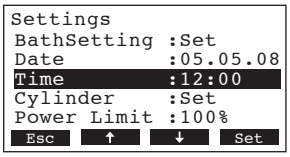
Factory setting: **2 min**
Setting range: **1 ... 30 min**

6.6.4.4 Setting the date



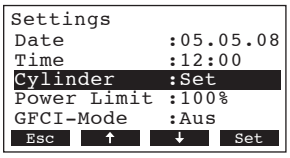
Select "**Date**" in the settings menu, then press the **<Set>** key. In the upcoming modification dialogue set the actual date (format: "dd.mm.yy").

6.6.4.5 Setting the time

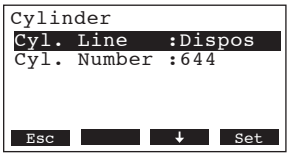


Select "**Time**" in the settings menu, then press the **<Set>** key. In the upcoming modification dialogue set the actual time (format: "hh.mm").

6.6.4.6 Cylinder settings



Select "**Cylinder**" in the settings menu, then press the **<Set>** key.



The cylinder settings appear. Press the **<↓>** and **<↑>** keys in order to select the individual settings and press the **<Set>** key to call up the modification dialogue for the selected setting.

Description of the cylinder settings

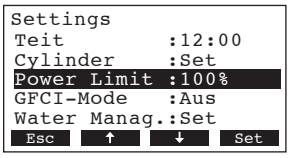
– **Cyl. Line**: Selecting the cylinder type.

Factory setting: **Dispos**
Options: **Dispos** (Disposable cylinder A..)
Clean (Cleanable cylinder D..)

– **Cyl. Number**: Selecting the cylinder number

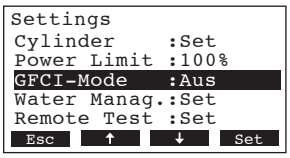
Factory setting: **according the installed cylinder**
Options: **342**, **343**, **363**, **444**, **464**, **654**, **644**, **664**, **674**

6.6.4.7 Setting the capacity limitation



Select "**Power Limit**" in the settings menu, then press the **<Set>** key. In the upcoming modification dialogue set the desired power limit in % of the maximum capacity.

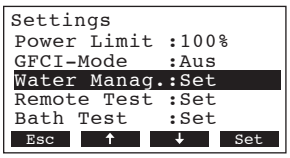
6.6.4.8 Activating/Deactivating fault current relay operation



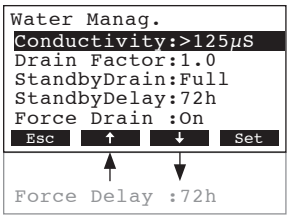
Select "**GFCI-Mode**" in the settings menu, then press the **<Set>** key. In the upcoming modification dialogue select whether or not the Condair CP3 D is connected to a fault current relay protected mains supply.

Factory setting: **Off**
Options: **On** (mains supply with fault current relay protection)
Off (mains supply without fault current relay protection)

6.6.4.9 Water management settings



Select "**Water Manag.**" in the settings menu, then press the **<Set>** key.



The water management settings menu appears.
Press the **<↓>** and **<↑>** keys in order to select the individual settings and press the **<Set>** key to call up the modification dialogue for the selected setting.

Description of the water management settings

– **`Conductivity`**: Selecting the conductivity range of the supply water.
Factory setting: **>125 µS/cm**
Options: **>125 µS/cm**, **<125 µS/cm**

– **`Drain Factor`**: Setting the drain factor
Factory setting: **1.0**
Setting range: **0.5...2.0**

– **`StandbyDrain`**: Selecting the type of draining which takes place after a certain time (see following setting) of **standby operation**.
Factory setting: **Full**
Options: **Full** (complete draining)
Partial (partial draining) **
Off (draining deactivated)

** The cylinder is drained so far that the water does not touch the electrodes any longer.

– **StandbyDelay**: Setting the period of time in standby operation after which an automatic cylinder draining takes place.

Factory setting: **72 hours**
Setting range: **1...720 hours**

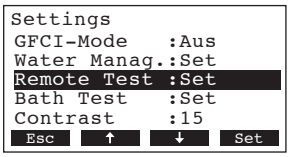
– **Force Drain**: Activating/Deactivating the forced draining which takes place after a certain time of operation. The forced draining takes place also during steam production.

Factory setting: **Off**
Options: **On** (Forced draining activated)
Off (Forced draining deactivated)

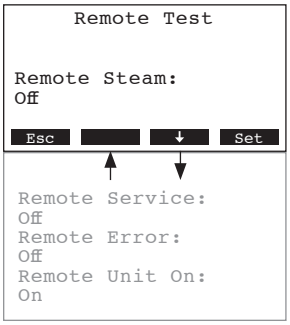
– **Force Delay**: Setting the time of operation after which a forced draining takes place.

Factory setting: **72 hours**
Setting range: **1...720 hours**

6.6.4.10 Performing remote relay tests

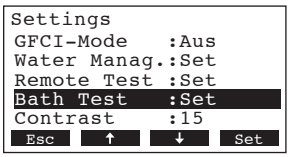


Select "**Remote Test**" in the settings menu, then press the **<Set>** key.

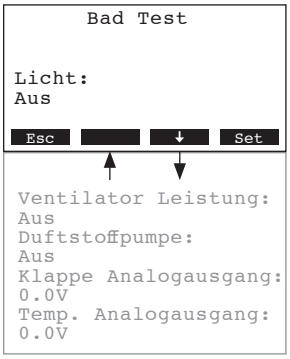


The list with the remote relay tests appears, the first relay test is shown.
Press the **<↓>** and **<↑>** keys in order to select the further relay tests available and press the **<Set>** key to activate/deactivate the corresponding relay for testing.

6.6.4.11 Performing steam bath tests

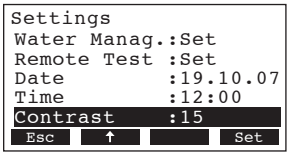


Select "**Bath Test**" in the settings menu, then press the **<Set>** key.



The list with the bath tests appears, the first bath test is shown.
Press the **<↓>** and **<↑>** keys in order to select the further bath tests available and press the **<Set>** key to activate/deactivate the function or to increase the corresponding parameter value for testing.

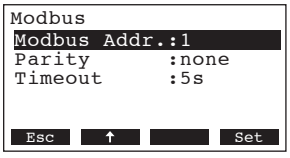
6.6.4.12 Setting the display contrast



Select "**Contrast**" in the settings menu, then press the **<Set>** key.
In the upcoming modification dialogue set the desired value for the display contrast.

Factory setting: **15**
Setting range: **0** (no display) **...100** (display turns black)

6.7 Modbus settings



Select the Modbus menu:
Path: ***Main menu > User > Password entry: 8808 > Modbus***

The settings for the Modbus appear.

