memmert

Experts in Thermostatics

HPP

IPP

SERVICE MANUAL

IPP 200-500
Cooled incubator with Peltier technology

HPP 108
Constant Climate Chamber with humidification

Contents

1. About this guide

1.1 Purpose and target group

This guide describes the service and repair work available for cooling incubators of types IPP 200–500 and constant climate chambers of type HPP 108. It is intended exclusively for use by electrical technicians who are familiar with safety regulations for electrical engineering.

1.2 Related documents

Apart from this service guide, the information and regulations in the user manual for the respective appliance must also be observed for all service and repair work.

Please refer to the circuit diagrams at the end of this guide for all work on the electrical system.

1.3 Tools needed

The following tools and equipment are required to perform the work described in this guide:

► Torx screwdriver sizes 8 and 10
► Phillips screwdriver size 1
► Wire-cutting pliers
► Flat pliers to remove the connection cable
► Allen key 2 mm for door hinge,
  1.5 mm for humidity sensor (for HPP 108)
► Multimeter with voltage and resistance measuring range
► Cable ties
► Adhesive tape to label cables and components

1.4 Manufacturer address and customer service

MEMMERT GmbH + Co. KG
Postfach 17 20
91107 Schwabach, Germany

Äußere Rittersbacherstr. 38
91126 Schwabach
Germany

Phone: +49 (0) 09122 / 925-0
Fax: +49 (0) 09122 / 14585
E-mail: sales@memmert.com
Internet: www.memmert.com

Customer Service:
Phone: +49 (0) 09122/925-128
and: +49 (0) 09122/925-126
E-mail: service@memmert.com

For service enquiries, please always specify the appliance number on the nameplate.

© 2008 Memmert GmbH + Co. KG

Date 10/2008

We reserve the right to make changes

2. Safety regulations

Danger!
After removing covers, voltage-carrying parts may be exposed if the mains plug has not been disconnected. Any work that involves opening the appliance may only be performed by trained electricians who are familiar with the safety regulations for electrical engineering.

Caution!
When dismantling the appliance you could be injured on sharp (unprocessed) metal edges. You should wear gloves.

Please also observe the safety regulations in the operating instructions for the respective appliance.

After all maintenance or repair work, the appliance must be subject to a function test. The appliance must not be left unattended until it has reached the steady state.

If the fault or malfunction cannot be rectified by the repair work: Contact the manufacturer.

3. Finding Errors and Error Messages

Error description	Cause of error	Rectifying errors	Page
General faults			
Controller display does not light up	Fuse 100 mA (200 mA/115 V) faulty	Check fuse, replace if necessary	14
	Appliance fuse 15 A faulty	Check fuse, replace if necessary	14
	Mainboard faulty	Replace mainboard	13
Temperature cannot be adjusted and appliance can in general not be operated with the push/turn control	Appliance "locked" by UserID card	Undo lock with UserID card	
	Push/turn control faulty	Replace main switch module with push/turn control	16
Cooling fan on rear wall does not turn	- cooling fan faulty - switched mode power supply faulty	- replace cooling fan - replace switched mode power supply	21 15
Cooling fan in interior does not turn	- cooling fan faulty - switched mode power supply faulty	- replace cooling fan - replace switched mode power supply	19 15
Malfunctions in the heating and cooling function			
Red LED on the mainboard does not light up	- switched mode power supply faulty - contact element MOSFET faulty	replace switched mode power supply	15
When changing from heating to cooling, the red LED on the mainboard does not go out	- switched mode power supply faulty - contact element MOSFET faulty	replace switched mode power supply	15
When switching from heating to cooling, the relay does not switch over	Relay faulty	Replace mainboard	13
Green LED on the mainboard does not light up	- switched mode power supply faulty - contact element MOSFET faulty	replace switched mode power supply	15
Error messages in monitoring display			
Caution – icon ⚠ is flashing	Monitoring controller has switched off heater, since temperature difference between operating and monitoring controller is too small	Increase temperature difference between monitoring temperature and working temperature. Replace Pt100 temperature sensor of monitoring controller if necessary	18

![memmert logo]

| Error description	Cause of error	Rectifying errors	Page
Error message "E-3" alternates with display of temperature	Pt100 temperature sensor of monitoring controller faulty. Monitoring controller is working in emergency mode with the temperature value of the Pt100 temperature sensor from the operating controller	Replace Pt100 temperature sensor of the monitoring controller on plug J3	18
Error messages in timer display			
Error message "E-0"	Serious configuration error (e.g. incorrect cabinet type or wrong temperature range)	Replace controller	17
Error message "CONF" (is displayed for only 10 sec. after switching on)	Checksum error (error when saving set values, e.g. air turbine speed)	The error can be rectified by the controller after a set value parameter has been saved again. If the error should continue occurring, or cannot be rectified, replace the controller	17
Error message "E-L1" in the timer display	Communication with the mainboard interrupted	Check connection cable, replace mainboard if necessary	13
Error messages in temperature display			
Error message "E-3" alternates with display of monitor	Pt100 temperature sensor of operating controller faulty. Operating controller is working in emergency mode with the temperature value of the Pt100 temperature sensor from the monitoring controller	Replace Pt100 temperature sensor of the operating controller on plug J4	18
Error message "E-1"	Mainboard actuator Triac faulty	Replace mainboard	13
Error message "E-2"	Mainboard faulty	Replace mainboard	13
Malfunctions of the humidifier and/or dehumidifier (only for the constant climate chambers HPP 108)			
Neither humidification nor dehumidification are working properly			33
Dehumidification works, humidification doesn't work			33
Humidification works, dehumidification doesn't work			36

4. Overview

4.1 Construction
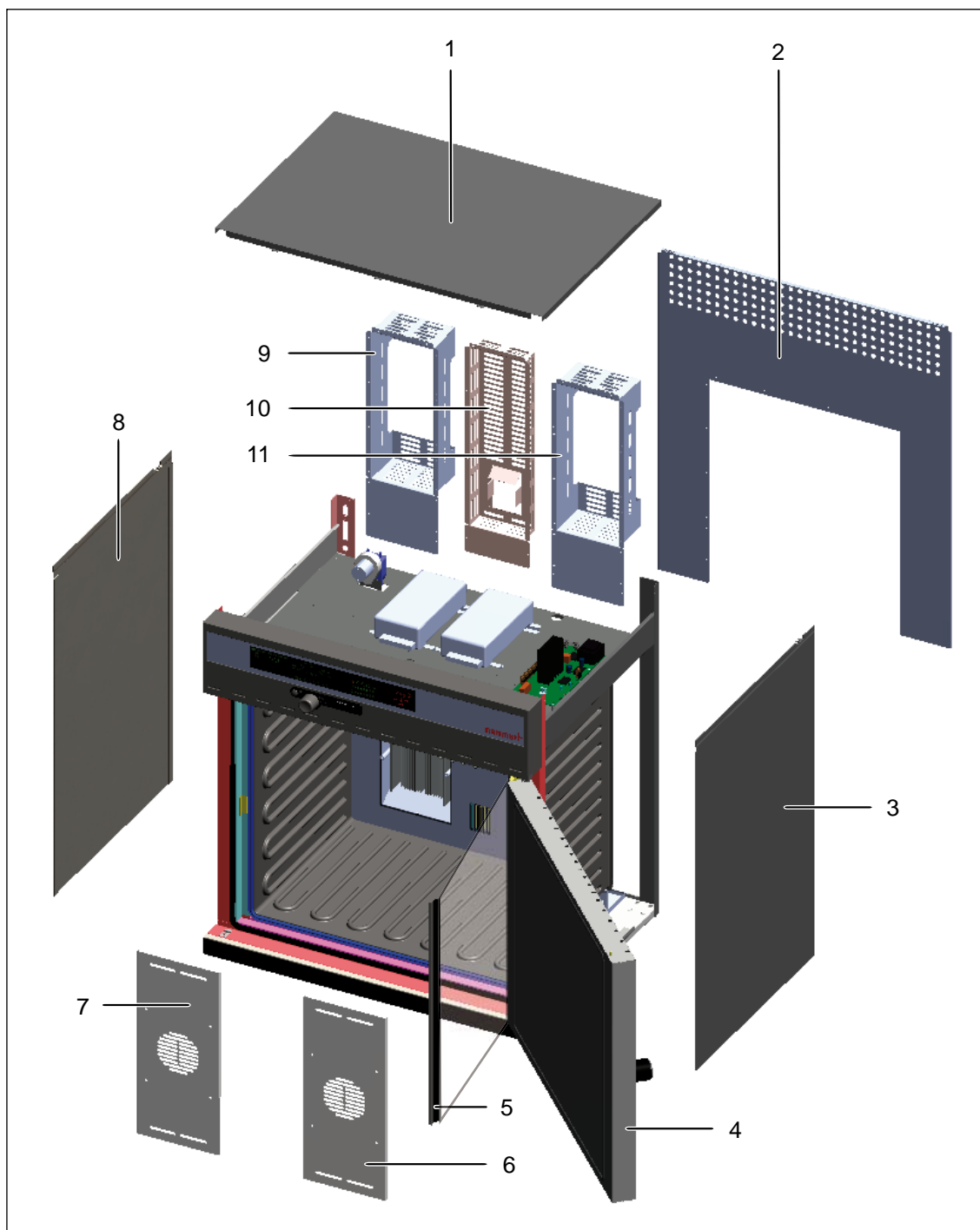
Fig. 1: Construction (shown in figure: Maximum fittings for HPP 108; the actual fittings may vary, depending on the appliance type)

Item	Designation	see also page
1	Top panel	11
2	Rear panel	12
3	Right-side panel	11
4	Door	26
5	Inner glass door	25
6	Fan cover, right[1]	19
7	Fan cover, left[1]	19
8	Left-side panel	11
9	Cover of left Peltier heating/cooling module[1]	21
10	Cover of dehumidification Peltier module[2]	37
11	Cover of right-hand Peltier heating/cooling module[1]	21

[1] only for types IPP 500 and HPP 108; types IPP 200-400 have just one interior fan and one Peltier heating/cooling module on the rear side

[2] only for constant climate chambers HPP 108

4.2 Control unit

(see also circuit diagrams from page 42).

The control unit can be reached after the top panel has been removed (see page 11).
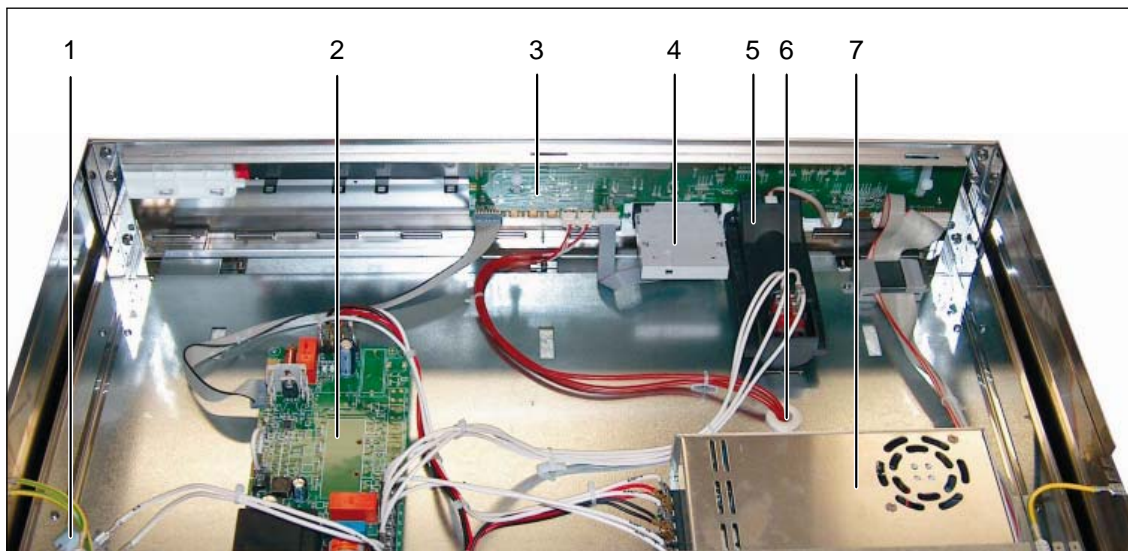
Fig. 2: Control unit IPP 200/300/400
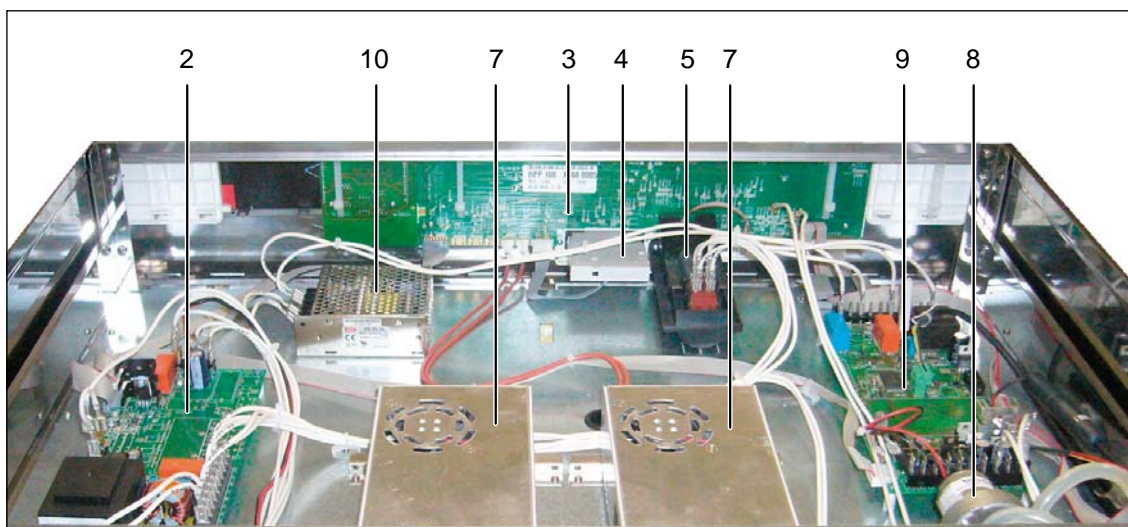
Fig. 3: Control unit IPP 500/HPP 108

1   Main connection terminal
2   Mainboard (see page 13)
3   Controller (see page 17)
4   Chipcard reader
5   Main switch (see page 16)
6   Feed-through for temperature sensor Pt100 (see page 18)
7   Switched mode power supply(ies) (see page 15)

Only for HPP 108:
8   Pump for humidification (see page 36)
9   Control module for humidification (page 39)
10 Power supply unit for humidification (page 38)

5. Removing covers

For some service work it is necessary to remove case panels (top, side, rear panels). How these panels are removed is described below. What panel(s) need(s) to be removed for the respective service work is described in the relevant chapter.

5.1 Removing top panel

Danger!
After removing the top panel, voltage-carrying parts in the control unit may be exposed if the mains plug has not been disconnected. Do not reach inside the control unit. If you want to examine or replace the components inside, disconnect the mains plug first.

1. Undo the 4 screws to the left and right on the rear side of the appliance holding down the top panel (1).
2. Slightly raise the panel and pull it out backwards (2).
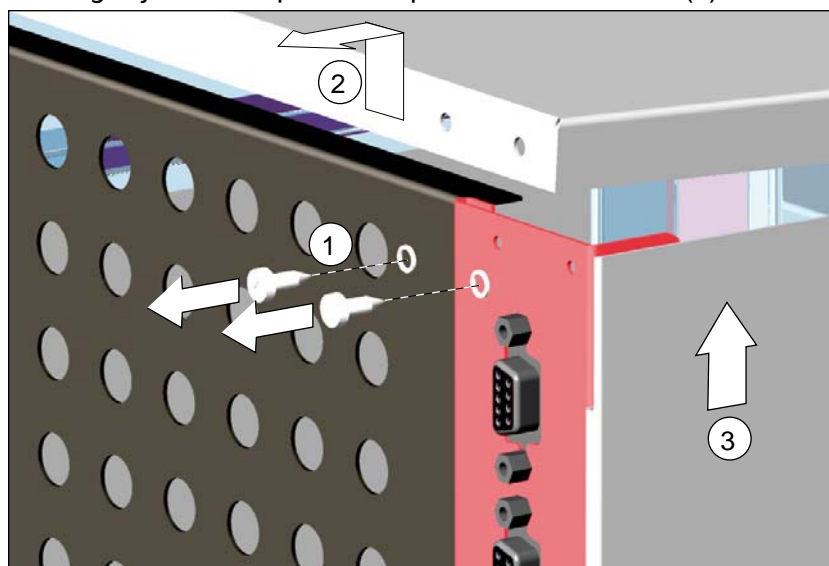
Fig. 4: Removing the top and side panels

Removing the side panels

You can now also remove the left and/or right side panel. They are not screwed down, and can simply be pulled out by pulling upwards (3). Make sure when doing this that they do not jam, and disconnect the PE conductor connection.

Put the covers back on

Insert side panels carefully from above into the guide rails and push downwards until they slot into place. Make sure that the side panels do not jam when doing this. Reconnect the PE conductor.

Put on the top panel and push forwards into the support. Insert the screws with retaining washers into the openings in the rear panel and screw down the top panel (1).

The retaining washers are necessary to create a safe PE conductor connection with the top panel.

5.2 Removing the rear panel

1. Disconnect the mains plug.

2. Remove the top panel (see page 11).

3. Unscrew the cover grid of the Peltier module (IPP 200–400) or of the two Peltier modules (IPP 500/HPP 108) on the rear side (1).
   In addition for the constant climate chamber HPP 108: Unscrew the cover grid of the dehumidification Peltier module and of the steam generator in the centre (2).

4. Pull rear panel upwards out of the appliance (3). Make sure that the rear panel does not jam when doing this.
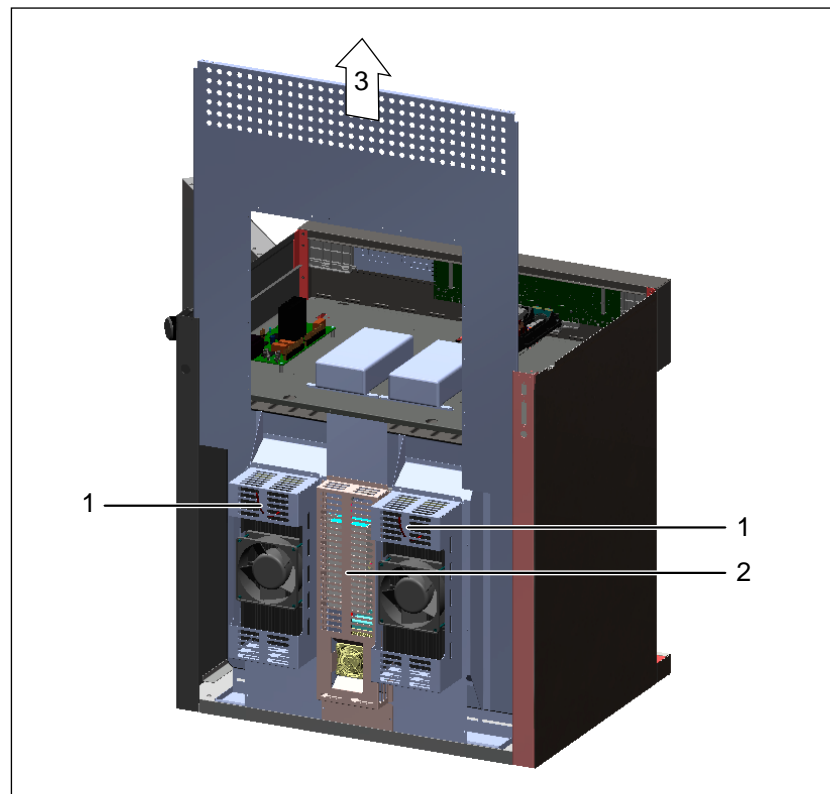
Fig. 5: Removing the rear panel

1   Unscrew the cover grid of the Peltier module/s
2   Unscrew the cover grid of the dehumidification Peltier module and of the steam generator (only for the HPP 108).
3   Pull out the rear panel of the casing upwards

Put the rear panel back on

1. Insert the rear panel carefully from above into the guide rails and push downwards until it slots into place. Make sure that the rear panel does not bend when doing this.

2. Screw on the grid covers of the Peltier modules on the right and left (1).
   In addition for the constant climate chambers HPP 108:
   Screw on the cover grid of the dehumidification Peltier module and of the steam generator in the centre (2).

6. Mainboard

Fig. 6: Mainboard (see also control unit overview on page 10)

1   Heat up LED (red)/cool down LED (green)
2   S 30 (fan)
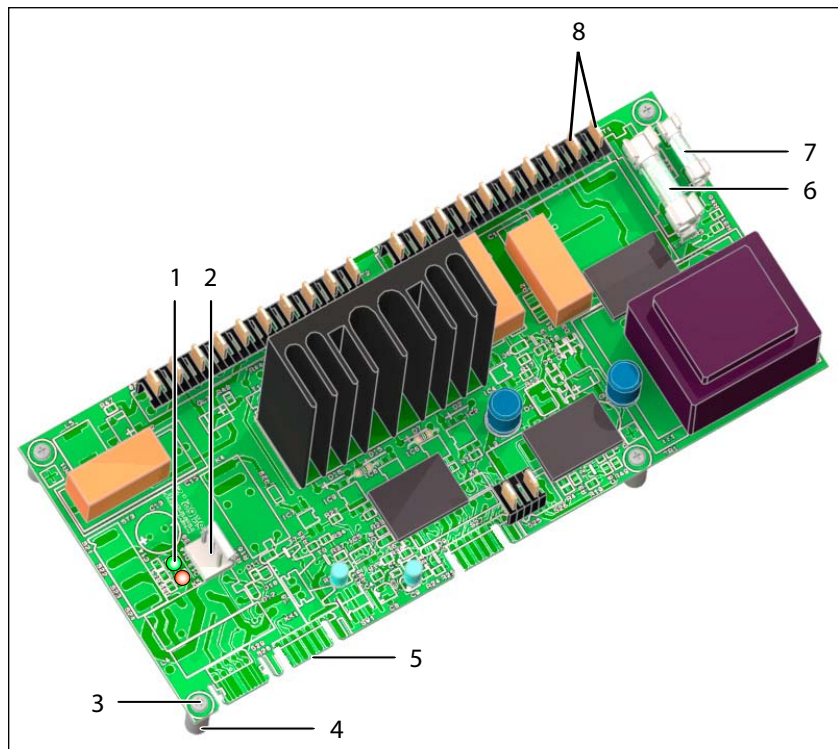3   Screw
4   Spacer bolt
5   S 28 (controller/display)
6   Appliance fuse
7   Fuse for controller/display
8   Main connection terminal power supply

6.1   Check switching function of mainboard

Remove the top panel to do this (see page 11).

The actual status of the actuator can be checked via the red and green LED (1) on the mainboard:

► red LED: heating
► green LED: cooling

<u>Note:</u>
The heating and cooling icon in the display shows only the current controller actuating variable and not the actual status of the MOSFET actuator.

In order to protect the Peltier element from the demands made by sudden changes in temperature, every change in performance takes place smoothly, i.e. a sudden change in the set value from heating to cooling causes a slow and smooth polarity reversal of the Peltier element.

6.2 Replace fuses

The fuses for controller/display and appliance protection are located on the mainboard (see page13).