Description of the Modbus settings

– **`Modbus Addr.`**: Setting the modbus address of the Condair CP3 D.
Factory setting: **1**
Setting range: **1...247**

– **`Parity`**: Selecting the parity bit for the data transmission
Factory setting: **None**
Options: **None**, **Odd**, **Even**

– **`Timeout`**: Setting the time out time for the data transmission.
Factory setting: **5 Seconds**
Setting range: **1...600 Seconds**

7 Maintenance

7.1 Important notes on maintenance

Qualification of personnel

All maintenance work must be carried out only by **well qualified and trained personnel authorised by the owner**. It is the owner's responsibility to verify proper qualification of the personnel.

General note

The instructions and details for maintenance work must be followed and upheld.

Only the maintenance work described in this documentation may be carried out.

Only use original Condair spare parts to replace faulty parts.

Safety

Some maintenance work requires removal of the unit cover. Please note the following:

⚠ **WARNING!**	**Danger of electrical shock! You may get in touch with live parts when the unit is open. Touching live parts may cause severe injury or even lethal violation.**

Prevention: **Before carrying out any maintenance work set the Condair CP3 D out of operation as described in chapter 6.3 (switch off the unit, disconnect it from the mains and stop the water supply) and secure the unit against inadvertent power-up.**

CAUTION!	The **electronic components** inside the unit are **very sensitive to electrostatic discharge.**

Prevention: Before carrying out any maintenance work to the electrical or electronic equipment of the steam generator, appropriate **measures must be taken to protect the respective components against damage caused by electrostatic discharge (ESD protection)**.

7.2 Maintenance list

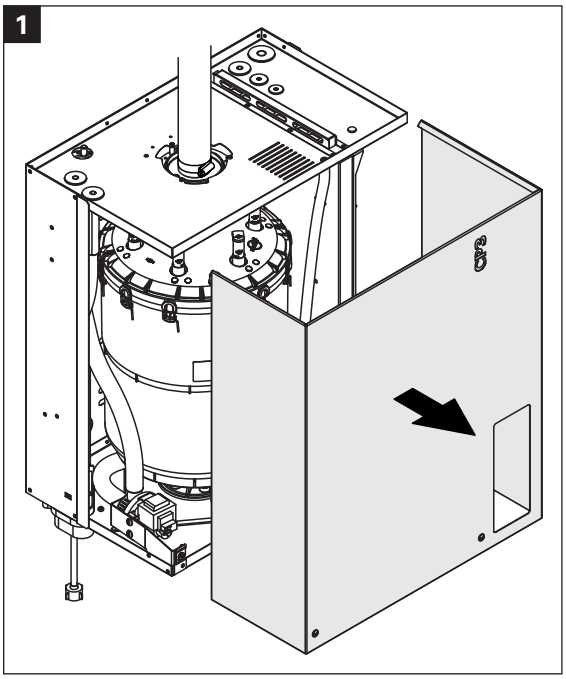
To maintain operational safety the Condair CP3 D steam generator must be maintained at regular intervals. This is differentiated between the f**irst maintenance after approx. 500 operating hours (I)**, **steam cylinder maintenance after the yellow LED lights (II)** and **annual maintenance (III)**.

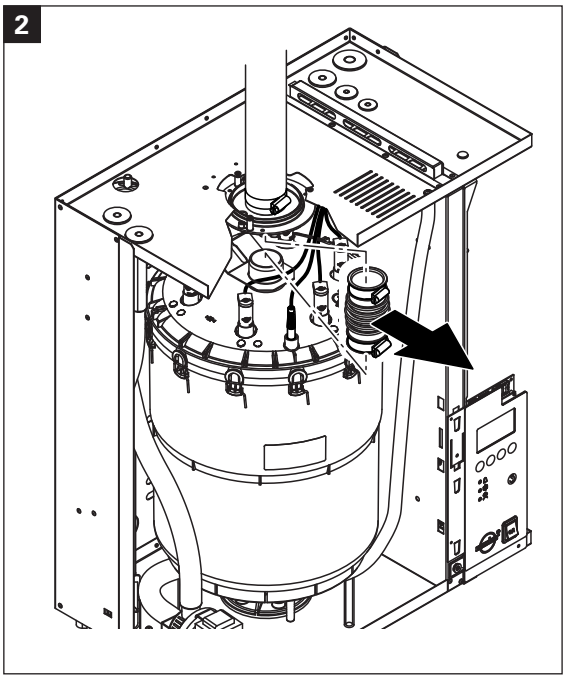
Below you will find a summary of the work to be carried out for each of the three maintenance stages.

Components	**Interval**			**Work to be done**
	I	**II**	**III**	
Cleanable steam cylinder Type D..	X	X	X	Clean steam cylinder and electrodes and check for damage, replace if necessary. Note: The steam cylinder must be replaced after a maximum operating time of 5,000 h.
Electrode plug	X	X	X	Check to see firmly positioned (remove cover and tighten fixing screw with hexagonal head socket wrench). Warning! This work should only be carried out by an electrician.
Replacement steam cyl. type A..		X		Remove and replace.
Drain pump			X	Remove, disassemble and clean, replace if necessary.
Steam cylinder receptacle			X	Inspect, clean if necessary.
Inlet valve			X	Remove and clean filter insert, replace if necessary.
Drain pipe and siphon			X	Inspect, clean if necessary (decalcify and rinse out).
Steam installation	X		X	Inspect steam and condensate hoses for cracks and to see that they are correctly attached, replace faulty hoses.
Water installation	X		X	Inspect water hoses in the unit for cracks and to see that they are correctly attached, replace faulty hoses Check supply pipe is tight, make tight if necessary. Clean water filter, if available.
Electrical installation	X		X	Check all cables in the unit are firmly positioned and examine status of insulation.

7.3 Removing and installing parts for maintenance

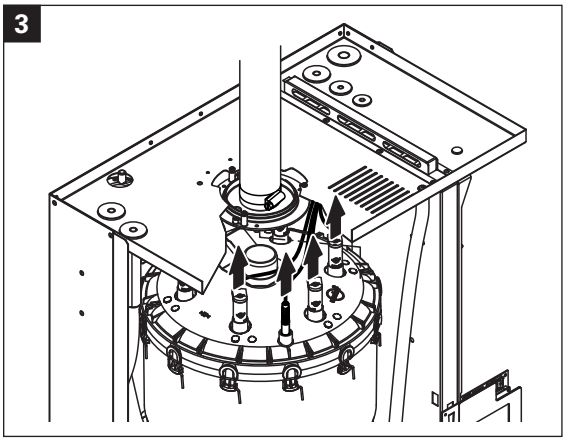
7.3.1 Removal and installation of the steam cylinder

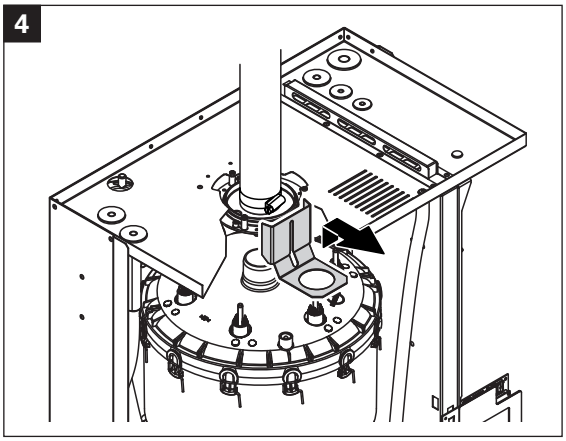




1. Use a screwdriver to undo the two screws fixing the front panel to the unit, then remove the front panel.
2. **Units with steam hose connector in housing top**: release the two hose clamps on the rubber sleeve using a screwdriver, then detach the rubber sleeve from the connection in the unit cover and from the steam outlet connection of the steam cylinder.

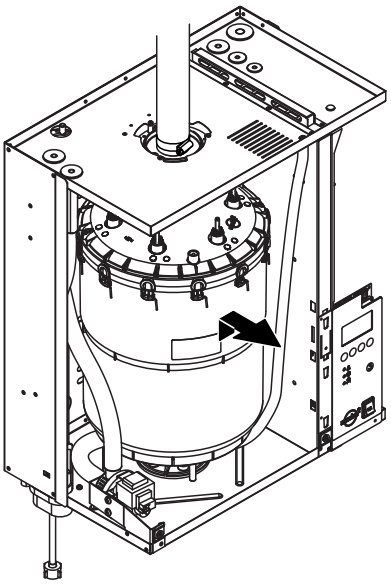
   Units without steam hose connector in housing top (not shown): release the hose clamp on the steam hose using a screwdriver, then detach the steam hose from the steam outlet connection of the steam cylinder.





3. Remove all plugs from the electrodes and from the level sensor.
4. Loosen the two screws of the steam cylinder fixing device by a few turns, then push the fixing device upwards until it comes loose and remove it.

5



5. Carefully lift steam cylinder away from the cylinder receptacle, then remove it to the front.

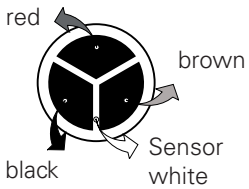
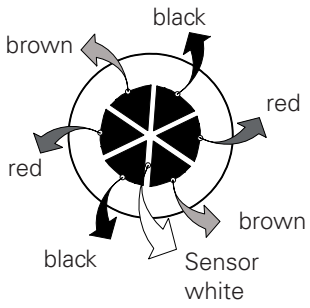
CAUTION!	Put steam cylinder down carefully to avoid damage to the lower connection piece!

Installation of the steam cylinder follows the reverse sequence. **Observe the following**:

– Before installing the steam cylinder in the unit, check the O-ring of the cylinder receptacle for damage and replace if necessary.

– Moisten the O-ring of the cylinder receptacle with water (do not use grease or oil), then insert steam cylinder into the receptacle and push it down to the stop.

– Attach the electrode plugs and the level sensor plug to the respective electrode and sensor connections according to the following table.

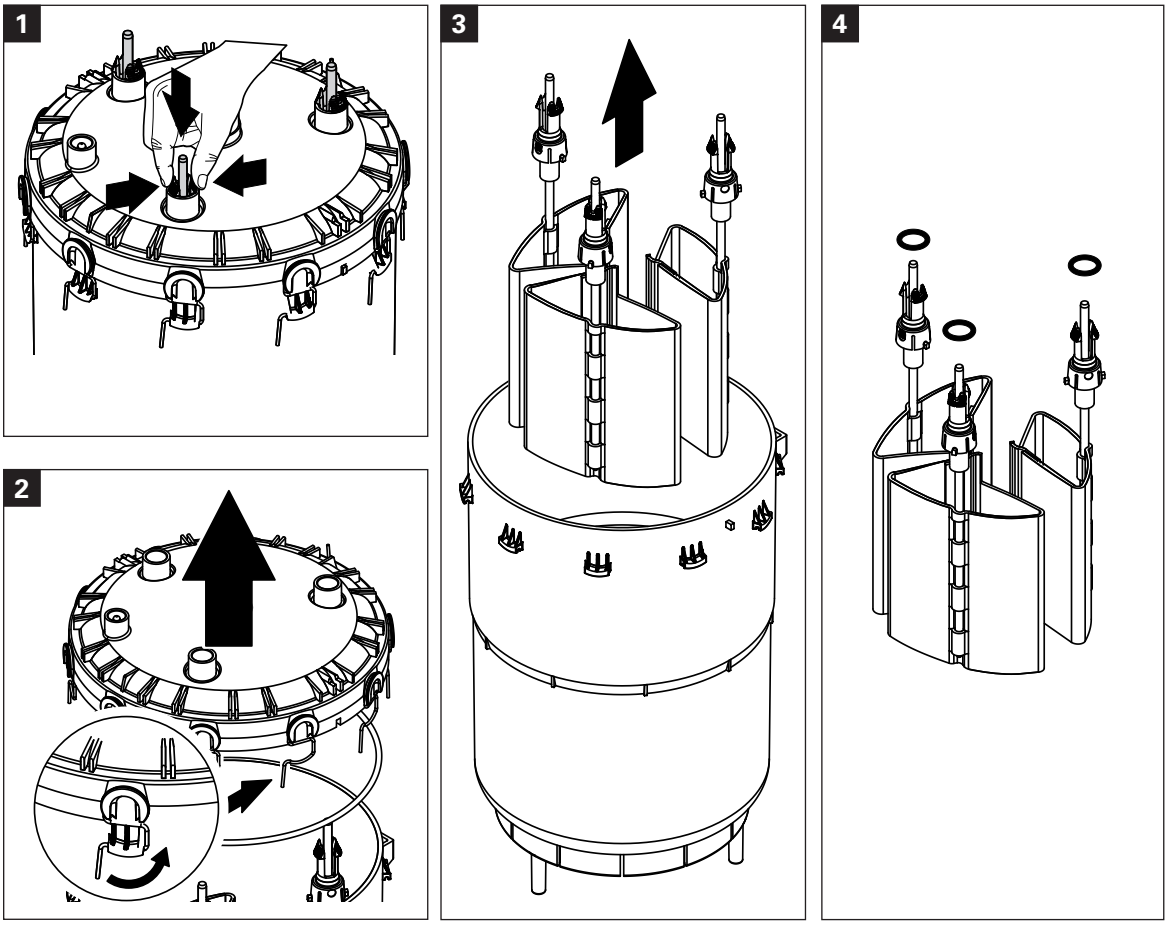
	Steam cylinder type	
	A363 / D363 A464 / D464	**A664 / D664 A674 / D674**
Cable configuration		

– Fasten steam hose on the connector in the unit cover and on steam connector of the cylinder with hose clamps.

CAUTION!	A leaky steam hose can cause damage due to moisture inside the unit.

CAUTION!	The outlet connector of the steam cylinder is made of plastic. **Do not overtighten** the hose clamp on the steam connector of the steam cylinder.