1. Disconnect the mains plug.
2. Remove the top panel (see page 11).
3. Measure the fuse resistance with a continuity tester. If the fuse is in order the resistance should only be a few Ohms.
4. To replace the fuse, push an insulated flat screwdriver beneath the side of the fuse and lever it out of the mounting bracket. Press the new fuse into the mounting bracket from above.

▶ Appliance fuse: 15 A quick-blow 32 x 6.3 mm (American)

▶ Fuse for controller/display: 100 mA slow-blowing 20 x 5 mm

                                        200 mA slow-blowing 20 x 5 mm (115V)

Spare part	Variants	Spare part number
Appliance fuse 15 A		E02387
Fuse for controller/display	100 mA/230 V	E02497
	200 mA/115 V	E01007

6.3 Replace mainboard

1. Disconnect the mains plug.
2. Remove the top panel (see page 11).
3. Pull off all cables from the mainboard. Label unmarked cables with adhesive tape to avoid confusion when reconnecting.
4. Undo 4 screws from the mainboard. Make sure that the spacer bolts are not lost when doing this.
5. Remove the mainboard.
6. Insert a new mainboard and screw it tight with the spacer bolts.
7. Reconnect the cable.
8. Put the top panel back on; plug in the mains plug.
9. Check that the appliance is working. If the fault persists: Contact the manufacturer.

Spare part	Variants	Spare part number
Mainboard	230 V	B04098
	115 V	B04113

7. Replacing the switched mode power supply

1. Disconnect the mains plug.
2. Remove the top panel (see page 11).
3. Disconnect all the plugs on the switched mode power supply and label them if necessary (1).
4. Undo the screws (4 screws) at the corners (2) and remove the switched mode power supply.
5. Insert a new switched mode power supply and screw tight.
6. Reconnect the plug to the switched mode power supply.
7. Re-attach the top panel.
8. Connect the mains plug and subject the appliance to a function test. If the fault should persist or if it works incorrectly, contact the manufacturer.
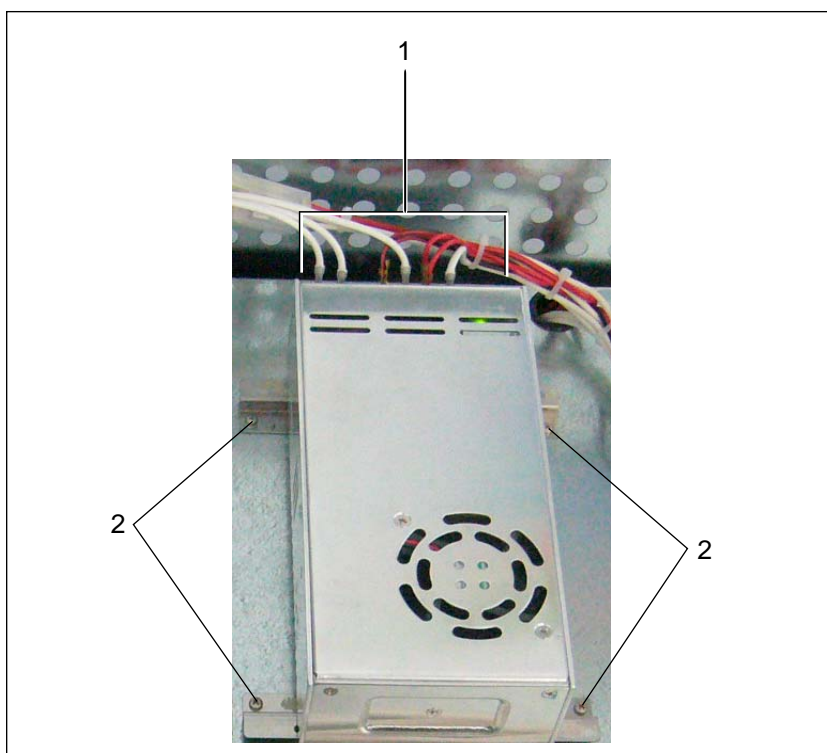

Fig. 7: Switched mode power supply

1 Connections
2 Screws

Spare part	Spare part number
Switched mode power supply	E04016

memmert

8. Replace main switch module with the push/turn control

1. Disconnect the mains plug.
2. Remove the top panel (see page 11).
3. Pull off the push/turn control (1) forwards.
4. Remove the plugs (4-pin) (4) from the controller slot J2.
5. Undo the mounting bolts on left and right (2).
6. Slightly raise the main switch module and pull backwards.
7. Place new main switch module into the control panel.
8. Attach the module with two screws (2).
9. Connect the plug (4) to the controller slot J2.
10. Attach the push/turn control (1) at the front.
11. Put the top panel back on; connect the mains plug.
12. Switch on appliance and check the function of the new main switch module and the push/turn control. If the error has not been rectified: Contact the manufacturer.
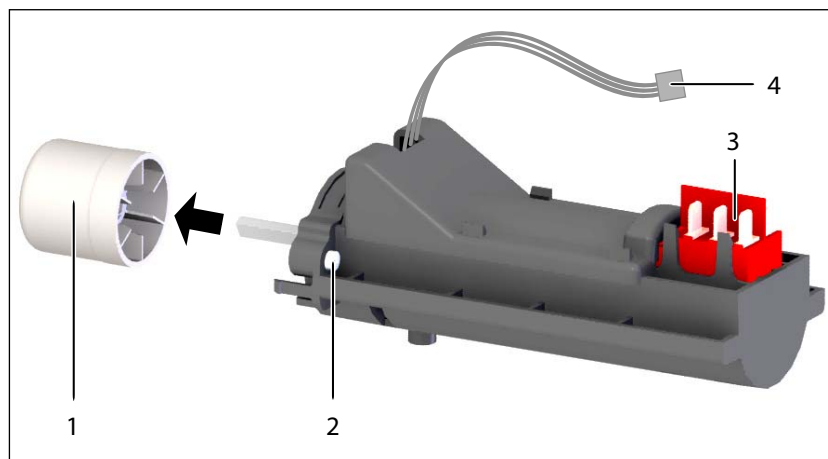

Fig. 8: Main switch module (see also control unit overview on page 10)

1   Push/turn control
2   Mounting bolts (left and right)
3   Main switch
4   Plug (controller slot J2)

Spare part	Variants	Spare part number
Main switch module	230 V	B04425

9. Replace controller

1. Disconnect the mains plug.
2. Remove the top panel (see page 11).
3. Pull off the push/turn control to the front (see page 16).
4. Undo three screws (3) and remove the main switch module (4).
5. Cut and remove both cable ties (2) with wire-cutting pliers.
6. Pull off and label the plugs of the respective controller slots (Jx).
7. Remove controller (1) to the rear.
8. Insert new controller and fasten controller and main switch module with three screws (3).
9. Reconnect plug to the respective controller slots.
10. Push the push/turn control back on.
11. Put the top panel back on; connect the mains plug.
12. Subject the appliance to a function test. If it should still work incorrectly, contact the manufacturer.

Fig. 9: Replace controller (see also control unit overview on page 10)

Spare part	Variants	Spare part number
Controller RS 232	IPP 200/300/400	B04279
	IPP 500/HPP 108	B04281
Controller RS 485	IPP 200/300/400	B04280
	IPP 500/HPP 108	B04282

10. Replace Pt100 temperature sensor

1. Disconnect the mains plug.
2. Remove the top panel (see page 11).
3. Push the temperature sensor on the ceiling of the chamber (1,2) carefully to the rear and out of the clamp (3) and thread upwards through the feed-through in the control unit floor (4).
4. In the control unit, pull off the plug of the sensor from the controller (see also page 17):
   Sensor for operating controller: 4-pin controller slot J4
   Sensor for monitoring controller: 4-pin controller slot J3
5. Cut through cable tie with wire-cutting pliers and remove Pt100 sensor with cables.
6. Thread in new sensor downwards from the control unit into the climate chamber.
7. Carefully push sensor into the clamp. Make sure that it is properly mounted. Insert the sensor in the clamp so that it is straight.
8. In the control unit, connect the cable of the sensor on the controller (see also page 17):
   Sensor for operating controller: 4-pin controller slot J4
   Sensor for monitoring controller: 4-pin controller slot J3
9. Put the top panel back on, connect the mains plug.
10. Subject the appliance to a function test. If the fault should persist/if it works incorrectly, contact the manufacturer.
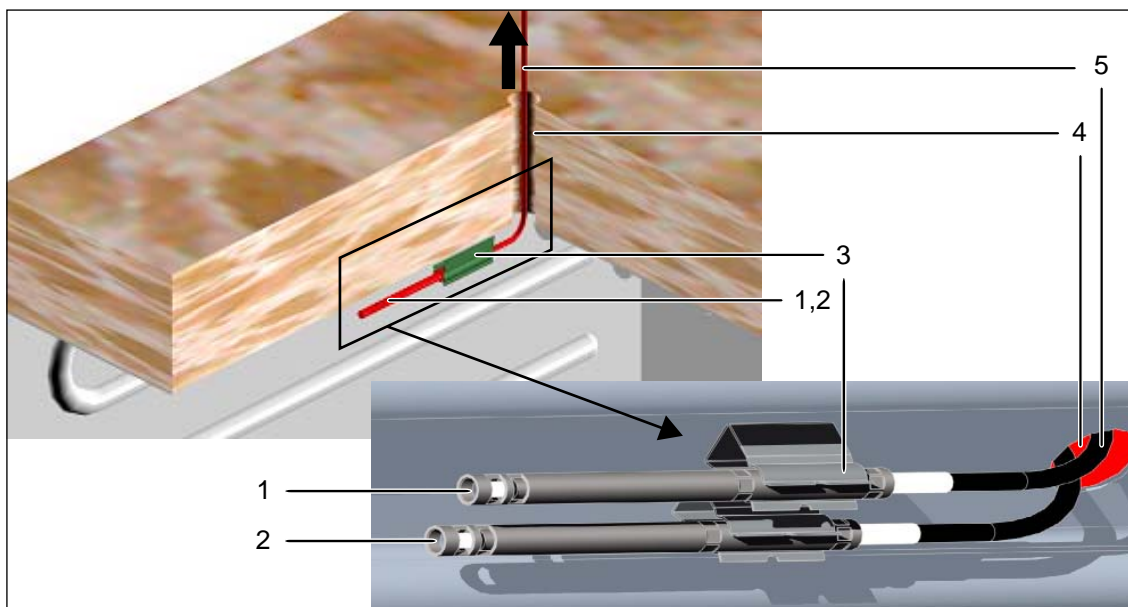

Fig. 10: Replace temperature sensor (see also control unit overview on page 10)
1 Temperature sensor for operating controller
2 Temperature sensor for monitoring sensor
3 Clamp
4 Feed-through through the control unit floor/chamber ceiling
5 Cable connection to the controller in the control unit