7.3.2 Disassembly and assembly of the cleanable steam cylinder type D...



1. Fasten electrode snap fastenings and push electrodes approx. 2 cm downwards into the steam cylinder.
2. Release clamp clips of the cylinder cover and raise cover.
3. Remove carefully electrodes by lifting upwards.
4. Remove O-rings from the electrodes.
   Note: Intact O-rings can be reused.

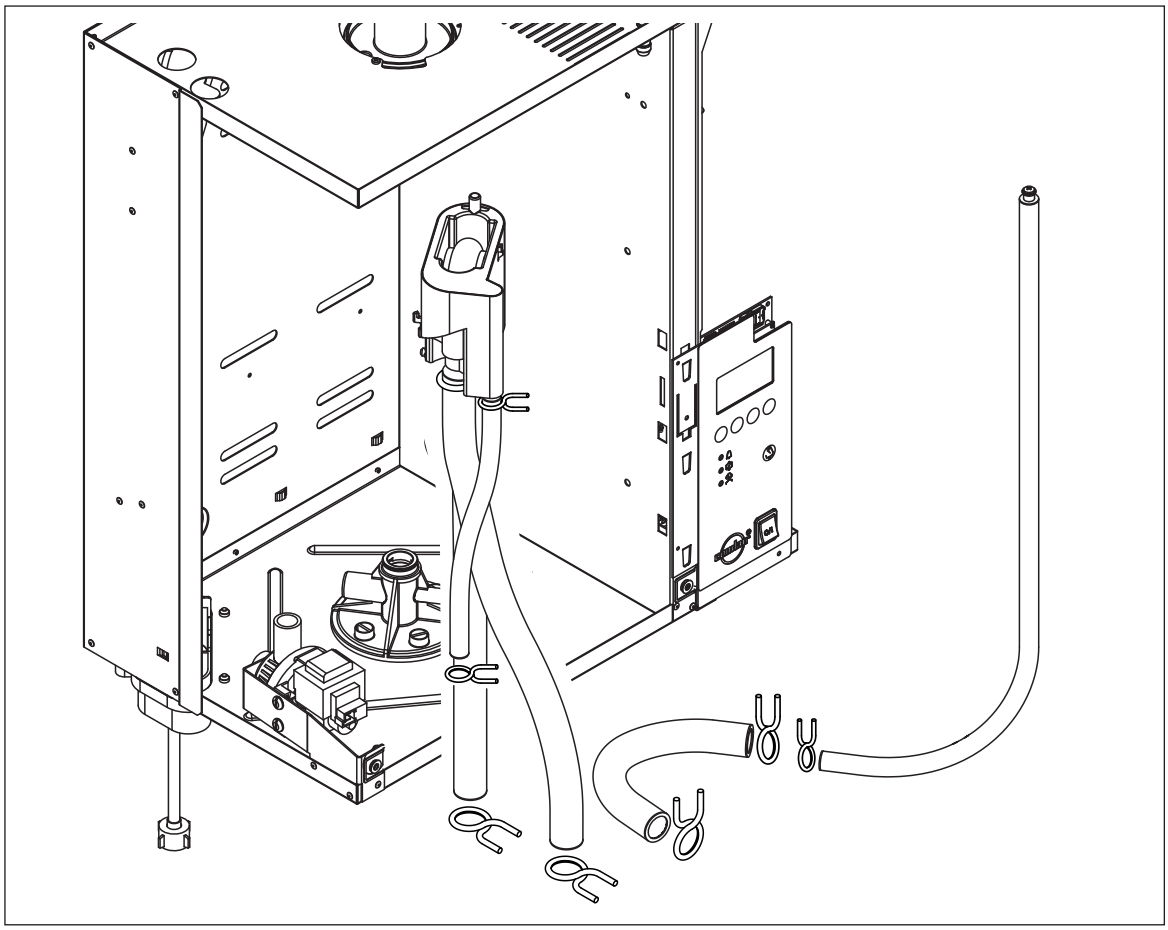
The **assembly** of the cleanable steam cylinder follows the reverse sequence. **Observe the following**:

– Before assembling the steam cylinder, check the O-ring in the steam cylinder cover and the O-rings on the electrodes for damage, and replace if necessary. Make sure to relocate O-rings correctly.

– Insert electrodes into steam cylinder cover and push them upwards until the snap fasteners engage.

– Place the cylinder cover (with mounted O-ring) in the correct position (align the two cams on the steam cylinder body with the corresponding grooves in the cylinder cover) on the cylinder body and secure cover with the fastening clips.

7.3.3 Removal and installation of the water cup and the water hoses

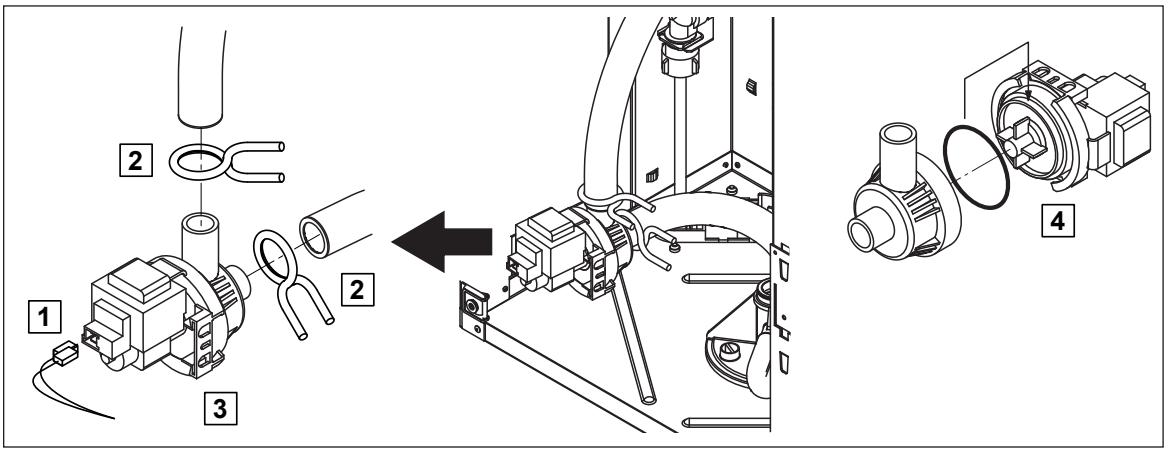


To improve accessibility for removing the water cup and the water hoses we recommend to remove the steam cylinder first (see chapter 7.3.1).

1. Release hose clamps using pliers, then disconnect all hoses from the corresponding connectors and remove the hoses.
   Note: The hoses connected to the water cup may also be removed together with the water cup (see illustration) and then disconnected from the connectors of the water cup outside the unit.
2. **Carefully** pull fixing clip of the water cup to the front, then push water cup down from the holding device and remove it to the front.

The **installation** of the water cup and the water hoses follows the reverse sequence. Before fixing the water hoses to the connector using the hose clamps, align the hoses in a way that they are not twisted.