Spare part	Spare part number
Pt100 temperature sensor	E04822

11. Replacing the chamber fan

1. Disconnect the mains plug.
2. Remove the top panel (see page 11).
3. Undo the screws of the fan cover (1); remove the fan cover (2).
4. Remove the plug connector of the chamber fan from the switched-mode power supply (see page 10).
5. Undo the screws of the chamber fan (3).
6. Remove the chamber fan (4) from the heat sink of the Peltier module (5).
7. Place a new fan on the heat sink of the Peltier module and screw it in.
8. Connect the plug connector of the fan to the switched-mode power supply in the control unit.
9. Position the fan cover and screw it down.
10. Re-attach the top panel.
11. Reconnect the mains plug. Subject the appliance to a function test. If the fault should persist or if it works incorrectly, contact the manufacturer.
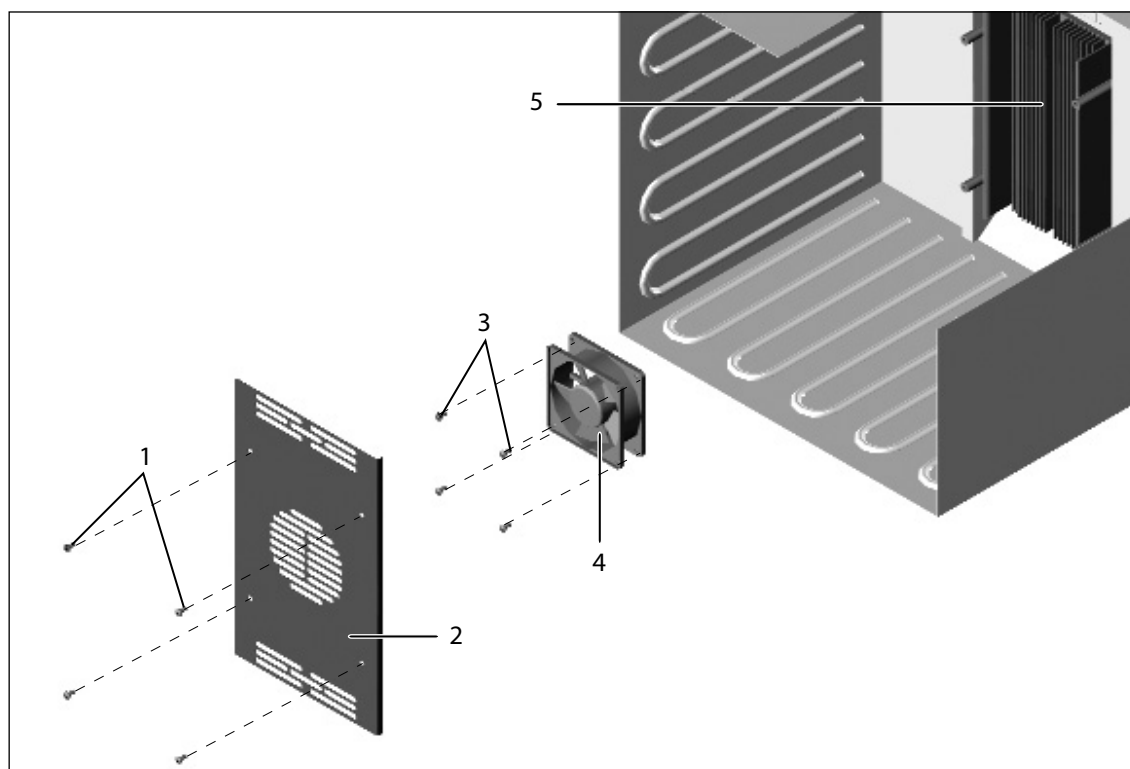

Fig. 11: Replacing the chamber fan
1   Screws for the fan cover
2   Fan cover
3   Screws for the fan
4   Chamber fan
5   Heat sink for the Peltier module

Spare part	Variants		Spare part number
Chamber fan IP54	all		B04004
Fan cover	IPP 200/300		E03995
	IPP 400		E03994
	IPP 500		E04656
	HPP 108	left	E05401
		right	E05402

12. Removing the fan from the rear panel

ℹ️ Depending on the appliance model, there may be up to three fans on the rear panel: one (IPP 200-400) or two (IPP 500/HPP) fans for heating/cooling, one fan for dehumidification (only for HPP). How to replace this is described on page 37. The description on this page refers to the removal of the fan(s) for heating/cooling (see also overview diagram on page 8).

1. Disconnect the mains plug.
2. Remove the top panel (see page 11).
3. Remove the cover of the Peltier module (1).
4. Undo the mounting bolts of the fan (2).
5. Remove the fan cover grid (3).
6. Pull off the plug connector of the fan in the control unit.
7. Remove the fan (4) from the heat sink of the Peltier module (5).
8. Screw on a new fan (4) with cover grid (3) to the heat sink of the Peltier module (5).
9. Connect the plug connector of the fan in the control unit.
10. Remove the cover of the Peltier module (1).
11. Put the top panel back on and connect the mains plug.
12. Subject the appliance to a function test and check the fan to see that it works. If the fault should persist or if it works incorrectly, contact the manufacturer.
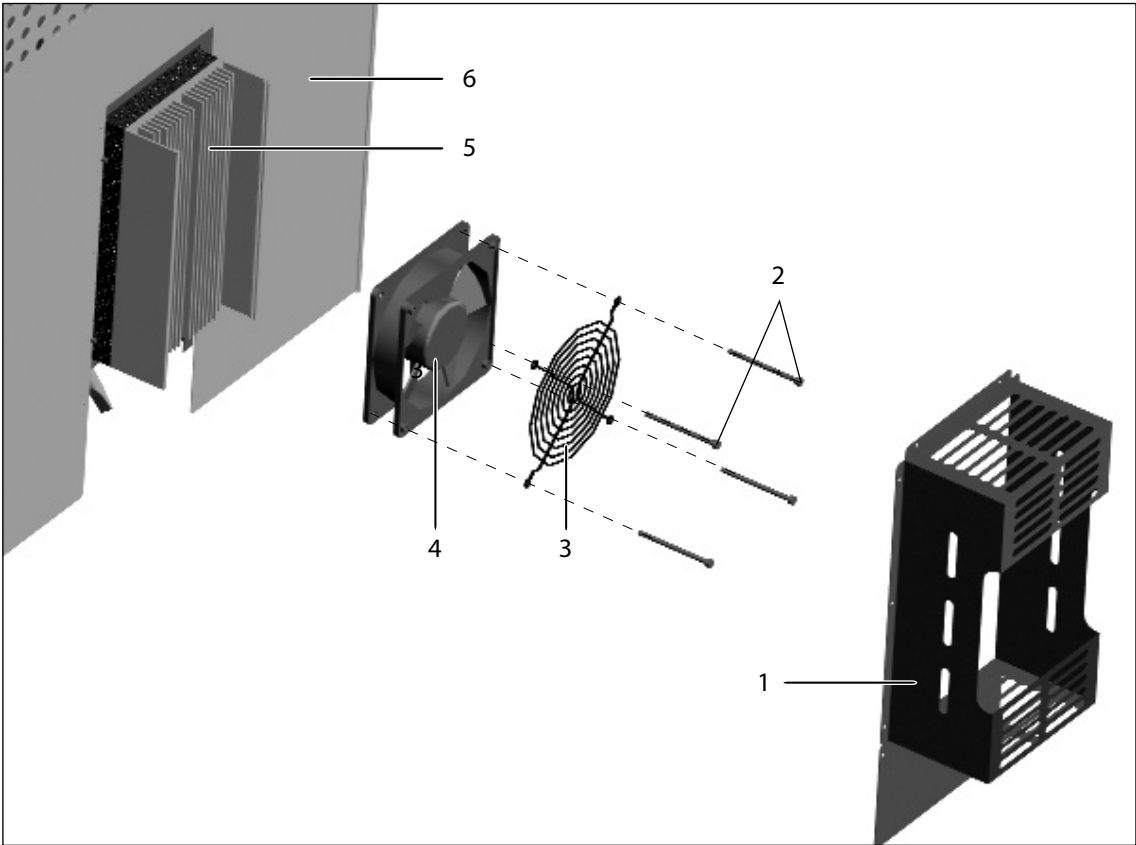
Fig. 12: Remove the fan from the rear panel (actual view may differ from this representation, depending on the appliance type)

1   Cover of the Peltier module
2   Screws for the fan
3   Fan cover grid
4   Fan
5   Heat sink for the Peltier module
6   Rear panel

Spare part	Variants	Spare part number
Cooling fan 120 mm	IPP 200/300	B04002
	IPP 400/500/HPP108	B04423

13. Replacing a Peltier cooling/heating module

ℹ️ Depending on the appliance model, there may be up to three Peltier modules on the rear panel: one (IPP 200-400) or two (IPP 500/HPP) modules for heating/cooling, one for dehumidification (only for HPP). Replacing it is described on page 37. The description on this page refers to the replacement of a Peltier module for heating/cooling (see also overview diagram on page 8).

1. Disconnect the mains plug.
2. Remove the top panel (see page 11).
3. Remove the cover of the Peltier module (2).
4. Pull out the rear panel of the casing (3) upwards.
5. Remove the insulation tape from the Peltier module.
6. Undo the retaining nuts of the Peltier module (1).
7. From the front side of the appliance, undo the mounting bolts of the cover plate in the interior of the appliance (4).
8. Remove the cover plate (5).
9. Pull off the plug-in connections of the Peltier module in the control unit and pull down the cable through the floor of the control unit.
10. Pull out the Peltier module towards the front (6).
11. Insert a new Peltier module from the front and screw it tight from the back (1).
12. Guide the connection cable of the new Peltier module upwards through the floor of the control unit and into the unit, and connect it.
13. Screw the cover plate (5) in the interior of the appliance back on.
14. Remount the rear wall of the casing (3).
15. Put the cover of the Peltier module (2) back on.
16. Re-attach the top panel (see page 11).
17. Reconnect the mains plug.
18. Subject the appliance to a function test. If the fault should persist or if it works incorrectly, contact the manufacturer.

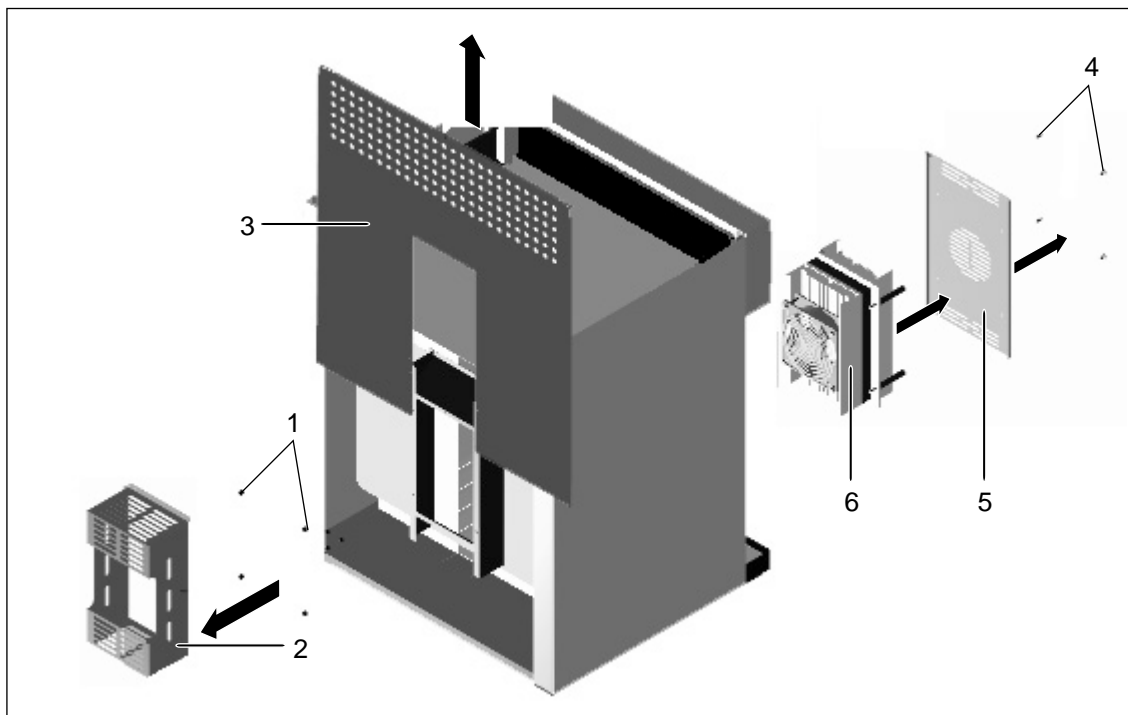| Spare part	Variants	Spare part number
Cover of the Peltier module	IPP 200/300	E04002
	IPP 400	E03986
	IPP 500/HPP 108	E04641
Peltier module	IPP 200/300	E03973
	IPP 400/500 – Type Supercool	E03972
	IPP 400/500 – Type Rübsamen & Herr	E05231
	HPP 108	E03972

Fig. 13: Replacing a Peltier module
(actual view may differ from this representation, depending on the appliance model)

1   Retaining nuts of the Peltier module
2   Casing cover of the Peltier module
3   Rear panel of casing
4   Mounting bolts of the cover plate
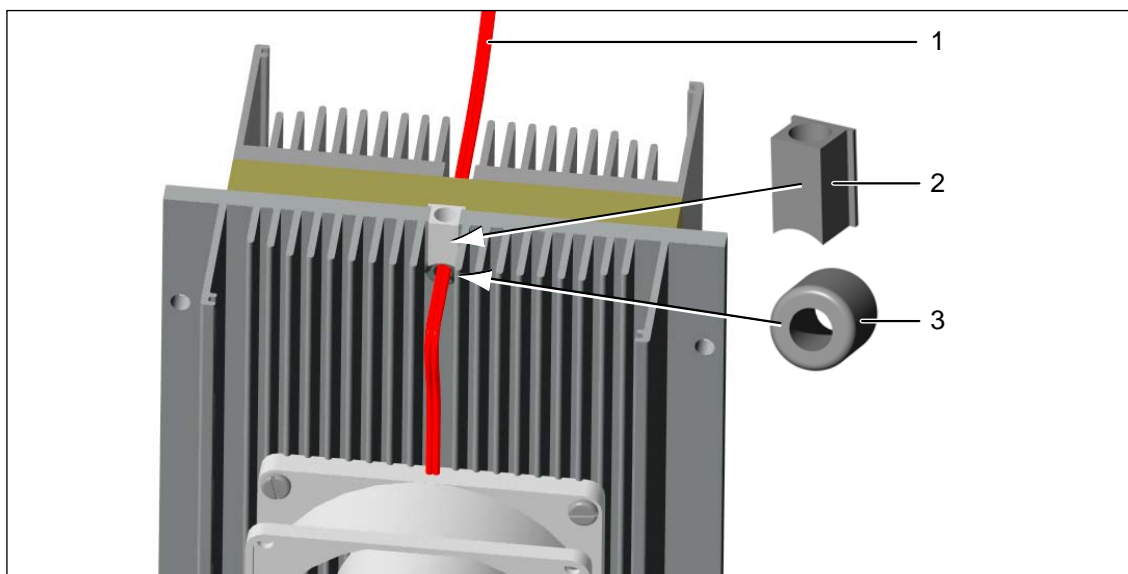5   Cover plate
6   Peltier module

Fig. 14: Cable feed-through of the Peltier module

1   Connection cable
2   Plastic wedge
3   Foam ring (cable seal)

14. Adjusting and removing inner door

14.1 Adjusting inner door

1. Loosen screws (1); do not remove screws completely, as otherwise the mounting block (inside) will fall out.
2. Check the screw (2) in the hinge and tighten if necessary.
3. Adjust the inner door (4) and tighten screws (1) again.

i If a mounting block has fallen out, you can reach it by pulling out the side section and then mount it again.

14.2 Removing the inner door

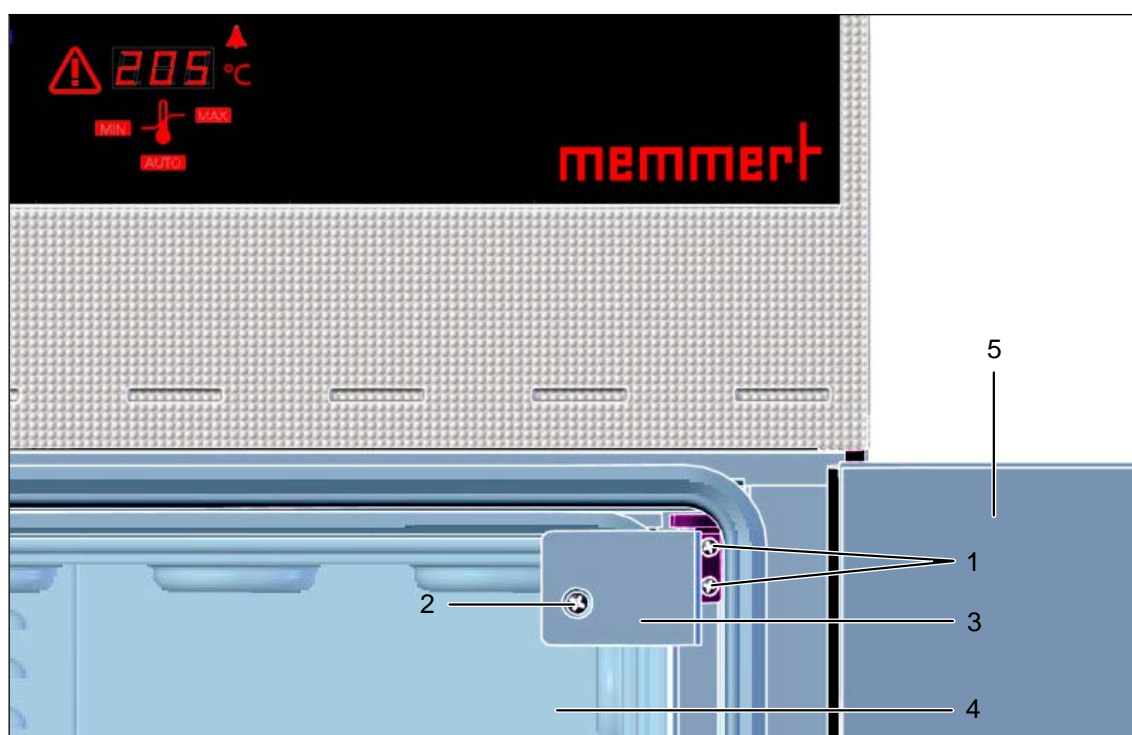Undo the screw (2) (counter with open-end wrench), tilt glass door forwards and lift out from lower hinge.

Fig. 15: Adjusting/removing inner door

1 Screws
2 Screw
3 Inner door hinge
4 Inner door
5 Outer door (open)

Spare part	Variants	Spare part number
Inner door	IPP 200	B03395
	IPP 300	B03396
	IPP 400	B03397
	IPP 500/HPP 108	B03398
Inner door hinge, top	all	B02902
Inner door hinge, bottom	all	B02903

memmert

15. Installing, removing and adjusting door

15.1 Removing the door

1. Open door 180SDgr and undo screws (4) at the two eccentric sockets (1) at the top and bottom.

2. Pull out door (5) horizontally in the direction of the arrow.

15.2 Installing the door

1. Grease the moving parts of the door hinges with thin silicone grease (see also operating instructions "Maintenance").

2. Inset a hard paper disk on the lower door hinge between the eccentric tappet (3) and door (5).

3. Insert the door. When doing this, make sure that the adjuster cam of the eccentric tappet (3) is pointing forwards (1a).
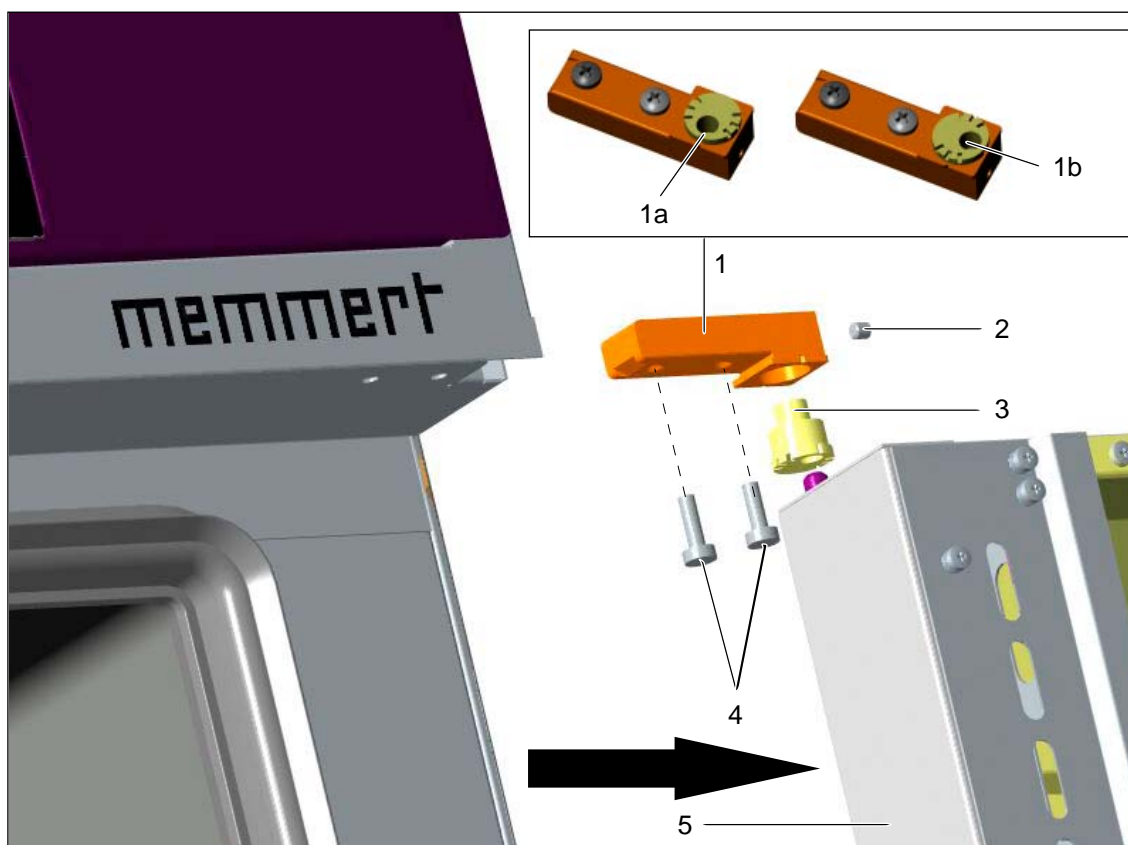
4. Put screws back in (4) and tighten up.

Fig. 16: Installing/removing door

1   Eccentric socket
    1a   Eccentric tappet moved fowards: factory settings for door
    1b   Eccentric tappet moved to the right: Doors are therefore also adjusted to the right
2   Allen set screw
3   Eccentric tappet
4   Screws
5   Door

15.3 Adjusting the door

1. Undo mounting bolts (2) at the top and bottom of door.

2. The top section of the door hinge (1) can now be moved slightly in the direction of the arrow.

3. After undoing the Allen set screw (5), the door can be adjusted by turning the eccentric tappet (3) with a screwdriver.

i The Allen set screw (5) is fixed with lock washer varnish. It can be undone with a jolting motion using a 2 mm Allen key.