7.3.4 Removal and installation of the drain pump

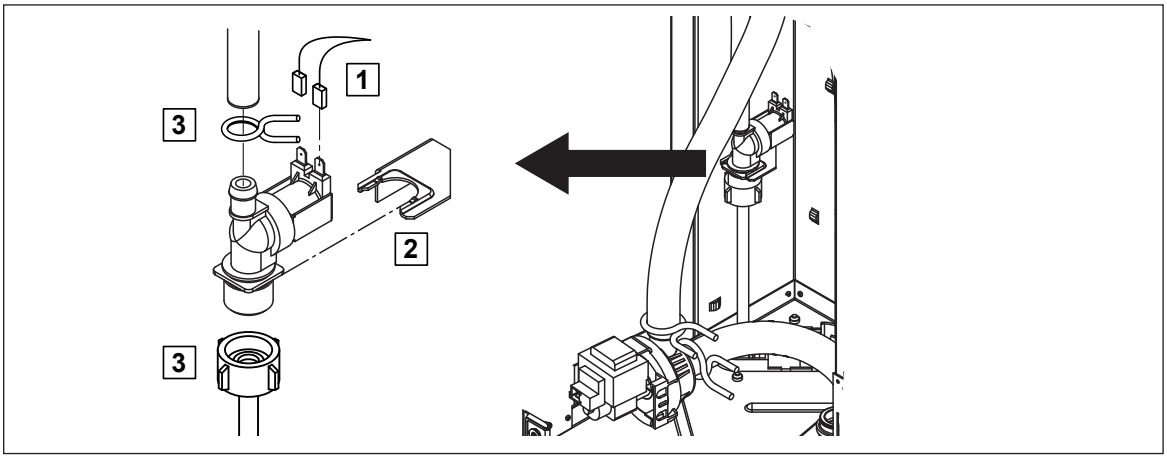


The steam cylinder does not need to be removed when removing the drain pump.

1. Detach electric cables (polarity of the cables must not be observed).
2. Release hose clamps and remove the hoses from the connectors.
3. Pull the drain pump off the holding device.
4. Separate the electric motor from the pump body: release the lock on the bayonet catch, then counter-rotate the electric motor and the pump body.

The **assembly** and the **installation** of the drain pump follows the reverse sequence. Before assembling the pump, check O-ring for damage and replace if necessary. Then, place the O-ring on the centering collar and moisten the O-ring with water.

7.3.5 Removal and installation of the inlet valve

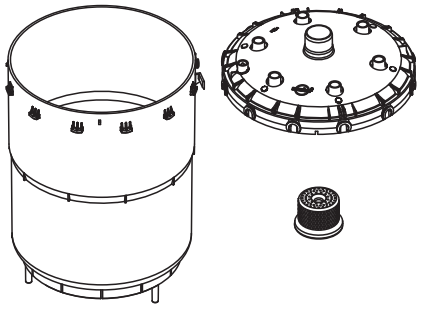
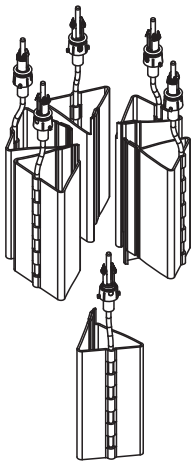
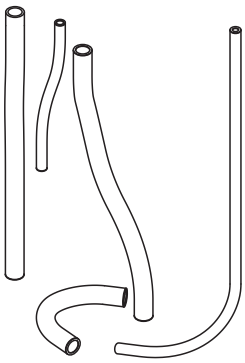
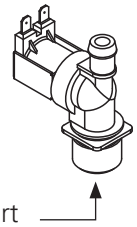


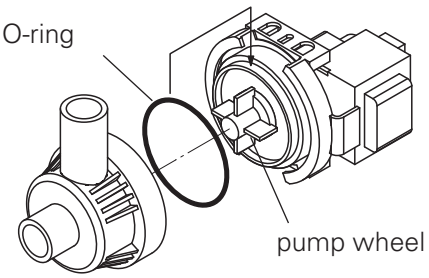
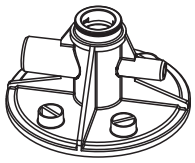
The steam cylinder does not need to be removed when removing the inlet valve.

1. Detach electric cables (polarity of the cables must not be observed).
2. Release hose clamp and remove the hose from the connector.
3. Unlock union nut of the water pipe and remove water pipe.
4. Pull the inlet valve off the holding device.

The **installation** of the inlet valve follows the reverse sequence. The union nut of the water pipe must be tightened by hand only.

7.4 Notes on cleaning the unit components

Unit component	What to clean and how to clean
Steam cylinder cover **Steam cylinder body** **Cylinder strainer** 	• Knock off or brush away any limescale as much as possible (do not use a wire brush). If the parts are heavily calcified, place them in an 8% formic acid solution (**observe safety notes in chapter 7.5**), until the limescale comes off. • Finally wash parts in a lukewarm soap solution and rinse well with tap water.
Heating electrodes 	• Immerse the heating electrodes (up to 2 cm below the snap fastening) in a container with 8-percent formic acid (**observe safety notes in chapter 7.5**). Allow the acid to take effect until the limescale has dissolved. Note: The heating elements do not have to be entirely free from scale. • Finally rinse the heating electrodes well with tap water and let them dry. **CAUTION!** On no account remove limescale from the heating electrodes using tools (screwdriver, scraper, etc.) or by striking. This could damage the heating elements.
Water hoses 	• Remove any limescale by slightly knocking on the tubes using a rubber hammer. Then, rinse the tubes well with hot tap water.
Inlet valve  Strainer insert	• Remove strainer insert with pointed pliers. Use a brush (do not use a wire brush) to remove any limescale. • Wash strainer insert with a lukewarm soap solution, then rinse well with tap water. **Let the inlet valve dry before reinstallation!**

Unit component	What to clean and how to clean
Drain pump 	• Use a brush to remove any limscale from the pump housing and the pump wheel (do not use a wire brush). • Then, wipe pump wheel with a damp cloth. Wash the pump housing with a lukewarm soap solution and rinse well with tap water.
Cylinder receptacle in the unit 	• Remove any limscale from the cylinder receptacle and its connectors using a brush (do not use a wire brush). • Wash the cylinder receptacle with a lukewarm soap solution and rinse well with tap water.
Water cup 	• Remove any limscale from the water cup and its connectors using a brush (do not use a wire brush). • Wash the water cup with a lukewarm soap solution and rinse well with tap water.
Interior of the unit (water side only)	Wipe the interior of the unit with a damp cloth without using any cleaning agent. **CAUTION!** Take care that the electrical connections and the electronic components remain dry.

7.5 Notes on cleaning agents

Only use cleaning agents stated in the table above. The use of disinfectants is only permitted if they do not leave any toxic residues. In any case the parts must be thoroughly rinsed with water after cleaning.