4. Apply lock washer varnish to the Allen set screw (5) and screw it tight.
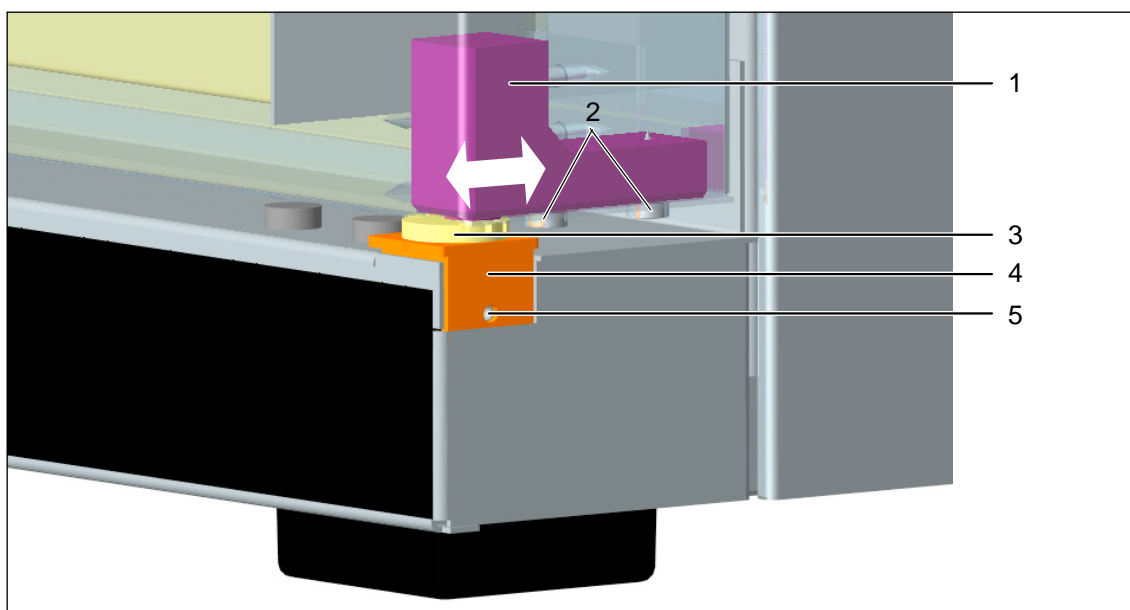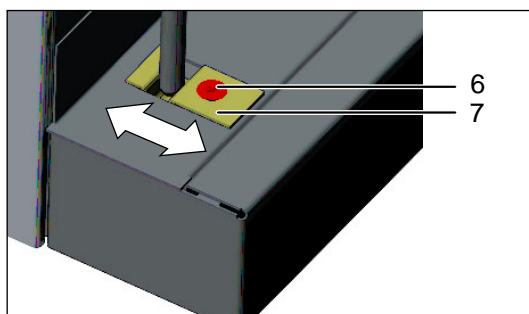
5. Tighten the mounting bolts (2).

Fig. 17: Adjusting the door

1 Upper section of the door hinge
2 Mounting bolts
3 Eccentric tappet
4 Eccentric socket
5 Allen set screw

Fig. 18: Adjusting the locking plate

6 Screw
7 Locking plate

The locking plate (7) can also be adjusted in the direction of the arrows after undoing the screws. Afterwards, screw the locking plate back firmly.

15.4 Removing and installing the door lock

1. Undo screws (6).
2. Remove the lock cover (5).
3. Screw off the door panel (2) and lift up.
4. Pull off the door-handle lid (1).
5. Pull off the circlip (2) sideways and remove the door-handle (3).
6. Undo the guide screw (4) and remove the circlips (10) and coil springs (12).
7. Pull out the axles (11) sideways and push the locking pins (7) outwards.
8. Remove the door lock mechanism (6, 8, 9).

Fig. 19: Removing the door lock

1   Door
2   Door panel
3   Door seal
4   Locking mechanism
5   Lock cover
6   Screws
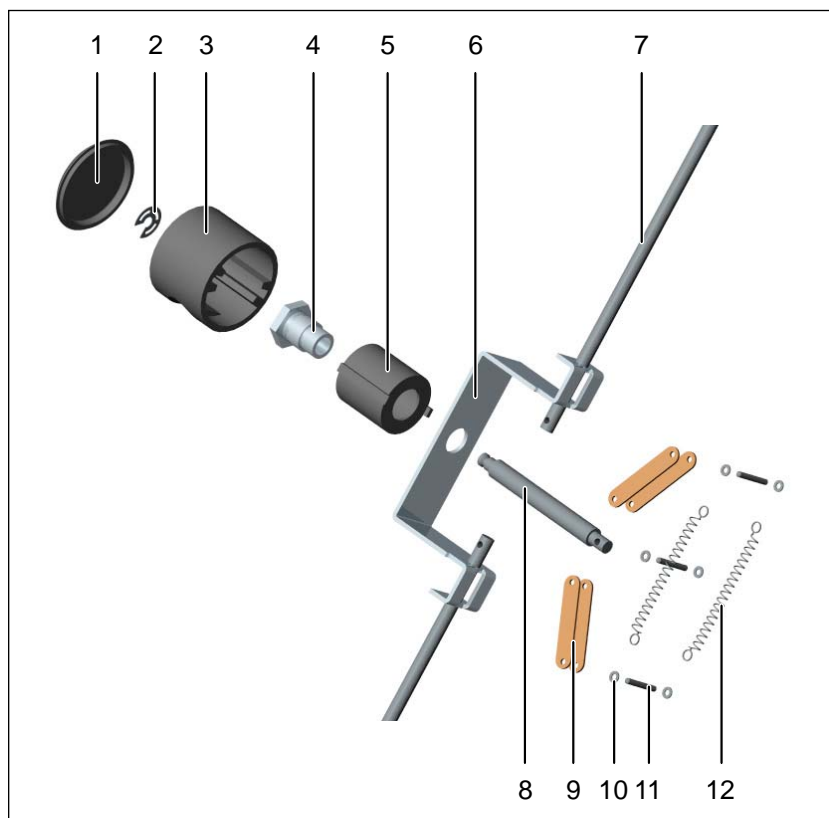
Fig. 20: Locking mechanism

1   Door-handle cover
2   Circlip (large)
3   Door-handle
4   Guide screw
5   Sleeve
6   Locking bracket
7   Locking pin
8   Locking bolt
9   Locking arm (brass)
10   Circlip (small)
11   Axles
12   Tension spring

Spare part	Model	Spare part number
Door	IPP 200	B00408
	IPP 300	B00430
	IPP 400	B00432
	IPP 500/HPP 108	B00444
Door eccentric tappet	all	B03749
Door-handle, complete, without locking pins	all	B00995
Door lock, complete, without locking pins	all	B02600
Door lock, complete, with locking pins	IPP 200	B02419
	IPP 300	B02603
	IPP 400	B02420
	IPP 500/HPP 108	B02421
Locking plate	all	B02720

16. Replacing seals

16.1 Replacing door seal

1. Remove locking cover (2) (see page 28).
2. Lift up door panel (4) and remove old seal (3).
3. Cut out the new door seal at the ends using the old one as a template and push onto the door panel.
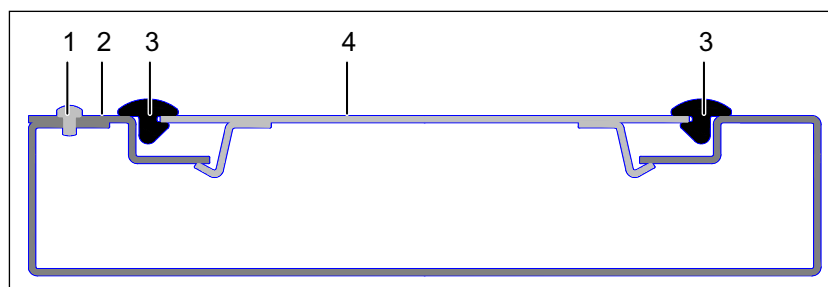4. Insert the door panel and press on.
5. Re-attach the lock cover.

Fig. 21: Replacing the door seal (cross-section)

1   Screw
2   Lock cover
3   Door seal
4   Door panel

16.2 Replacing the chamber seal and the cage seal

The appliance has two seals:

► Chamber seal

► Cage seal

The seal can be pulled out after the door is opened and the new seal be pushed into place.

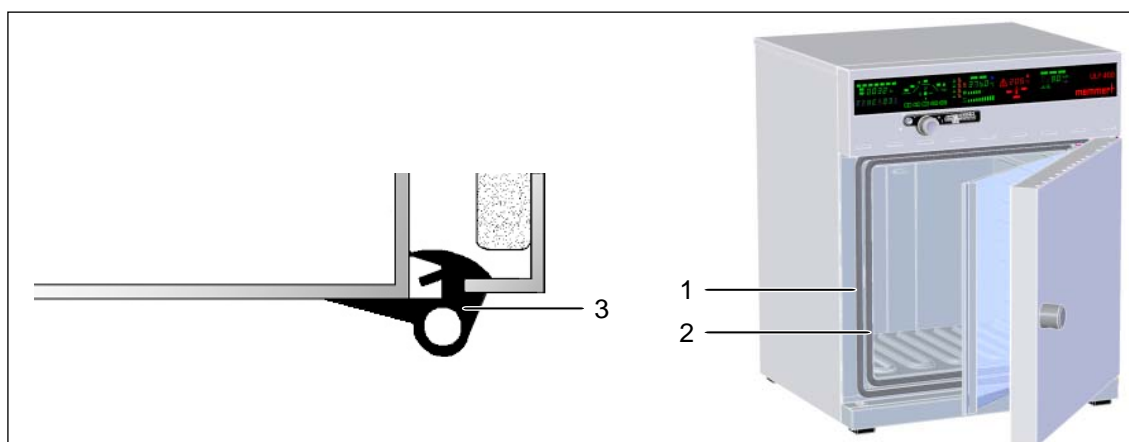Push in the pre-cut length of seal into the space, without stretching it, and cut off the end if necessary.

Fig. 22: Replacing the chamber and cage seals

1   Chamber seal
2   Cage seal
3   Seal cross-section

Spare part	Model	Spare part number
Door seal	IPP 200	Z00691
	IPP 300	Z00692
	IPP 400	Z00693
	IPP 500/HPP 108	Z00694
Cage seal	IPP 200	Z00713
	IPP 300	Z00714
	IPP 400	Z00715
	IPP 500/HPP 108	Z00716
Chamber seal	IPP 200	Z00699
	IPP 300	Z00700
	IPP 400	Z00701
	IPP 500/HPP 108	Z00702

17. Replacing the interface module

1. Disconnect the mains plug.
2. Remove the top panel (see page 11).
3. Pull off the plug on the USB interface module or Ethernet module (depending on the appliance fittings) on the rear casing panel (1).
4. Undo 2 screws at top and bottom with which the module is attached to the rear wall (2); remove module.
5. Insert a new module and screw tight.
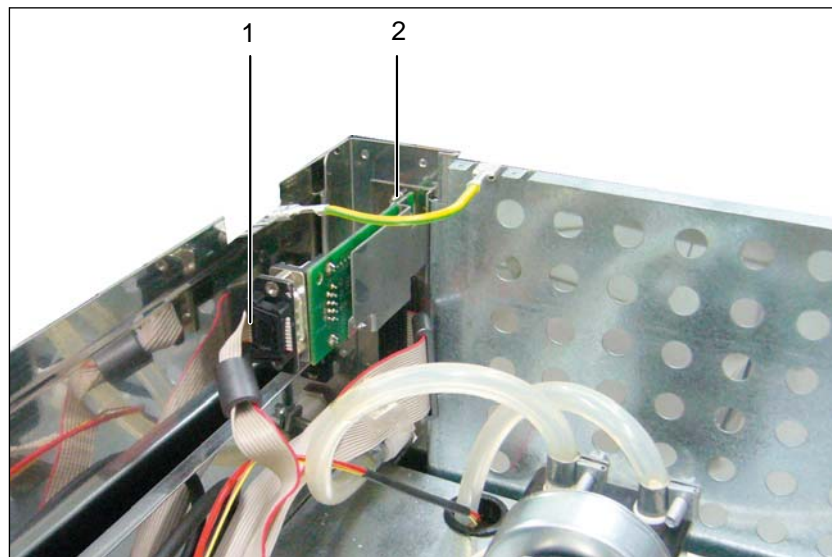6. Connect the plug.
7. Re-attach the casing lid.

Fig. 23: Replacing the interface module
1   Plug
2   Screw connection

Spare part	Spare part number
USB interface module	B04118
Ethernet module	B04121

18. Humidification and/or dehumidification does not work properly

(only for constant climate chambers HPP 108)

If humidification or dehumidification does not work properly for HPP 108 constant climate chambers (see also operating instructions), there may be several different causes. It is described below how the fault can be determined and what needs to be done to remedy this.

First check whether an error message of the control module for humidification/dehumidification is displayed at the front of the appliance (see operating instructions). If this is the case, the control module must be replaced (see page 39).

If this is not the case, check whether an error message from the humidity sensor is displayed. If this is the case, the humidity sensor must be replaced (see page 40).