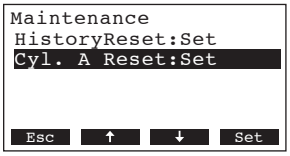
⚠ **WARNING!**	Formic acid is indeed harmless to the skin, but it attacks the mucous membranes. Therefore prevent your eyes and respiratory tracts from getting in touch with the acid and its vapours (wear goggles and work in a well ventilated room or outside).

CAUTION!	**Do not use any solvents, aromatized or halogenized hydrocarbons or other aggressive substances** as they may cause damage to the components of the unit.

It is mandatory to observe and comply with the information and instructions regarding cleaning agents. Observe in particular: all information relating to the protection of personnel, environmental protection and restrictions regarding usage.

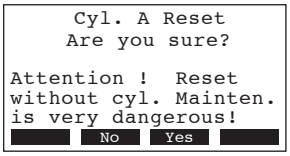
7.6 Resetting the maintenance indication

After completing maintenance work, the **maintenance indication** (yellow LED lights) must be reset as follows:



Select the maintenance menu:
Path: ***Main menu > User > Password entry: 8808 >***

Select "**Cyl. A Reset**" in the maintenance menu, then press the **<Set>** key.



The reset dialogue shows up in the display. Press the **<Yes>** key to reset the **maintenance counter**.
Note: Press the **<No>** key if you wish to abort the reset procedure.

To return to the standard operating display press the **<Esc>** key several times.

8 Malfunctions

Important! Most operational malfunctions are not caused by faulty equipment but rather by improper installation or disregarding of planning guidelines. Therefore, a complete fault diagnosis always involves a thorough examination of the entire system. Often, the steam hose connection has not been properly executed, or the fault lies with the humidity control system.

8.1 Malfunction list

8.1.1 System faults

Warning		Error		Cause	Remedy
LED	Display	LED	Display		
CP3 Card missing (Test run possible)		**CP3 Card missing**			
—	Warning W1: CP3 D-Card Missing	red lights	Error E1: CP-Card Missing	No CP3 Card installed on the control board.	Install CP3 Card or start test run.
		CP3 Card is empty			
—	—	red lights	Error E2: CP-Card Empty	No data stored on the CP3 Card.	Install new CP3 Card.
		CP3 Card is defective			
—	—	red lights	Error E3: CP-Card Invalid	Invalid data stored on the CP3 Card.	Install new CP3 Card.
		CP3 Card is incompatible			
—	—	red lights	Error E4: CP-Card incompat	The installed CP3 Card is not compatible with the hardware of the unit or with the basic settings of the control electronics.	Install correct CP3 Card. Let your Condair service technician adjust the basic settings.
		Wrong hardware settings			
—	—	red lights	Error E9: Illegal Settings	False test run parameters.	Let your Condair service technician adjust the test run parameters (heating voltage, Cylinder-No.).
		Hardware fault			
—	—	red lights	Error E10: Flash R/W Fault	Control board defective.	Replace control board.
—	—		Error E11: Clock R/W Fault	Backup battery on control board discharged.	Let have the backup battery be replaced.
		Maximum heating time reached			
—	—	red lights	Error E13: Max.Heating	Maximum heating time is reached. Steam generator was not switched off (manually or by the timer).	Switch off steam generator when leaving the steam bath cabin (with manual operation only). Check timer settings (set heating time must be shorter than the set maximum heating time). Increase maximum heating time.
		Door of steam bath cabin open			
—	—	red lights	Error E14: Door Open	Door of steam bath cabin has been open too long, door switch has triggered.	Close door of steam bath cabin. Check door switch, replace if necessary.
				No cable bridge installed (in case that no door switch is connected).	Install cable bridge (see wiring diagram).

8.1.2 Unit faults

Warning		Error		Cause	Remedy
LED	Display	LED	Display		
Maximum temperature switch has triggered		**Maximum temperature switch has triggered**			
red and green flash	Warning W20A: Temp.Fuse	red lights	Error E20A: Temp.Fuse	Maximum temperature switch has triggered	Check temperature in the steam bath cabin.
				Maximum temperature switch defective or not connected.	Check maximum temperature switch, replace if necessary or correctly connect maximum temperature switch.
Max. filling level of steam cylinder reached		**Max. filling level of steam cylinder reached but no heating current**			
—	Warning W21A: Cyl.Max.Level	red lights	Error E21A: Cyl.Max.&NoCurr	Water conductivity too low (after initial operation).	Wait until the mineral content of the cylinder has increased
				Water conductivity too low for type of steam cylinder.	Select correct steam cylinder type.
				Phase failure heating voltage.	Check service switch in the mains supply line and switch on if applicable. Check mains fuse(s) and replace if applicable.
Permissible filling time exceeded (20 minutes)		**Permissible filling time exceeded (more than 4 hours)**			
—	Warning W22A: Max. Filltime	red lights	Error E22A: Max. Filltime	Water supply obstructed/shut-off valve closed/water pressure too low.	Inspect water supply (filter, water piping, etc.), check/open shut-off valve, check water pressure.
				Inlet valve blocked or defective.	Inspect strainer insert in the inlet valve, if applicable clean strainer insert or replace inlet valve.
				Excessive back pressure in the steam line (steam line too long or kinked), causing water loss via filling cup.	Inspect steam installation.
				Leakage in the water system.	Inspect water system and seal if necessary.
No electrode current for more than 20 minutes		**No electrode current for more than 4 hours**			
—	Warning W23A: No Current	red lights	Error E23A: No Current	Phase failure heating voltage.	Inspect/turn on service switch of the mains supply line. Inspect the fuses of the mains supply, replace if necessary.
				Water supply obstructed/shut-off valve closed/water pressure too low.	Inspect water supply (filter, water piping, etc.), check/open shut-off valve, check water pressure.
				Inlet valve blocked or defective.	Inspect strainer insert of the inlet valve, if applicable clean strainer insert or replace inlet valve.
				Excessive back pressure in the steam line (steam line too long or kinked), causing water loss via filling cup.	Inspect steam installation.
				Leakage in the water system.	Inspect water system and seal if necessary.
Electrode current in relation to the steam demand too high		**Electrode current in relation to the steam demand too high**			
—	Warning W24A: Over Current	red lights	Error E24A: Over Current	Humidity demand has decreased too fast.	Automatic adaptation of the operating point.
				Drain pump defective.	Inspect drain pump, replace if necessary.
				Drain in steam cylinder blocked.	Clean/replace steam cylinder.
				Water conductivity too high for this type of steam cylinder.	Select correct steam cylinder type.