If no error message is displayed, proceed as follows:

18.1 Humidification is not working properly

If humidification (increase of humidity in the chamber) is not working properly, this can be seen by the fact that the humidity display on the control panel does not change if a higher humidity is set (see operating instructions). Reducing the humidity (dehumidification) works, however.

Proceed as follows to determine the cause:

1. Check whether there is water in the external tank/canister (1); if not, fill it up with distilled water.

2. Check whether the water tubes on the appliance and on the steam generator (3) on the rear side of the appliance are connected properly (2). If not, make sure that they are fastened tight.
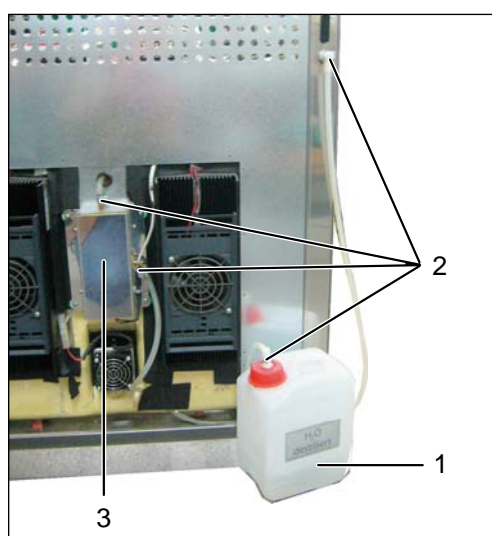

Fig. 24: Checking the tube connections
1   Water tank/canister
2   Tube connections
3   Steam generator

If the fault is not down to the water supply, continue as follows:

1. Remove the top panel (see page 11). In the control unit that is now accessible you will find the following components for regulating humidity:
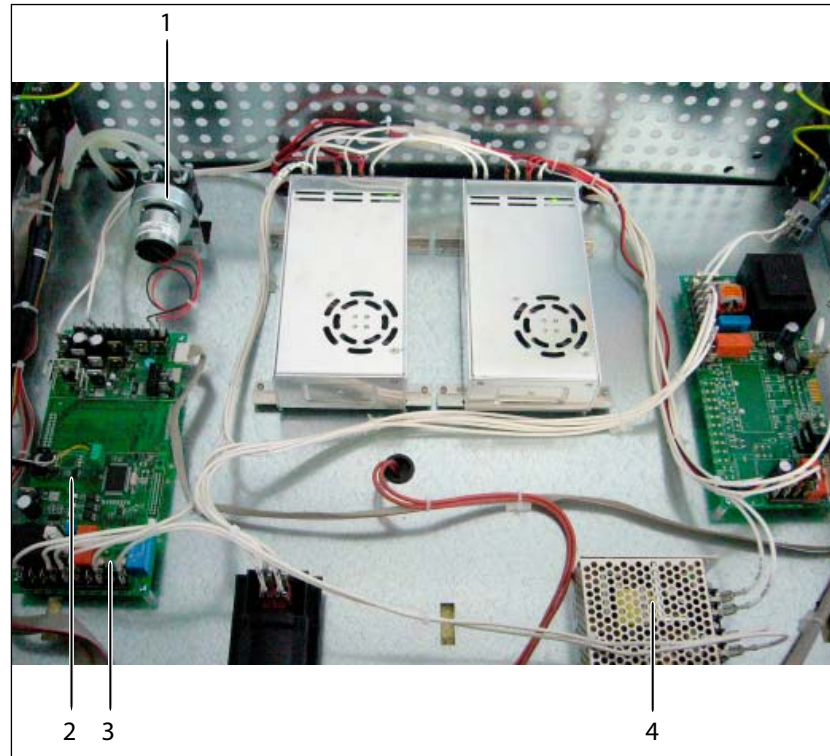

Fig. 25: Components of humidity regulation in the control unit

1   Pump
2   Control module
3   Fuse for control module
4   Power supply unit

2. Check that all plugs are connected.
3. Check that the fuse for the control module (3) is OK. If not: replace the fuse.
4. Check that the pump is running (1). If not: Replace the pump (see page 36).
5. If the error has still not been been found, then the steam generator at the back of the appliance is faulty. In this case it must be replaced (see next chapter).

18.1.1 Replace steam generator

1. Disconnect the mains plug.

2. Remove the rear panel (see page 12). To do this the top panel must be removed first (see page 11).

3. Undo tube connections at the top and the right (2) on the steam generator (1).

4. Undo the plug connector of the steam generator in the control unit on the top of the appliance.

5. Unscrew the steam generator (3).

6. Remove the steam generator.

7. Put on a new steam generator and screw it tight.

8. Connect the plug connector of the steam generator in the control unit on the top of the appliance.

9. Connect the water tubes on the right and at the top on the steam generator.

10. Put back the rear panel and re-attach the cover grids of the steam generator and Peltier modules. Re-attach the top panel.

11. Reconnect the mains plug.

12. Check that the humidification is now working properly. If this is not the case, contact the manufacturer.
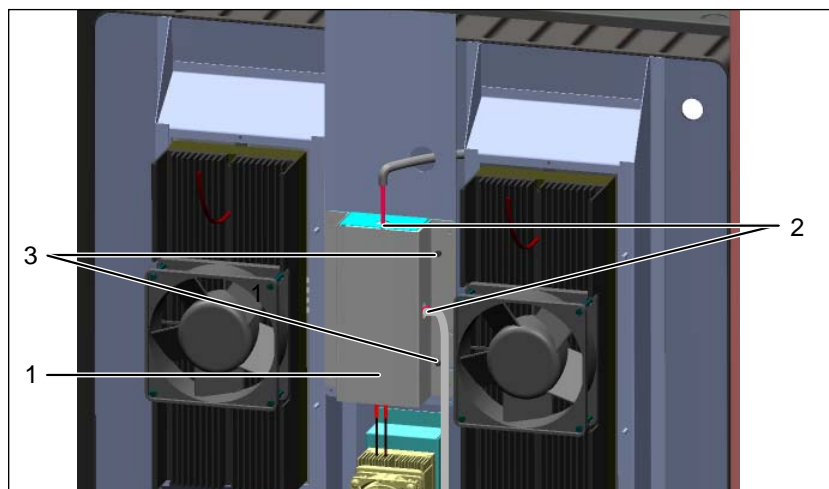

Fig. 26: Replace steam generator

1   Steam generator
2   Tube connections
3   Screw connections (four screws)

Spare part	Spare part number
Steam generator	B04436

18.1.2 Replacing the pump

1. Disconnect the mains plug.
2. Remove the top panel (see page 11).
3. Release the two tube connections on the pump (1).
4. Pull off the plug connector from the control module (2).
5. Undo the screw connection of the pump (3) to the ground plate (2 screws) and remove the pump.
6. Insert a new pump and screw it tight with 2 screws.
7. Connect the plug connector.
8. Connect both tube connections.
9. Re-attach the top panel (see page 11).
10. Reconnect the mains plug.
11. Check that the humidification is now working properly. If this is not the case, contact the manufacturer.
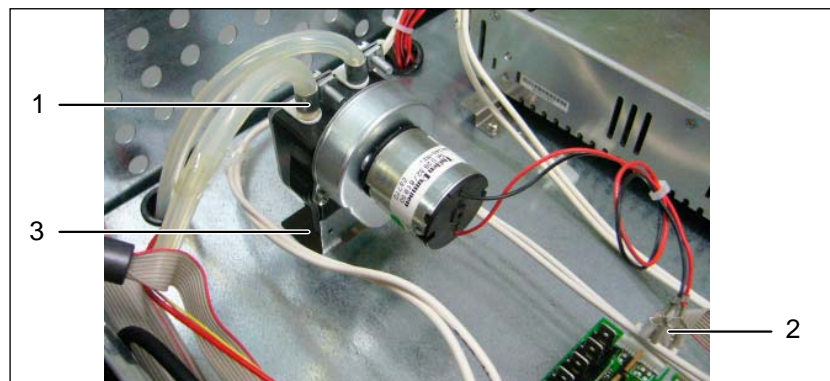

Fig. 27: Replace the pump
1   Remove hoses
2   Undo plug connector
3   Undo screws

Spare part	Spare part number
Pump	E04504

18.2 Dehumidification is not working properly

If dehumidification (decrease of humidity in the chamber) is not working properly, this can be seen by the fact that the humidity display on the control panel does not change if a lower humidity is set (see operating instructions). Increasing the humidity (humidification) works, however.

Proceed as follows to determine the cause:

1. On the control panel on the front of the appliance, set a low humidity (see operating instructions).
2. Check that the fan of the dehumidification Peltier module on the rear side of the appliance is running (Fig. 28). If this is not the case, the fan is faulty and needs to be replaced, along with the Peltier module (see next section).

If the fan is running, but the humidity inside the appliance does not fall, you should proceed as follows:

1. Remove the top panel (see page 11).
2. Check that all plugs in the control unit are connected.
3. Check that the fuse for the control module is OK (see page 34). If not: replace the fuse.
4. Check that the green LED on the power supply unit lights up for dehumidification (see page 34). If not: Replace the power supply unit (see page 38).
5. If no errors can be found, either in the fan or the control module or power supply unit, the dehumidification Peltier module with the fan must be replaced (see next chapter).

18.2.1 Replace fan and dehumidification Peltier module

1. Disconnect the mains plug.
2. Remove the top and rear panels (see pages 11 and 12).
3. Undo the plug connector of the fan (1).
4. Undo the screw connection of the fan at the top and the bottom (2).
5. Pull out the fan with the Peltier module to the rear.
6. Insert a new fan with Peltier module and screw it tight at the top and the bottom.
7. Connect the plug connector of the fan.
8. Mount all three cover grids on the rear side of the appliance. Re-attach the rear and top panels.
9. Reconnect the mains plug.
10. Check that the dehumidification is now working properly. If this is not the case, contact the manufacturer.
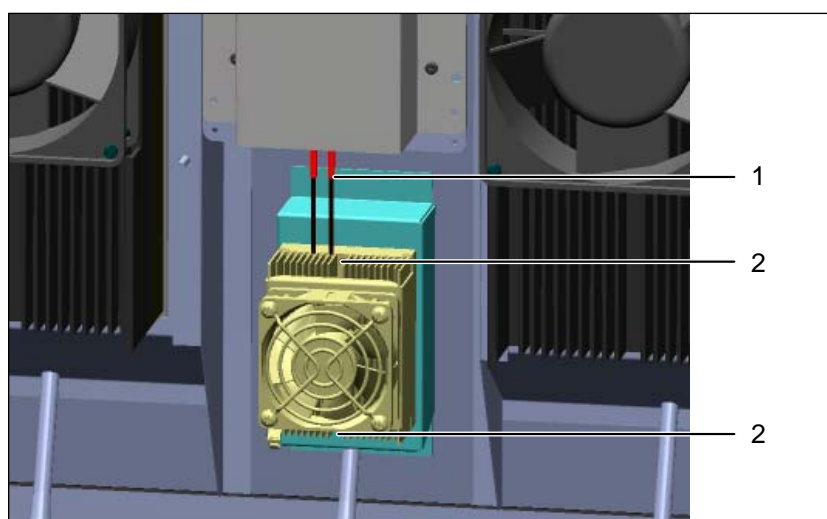