Warning		Error		Cause	Remedy
LED	**Display**	**LED**	**Display**		
Max. admissible electrode current exceeded		**Max. admissible electrode current exceeded**			
—	Warning W25A: Excess Current	red lights	Error E25A: Excess Current	Drain pump defective.	Inspect drain pump, replace if necessary.
				Drain in steam cylinder blocked.	Clean/replace steam cylinder.
				Water conductivity too high for this type of steam cylinder.	Select correct steam cylinder type.
		Main contactor jammed			
—	—	red lights	Error E26A: Req.Off Current	Main contactor jammed in activated position.	Inspect main contactor, replace if necessary.
Foam detection		**Foam detection (4 automatic drainings within 24 hours)**			
—	Warning W27A: Foam	red lights	Error E27A: Foam	Foaming in steam cylinder.	Drain steam cylinder via drain key (several times, if necessary). Check quality of the supply water.
Steam cylinder needs service		**Service interval for steam cylinder exceeded**			
yellow lights	Warning W28A: Cyl. Maintenance	red and yellow flash	Error E28A: Cyl. Maintenance	Mineral deposits and/or electrodes spent.	Steam cylinder Type A: replace Steam cylinder Type D: clean Important: After replacement or cleaning of the steam cylinder, reset the maintenance counter (see chapter 7.6).
Steam cylinder needs service		**Max. operating hours of the steam cylinder reached**			
yellow lights	Warning W29A: Cyl. Maintenance	red and yellow flash	Error E29A: Cyl. Maintenance	Maximum operating hours of the steam cylinder reached.	Steam cylinder Type A: replace Steam cylinder Type D: clean Important: After replacement or cleaning of the steam cylinder, reset the maintenance counter (see chapter 7.6).
Temperature sensor signal missing		**Temperature sensor signal missing for more than 1 minute**			
—	Warning W32A: Temp.Sensor def.	red lights	Fehler E32A: Temp.Sensor def.	No temperature signal present at signal input.	Check temperature sensor, replace if necessary. Inspect wiring.
Unit locked via Modbus					
—	Warning W34A: Modbus disable	—		Module A (B) locked because the corresponding Modbus register is deactivated.	Activate the corresponding Modbus register.
		Modbus Timeout (5 s)			
—	—	red lights	Error E35A: Modbus Timeout	No actual demand or humidity signal received via Modbus.	Send actual demand or humidity signal.
Standby draining of steam cylinder active					
—	Warning W36A: Standby Drain	—	—	Automatic standby draining of steam cylinder active.	No measures must be taken.
Forced draining of steam cylinder active					
—	Warning E37A: Forced Drain	—	—	Forced draining of steam cylinder active.	No measures must be taken.

8.2 Notes on fault elimination

⚠ **WARNING!**	For the elimination of faults **set the steam generator out of operation** as described in chapter 6.3, **separate the unit from the mains** and **secure it against inadvertent power-up**.

The elimination of faults must be carried out by qualified and well trained professionals only. Malfunctions relating to the electrical installation (e.g. replacement of fuses) must be repaired by authorized personnel or by your Condair representative's service technician only.

Repair work and the replacement of faulty components must be carried out by your Condair representative's service technician only!

8.3 Resetting the error indication (red LED lights)

To reset the error indication:

Disconnect the steam generator from the mains. Wait approx. 5 seconds, then reconnect the unit to the mains.

Note: If the fault has not been eliminated, the error indication reappears after a short while.

9 Taking out of service/Disposal

9.1 Taking out of service

If the Condair CP3 D must be replaced or if the humidification system is not needed any more, proceed as follows:

1. Take the unit out of operation as described in chapter 6.3.
2. Have the unit (and all other system components, if necessary) unmounted by a qualified service technician.

9.2 Disposal/Recycling

Dismantled components must be disposed of and/or recycled according to the local regulations. In case of doubt please contact your Condair supplier.

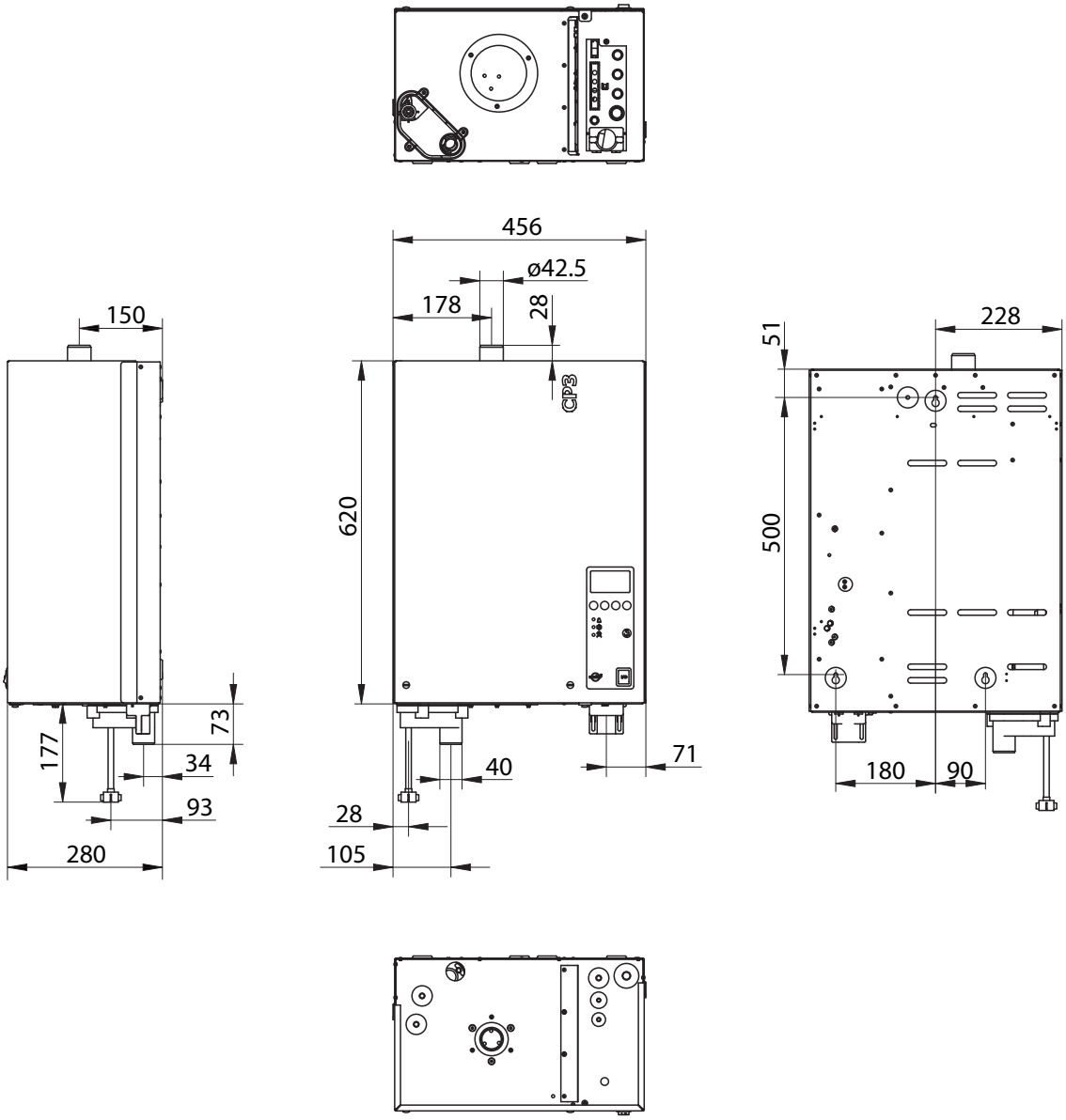
10 Product specifications

10.1 Technical data

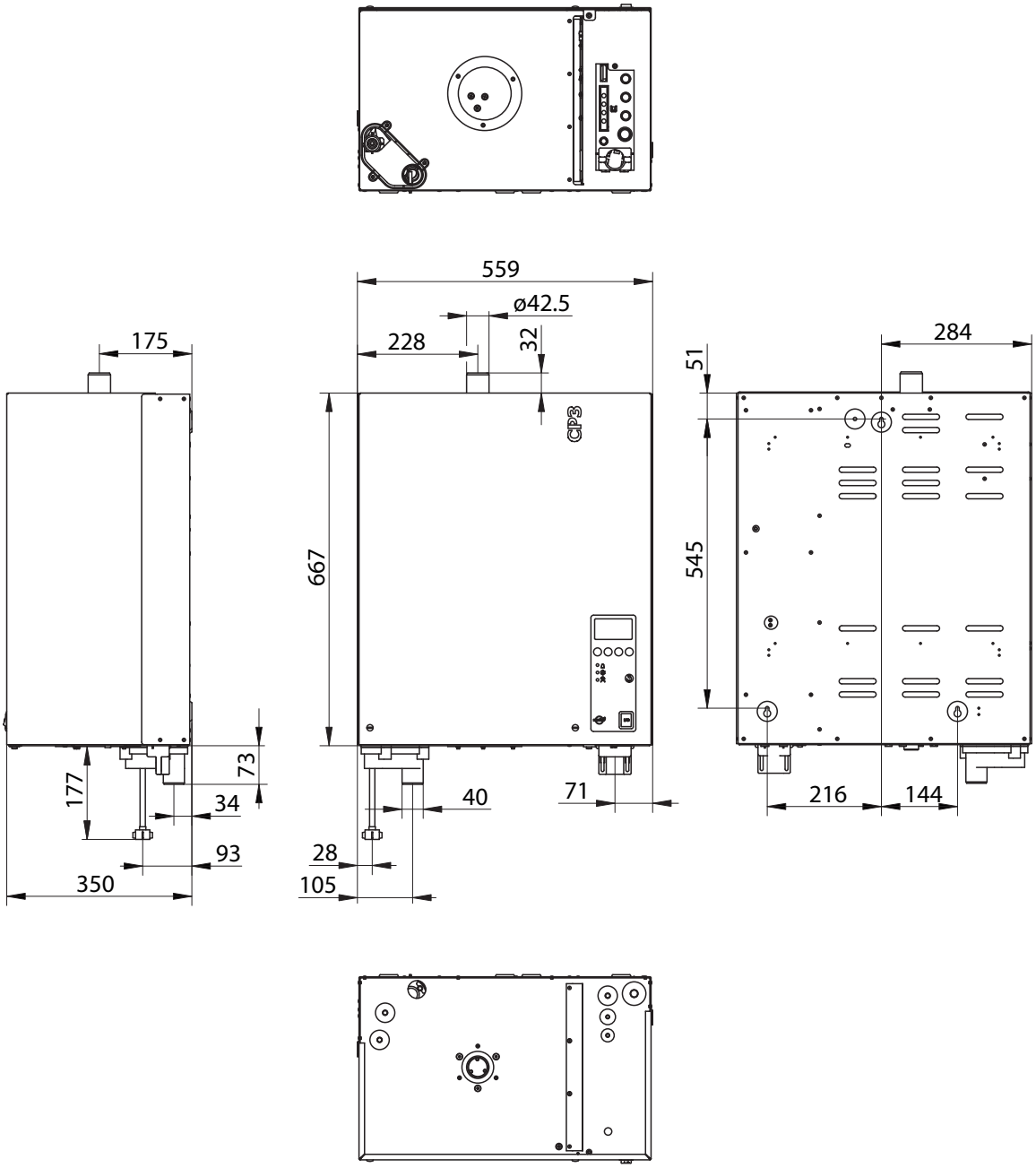
Heating voltage 230V/1~/50..60Hz					
Unit model: CP3 D...230V1		**5...8**			
Steam capacity in kg/h:		5...8			
Max. power consumption in kW		3.8...6.0			
Heating voltage 230V/3~/50..60Hz					
Unit model: CP3 D...230V3		**5...8**	**9...15**	**16...21**	**22...30**
Steam capacity in kg/h:		5...8	9...15	16...21	22...30
Max. power consumption in kW		3.8...6.0	6.8...11.3	12.0...15.8	16.5...22.5
Heating voltage 400V/3~/50..60Hz					
Unit model: CP3 D...400V3		**5...8**	**9...15**	**16...25**	**26...45**
Steam capacity in kg/h:		5...8	9...15	16...25	26...45
Max. power consumption in kW		3.8...6.0	6.8...11.3	12.0...18.8	19.5...33.8
Control voltage		1 x 230V / 50-60 Hz			
Operating conditions					
Admissible water pressure		1...10 bar			
Water quality		Untreated drinking water with a conductivity of 125...1250 uS/cm			
Admissible water temperature		1...40 °C			
Admissible ambient temperature		1...40 °C			
Admissible ambient humidity		max. 75% rh			
Type of protection		IP 20			
Conformity		CE, VDE, GOST			
Dimensions/Weights					
Housing (WxHxD) in mm	456x620x280	1	1		
	559x667x350			1	1
Net weight in kg		21	21	28	28
Operating weight in kg		26	32	32	65
Equipment/options					
Steam cylinder type (Type A.. standard equipment)	A3.../D3...	1			
	A4.../D4...		1		
	A6.../D6...			1	1
Steam hose connector	SC22	1			
	SC60		1		
	SC80			1	1
Cable gland	PG	1	1	1	1
Remote operating and fault indication	RFI	1	1	1	1
Terminals heating voltage	M-THV	1	1		
	L-THV			1	1
Mounting profile	MP	1	1	1	1
Internal control voltage with terminals	M-CVI	1	1		
	L-CVI			1	1
Transformer 400V/230V	M-Trafo	1	1		
	L-Trafo			1	1
Accessories					
Steam distribution pipe	W22	1			
	W30		1		
	W45			1	1
Steam hose / meter	DS22	1			
	DS60		1		
	DS80			1	1
Condensate hose / meter	KS10	1	1	1	1

10.2 Unit dimensions

Condair CP3 D 5...15 (dimensions in mm)



Condair CP3 D 16...45 (Dimensions in mm)



CONSULTING, SALES AND SERVICE:

Solutions for Indoor Climate

Reg.No. 40002-2

Manufacturer:
Walter Meier (Climate International) Ltd.
Talstr. 35-37, P.O. Box, CH-8808 Pfäffikon (Switzerland)
Phone +41 55 416 61 11, Fax +41 55 416 62 62
www.waltermeier.com, international.climate@waltermeier.com