Fig. 28: Replace the dehumidification Peltier module with fan

1   Plug connection
2   Screw connections at the top and bottom (2 screws)

Spare part	Spare part number
Dehumidification Peltier module	E05394

18.2.2 Replace the dehumidification power supply unit

1. Disconnect the mains plug.
2. Remove the top panel (see page 11).
3. Pull off all the plugs from the dehumidification power supply unit (1).
4. Undo the screw connection (2) for the ground plate on the connection side of the power supply unit (2 screws).
5. Pull the power supply unit horizontally away, in the direction of the arrow, from the third screw on the opposite side (3) and remove.
6. Push in new power suppy unit underneath the remaining screw and screw tight on the connection side.
7. Reconnect the plug connectors.
8. Re-attach the top panel.
9. Reconnect the mains plug.
10. Check that the dehumidification is now working properly. If this is not the case, contact the manufacturer.
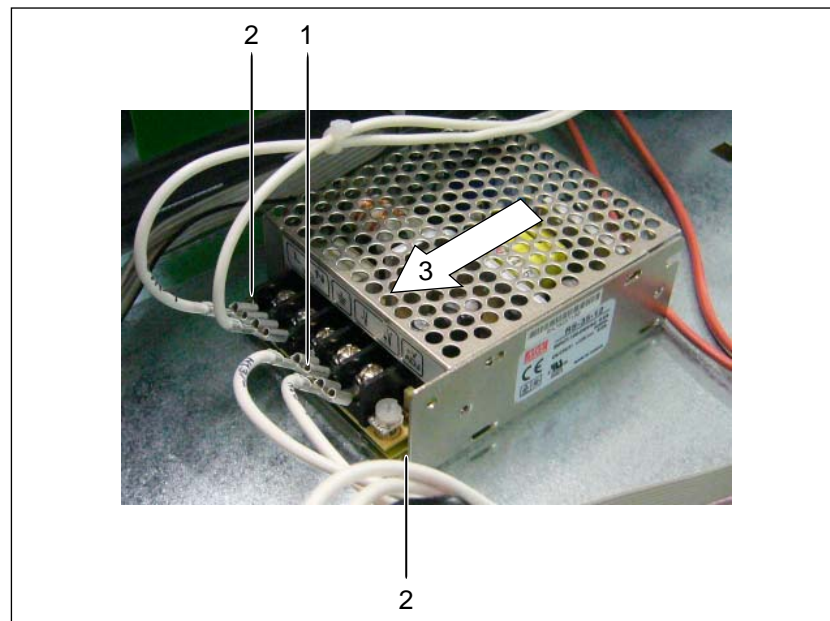

Fig. 29: Replace the power supply unit for dehumidification
1   Undo the plug
2   Undo the screws on the bottom plate (2 screws)
3   Pull away power supply unit to the side

Spare part	Spare part number
Dehumidification power supply unit	E05400

18.3 Replace control module

1. Disconnect the mains plug.
2. Remove the top panel (see page 11).
3. Undo all plug connectors on the control module (1).
4. Undo the screws of the control module (2) (4 screws) and remove the control module.
5. Screw in a new control module.
6. Reconnect the plug connections. The number of the respective slot is marked on the cables.
7. Re-attach the top panel.
8. Reconnect the mains plug.
9. Check that the humidification/dehumidification is now working properly. If this is not the case, contact the manufacturer.
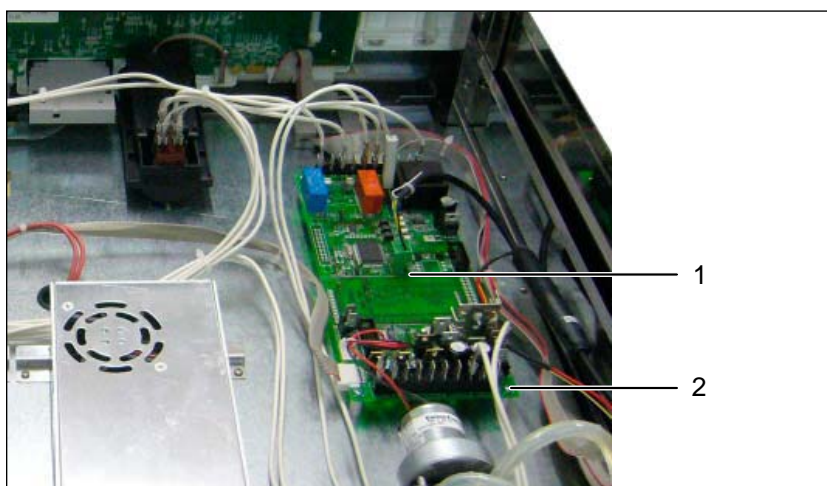

Fig. 30: Replacing the control module for the humidification/dehumidification
1   Control module
2   Screw connection (four screws)

Spare part	Spare part number
Control module	B04376

18.4 Replacing the humidity sensor

1. Disconnect the mains plug.
2. Remove the top, rear and left-side panels (see pages 11 and 12).
3. Remove the insulation material on the rear of the appliance in the opening for the humidity sensor (1).
4. Undo the connection cable of the humidity sensor (2) on the control module in the control unit.
5. On the rear of the appliance there is a small opening in the insulation material through which the Allen set screw (3) can be undone with a 1.5 mm Allen key (4), with which the humidity sensor is attached.
   Undo the set screw and pull out the humidity sensor to the rear.
6. Pull the humidity sensor out and upwards through the opening in the floor of the control unit (5).
7. Push the new humidity sensor down through the opening in the floor of the control unit and insert into the opening in the insulating material on the rear of the appliance.
8. Screw down the humidity sensor sideways with the Allen key and push the filling material back inside.
9. Connect the plug connection of the humidity sensor to the control module in the control unit.
10. Re-attach the side, rear and top panels.
11. Reconnect the mains plug.
12. Check that the humidification and dehumidification is now working properly. If this is not the case, contact the manufacturer.
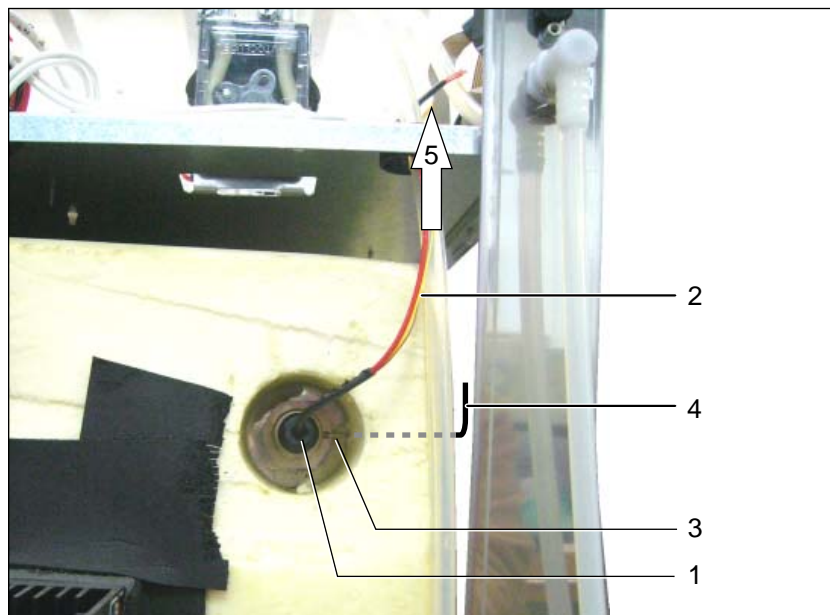
Fig. 31: Replacing the humidity sensor

1 Humidity sensor in the insulation material on the rear panel of the appliance
2 Connection cable in the control unit
3 Allen set screw
4 Undo the Allen set screw with the 1.5 mm Allen key through the opening in the insulation material on the side wall
5 Pull the humidity sensor out and upwards through the opening in the floor of the control unit

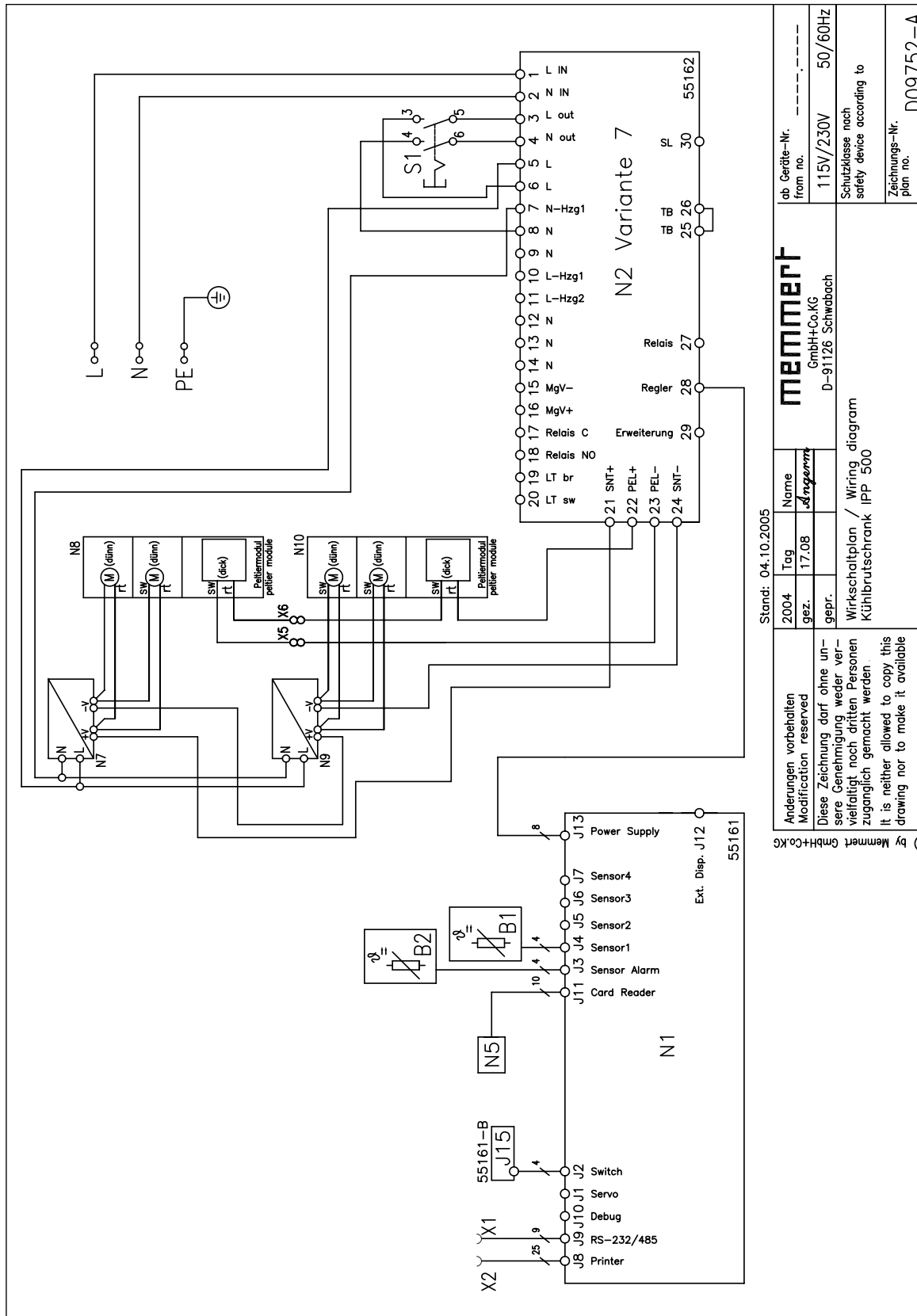| Spare part	Spare part number
Humidity sensor	E05249

19. Circuit diagrams

19.1 Legend

Legend for circuit diagrams on the following pages:

Component drawing	Component
B1	Temperature sensor Pt100
B2	Temperature sensor Pt100
J15	Sensor board for angular sensor 55161-B
N1	Temperature controller 55161
N2	Mainboard 55162
N5	Chipcard reader
N7+N9	Switched mode power supply SP 200 24 V/200 W
N8+N10	Peltier module with fan motors IPP 200/300: M-064-24-12-12-ME IPP 400/500: M-081-24-12-00-ME
S1	Main switch
X1	SUB-D 9-pin – RS 232/RS 485
X2	SUB-D 25-pin – printer

19.2 IPP 200/300/400

19.3 IPP 500

19.4 HPP 108

Notes: