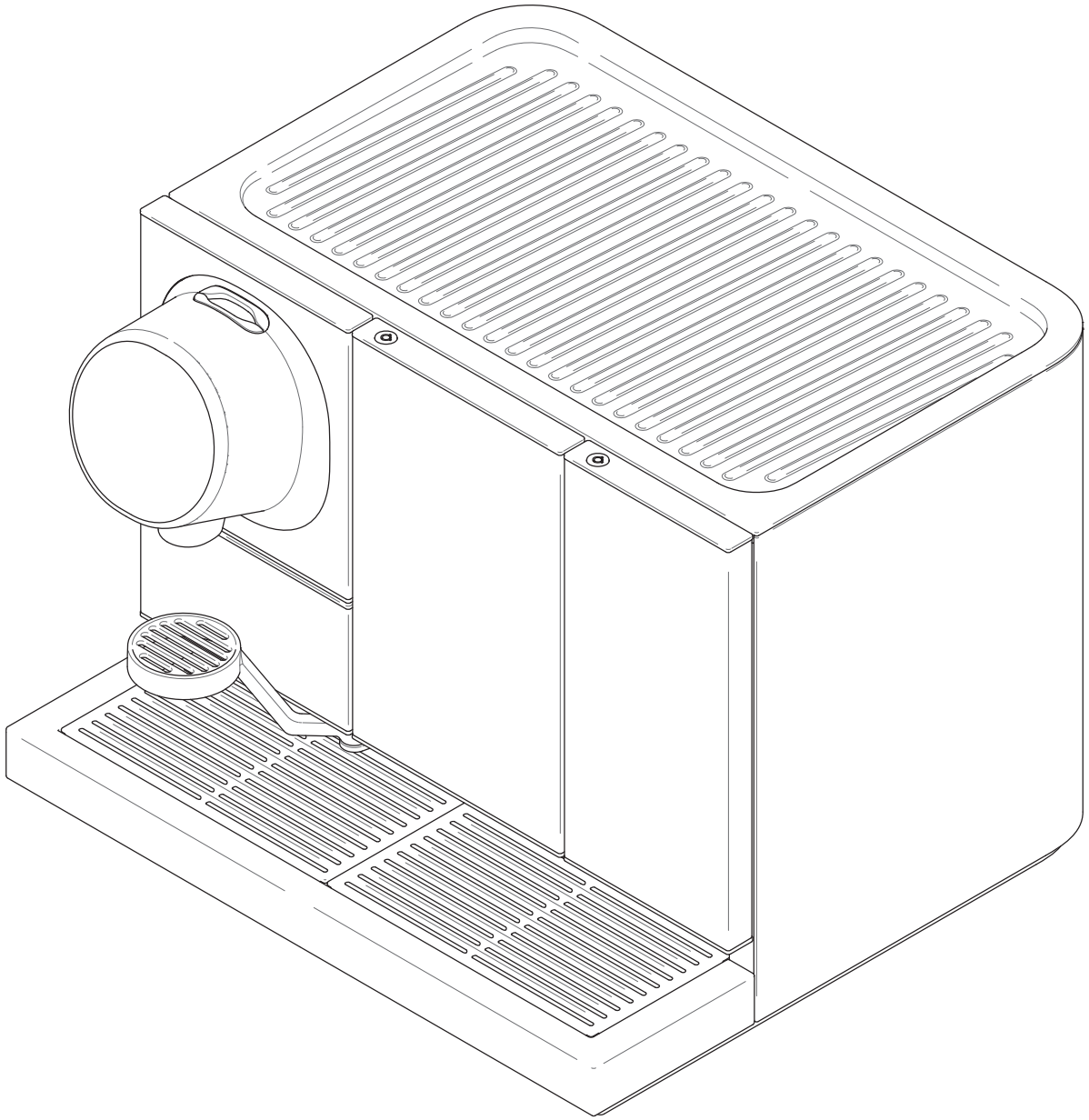
SERVICE MANUAL
COFFEE/MILK MACHINE

MOMENTO 120



Version 1.4 EN
last modified - 15.06.2023

CONTENTS

PREFACE

The purpose of this service manual is to provide the service personnel with all necessary information with regards to correct handling, maintenance and repair of the Momento 120 coffee machine.

This manual should be used by the technicians as a valuable aid to guarantee the permanent readiness for use of the machines. In order to take full advantage of all the functions, it is absolutely necessary to follow the instructions in this manual.

Only use original spare parts from your official supplier for maintenance and repair work. Spare parts lists and exploded drawings are subject to change. To obtain the last version, please contact your official spare parts supplier.

Visit the *Nespresso* technical website periodically to check for upgrades, technical modifications, counter measures etc. for these coffee machines:

https://business.nespresso.com

i Please keep this manual together with the corresponding service documentation. This way you are assured to have the necessary information.

i Access is restricted and is obtained by asking your *Nespresso* technical contact person.

1 CONTENT UPDATES

Version 0.1

- Removal of spare parts list/drawings.
- Preliminary service manual version.

Version 0.2

- Draft of all repair procedures added/finalised.

Version 0.3

- Removed the troubleshooting info of the Momento 100/200 service manual and the Momento 120 user manual.
- Included information from Thermoplan technical manual.

Version 0.4

- Interim version, reordering of installation chapter subsections.
- Implementation of new feedback as far as information is available.

Version 0.5

- Preventive maintenance and software diagnostic menu.
- Added chapter/sub-chapter numbering.

Version 1.0

- Minor adjustments, spelling check, final version for SOP.

Version 1.1

- Milk Pump Calibration procedure.

Version 1.2

- Restructuring for inclusion of plastic component carrier.
- Inclusion of plastic component carrier.
- Several updates and amendments.
- New and more specific change log from this version onward:

Change	Page N°	Requested by
Removed error list from Appendix section	-	*Nespresso*
Corrected wrong Hz for South Korea	**p. 19**	*Nespresso*
Power rating of complete milk module added to technical data	**p. 19**	*Nespresso*
Added info about necessity for machine to be upright 24h before machine is switched on after milk module installation	**p. 25**	THP
New section "Reinforced Cleaning in Case of Misuse"	**p. 48**	*Nespresso*
Added info about machine blockage if no descaling is performed	**p. 51**	*Nespresso*
Adjusted page references for PM on both component support versions	**p. 52**	-
Added "Cleaning of FEP Tubes and T-Connector" to PM	**p. 53**	THP
Reworded “valve motor” to “magnetic coil” for consistency	**p. 153**	THP
Change procedure to remove the water coupling (hose fitting stays in tube)	**p. 155**	THP
New procedure to replace the air valve (pcs)	**p. 165**	THP

Change	Page N°	Requested by
New procedure to replace the air valve (mcs)	**p. 187**	THP
Updated milk module wiring diagram	**p. 202**	THP
Restructuring of milk module repair section:		
General procedures for both component support versions	**p. 140**	Existing Content
Procedures for the plastic component support (new content)	**p. 157**	THP
Procedures for the metal component support (existing content)	**p. 179**	Existing Content

Version 1.3

Change	Page N°	Requested by
Reworded “Flow Control Valve” to “Air Valve” for consistency	-	*Nespresso*, THP
Added more details about the descaling logic (machine blockage)	**p. 51**	*Nespresso*
New procedure for PM to clean DWO tube if machine is used with DWC	**p. 54**	*Nespresso*
Added “Safety Stop Mode” information to the troubleshooting section	**p. 56**	*Nespresso*
Added a new section with functional details for the milk module	**p. 65**	*Nespresso*
Added amperage remark of 10 A to main fuse replacement	**p. 93**	*Nespresso*

Version 1.4

Change	Page N°	Requested by
Updated hot foam adjustment procedure and reference scale	→ **p. 29**	*Nespresso*, THP
Added cold foam adjustment section and reference scale	→ **p. 30**	*Nespresso*, THP
Added foam quality troubleshooting tips	→ **p. 30**	*Nespresso*, THP
Removed foam section from MMI menu chapter	→ **p. 33ff**	Consistency

2 GENERAL SAFETY NOTES

Risk of fatal electrical shock and fire!
Mains voltage inside the coffee machine.

- **Unplug the appliance before cleaning.**
- **Never clean, wet or immerse plug, cord or base station in any fluid.**
- **Disconnect the power plug before disassembly – the appliance must be free of voltage.**

Danger of burns!
Hot parts and water pressure inside the coffee machine (particularly in the thermoblock and boiler).

- **Let the coffee machine cool down before cleaning or disassembly.**
- **Do not touch any hot parts while checking for leakages.**

i A class 1/I laser product is safe under reasonable foreseeable conditions of operation and is not harmful to the eyes provided that the product is used and maintained correctly.

Possible eye hazard!
The capsule recognition module emits an invisible laser beam.

- **Do not stare into the laser beam accidentally or direct it towards other people around you.**
- **Do not put reflective objects in the path of the laser beam.**
- **Do not remove the PCB from the capsule recognition module and look on the powered laser diode with optical equipment such as a magnifying glass or a microscope.**

Danger of flooding in regard to the direct water connection!

- **During repair of the coffee machine on-site, turn off and lock the stop valve of the direct water connection.**
- **Attach a danger sign to prevent unauthorised operation.**

As an additional safety measure, the use of a residual current device (RCD), also called a ground fault circuit interrupter (GFCI), in the repair centre is highly recommended.

i Example illustrations of typical devices.

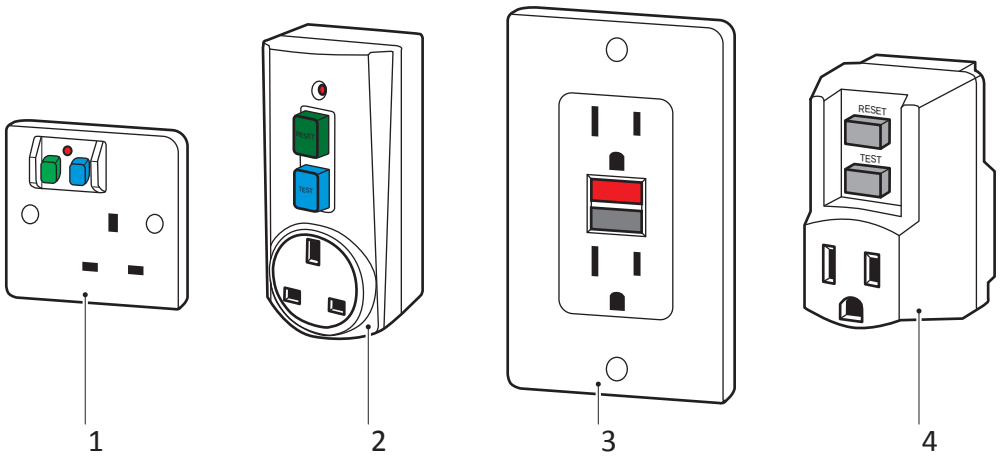


Fig. 1

1) RCD protected socket-outlet
2) Plug-in RCD unit
3) GFCI socket
4) Plug-in GFCI

3 MAIN COMPONENTS

3.1 Momento 120 Chassis

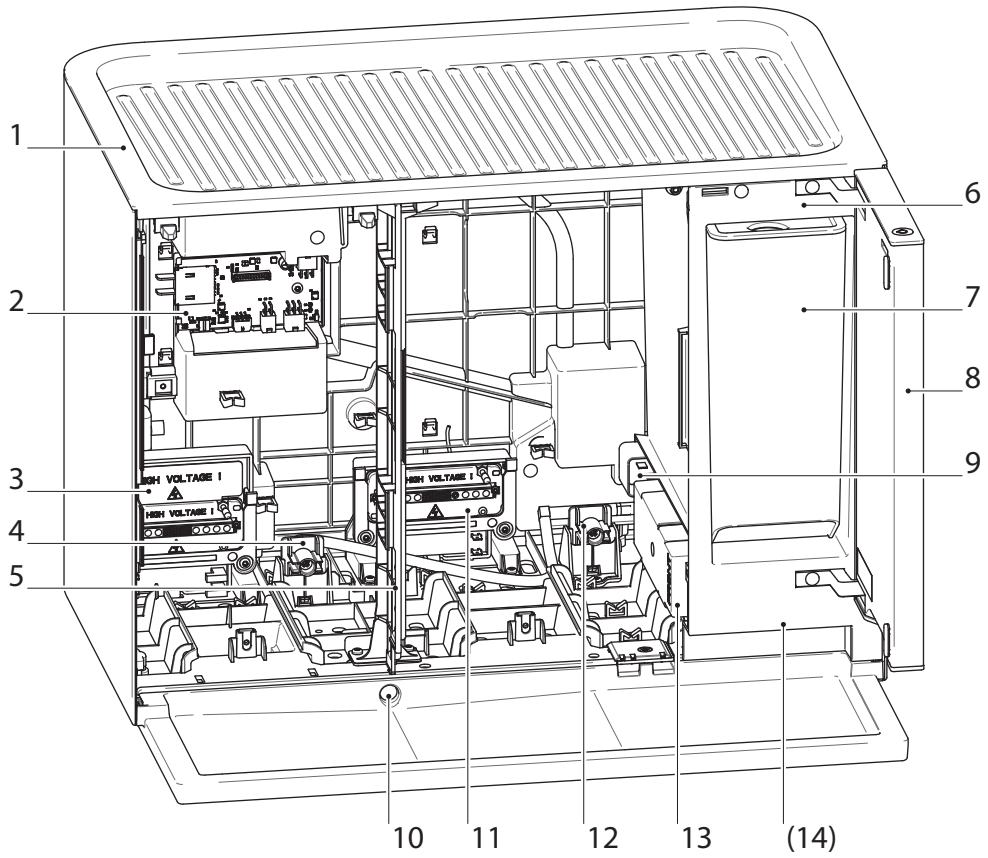


Fig. 2

1) Top plate with milk coupling
2) Access point PCB
3) Smart PCB
4) Coupling chassis / coffee module
5) Structure blind 120
6) Water tank slot 120
7) Water tank
8) Water tank door
9) Power connection
10) Waste water outlet
11) Extension PCB
12) Coupling chassis / milk module
13) EMC PCB and Power supply
14) ON/OFF switch (underneath)

Fluid System

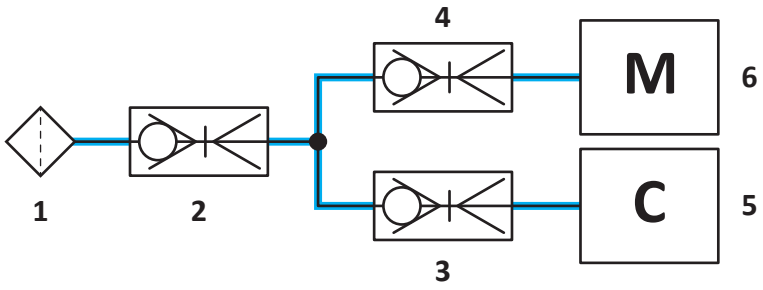


Fig. 3

1) Water tank with optional filter
2) Coupling water tank
3) Coupling chassis / coffee module
4) Coupling chassis / milk module
5) Coffee module → p. 12
6) Milk module → p. 14

3.2 Coffee Module

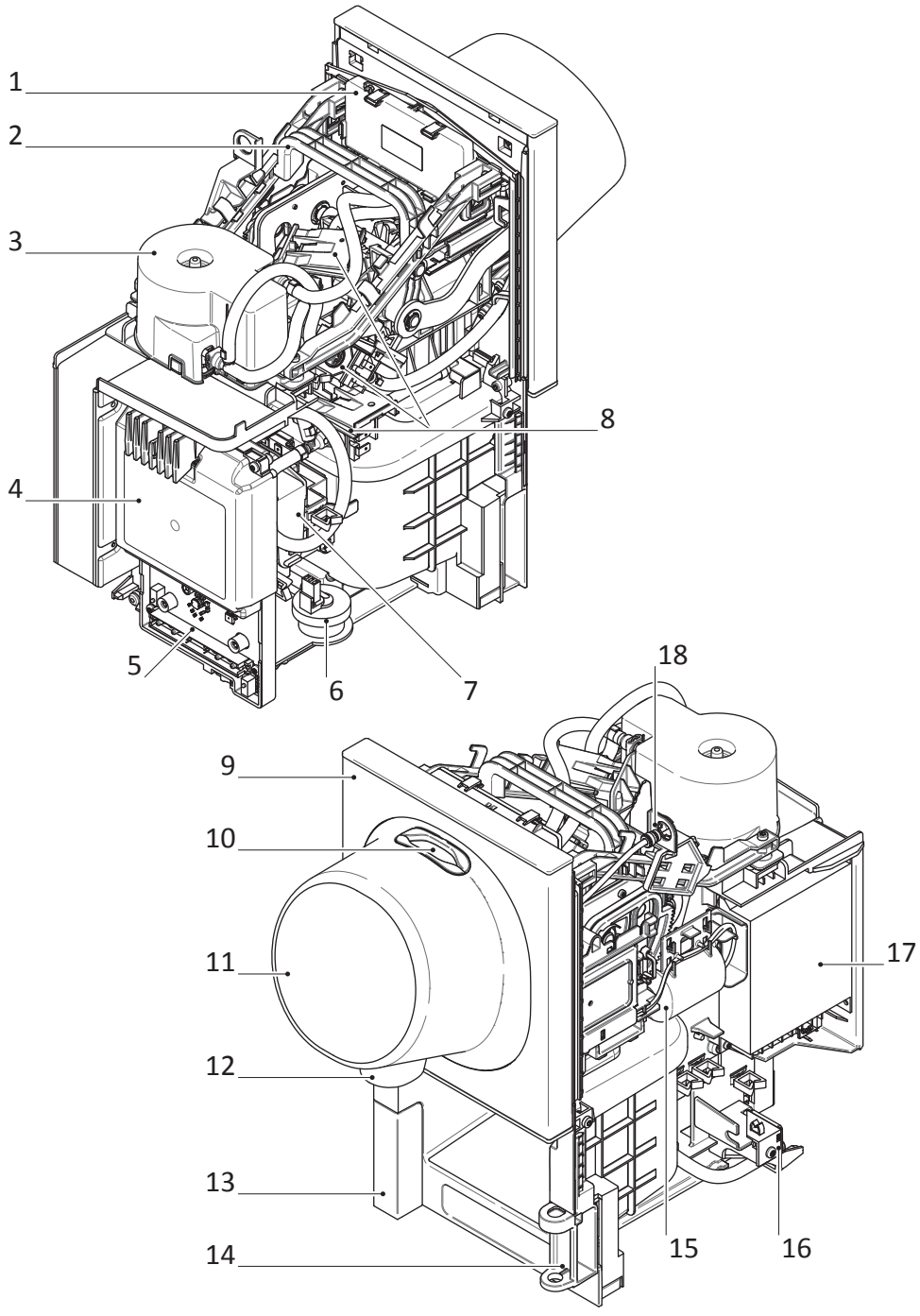


Fig. 4

1) Capsule recognition
2) Module handle / cross beam
3) Thermoblock
4) Main PCB
5) Smart / extension PCB connector
6) Flow meter
7) Pump
8) 2/2-way valves
9) Head base plate
10) Capsule guide with lid
11) MMI screen
12) Outlet
13) Blind cup holder
14) Cup holder support
15) Motorised brewing unit
16) Coupling chassis / coffee module
17) Power supply
18) Coupling milk module

Fluid System

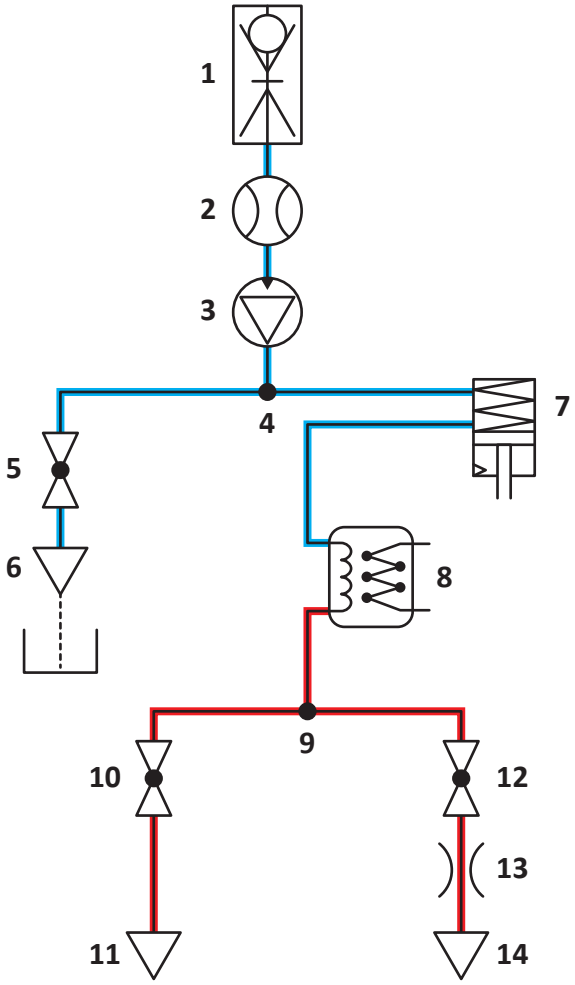


Fig. 5

1) Coupling chassis / coffee module
2) Flowmeter
3) Pump
4) T-Connector
5) 2/2-way valve DEV 122
6) Drain
7) Brewing unit – Fluidic compensation chamber
8) Thermoblock
9) T-Connector
10) 2/2-way valve DEV 122
11) Hot water outlet
12) 2/2-way valve DEV 122 inversed
13) Brewing unit – Capsule
14) Coffee outlet

3.3 Milk Module

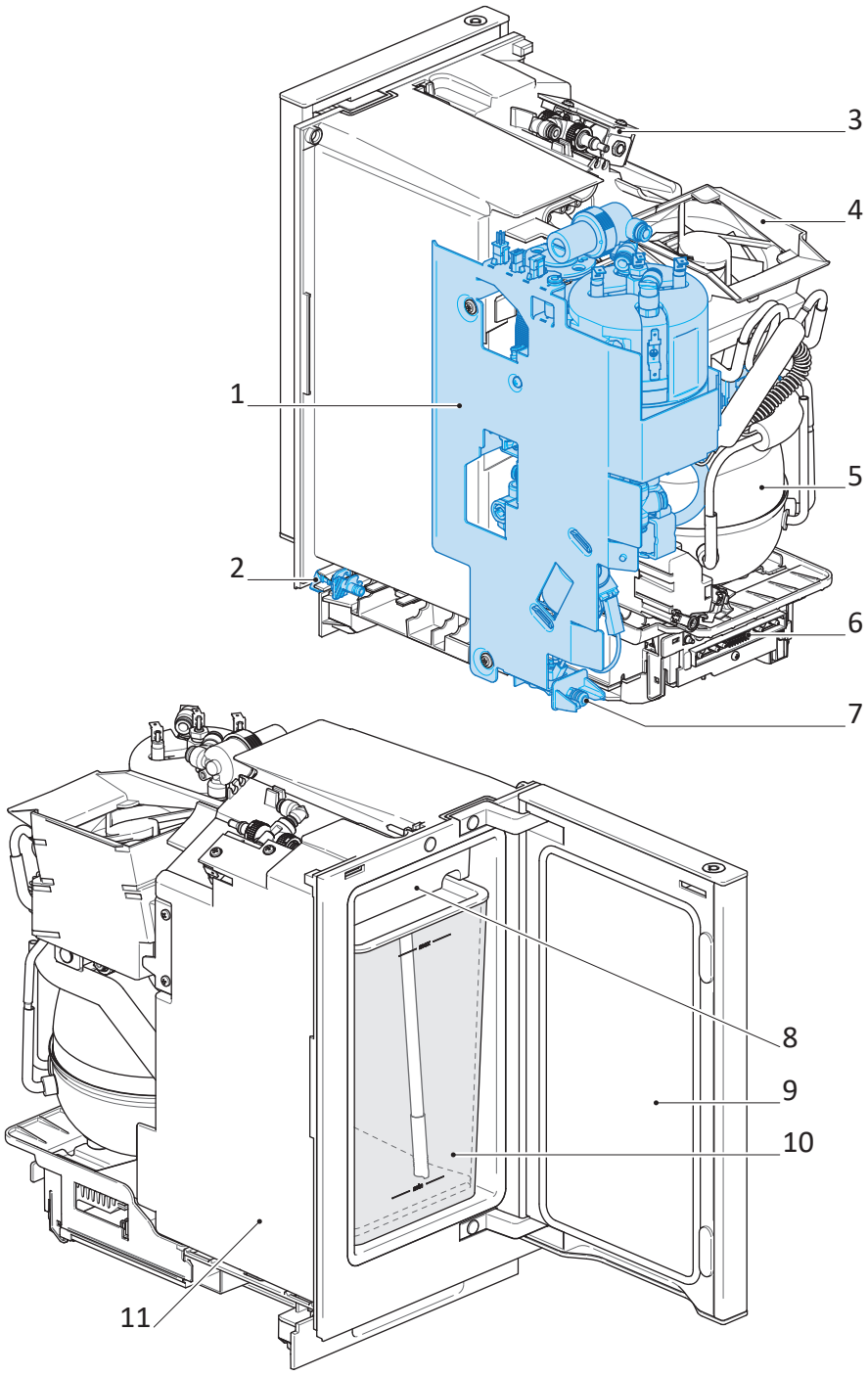


Fig. 6

1) Hydraulic unit
2) Waste water outlet
3) Outlet valve
4) Heat exchanger
5) Compressor
6) Control board
7) Coupling chassis / milk module
8) RF-Box
9) Milk module door
10) Milk tank
11) Fridge

Fluid System

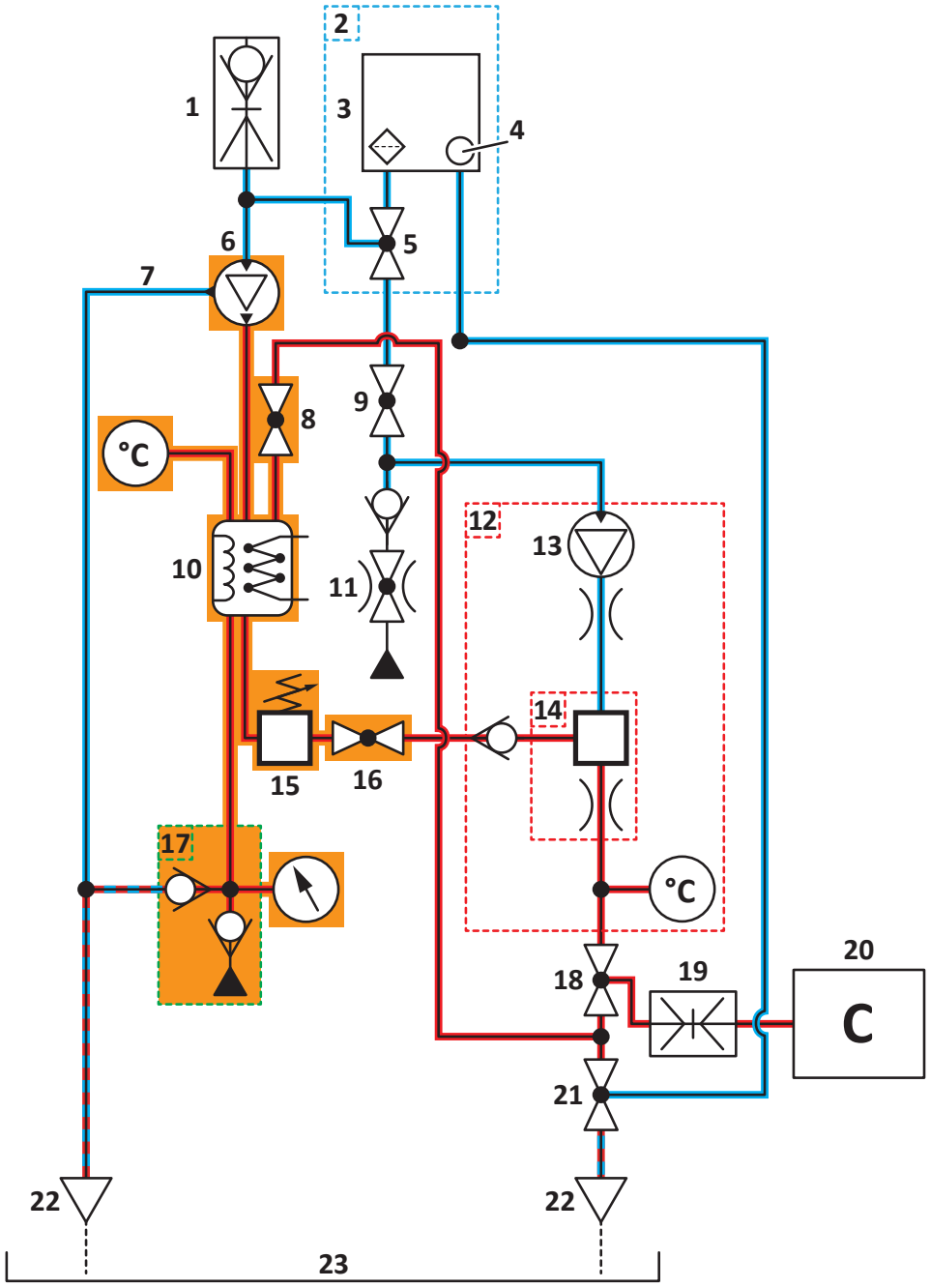


Fig. 7

1) Coupling chassis / milk module
2) Fridge
3) Milk or cleaning tank
4) Cleaning tablet
5) Source valve 3/2
6) Self priming water pump
7) Self priming connection
8) Emptying valve 2/2
9) Suction nozzle valve 2/2
10) Steam boiler
11) Air valve 2/2
12) Pump-heating unit
13) Milk pump
14) Heating chamber
15) Pressure reducer
16) Steam valve 2/2
17) Combination valve
18) Outlet valve 3/2
19) Coupling milk / coffee module
20) Coffee module
21) Cleaning valve 3/2
22) Outlet to drip tray
23) Drip tray

Components and pipes under pressure are marked with a fat orange line or box.

If you need to work on those components or pipes, perform an emptying of the machine → p. 34.

If the module is blocked and this option is not available, wait at least 1h before opening the module. But caution: The components are still hot and can cause burns.

3.4 Overview – Chassis Rear Side

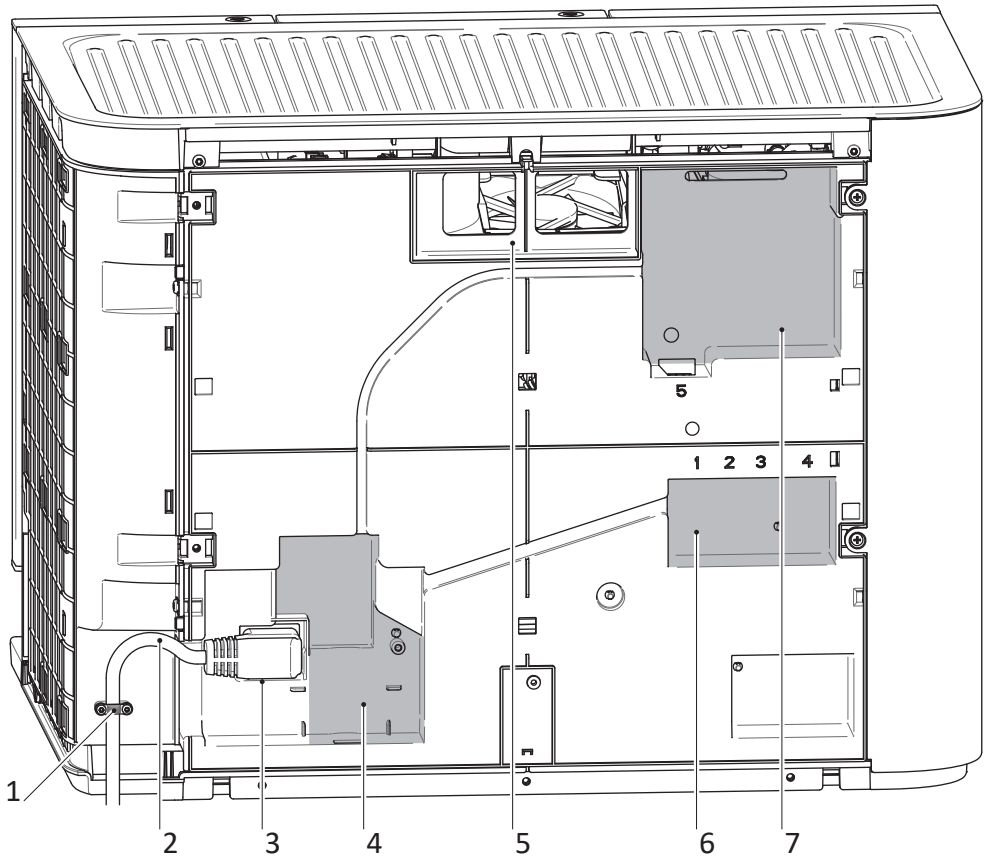


Fig. 8

1) Cable strain relief
2) Power cord
3) Power socket
4) DWC-Kit installation area
5) Venting channel
6) Access point area
7) Telemetry installation area

The Access point area (6) and Telemetry installation area (7) have numbered plugs for connection as follows:

1) Tower link plug
2) Cabinet plug
3) Direct water connection plug
4) Wired access point (Helbling debugging)
5) Telemetry modem plug

3.5 Removable Parts

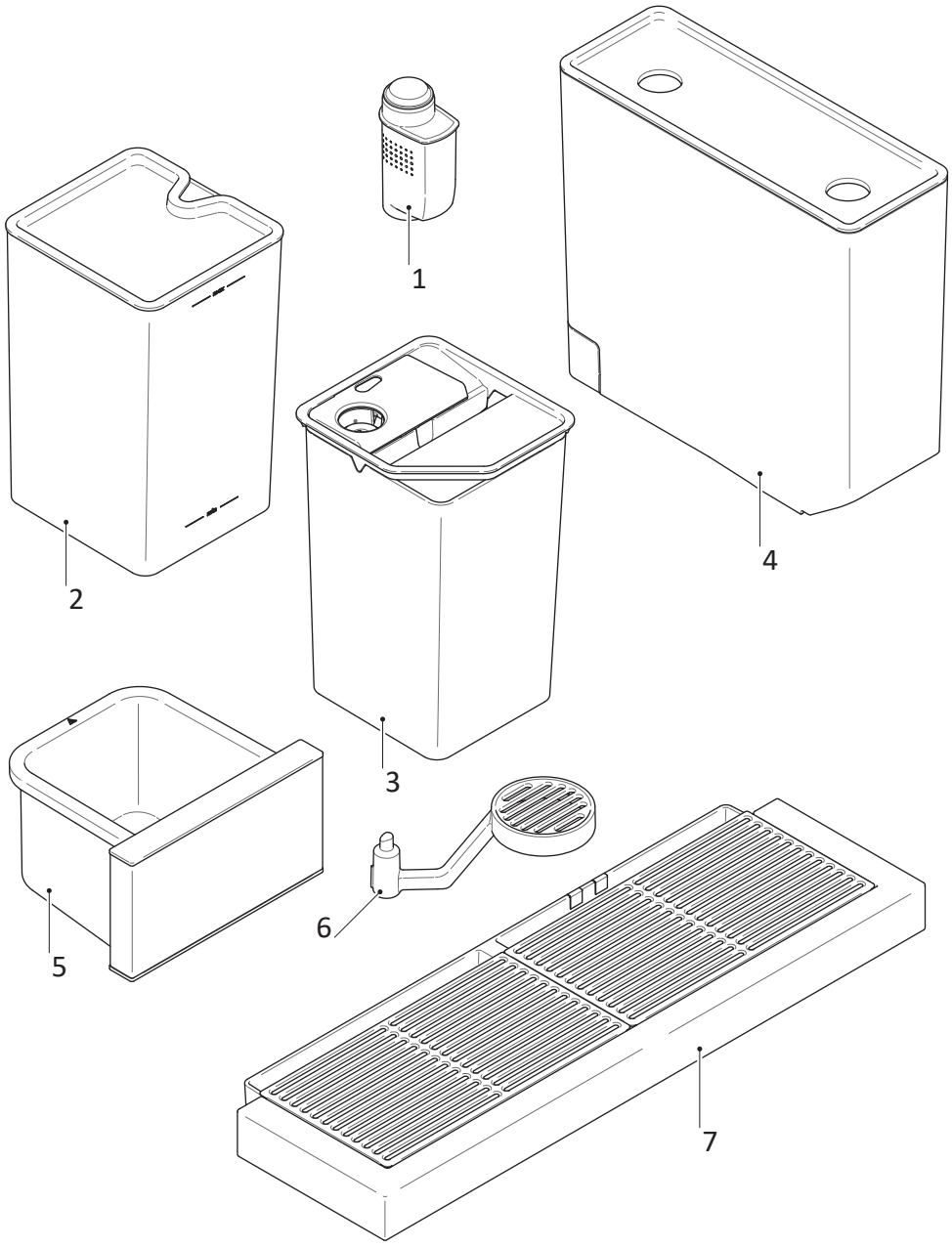


Fig. 9

1) Internal water filter
2) Milk tank
3) Milk module cleaning tank
4) Water tank 120
5) Capsule container
6) Cup holder
7) Drip tray 120/200

3.6 Rating Plate

3.6.1 Position

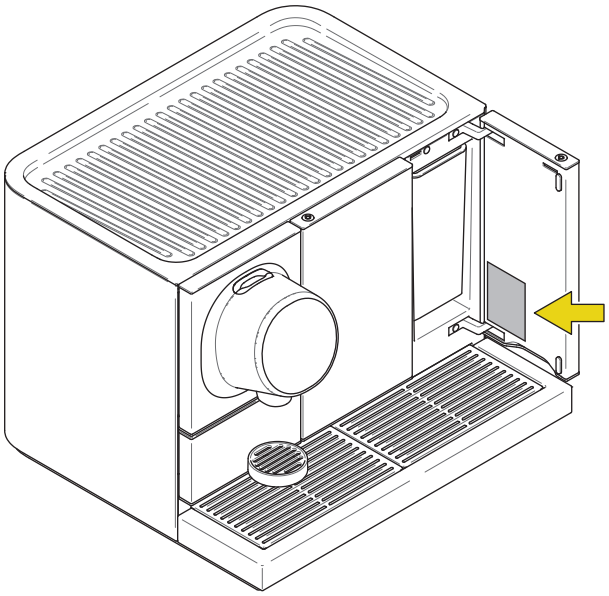


Fig. 10

The rating plate is located on the inside of the water tank door.

3.6.2 Example

Fig. 11

3.7 Technical Data

Mains voltages

Europe (LT, EE, LV, RU, NO, SE, FI, DK, ES, IT, CH, UK, DE, AUS, ZA)	230 V, 50 Hz
US / CA	120 V, 60 Hz
Mexico	127 V, 50 / 60 Hz
Brazil	127 V, 60 Hz
Chile	220 V, 50 Hz
Argentina	220 V, 50 Hz
Costa Rica, Guatemala, El Salvador, Ecuador, Nicaragua	120 V, 60 Hz
Colombia	110 V, 60 Hz
Israel	230 V, 50 Hz
Australia / New Zealand	220–240 V, 50/60 Hz
China	220–240 V, 50 Hz
Hong Kong	220–240 V, 50 Hz
Taiwan	110 V, 60 Hz
South Korea	220 V, 60 Hz
Japan	100 V, 50/60 Hz
Singapore, Malaysia	230 V, 50 Hz

Power ratings

Thermoblock (coffee module)	nominal 1100 W
Pump (coffee module)	55 W – 70 W
Milk module (complete)	2100 W
Fridge compressor (milk module)	50 W

Environmental conditions

Operating temperature range	+5 °C – +32 °C (+41 °F – +90 °F)
Storage temperature range	–25 °C – +60 °C (–13 °F – +140 °F)
Operating humidity range	no condensation, 90 %
Operating altitude	approx. 2500 m (735 hPa)

Capacities

Water tank 120	5 l
Milk tank	3 l
Drip tray 120	1600 ml
Capsule container	40 pcs. min.

Weight

Momento 120	35.4 kg

Dimensions (width × depth × height)

Double coffee/milk chassis	560 × 500 × 420 mm
Power cord length	1.8 m

4 INSTALLATION

This chapter will guide you through the steps for installing a Momento 120 coffee machine on the customer's side.

- Assemble the power cord → p. 20.
- Install the direct water connection kit → p. 21 (**optional**).
- Assembling coffee and milk module → p. 23
- Insulation resistance test → p. 207.
- Initial boot and settings → p. 26.
- Check and adjust the milk foam quality → p. 28.

4.1 Assemble Power Cord

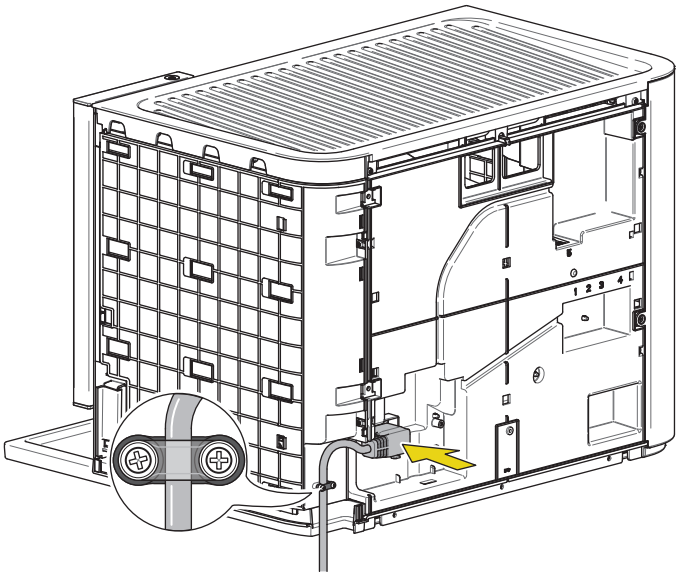


Fig. 12

Prerequisites

- Panel rear is removed → p. 85.
- Right side panel is removed → p. 87.

Procedure

1. Loosen 2 screws (TX10) and open the cable strain relief (see detail).
2. Connect the power cord to the machine.
3. Install the power cord like shown and fasten it with the cable strain relief.
4. Re-assemble the rear panel and the right side panel.

Do not connect the power cord to the mains yet!

4.2 Direct Water Connection (DWC)

The following describes the requirements in general and the specific requirements of the reinforced water hose that is needed to connect the Direct Water Connection Kit to the clients fixed installation.

Requirements

- External water filter (recommended: BRITA Purity Quell ST)
- G 3/8 Valve with back-flow prevention (mandatory)
- 2 reinforced and flexible water hoses
- DWC Kit G 3/8 to filter 3/8
- G 3/8 Valve to plumbing side
- Line pressure between 2 and 4 bar (a pressure reducer might be needed)

Hose Specifications

The reinforced flexible water hoses shall meet the following specifications:

Connection Machine Side	: G 3/8 straight ISO 228-B, including seal
Connection Installation Side	: Default G 3/8 straight, including seal can be adapted to customer needs
Hose diameter	: DN6 (outer diameter Ø 10 mm ± 1 mm)
Hose overall length	: Default 500 mm can be adapted to customer needs
Operating pressure	: 10 bar minimum @ 20 °C
Burst pressure	: 20 bar minimum @ 20 °C
Operating temperature	: 0 °C to +40 °C
Reinforced mesh material	: Stainless steal
Hose construction	: Flexible, allowing a bending radius of 40 mm
Fitting material	: Brass, nickel plated
Sieve	: Mesh Ø 0.5 mm maximum on installation side (mandatory)

DWC Kit Momento 100/120

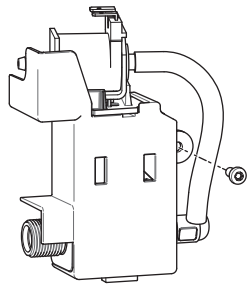


Fig. 13

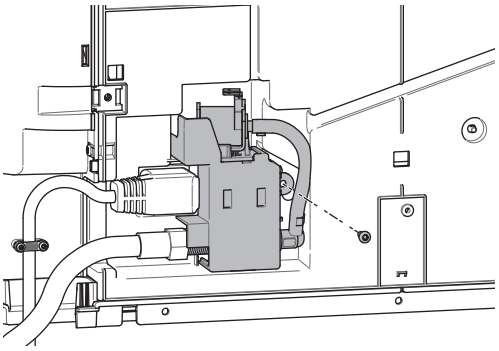
ℹ The SKU of the DWC Kit are different for the Momento 100 and 120.

4.2.1 DWC Installation – Machine Side

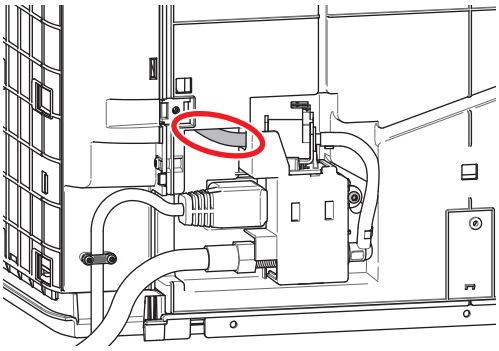
Prerequisites

- Panel rear is removed → p. 85.
- Right side panel is removed → p. 87.

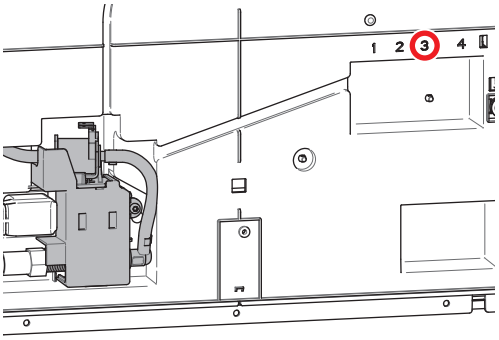
Procedure



1. Mount the DWC Kit using the screw provided.



2. Connect the hose from the water tank.



3. Connect the plug from the DWC Kit to the connector number 3 (labelled on the chassis rear side).

4. Continue with the client side installation.

4.3 Assembling Coffee and Milk Module

4.3.1 Placing the Machine

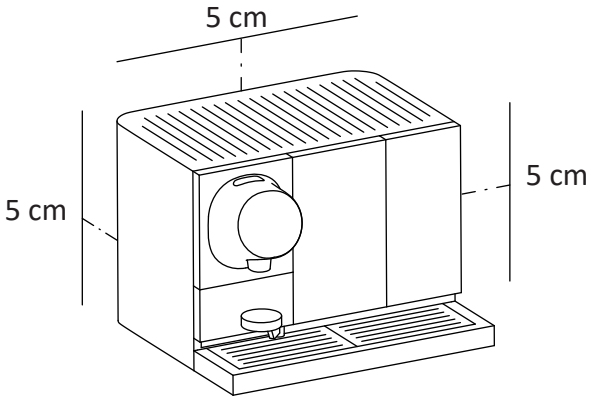


Fig. 14

Ensure that the coffee machine is placed in a location with sufficient ventilation (at least 5 cm space on the back, on the sides and top of the machine)!

4.3.2 Mount the Cup Holder Support

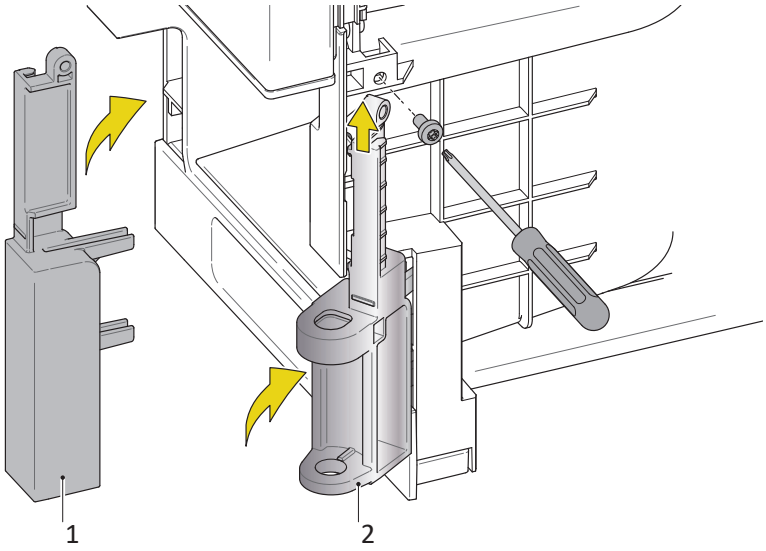


Fig. 15

1. Insert the cup holder support (2) on the right side of the coffee module.
2. Slide the cup holder support upwards and screw it on (TX20).
3. Attach the blind cup holder (1) in the same way on the left side of the coffee module.

4.3.3 Install the Coffee Module

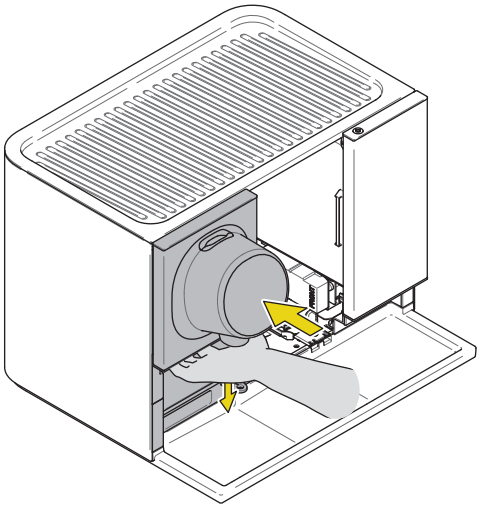


Fig. 16

1. Hold the coffee module on the orange handle. Reach in the capsule ejection opening with the other hand for support.
2. Insert the coffee module into the related slot of the main housing and place it on the guide rails at the bottom.
3. Carefully slide the coffee module into the main housing until it stops.
4. To ensure correct positioning, push the coffee module into the main housing and pull it down at the capsule ejection opening.

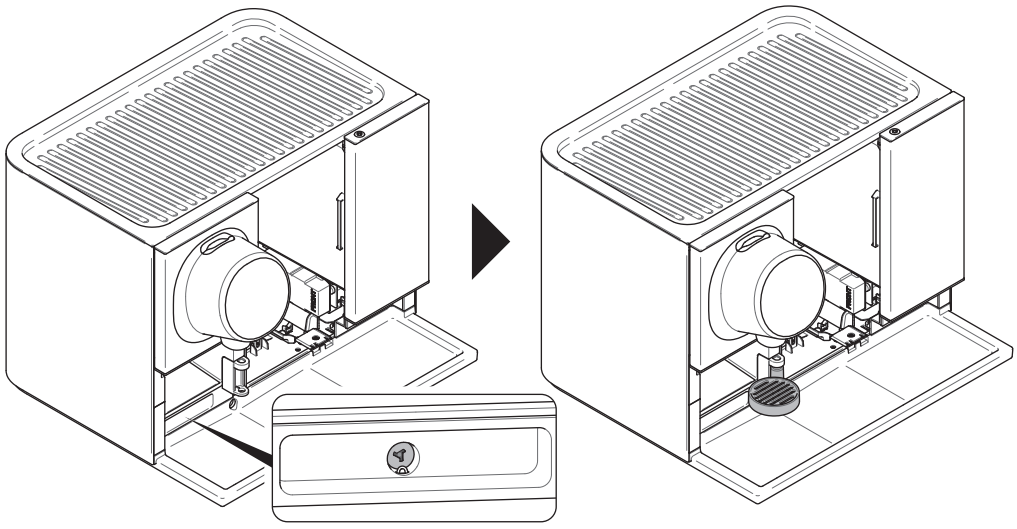


Fig. 17

5. Fasten the Tri-Wing screw to secure the coffee module.
6. Mount the cup holder.

4.3.4 Install the Milk Module

Risk of damage! Ensure that the milk module was standing upright for at least 24 h before switching on the machine after the module installation, to avoid damage to the fridge compressor.

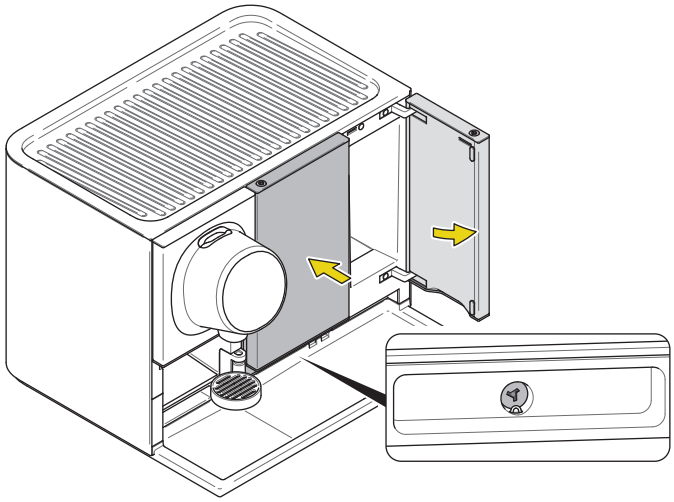


Fig. 18

1. Open the water tank door and insert the milk module into the related slot of the main housing and place it on the guide rails at the bottom.
2. Carefully slide the milk module into the main housing until it stops.
3. Fasten the Tri-Wing screw at the bottom of the milk module.

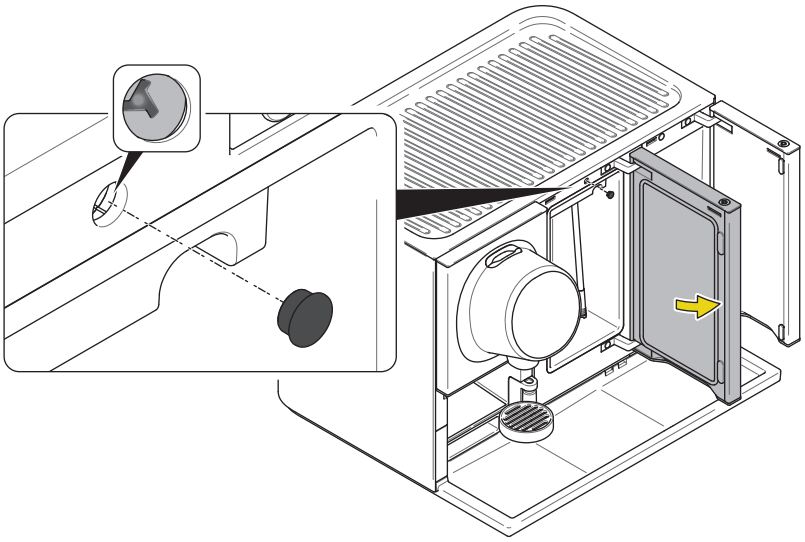


Fig. 19

4. Open the milk module door.
5. Remove the screw cover and fasten the Tri-Wing screw on the top part of the milk module.
6. Put the screw cover back and close both doors.

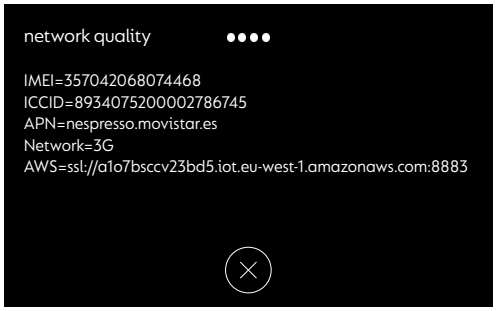
Perform an insulation resistance test to finish the modules installation.
→ p. 207

Milk foam quality must be checked and adjusted after every installation
→ p. 28

4.4 Initial Boot and Settings

4.4.1 Modem Connectivity Check

The connectivity information is only displayed on the MMI during machine boot-up.



Minimum Requirement

Network	3G
Network quality	Minimum of 2 dots

Not meeting this requirements, the telemetry might still work but remote firmware update will not.

The installation of an external antenna can help finding better coverage as you can place it away from electromagnetic noise or a bit closer to the signal source.

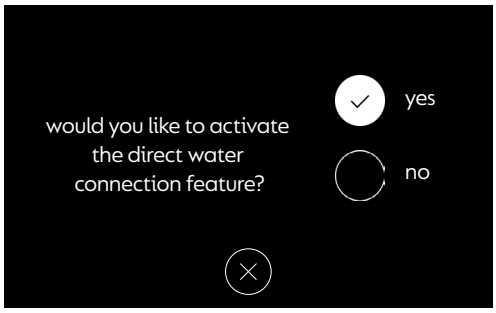
Recommended start position is on machine right panel as close as possible to the upper right corner.

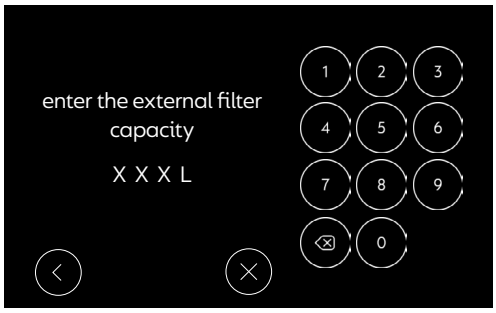
Reboot the machine to check the signal quality again after every time you moved the antenna.

4.4.2 DWC Set Up (if installed)

The external filter capacity has to be set when activating the DWC function:

According to the time zone defined, set the volume in L (litres) or gal (gallons).





4.4.3 Set Agent Code

This step is mandatory to allow the correct transmission of telemetry data!

The Agent code setting is not part of the setup wizard and must be done manually after assembling and installing the modules → p. 39.

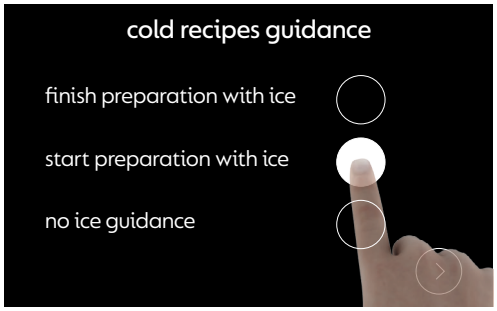
4.5 Setting Cold Recipes Menu Item

1. Enter the technician menu via the machine settings → p. 33.

2. Press the “next” symbol to scroll through the settings.
3. Select “set cold recipes”.
4. Confirm the setting by tapping on “yes”.

4.6 Setting Cold Recipes Guidance

1. Enter the setup menu via the machine settings → p. 33.

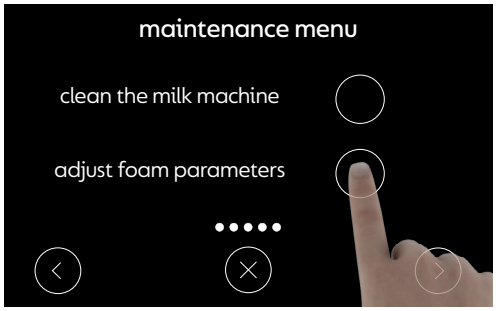


2. Press the “next” symbol to scroll through the settings.
3. Select “set cold recipes guidance”.
4. Select “start preparation with ice”.

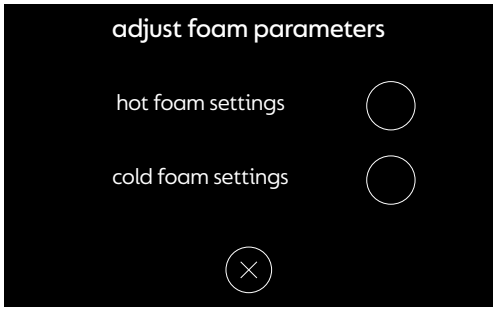
4.7 Milk Foam Adjustment

4.7.1 MMI Menu for Foam Settings

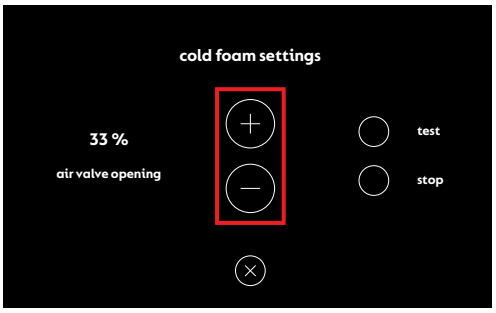
1. Enter the maintenance menu via the machine settings → p. 33.



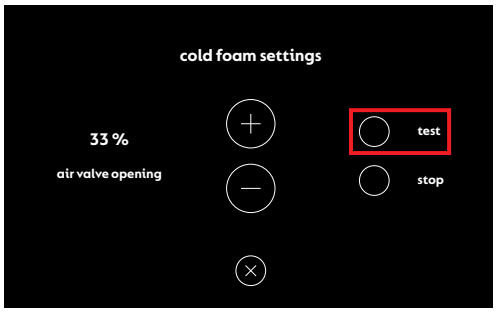
2. Tap on “adjust foam parameters”.



3. Select the hot/cold foam settings depending on which you want to adjust.



4. The only parameter that is adjustable regarding the product quality is the air valve opening for froth.



5. With “test”, a test product with this settings is dispensed.

Changes of the air valve opening have the following impact on the product:

⊕	Air flow increases → foam becomes more solid. **If the air limit is exceeded → blow out, many big bubbles!**
⊖	Air flow decreases → foam becomes more liquid.

Refer to the next 2 pages for optimal adjustment of both hot and cold foam.

ℹ The milk foam settings are part of the maintenance menu → p. 34

4.7.2 Hot Foam Adjustment Procedure and Reference Scale

Milk foam adjustment has to be performed with the same type of milk that the customer is going to use and must always be performed at the first installation of the machine.

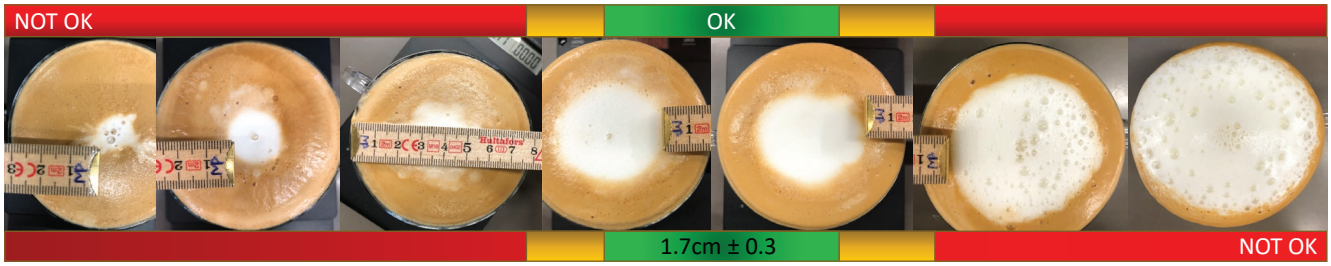
Material

- Cappuccino cup (about 180 ml/60 Oz)

- Coffee Pods (Forte variety)
- Pre cooled cow milk (below 8°C), UHT or pasteurized **1.5% to 3.5% fat**

Procedure

1. Set the air valve to 25% to start.
2. Dispense 4 test products by tapping on “test” and discard the frothed milk.
3. Dispense a ristretto (Forte variety) in the empty cappuccino cup.
4. Dispense milk foam at the centre of the cup until reaching the top of the cup (place the cup such that the milk outlet will be centred above the cup).
5. Measure the width of the brown coffee ring as shown on the scale below (if the ring is not symmetrical, take the average of both sides).
6. Compare the result with the scale below and proceed according to (a), (b) or (c).



(a) If the width of the brown coffee ring measures 17mm ± 3mm, the froth adjustment is complete.

(b) If the width of the brown coffee ring is too large then the foam is too liquid and the amount of air needs to be increased. Restart from step 1 and increase the air valve value by 2%.

(c) If the milk foam surface has too many bubbles and/or no consistent ring then the amount of air needs to be decreased. Restart from step 1 and decrease the air valve value by 2%.

4.7.3 Cold Foam Adjustment Procedure and Reference Scale

Milk foam adjustment has to be performed with the same type of milk that the customer is going to use and must always be performed at the first installation of the machine.

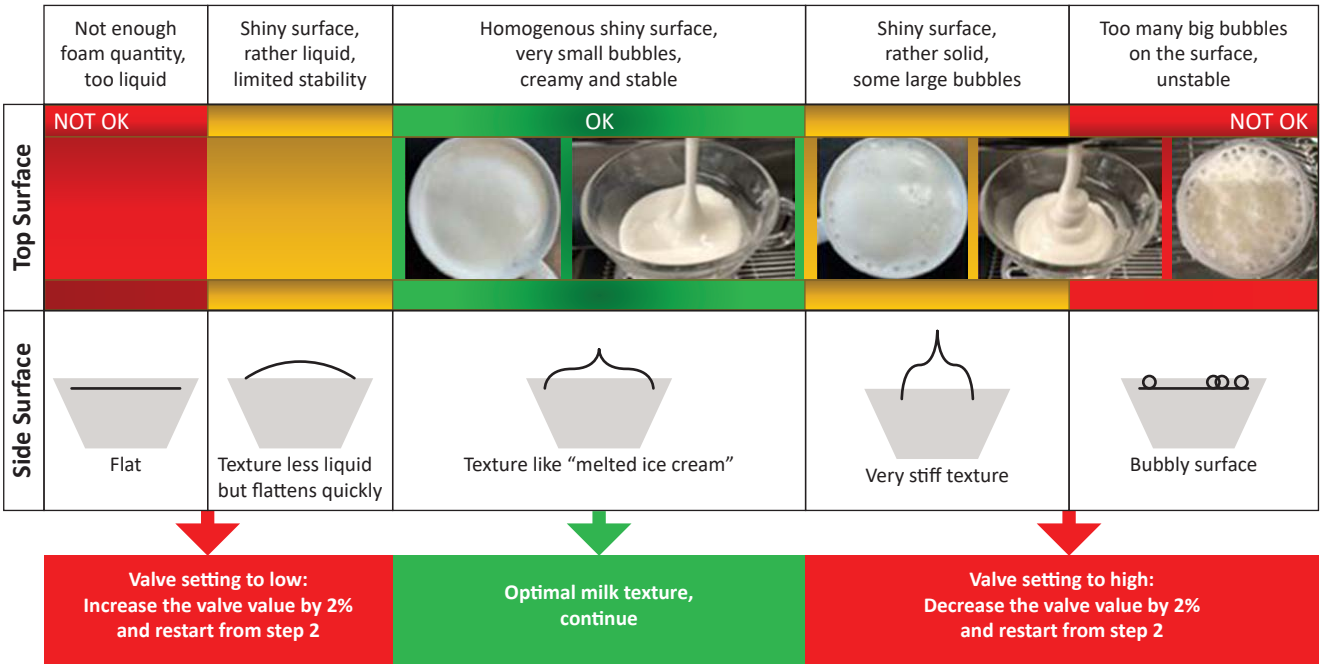
Material

- Cappuccino cup (about 180 ml/60 Oz)

- Coffee Pods (Ice Intenso)
- Pre cooled cow milk (below 8°C), UHT or pasteurized **1.5% to 3.5% fat**

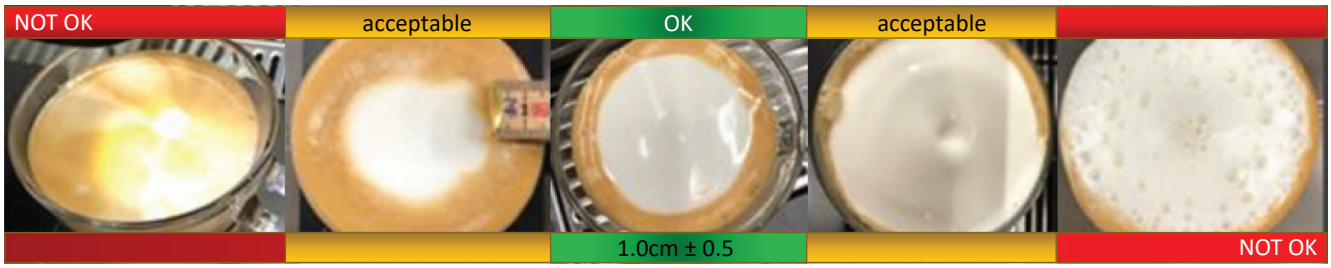
Procedure

1. Set the air valve to 25% to start.
2. Dispense 4 test products by tapping on “test” and discard the frothed milk.
3. Press test, fill the cappuccino cup with froth and assess the quality as follows:



4. Dispense a ristretto (Ice Intenso) in the empty cappuccino cup.
5. Dispense milk foam at the centre of the cup until reaching the top of the cup (place the cup such that the milk outlet will be centred above the cup).
6. Continue on the next page →

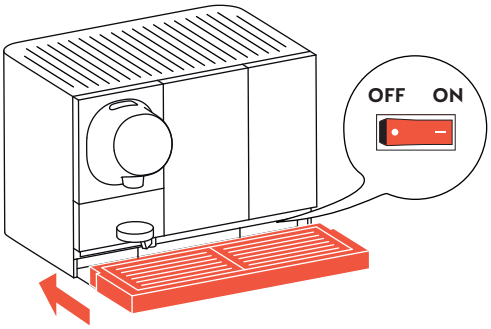
7. Measure the width of the brown coffee ring as shown on the scale below (if the ring is not symmetrical, take the average of both sides).
8. Compare the result with the scale below and proceed according to (a), (b) or (c).



(a) If the width of the brown coffee ring measures 10mm ± 5mm and remains stable for more than 1 minute, the froth adjustment is complete.
(b) If there is no ring and only brown surface then the foam is too liquid and the amount of air needs to be increased. Restart from step 1 and increase the air valve value by 2%.
(c) If the milk foam surface has too many bubbles and/or no consistent ring then the amount of air needs to be decreased. Restart from step 1 and decrease the air valve value by 2%.

5 OPERATION

5.1 Switching the Coffee Machine ON/OFF



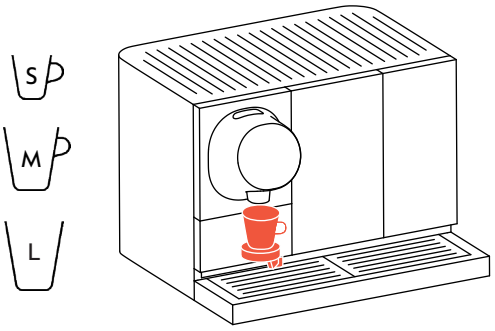
1. Remove the drip tray.
2. Switch the machine ON or OFF.
3. Re-insert the drip tray.

5.2 Preparing a Beverage

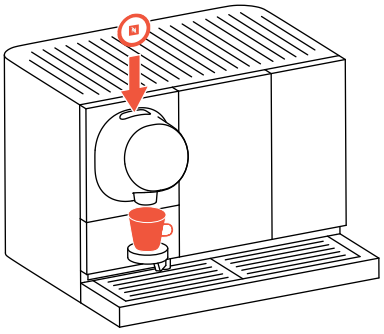
5.2.1 Coffee Preparation

ℹ Every time the machine is started, it will do a rinsing to ensure the perfect cup of coffee. Every 2 hours the machine will rinse briefly.

ℹ Hot foam, hot water and hot milk functions are directly accessible from the home screen.



1. Select the right cup (size) for your drink. Use the cup support for small and medium cups. Move the cup support to the side if a large cup is used.

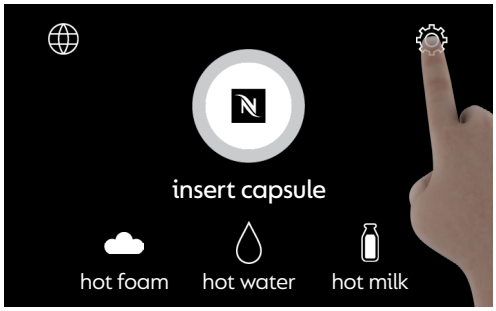


2. Place the cup under the outlets. Insert the capsule into capsule slot.

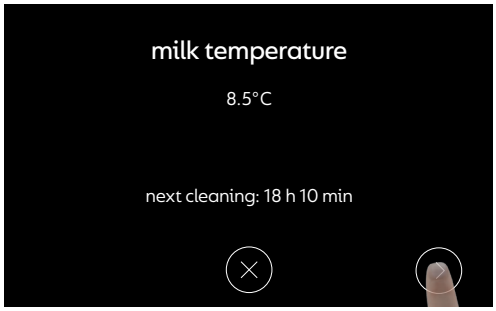
3. Select the recipe. Recommended recipes for the inserted capsule are highlighted.

6 MMI MENUS

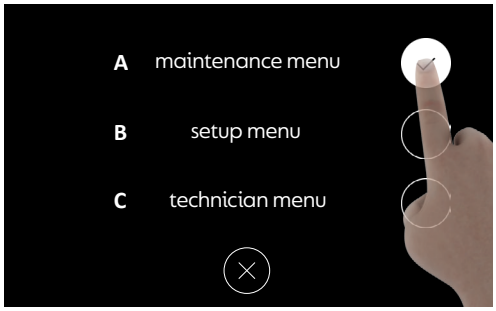
6.1 Settings



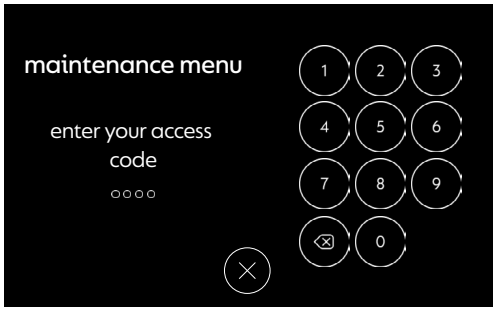
1. Tap on the “settings” symbol to access the settings menu.



2. A screen with some basic maintenance info is shown.
3. Tap on the continue symbol.



4. Select a sub-menu:
   - A Maintenance menu → p. 34
   - B Setup menu → p. 35
   - C Technician menu → p. 39



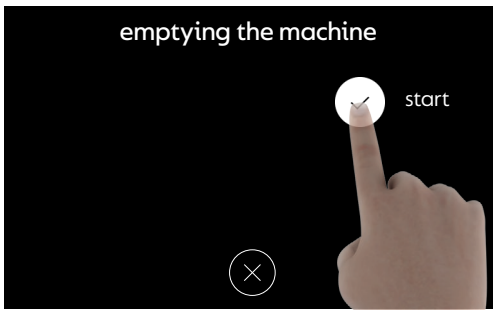
5. All three menus are protected. The default code for the maintenance menu and the setup menu is 8888. The default code for the technician menu is 8520.

6.2 Maintenance Menu

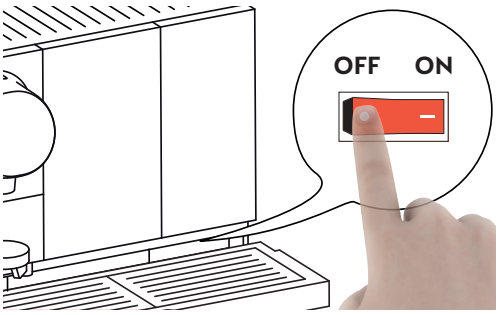
1) Clean the milk machine: → p. 44
2) Adjust foam parameters → p. 28
3) Change the internal filter: → p. 44
4) Descale the machine
   - Coffee module: → p. 51
   - Milk module: → p. 51
5) Reset the cabinet capsule container counter: Set counter back to 0. Available only on machines equipped with the *Nespresso* base cabinet (optional).
6) Display the connectivity status: Network data are displayed. Available only on machines equipped with telemetry (optional).
7) Display the log: Automatic protocol of software events i.e. to diagnose problems.
8) Display the serial number and software version: Serial numbers and software versions of the corresponding machine parts are displayed.
9) Emptying the machine → p. 34

6.2.1 Emptying the Machine

i The procedure will last about 25 minutes.



1. Enter the maintenance menu. Select “emptying the machine”, press start and follow the instructions on screen.



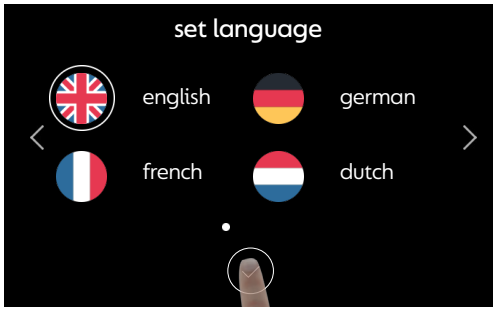
2. Once the machine is successfully emptied, turn it off by pressing the ON/OFF switch. Unplug the machine.

6.3 Setup Menu

1) Set language: → p. 35
2) Set time: Set time zone, time and date
3) Set energy saving modes: → p. 35
4) Machine configuration
5) Set temperature: → p. 36
6) Set cup size: → p. 36
7) Set recipes and recipes lengths: → p. 37
8) Set access code: → p. 37
9) Set water hardness: → p. 38
10) Reset to factory settings: → p. 38

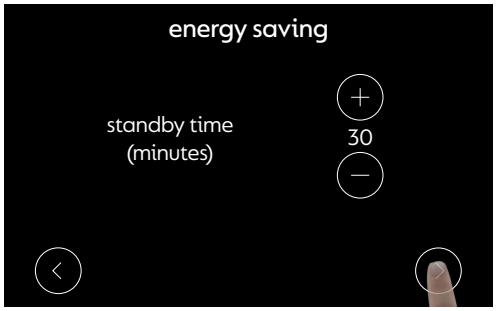
6.3.1 Change Language

1. Tap on the “language” symbol to access the language menu.

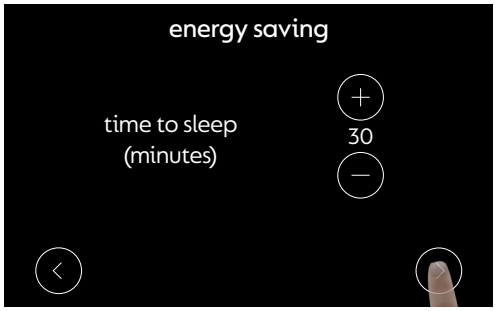


2. Select the desired language and tap on the “confirm” symbol.

6.3.2 Energy Saving



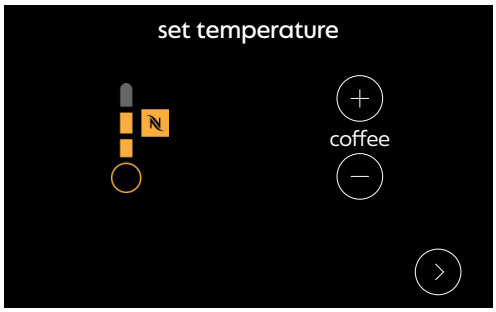
1. Select the time after which the machine enters standby mode. In this mode, the machine automatically turns on again if a user gets near it.



2. Select the time after which the machine enters sleep mode. In this mode, a control panel has to be touched to turn the machine on again.

i The machine fridge remains on whilst machine in sleep mode.

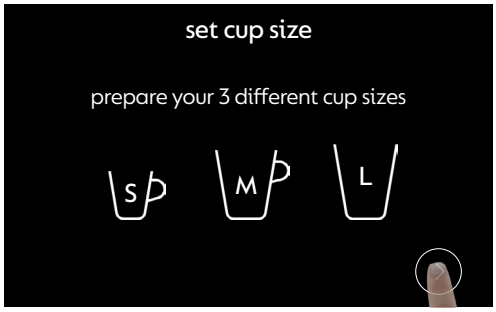
6.3.3 Set Temperature



1. Set the coffee temperature with +/–. Tap on the “next” symbol to proceed to the setup menu. *Nespresso* recommends temperature as displayed.

6.3.4 Set Cup Size

1. Select “yes” if you use *Nespresso* branded cups. If not, select “no”. The machine will help you to define the size of your cups.



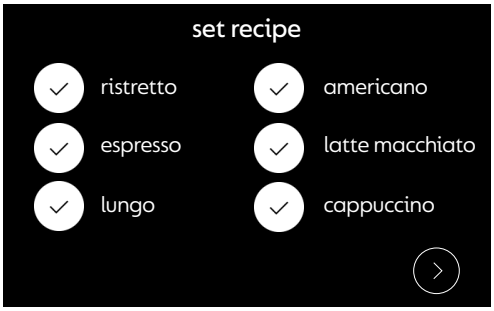
2. Have your standard small, medium and large cups available. Tap on the “next” symbol, follow the instructions on the screen and place the smallest cup under the coffee outlets.

3. Press start to fill the cup and press stop when it is full. Repeat this procedure with the medium and large cups. You can skip a cup size by tapping on the “next” symbol.

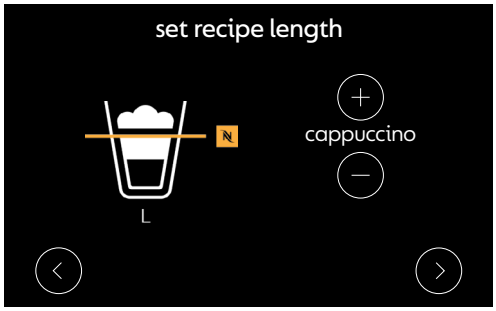
6.3.5 Set Recipe

1. Select the “plus” symbol to add another recipe.

2. Highlight the desired recipe and select the “confirm” symbol to proceed.

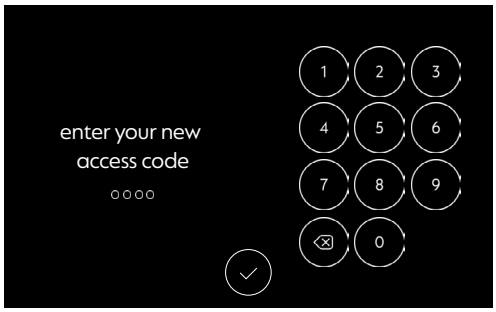


3. The new selected recipe is displayed.

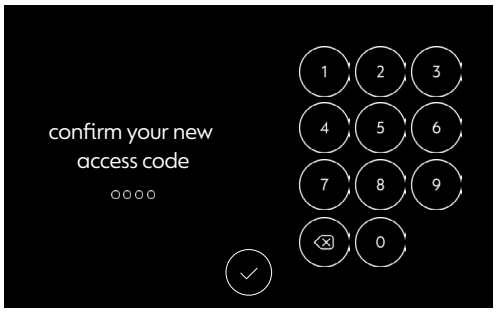


4. Set the recipe length for all available recipes with +/–. *Nespresso* recommends recipe lengths for each recipe as displayed.

6.3.6 Set Access Code

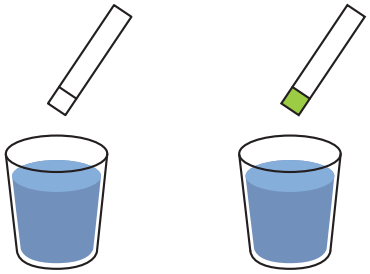


1. The default access code for the maintenance and setup menu is 8888. Enter a new access code and tap on the “confirm” symbol.

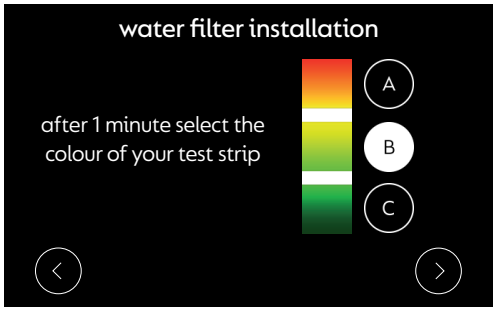


2. Confirm the new access code and tap on the “confirm” symbol.

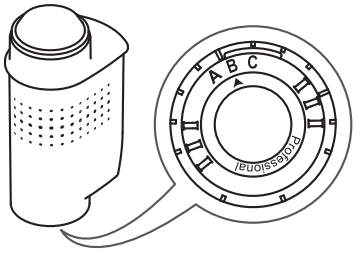
6.3.7 Set Water Hardness



1. Prepare the items as instructed. After 1 minute in water, the test strip is coloured.



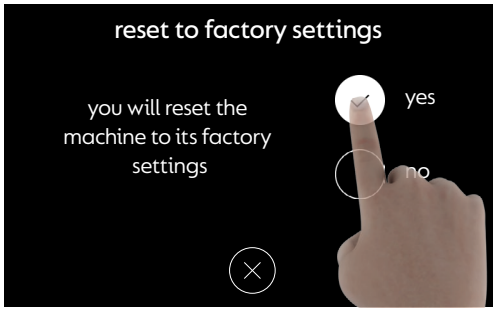
2. Tap on the “A”, “B” or “C” symbol to match the colour of your test strip. Tap on the “next” symbol to proceed.



3. Adjust the bottom ring on the water filter to “A”, “B” or “C” as recommended.

6.3.8 Reset to Factory Settings

If the machine is reset to factory settings, all customised settings will be lost!



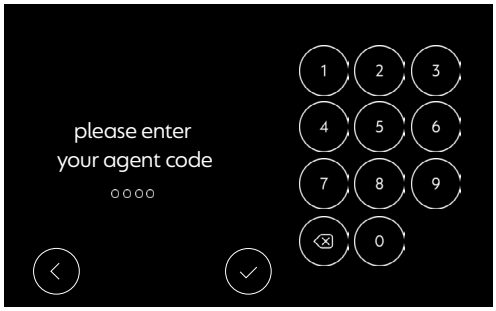
1. Select “yes” to reset the machine to its factory settings. To cancel, select “no” or tap on the “cancel” symbol.

6.4 Technician Menu

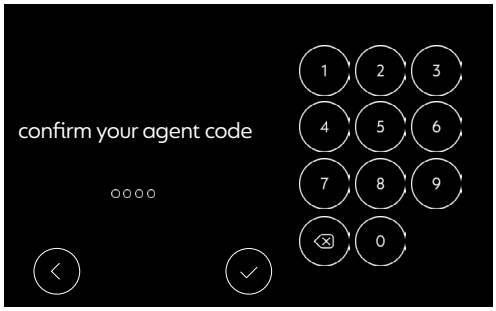
1) Set access code
2) Copy log on SD card
3) Save/load configuration locally
4) Save/load configuration on SD card
5) Set tower link
6) Set cup heater
7) Set direct water connection
8) Set cabinet threshold
9) Change external filter
10) Set agent code: → p. 39
11) Milk module diagnostic: → p. 39
12) Milk Pump Calibration: → p. 41
13) Upgrade machine software: → p. 42
14) Component maintenance status: → p. 43
15) Set cold recipes menu item → p. 27

6.4.1 Set Agent Code

The agent code list is updated and available for download on the “INFOTECH“ section of the Nestlé *Nespresso* business extranet https://business.nespresso.com.

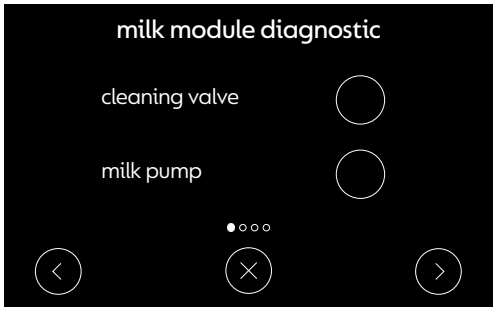


1. Enter the agent code and tap on the “confirm” symbol.

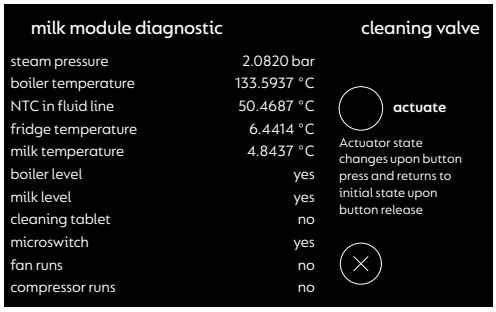


2. Confirm the agent code by tapping the “confirm” symbol again.

6.4.2 Milk Module Diagnostics



1. Press the “next” symbol to scroll through the components.
2. Select the circle next to a component to enter the corresponding diagnostic screen.



3. The table “milk module diagnostics“ is shown independently of the selected component.
4. Pressing and holding the “actuate“ symbol activates the chosen component. When the button is released the component is deactivated and reset.

Risk of damage! Only activate a component when you are knowledgeable about the risks.

Expected Sensor Values

If the sensor values indicated on the screen differ from what is shown in this table, a hardware issue of the sensor might be the root cause.

Value	Min	Max	Comment
Steam pressure	0.0 bar	4.5 bar	Operating pressure: 2.6 bar – 3.2 bar Over pressure valve opening pressure: 3.5 bar
Boiler temperature	0.0 °C	150.0 °C	**Min**: Depends on the water temperature with which the boiler was filled. **Max**: Overpressure, exceeding 3.5 bar.
NTC in fluid line	0.0 °C	130.0 °C	**Min**: Depends on the fluid which is currently pumped and if steam is involved or not. **Max**: If only steam is pushed without fluid.
Fridge temperature	2.0 °C	85.0 °C	Max: During cleaning procedure. Normal operating temperature: 2.0 °C – 5.0 °C **Hint**: If the sensor shows exactly -20 °C, this indicates an unplugged sensor connector.
Milk temperature	0.4 °C	83.4 °C	Milk temperature is calculated based on the measured fridge temperature → Correcting value is -1.6 °C

Component Action and Feedback

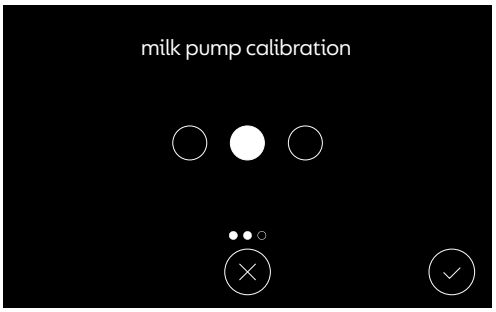
Risk of damage!
Only activate components via the diagnostics if you really need to and are knowledgeable about the risks!

- **Falsely activated components can lead to milk in unwanted locations in the hydraulic unit or have other unwanted effects.**
- **Activating a component for too long can damage a component.**

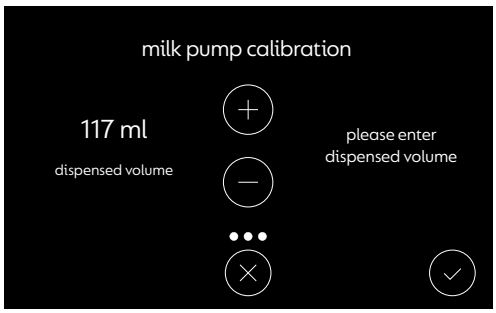
Component	Action by Button	Feedback to Tech
Source valve	Activate/deactivate valve switching	Click sound
Suction nozzle valve	Activate/deactivate valve switching	Click sound
Air valve	Activate/deactivate valve switching	No feedback to technician
Steam valve	Activate/deactivate valve switching	Click sound, steam in drain (if steam boiler ready)
Outlet valve	Activate/deactivate valve switching	Click sound
Cleaning valve	Activate/deactivate valve switching	Click sound
Emptying valve	Activate/deactivate valve switching	Click sound, steam water in fridge (if steam boiler ready)
Water pump	Activate/deactivate pump running	Sound of pump motor, switching of level sensor if water level was below threshold, increase of pressure in boiler
Milk pump	Activate 80% PMW/deactivate pump running	Sound of pump motor, changing fluid line temperature, water is dispensed in the drain
Fan	Activate/deactivate fan running	Sound of fan
Heater in steam boiler	Activate/deactivate heating	Increasing steam pressure and boiler temperature
Compressor	Activate/deactivate compressor running	Sound of compressor

6.4.3 Milk Pump Calibration

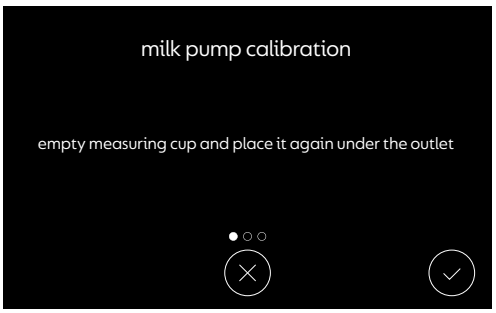
1. Place a measuring cup under the outlet that holds at least 150 ml and tap on the “confirm” symbol.



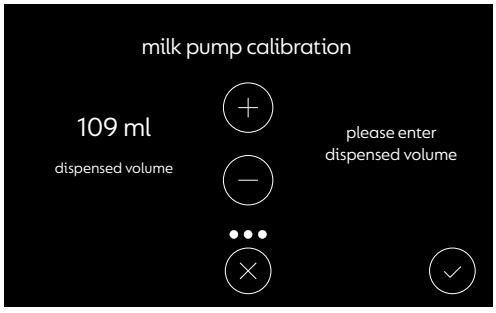
2. Wait until the milk shot is dispensed.



3. Enter the dispensed volume and tap on the “confirm” symbol.



4. Empty the measuring cup, put it back under the outlet and tap on the “confirm” symbol.



5. Repeat the procedure two more times.

6. Tap on the “confirm” symbol on the final screen.

Please note that the dispensed volume is not adjusted during the procedure. The calibration is done by calculating the average of the three entered shot volumes.
To ensure that the calibration was successful, dispense a test product.

6.4.4 Upgrade Machine Software

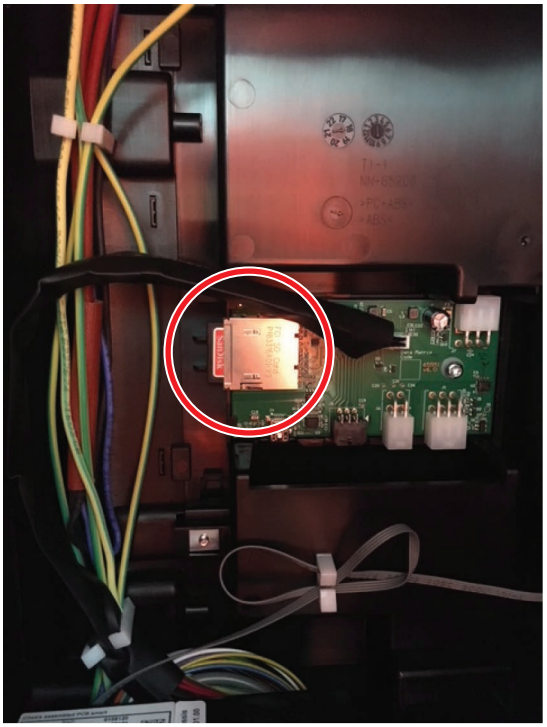
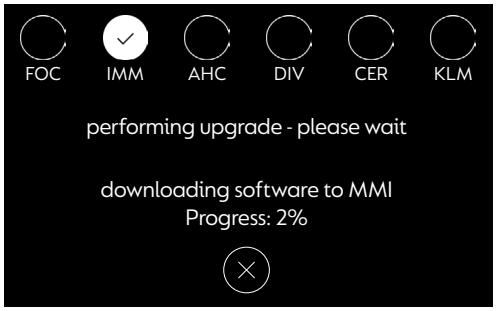


Fig. 20

1. Remove the coffee module → p. 89.
2. Insert a 32GB SD card into the card reader inside the chassis (see fig. 18).
3. Insert the coffee module again.
4. Enter the technician menu and choose “Upgrade machine software“.



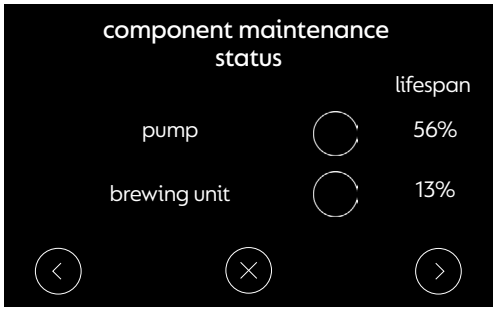
Explanation of abbreviations:

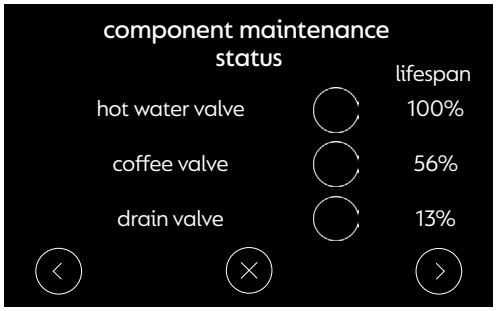
- FOC: Coffee main
- IMM: MMI (interface)
- AHC: Chassis
- DIV: Video drivers
- CER: Capsule recognition
- KLM: Milk

Remember to remove the SD card after the update.

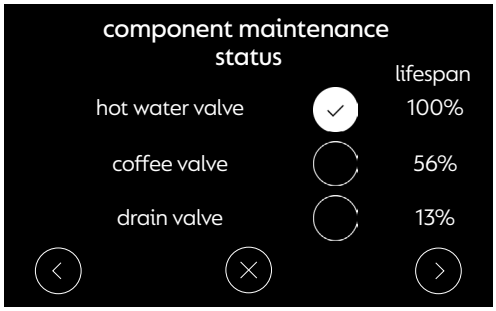
6.4.5 Component Maintenance Status

Reset Maintenance Counter

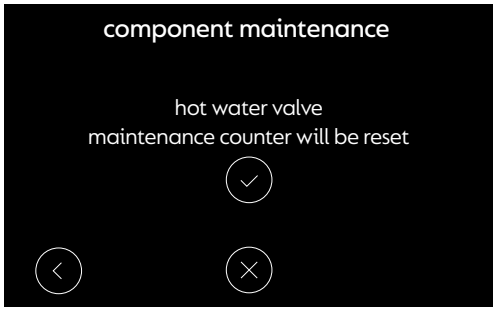




1. Press the “next” symbol to scroll through the components.

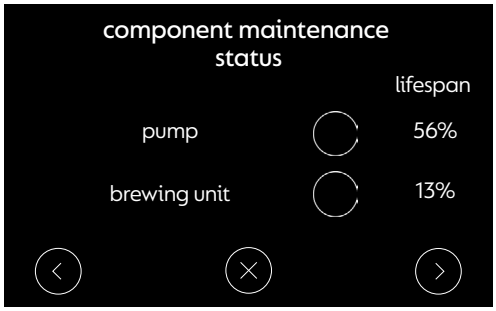


2. Select the circle next to a component you want to reset the counter.

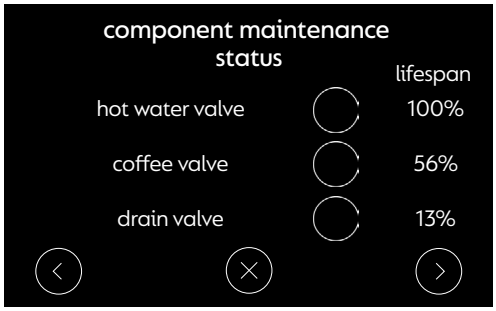


3. Confirm the reset by tapping the “confirm” symbol.

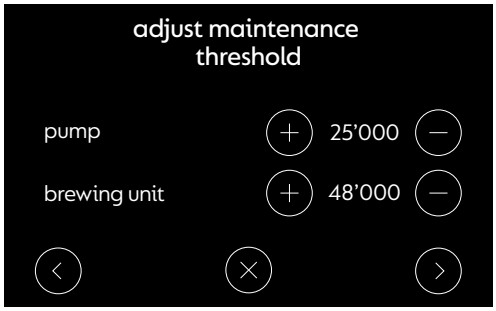
Adjust Maintenance Threshold



1. Press the “next” symbol to scroll through the components.



2. On the last page, press the “next” symbol once more.

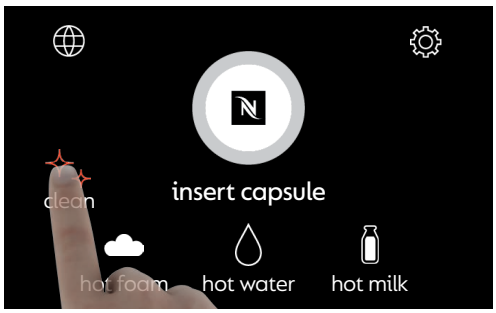


3. Adjust the threshold or press the “next” symbol for more components

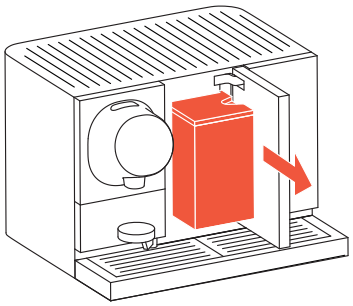
7 MAINTENANCE

7.1 Clean the Milk Machine (daily)

ℹ Alternatively, you can start the cleaning procedure by entering the maintenance menu. Select “clean the milk machine” and follow the instructions.

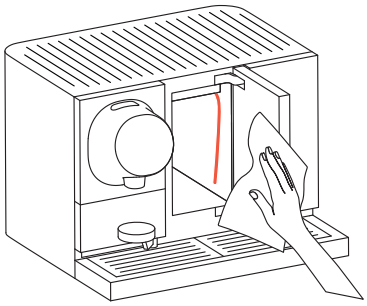


1. When the “clean” symbol appears in red, the machine should be cleaned. Tap on red “clean” symbol and follow the instructions on the screen.

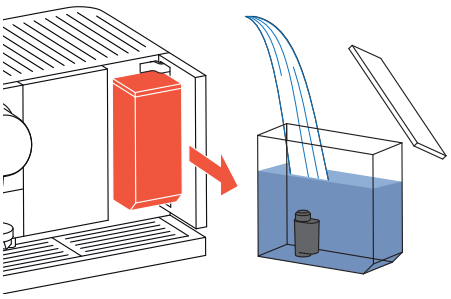


2. Swing the cup support to the side and remove, empty and clean the milk tank. Clean the milk tank in the dishwasher or use single-use paper towels or tissues with washing-up liquid.

ℹ In case the “clean” and “descale”symbols appear in red at the same time, proceed first to the cleaning procedure and then to the descaling procedure.

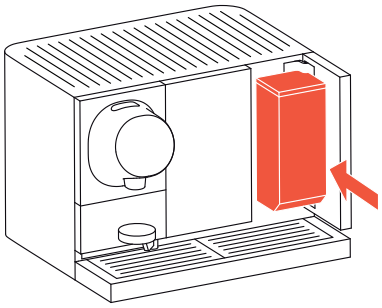


3. Clean the milk suction pipe and the milk tank bay.

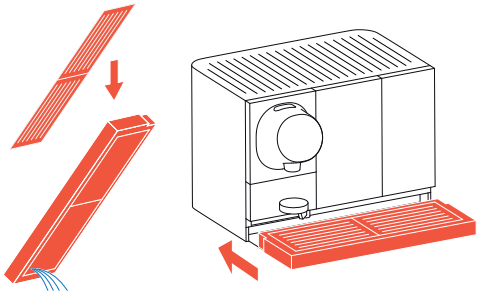


4. Remove the water tank from the machine. Fill the water tank completely with fresh drinking water.

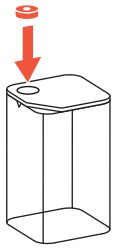
ℹ Please remember to use mild odourless detergents and non-abrasive tools.



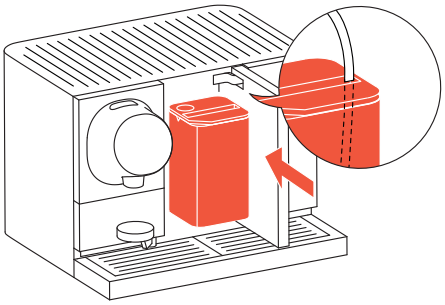
5. Insert the water tank back to the machine.



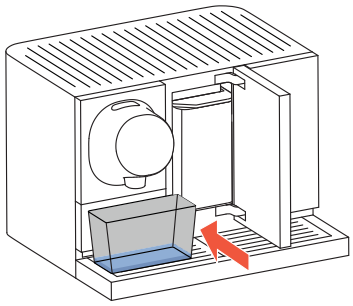
6. Remove the drip tray with the drip grid from the machine. Empty the drip tray. Wash with soapy water, rinse and dry both elements. Insert the drip tray with drip grid back to the machine.



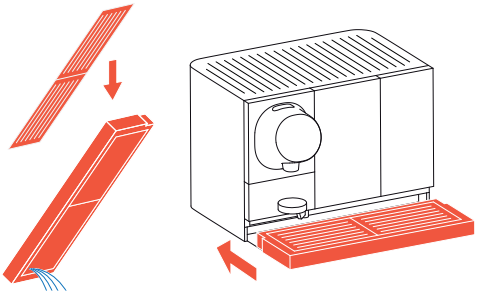
7. Place the cleaning tablet in its foreseen position in the cleaning tank. If cleaning tablet is not inserted, the cleaning procedure cannot be started.



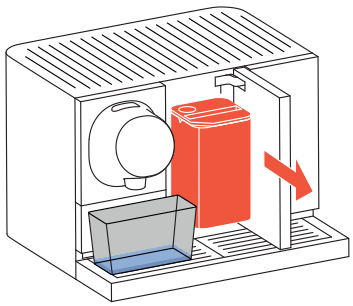
8. Insert the cleaning tank. The indentation on the cleaning tank lid must be on the front left side for correct insertion.
9. Make sure the milk suction pipe is properly placed into the cleaning tank.



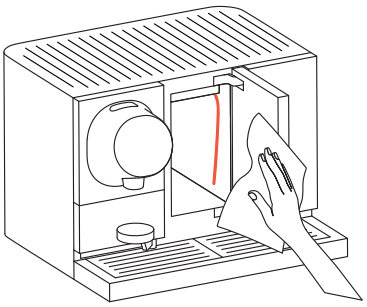
10. Place the waste water container below the outlets. **Let the fridge door open** (to avoid condensation in the milk tank bay).
11. Select “>” to launch the cleaning procedure and follow the instructions on the screen.



12. After the cleaning process has finished, remove the drip tray with the drip grid from the machine. Empty the drip tray. Wash with soapy water, rinse and dry both elements. Insert the drip tray with the drip grid back to the machine.



13. Remove, empty and clean the water container. Remove the cleaning tank, remove the lid, empty the tank and clean both lid and cleaning tank. Handle the cleaning tank with care as the cleaning solution is warm and composed of cleaning agent.

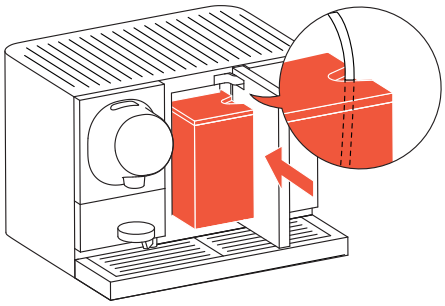


14. Clean the milk suction pipe and the milk tank bay with a single-use paper towel or tissue. Check visually that the filter on the milk suction pipe is not clogged. If it is, remove the pipe and clean it with fresh drinking water.

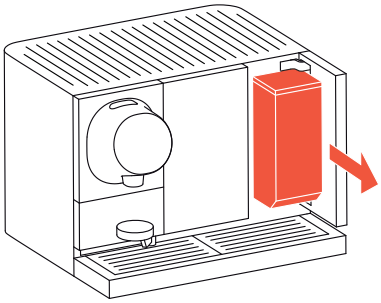
i If the cleaning procedure is interrupted for any reason, it has to be restarted.

ℹ Precooled milk (5 °C) can be refilled right after the cleaning procedure completion. The machine will take approximately 15 minutes to be ready to dispense milk recipes.

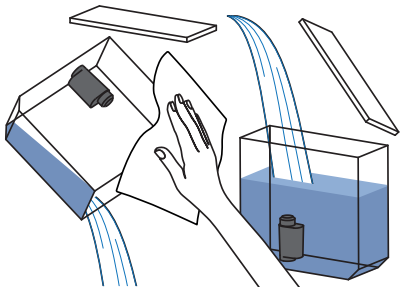
15. The cleaning procedure is finished.



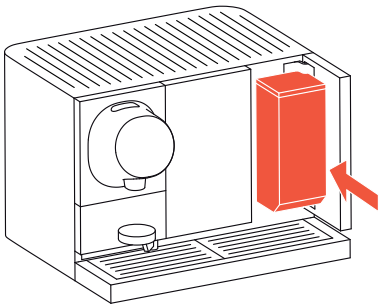
16. Refill the milk tank with refrigerated milk. Insert the milk tank back into the machine.



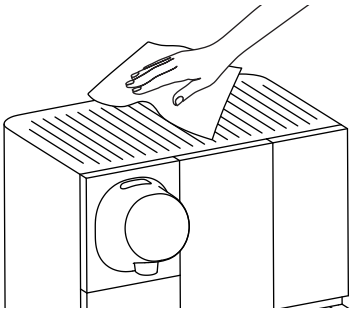
17. Remove the water tank from the machine.



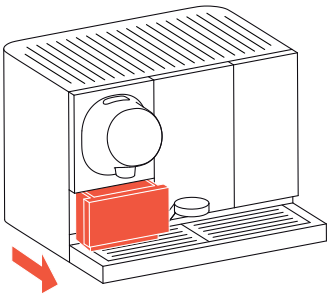
18. Remove the water tank lid. Empty, clean with a single-use paper towel or tissue and rinse with fresh drinking water. Fill the water tank with fresh drinking water and attach the lid again.



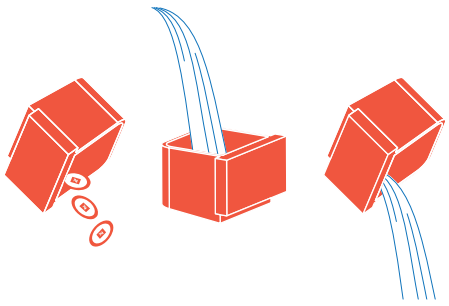
19. Insert the water tank back to the machine.



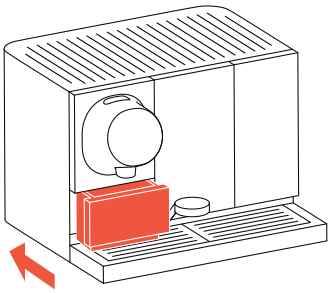
20. Clean top of the machine with a disposable tissue or paper towel. Be careful, it might be warm.



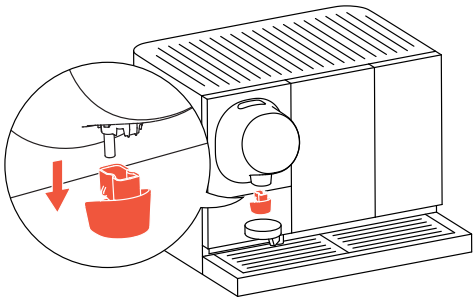
21. Swing the cup support to the side and remove the capsule container.



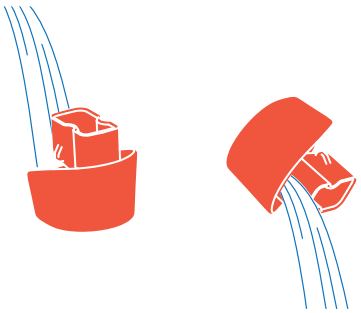
22. Empty the capsule container, wash with soapy water and dry it.



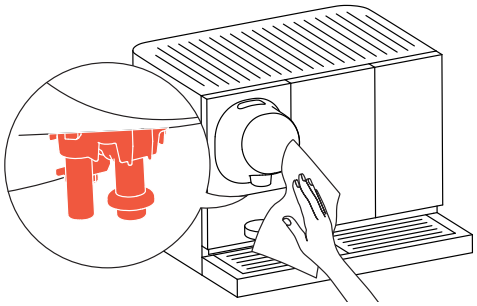
23. Insert the capsule container back into the machine.



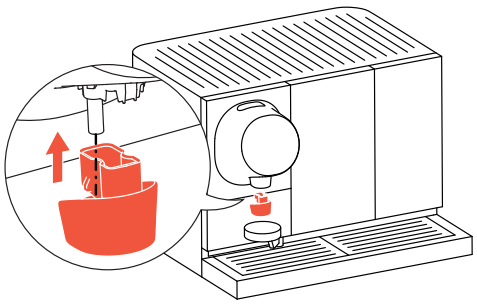
24. Remove the outlets cover. Be careful, hot water might drip.



25. Rinse the outlets cover with fresh drinking water and dry it.



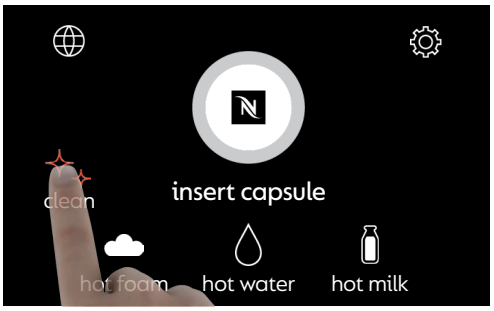
26. Clean the coffee and the milk outlets with a disposable tissue or a paper towel.

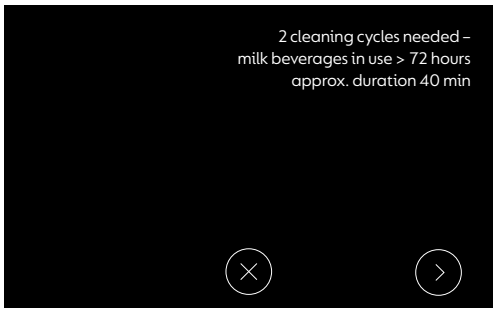


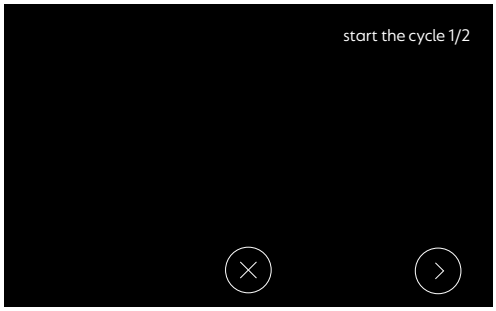
27. Insert the outlets cover back into the machine.

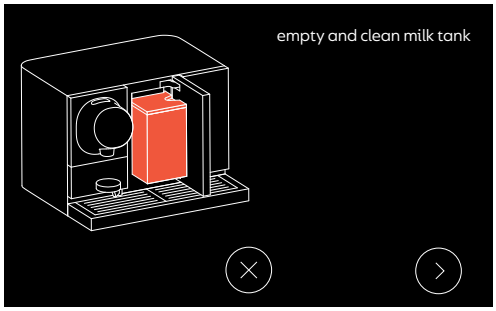
7.1.1 Reinforced Cleaning in Case of Misuse

If 72 hours pass without cleaning after the first beverage, 2 cleaning cycles are required:

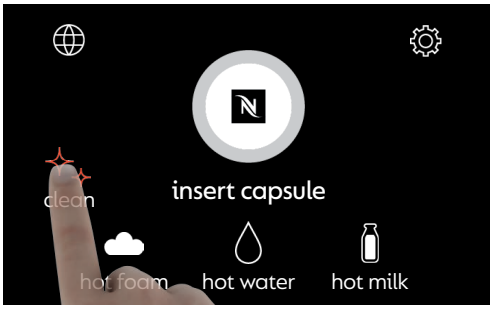


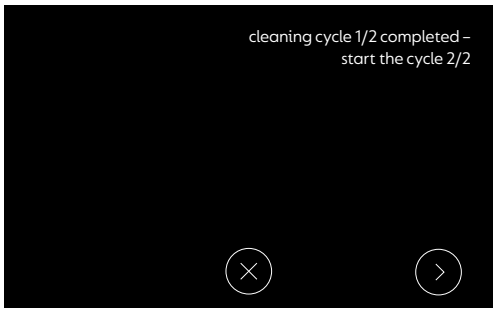


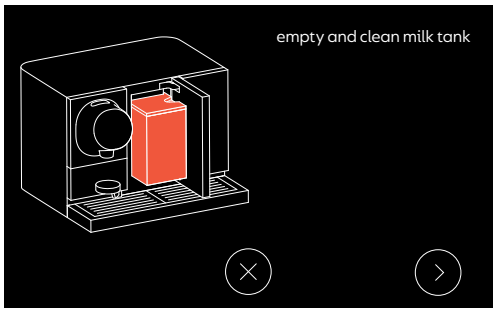




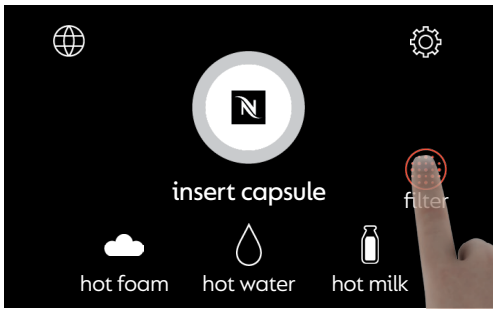
If the user did complete one cleaning cycle, only a normal cleaning is required:



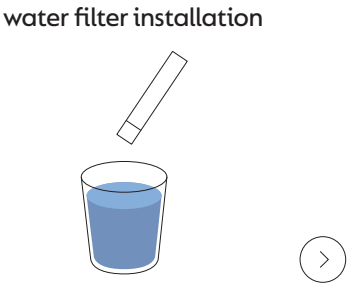




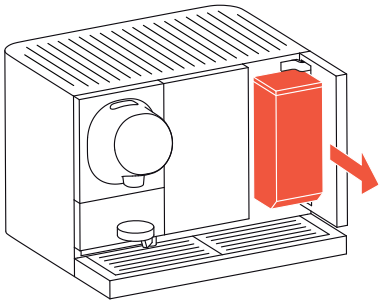
7.2 Change Internal Filter



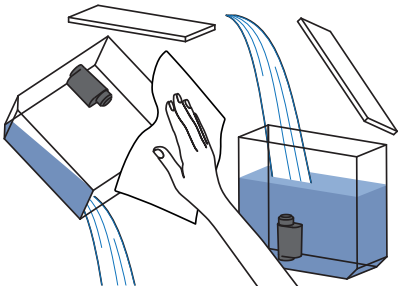
1. When the “filter” symbol appears in red the internal filter should be changed. Tap on the red filter symbol and follow the instructions.



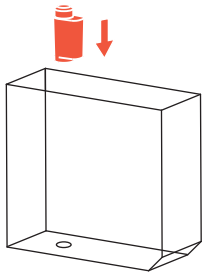
2. Follow the instructions on the screen to set the water hardness on both the machine and the new water filter.



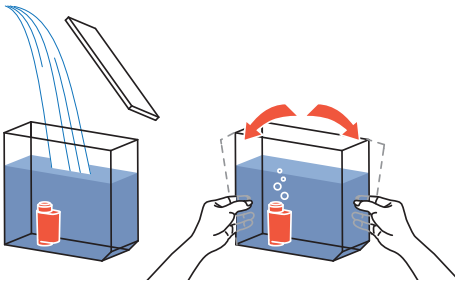
3. Once the water hardness is set, remove the water tank.



4. Remove the water tank lid. Rinse with fresh drinking water.



5. Remove the old water filter and insert the new one. (For first use, simply insert the new water filter.)



6. Fill the water tank with fresh drinking water and attach the lid again. Tilt the water tank back and forth to remove air bubbles from the filter. Insert the water tank back to the machine.

ℹ The water tank should be cleaned every time the filter is changed (or at least weekly in the direct water connection mode).

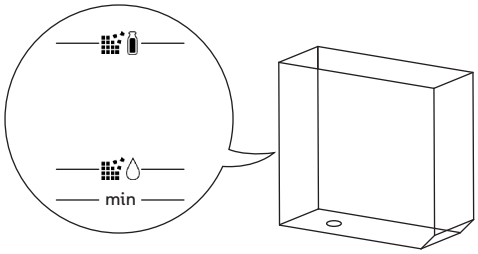
ℹ Alternatively, when the “filter” symbol appears in red, you can start the water filter change procedure by entering the maintenance menu. Select “change the internal filter” and follow the instructions.

7.3 Descaling

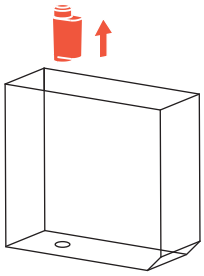
i For descaling, use *Nespresso* liquid descaler. Never use vinegar.

i In case the "clean" and "descale"symbols appear in red at the same time, proceed first to the cleaning procedure and then to the descaling procedure.

Coffee and Milk modules are descaled using two separated processes. When one of the descaling processes is required, the screen will inform on the expected delay until the other descaling process will be required (approximated based on the machines consumption pattern over the last 30 days).



The water tank shows different descaling levels for coffee descaling (bottom sign) and milk descaling (top sign).



If the machine is equipped with a water filter, always remove it before descaling.

7.3.1 Descaling Frequency

This table gives approximate descaling needs for the coffee and milk module.

	25 recipes / day		50 recipes / day		80 recipes / day	
	coffee module	**milk module**	**coffee module**	**milk module**	**coffee module**	**milk module**
High water hardness	~8 months	~4 months	~4 months	~3 months	~2 months	~3 months
Medium water hardness	~10 months	~8 months	~5 months	~6 months	~3 months	~5 months
Low water hardness	~16 months	~13 months	~8 months	~10 months	~5 months	~8 months

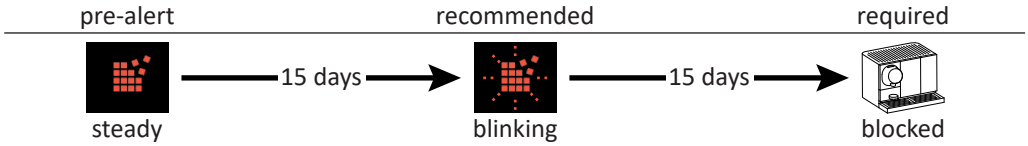
7.3.2 Descaling Logic – Machine Blockage

A descaling alert gets triggered on the machine and shown on the MMI based on:

- **The "threshold"** computation based on the water hardness and consumption (recommended descaling)
- **The required** descaling

If a descaling alert is triggered,

- the MMI shows a steady descaling icon for the initial 15 days after the alert,
- after 15 days have passed without a descaling performed by the user, the descaling icon starts blinking,
- after another 15 days without descaling, the machine is blocked and descaling is forced before operation is possible again.



7.3.3 Coffee module

1. When the "descale" symbol appears in red, the machine should be descaled. Tap on the red descaling symbol. The machine will inform that it requests a coffee module descaling.

Follow instructions on screen.

Alternatively, the maintenance menu can be entered to start the descaling procedure.

Prepare the following items to complete the descaling process:

- cleaning tank
- waste water container
- 2 bags of *Nespresso* liquid descaler
- 1 l of water

The procedure will last about 20 minutes.

7.3.4 Milk Module

1. When the "descale" symbol appears in red machine should be descaled. Tap on red descaling symbol. The machine will inform that it requests a milk module descaling.

Follow instructions on screen.

Alternatively, the maintenance menu can be entered to start the descaling procedure.

Prepare the following items to complete the descaling process:

- cleaning tank
- waste water container
- 4 bags of *Nespresso* liquid descaler
- 2 l of water

The procedure will last about 60 minutes.

8 TROUBLESHOOTING

Before any intervention to the machine, clean and sanitize your hands and tools. After the intervention started, sanitize your hands and tools frequently.

This chapter gives useful hints and information for fault finding. It is not intended as a complete list of possible errors and malfunctions.

For troubleshooting information regarding the coffee module, see the Momento 100/200 service manual.

8.1 Preventive Maintenance Plan Coffee Module

8.1.1 Components to be replaced periodically

The following are the default lifespans for periodically replaced components:

- Pump: 25’000 cycles → p. 128
- Brewing Unit: 48’000 cycles → p. 132
- Hot water valves: 25’000 cycles → p. 122
- Coffee valves: 25’000 cycles → p. 122
- Drain valve: 48’000 cycles → p. 122

Depending on the customer there might have been different lifespans programmed → p. 39.

8.2 Preventive Maintenance Milk Module

Preventive maintenance on the milk module has to performed after 9000 cycles or every 365 days.

8.2.1 Components to be replaced

- Replace the water coupling check valve → p. 156
- Replace the plunger and gasket of the steam valve → p. 153

Metal component support

- Replace the complete steam pressure regulator → p. 188
- Replace the complete steam heating chamber → p. 196
- Replace the membranes (→ p. 143) of the following valves:
  - Outlet valve → p. 144
  - Source valve 3/2 inside the RF-Box → p. 179 no. (4)
  - Suction nozzle valve above the pressure sensor → p. 186 no. (4)
  - Cleaning valve 3/2 behind the steam heating chamber → p. 196 no. (3)

Plastic component support

- Replace the complete steam pressure regulator → p. 166
- Replace the complete steam heating chamber → p. 170
- Replace the membranes (→ p. 143) of the following valves:
  - Outlet valve → p. 144
  - Source valve 3/2 inside the RF-Box → p. 157 no. (4)
  - Suction nozzle valve above the pressure sensor → p. 164 no. (4)
  - Cleaning valve 3/2 behind the steam heating chamber → p. 170 no. (3)

8.2.2 Cleaning of FEP Tubes and T-Connector

Removing FEP tubes: → p. 142

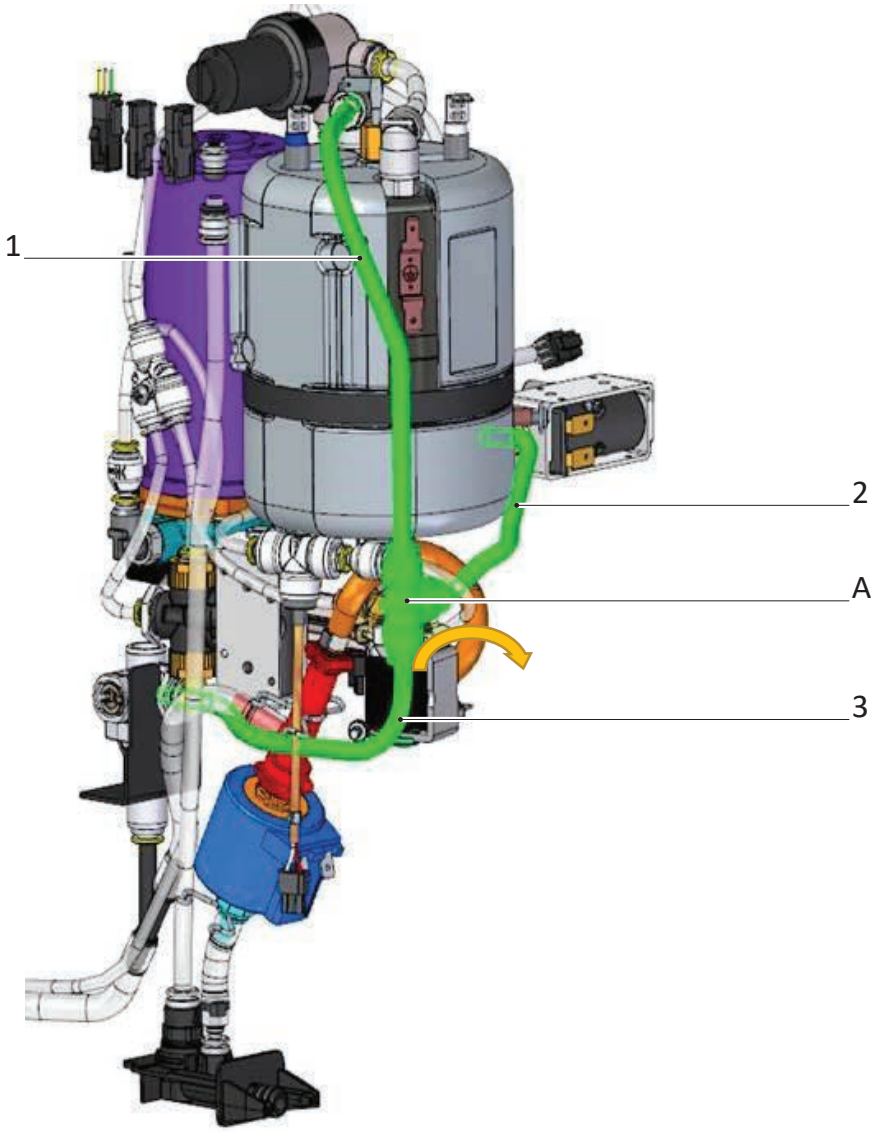


Fig. 21

Prerequisites

- Hydraulic unit and PCB assembly are detached → p. 182.

Procedure

1. Remove the FEP tube (1), (2), (3) and the T-Connector (A).
2. Flush the FEP tube (1), (2), (3) and the T-Connector carefully with water.

8.2.3 Cleaning the DWC Out Tube

If the machine is used with DWC, the outlet tube of the mini cabinet needs to be cleaned from possible milk residuals:

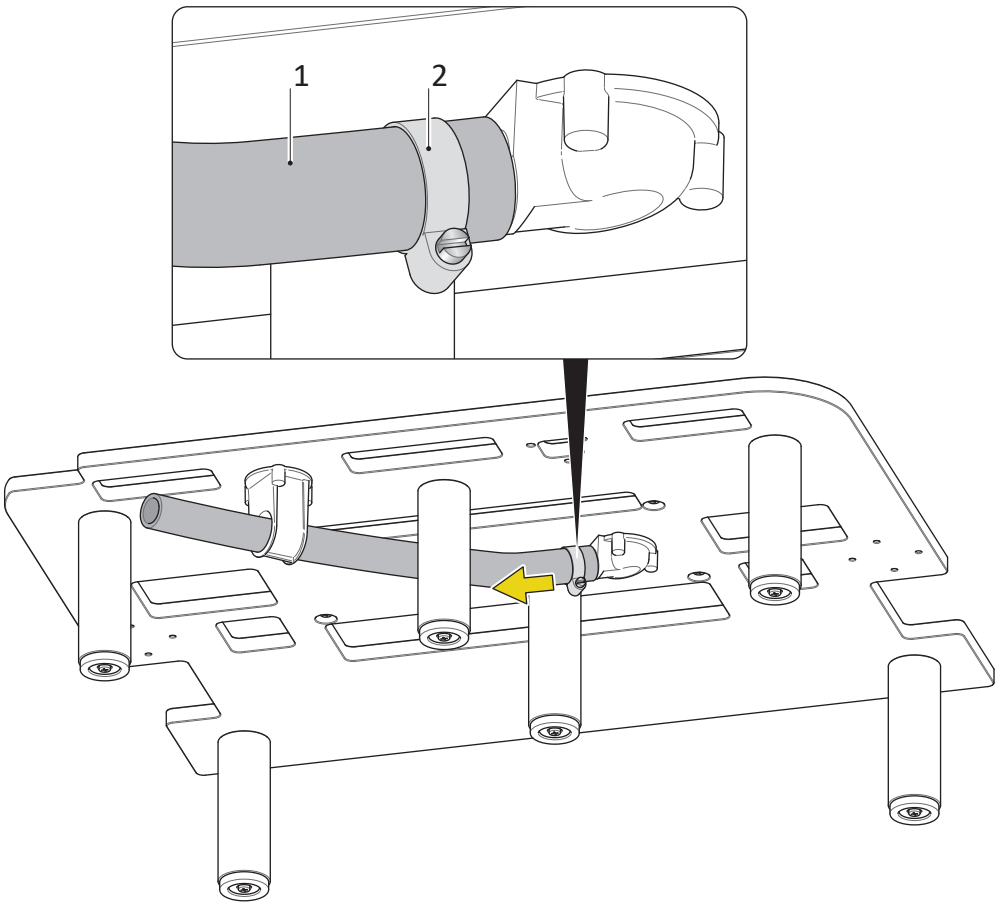


Fig. 22

Procedure (Underneath the Mini Cabinet)

1. Loosen the screw (slotted) on the tube fixation (2).
2. Remove and thoroughly flush the tube (1).

8.2.4 Procedure after Preventive Maintenance

- Carry out the final tests:
  - Protective earth (PE) continuity test → p. 205
  - Protective insulation test → p. 207
  - Functional test of the milk module → p. 209

8.3 General Milk Module Errors

Please refer to the specific error list on the *Nespresso* extranet for a complete listing of specific error numbers and their meaning.

Always check for an available firmware update first.

Product Icons Greyed Out

- Check the error message shown on the screen for possible root cause.
- See “8.3.1 Safety Stop Mode” on page 56.
- Reboot the machine.

Milk Too Warm

- Fresh cold milk is inserted into milk tank. Machine is switched on and the fridge still warm. The machine needs approximately 15 minutes to completely cool down.
- If the temperature is not dropping, check if the fridge walls are cold.
- Check the function of the fridge functions in the diagnostic tool V1 (compressor running y/n and fridge temperature measured)
- If no: check the connection of the fridge compressor ant the connector of the fridge temperature sensor.

Milk Temperature -20°C

- If the milk temperature on the GUI is shown as exactly -20°C, a disconnected or defective sensor plug might be the reason

Liquid Flows the Wrong Way

- Check the connection of all tubes.
- Check the function of all valves in the diagnostic tool V2 (not yet available).

Milk Module Is Unplugged

- The milk module is not held in position with the screw.
- Micro switches are possibly defective.

Milk tank not detected

- Make sure that the milk tank is well positioned.
- Check if there is enough milk in the tank.
- Clean the interior of the fridge and the milk tank and remove ice from the fridge.
- Check the function of the sensor by placing the hand in front of the milk level sensor, the hand should be detected as full milk tank.
- Check the connector of the milk level sensor for all kind of residuals and make sure it is well connected.

Milk Freeze in Milk Tank

- Make sure that the milk tank is well positioned.
- Clean the interior of the fridge and the milk tank and remove ice from the fridge.
- Check the connector of the milk temperature sensor for all kind of residuals and make sure it is well connected.

8.3.1 Safety Stop Mode

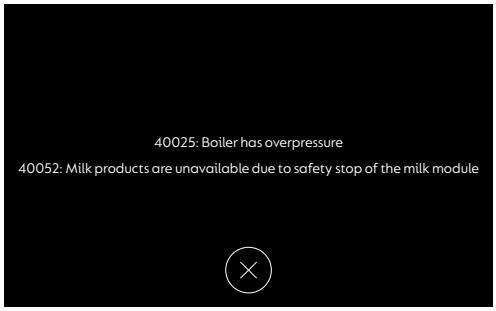
In case of specific errors, the milk module may enter “safety stop mode”.

If this happens, the milk module is switched off and milk recipes are disabled. Follow this procedure to find more details about the reason as to why the milk module entered “safety stop mode”.

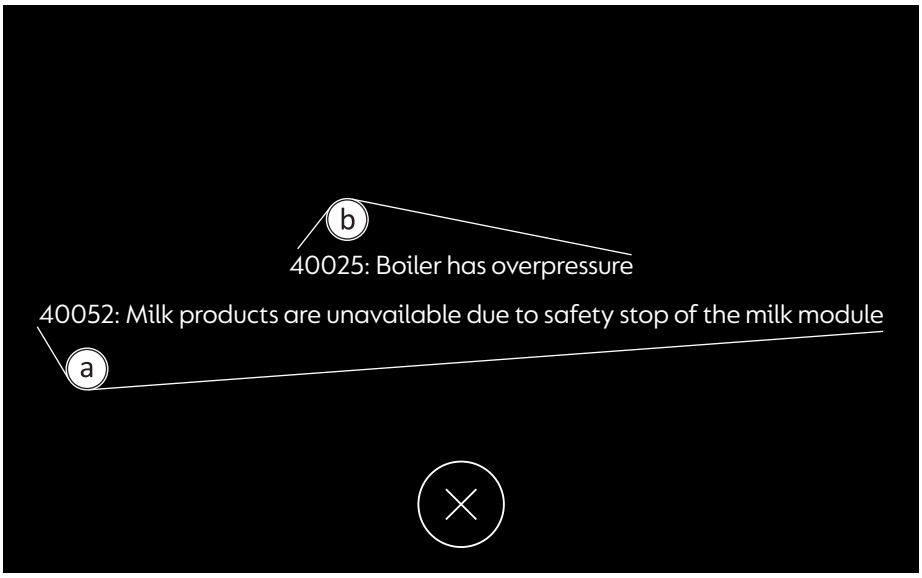
1. Tap on the greyed-out “hot milk” symbol.

2. Tap on a greyed-out milk recipe.

3. Tap on the “i” symbol.



4. Identify the problem (see below).



(a) Error 40052 is always set in case of a safety stop

(b) This error flag indicates the source that triggered the safety stop

Please refer to the specific error list on the *Nespresso* extranet for a complete listing of specific error numbers and their meaning.

8.4 In Cup Quality

Spitting at the End of the Product

- Check the if the water tank is connected properly and filled with water.
- Check fluid line for kinks.
- Check the water coupling for residuals and dirt.
- Check the function of the fluid line NTC with the diagnostic tool V2 (not yet available).
- Check the milk pump performance with the diagnostic tool V2 (not yet available).

Too Little Product Volume

- Check the milk pump performance with the diagnostic tool V2 (not yet available).
- Check the fluidic line for residuals and kinks.

Too Cold Beverages

- Check the function of the fluid line NTC in the diagnostic tool V1.
- Check the boiler temperature with the diagnostic tool V1.
- Check the boiler pressure with the diagnostic tool V1.

Too Hot Milk Foam

- Check the function of the fluid line NTC in the diagnostic tool V1.
- Check the boiler temperature with the diagnostic tool V1.
- Check the boiler pressure with the diagnostic tool V1.
- Check the milk pump performance with the diagnostic tool V2 (not yet available).

Milk Foam Quality Insufficient, Too Bubbly

- To adjust the milk foam quality → p. 28.
- Check the fluid line for kinks, especially the air suction valve and tube.
- Check the boiler pressure and temperature in the diagnostic tool V1.
- If the foam still cannot be adjusted, replace the pressure reducer.

Milk Foam Quality Insufficient, Too Liquid

- To adjust the milk foam quality → p. 28.
- Reboot the machine.
- Check the air valve for residuals and dirt.
- Check the fluid line for kinks, especially the air suction valve and tube.

No Product in Outlet (but Steam)

- Check that the milk suction tube is not kinked or frozen, and the milk/water tank is filled.
- Check if all tubes are connected correctly.
- Check the function of every valve with the diagnostic tool V2 (not yet available).
- Check the function of the milk pump in the diagnostic tool V2 (not yet available).
- Check the performance of the milk pump in the diagnostic tool V2 (not yet available).
- Check the air valve setting for froth and reduce it if needed.

8.5 Cleaning Process

Cleaning Tablet Not Detected

- Cleaning tablet missing → Insert cleaning tablet into cleaning tank.
- Cleaning tablet inserted but not detected → move cleaning tank until reed-switch makes contact.
- Check if the magnet lever is inserted correctly in the cleaning tank cover.
- Check the connection and position of the reed sensor.

Only Stream in Outlet, Drip Tray or Fridge

- Check the performance of the milk pump in the diagnostic tool V2 (not yet available).
- Check if all tubes are connected correctly.
- Check that the milk suction tube is not kinked.
- Check if the water tank is filled.

8.6 Steam Boiler

Milk Module Has an Overpressure

- Pressure sensor not working properly, check its function in diagnostic tool V1.
- Overpressure valve opens too early.

Milk Module Does Not Heat Up

- Reboot the machine.
- Check the electric connection of the boiler.
- Check the electric resistance of the steam boiler. If you find an open circuit, replace the steam boiler.
- Check the electric connection of the control board.
- Pressure sensor or boiler temperature sensor not connected or not operating. Check its function in the diagnostic tool V1.

Boiler Temperature Too High

- Check the function of the boiler temperature sensor in the diagnostic tool V1.
- Check the function of the boiler pressure sensor in the diagnostic tool V1.
- Check the connectors of the control board.

Boiler Refilling Fails

- Check the connector of the water level probe of the boiler.
- Check the ground connector of the milk module.
- Check the connectors of the control board.

9 MILK MODULE - HYDRAULIC FUNCTIONS

9.1 Boiler Filling and Emptying

Filling

The filling of the boiler depends on the filling level. Via the water coupling, water **(green path)** is sucked in by the water pump and pumped into the boiler. A minimum leakage via the vent valve of the pump is unavoidable due to the system and is led into the drip tray via the drain hose.

Emptying

At the end of the cleaning, the hot water **(blue path)** is let out of the boiler via the outlet nozzle on the RF box into the cleaning container using the internal boiler pressure. To reduce the water temperature, cold water is added via the milk pump (this path is not shown in the figure below).

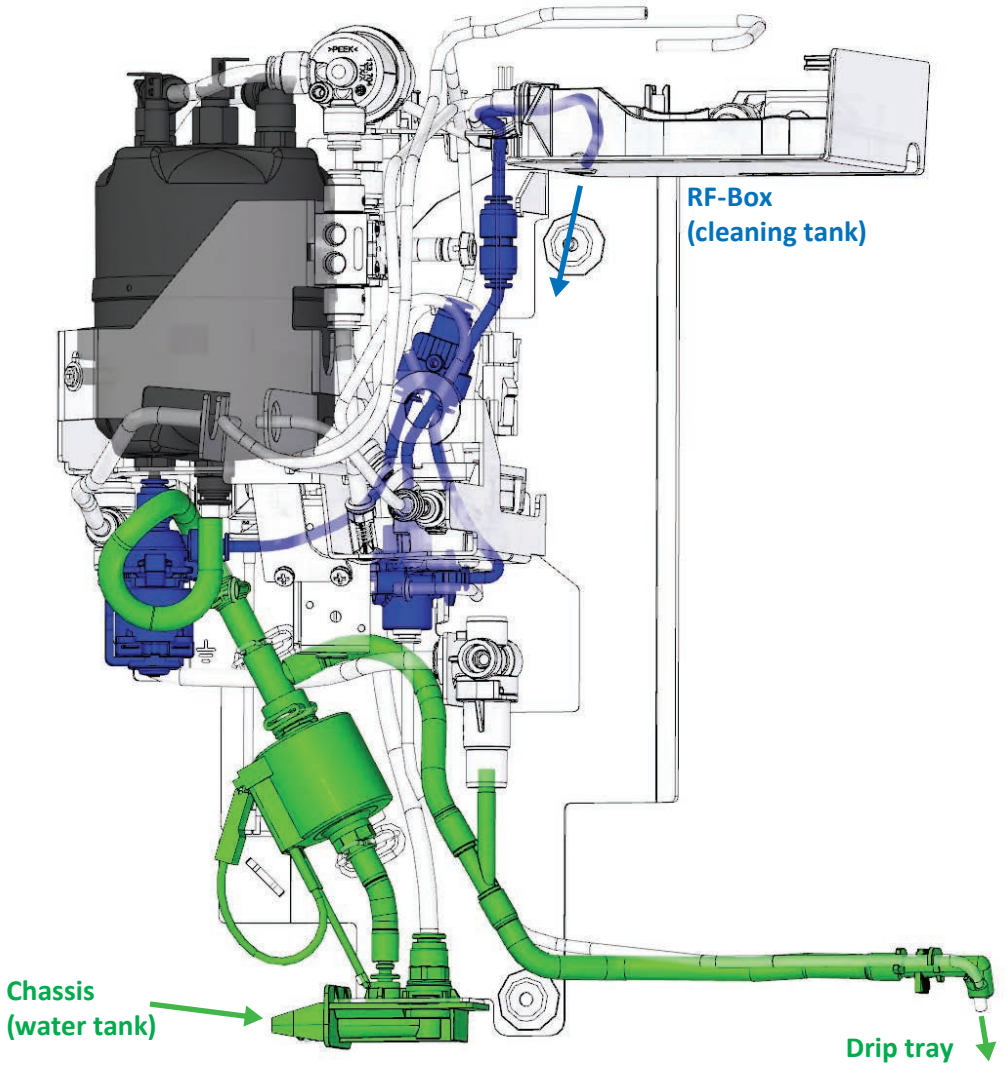


Fig. 23

9.2 Steam Supply

The steam from the steam boiler is led trough the pressure regulator supplies to guarantee a constant steam pressure at the inlet of the steam valve. When the steam valve is opened, the steam **(red path)** flows into the milk (foam) stream **(yellow path)** boosted by the milk pump. The milk product heated in this way is conveyed via the outlet valve (which is placed on the fridge) to the milk outlet of the machine.

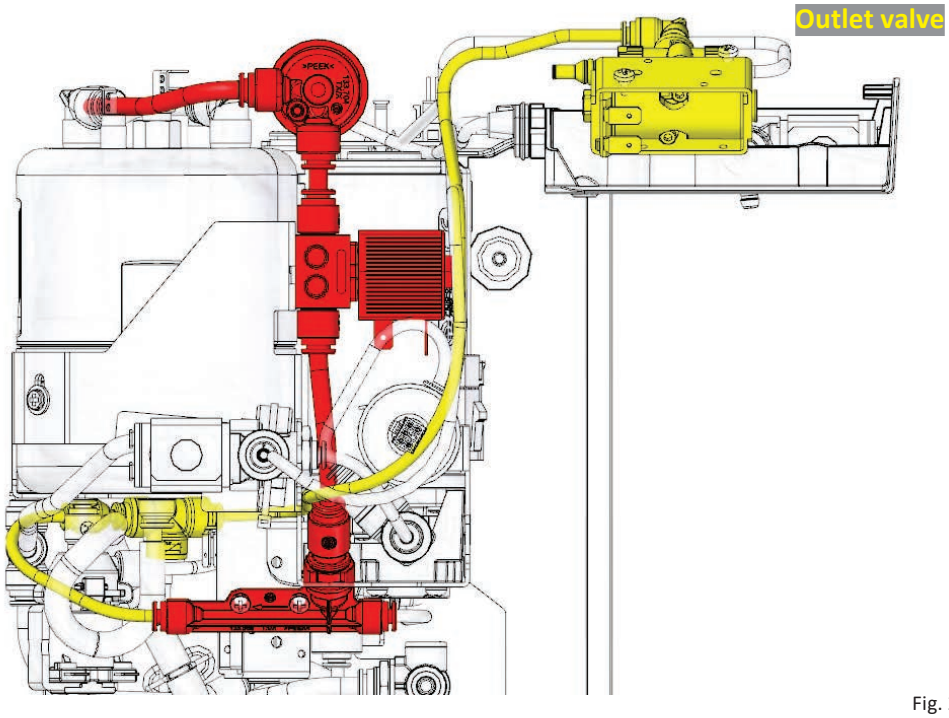


Fig. 24

9.3 Milk Products

The milk module can prepare the following products:

- Hot milk
- Hot milk foam

For the preparation of these products the following is required:

- Cold milk (from fridge)
- Steam (coming from boiler)
- Air (sucked in from machine interior)
- Water to rinse the fluid line

Hot Milk

The milk **(green path)** is sucked out of the milk tank with the milk pump via RF-box. The nozzle valve positioned between the RF-box and the pump inlet remains open and does not restrict the milk flow. The air valve is closed so that no air is sucked in.

After the milk pump starts, the steam valve opens and the steam **(red path)** is blown into the milk flow on the outlet side of the pump. The product heated in this way is conveyed via the outlet valve to the milk outlet of the machine **(yellow path)**.

Hot Milk Foam

Hot milk foam is produced in the same way as hot milk, but with the following exceptions:

- The nozzle valve closes, throttling the flow of milk from the RF box and increasing the vacuum on the suction side of the pump.
- The air valve opens and air **(blue path)** is sucked in.

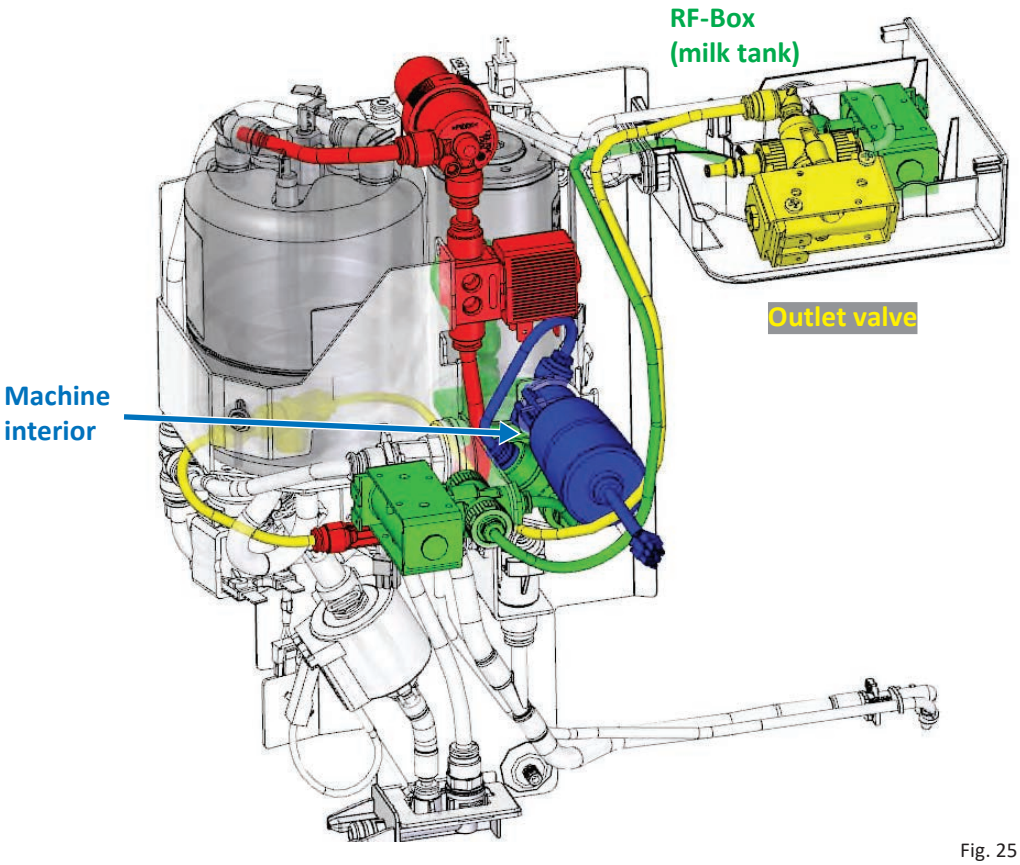


Fig. 25

9.4 Rinsing After Product Preparation

After each product preparation, the milk system is rinsed with water for hygienic reasons.

The source valve placed in the RF-box switches at the end of the product, whereby cold water is drawn in from the machine's water tank **(green path)** instead of milk from the milk tank **(yellow path)**.

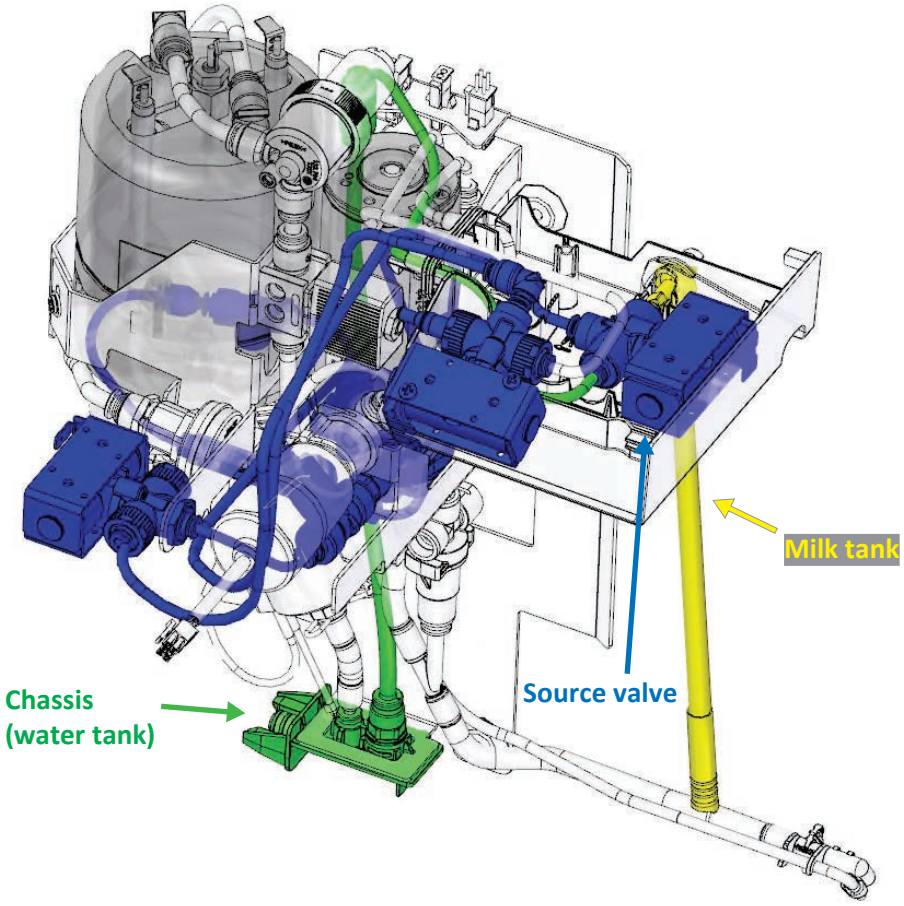


Fig. 26

9.5 Drain Into Drip Tray

The fluid is pumped from the milk pump into the outlet valve **(green path)**. Via this valve, the fluid can be fed either into the product outlet of the machine (**yellow path**, i.e. to the cup) or into the cleaning valve **(red path)**. In normal operation, the fluid is then led through the cleaning valve into the drip tray (drain) (further **red path**).

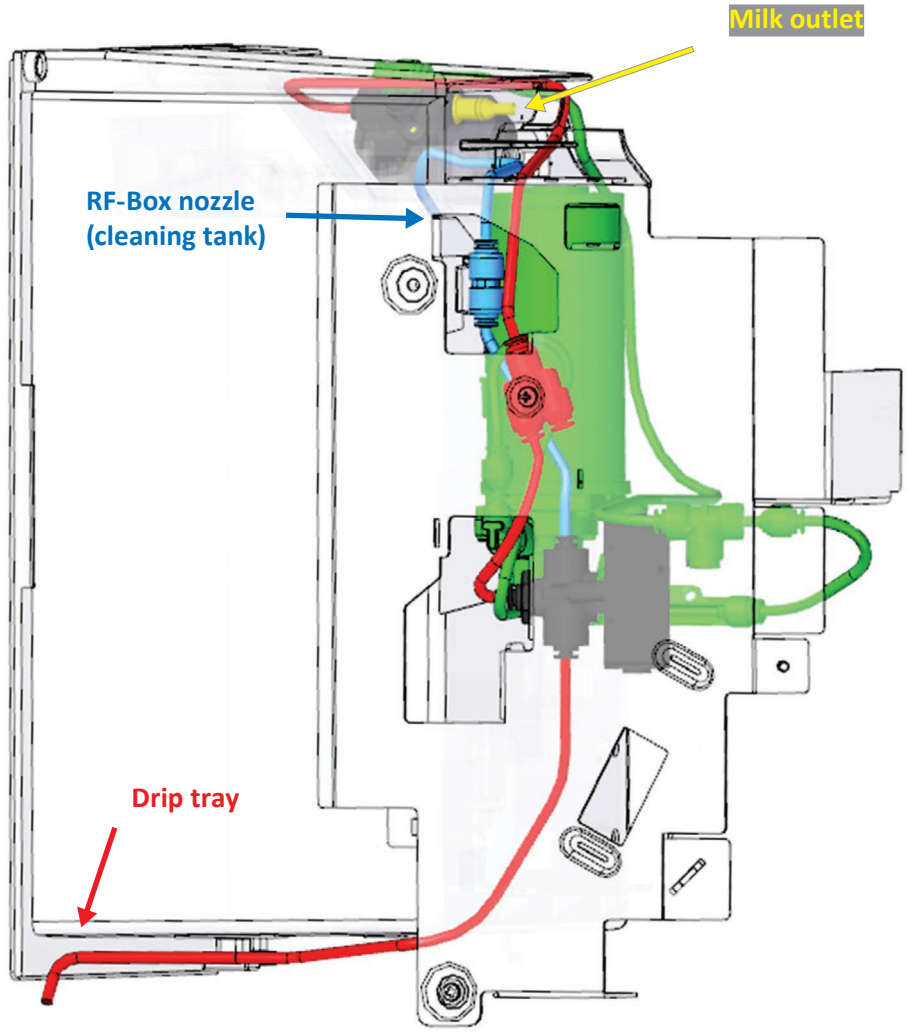


Fig. 27

9.6 Pressure Control, Overpressure and Anti-Vacuum Valve

Pressure sensor and safety combination valve communicate with the vapour phase of the boiler.

If the appliance is switched off and the boiler cools down, the anti-vacuum valve integrated in the combination valve prevents a vacuum by entering air into the boiler **(blue path)**.

In case of a malfunction of the heating control, the boiler may overheat, resulting in an increase in pressure. In order to limit this pressure rise, the overpressure valve, which is also integrated in the combination valve, opens. The escaping steam **(red path)** is led through the drain into the drip tray.

The pressure sensor is connected to the pressure line via a branch **(orange path)**. The sensor is pressurized so that it does not overheat when the pressure relief valve is opened.

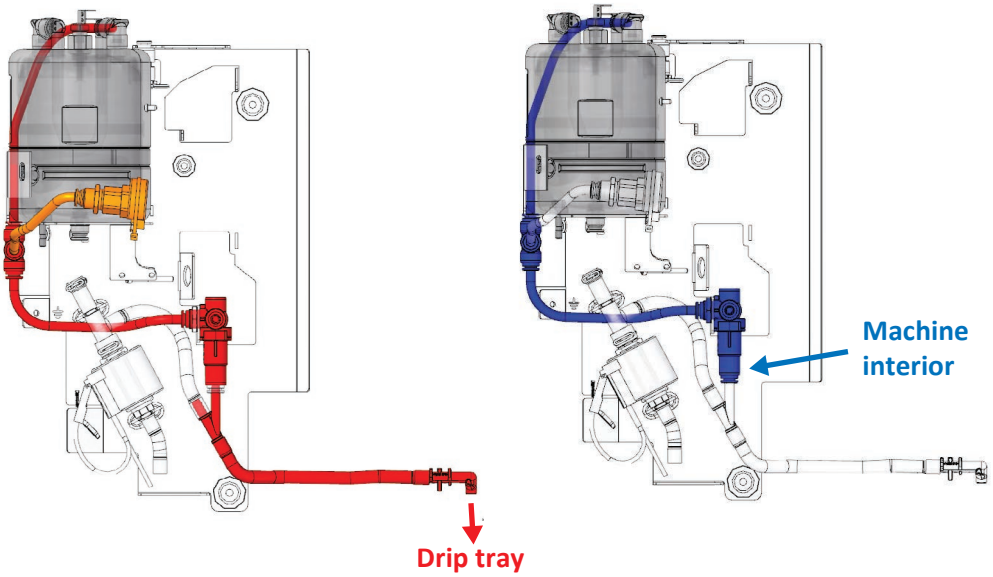


Fig. 28

10 MILK MODULE - FUNCTIONAL DETAILS

10.1 Refrigerator and its Controllers

10.1.1 Overview

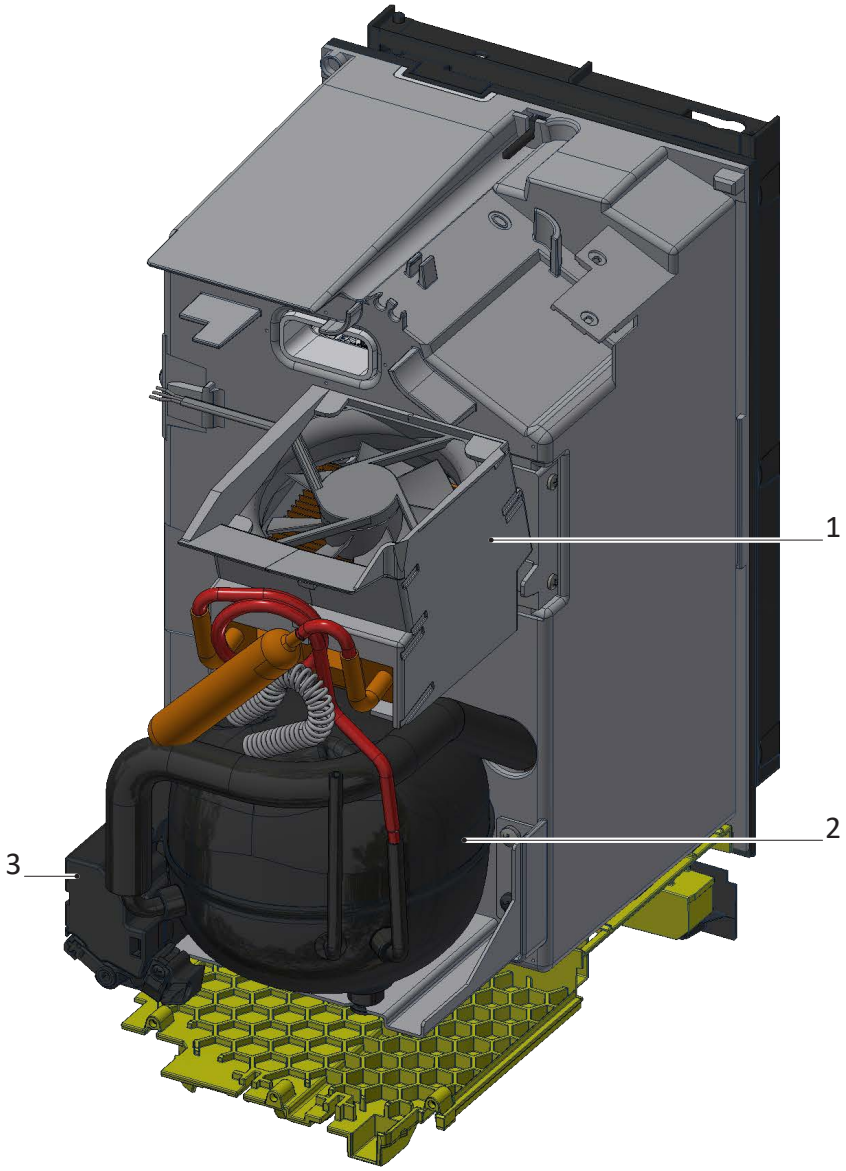


Fig. 29

1) Ventilator 24 V DC 5.04 W with RPM detection
2) Compressor 208 - 240 V AC 50/60 Hz
3) Electronics

- The compressor motor is equipped with a thermal fuse which is self resettable.
- The fan is equipped with a data signal to watch its state.
- If the refrigerator has been stored in a not upright position, it needs to be settled down in upright position for 12 hours.

10.1.2 Milk Level Sensor

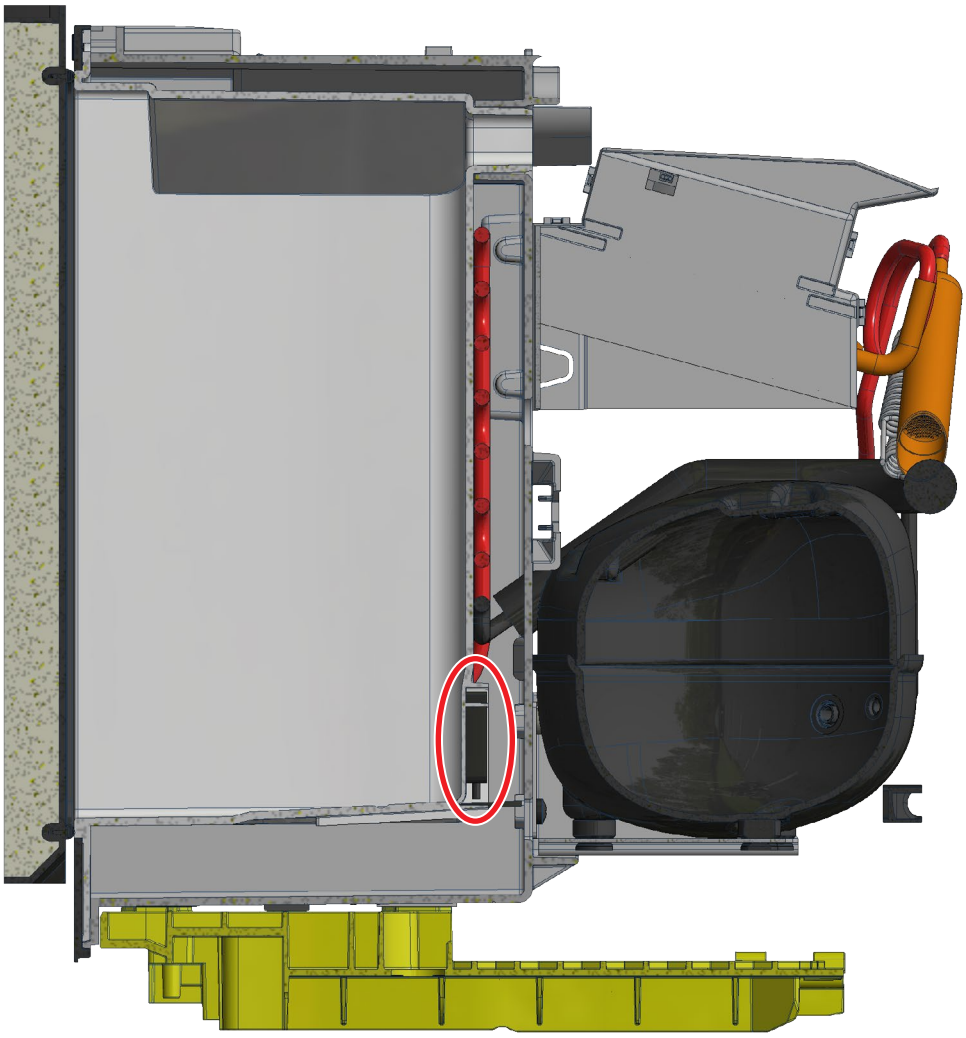


Fig. 30

- Detects the milk tank, or rather if it is empty or full.
- Detects the milk empty level.
- The cleaning tank is not getting detected.
- This is a capacitive sensor located inside the inner refrigerator body.
- This sensor is not replaceable.

10.1.3 Milk NTC

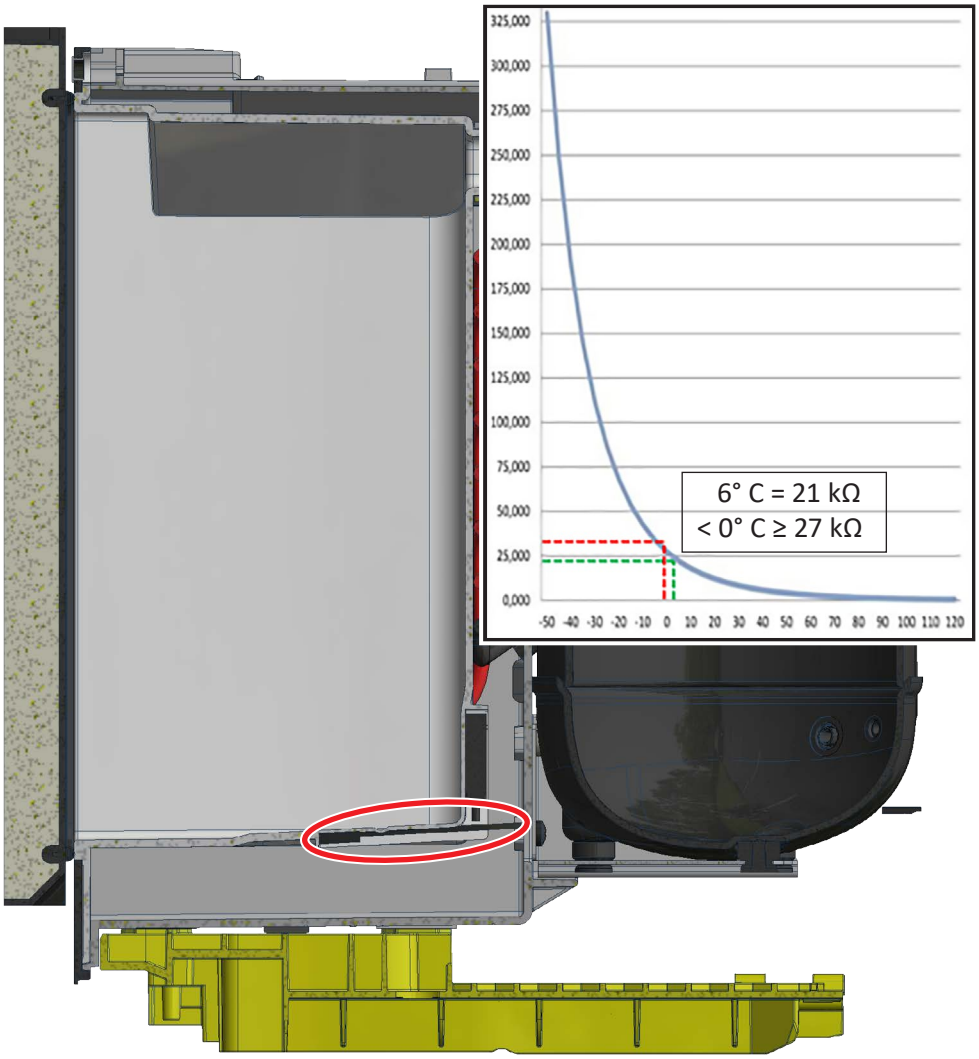


Fig. 31

- Is measuring the milk temperature.
- The temperature is used to control the refrigerator to achieve the target milk temperature.
- The NTC is located inside the inner refrigerator body.
- The temperature measurement is indirect because it is not located directly in the milk.
- This sensor is not replaceable.
- Check the resistance value at given temperature in case of cooling issues.

Defrost Feature

To avoid freezing of the refrigerator wall, the cooling performance is reduced and the temperature target is set higher when the milk tank is empty or MIN level is detected.

In order to speed up refrigerator cooling, always place a full tank of refrigerated milk.

10.2 Steam Boiler

10.2.1 Level Probe

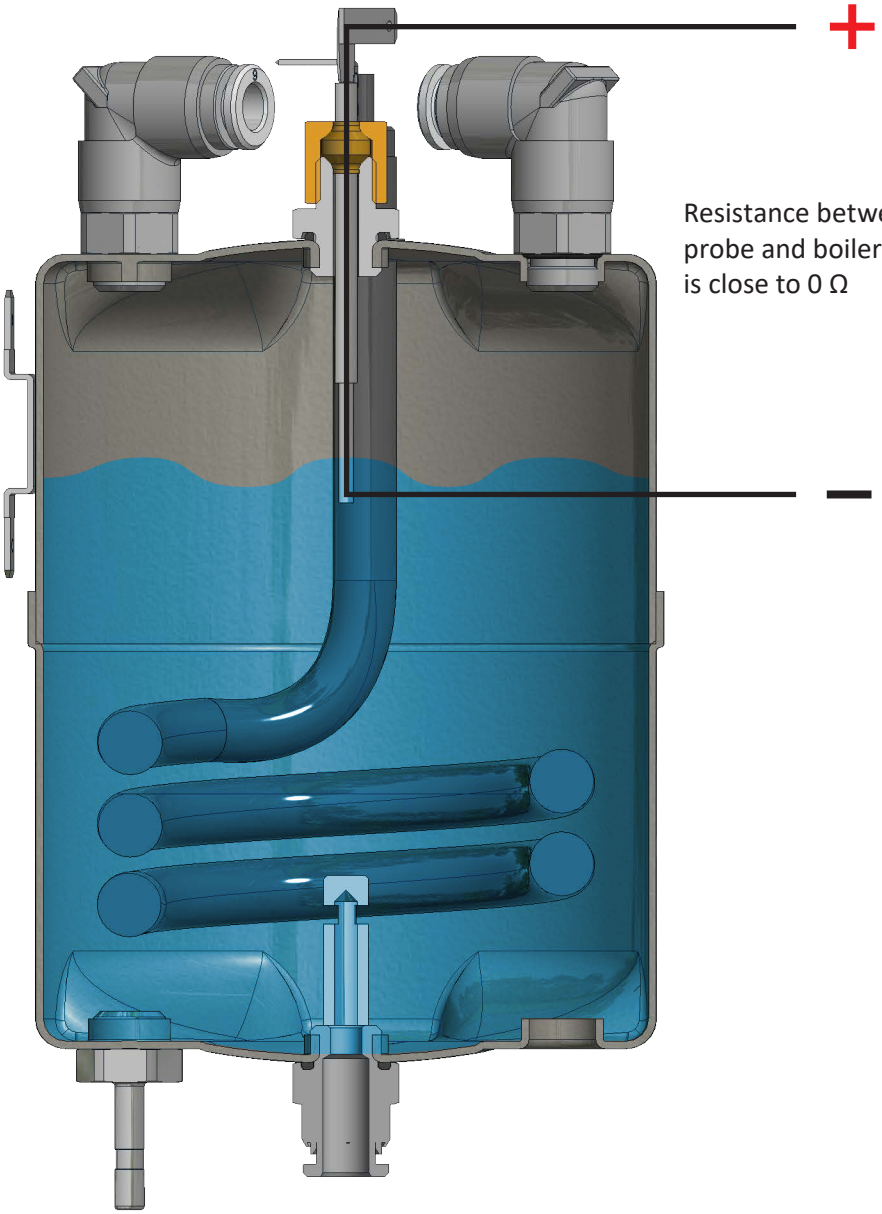


Fig. 32

- Is detecting the water level inside of the steam boiler.
- This is a probe and not a sensor.
- The sensory parts are located on the PCB.
- The probe is acting as a conductor.
- The water is acting as a conductor when the probe is covered.

10.2.2 Steam Boiler NTC

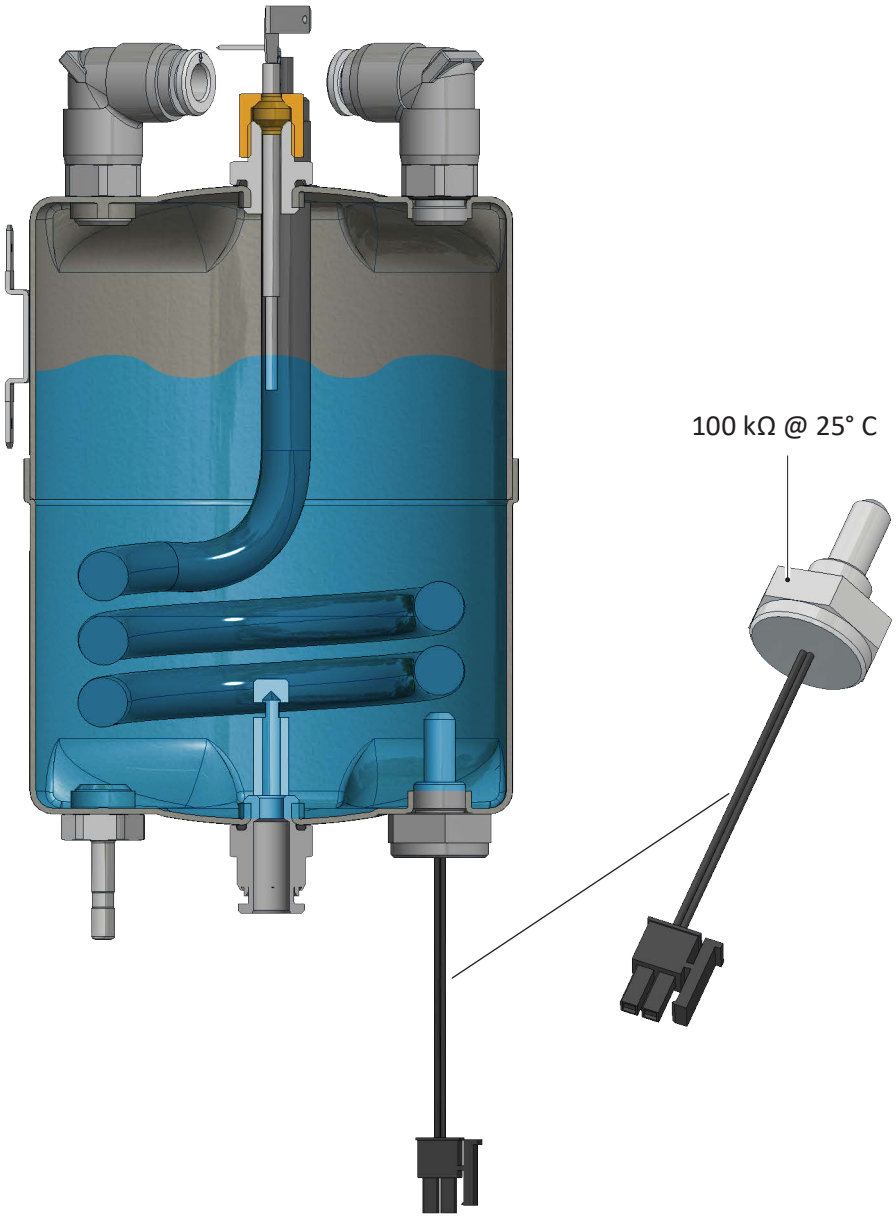


Fig. 33

- Usually, the regulator is controlling the boiler by its steam pressure.
- In addition, the NTC is also watching the temperature of the water and will have redundant safety thresholds.
- Used during descaling to control the temperature of the descaling solution.

10.3 Fluid Line NTC

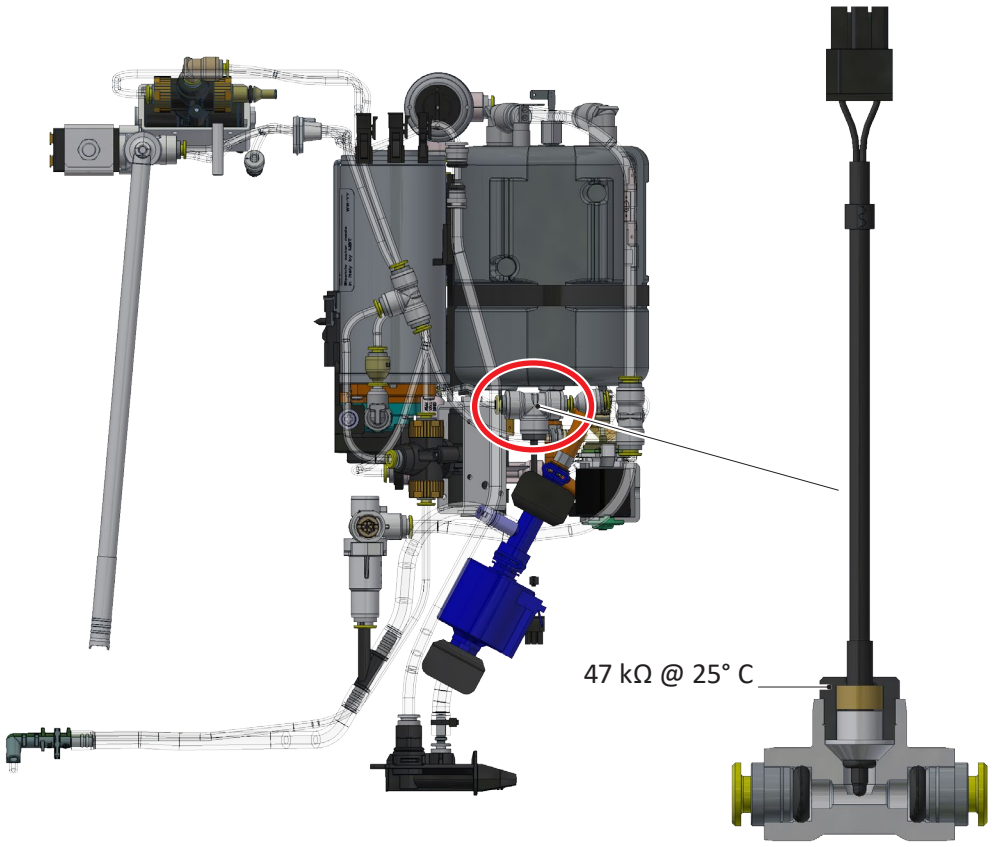


Fig. 34

- Is measuring the fluid temperature to achieve the target temperature.
- The NTC will give the temperature information to the controller which is controlling the temperature by adjusting the milk pump speed.

11 REPAIR

Abbreviations for Component Support Versions

Two abbreviations are used to identify if a reference applies to the metal component support (**MCS**) or the plastic component support (**PCS**) of the milk module.

11.1 General

The disassembly/repair procedures are presented as step by step instructions:

11.2 Basic Repair Instructions

- Hold a towel ready to wipe away leaking water.
- Parts of the chassis and components of the coffee machine are connected screwless with latches. When loosening these connections, proceed with care and patience to avoid causing any damage.

- With each disassembly and repair,
  - accomplish an internal cleaning,
  - perform a protective earth (PE) continuity test (→ p. 205),
  - perform a protective insulation test (→ p. 207),
  - perform a functional test of the milk module (→ p. 209).

Only use original spare parts from your official supplier for maintenance and repair work.

11.3 Safety Information

Risk of fatal electrical shock and fire!
Mains voltage inside the coffee machine.
- **Unplug the appliance before cleaning.**
- **Never clean, wet or immerse plug, cord or base station in any fluid.**
- **Disconnect the power plug before disassembly – the appliance must be free of voltage.**

Risk of damage!
Changing wiring arrangement arbitrarily during reassembly can cause
- **electromagnetic interferences,**
- **squeezed wires and insulation defects,**
- **insulation problems if low and high voltage wires are not separated,**
- **damage to the electronics.**

Protective measures:
- **Refer to special wiring instructions in assembly tips.**
- **Refer to the wiring diagrams when reconnecting wires (→ p. 200).**
- **Make sure that wires do not touch hot parts – use existing cable clips.**

This chapter contains special safety and assembly notes. Disregarding them may lead to injuries and damages.

Before any intervention to the machine, clean and sanitize your hands and tools. After the intervention started, sanitize your hands and tools frequently.

Risk of damage!
The displays and PCBs are sensible to electrostatic discharge.
- **The service technician must be earthed using a grounding strap, ESD gloves or similar safety measures.**

Danger of burns!
Hot parts and water pressure inside the coffee machine (particularly in the thermoblock and boiler).
- **Let the coffee machine cool down before cleaning or disassembly.**
- **Do not touch any hot parts while checking for leakages.**

Danger of steam release!
Several components and pipes of the milk module (particularly in the hydraulic unit) are under pressure.
- **Let the milk module cool down before cleaning or disassembly.**
- **Do not touch or disconnect any hot parts.**

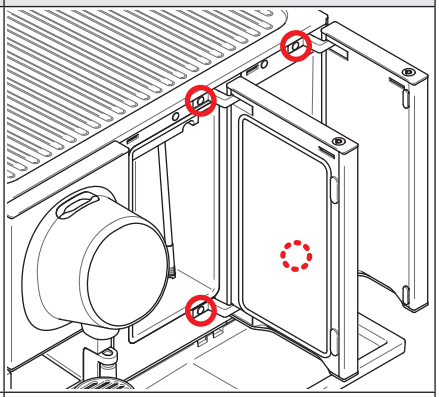
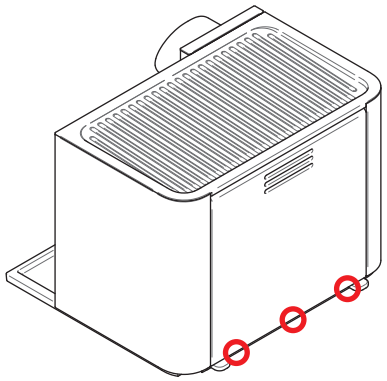
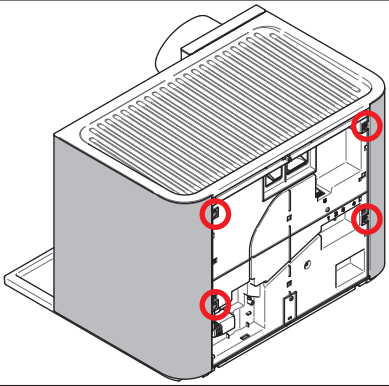
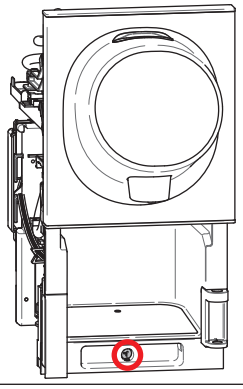
Risk of fire / flammable materials!
The fridge unit contains a highly flammable refrigerant fluid (R600a).
In case of (audible) leakage:
- **Keep away any open flames or sources of ignition.**
- **Don’t smoke.**
- **Let the leaking gas dissipate before any further actions.**
- **Replace the complete fridge unit.**

Possible eye hazard!
The capsule recognition module emits an invisible laser beam.
- **Do not stare into the laser beam accidentally or direct it towards other people around you.**
- **Do not put reflective objects in the path of the laser beam.**
- **Do not remove the PCB from the capsule recognition module and look on the powered laser diode with optical equipment such as a magnifying glass or a microscope.**

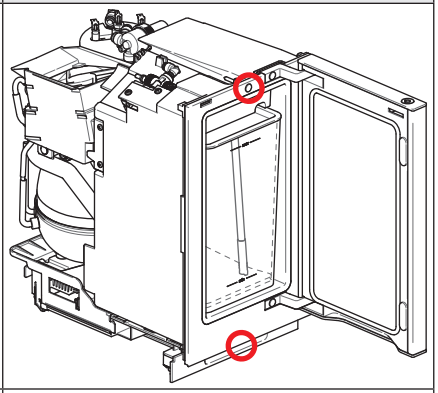
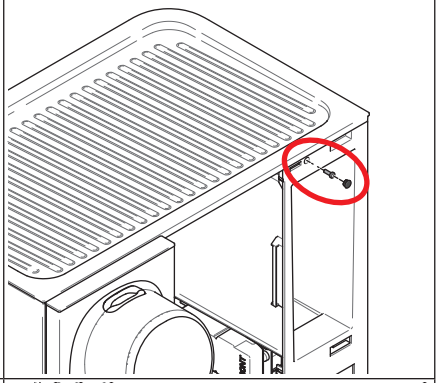
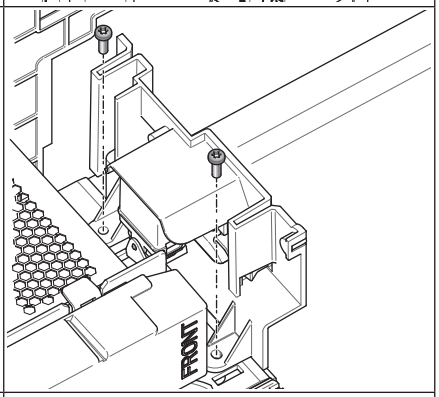
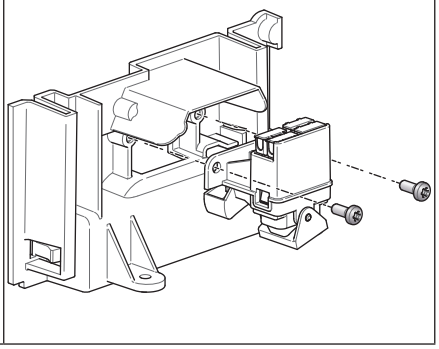
A class 1/I laser product is safe under reasonable foreseeable conditions of operation and is not harmful to the eyes provided that the product is used and maintained correctly.

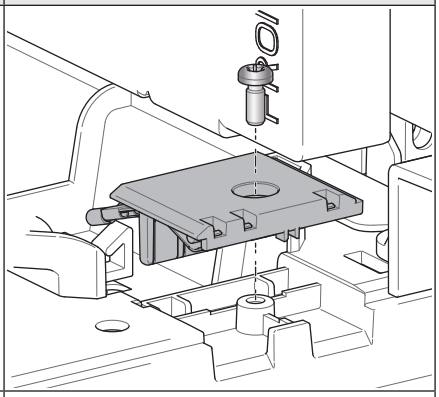
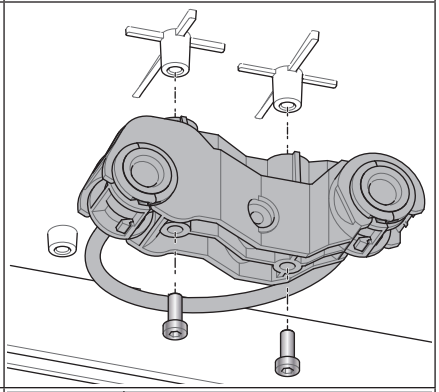
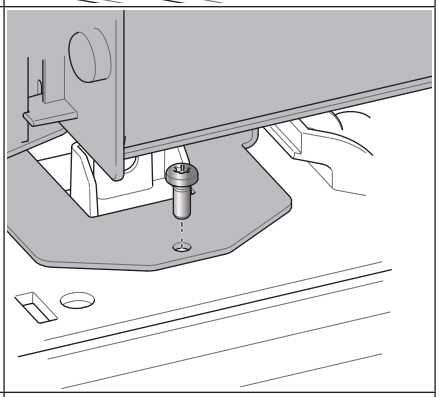
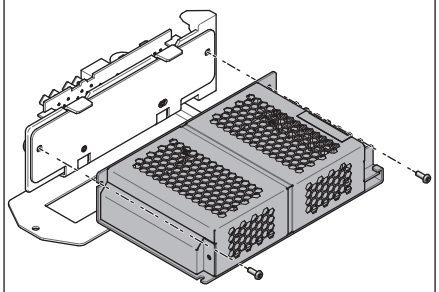
Danger of flooding in regard to the direct water connection!
- **During repair of the coffee machine on-site, turn off and lock stop valve of the direct water connection.**
- **Attach a danger sign to prevent unauthorised operation.**

11.4 Screw Connections – Chassis

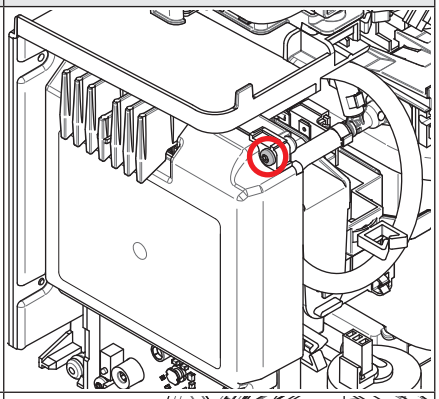
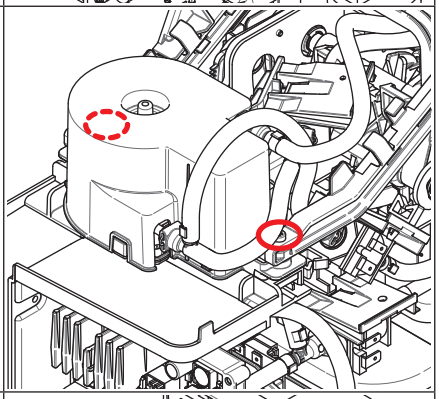
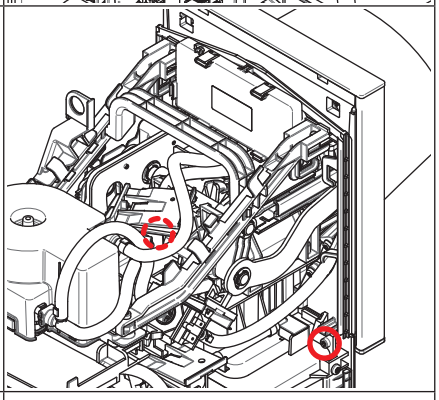
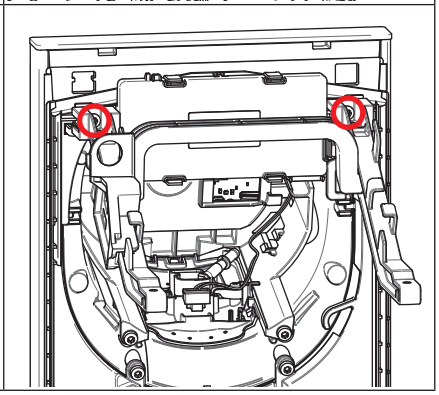
Screw connection / type	Torque	Position
Front doors fixing screws (4×) Crosshead screw PT 40 × 12	N/A	
Panel rear fixing screws (100:2×/200:3×) Crosshead screw M4 × 12	N/A	
Side panel fixing screws (2× per side) Crosshead screw M4 × 12	N/A	
Coffee module fixing screw (1×) Tri-Wing security screw diam. 4 × 30	15.3 ± 0.5 kgf cm 150.0 ± 4.9 Ncm 13.3 ± 0.4 lbf-in	

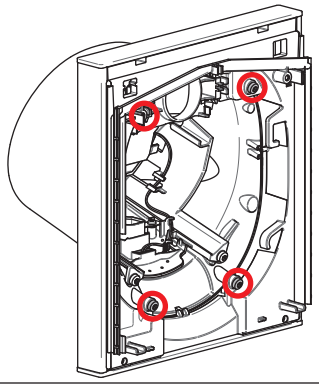
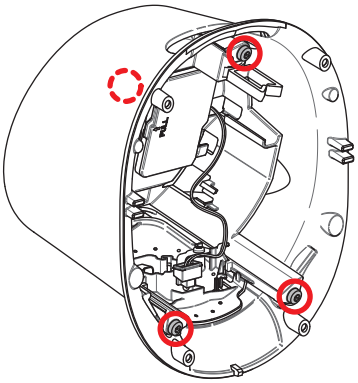
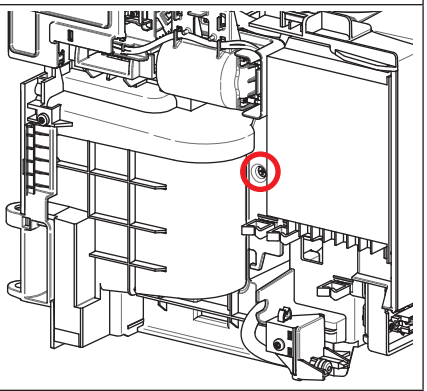
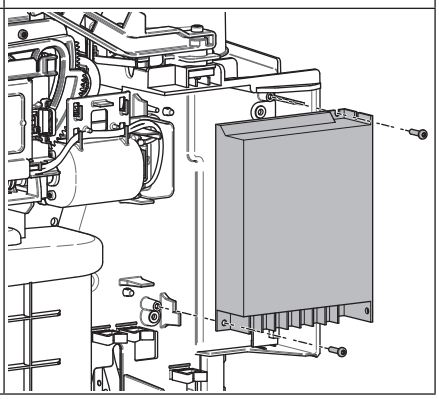
i A Tri-Wing screw head looks like this:

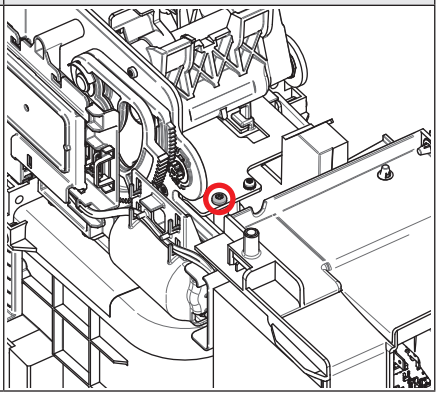
Screw connection / type	Torque	Position
Milk module fixing screw (2×) Tri-Wing security screw diam. 4 × 30	N/A	
Water tank slot fixing screw (1×) Crosshead screw PT 40 × 12	N/A	
ON/OFF switch support fixing screws (2×) TX 20 K40 × 12	N/A	
ON/OFF switch fixing screws (2×) TX 20 PT 40 × 10	N/A	

Screw connection / type	Torque	Position
Drip tray contact plate fixing screw (1×) TX 20 PT 40 × 10	N/A	
Milk/Coffee module coupling (2×) Hexagon socket M4 × 12	N/A	
Power supply support fixing screw (1×) TX 20 PT 40 × 10	N/A	
Power supply fixing screw (2×) TX 10 M3 × 8	N/A	

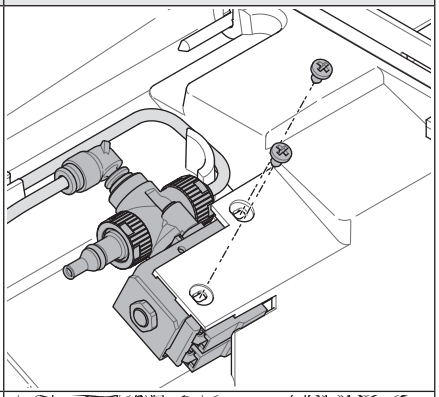
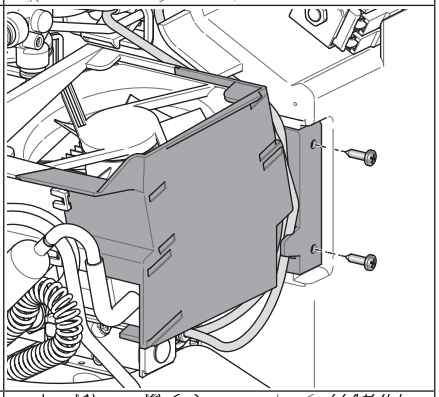
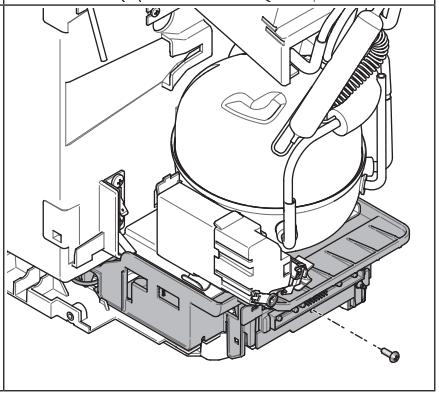
11.5 Screw Connections – Coffee Module

Screw connection / type	Torque	Position
Main PCB cover fixing screw (1×) TX20 K40 × 12	N/A	
Cross beam to chassis BU fixing screws (2×) TX20 M4 × 30	N/A	
Head base plate fixing screws (2×) TX20 M4 × 20	N/A	
Cross beam to head base plate fixing screws (2×) TX20 K40 × 12	N/A	

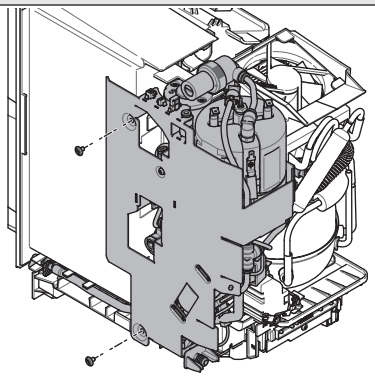
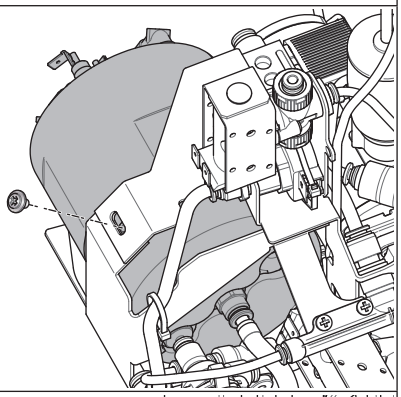
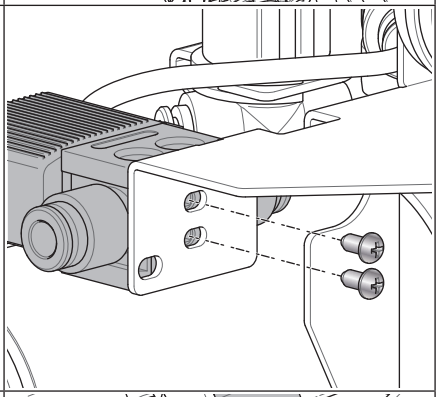
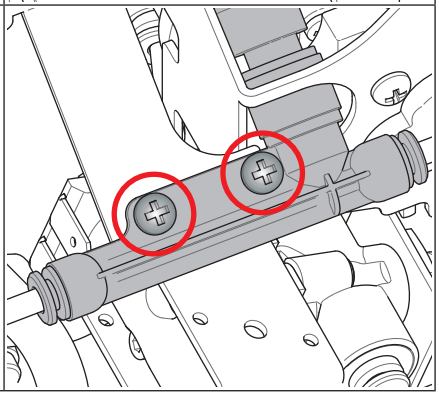
Screw connection / type	Torque	Position
Front cover fixing screws (4×) TX20 M4 × 12	N/A	
MMI assembly fixing screws (4×) TX20 M4 × 12	N/A	
Pump fixing screw (1×) Crosshead screw M4 × 20	N/A	
Power supply fixing screws (2×) TX10 K30 × 12	N/A	

Screw connection / type	Torque	Position
Brewing unit fixing screw (1×) TX20 K40 × 12	N/A	

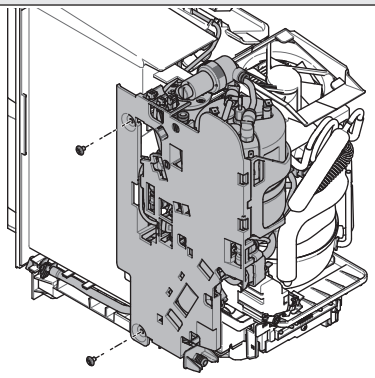
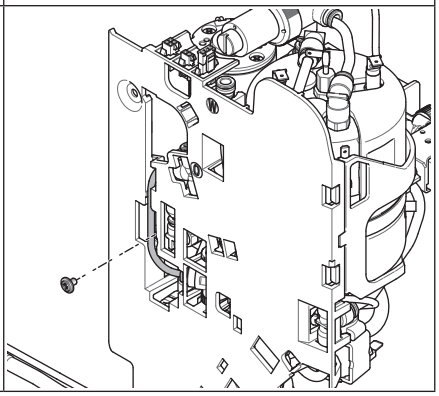
11.6 Screw Connections – Milk Module

Screw connection / type	Torque	Position
Outlet valve fixing screws (2×) Crosshead screw	N/A	
Fan cover fixing screws (2×) Crosshead screw	N/A	
PCB assembly fixing screw (1×) Crosshead screw K35 × 10	N/A	

11.6.1 Metal Component Support

Screw connection / type	Torque	Position
Hydraulic unit fixing screws (2×) Crosshead screw	N/A	
Boiler fixing screw (1×) Crosshead screw	N/A	
Steam valve fixing screws (2×) Crosshead screw K35 × 6	N/A	
Steam heating chamber fixing screws (2×) Crosshead screw M4 × 6	N/A	

11.6.2 Plastic Component Support

Screw connection / type	Torque	Position
Hydraulic unit fixing screws (2×) Crosshead screw	N/A	
Hydraulic components support fixing screw (1×) Crosshead screw	N/A	

11.7 Tools and Accessories

With the following tools, all described disassembly and repair work can be done:

- Torque screwdriver (→ p. 73)
- Crosshead M4 bit or screwdriver
- Hexagon M4/M2.5 bit or screwdriver
- TX20/TX10/TX9 bit or screwdriver
- Fork wrenches no. 6/11/13/17
- Tri-Wing bit or screwdriver
- Flathead screwdriver
- (Angled) Pointed pliers
- Side cutting pliers (cable ties)
- Special tube pliers (optional)
- Towel, cleaning utensils

11.8 Simple Repair Work

The following machine parts can be removed and replaced without prior disassembly of the machine:

- Drip tray
- Drip grid
- Cup holder
- Capsule container
- Water tank
- Internal water filter
- Milk tank
- Cleaning tank
- Coffee Module
- Milk module

11.9 General Disassembly

11.9.1 Removable Parts

Unplug the machine from the mains before disassembly – appliance must be isolated!

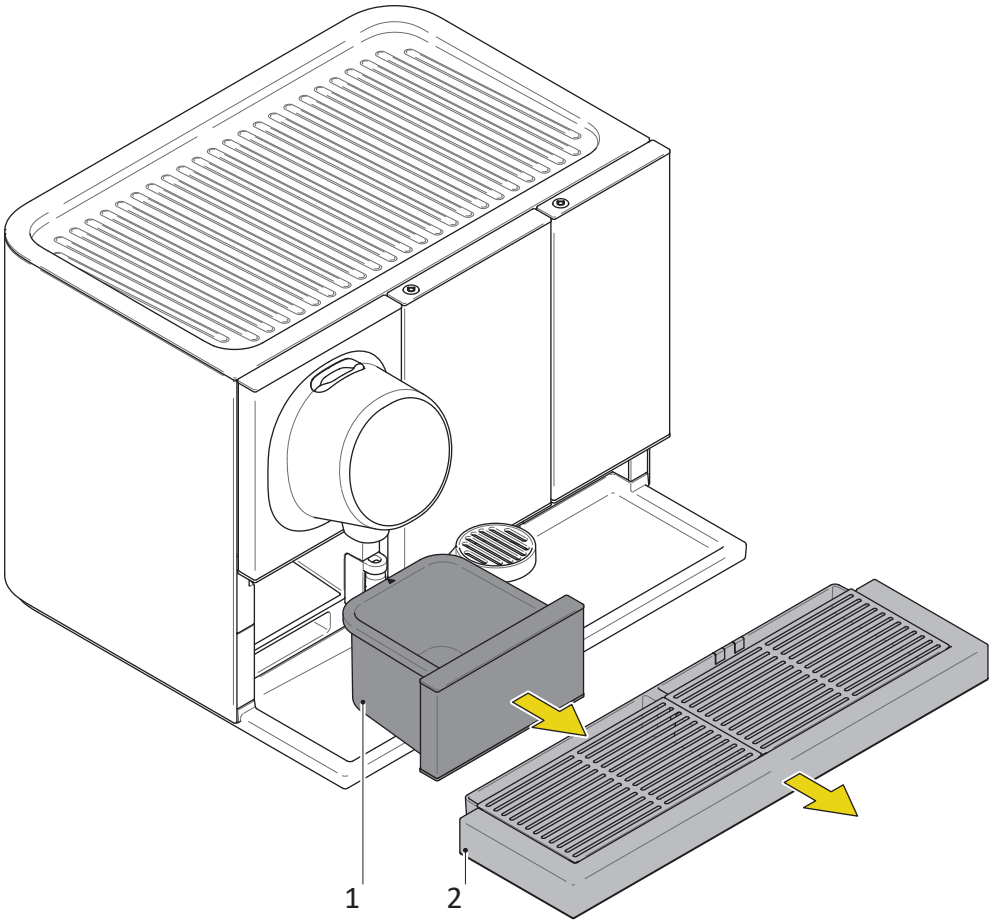


Fig. 35

1. Switch off the machine and unplug the power cord.
2. Remove the drip tray (2) and the capsule container (1) from the coffee module.

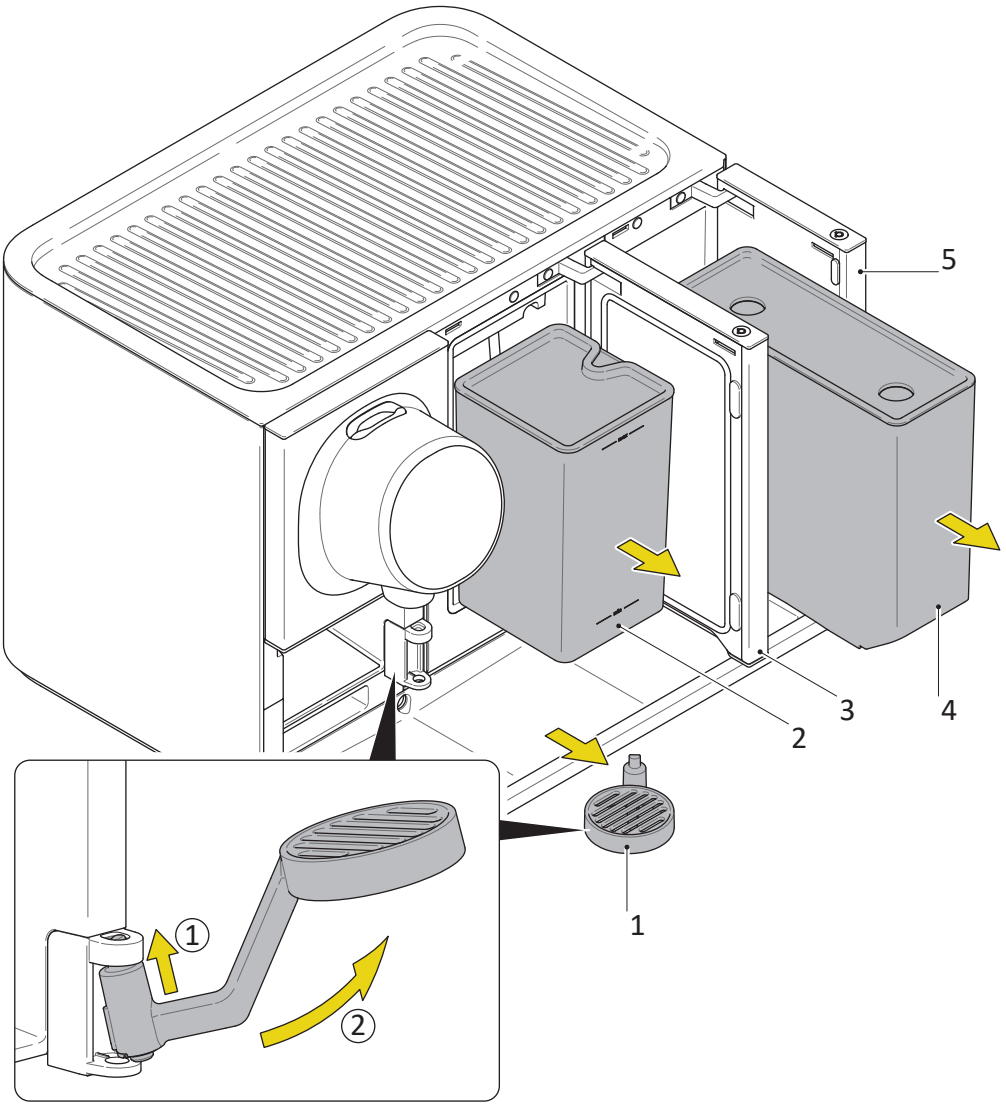


Fig. 36

3. Open the water tank door (5) with its key and remove the water tank (4).
4. Open the milk module door (3) with its key and remove the milk tank (2).
5. Remove the cup holder (1 – see detail) by first moving it up and then swing it out.

11.9.2 Remove Front Doors

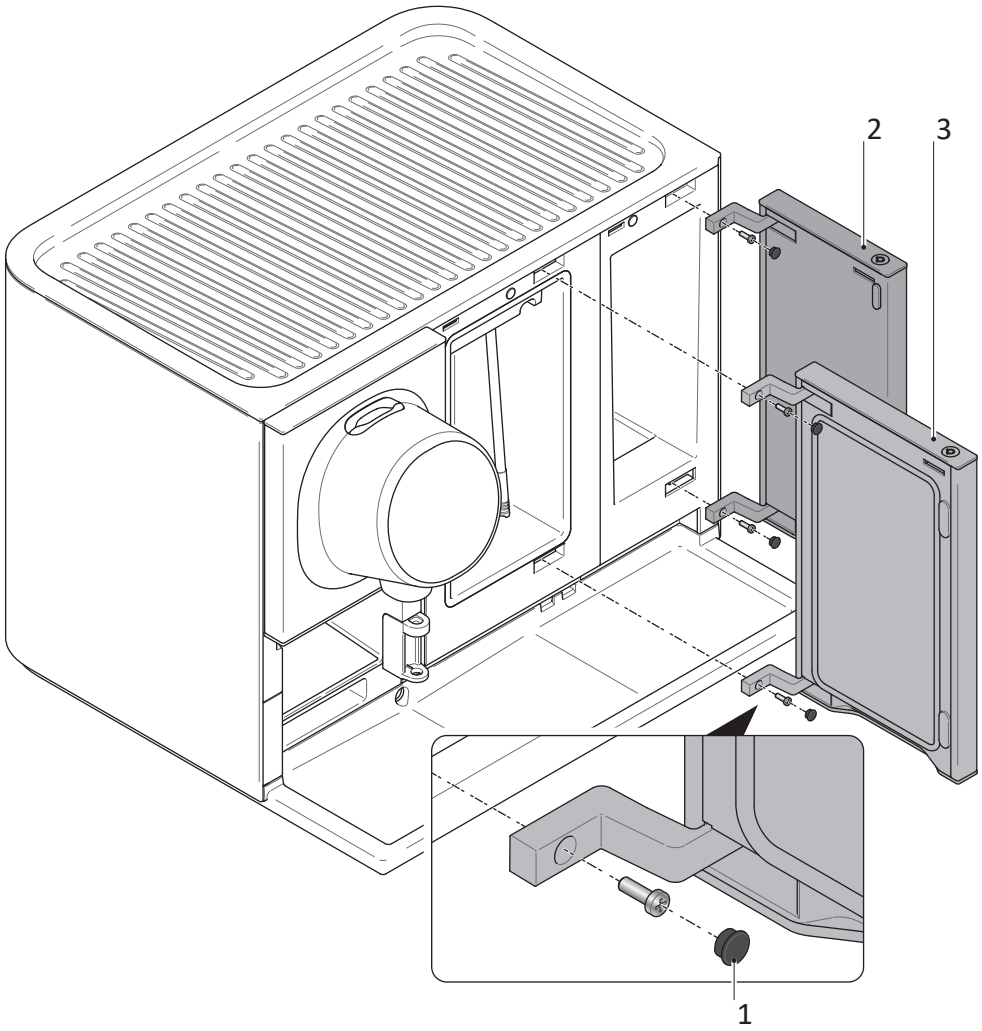


Fig. 37

1. Open the water tank door (2) and the milk module door (3) with their key.
2. Remove the hinge covers (1) with the help of a small flathead screwdriver.
3. Loosen 2 screws (crosshead) per door on the hinges.
4. Remove the water tank door / milk module door.

Assembly Tip

- Do not forget to put back the hinge covers (1).

11.9.3 Remove Panel Rear

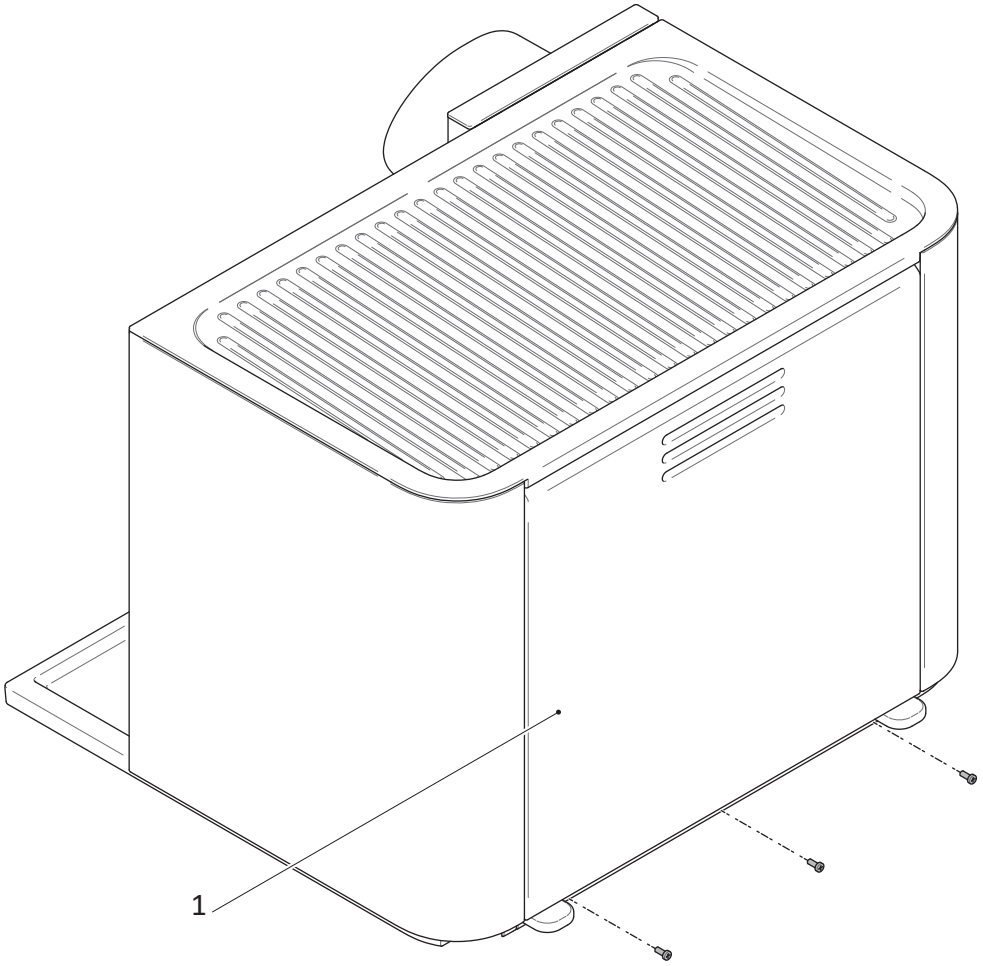


Fig. 38

1. Loosen 3 screws (crosshead) on the panel rear (1).

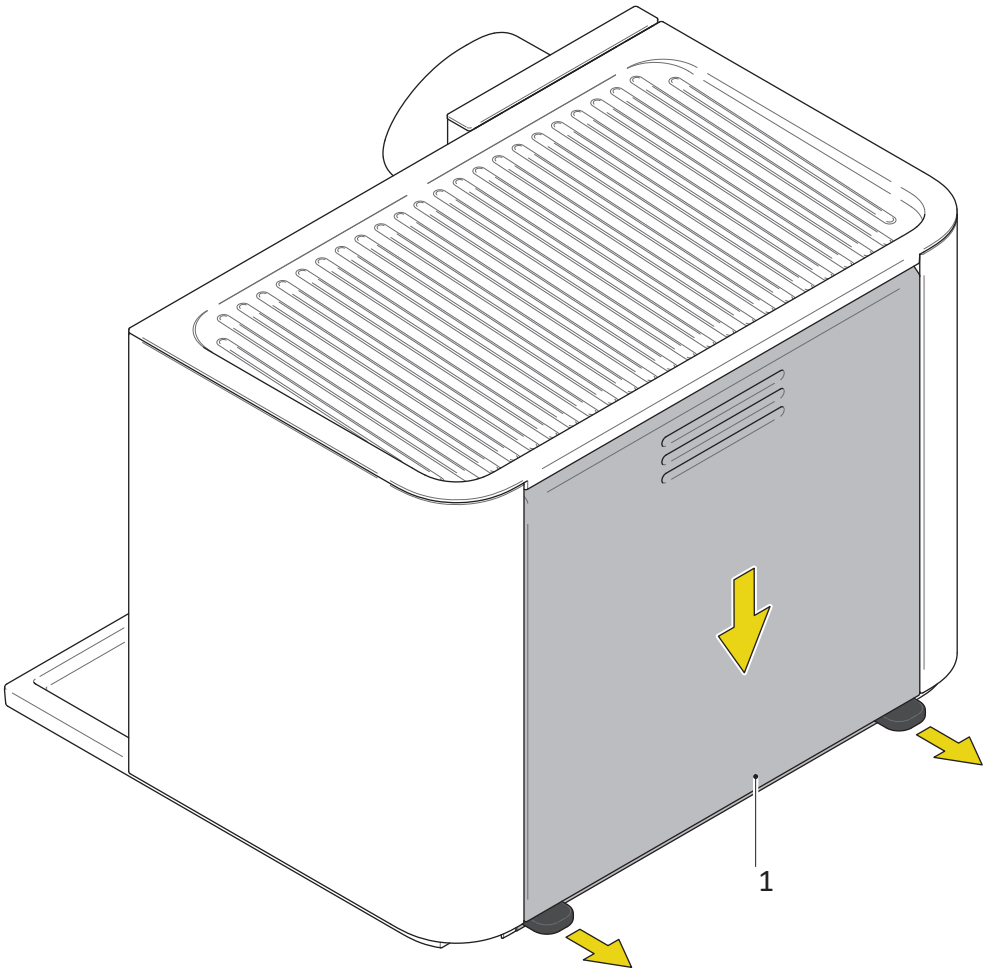


Fig. 39

2. Pull the panel rear (1) down and away from the machine at the same time, using the wall bumpers on the bottom of the panel as grip.
3. Remove the panel rear (1).

Assembly Tips

- First, slide in the guides on top of the panel rear (1).
- Slide the panel slightly down again until all hooks fall into place.
- Slide the panel up again to snap it in and fix it with the screws.

11.9.4 Remove Side Panel(s)

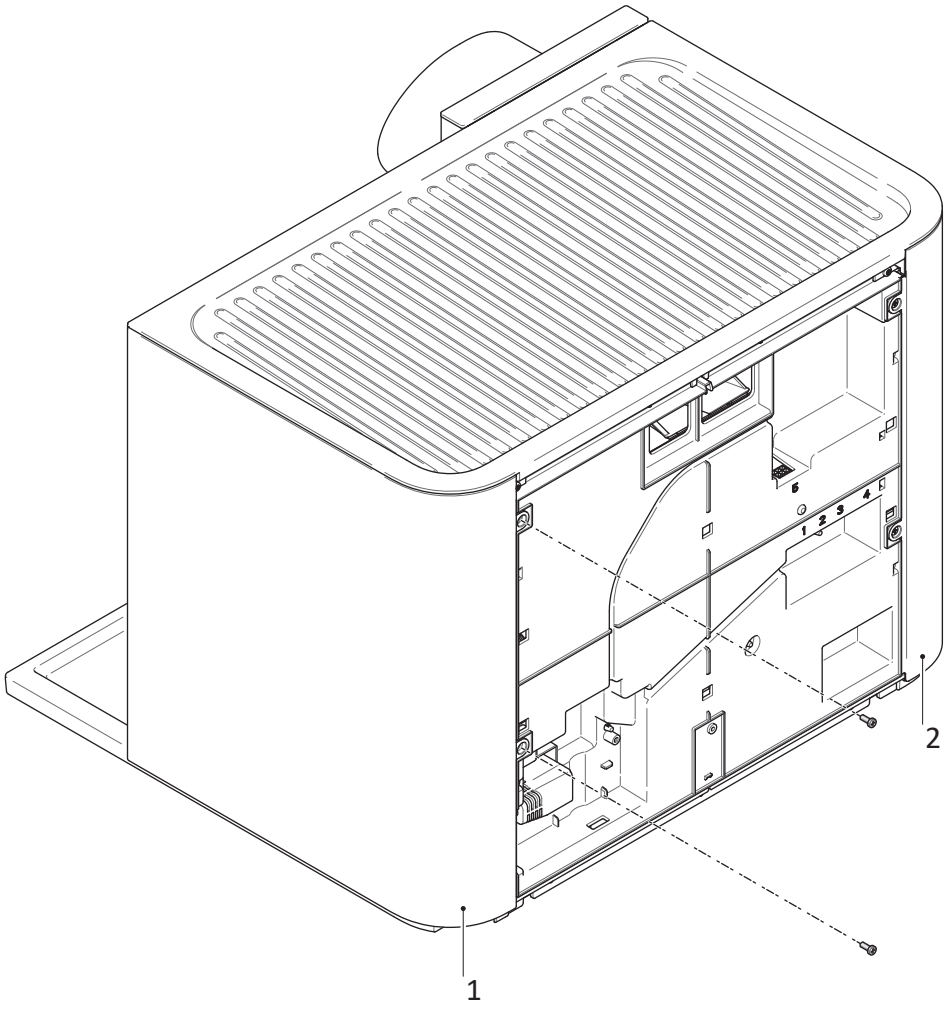


Fig. 40

Prerequisites

- Panel rear is removed → p. 85.

Procedure

1. Loosen 2 screws (crosshead) from the side panel (right:1/left:2) that you wish to remove.

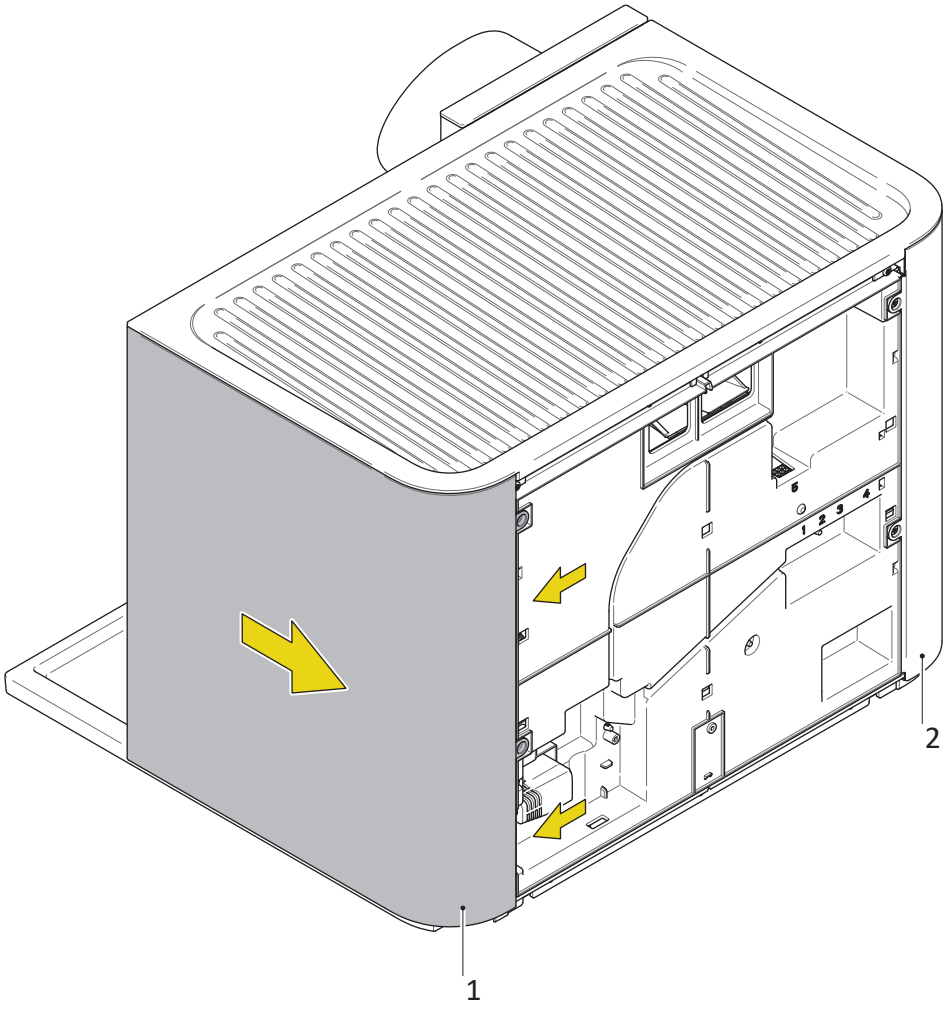


Fig. 41

2. Pull the side panel (right:1/left:2) back and away from the machine at the same time, to release its hooks.
3. Remove the side panel (right:1/left:2).

11.9.5 Remove Coffee Module

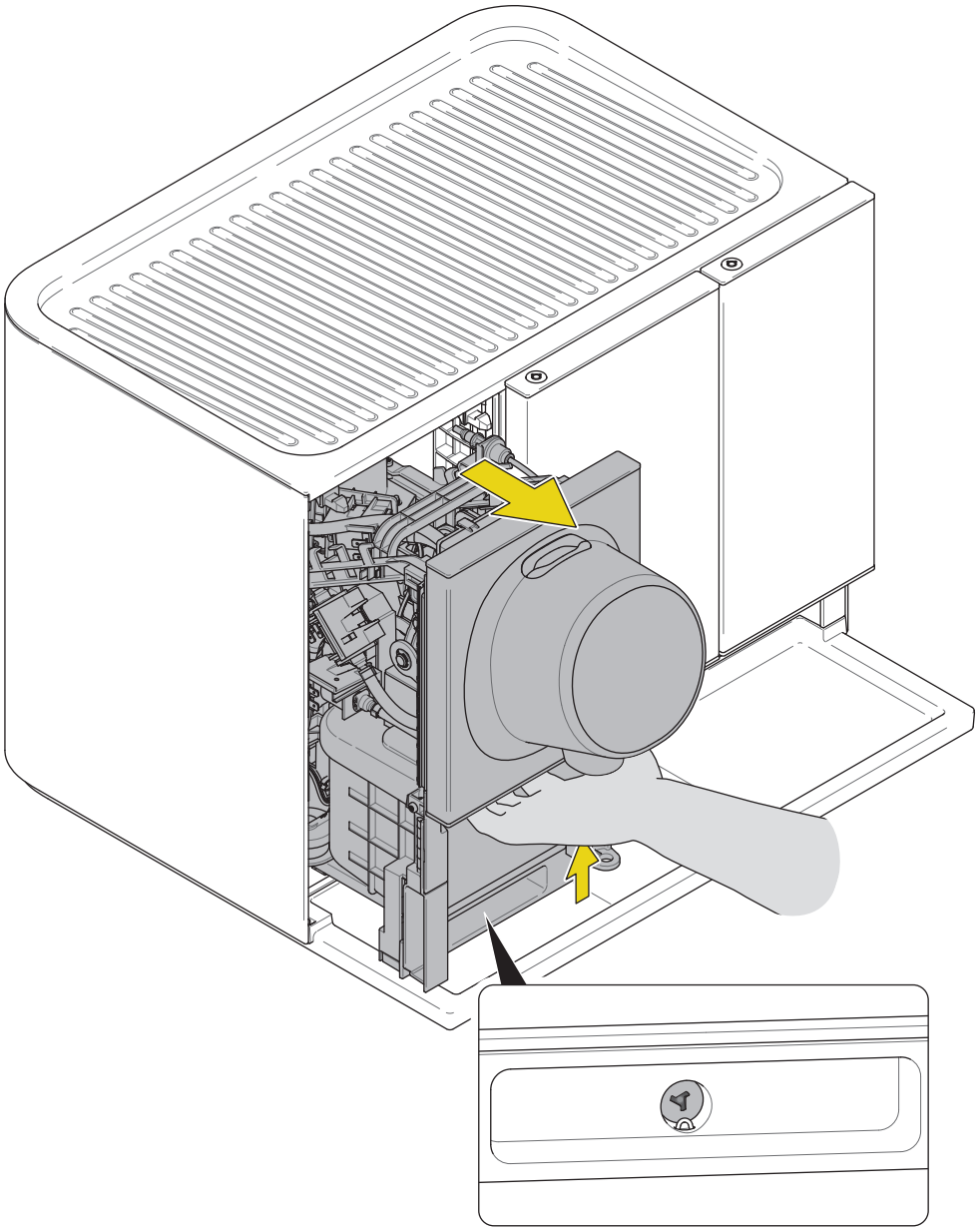


Fig. 42

Prerequisites

- Removable parts are removed → p. 82.

Procedure

1. Loosen the Tri-Wing security screw (see detail) on the coffee module.
2. Lift the coffee module upward while pulling on it to remove it.

11.9.6 Remove Milk Module

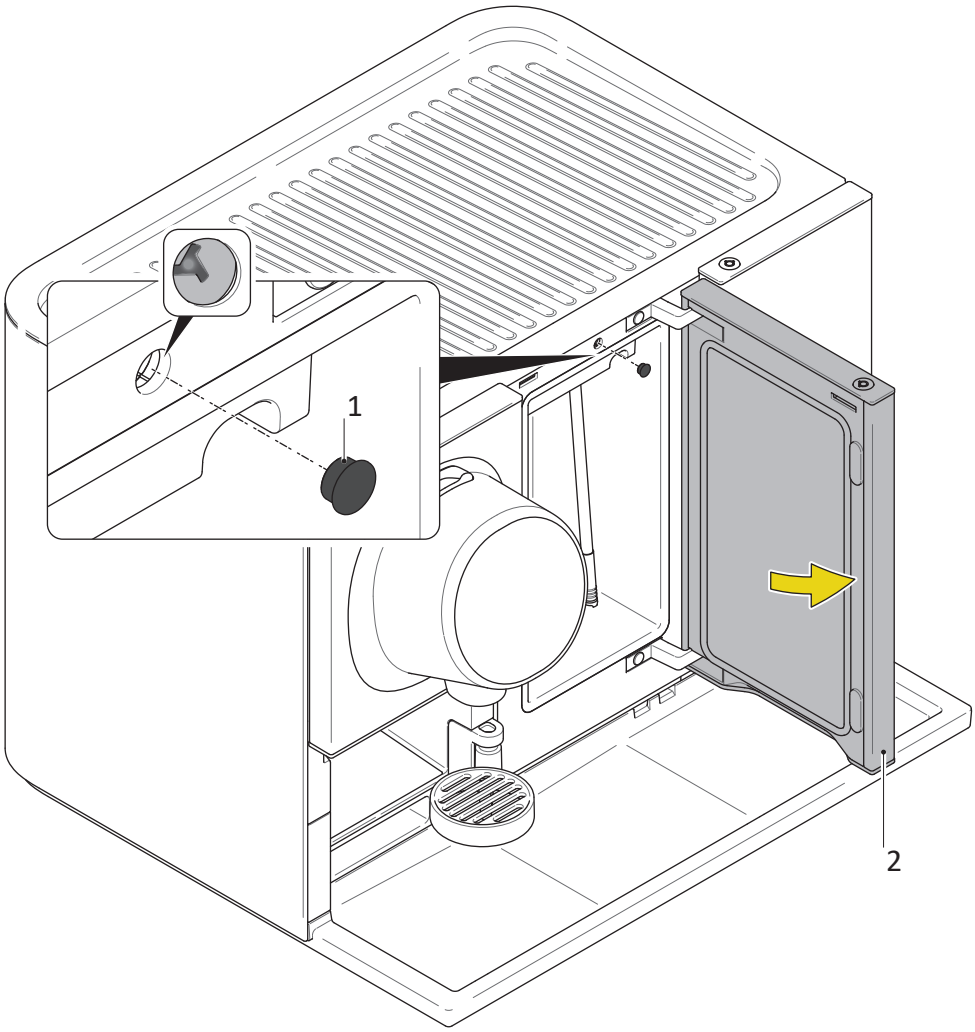


Fig. 43

If you need to interact with components or pipes under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- Removable parts are removed → p. 82.

Procedure

1. Open the milk module door (2)
2. Remove the screw cover (1) and loosen the Tri-Wing screw on the top part of the milk module (see detail).
3. Put the screw cover (1) back and close the milk module door (2).

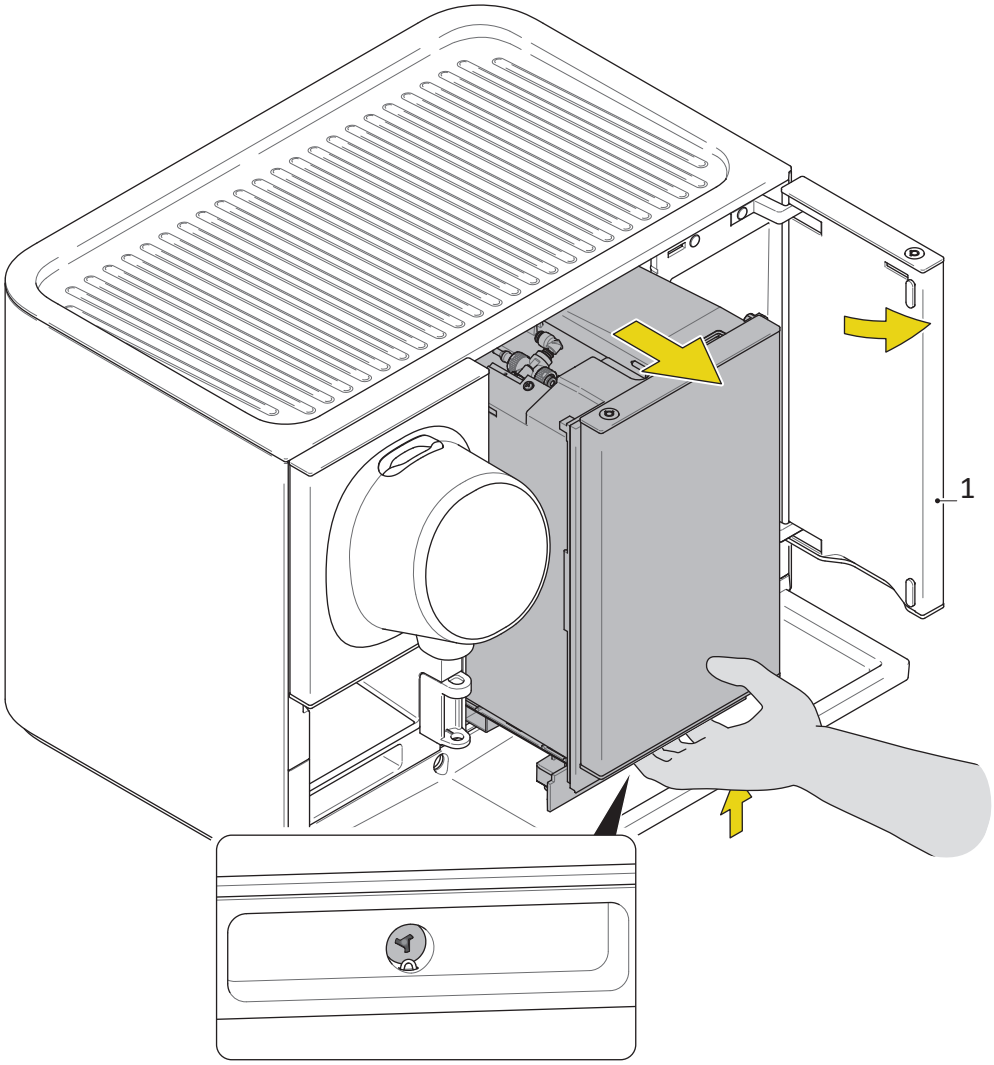


Fig. 44

4. Loosen the Tri-Wing security screw (see detail) on the bottom of the milk module.
5. Open the water tank door (1).
6. Lift the milk module slightly upward while pulling on it to remove it.

11.10 Chassis Repairs

11.10.1 Replace Milk/Coffee Module Coupling

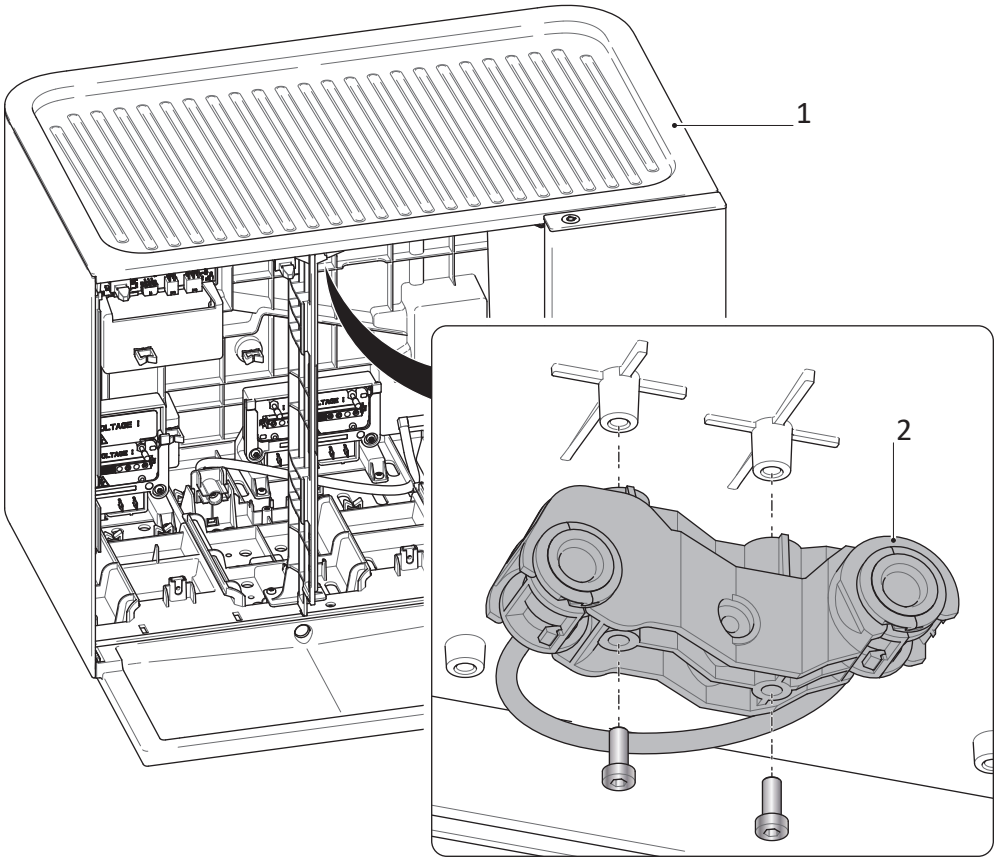


Fig. 45

Prerequisites

- Coffee module is removed → p. 89.
- Milk module is removed → p. 90.

Procedure

1. Loosen 2 screws (hexagon socket) from the top plate (1).
2. Remove the milk/coffee module coupling (2).

11.10.2 Replace Main Fuse

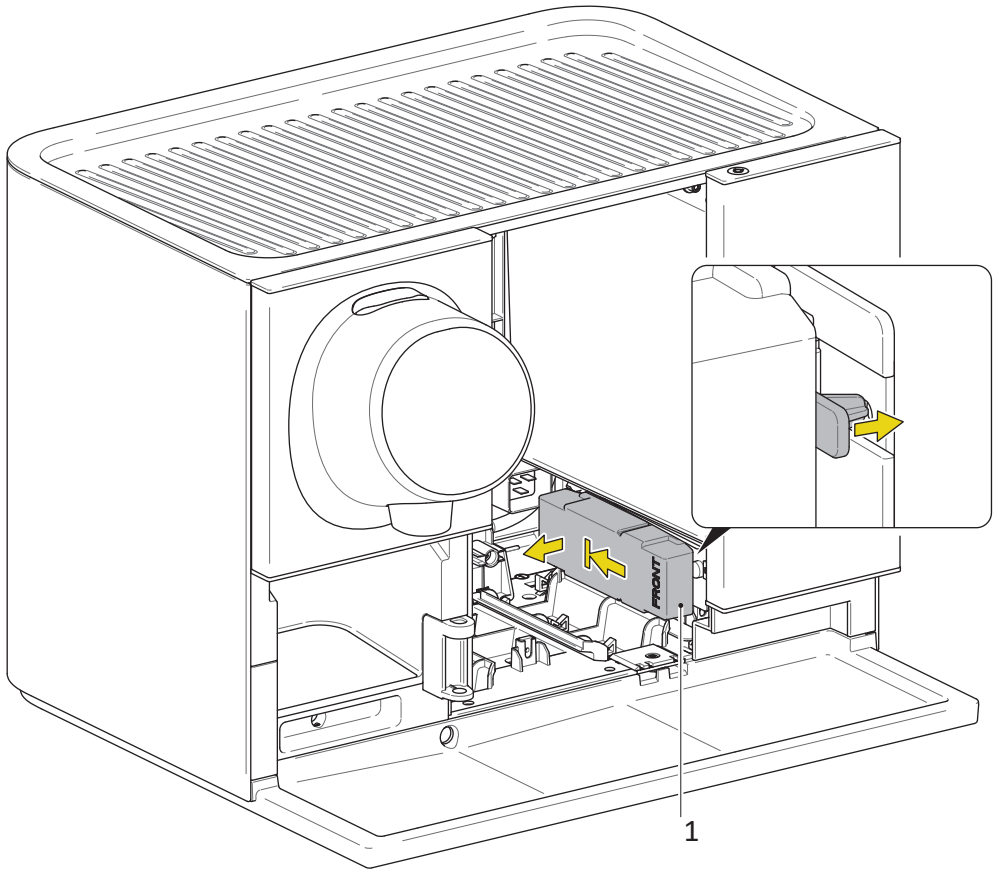


Fig. 46

In case the fuse is not sourced from the official spare parts supplier, ensure that the amperage of the fuse is 10 A.

Prerequisites

- Milk module is removed → p. 90.

Procedure

1. Press in the latch fixating the EMC PCB lid (1, see detail).
2. Push the EMC PCB lid (1) back until you hear it click.
3. Lift up and remove the EMC PCB lid (1).

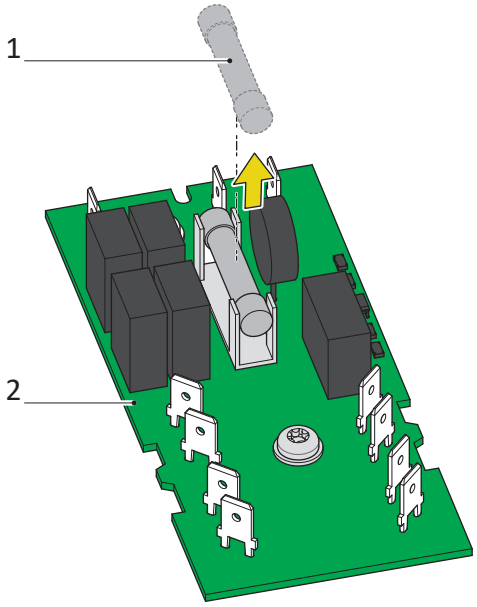


Fig. 47

4. Pull the old main fuse (1) out of its socket on the EMC PCB (2) and replace it with a new one.

Assembly Tip

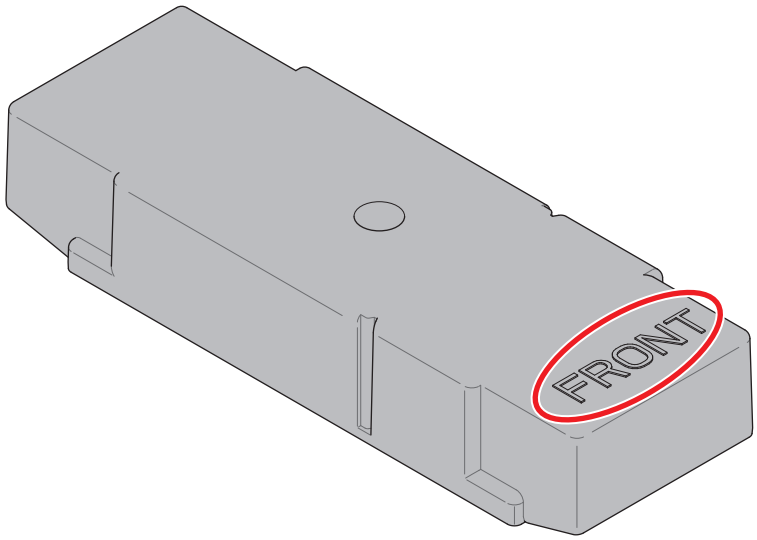


Fig. 48

- Make sure that the “FRONT” label points to the front of the machine when putting back the EMC PCB lid. The lid will not snap in if placed the wrong way.

11.10.3 Remove Water Tank Slot

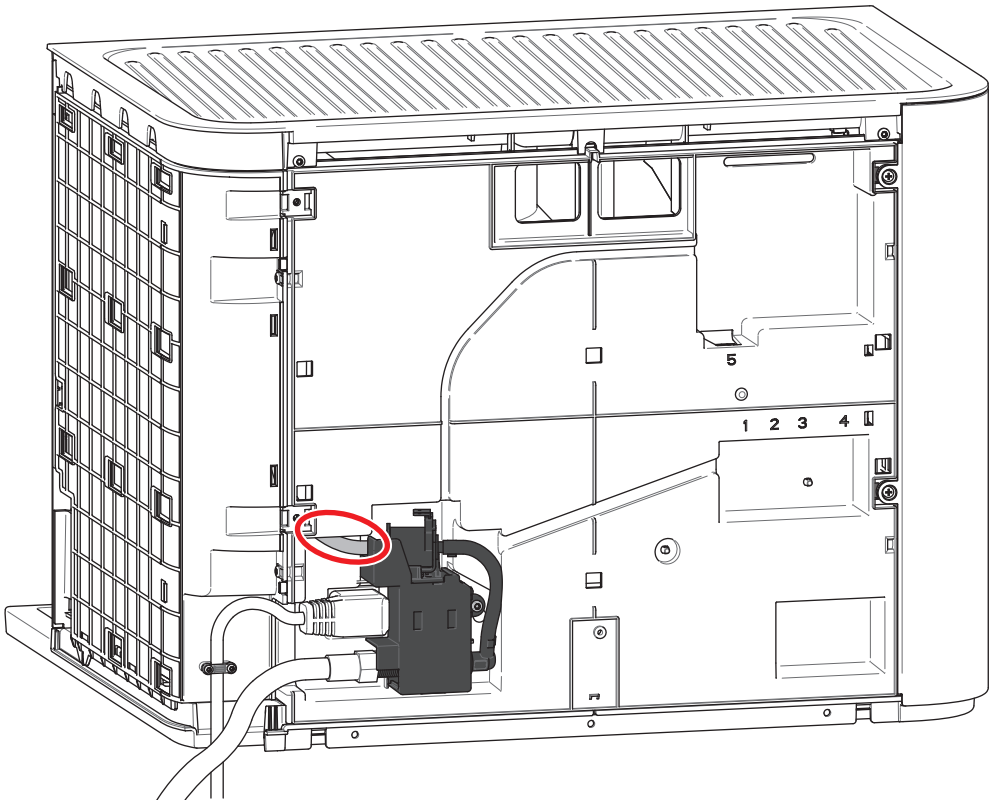


Fig. 49

Prerequisites

- Water tank door is removed → p. 84.
- Right side panel is removed → p. 87
- Milk module is removed → p. 90.

Procedure

1. Pull off the hose from the DWC-Kit in the back if a DWC-Kit is installed.

If you have problems pulling off the hose(s) from the DWC-Kit, loosen the screw on the DWC-Kit to get easier access to the hose connection(s).

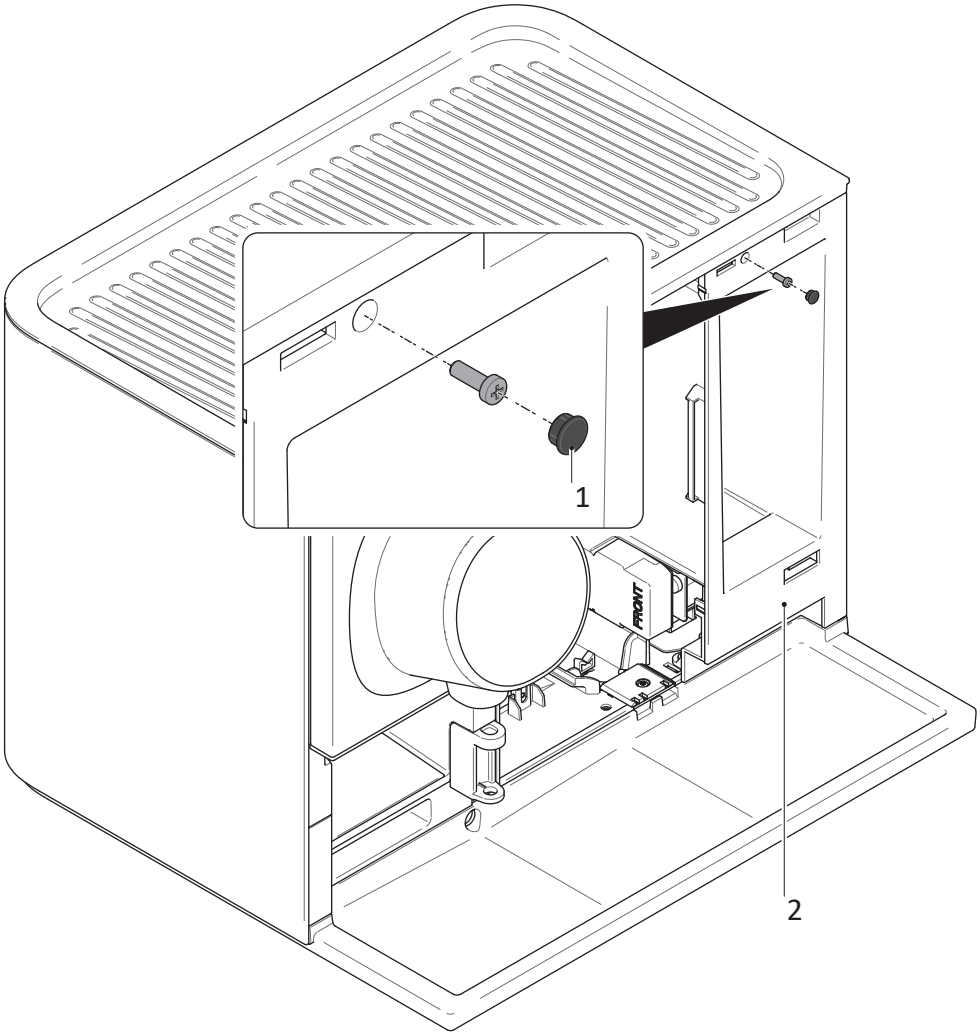


Fig. 50

2. Remove the screw cover (1) with the help of a small flathead screwdriver.
3. Loosen the screw (crosshead) at the top of the water tank slot (2).

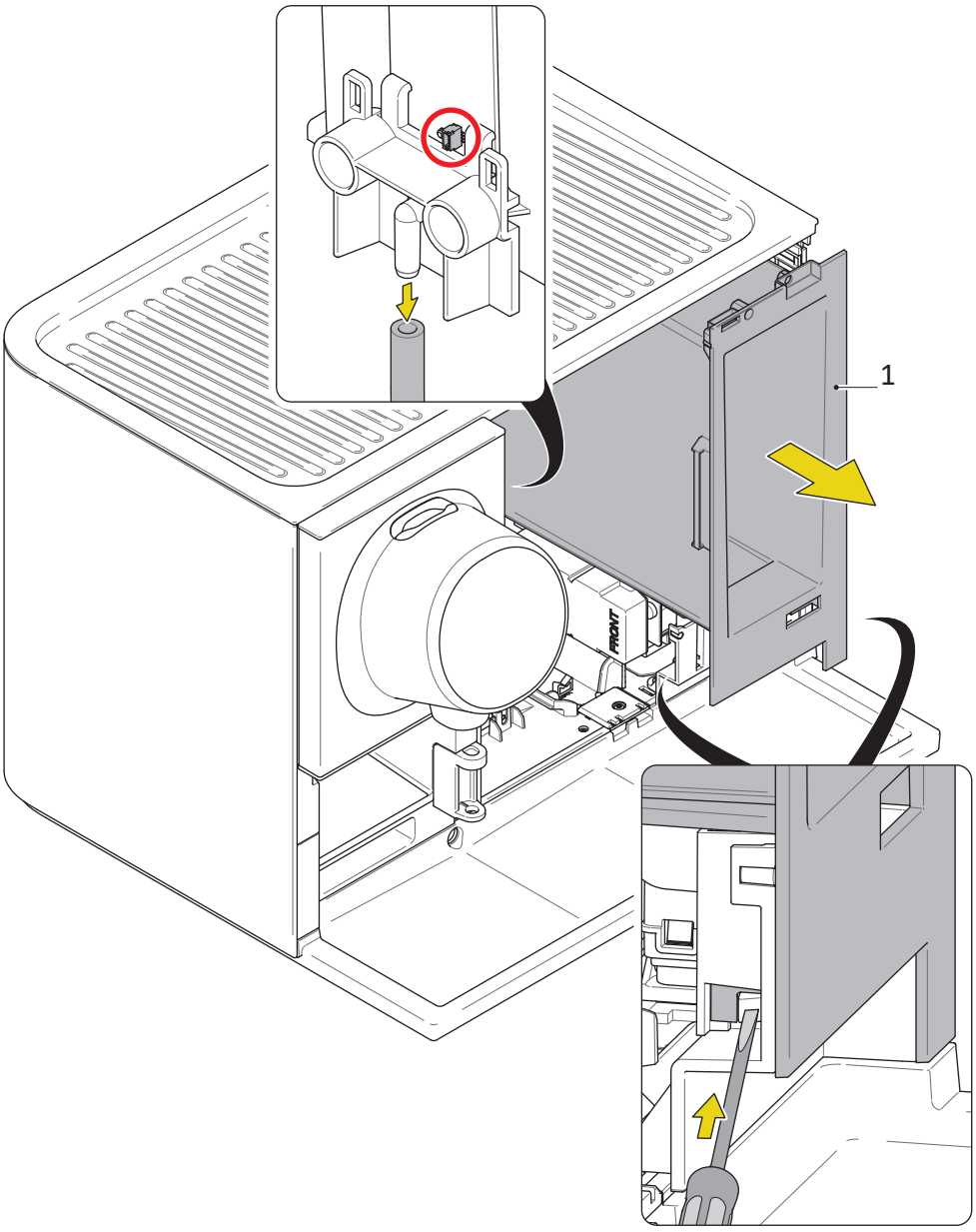


Fig. 51

4. Press in the latches (see lower detail) on both sides of the water tank slot (1) and pull it out a bit.
5. Unplug the water level detection wire (see upper detail, red circle) from the back of the water tank slot (1) as soon as you are able to reach it.
6. Pull off the hose from the from the back of the water tank slot (1).
7. Completely remove the water tank slot (1).

⚠ Danger of damage! Do not pull out the water tank slot too far while the water level detection wires are still connected.

Assembly Tips

- Reconnect the water level detection wire and the hose from the chassis coupling (1) before mounting/fixing the water tank slot (2).

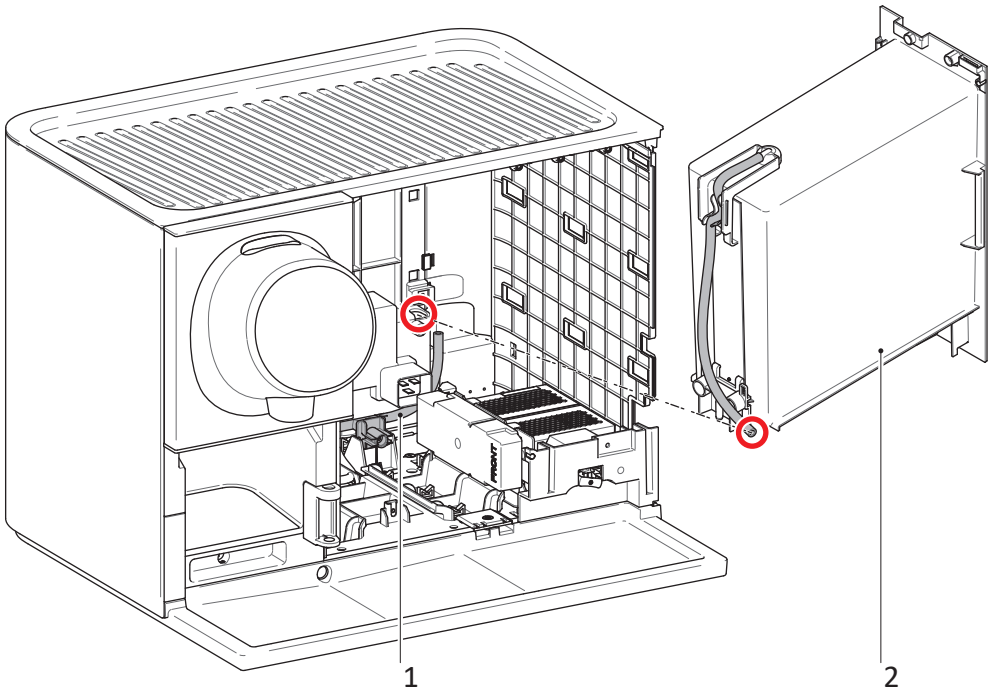


Fig. 52

- Pull the hose from the top of the water tank slot (2) through the respective hole in the chassis (circled in red) before mounting.
- Reconnect the hose to the DWC-Kit, if present.

11.10.4 Replace ON/OFF Switch

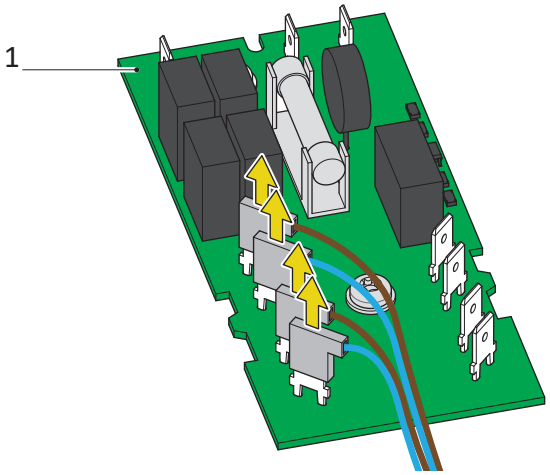


Fig. 53

Prerequisites

- Water tank slot is removed → p. 95.

Procedure

1. Remove the EMC PCB lid → **Fig. 46 on p. 93**.
2. Unplug the receptacles on the EMC PCB (1) coming from the ON/OFF switch.

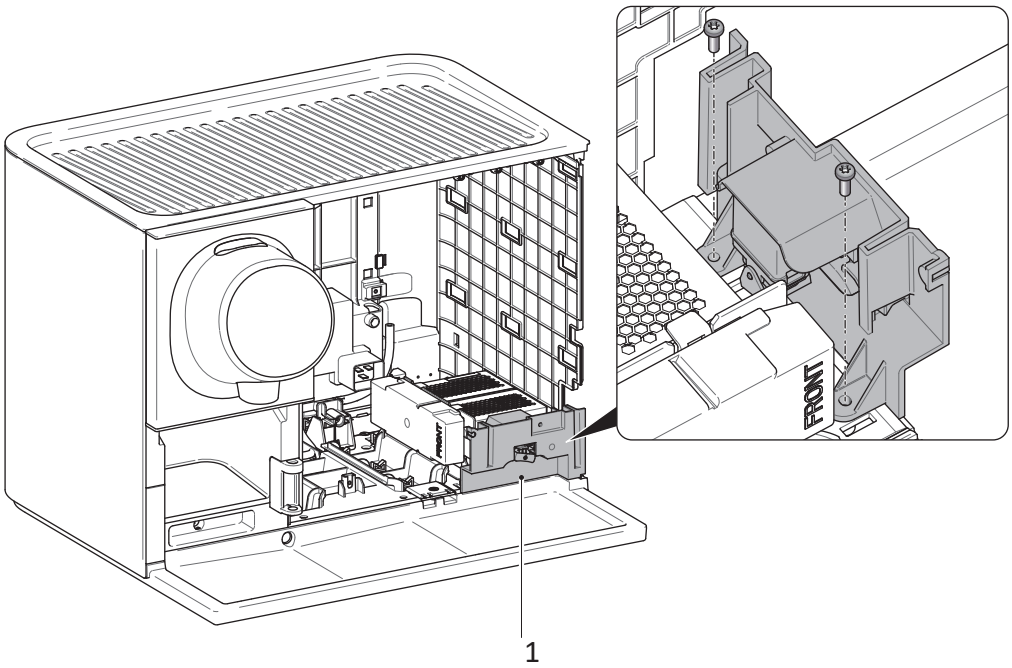


Fig. 54

3. Loosen 2 screws (TX20) from the switch support (1).
4. Lift the support (1) and wires out of the chassis.

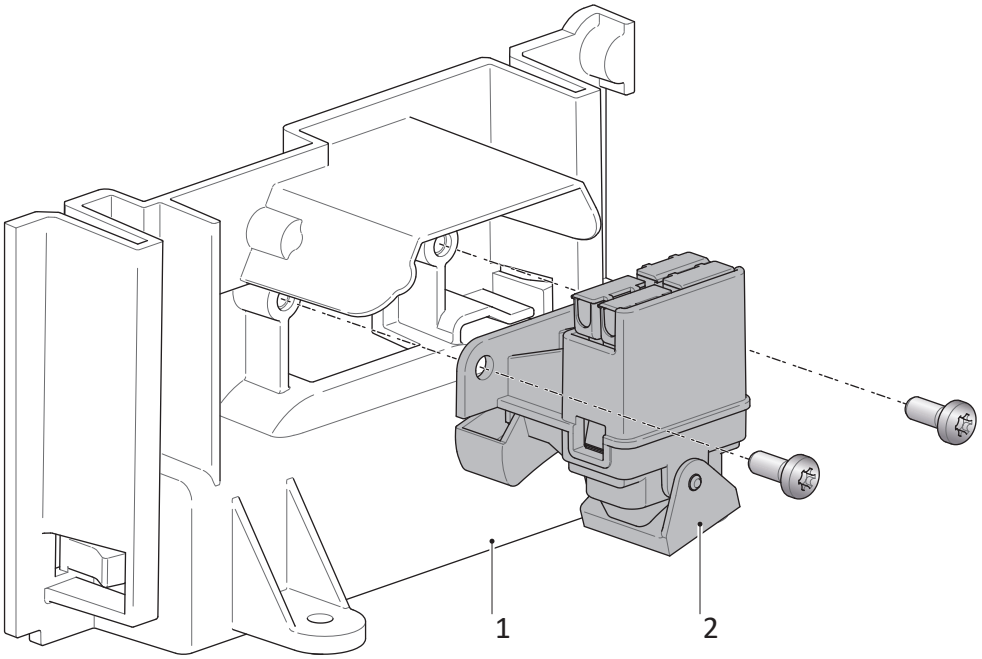


Fig. 55

5. Loosen 2 screws (TX20) from the ON/OFF switch (2).
6. Remove the ON/OFF switch (2) from the switch support (1).

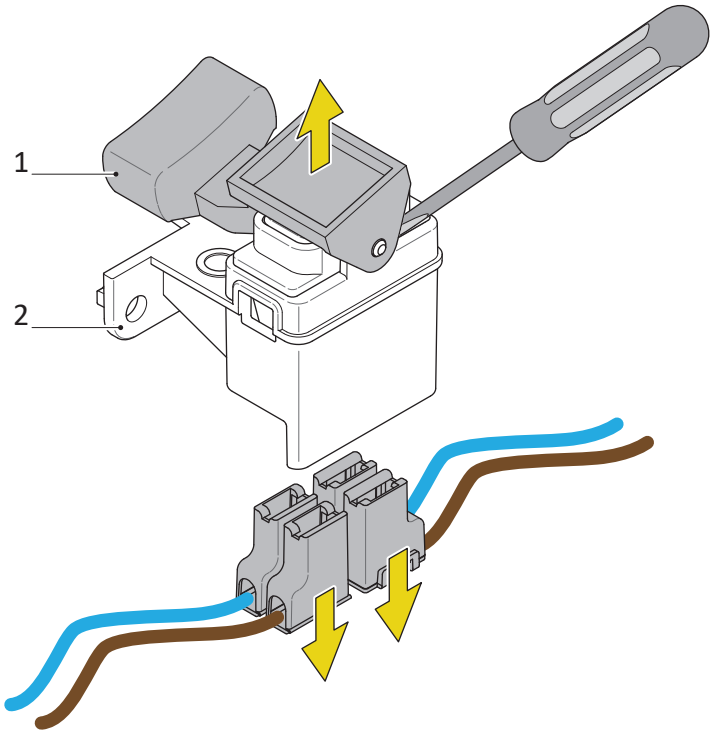


Fig. 56

7. Remove the ON/OFF actuator (1) from the ON/OFF switch (2) with the help of a small flathead screwdriver.
8. Unplug the wires and replace the ON/OFF switch (2).

11.10.5 Replace Power Supply

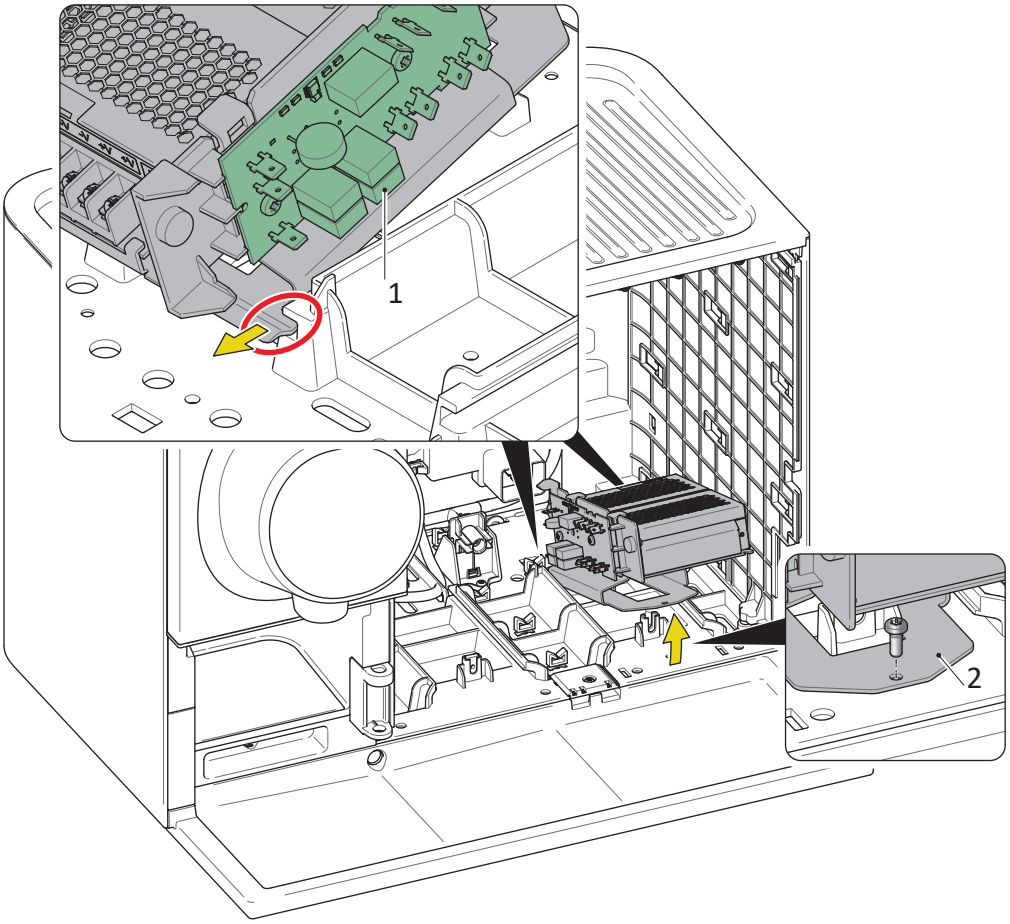


Fig. 57

Prerequisites

- Milk module is removed → p. 90.
- Water tank slot is removed → p. 95.
- Power switch support is removed → p. 99.
- EMC PCB lid is removed → **Fig. 46 on p. 93**.

Procedure

1. Unplug all receptacles on the EMC PCB (1)
2. Loosen 1 screw (TX20, see detail) on the power supply support (2).
3. Tilt the power supply support (2) upwards on the front and push it back a bit to release the two support extensions from the chassis (circled in red, see detail view from the back).

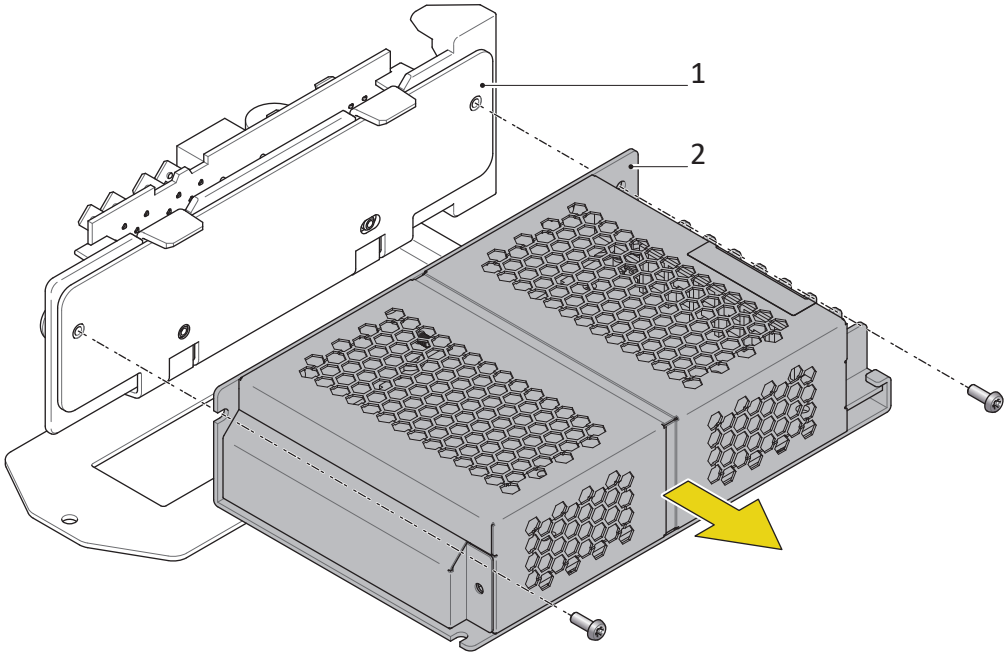


Fig. 58

4. Unscrew all flat receptacles on the back of the power supply (2).
5. Loosen 2 screws (TX10) on the power supply support (1).
6. Remove the power supply (2) from the support (1).

Assembly Tip

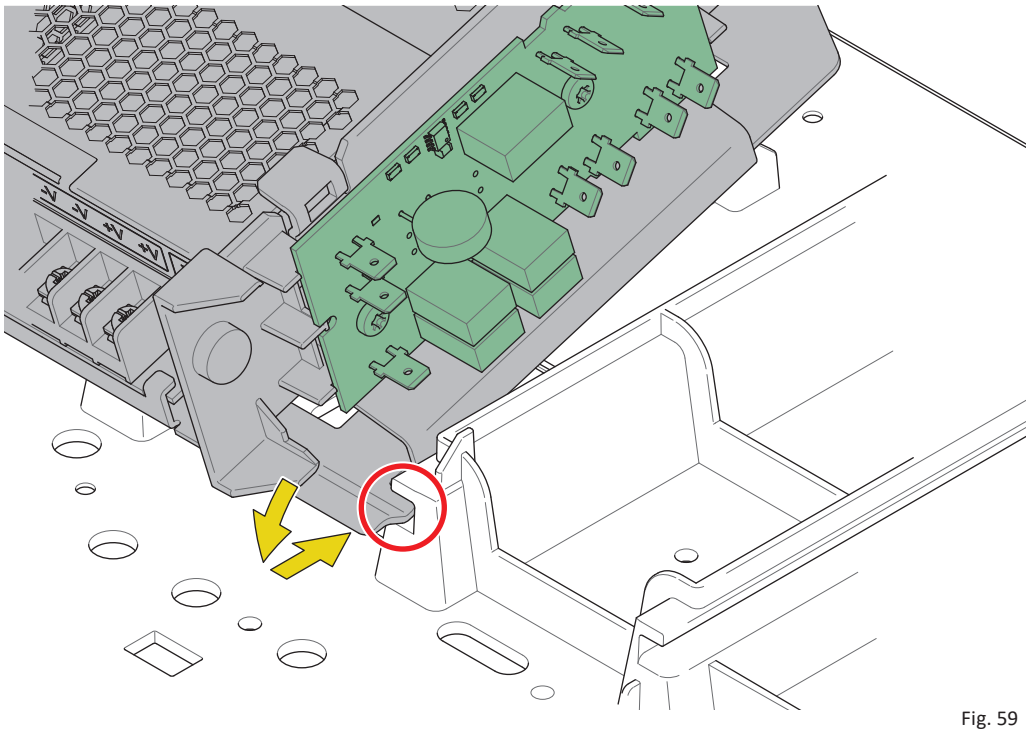


Fig. 59

- Slide in the support extensions into the guiding (circled in red) in the back of the chassis first, then pull the power supply support forward and tilt it down in its place before fastening the screw.

11.10.6 Remove Drip Tray Contacts for Cleaning

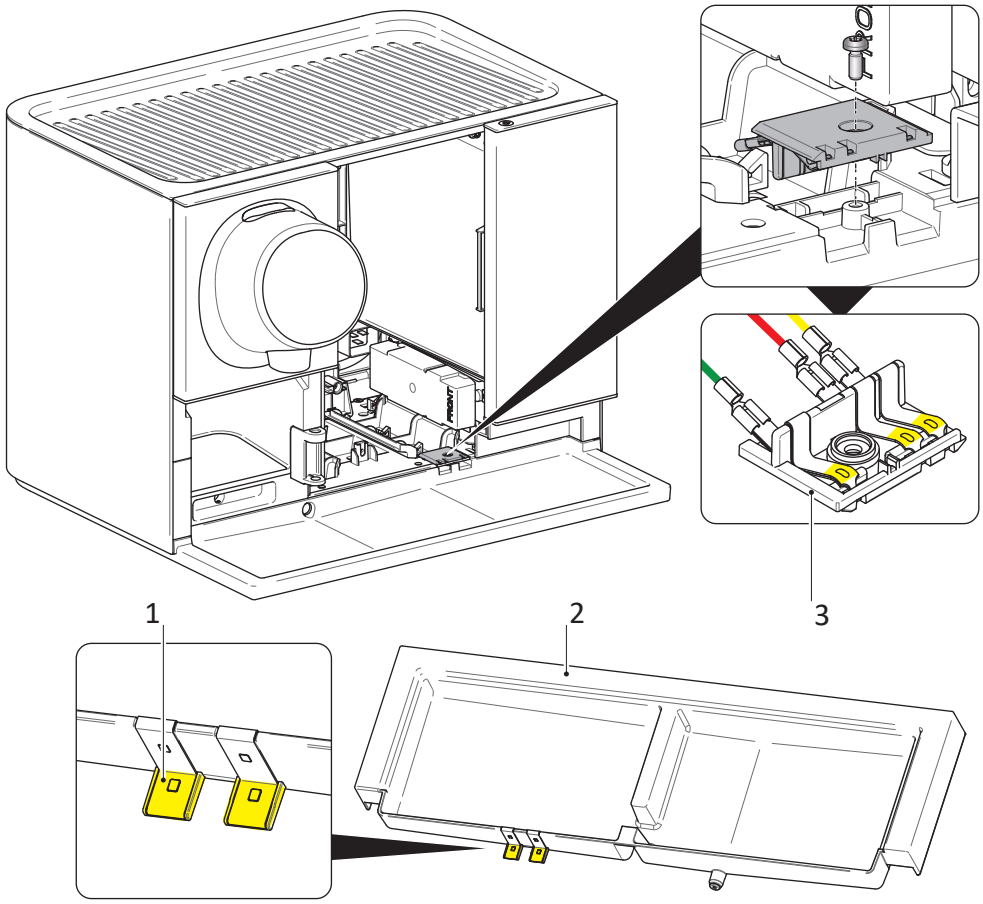


Fig. 60

This procedure only needs to be done if the drip tray is not or not always recognised when placed onto the machine.

Prerequisites

- Milk module is removed → p. 90.

Procedure

1. Loosen 1 screw (TX20) on drip tray contact plate (3).
2. Turn the drip tray contact plate (3) around and clean the contacts (see detail, yellow surfaces).
3. Also clean the contacts (1) on the drip tray (2) itself (see detail, yellow surfaces).

11.10.7 Replace Smart PCB

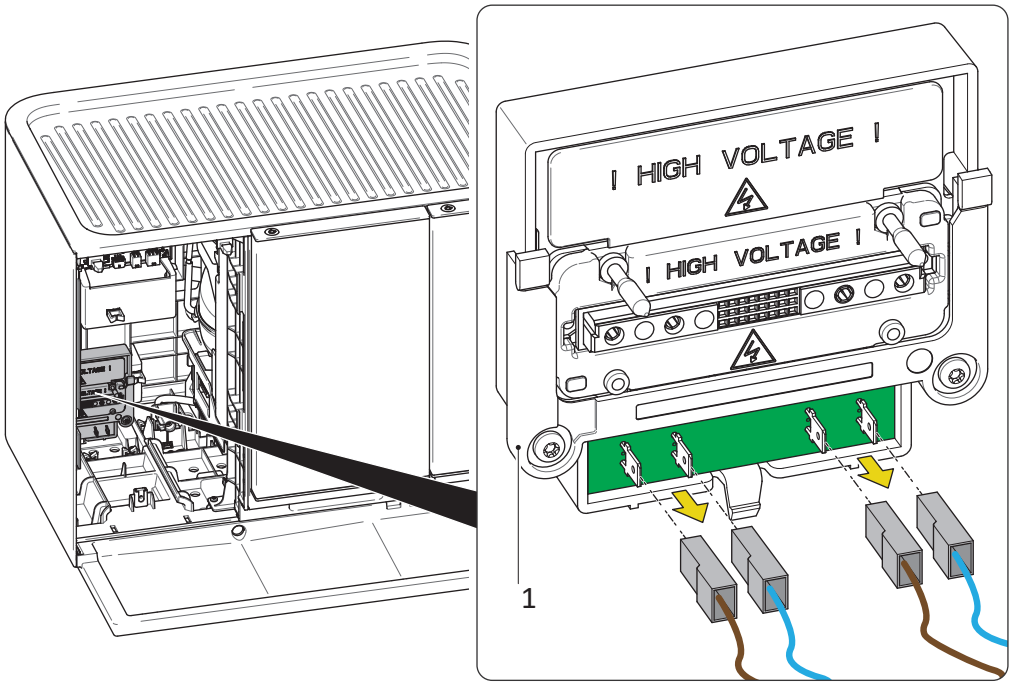


Fig. 61

Prerequisites

- Coffee module is removed → p. 89.

Procedure

1. Unplug all receptacles from the front of the smart PCB (1).

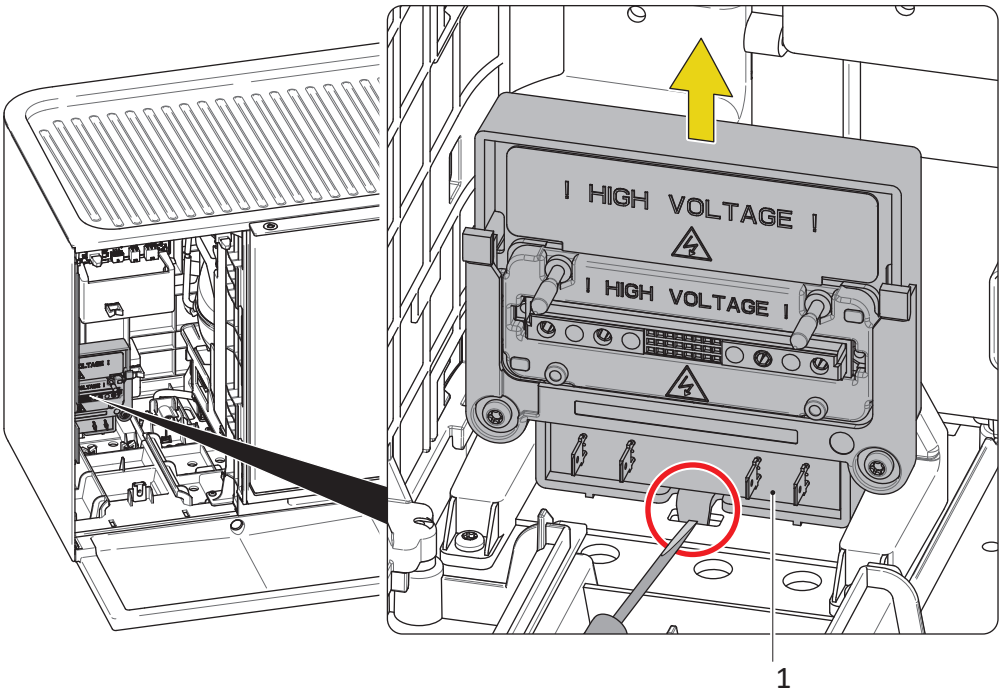


Fig. 62

2. Release the latch (circled in red) on the bottom of the smart PCB (1) with the help of a screwdriver and slide the smart PCB (1) upwards, out of its guides.

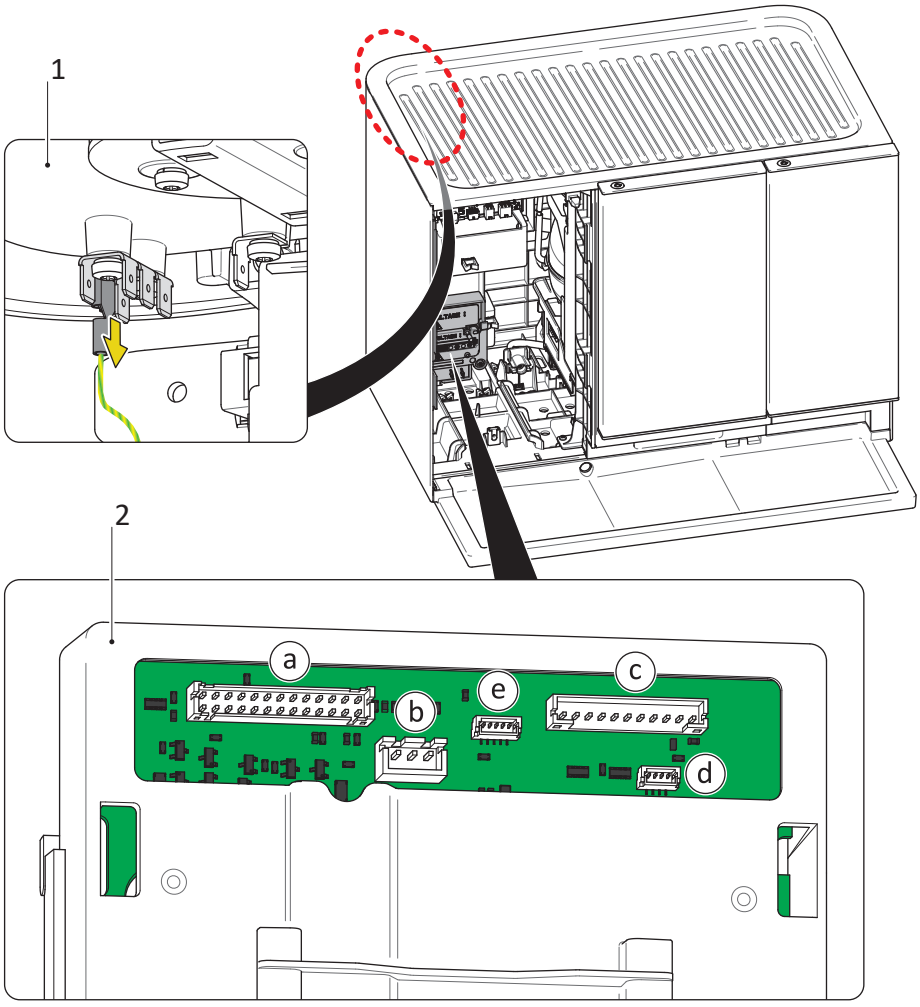


Fig. 63

3. Unplug the flat receptacle of the grounding wire from the top plate (1).

This kind of flat receptacle has a special connector latching. Press down the lever with flat nose pliers while pulling on it.

4. Unplug all connectors from the back of the smart PCB (2):
   (a) Access point PCB connector
   (b) Drip tray contact connector
   (c) Extension PCB connector
   (d) Water level detection connector

Slot (e) is used as interface to program or update the smart PCB.

5. Replace the smart PCB (2).

Assembly Tip

- Make sure that the connector latch of the grounding wire is locked by slightly pulling it down.

11.10.8 Replace Extension PCB

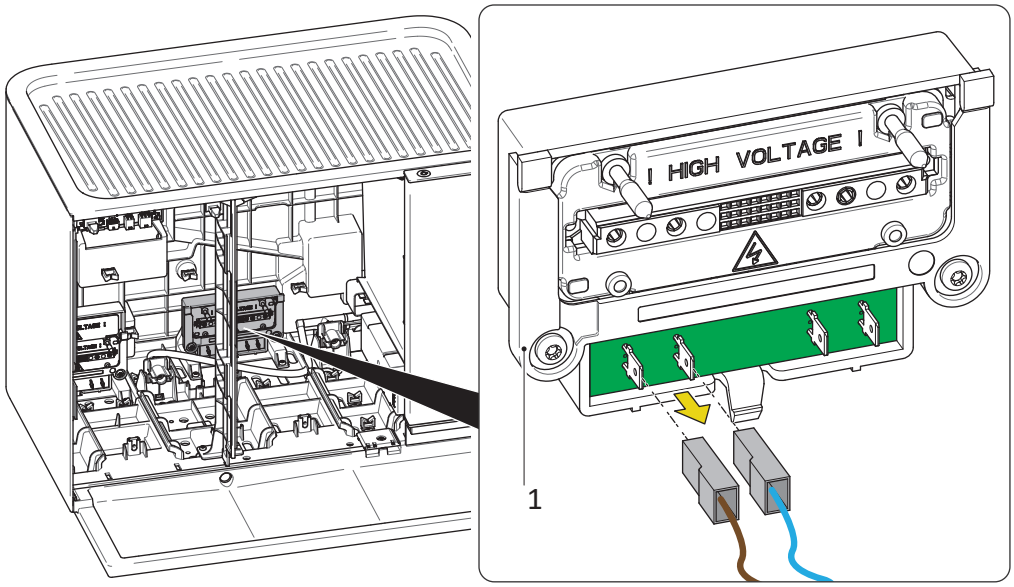


Fig. 64

Prerequisites

- Coffee module is removed → p. 89.
- Milk module is removed → p. 90.

Procedure

1. Unplug all receptacles from the front of the extension PCB (1).

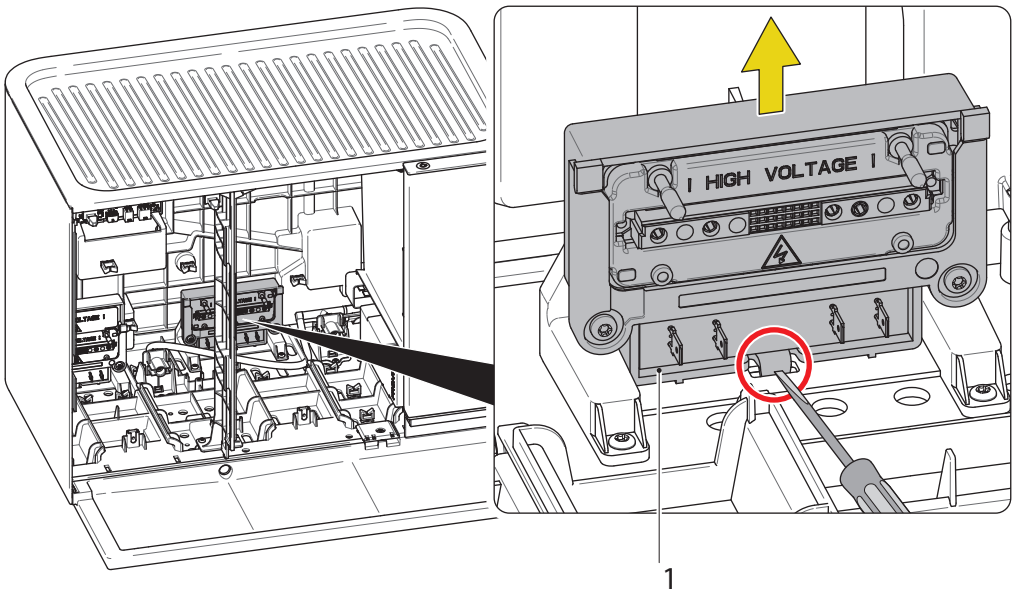


Fig. 65

2. Release the latch (circled in red) on the bottom of the extension PCB (1) with the help of a screwdriver and slide the extension PCB (1) upwards, out of its guides.

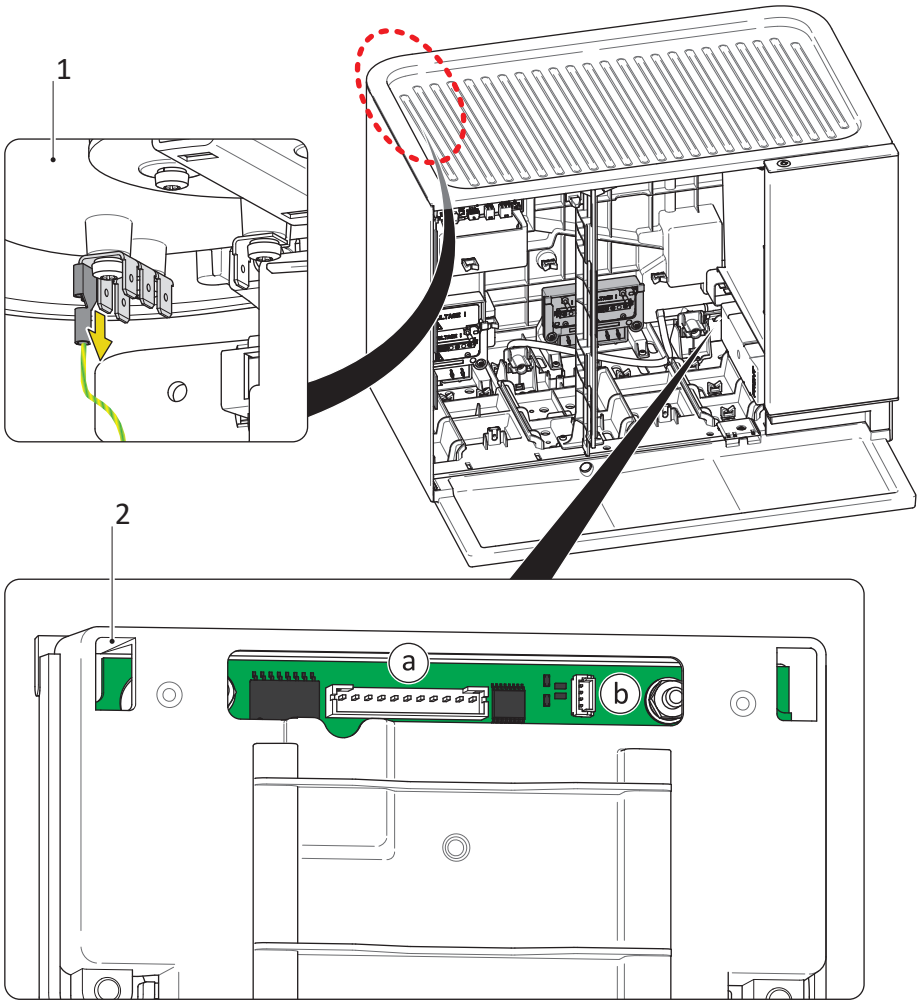


Fig. 66

3. Unplug the flat receptacle of the grounding wire from the top plate (1).

This kind of flat receptacle has a special connector latching. Press down the lever with flat nose pliers while pulling on it.

4. Unplug all connectors from the back of the extension PCB (2):
   (a) Smart PCB connector
   (b) Water level detection connector for 2nd tank
5. Replace the extension PCB (2).

Assembly Tip

- Make sure that the connector latch of the grounding wire is locked by slightly pulling it down.

11.11 Coffee Module Repairs

To remove the coffee module(s) → p. 89

11.11.1 Remove Main PCB Cover

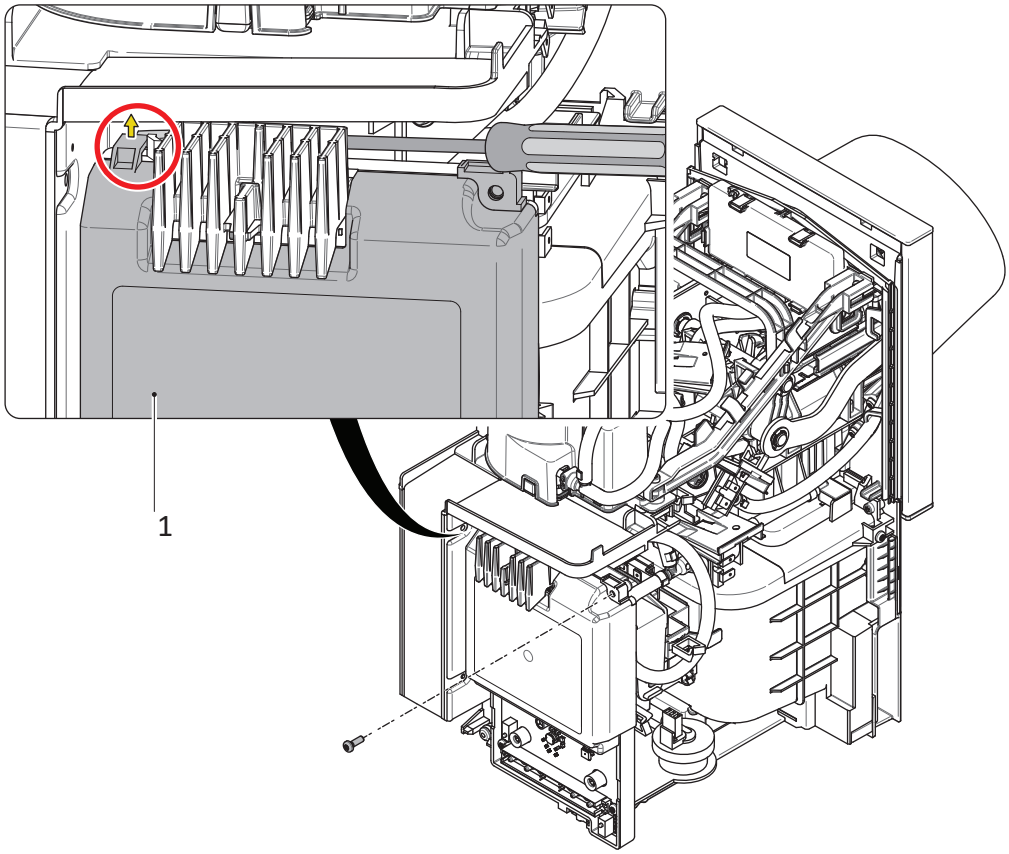


Fig. 67

1. Loosen the screw (TX20) on main PCB cover (1).
2. Release the latch (see detail) on main PCB cover (1) with a long enough flathead screwdriver.
3. Slide the main PCB cover (1) downwards and remove it.

Assembly Tip

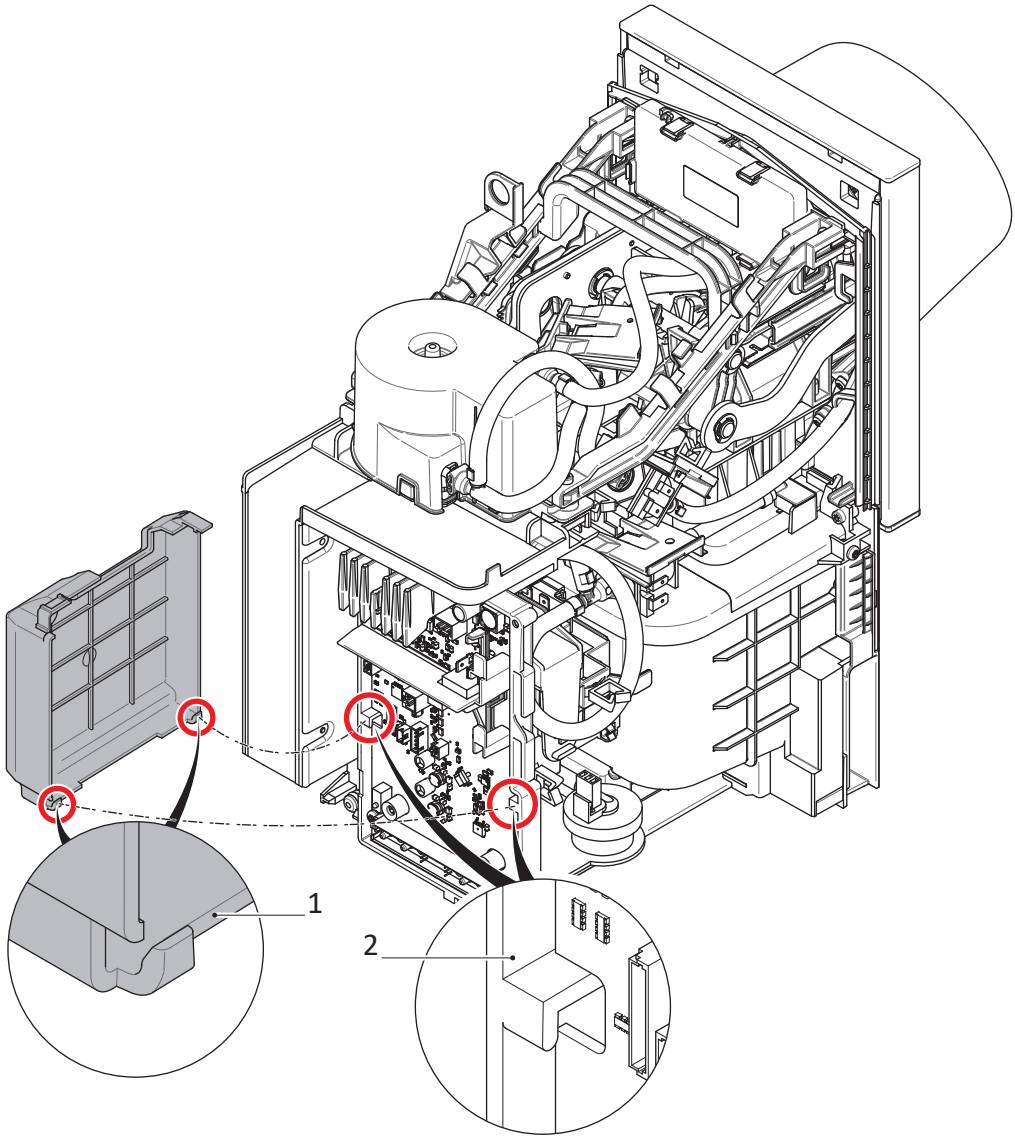


Fig. 68

- Ensure that the 2 hooks at the bottom of the main PCB cover (1) are inserted from below into main PCB housing (2) before snapping the cover back in place.

11.11.2 Remove Head Base Plate

Danger of damage! Always replace the O-ring when pulling off a hose adapter from a valve.

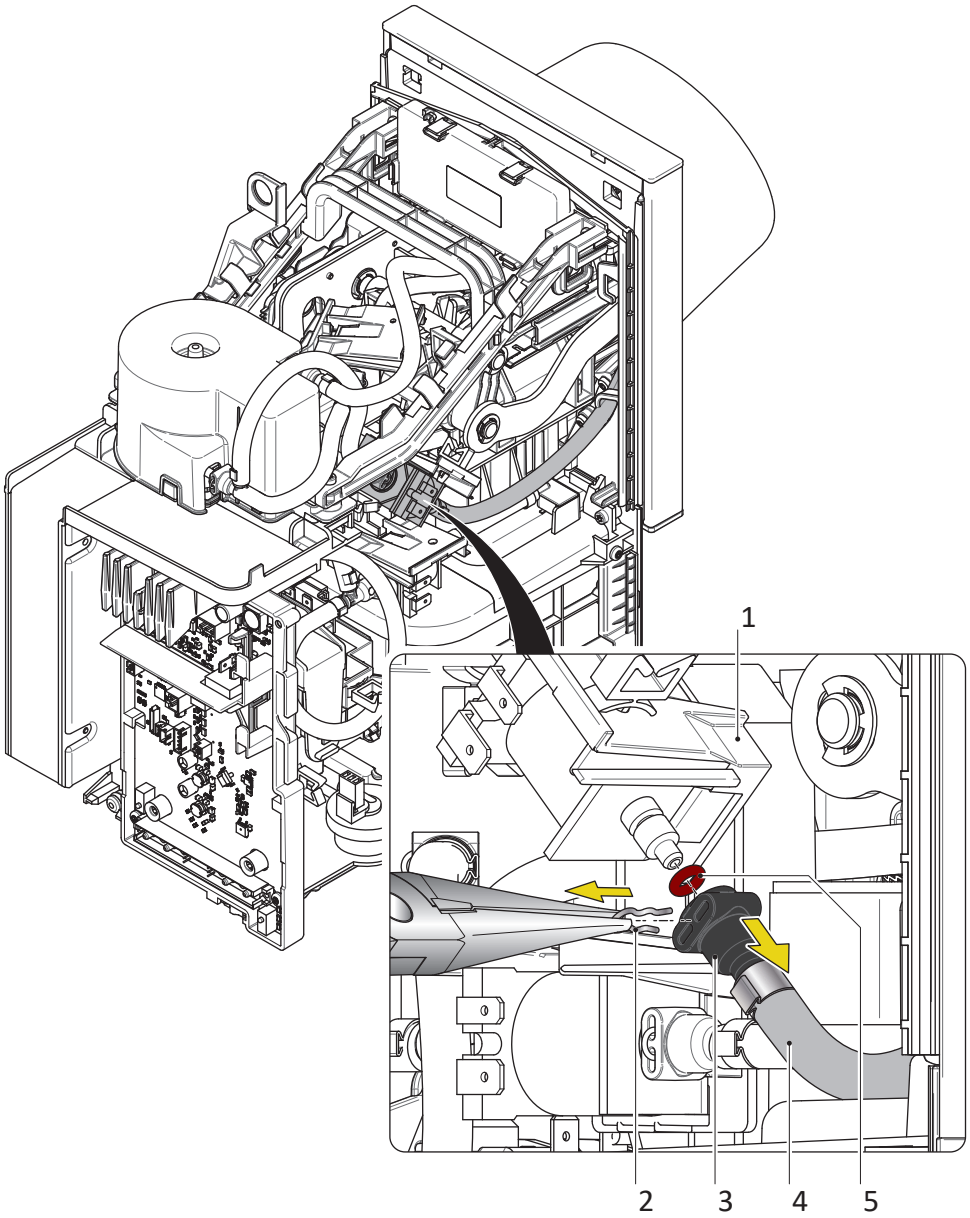


Fig. 69

Prerequisites

- Main PCB cover is removed → p. 109.

Procedure

1. Pull out the connector clip (2) from the hose adapter (3) with pointed pliers.
2. Pull off the hose (4) with hose adapter (3) from the valve (1).
3. Replace the O-ring (5) seated between valve (1) and hose adapter (3).

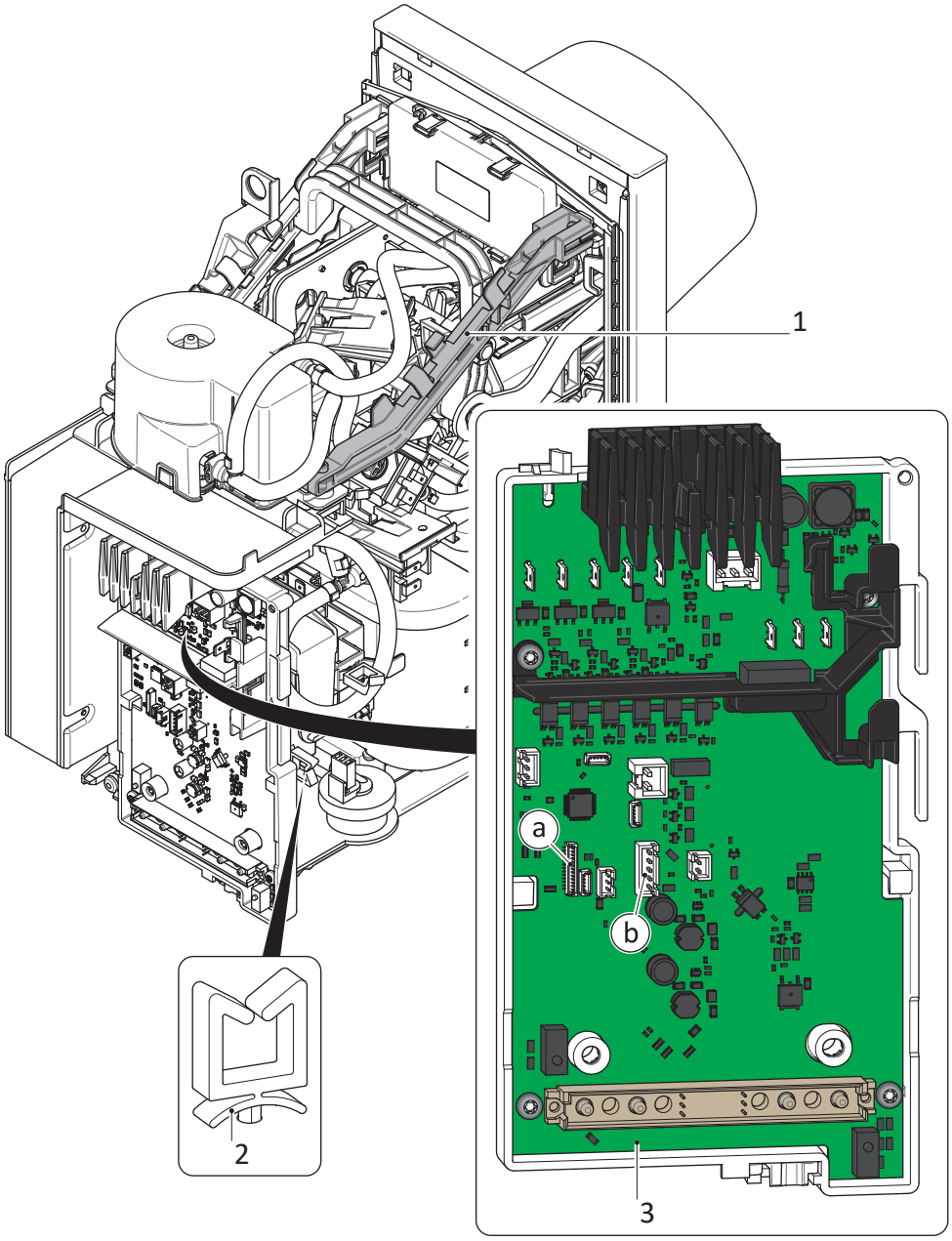


Fig. 70

4. Unplug the MMI connectors (see detail) from the main PCB (3):
   (a) MMI connector
   (b) MMI power connector
5. Pull the MMI wires out of the wire saddles (2) up till but not including the cross beam (1).

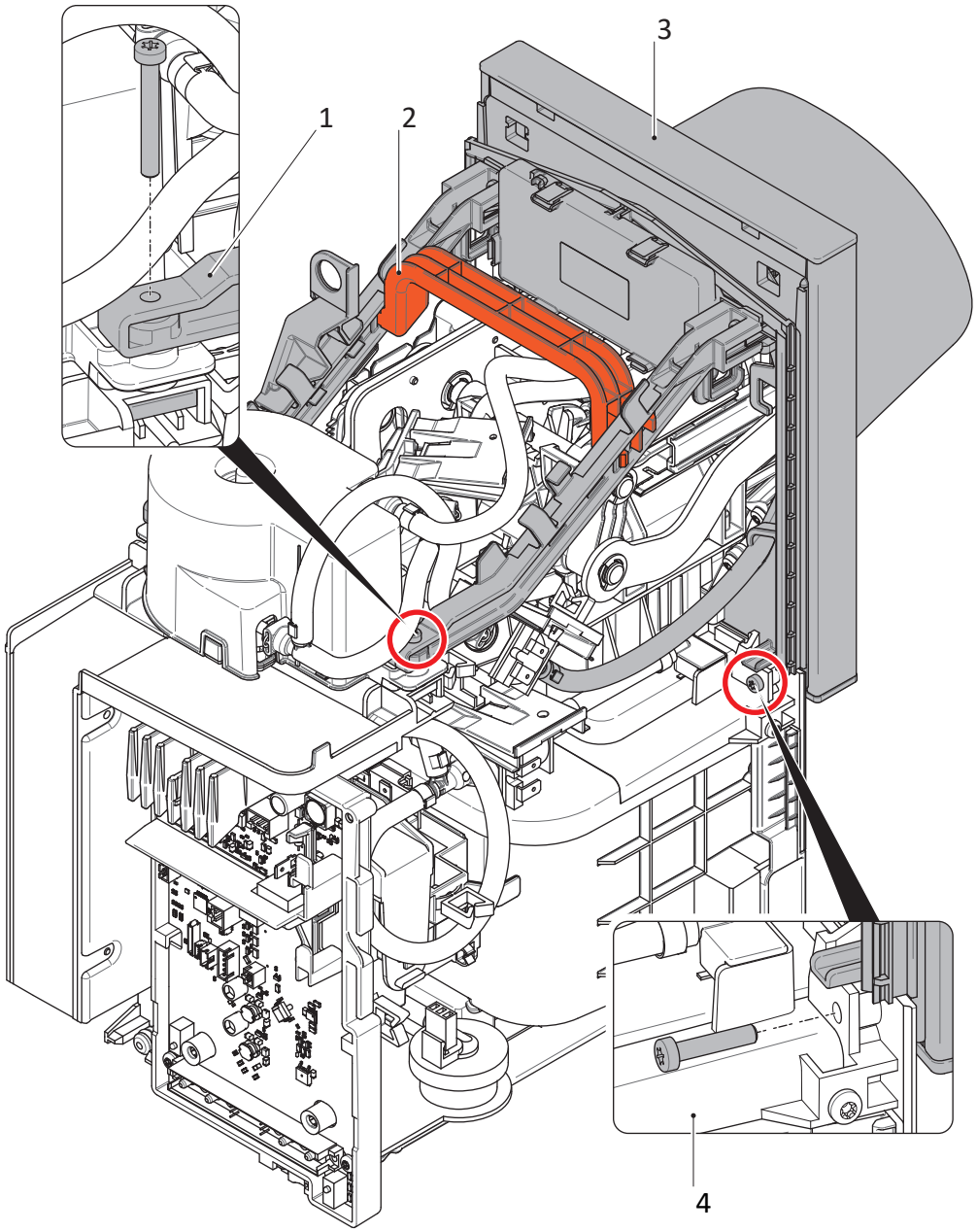


Fig. 71

6. Loosen one screw (TX20) on the cross beam (1) and on the chassis BU (4).
7. Do the same on the other side of the coffee module.
8. Remove the head base plate (3) including the cross beams (1) by pulling it away on the coffee module handle (2).

Assembly Tips

- Make sure that the cross beam (1) screws are countered with a square nut.
- Always replace the O-ring seated between the valve and hose adapters.

ℹ Be cautious not to lose the square nuts countering the screws on the cross beam.

11.11.3 Replace Outlet LED

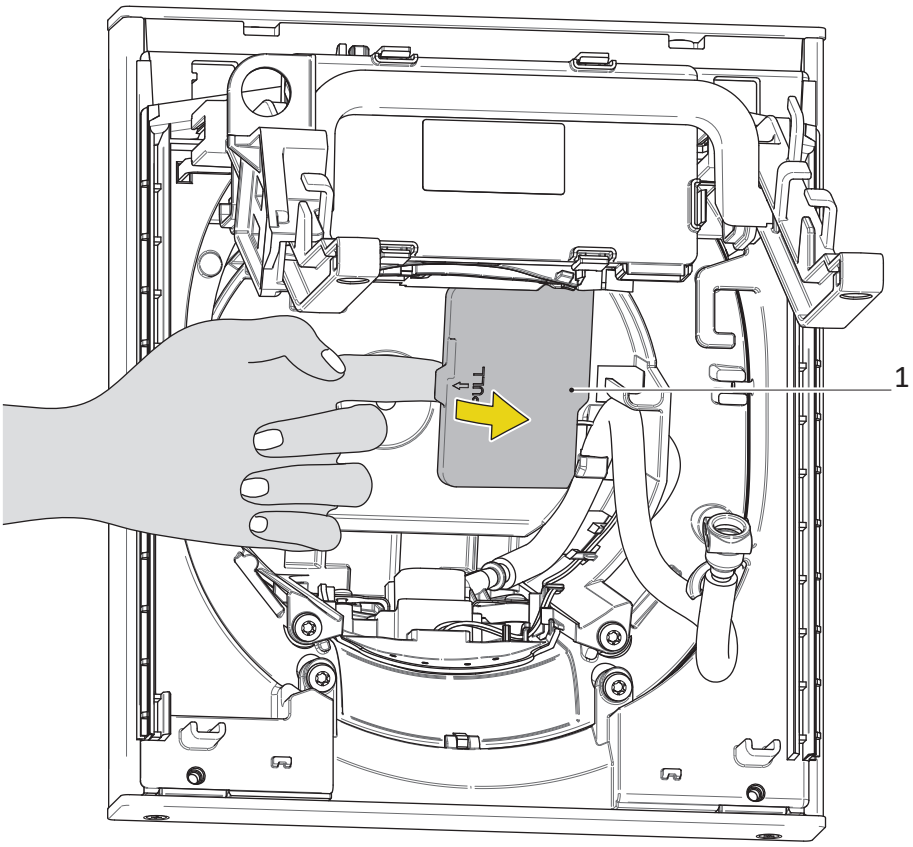


Fig. 72

Prerequisites

- Head base plate is removed → p. 111.

Procedure

1. Open and remove the MMI cables sealing (1) by hand or a suitable tool.

The sealing (1) is held by two latches and needs some force to remove it

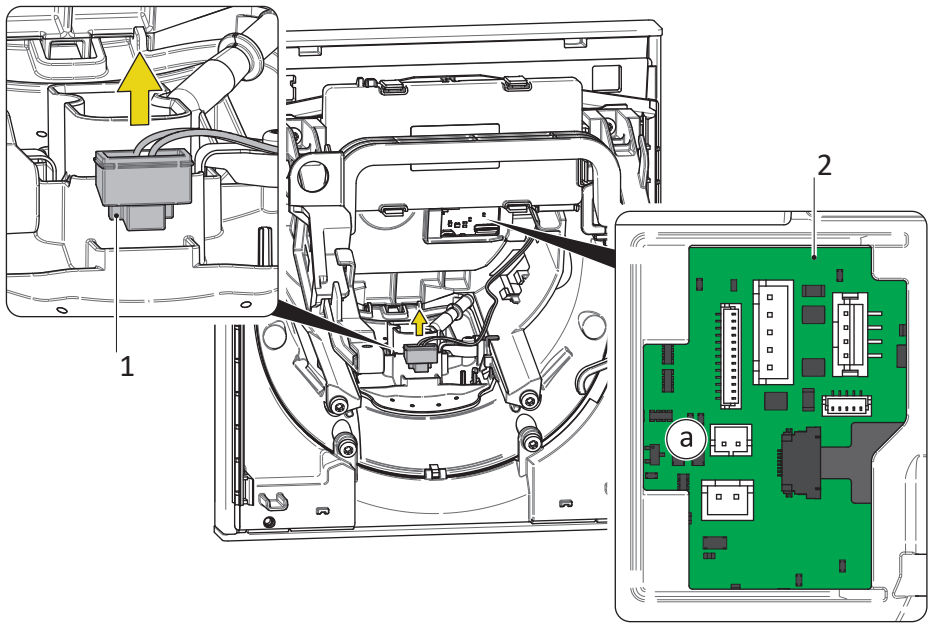


Fig. 73

2. Unplug the outlet LED connector (a) from the MMI PCB (2).
3. Simply pull out and replace the outlet LED (1).

11.11.4 Replace Capsule Recognition

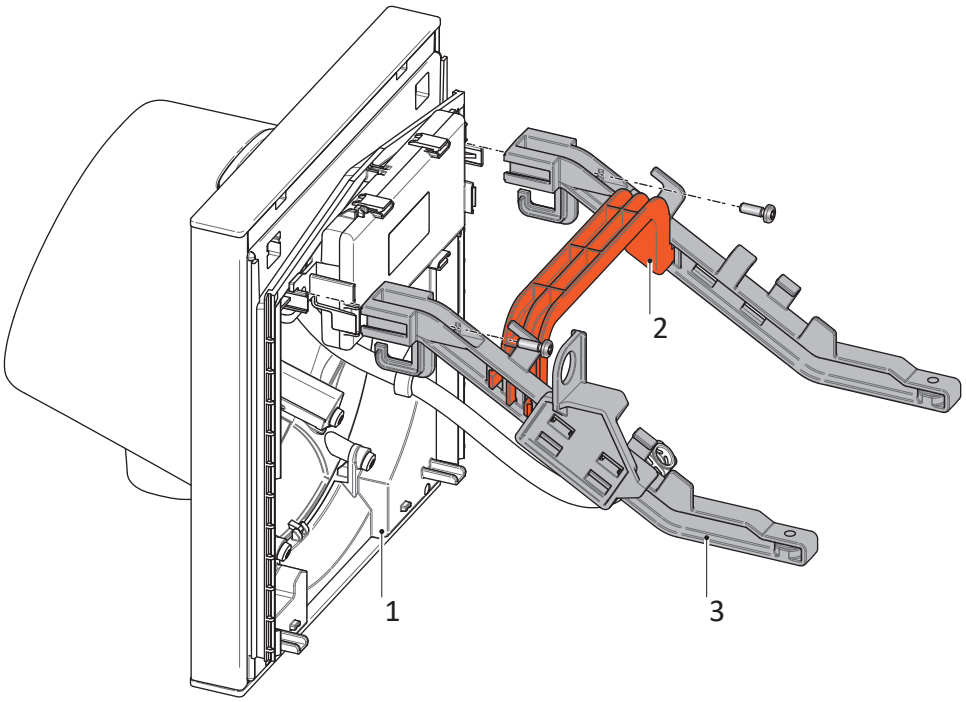


Fig. 74

Prerequisites

- Head base plate is removed → p. 111.

Procedure

1. Loosen 2 screws (TX20) on cross beams (3).
2. Detach the cross beams (3) and coffee module handle (2) together from the head base plate (1).

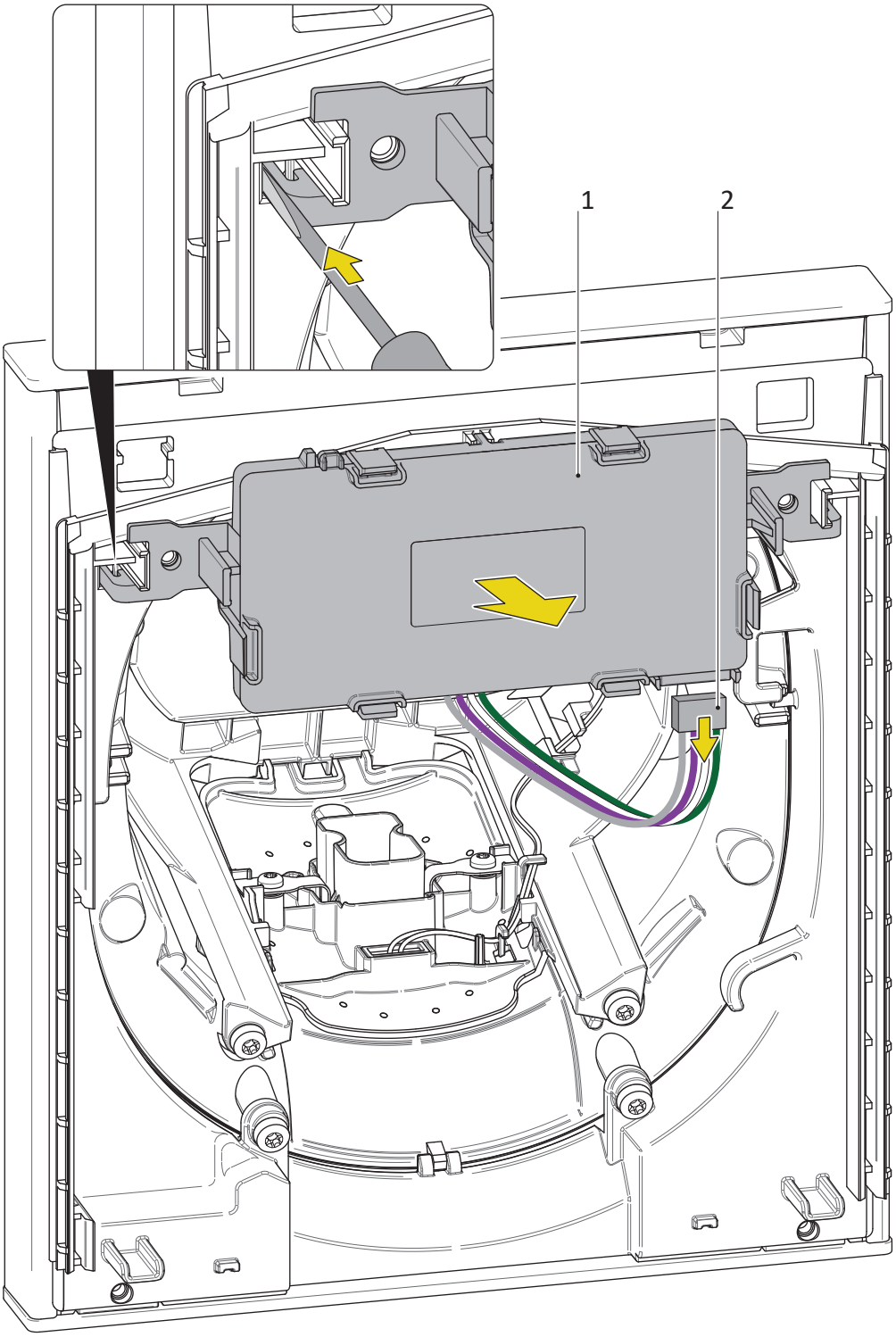


Fig. 75

3. Unplug the capsule recognition wire (2) from the capsule recognition (1).
4. Release the latches on the side of the capsule recognition housing (1) with the help of a small flathead screwdriver (see detail).
5. Remove the capsule recognition (1)

11.11.5 Replace MMI Assembly (Screen)

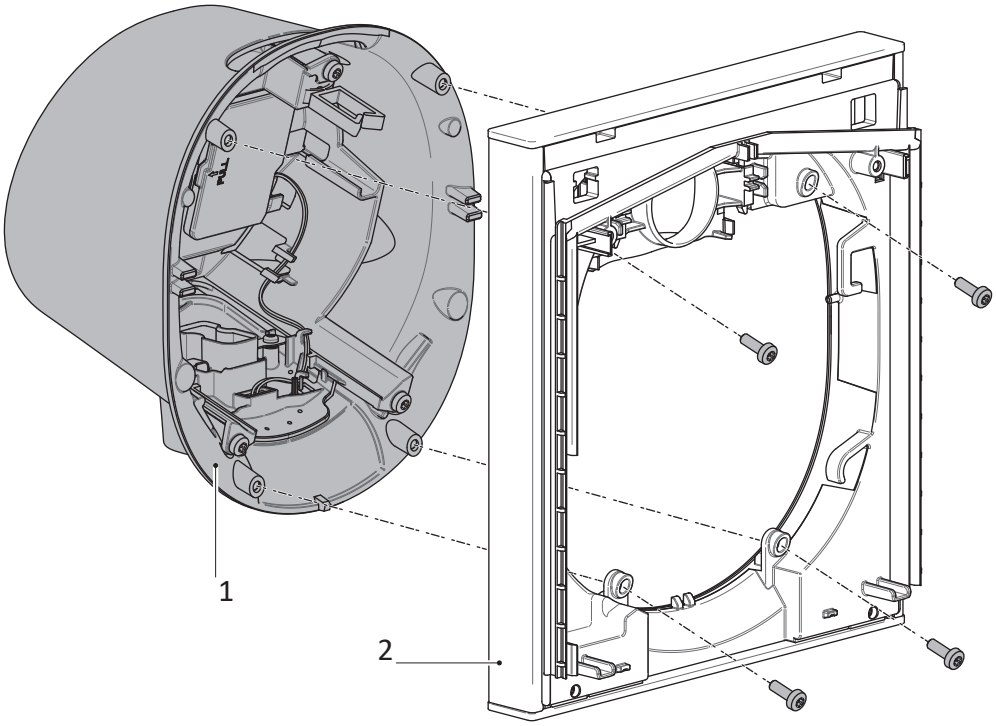


Fig. 76

Prerequisites

- Head base plate is removed → p. 111.
- Capsule recognition is removed → p. 116.

Procedure

1. Loosen 4 screws (TX20) on head base plate (2).
2. Remove the front cover (1) from the head base plate (2).

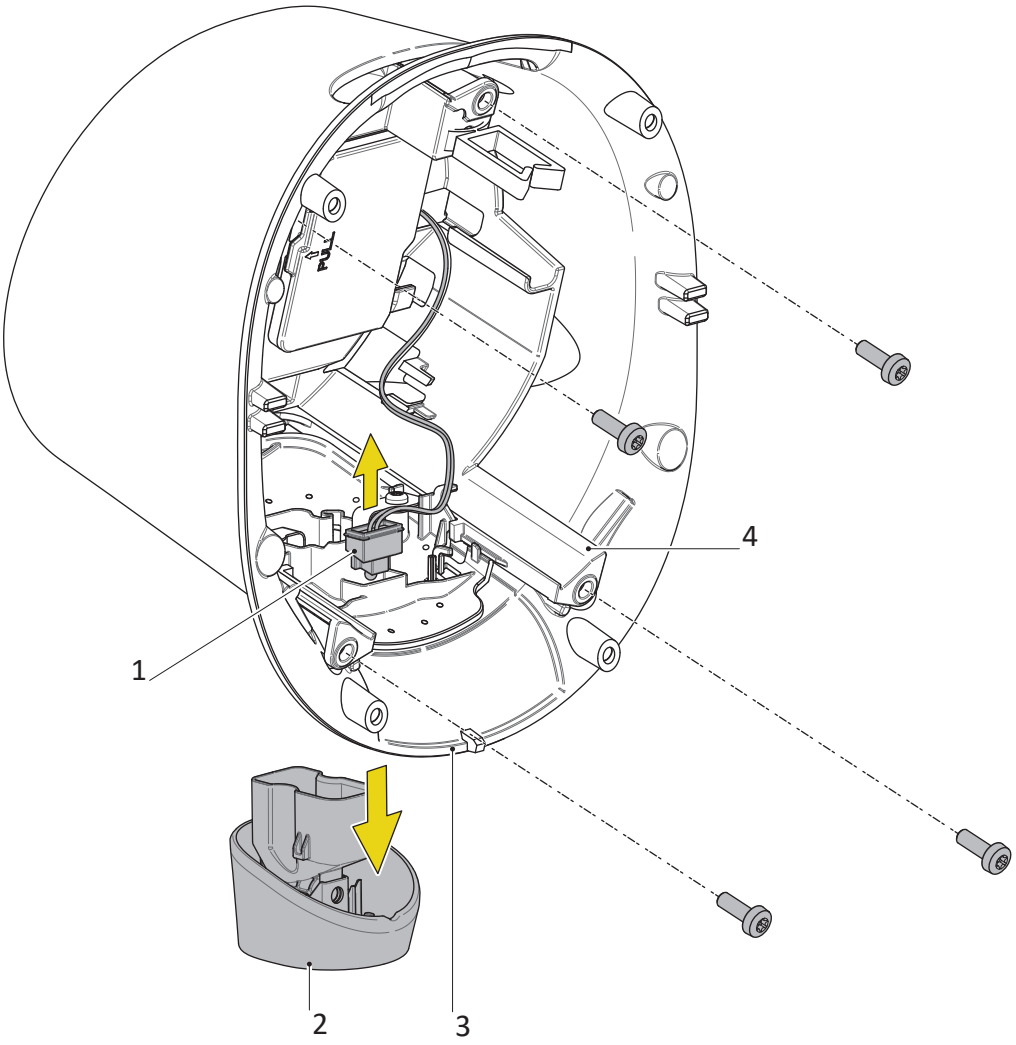


Fig. 77

3. Loosen 4 screws (TX20) on the front cover (3) from the MMI housing (4).
4. Pull off the outlet (2) from the front cover (3).
5. Pull out the outlet LED (1).

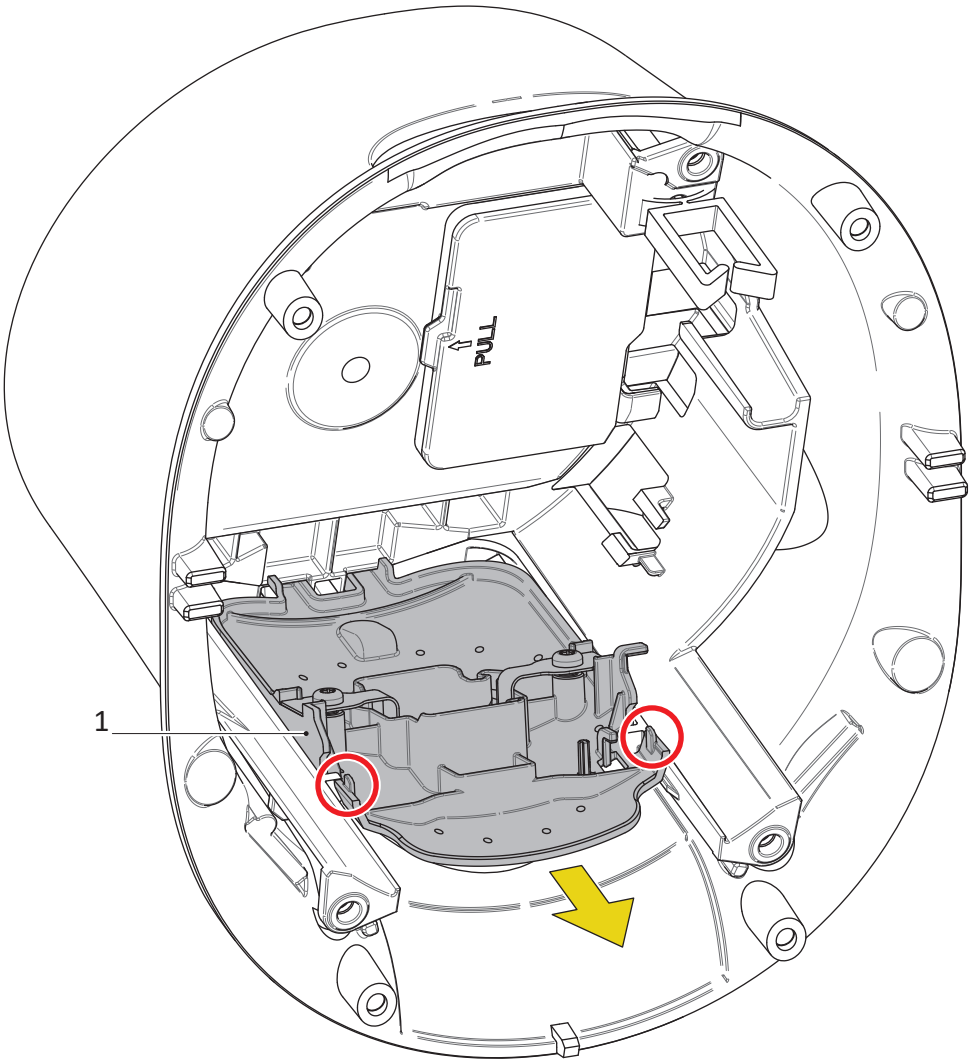


Fig. 78

6. Release 2 latches (circled in red) from the outlet support (1).
7. Pull out the outlet support (1).

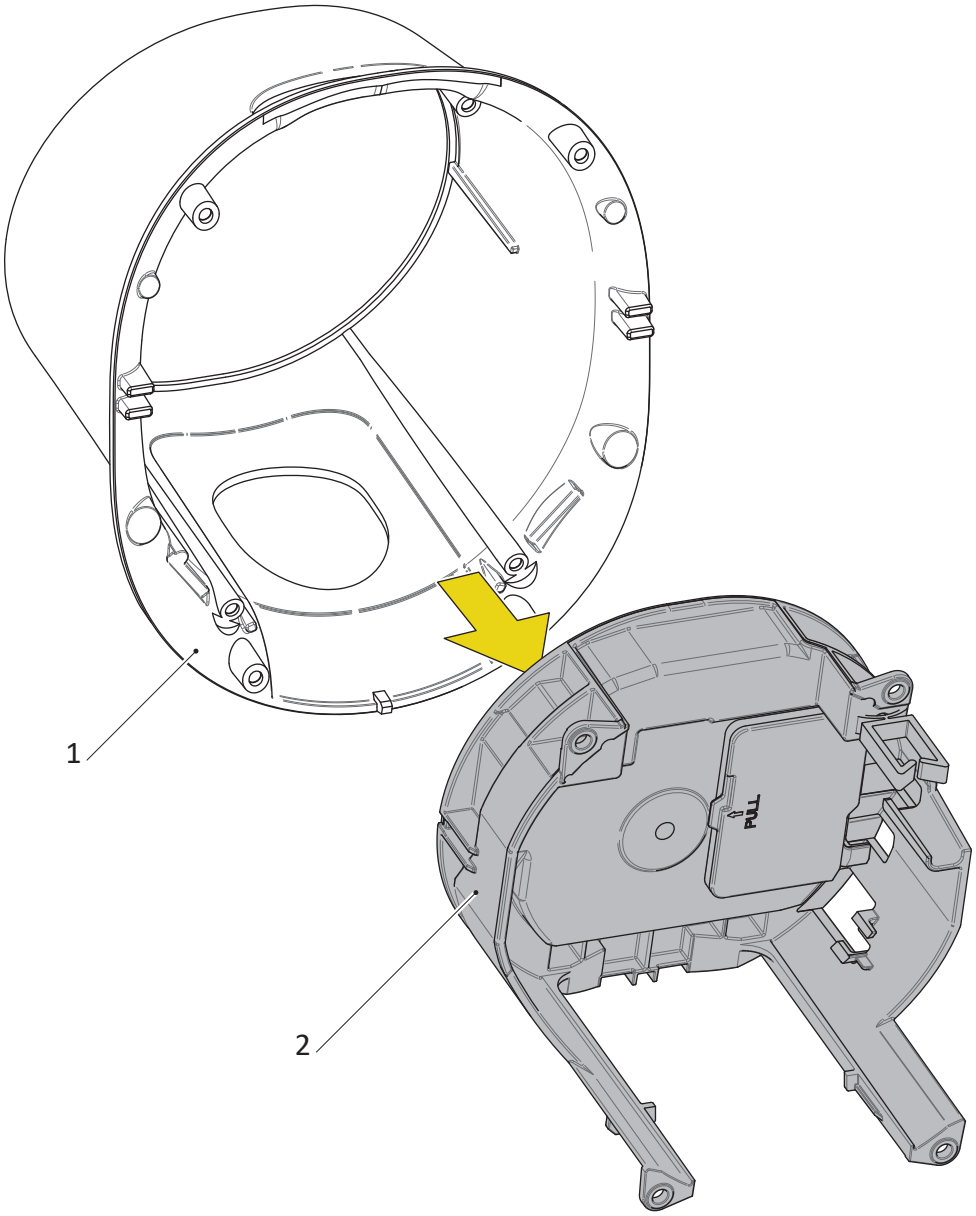


Fig. 79

8. Remove the MMI housing (2) from the front cover (1).

11.11.6 Replace Valve(s)

- The removal procedure for all valves is the same.
- All valves can be replaced without disassembling the coffee module.

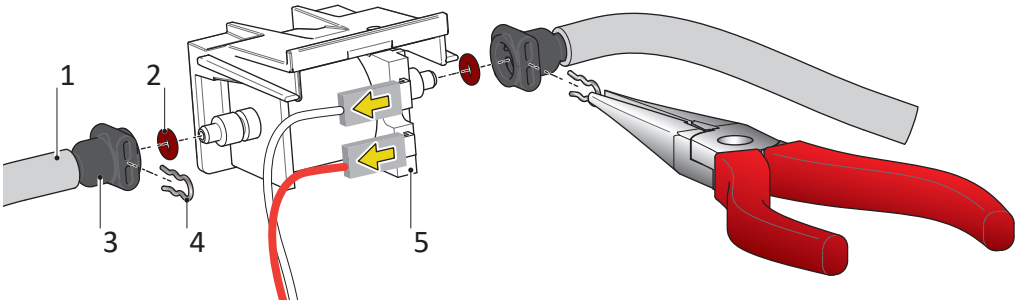


Fig. 80

1. Pull out the connector clips (4) from the hose adapters (3) with pointed pliers.
2. Pull off the hoses (1) with hose adapter (3) from the valve (5).
3. Pull off and discard the O-rings (2) between valve (5) and hose adapter (3).
4. Unplug the flat receptacles from the valve (5).

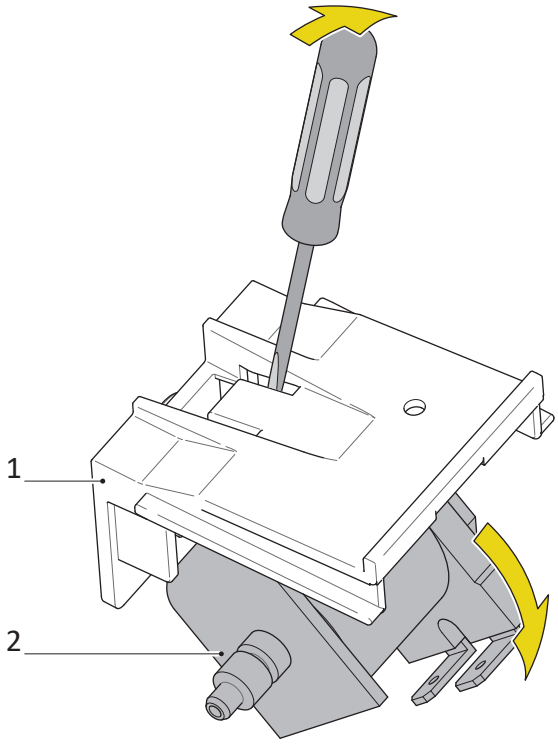


Fig. 81

5. Release the latch from the valve support (1) with a small flathead screwdriver or another suitable tool.
6. Remove the valve (2) by tilting it downwards.

Assembly Tip

- Always replace the O-ring seated between a valve and a hose adapter.

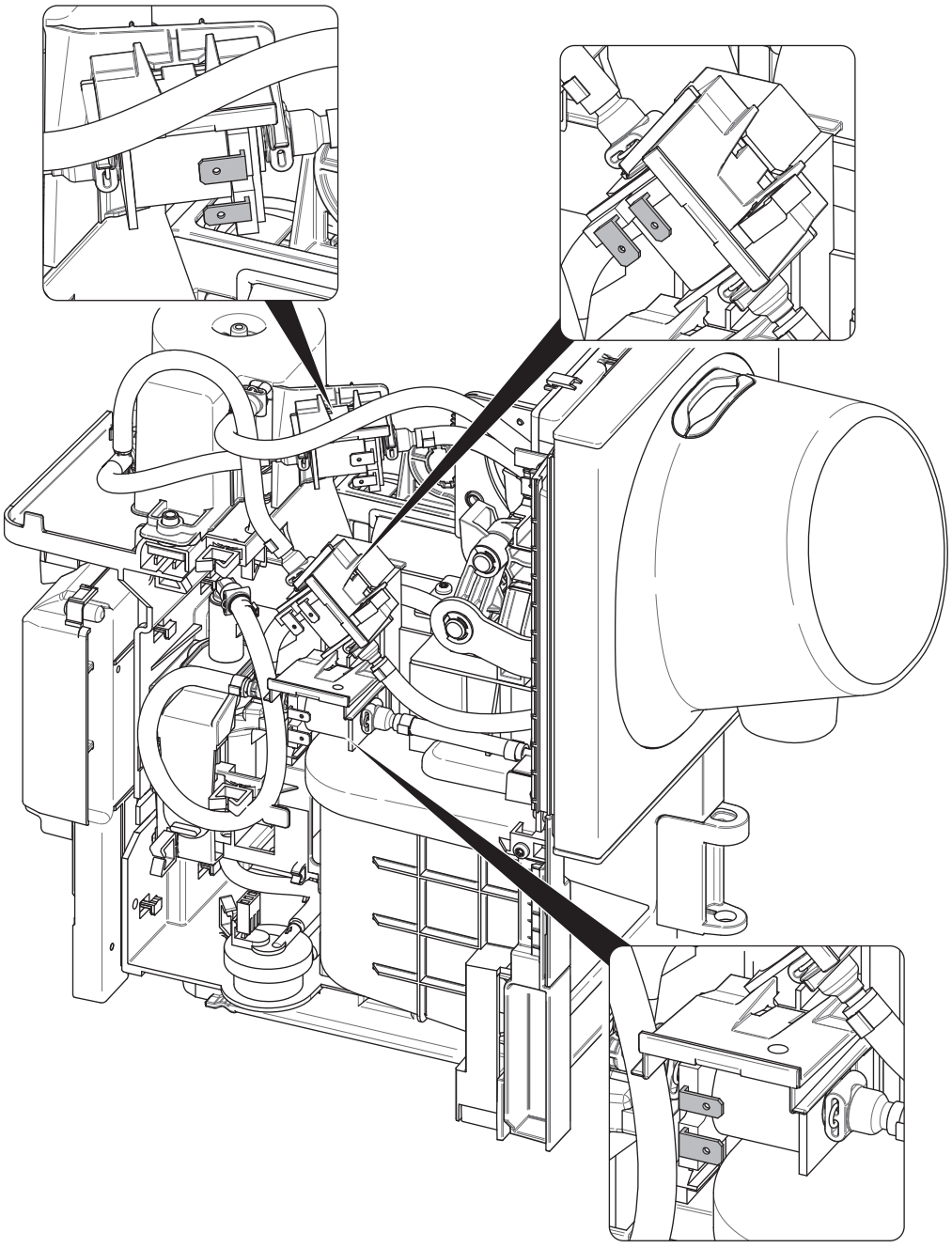


Fig. 82

- Pay attention to the orientation when replacing a valve – use the flat terminals and this illustration as a guide.

11.11.7 Replace Thermoblock

It is possible to remove the thermoblock without removing the head base plate: just loosen the screws on the cross beam.

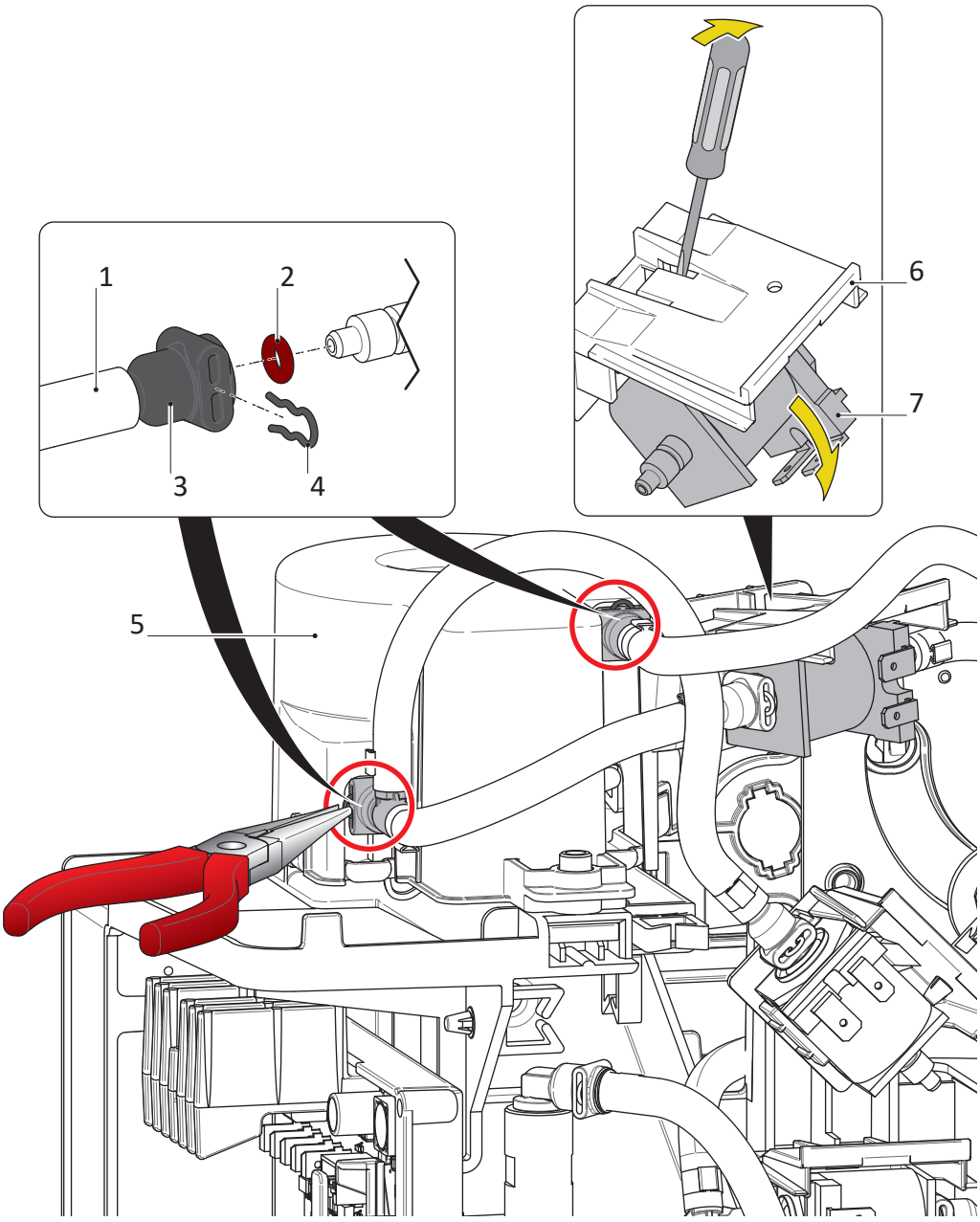


Fig. 83

Prerequisites

- Main PCB cover is removed → p. 109.
- (Optional) Head base plate is removed → p. 111.

Procedure

All connector clips for the thermoblock are coloured black. Do not interchange them with other clips from the valves!

1. Pull out the black connector clips (4, circled in red) from the hose adapters (3) with pointed pliers.
2. Pull off the hoses (1) with hose adapters (3) from the thermoblock (5).
3. Pull off and discard the O-rings (2) between thermoblock (5) and hose adapters (3).
4. Release the valve (7) from thermoblock cover (6) with the help of a small flathead screwdriver (see detail or refer to → p. 122).

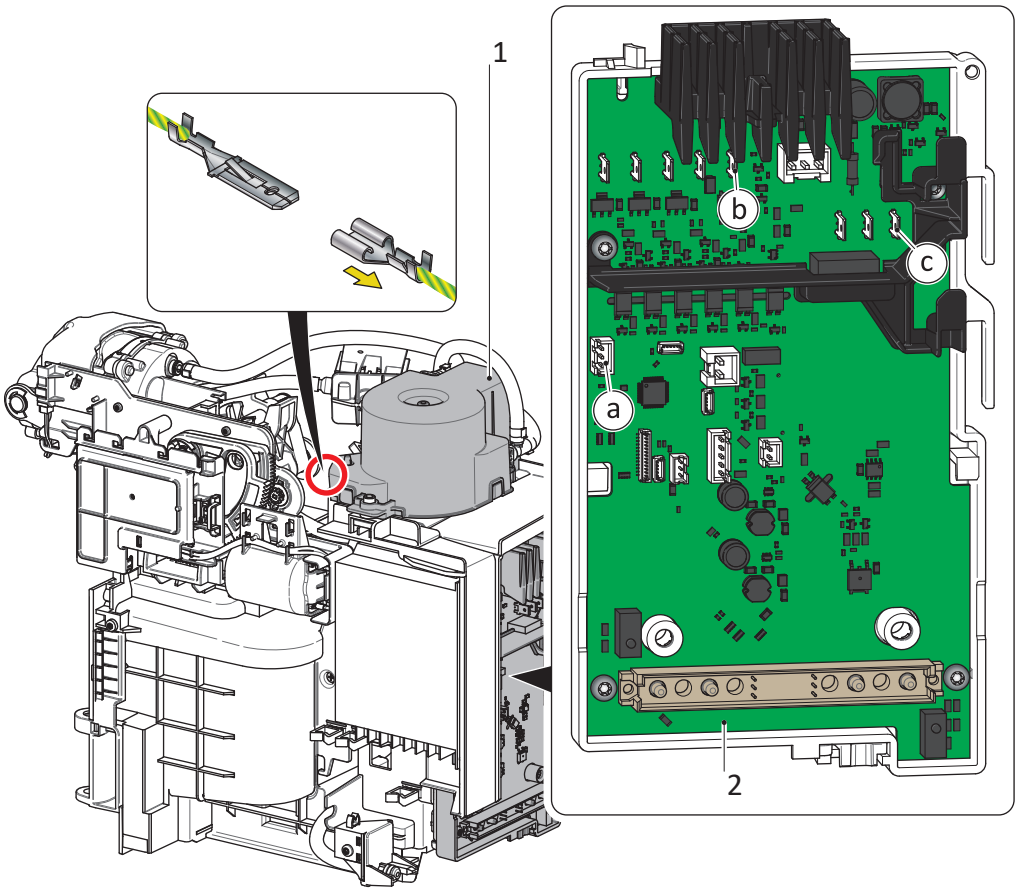
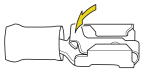


Fig. 84

5. Unplug 3 wires of thermoblock (1) from the main PCB (2):
   (a) Thermoblock NTC connector
   (b) Thermoblock control receptacle
   (c) Thermoblock line receptacle
6. Pull the wires out of the guides and wire saddles.
7. Release the flat receptacle of the ground wire at the thermoblock (1, location circled in red).



This kind of flat receptacle has a special connector latching. Press down the lever with flat nose pliers while pulling on it.

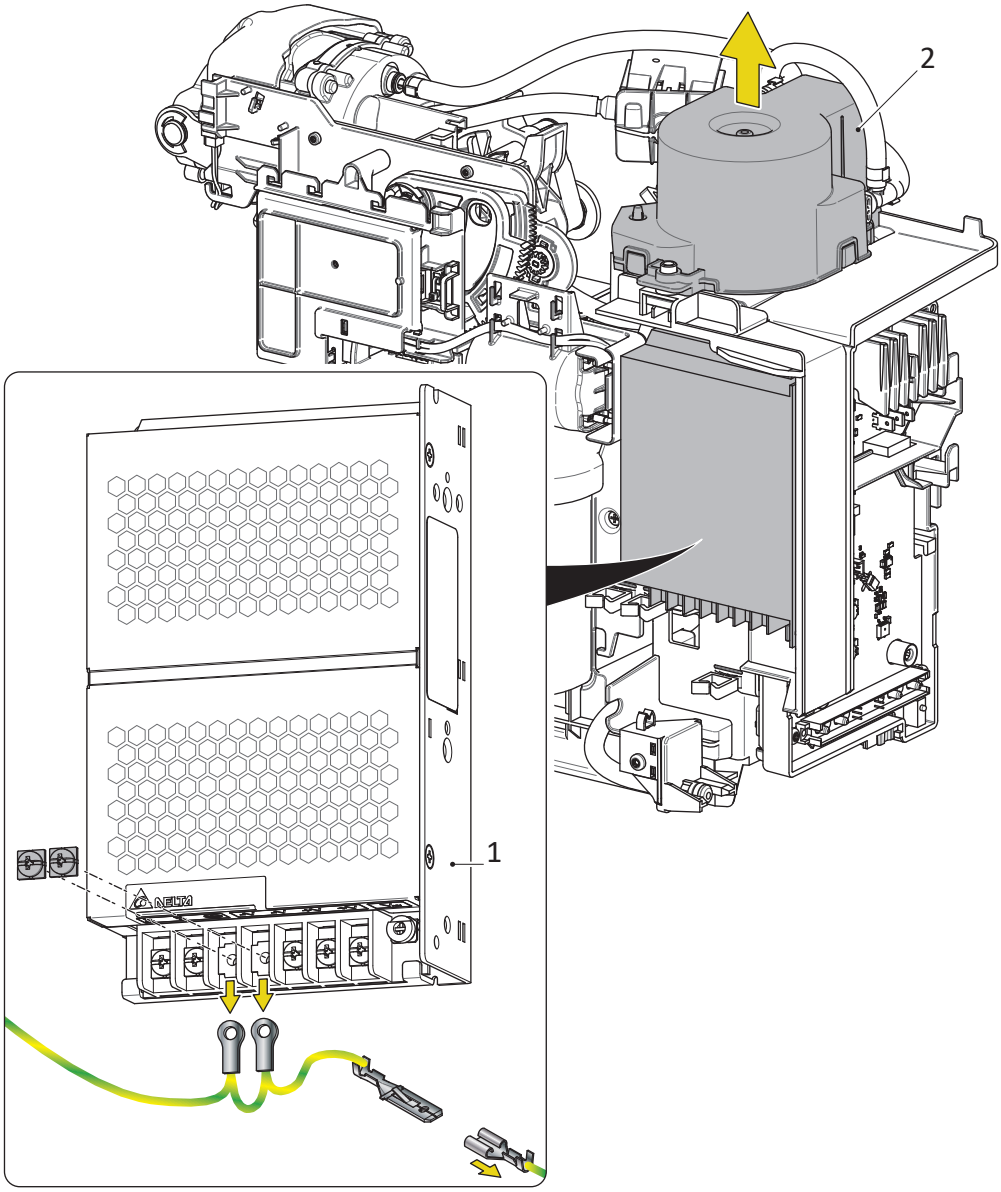
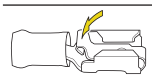


Fig. 85

8. Unscrew 2 flat receptacles of the ground wire from thermoblock (2) on the power supply (2).
9. Release the flat receptacle of the ground wire at the power supply (1).



This kind of flat receptacle has a special connector latching. Press down the lever with flat nose pliers while pulling on it.

10. Pull the wires out of the guides and wire saddles.
11. Lift the thermoblock (2) off of the coffee module.

Assembly Tips

- Make sure that the cross beam screws are countered with a square nut.
- Only use the black coloured connector clips for the hose adapters which connect directly to the thermoblock (2).
- Always replace the O-ring seated between the thermoblock (2) and hose adapters.

11.11.8 Replace Flowmeter

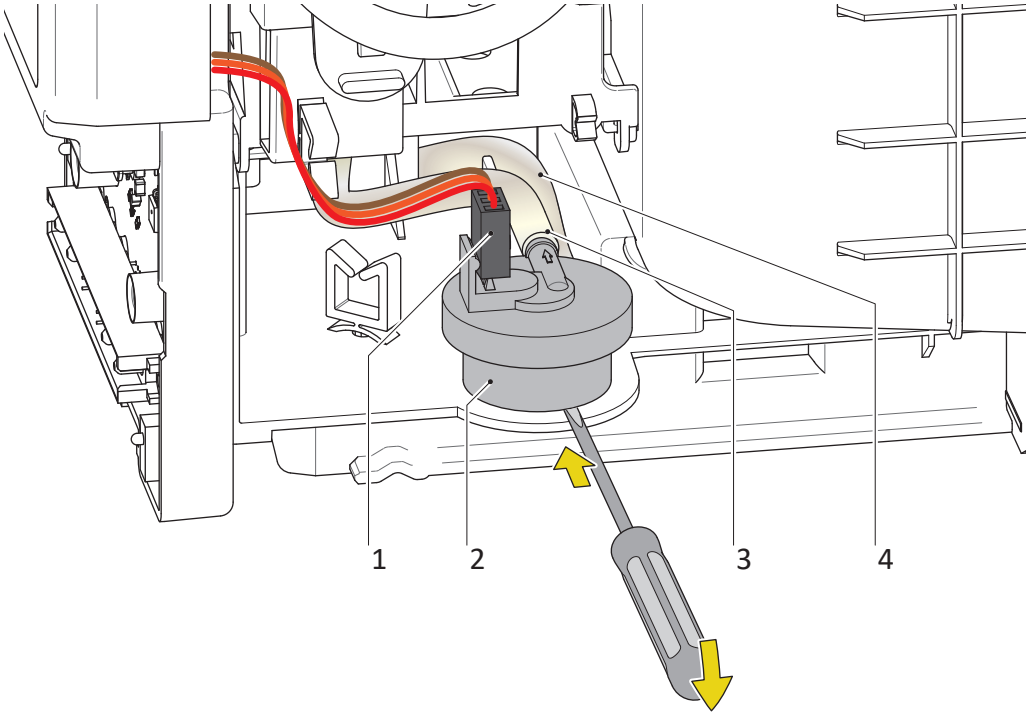


Fig. 86

1. Unplug the flowmeter connector (1).
2. Pull off the low pressure hoses (3,4) coming from the pump and the coffee module coupling.
3. Insert the blade of a small flathead screwdriver below the flowmeter (2) and release its locking pin.

Assembly Tips

- Be cautious to not interchange the pressure hoses (3,4) – risk of malfunction.
- Make sure the connector (1) is plugged correctly on all 3 pins.

11.11.9 Replace Pump

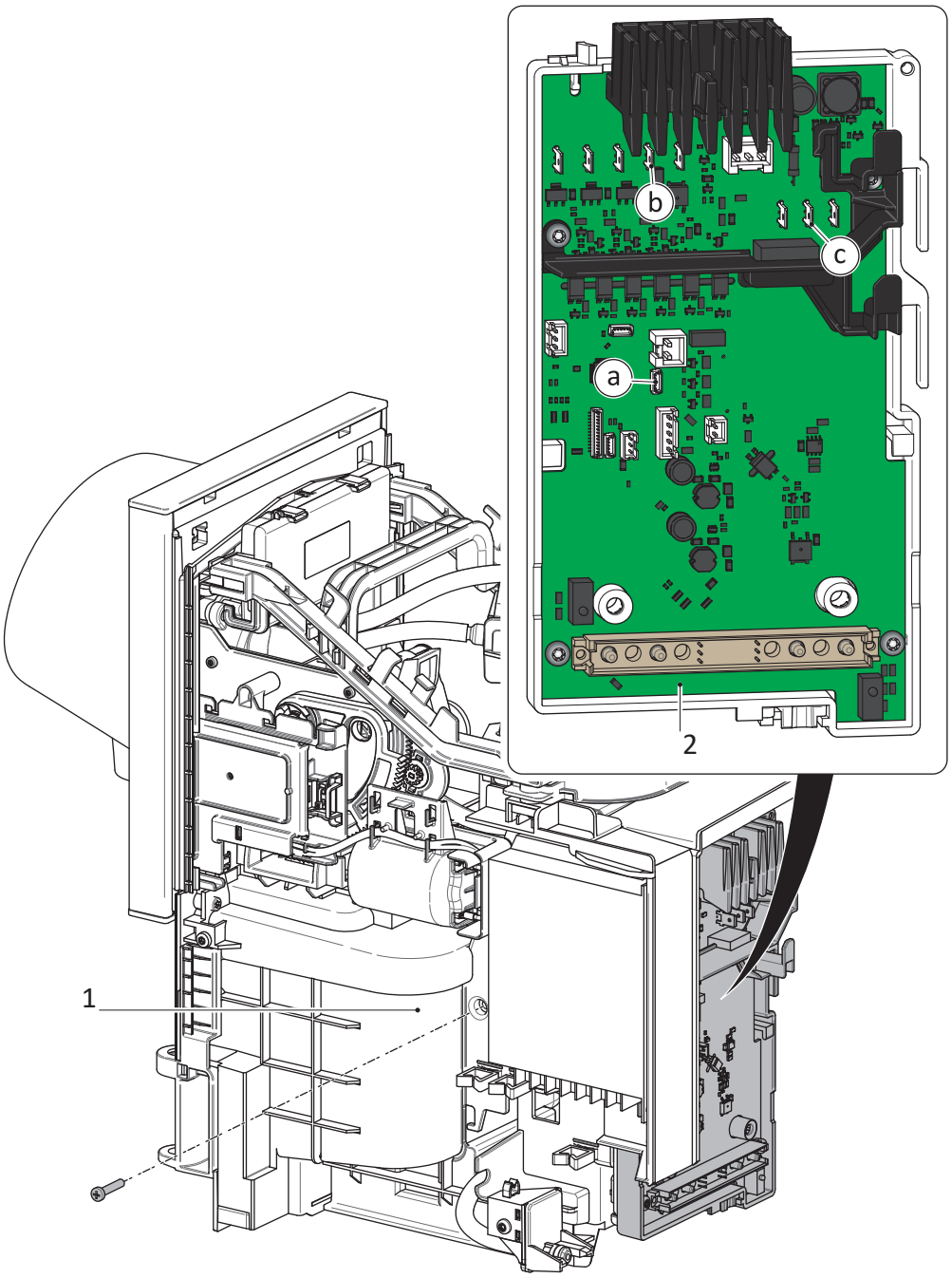


Fig. 87

Prerequisites

- Main PCB cover is removed → p. 109.

Procedure

1. Loosen 1 screw (TX20) on chassis BU (1).
2. Unplug the 3 wires of the pump from the main PCB (2):
   (a) Capsule container detection connector
   (b) Pump control receptacle
   (c) Pump line receptacle

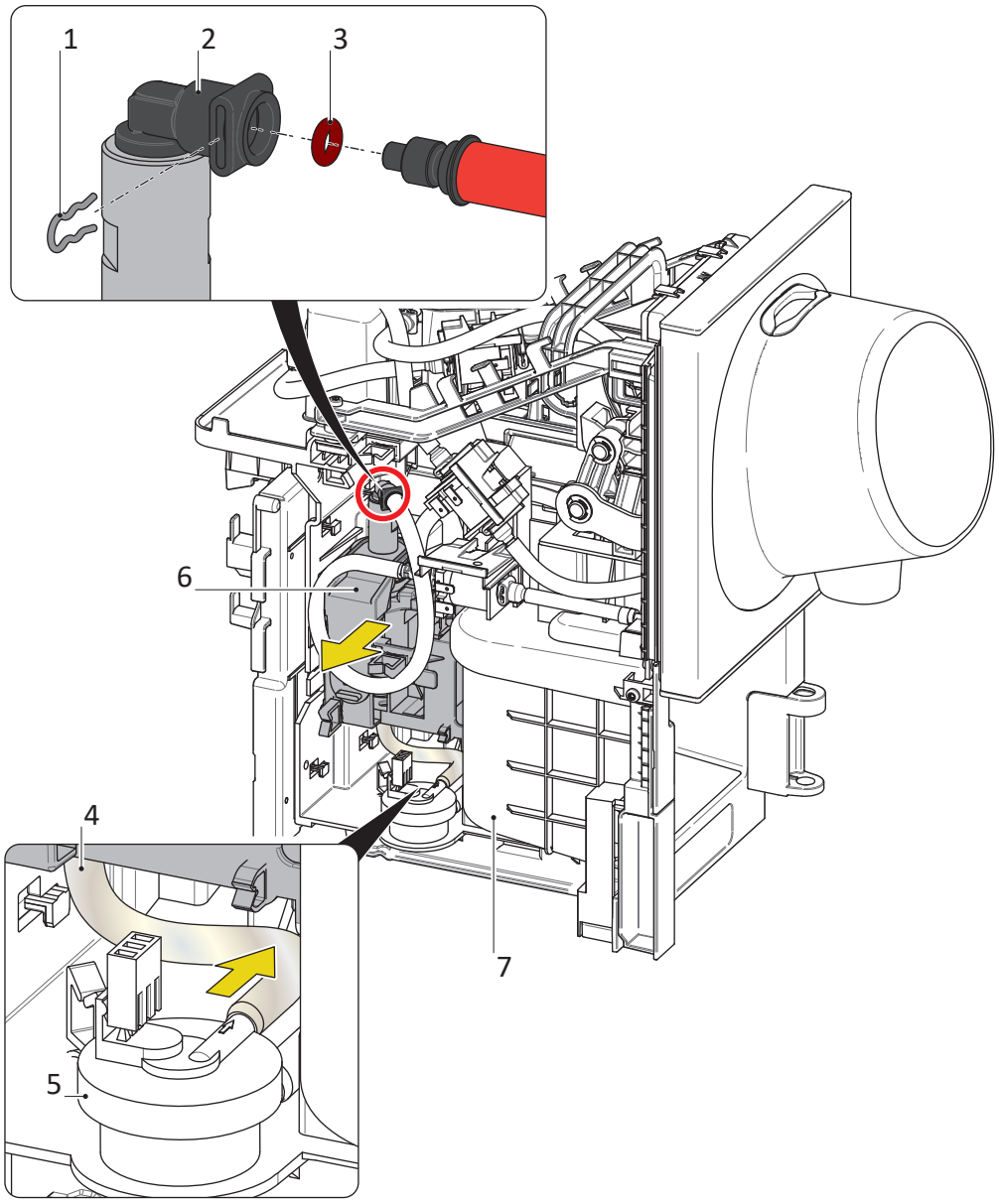


Fig. 88

3. Pull the wires out of the guides and wire saddles.
4. Pull off the upper low pressure hose (4) from the flowmeter (5).
5. Pull out the connector clip (1) from the pump connector (2, see detail) with pointed pliers.
6. Pull off and discard the O-ring (3) between pressure hose and pump connector (2).
7. Slide the pump (6) out of chassis BU (7).

Assembly Tips

- Always replace the O-ring seated between pump connector and pressure hose.
- Do not twist or fold the pressure hose to the flow meter – water must be able to flow free of resistance.

11.11.10 Replace Main PCB

ℹ The illustration shown is with the pump removed – for better visibility.

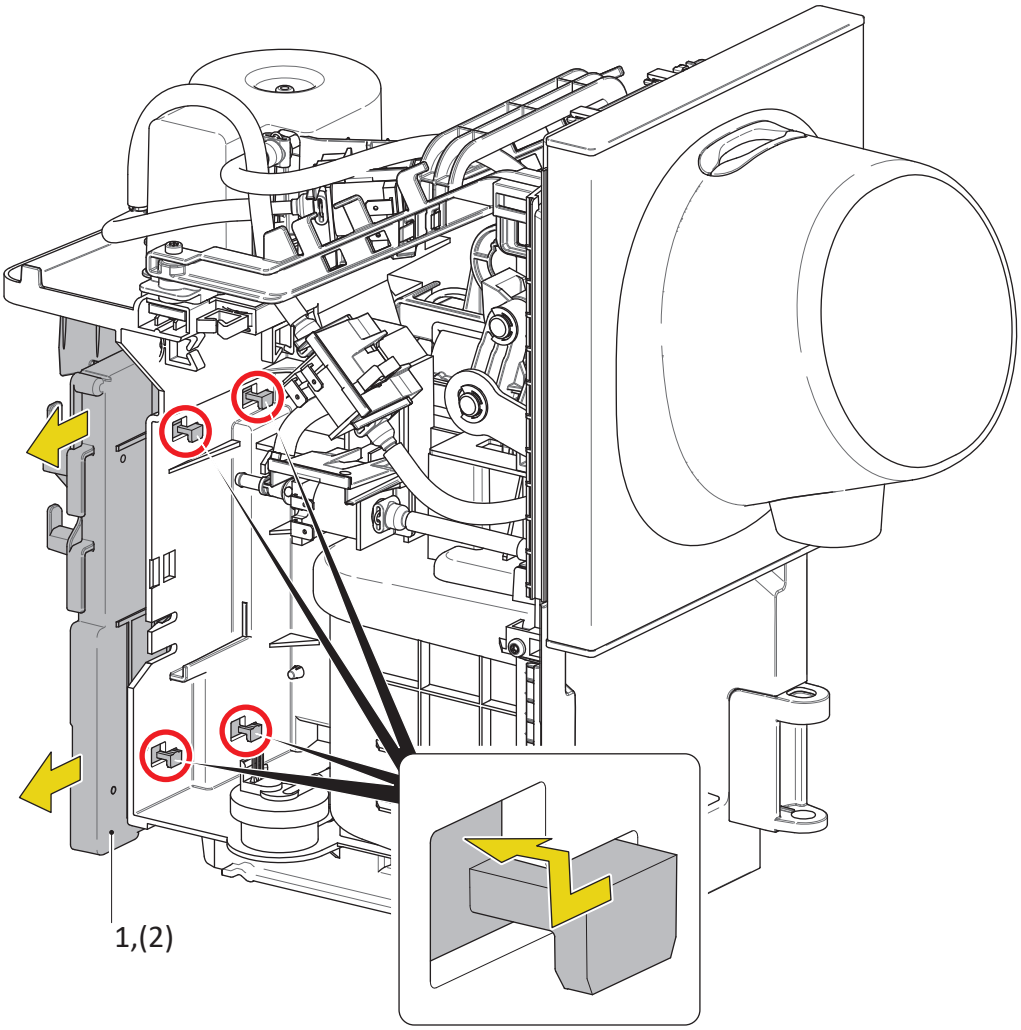


Fig. 89

Prerequisites

- Main PCB cover is removed → p. 109.

Procedure

1. Unplug all connectors and receptacles from the main PCB (2).
2. Pull on the main PCB housing (1) until you hear it click.
3. Lift the main PCB (2) and housing (1) out of its slots (circled in red).

11.11.11 Replace Power Supply

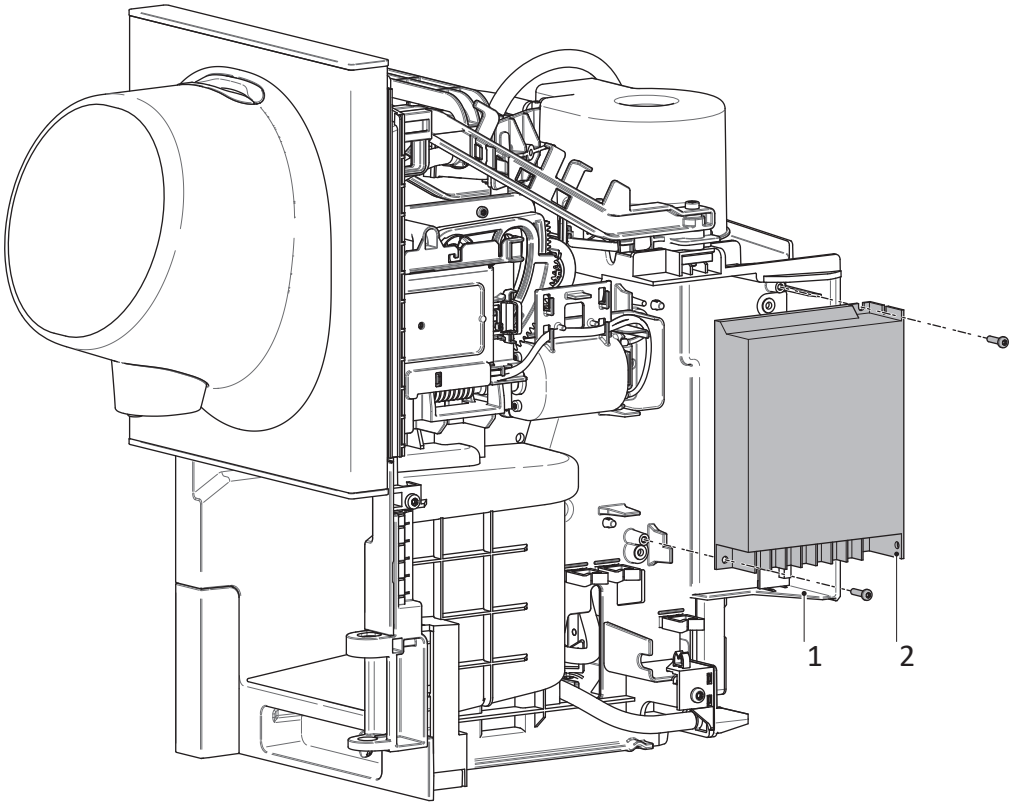


Fig. 90

1. Unscrew all flat receptacles on the power supply (2).
2. Loosen 2 screws (TX10) on chassis BU (1).
3. Remove the power supply (2).

11.11.12 Replace Brewing Unit (Maint. Kit)

This procedure should be done at least every 48’000 cycles.

i The brewing unit does not need to be detached from the coffee module for maintenance.

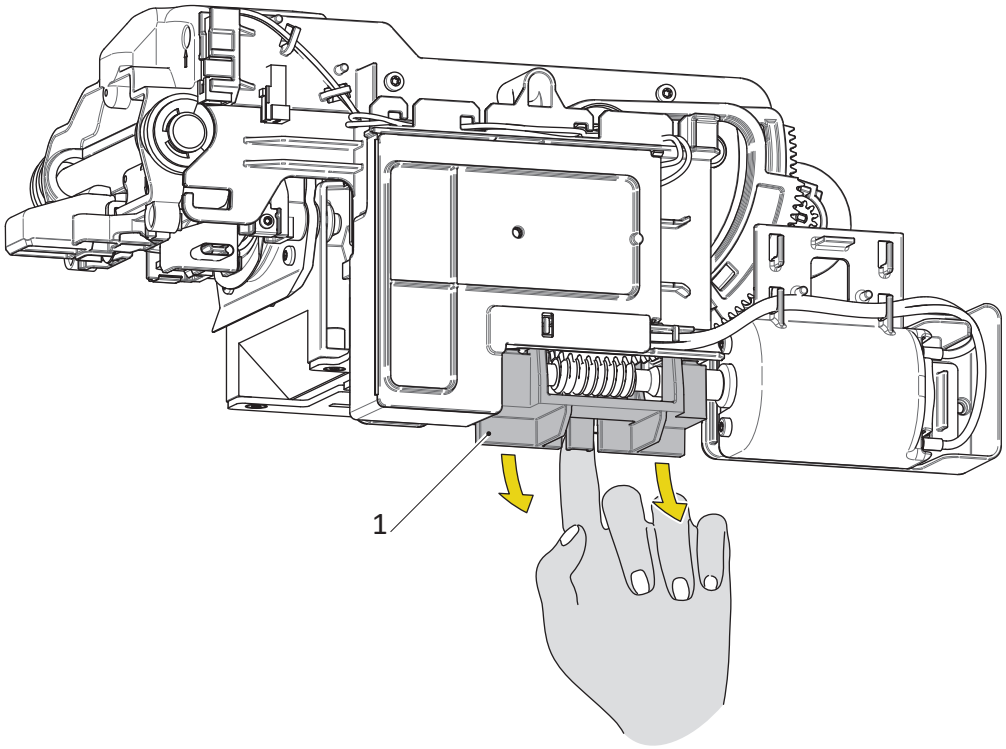


Fig. 91

Prerequisites

- Head base plate is removed → p. 111.

Procedure

1. Release the latch of the worm gear support (1) and remove the support (1).

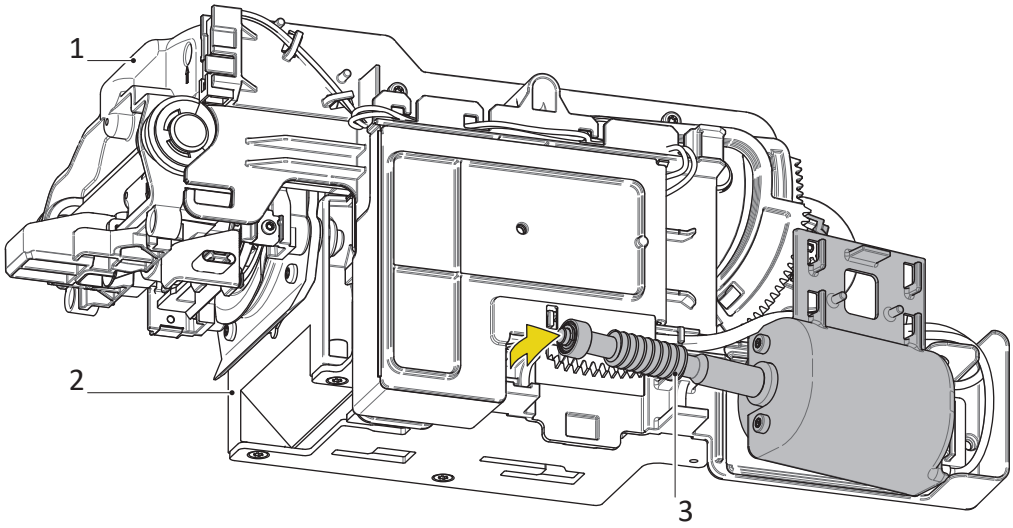


Fig. 92

2. Slightly pull out the worm gear (3) to be able to freely move the brewing units’ (2) front assembly (1).

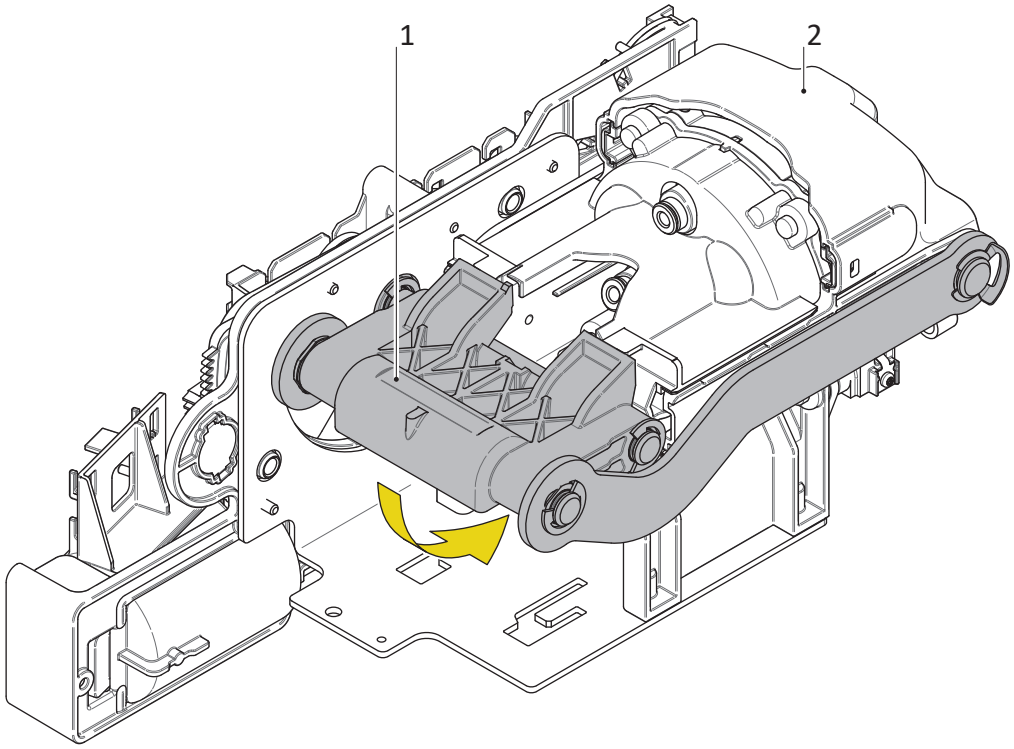


Fig. 93

3. Push down the base handle (1) as far as it will go to move the front assembly (2) into “open”-position.
4. Re-insert the worm gear and worm gear support.

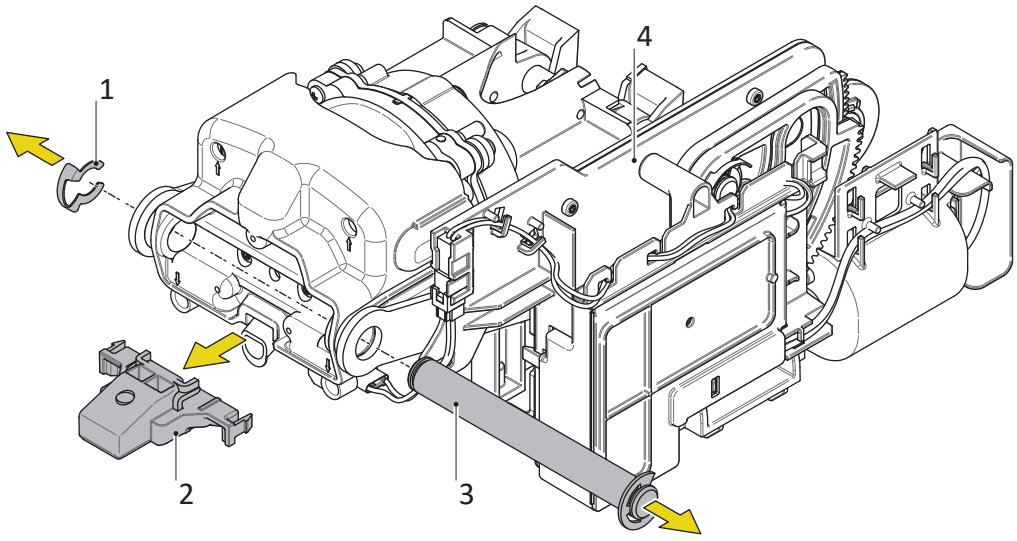


Fig. 94

5. Unclip the steam hood (2) and remove it from the brewing unit (4).
6. Detach the C-clip (1) from the front axle (3) and remove the front axle (3).

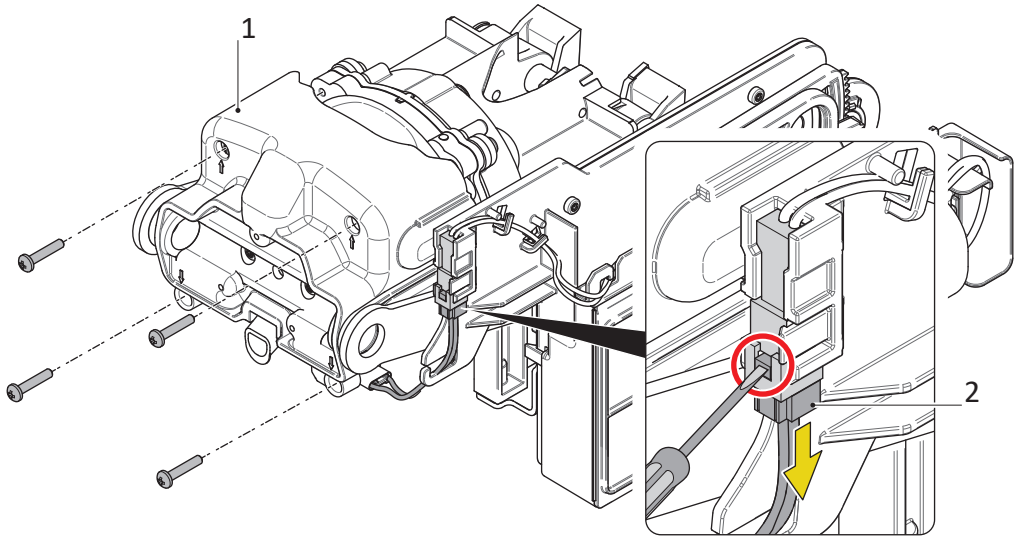


Fig. 95

7. With the help of a small screwdriver, release the latch and unplug the coil connector (2, see detail).
8. Loosen 4 screws (crosshead) on the front assembly (1). These can be disposed of.

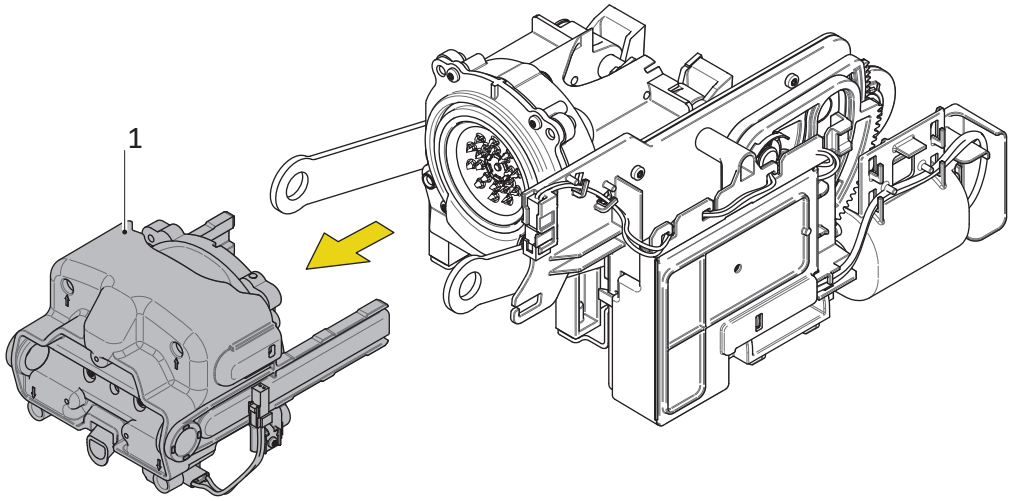


Fig. 96

9. Remove and dispose of the front assembly (1).

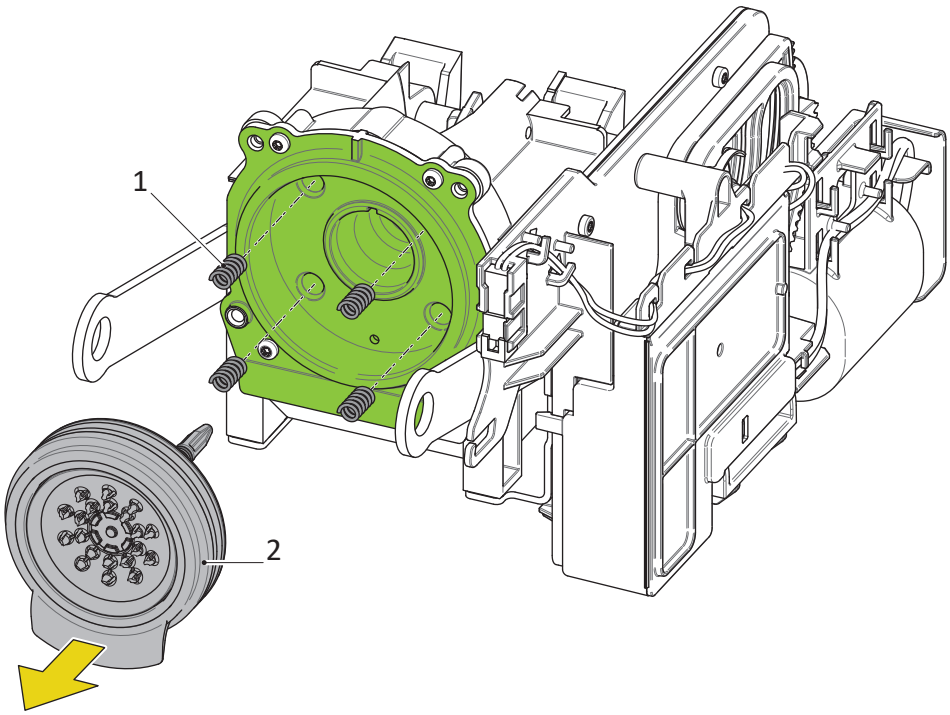


Fig. 97

10. Pull out the piston (2) by hand.
11. Pull out the 4 piston springs (1).
12. Clean the piston skirt inside and housing (green area) with a cleaning cloth.
13. Put in the 4 piston springs (1) again.
14. Insert a new piston (2) after greasing all its seals (Molykote 111).

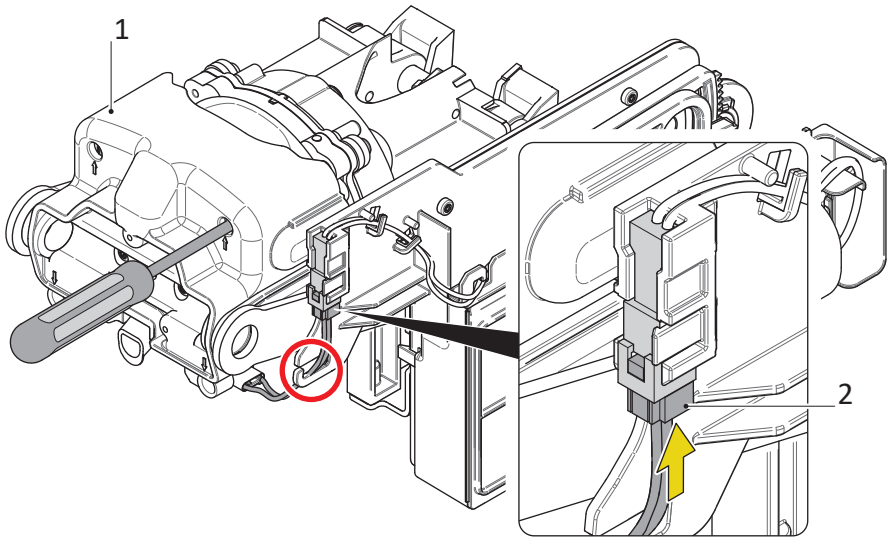


Fig. 98

15. Insert a new front assembly (1) and tighten the 4 screws (crosshead).
16. Pull the coil connector (2) through the cable guide (red circle) and plug it in (see detail).

⚠ The C-clip must be mounted on the correct side!

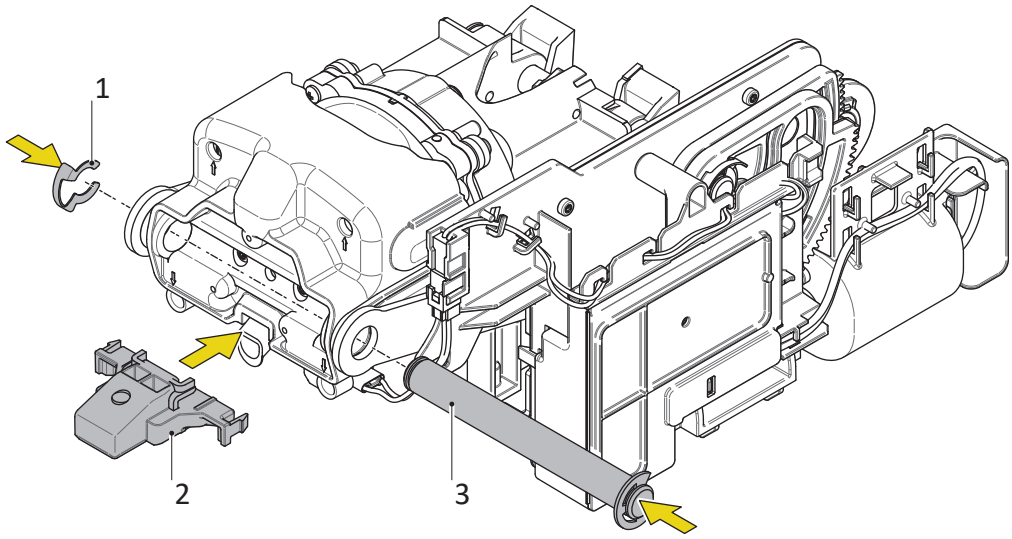


Fig. 99

17. Insert the front axle (3) and attach the C-clip (1).
18. Insert the steam hood (2).

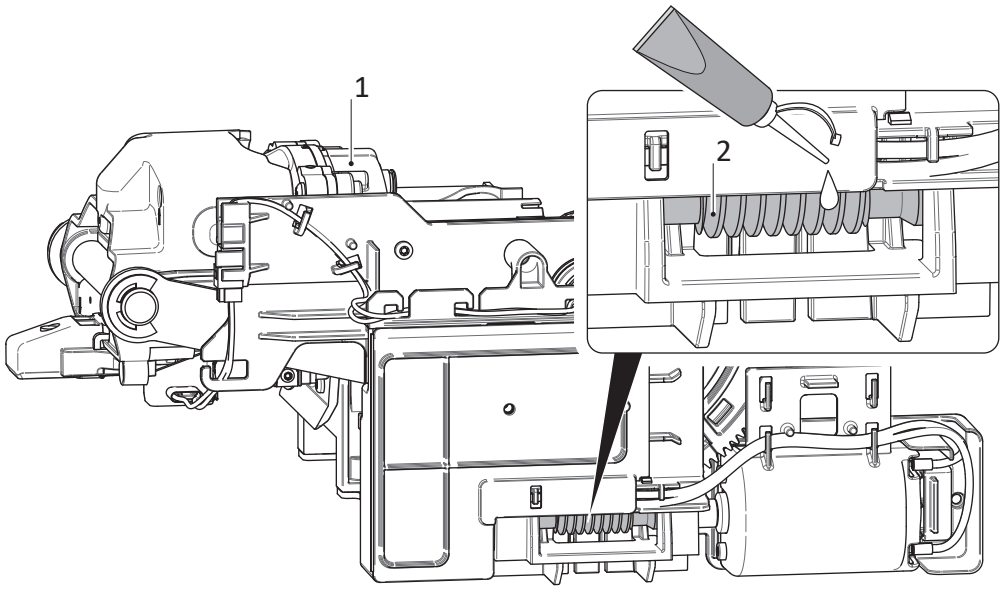


Fig. 100

19. To finish the maintenance of the brewing unit (1), grease the worm gear (2) of the motor (see detail) with Elkalub GLS 993 H1.

11.11.13 Replace Brewing Unit (MHBU)

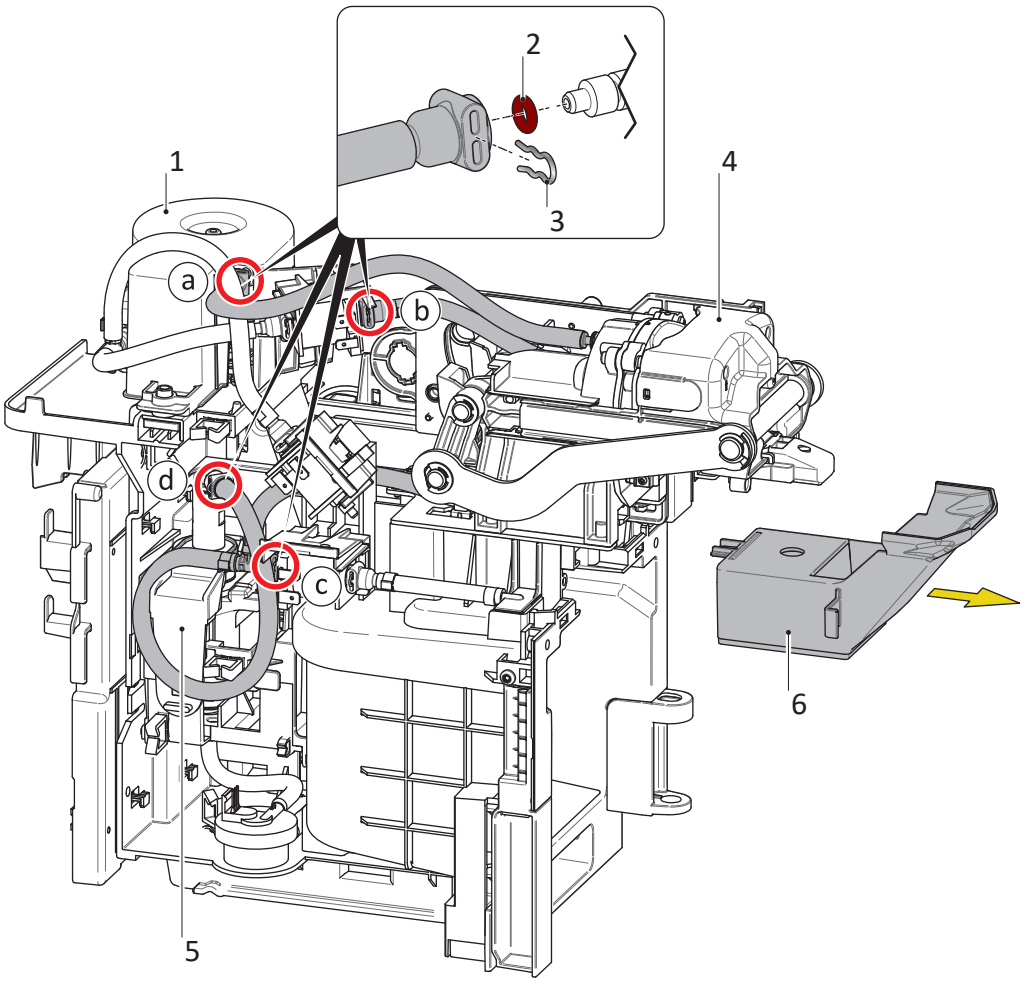


Fig. 101

Prerequisites

- Main PCB cover is removed → p. 109.
- Head base plate is removed → p. 111.

Procedure

1. Pull out the capsule chute (6) at the front.
2. Pull out the connector clips (3) and detach the following hose connectors (circled in red) together with the attached pressure hoses:
   (a) Brewing unit (4) to thermoblock (1)
   (b) Brewing unit (4) to top valve
   (c) Brewing unit (4) to bottom valve
   (d) Bottom valve to pump (5)
3. Discard the O-rings (2) from the detached connectors.

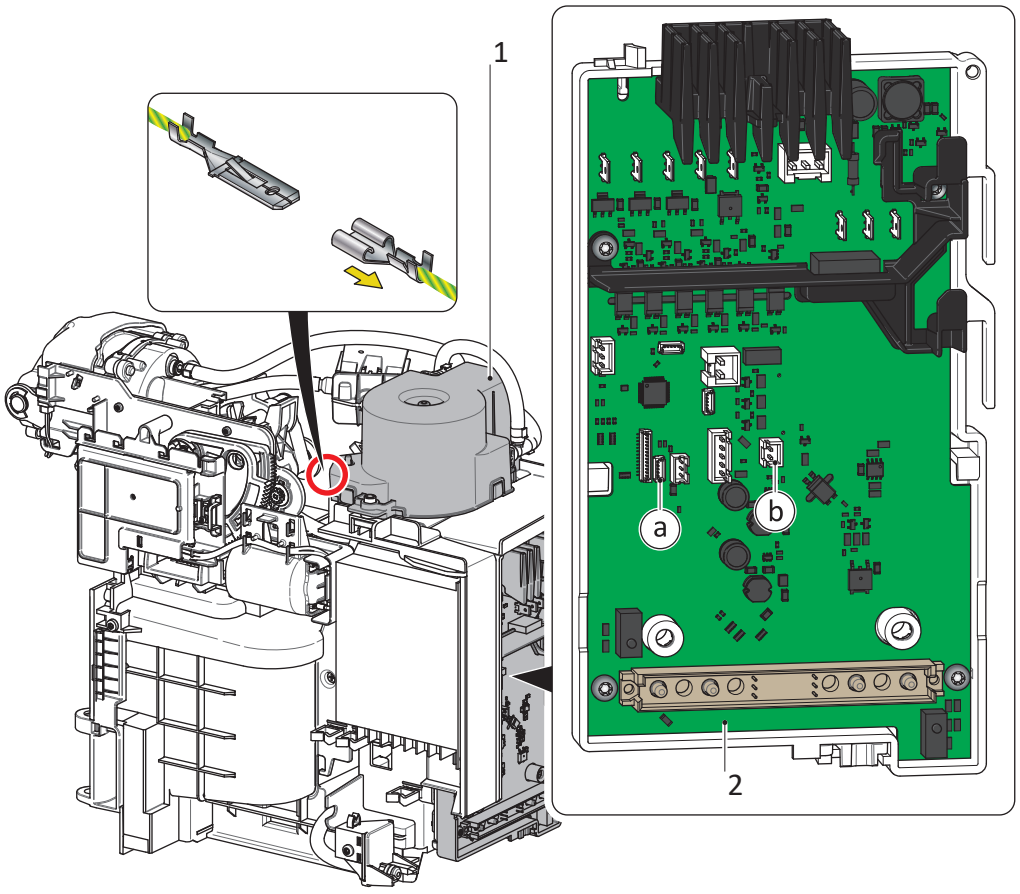
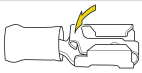


Fig. 102

4. Release the flat receptacle of the ground wire at the thermoblock (1, location circled in red).



This kind of flat receptacle has a special connector latching. Press down the lever with flat nose pliers while pulling on it.

5. Unplug 2 connectors (see detail) from the main PCB (2):
   (a) MHBU connector
   (b) MHBU power connector
6. Pull the wires out of guides and wire saddles.

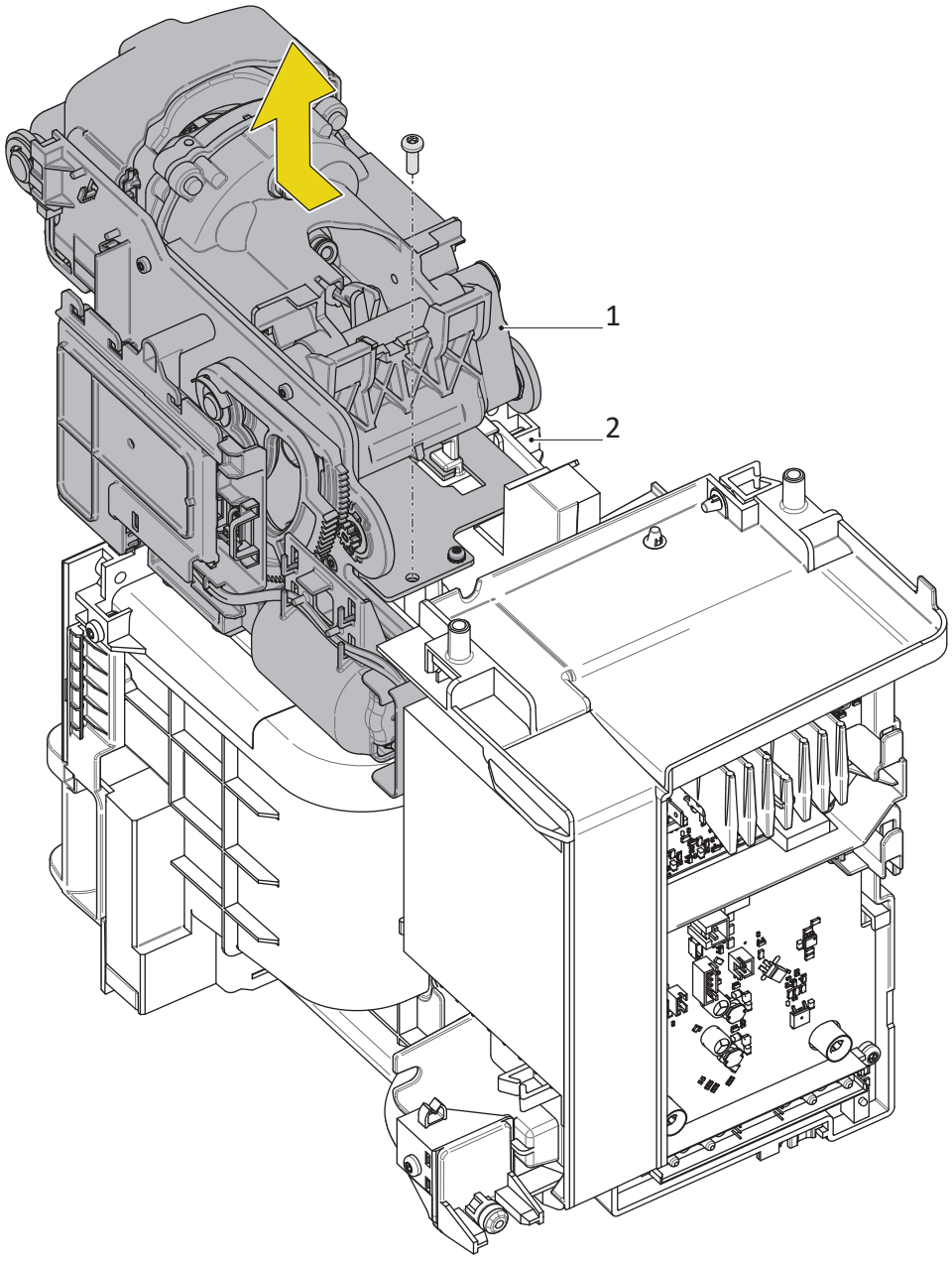


Fig. 103

i The illustration shown is with the thermoblock, valves and pressure hoses removed – for better visibility.

7. Loosen 1 screw (TX20) on the brewing unit (1).
8. Slide the brewing unit forward and lift it up at the same time to remove it from chassis BU (2).

Assembly Tips

- Only use the black coloured connector clip for the hose adapter connected directly to the thermoblock.
- Always replace the O-ring seated between the thermoblock and hose adapter.
- Always replace the O-rings seated between valves and hose adapters.
- Always replace the O-ring seated between pump connector and pressure hose.

11.12 Milk Module Repairs (General)

To remove the milk module → p. 90.

Abbreviations for Component Support Versions

Two abbreviations are used to identify if a reference applies to the metal component support (**MCS**) or the plastic component support (**PCS**) of the milk module.

Components and Pipes Under Pressure

Below is an extraction of the hydraulic diagram for the milk module (→ p. 15) that shows all components and pipes under pressure, marked with fat orange line or box.

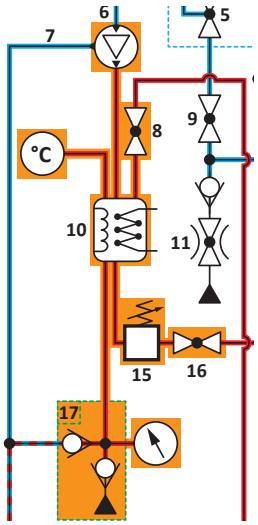


Fig. 104

If you need to work on those components or pipes, follow the instructions below:

- Perform an emptying of the machine → p. 34.
- If the module is blocked and this option is not available, wait at least 1h before opening the module.

Caution: The components are still hot and can cause burns.

Fridge

Risk of fire / flammable materials!
The fridge unit contains a highly flammable refrigerant fluid (R600a).
In case of (audible) leakage:

- **Keep away any open flames or sources of ignition.**
- **Don’t smoke.**
- **Let the leaking gas dissipate before any further actions.**
- **Replace the complete fridge unit.**

No repair work must be performed on the fridge! (expect the fan → p. 146)

When doing repairs, take special care to not push or bend any of the copper pipes around the compressor of the fridge.

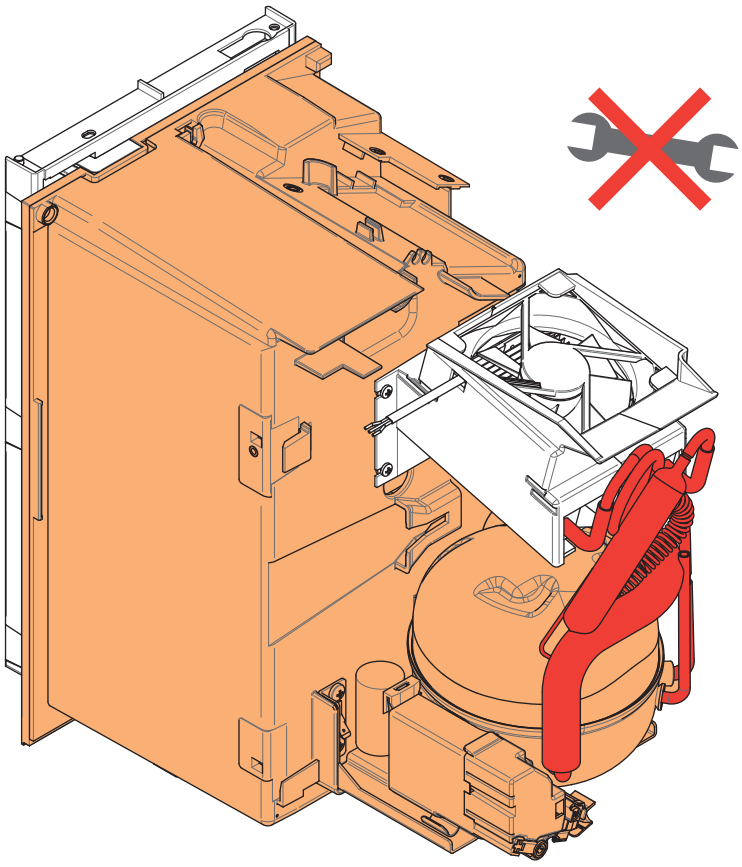


Fig. 105

11.12.1 Removing FEP Tubes

Most tubes in the milk module are connected with quick-acting fasteners. Follow this instructions to release or fasten a tube in the procedures for the milk module repairs hereafter.

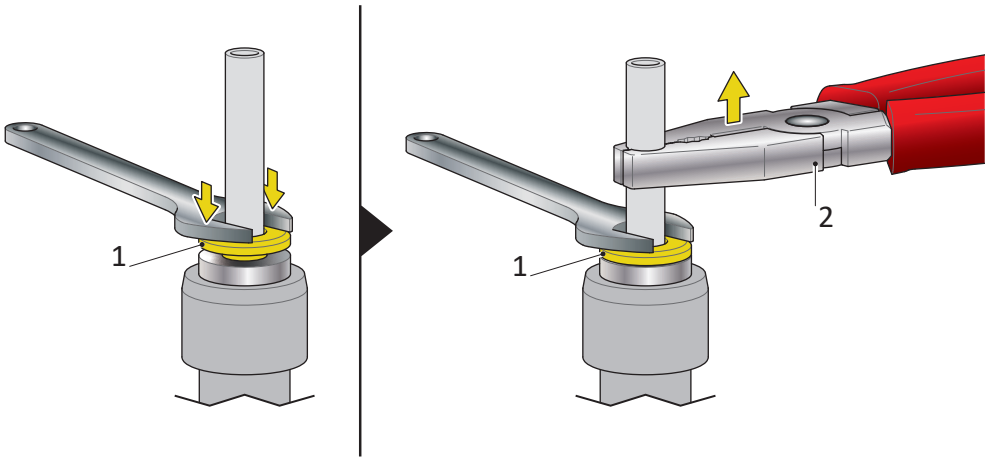


Fig. 106

1. Using a fork wrench no. 6 or your fingers, push in the fastener's head (1).
2. Pull out or insert a tube with special tube pliers (2) or by hand.
3. Release the fastener's head (1).

When inserting a tube, two noticeable resistances must be overcome. Always ensure a firm connection!

The tubes must never get kinked or clamped between housing parts.

11.12.2 Replacing Valve Membranes (PM)

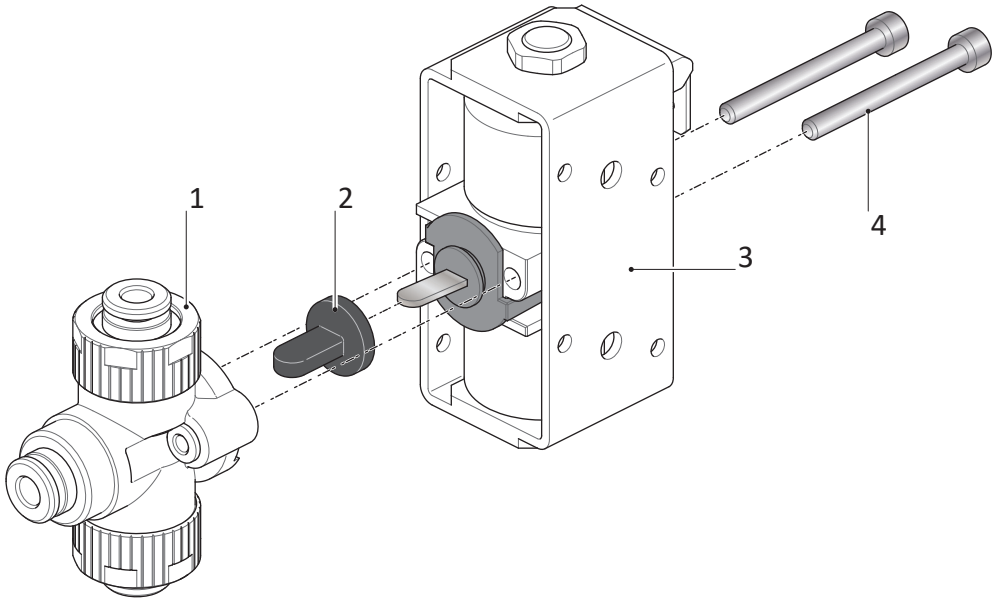


Fig. 107

1. Loosen 2 screws (4, hexagon M2.5) to release the valve body (1) from the magnetic coil (3).
2. Remove the membrane (2) from the magnetic coil (3).
3. Clean stains and impurities in the valve body (1) and replace the membrane (2).

11.12.3 Replace Outlet Valve

Removing FEP tubes: → p. 142

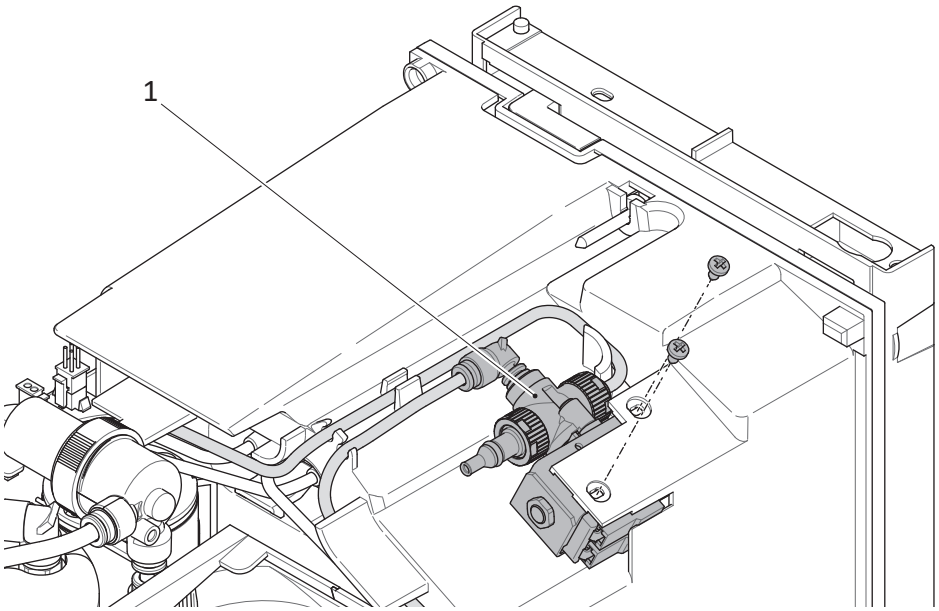


Fig. 108

1. Loosen 2 screws (crosshead) to release the outlet valve (1).

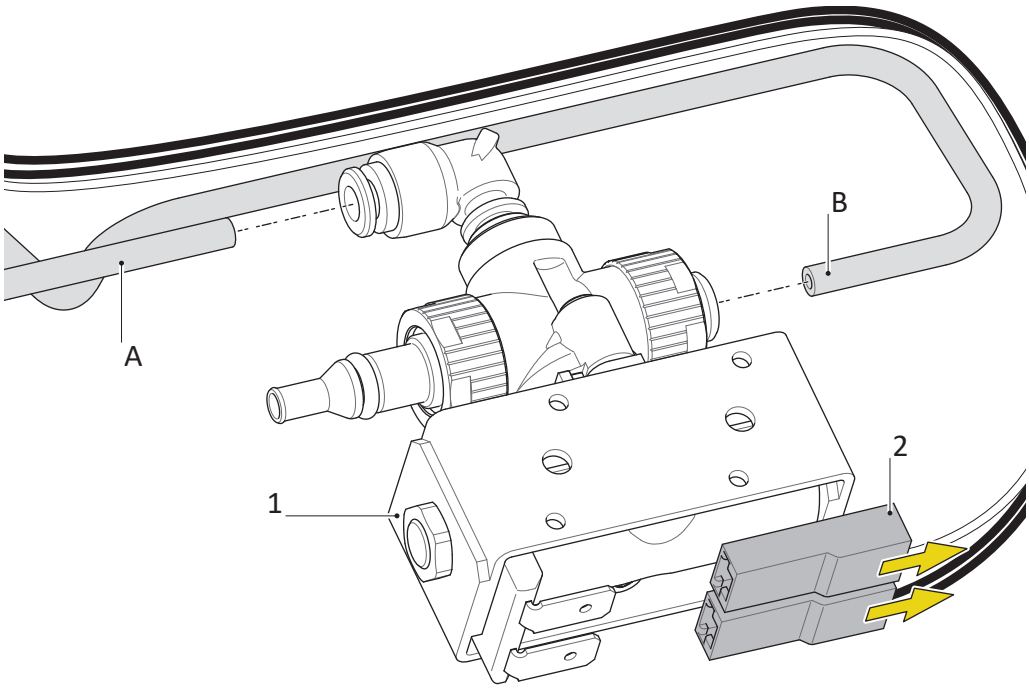


Fig. 109

2. Remove both tubes (A+B) from the outlet valve (1).
3. Unplug the 2 electrical connectors (2) from the RF-Box on the outlet valve (1).

Assembly Tip

Fig. 110

- Route the tubes and wires according to the image above.

11.12.4 Replace Fridge Fan

Removing FEP tubes: → p. 142

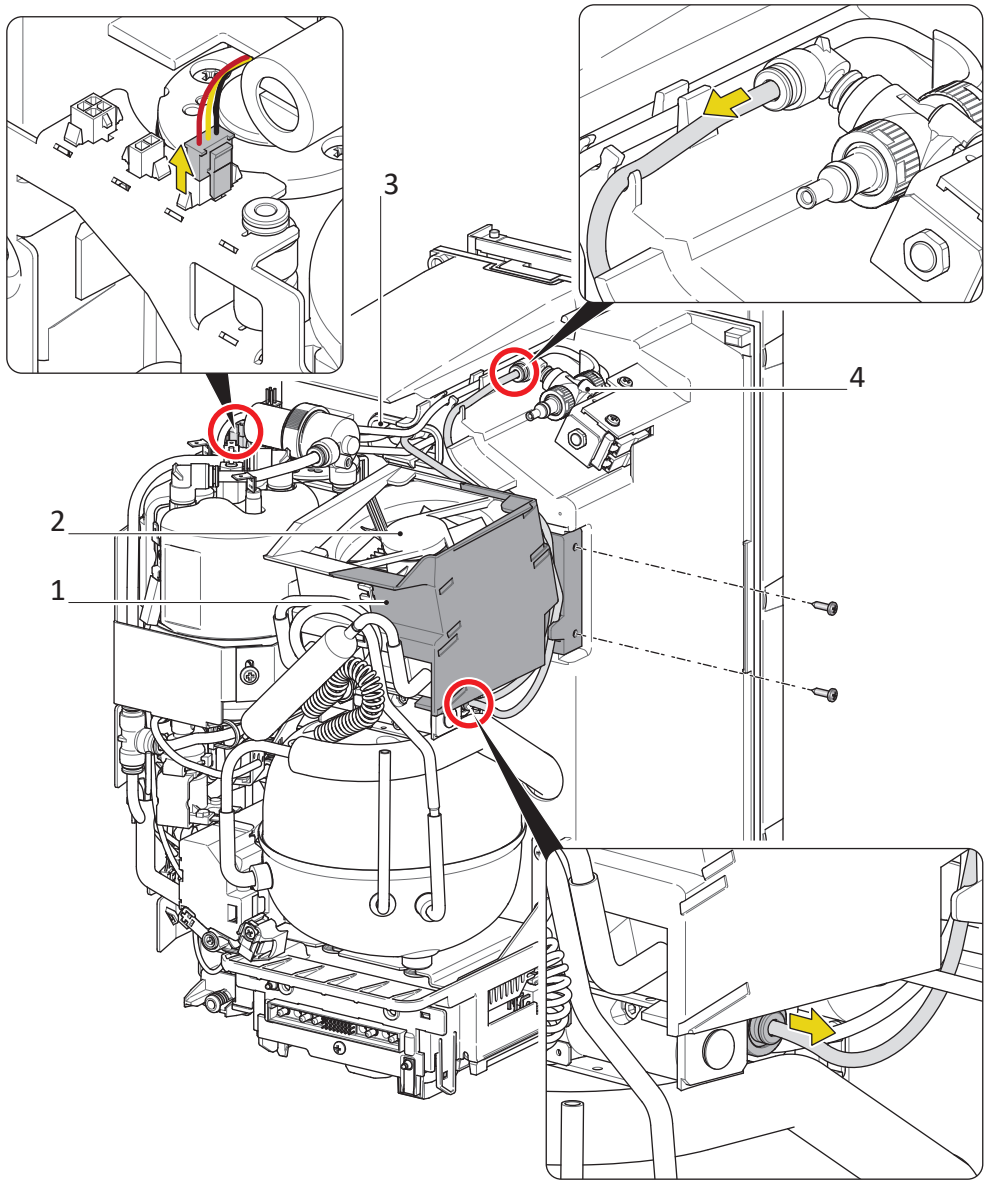


Fig. 111

Take special care to not push or bend any of the copper pipes around the compressor of the fridge!

Procedure

1. Unplug the electrical connector of the fan (2) from the hydraulic unit.
2. Pull out one tube on the outlet valve (4) and one tube from the RF-Box (3), see details.
3. Pull the tubes out of their guides.
4. Loosen 2 screws (crosshead) on the fan cover (1).

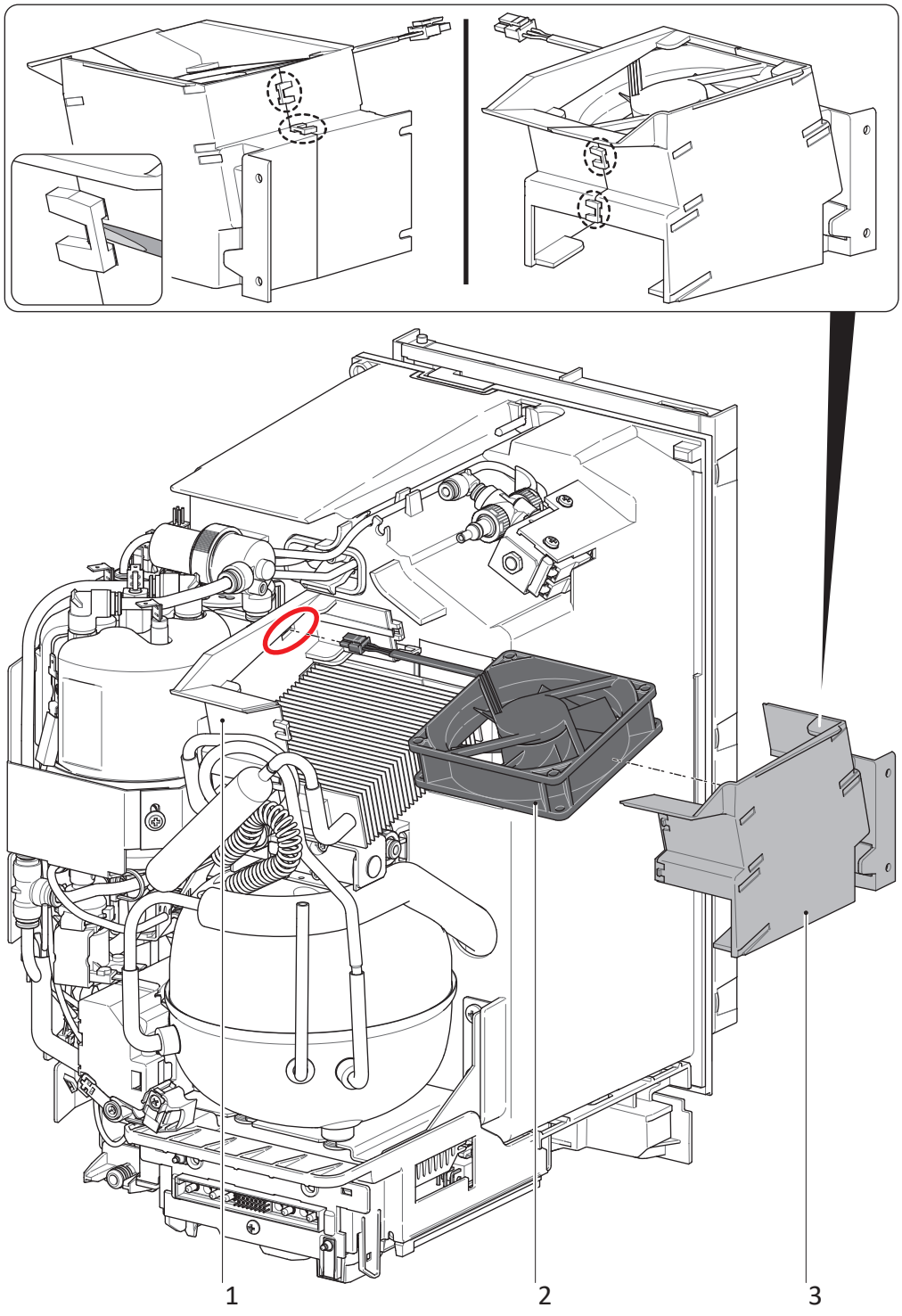


Fig. 112

5. Release the 4 latches (see detail) on the fan cover (3) with the help of a small flat-head screwdriver.
6. Pull away the outer part of the fan cover (3).
7. Slide the fan (2) out of the remaining fan cover part (1) while pulling the fan wire through the hole in it (circled in red).

11.12.5 Replace Control Board

Risk of damage! Follow basic ESD protection measures while handling a PCB.

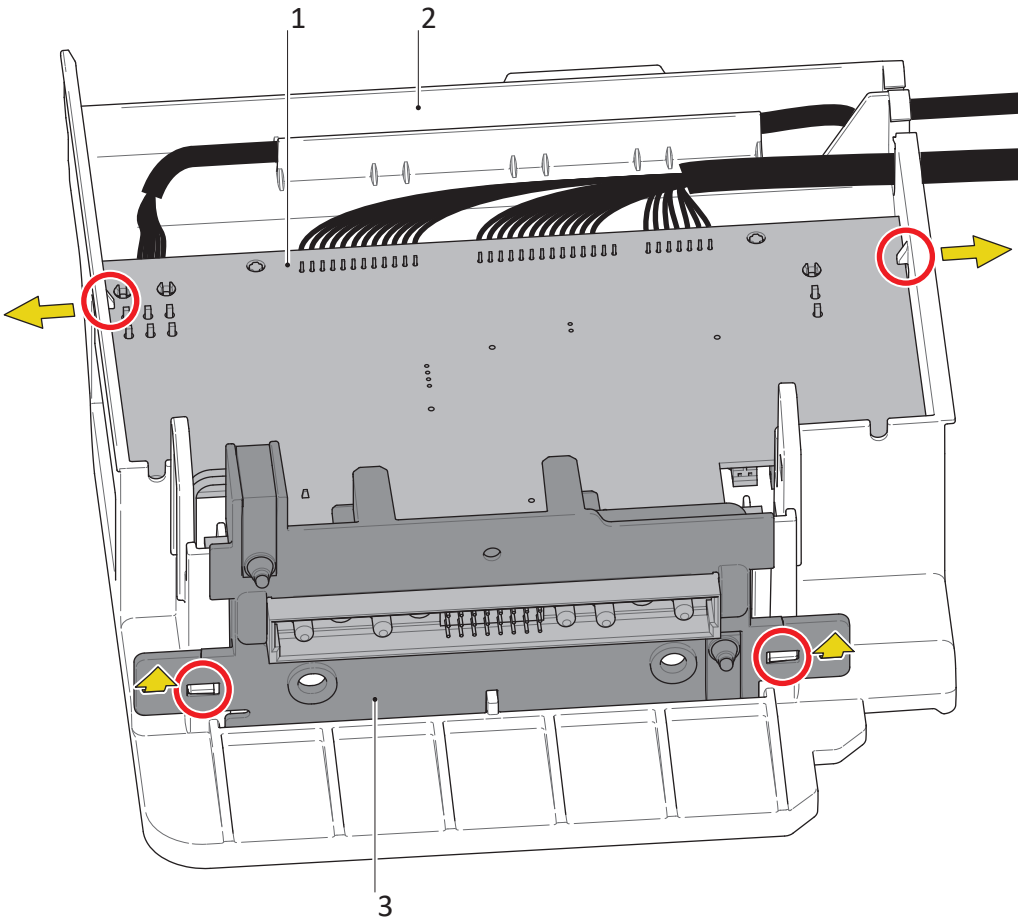


Fig. 113

Prerequisites

- (**MCS**) Hydraulic unit and PCB assembly are detached → p. 182.
- (**PCS**) Hydraulic unit and PCB assembly are detached → p. 160.

Procedure

1. Turn the PCB assembly around.
2. Release the two latches from the water protection clamp (3) by hand while sliding up the control board (1) a bit.
3. Release the two latches fixing the control board (1) on the water protection (2) by slightly bending the water protection (2) outwards while pulling on the control board (1).
4. Pull the wiring harness out of the guides on the water protection (2).
5. Pull the control board (1) and water protection clamp (3) out of the water protection (2).

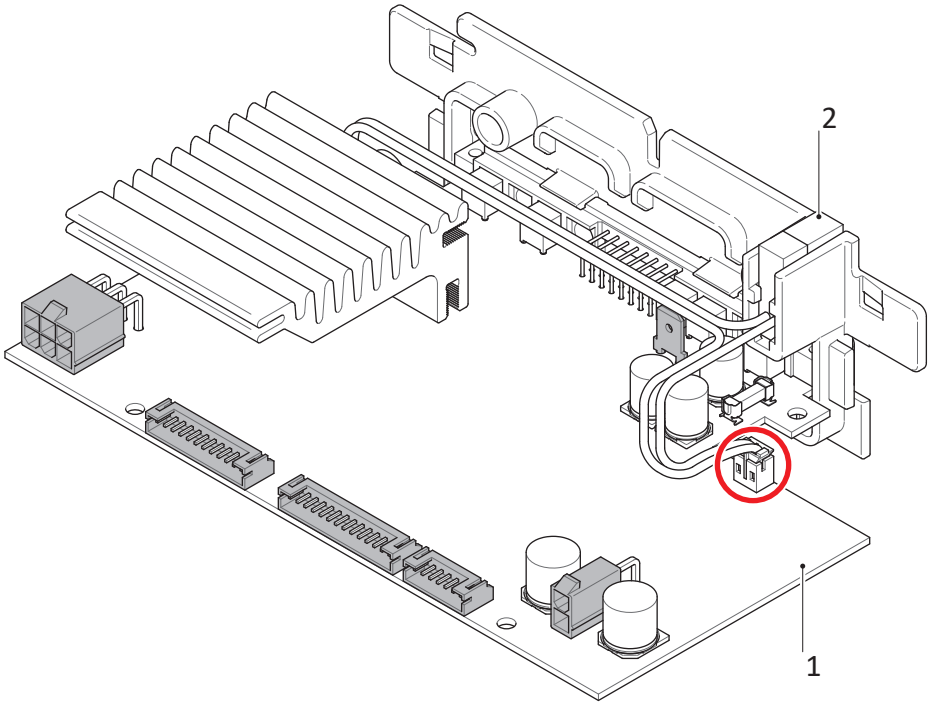


Fig. 114

6. Unplug all connectors on the control board (1) except the one for the micro switches (2, connector circled in red).

Assembly Tip

- All connectors are keyed and cannot be inserted wrong:

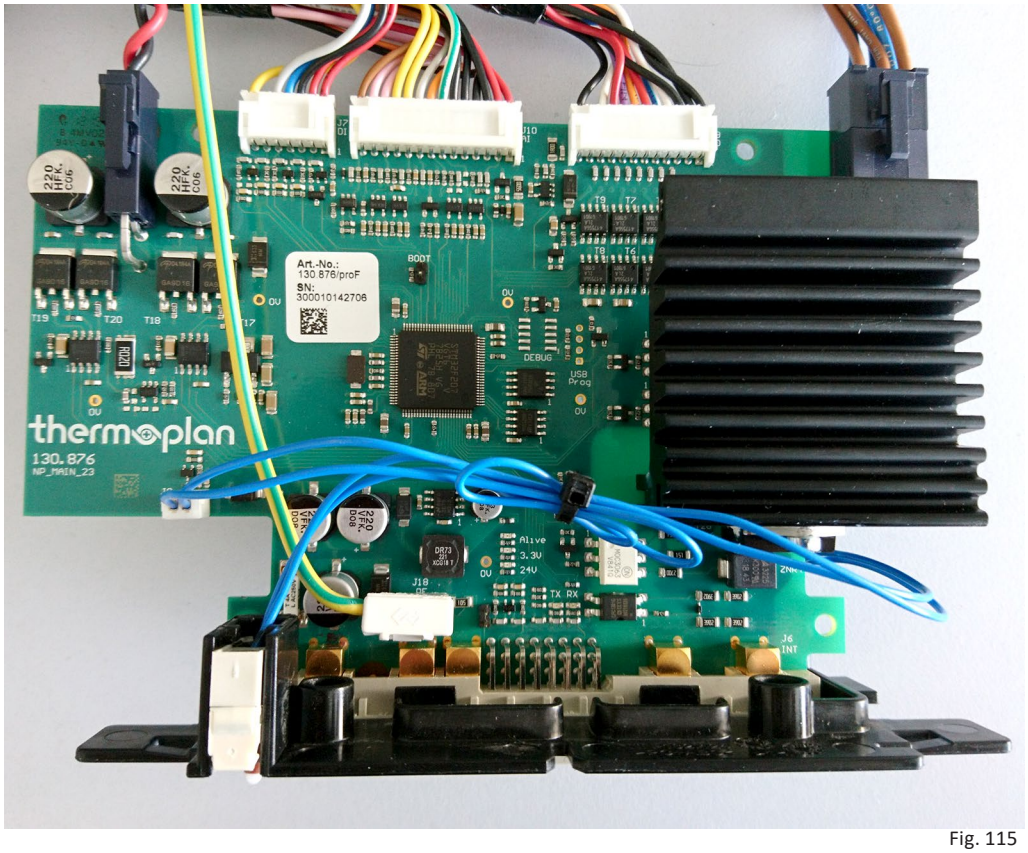


Fig. 115

11.12.6 Replace Micro Switches / Water Protection Clamp

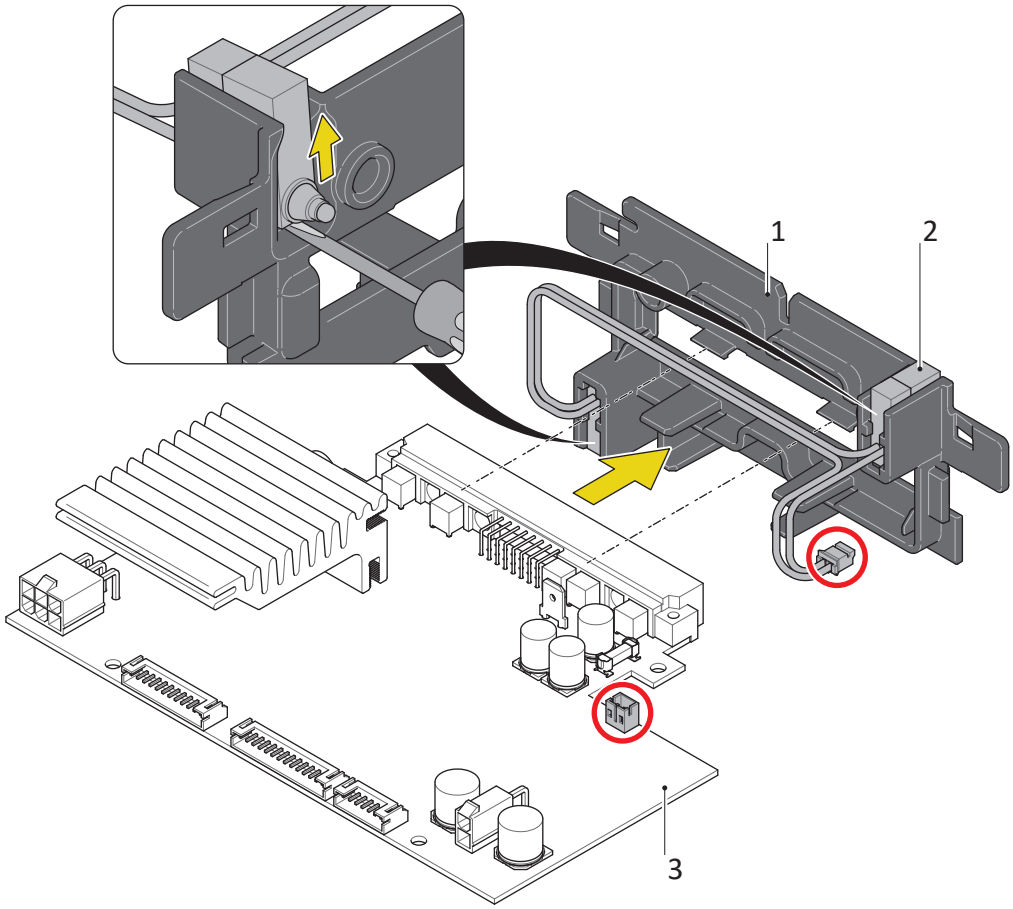


Fig. 116

Prerequisites

- Control board is removed → p. 148.

Procedure

1. Unplug the connector (circled in red) of the micro switches (2) on the control board (3).
2. Pull away the water protection clamp (1) with the micro switches (2) from the control board (3) by hand.
3. Lever the micro switches (2) out of the water protection clamp (1) by hand or with the help of a small flathead screwdriver (see detail).

11.12.7 Replace Chassis / Inlet Geometry Handle

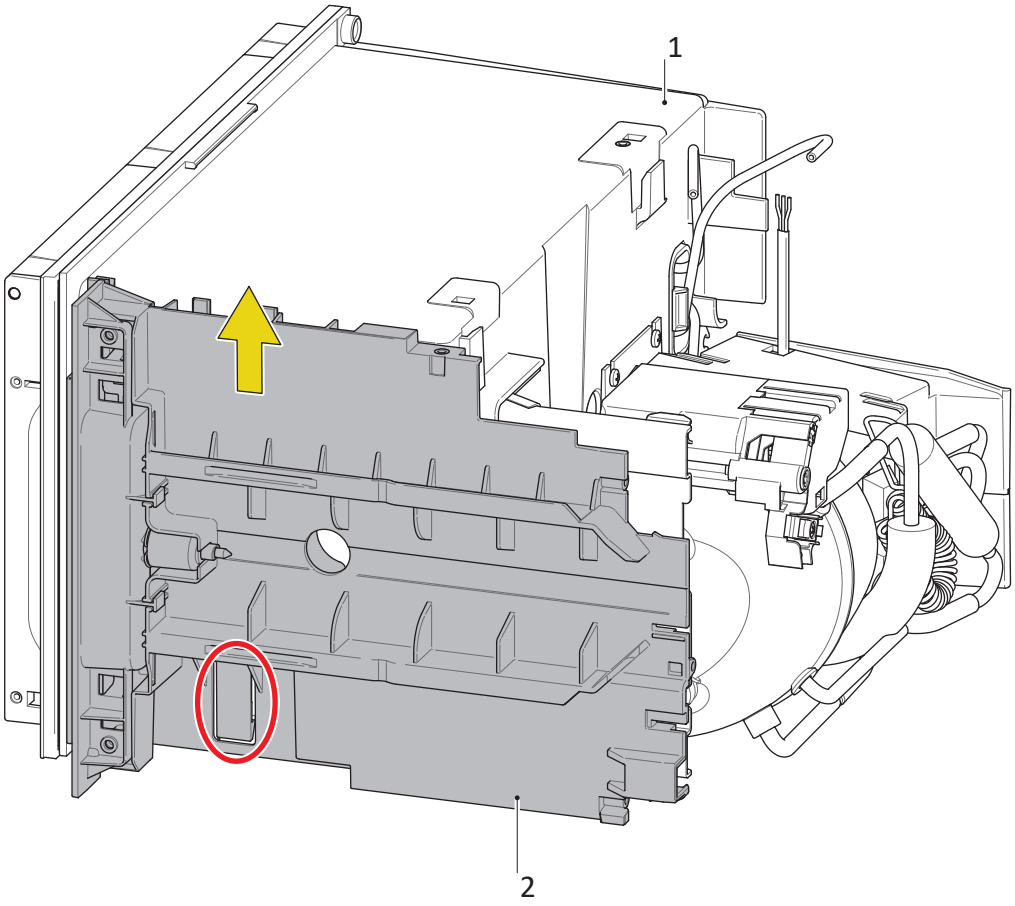


Fig. 117

Prerequisites

- (**MCS**) Hydraulic unit and PCB assembly are detached → p. 182.
- (**PCS**) Hydraulic unit and PCB assembly are detached → p. 160.

Procedure

1. Lay the fridge assembly (1) on its side as shown.
2. Pull the chassis (2) upwards and away from the fridge assembly (1) while releasing the latch (circled in red) to remove the chassis (2).

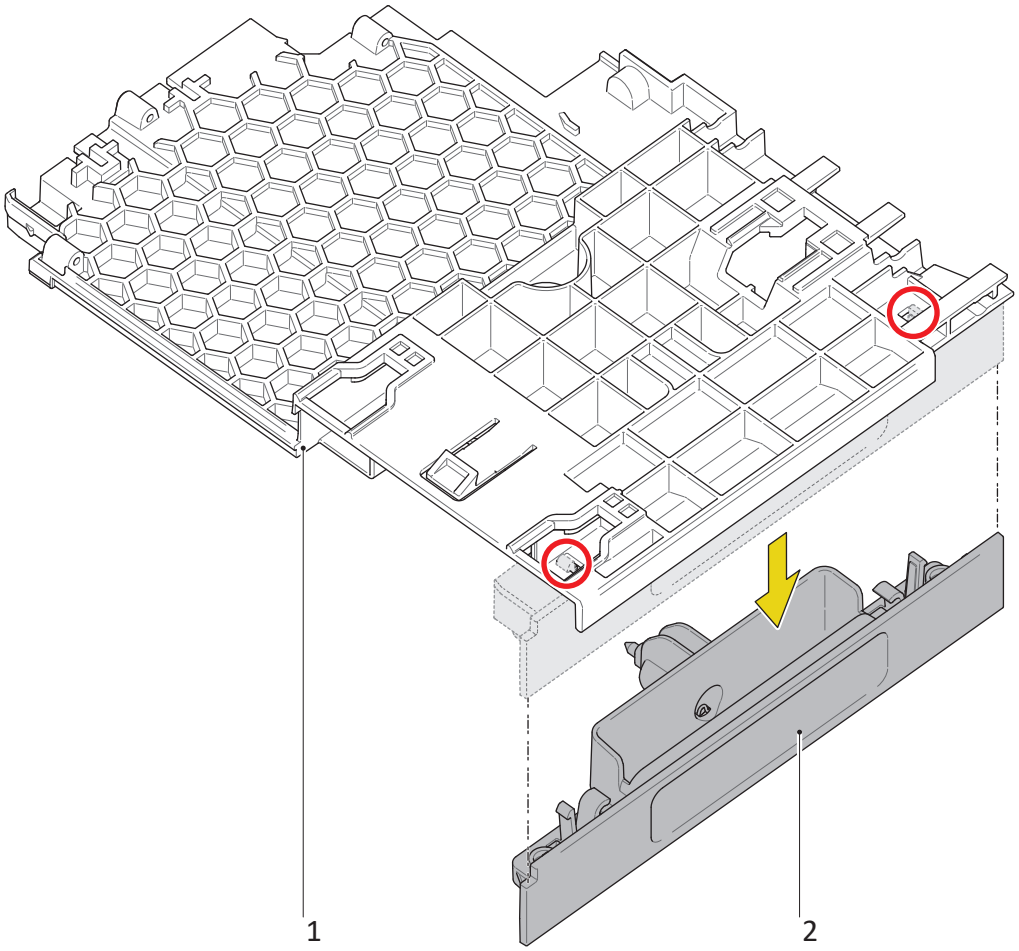


Fig. 118

3. Release the two latches from the inlet geometry handle (2, circled in red) by hand or with the help of a flathead screwdriver.
4. Remove the inlet geometry handle (2) from the chassis (1).

11.12.8 Replace Steam Valve Plunger and Gasket (PM)

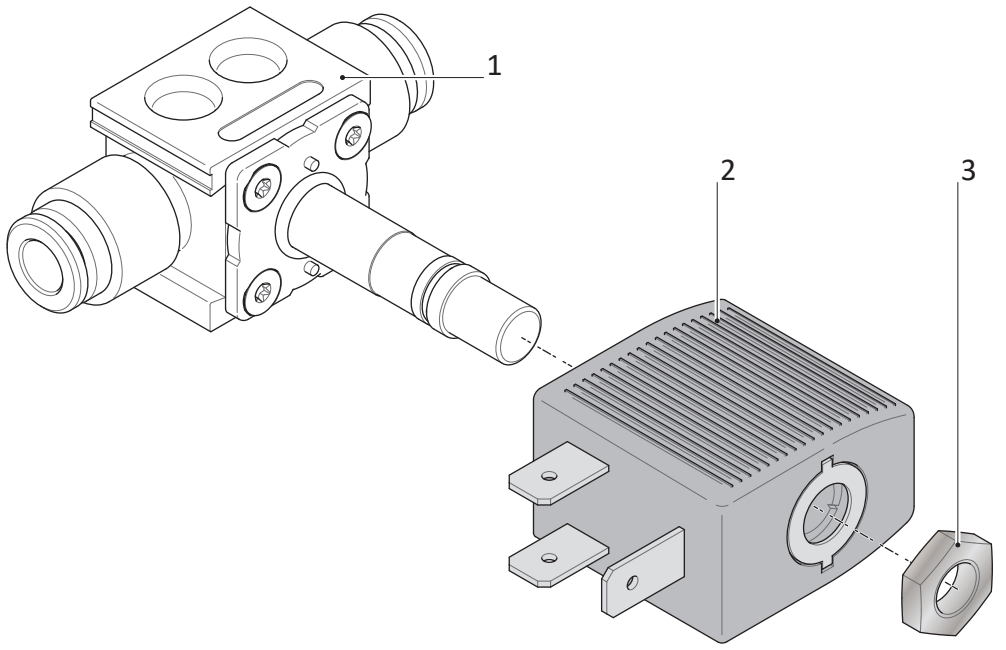


Fig. 119

The steam valve does not need to be removed from the hydraulic unit for this procedure, it is just shown by itself here for easier visibility.

This component and connected pipes are partially under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- (**MCS**) Hydraulic unit and PCB assembly are detached → p. 182.
- (**PCS**) Hydraulic unit and PCB assembly are detached → p. 160.

Procedure

1. Unplug the two electrical connectors from the magnetic coil (2).
2. Loosen the screw nut (3) with a fork wrench no. 11 on the magnetic coil (2).
3. Pull off the magnetic coil (2) from the steam valve (1).

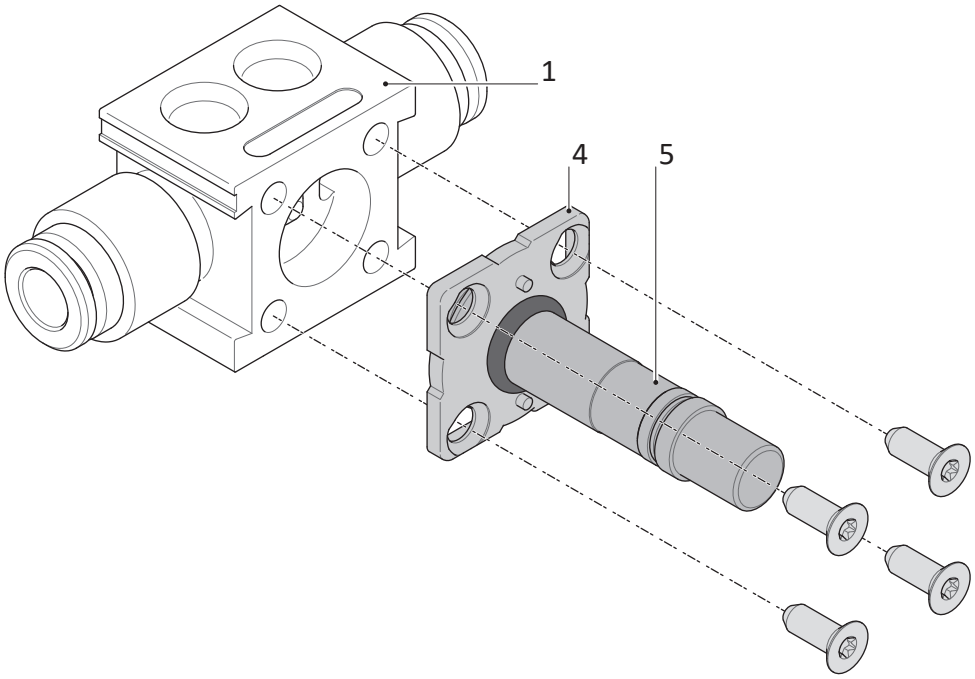


Fig. 120

4. Loosen 4 screws (TX9) on the metal holding plate (4).
5. Remove the metal holding plate (4) together with the plunger guide (5).

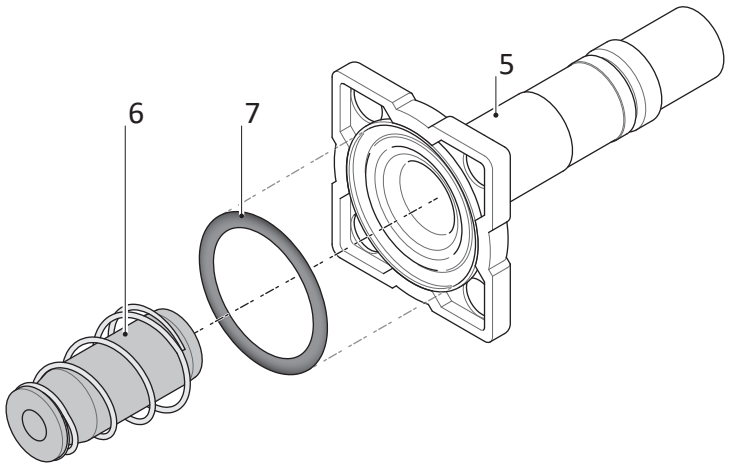


Fig. 121

6. Remove the plunger (6) and the gasket (7) from the plunger guide (5).

Assembly Tips

- Always replace the gasket (7)!
- Avoid cutting a new thread with the screws when remounting the metal holding plate.
- Alternate between the screws on the metal holding plate (4) when turning them in again to ensure that the holding plate is mounted flush on the valve (1).

11.12.9 Replace Water Coupling

Removing FEP tubes: → p. 142

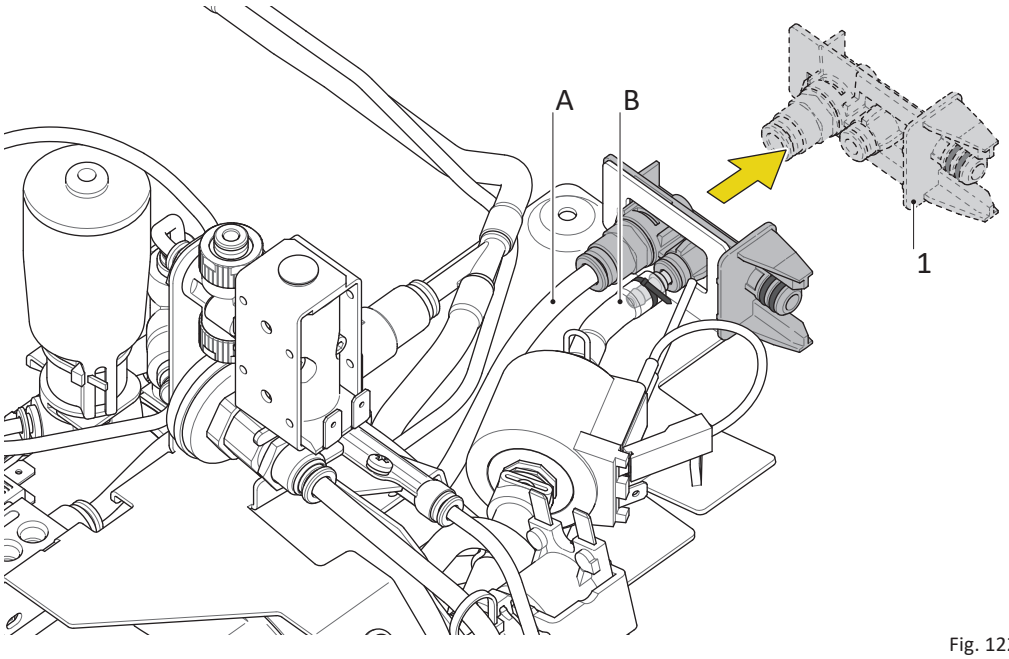


Fig. 122

Prerequisites

- (**MCS**) Hydraulic unit and PCB assembly are detached → p. 182.
- (**PCS**) Hydraulic unit and PCB assembly are detached → p. 160.

Procedure

1. Remove the FEP tube (A) from the water coupling (1).
2. Remove the silicone tube (B) including the hose fitting from the water coupling (1).
3. Remove the water coupling (1) from the hydraulic unit.

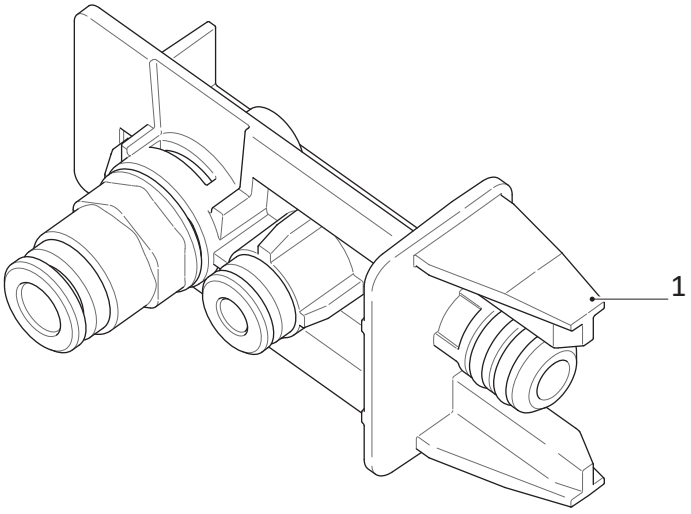


Fig. 123

11.12.10 Replace Water Coupling Check Valve (PM)

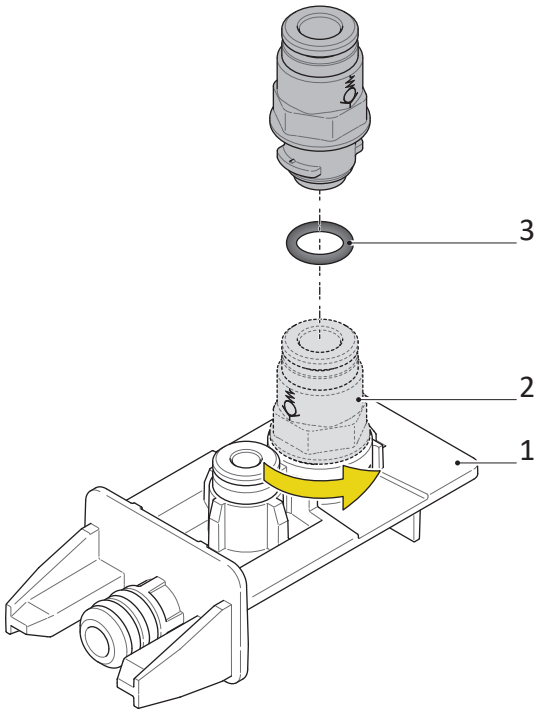


Fig. 124

Prerequisites

- Water Coupling is removed → p. 155.

Procedure

1. Turn the water coupling check valve (2) by 90° with a fork wrench no. 13.
2. Pull the water coupling check valve out of the water coupling assembly (1) together with its O-ring (3).

Always replace the O-ring together with the check valve

11.13 Milk Module Repairs (Plastic Component Support)

11.13.1 Replace RF-Box

Removing FEP tubes: → p. 142

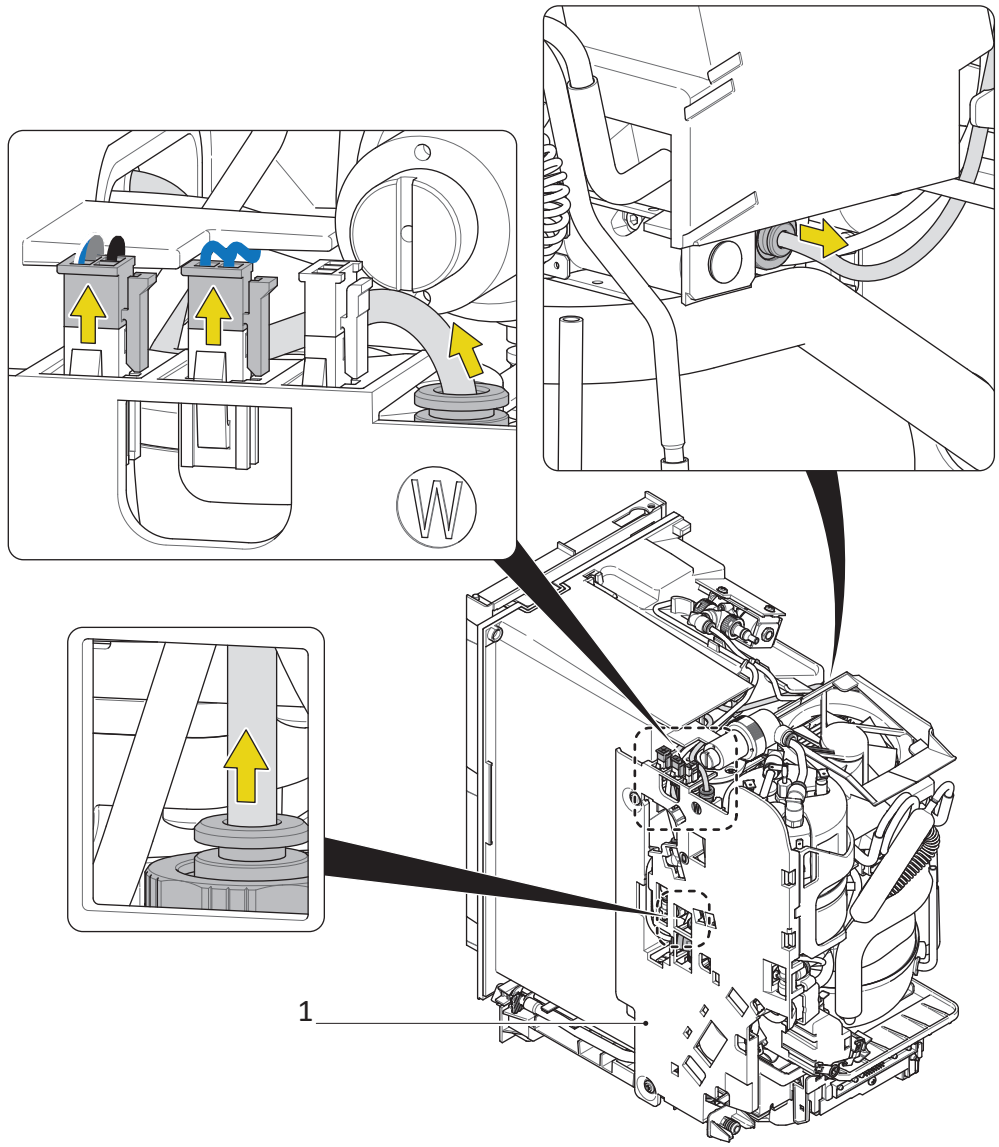


Fig. 125

Prerequisites

- Electrical connectors are removed from the outlet valve → p. 144.

Procedure

1. Unplug all of the electrical connectors and tubes (see details) on the hydraulic unit (1) coming from the RF-Box.

i The source valve (4) is just labelled in this illustration to identify it for preventive maintenance and is not part of the procedure.

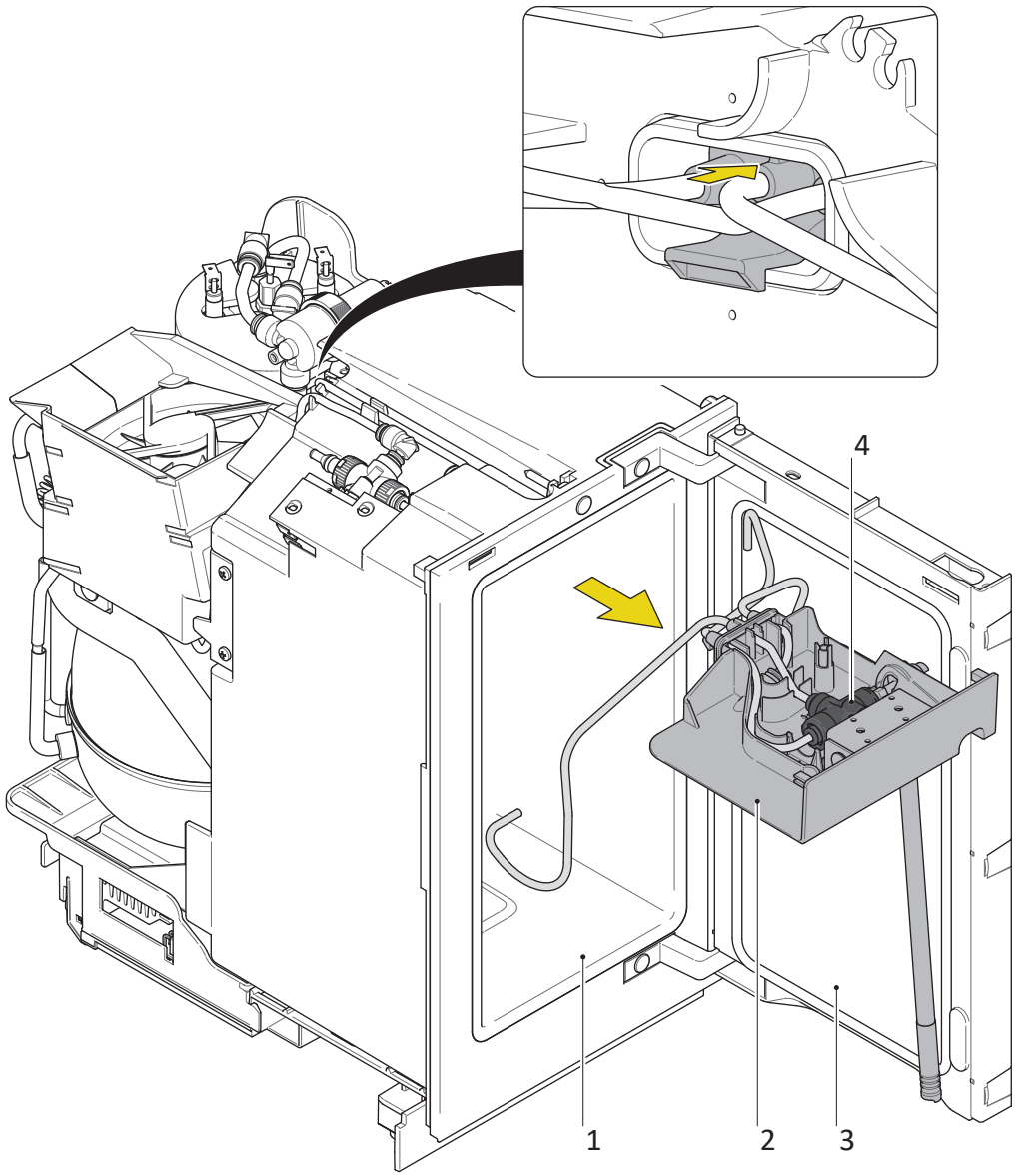


Fig. 126

2. Open the milk module door (3).
3. Release and push in the latch (see detail).
4. Pull the RF-Box (2) out of the module and lead the wires and tubes through the hole in the back of the fridge (1).

Assembly Tip

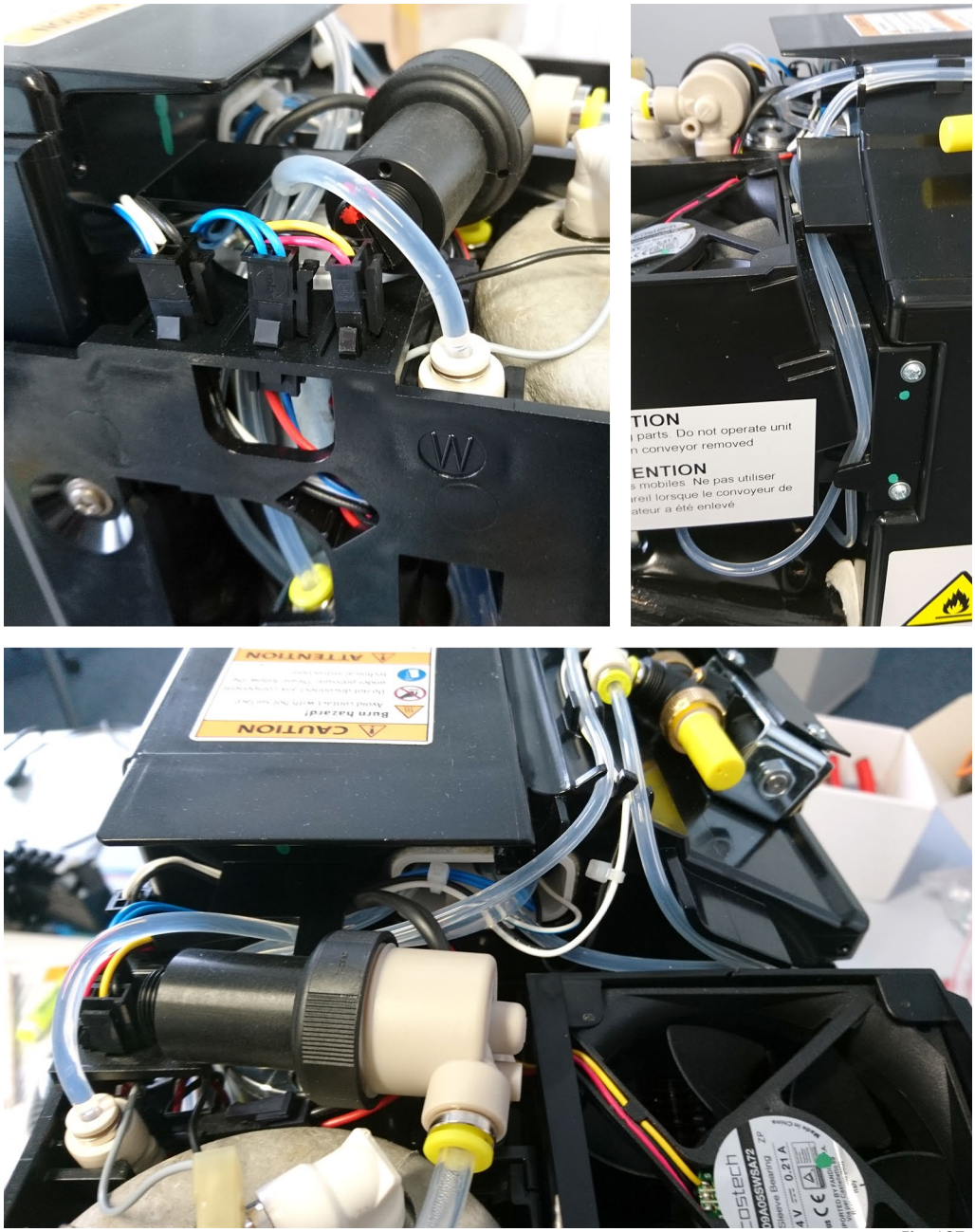


Fig. 127

- Route the tubes and wires according to the images above.

11.13.2 Detach Hydraulic Unit and PCB Assembly

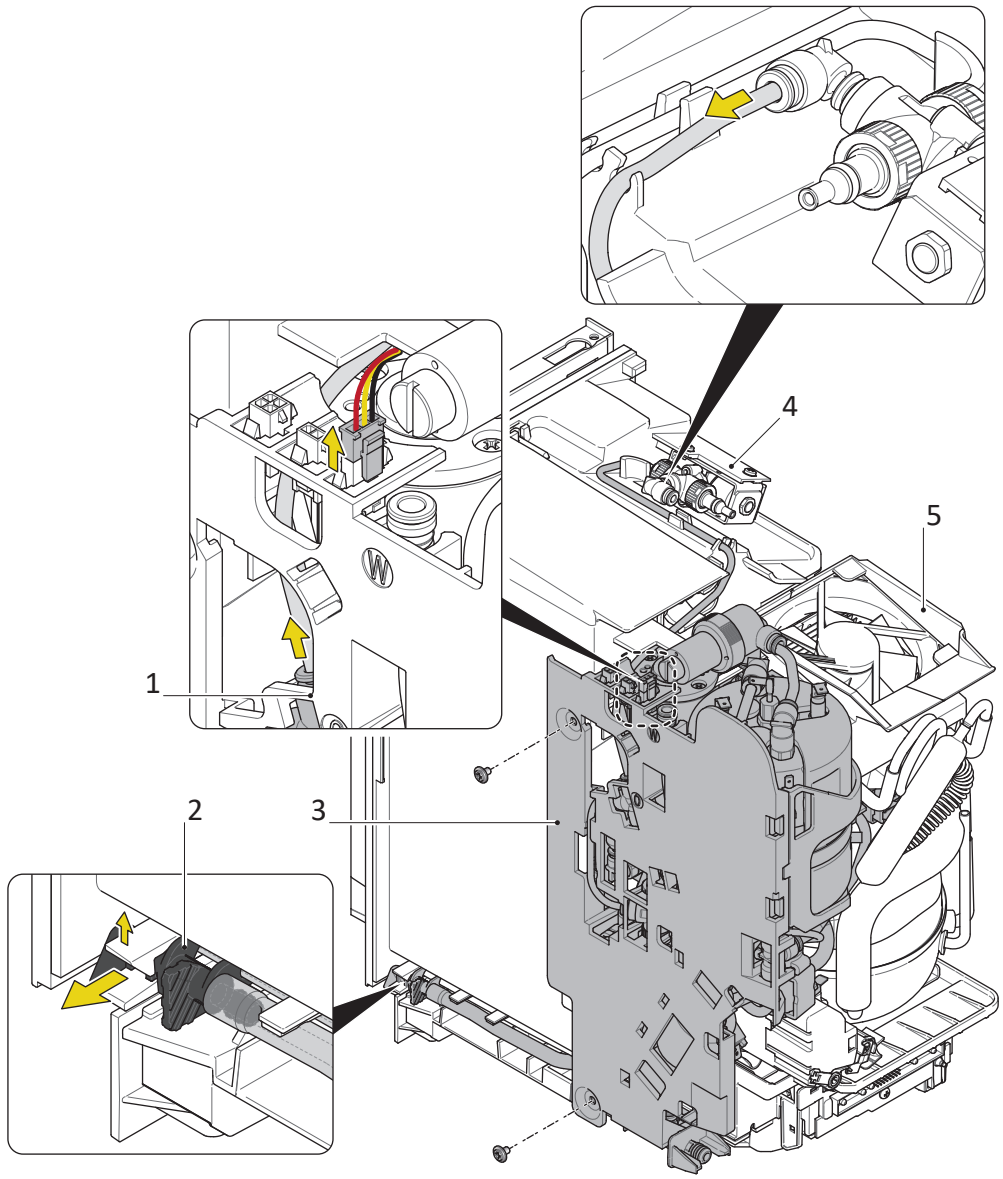


Fig. 128

Take special care to not push or bend any of the copper pipes around the compressor of the fridge!

Prerequisites

- Tubes and electrical connectors from the RF-box are unplugged on the hydraulic unit → p. 157.

Procedure

1. Unplug the electrical connector from the fridge fan (5) on the hydraulic unit (3).
2. Pull out the tube from the Y-connector (1, see detail).
3. Pull out the tube from the outlet valve (4, see detail).
4. Pull out the drain outlet (2, see detail) by hand.
5. Loosen 2 screws (crosshead) from the hydraulic unit (3).

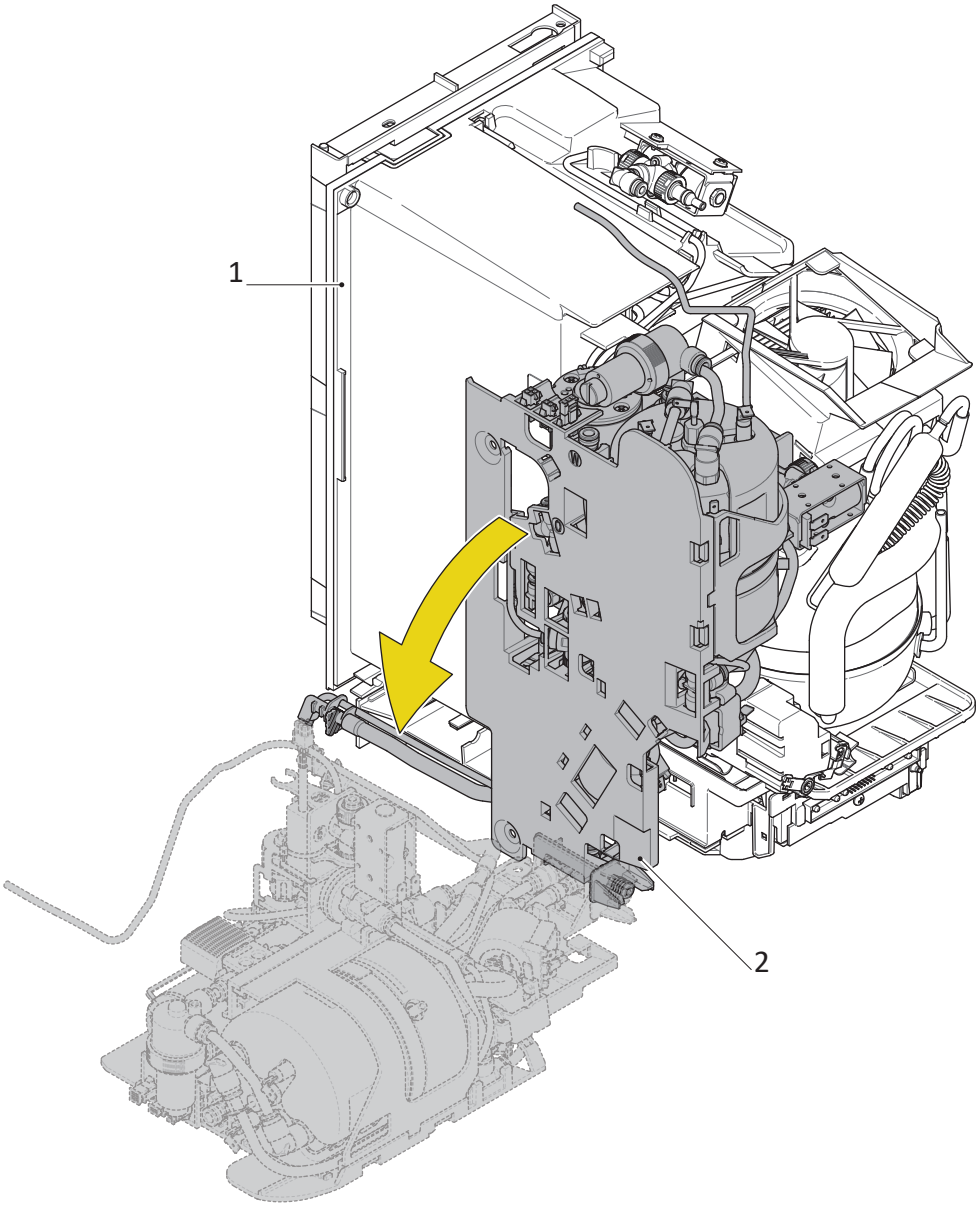


Fig. 129

6. Slightly lift up the hydraulic unit (2) by hand until you can feel it is releasing.
7. Pull the hydraulic unit (2) away from the fridge assembly (1) while releasing stuck wires and tubes if necessary, until it is possible to lay it down besides the fridge assembly (1).

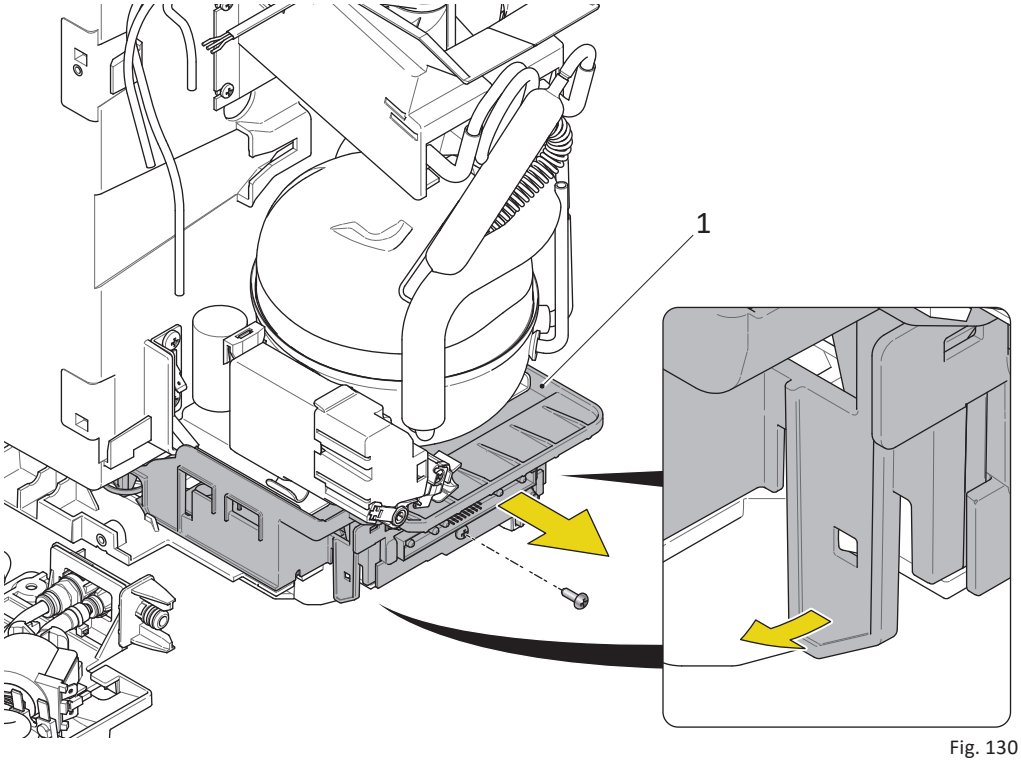


Fig. 130

8. Loosen 1 screw (crosshead) on the PCB assembly (1).
9. Release the latch (see detail) on each side of the PCB assembly (1) by hand.
10. Slide out the PCB assembly (1).

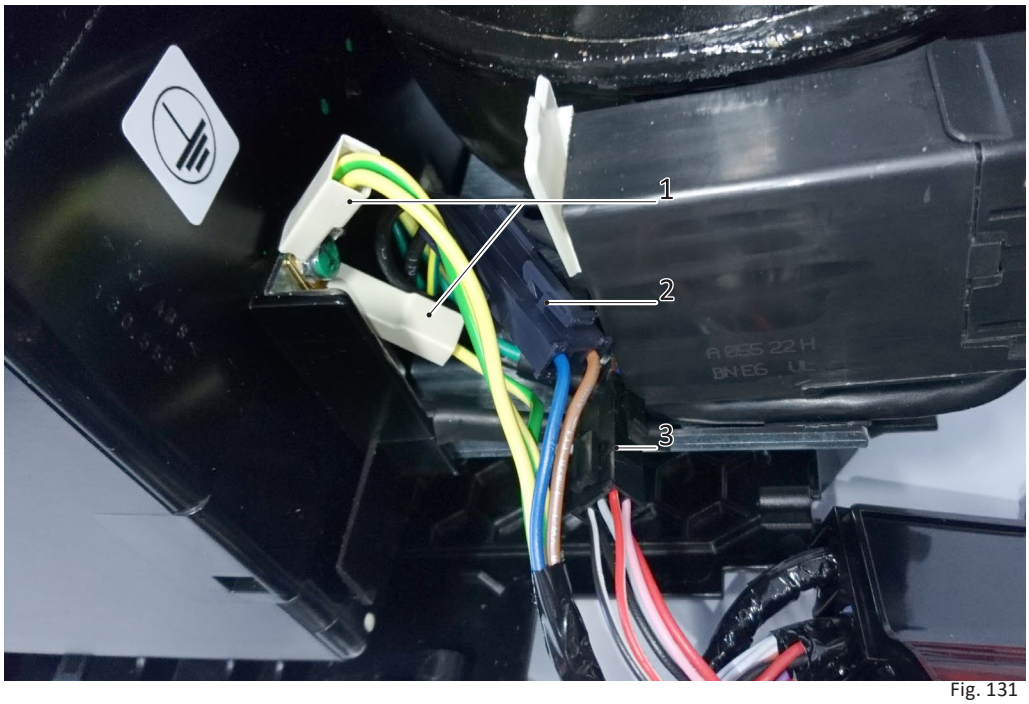


Fig. 131

11. Unplug the connectors to the compressor (2), reed sensor (3) and the ground wires (1).
12. The hydraulic unit and PCB assembly can now be separated from the fridge assembly.

Assembly Tips

- All connectors are keyed and cannot be plugged wrong.
- When reattaching the hydraulic unit, assemble the drain outlet first.
- Ensure that the PCB assembly is properly snapped in and cannot be moved.

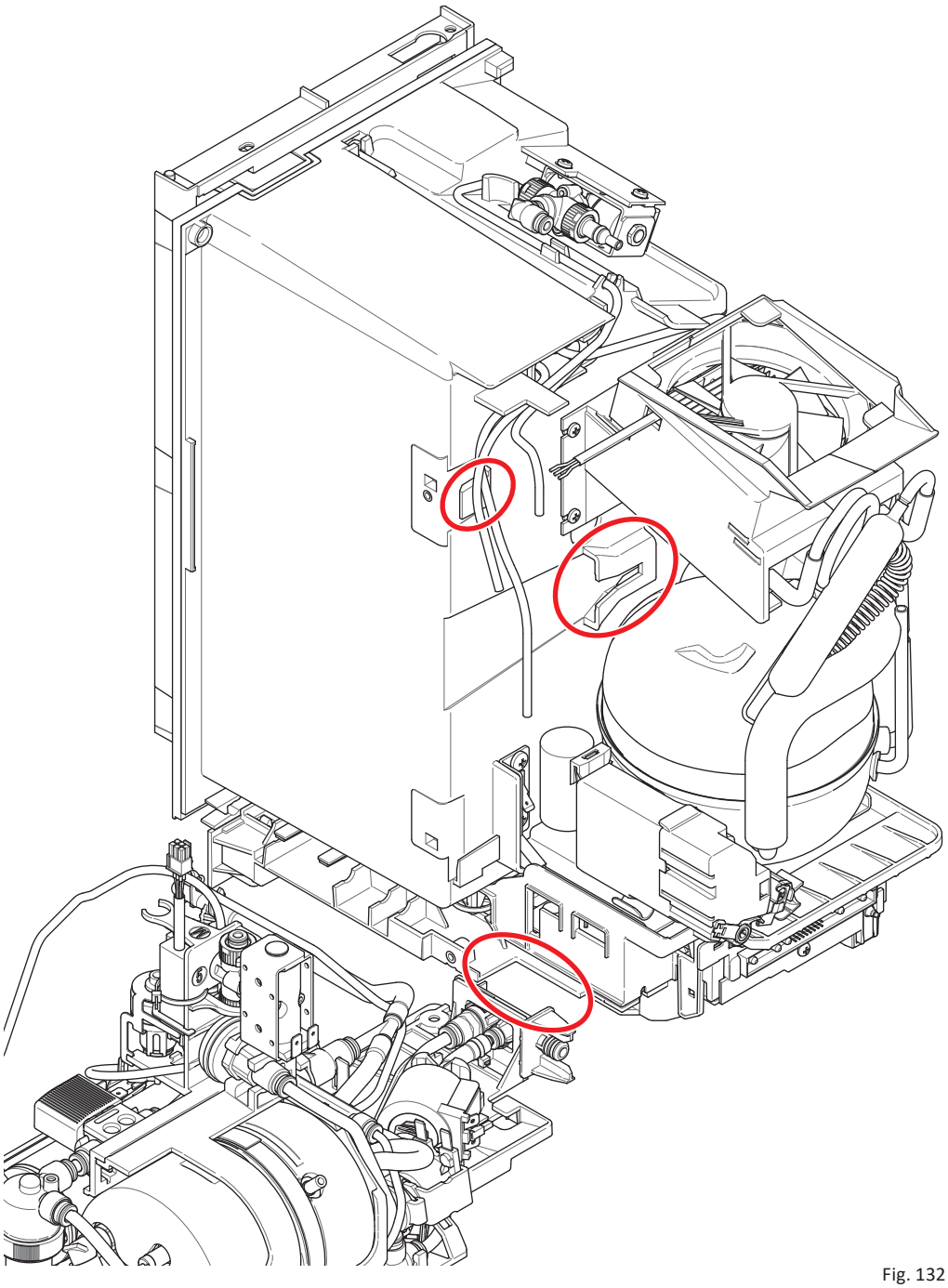


Fig. 132

- Use the guide rails and hooks (circled in red) to properly align the hydraulic unit with the fridge assembly.
- If you are having problems with the alignment of the holes for the two screws, try to screw in the bottom one first.

Take special care to not push or bend any of the copper pipes around the compressor of the fridge!

11.13.3 Replace Pressure Sensor

Removing FEP tubes: → p. 142

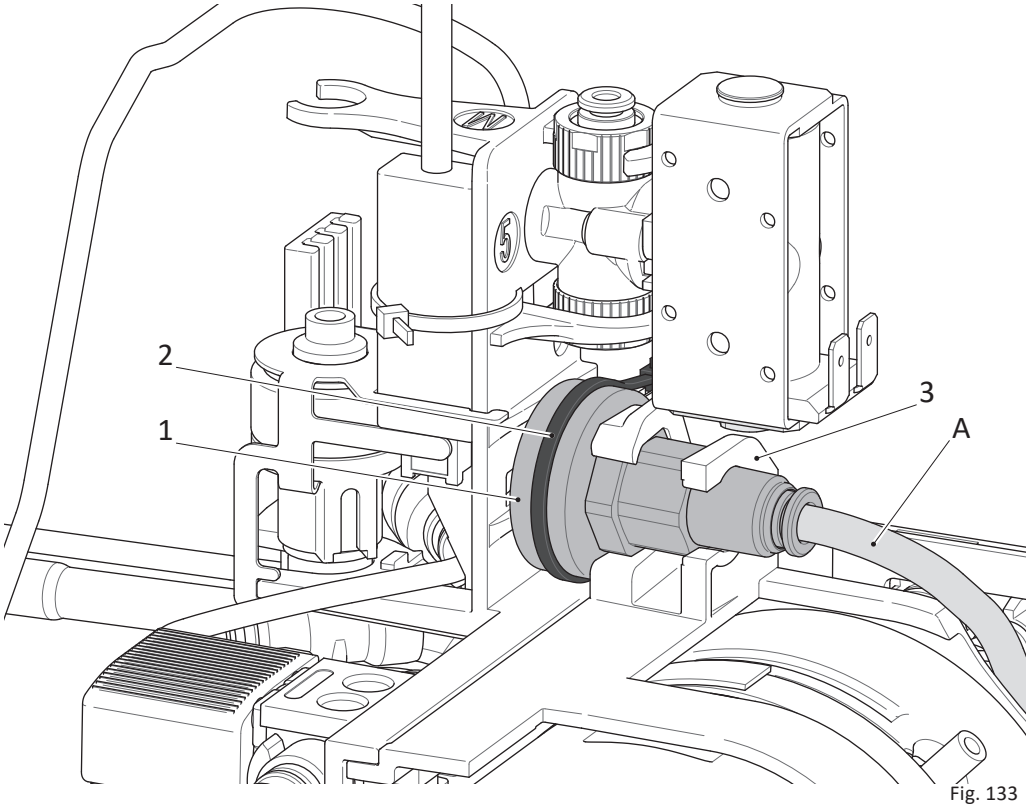


Fig. 133

This component and connected pipes are under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- Hydraulic unit and PCB assembly are detached → p. 160.

Procedure

1. Remove the FEP tube (A) from the pressure sensor (1).
2. Cut the cable tie (2) and unplug the connector of the pressure sensor (1).
3. Slide the pressure sensor (1) out of the holding plate (3).

Assembly tip

- Don’t forget to fix the pressure sensor’s connector with a cable tie.

11.13.4 Replace Air Valve

Removing FEP tubes: → p. 142

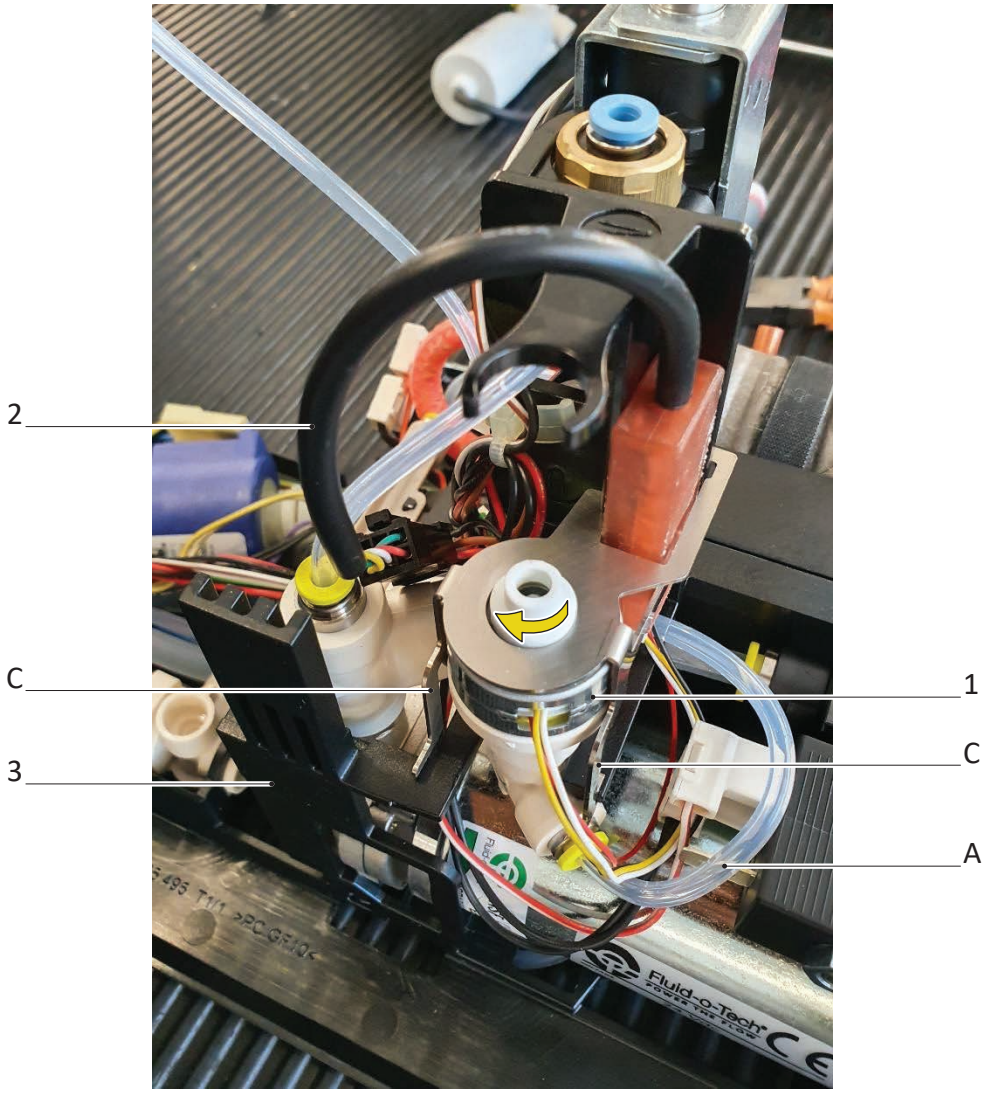


Fig. 134

Prerequisites

- Hydraulic unit and PCB assembly are detached → p. 160.

Procedure

1. Remove the FEP tube (A).
2. Unplug the air valve (1) electronics connector (2).
3. Turn the air valve (1) clockwise to loosen the fixation (C).
4. Slide the air valve (1) out of the holding plate (3).

11.13.5 Replace Steam Pressure Regulator

Removing FEP tubes: → p. 142

Never try to adjust the steam pressure regulator via the adjustment screw!

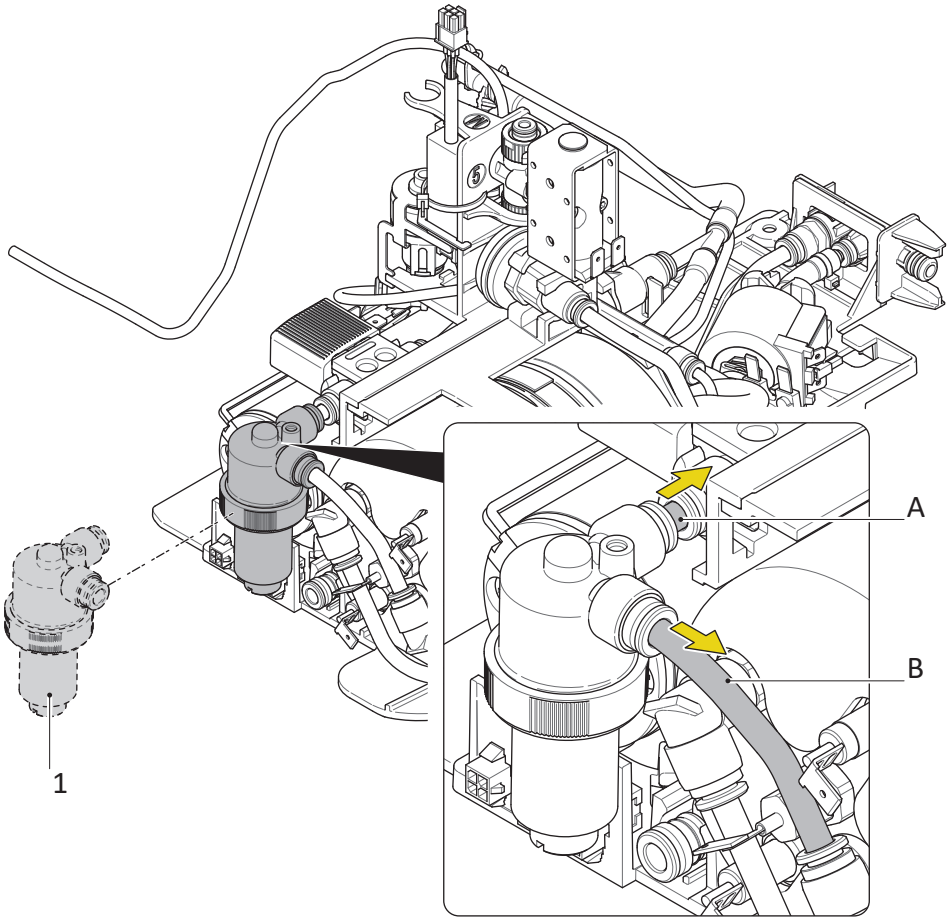


Fig. 135

This component and connected pipes are under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- (Optional) Hydraulic unit and PCB assembly are detached → p. 160.

It is possible to replace the steam pressure regulator without detaching the hydraulic unit first.

Procedure

1. Remove the FEP tubes (A and B) from the steam pressure regulator (1).
2. Remove the steam pressure regulator (1)

11.13.6 Replace Emptying Valve

Removing FEP tubes: → p. 142

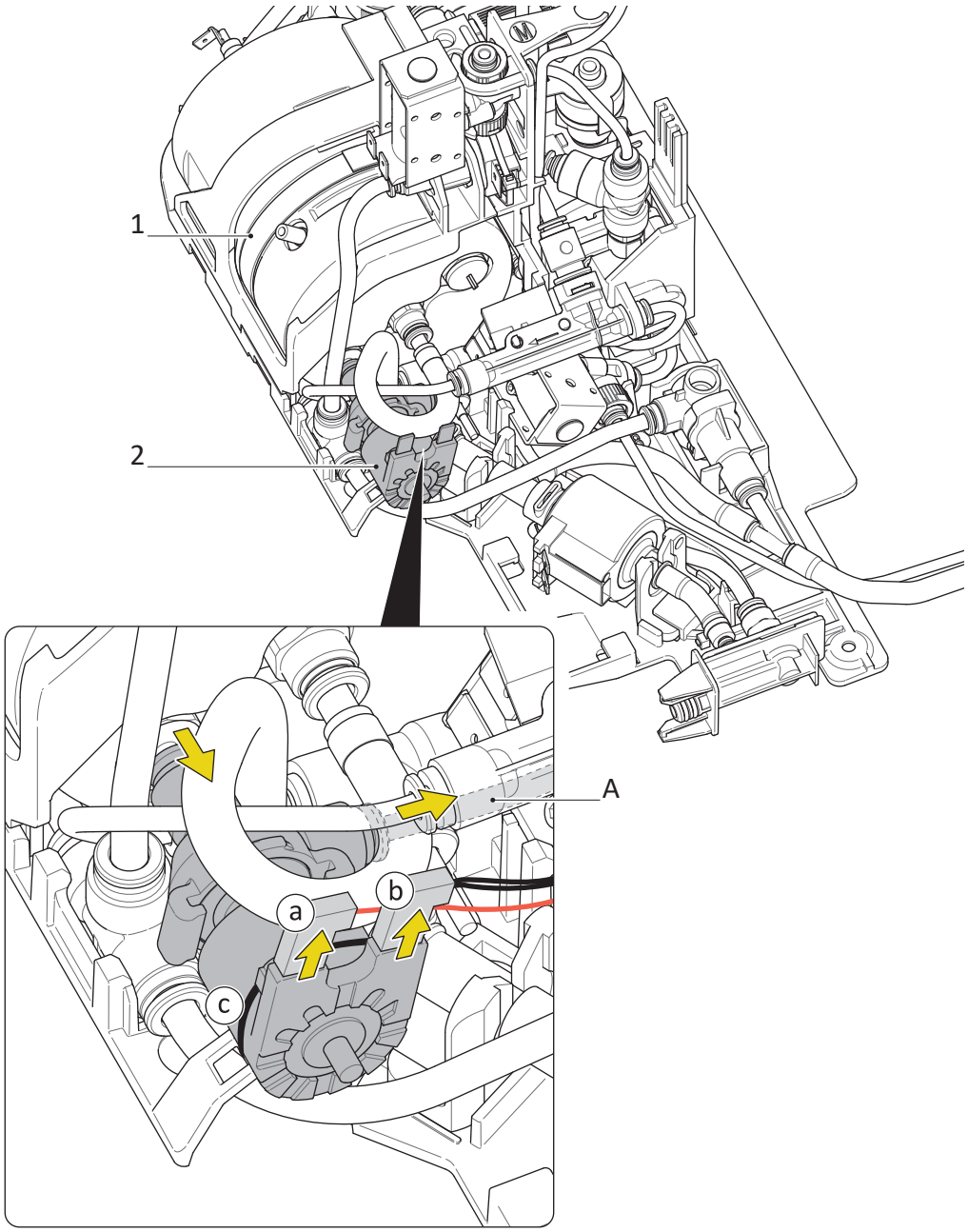


Fig. 136

This component and connected pipes are partially under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- Hydraulic unit and PCB assembly are detached → p. 160.

Procedure

1. Unplug the two electrical connectors (a+b) from the emptying valve (2).
2. Cut the cable tie (c) and remove the emptying valve (2) from the boiler (1) in the same way as FEP tubes.
3. Remove the FEP tube (A) from the emptying valve (2).
4. Remove the emptying valve (2).

11.13.7 Replace NTC Fluid line

Removing FEP tubes: → p. 142

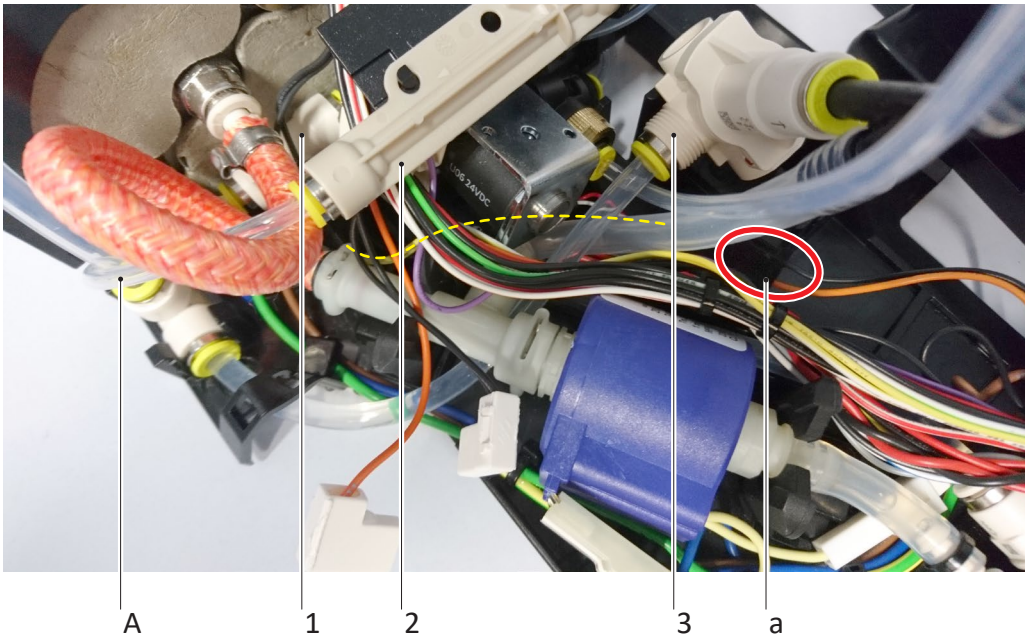


Fig. 137

This component and connected pipes are under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- Emptying valve is removed → p. 167.

Procedure

1. Remove the FEP tube (A) from the steam heating chamber (2).
2. Unclip and pull up the security valve (3) to get access to the NTC connector(a).
3. Unplug the connector (a, circled in red) of the NTC (1).

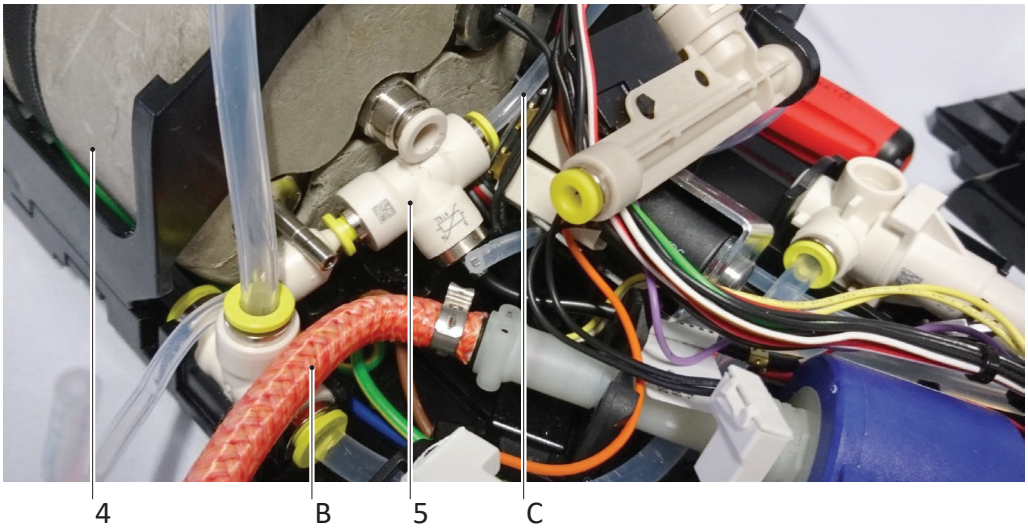


Fig. 138

4. Pull out the tube (B) from the boiler (4) in the same way as FEP tubes.
5. Pull the NTC assembly (5) out far enough to be able to remove the FEP tube (C).
6. Remove the NTC assembly (5) together with its connector (a).

11.13.8 Replace Water Pump

Removing FEP tubes: → p. 142

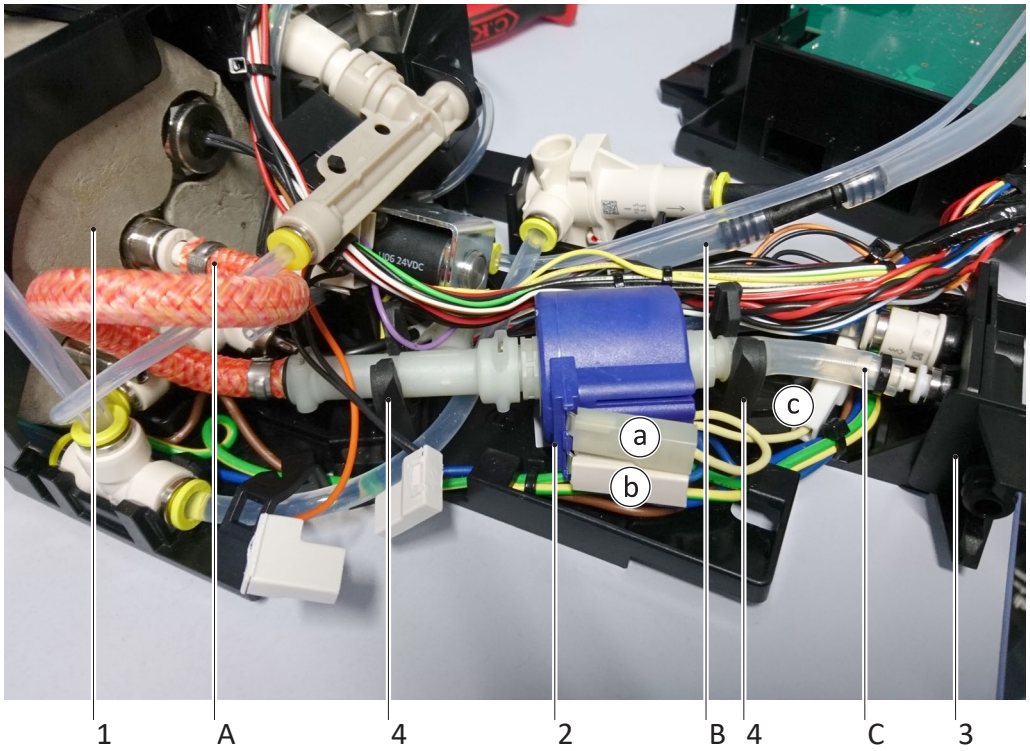


Fig. 139

This component and connected pipes are partially under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- Emptying valve is removed → p. 167.

Procedure

1. Remove the 3 electrical connectors (a+b+c) from the water pump.
2. Remove the tube (A) of the water pump (2) from the boiler (1) in the same way as an FEP tube.
3. Remove the tube (B)
4. Remove tube (C) from the water coupling (3) in the same way as FEP tubes.
5. Pull the water pump (2) out of its support (4).

11.13.9 Replace Steam Heating Chamber

Removing FEP tubes: → p. 142

The cleaning valve (3) is just labelled in this illustration to identify it for preventive maintenance and is not part of the procedure.

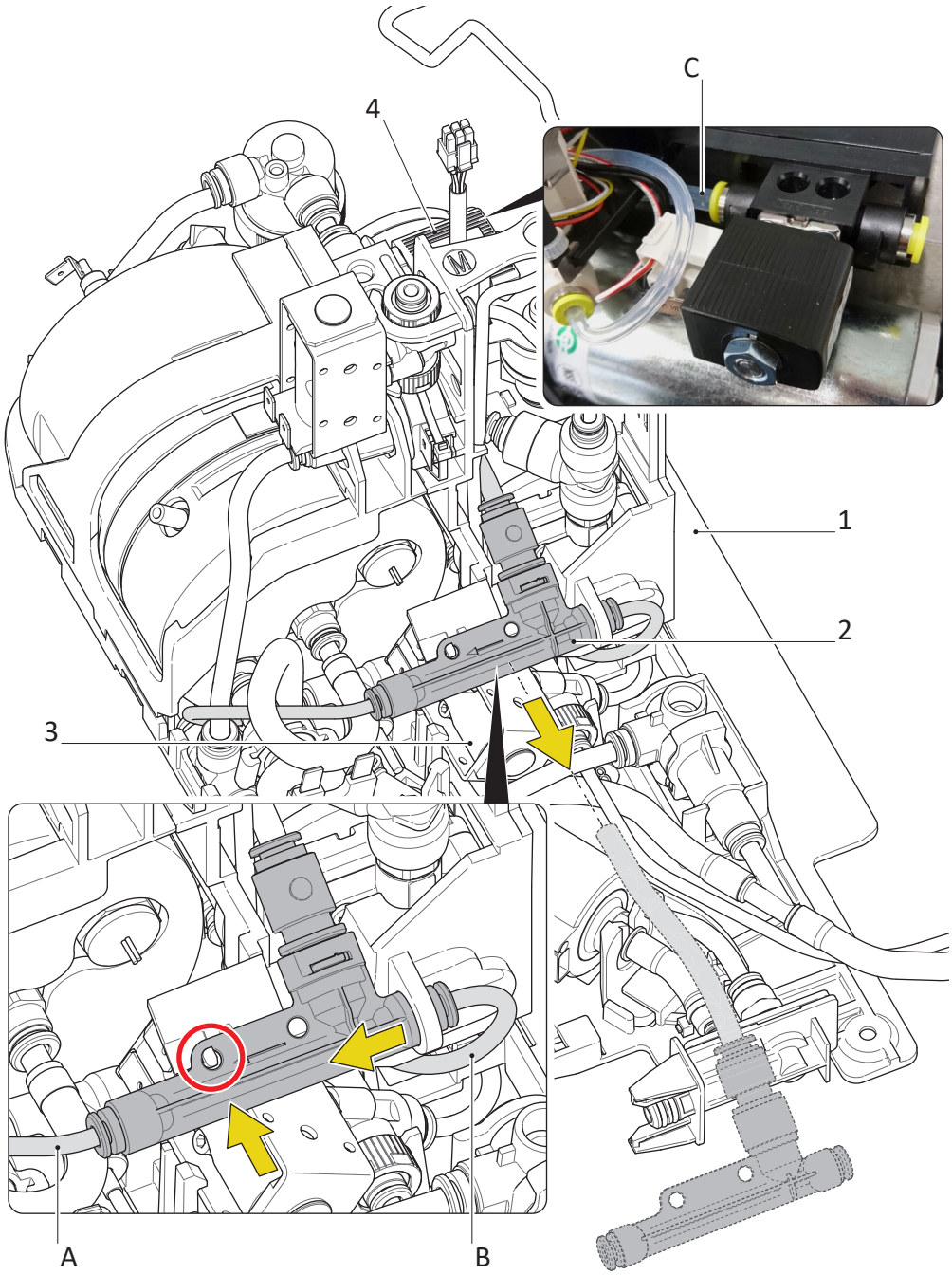


Fig. 140

Prerequisites

- Hydraulic unit and PCB assembly are detached → p. 160.

Procedure

1. Remove the FEP tubes (A+B) on both sides of the steam heating chamber (2).
2. Push the steam heating chamber (2) slightly upwards to release it from the latch (circled in red, see detail).
3. Pull the steam heating chamber (2) out of its support.
4. Remove the FEP tube (C) from the steam valve (4, see photo).
5. Remove the steam heating chamber (2) together with the FEP tube (C).

11.13.10 Replace Steam Valve

Removing FEP tubes: → p. 142

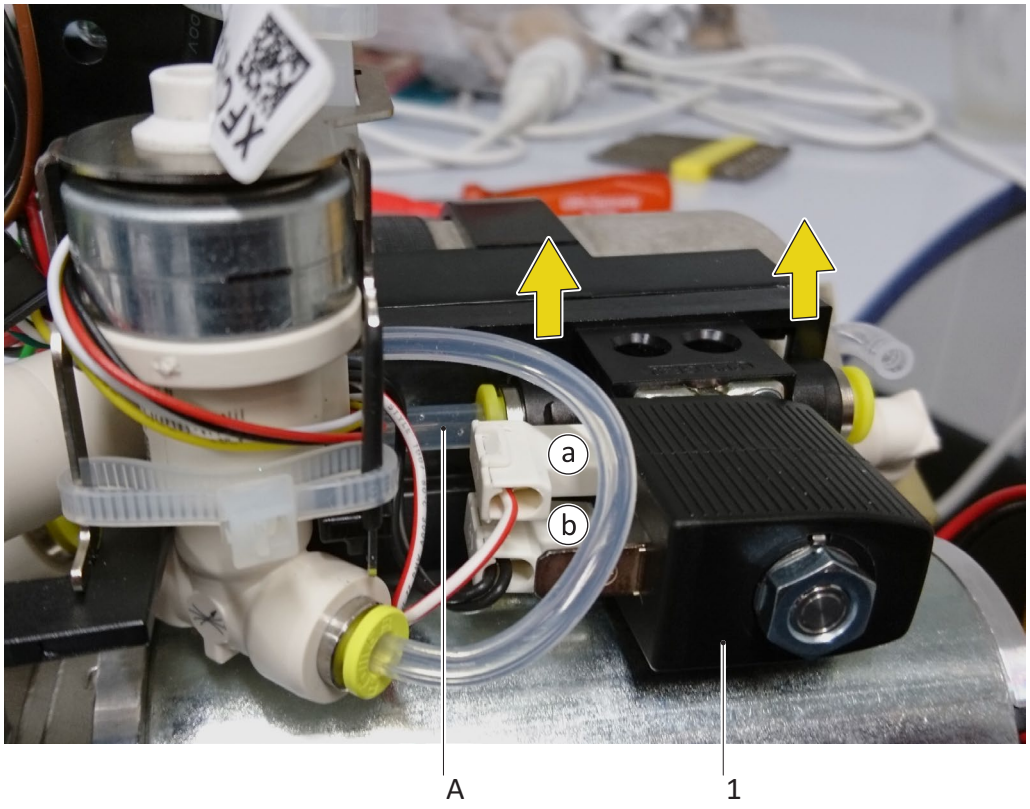


Fig. 141

This component and connected pipes are partially under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- Hydraulic unit and PCB assembly are detached → p. 160.
- Steam pressure regulator is removed → p. 166.

Procedure

1. Unplug the two electrical connectors (a+b) from the steam valve (1).
2. Pull the steam valve (1) out of the two holding clamps.
3. Remove the FEP tube (A) from the steam valve (1).

11.13.11 Remove Hydraulic Components Support

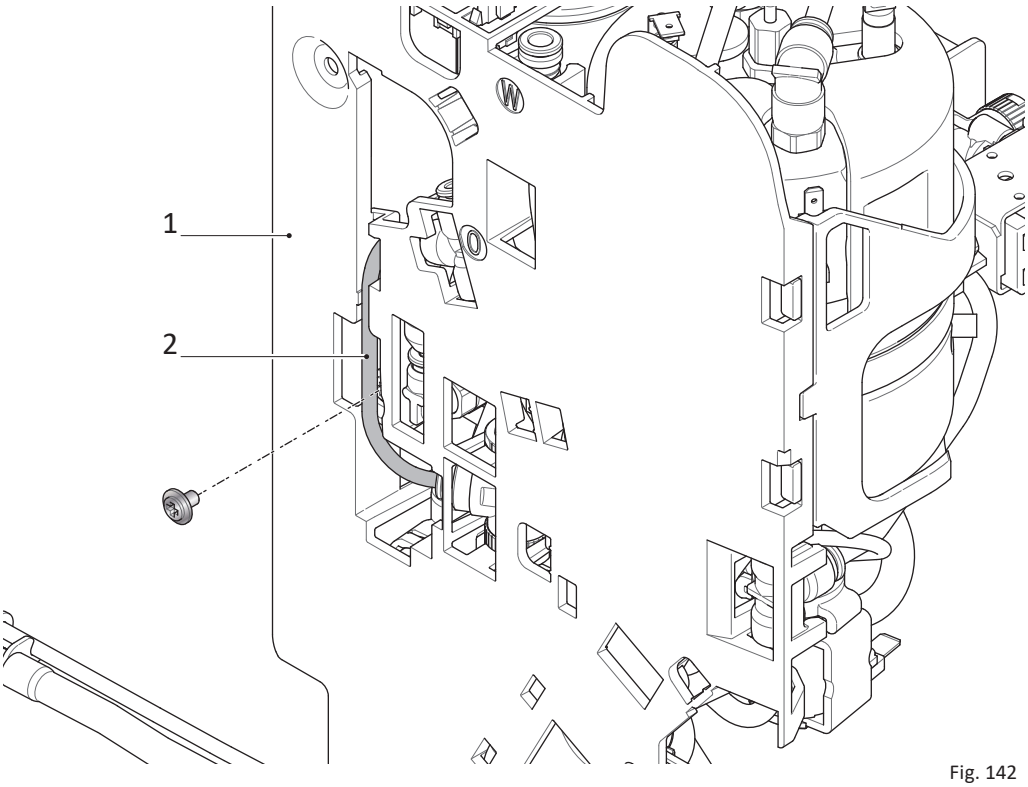


Fig. 142

Connected pipes are under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- Hydraulic unit and PCB assembly are detached → p. 160.
- All connectors are removed from the control board → p. 148.
- Steam pressure regulator is removed → p. 166.
- Tube of the NTC fluid line is removed from the steam chamber → p. 168.

Procedure

1. Push the tube (2) slightly to the side to get access to the screw.
2. Loosen the screw (crosshead) on the back of the hydraulic unit (1).

Removing FEP tubes: → p. 142

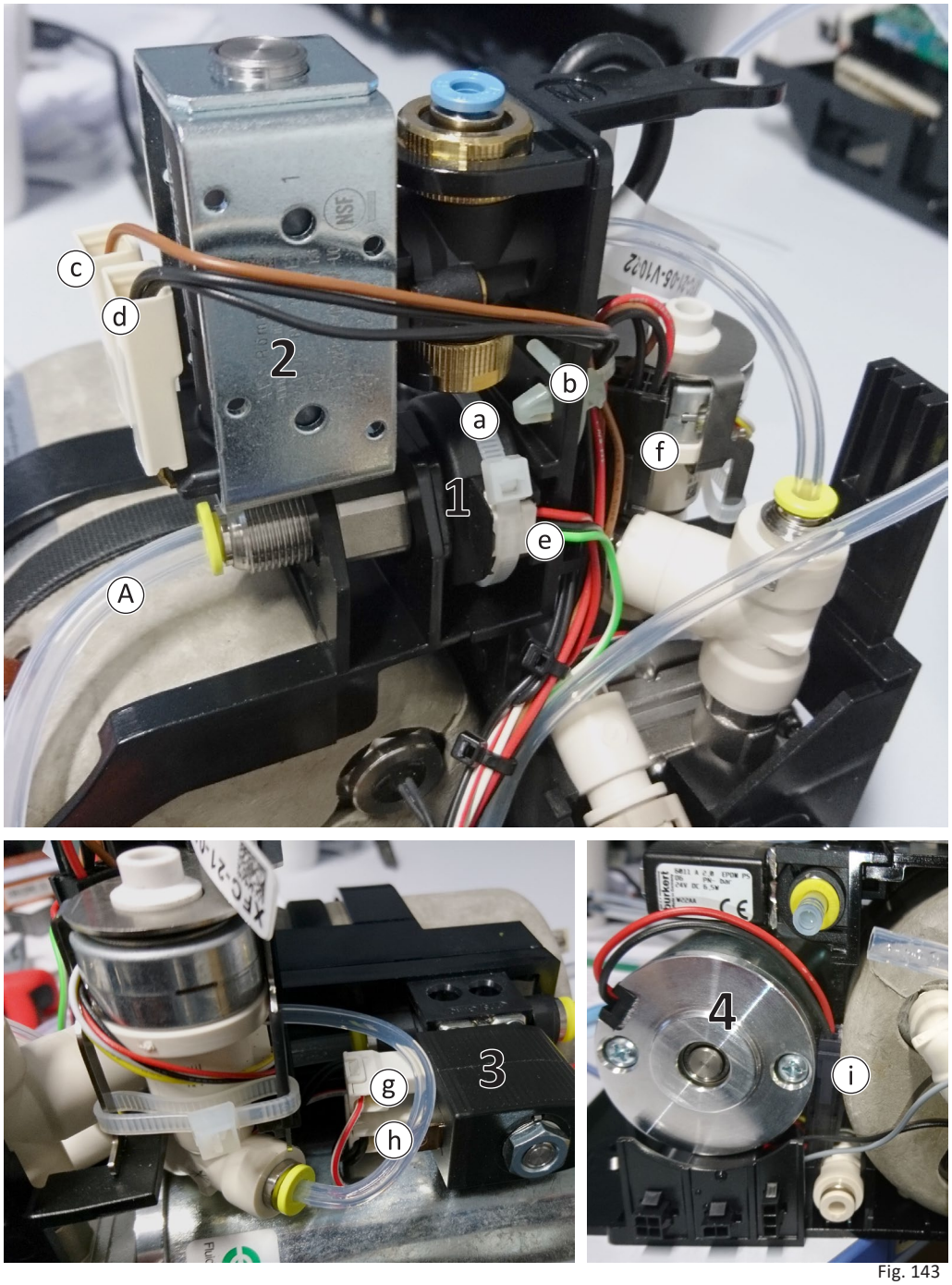


Fig. 143

3. Cut the cable ties (a) with side cutting pliers.
4. Remove the cable tie (b) by pressing it together with pliers and then pull it out of the hydraulic components support, but do not cut it.
5. Remove the tube (A) from the pressure sensor (1).
6. Unplug the two connectors (c+d) from the magnetic valve (2).
7. Unplug the connector (e) from the pressure sensor (1).
8. Unplug the air valve electronics connector (f).
9. Unplug the connectors (g+h) from the steam valve (3).
10. Unplug the connector (i) from the milk pump (4).

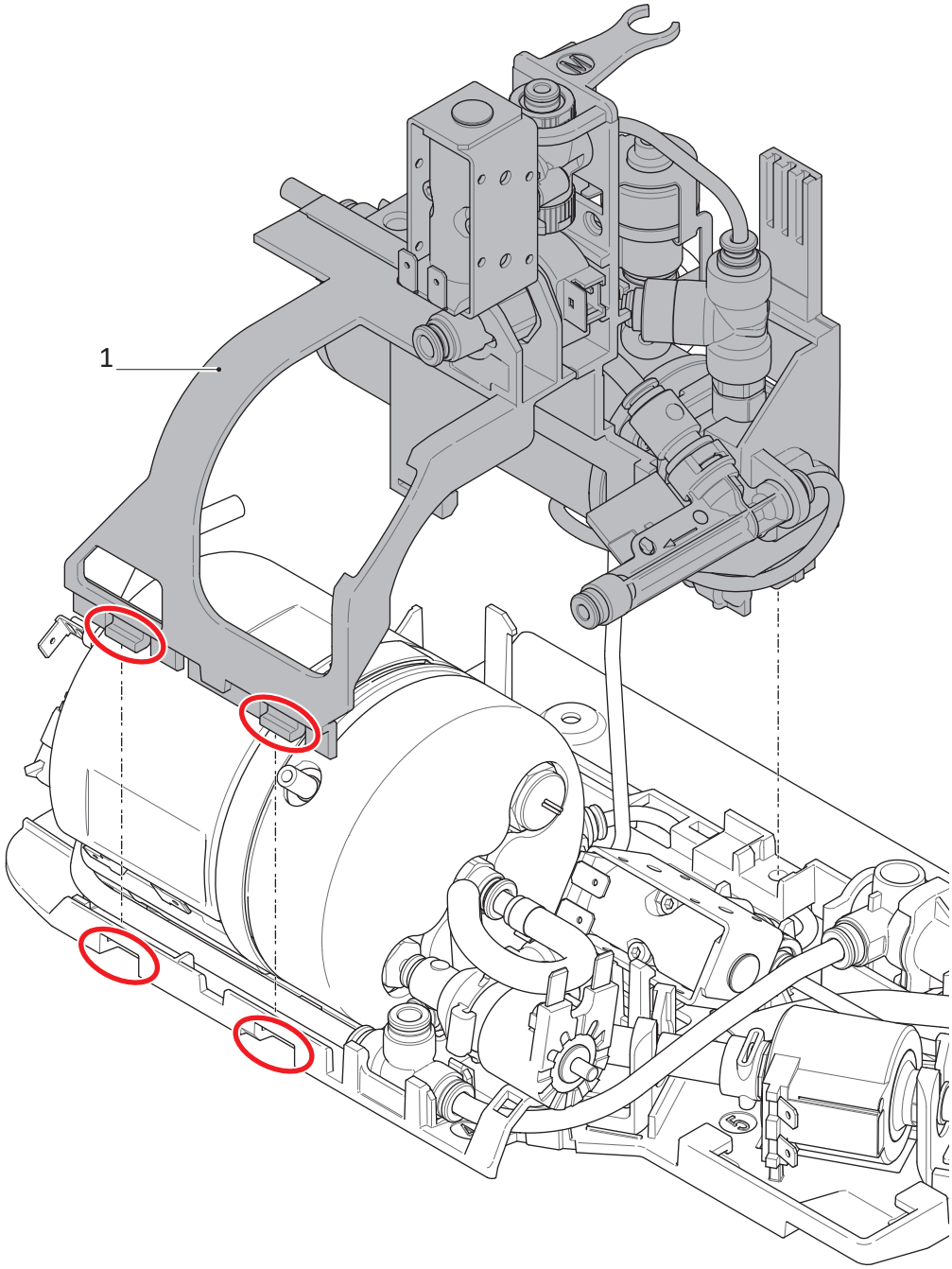


Fig. 144

11. Loosen two latches by hand (circled in red).
12. Lift up and remove the hydraulic components support (1).

11.13.12 Replace Boiler

Removing FEP tubes: → p. 142

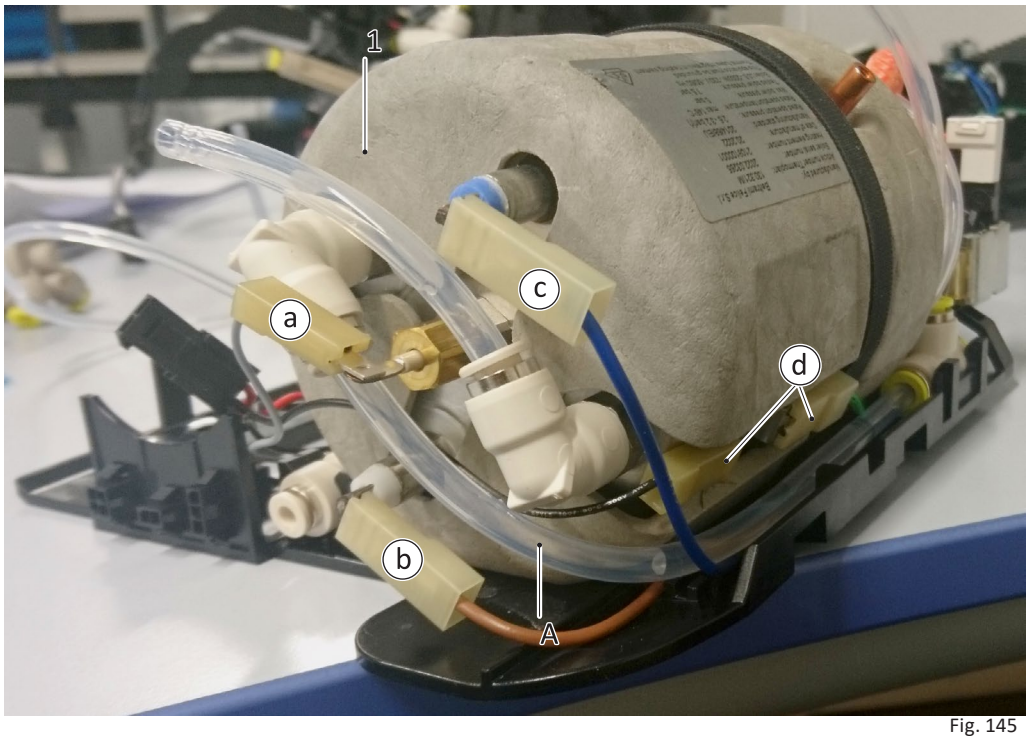


Fig. 145

This component and connected pipes are under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- Hydraulic unit and PCB assembly are detached → p. 160.
- Hydraulic components support is removed → p. 172.

Procedure

1. Remove the following electrical connectors from the boiler (1):
   (a) Level detector (light grey)
   (b) Boiler heating (brown)
   (c) Boiler heating (blue)
   (d) 2 grounding wires (black (top), green-yellow (bottom))
2. Remove the FEP tube (A) from the top of the boiler (1).

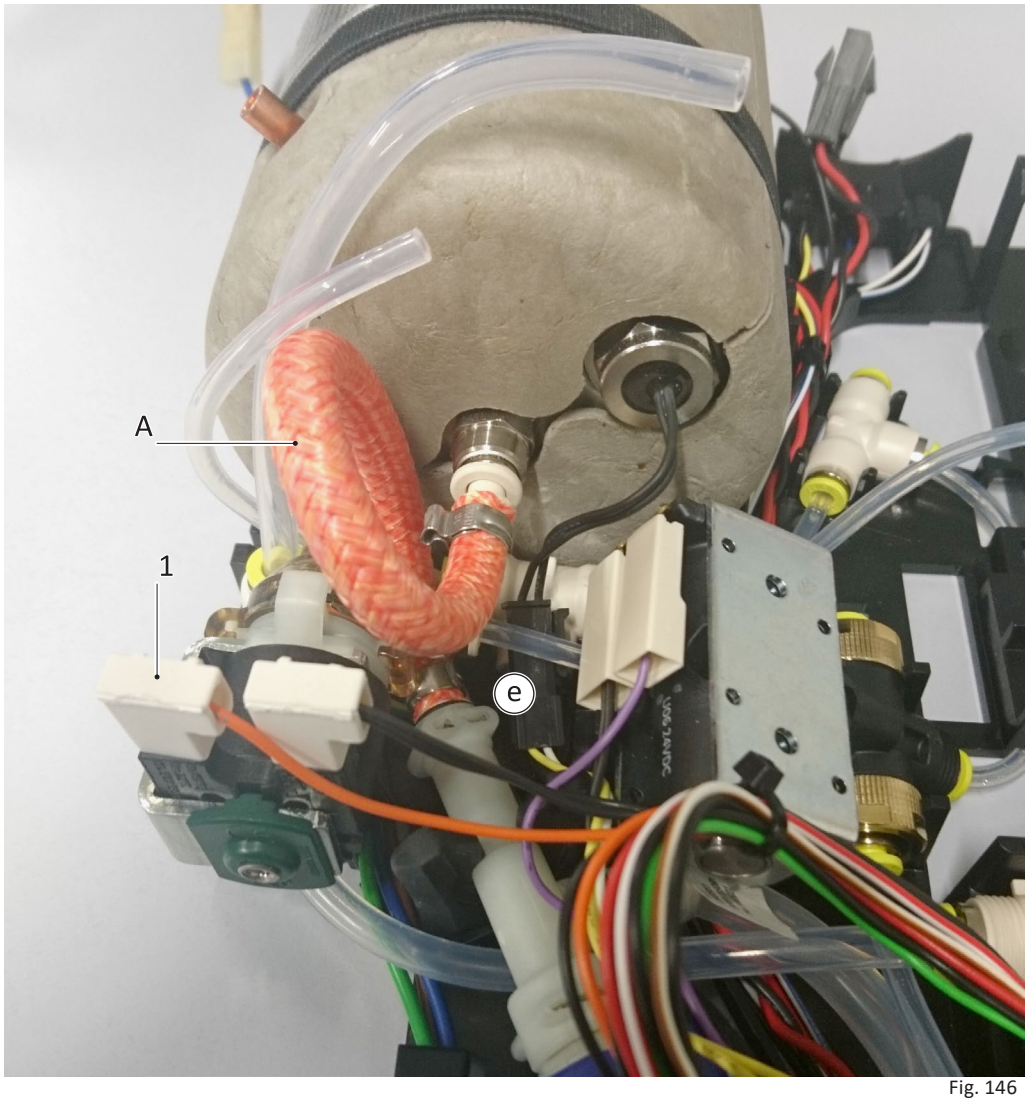


Fig. 146

3. Remove the emptying valve (1) → p. 167.
4. Remove the tube (A) coming from the water pump.
5. Disconnect the boiler NTC connector (e).
6. Remove the boiler from the component support.

11.13.13 Replace Milk Pump

Removing FEP tubes: → p. 142

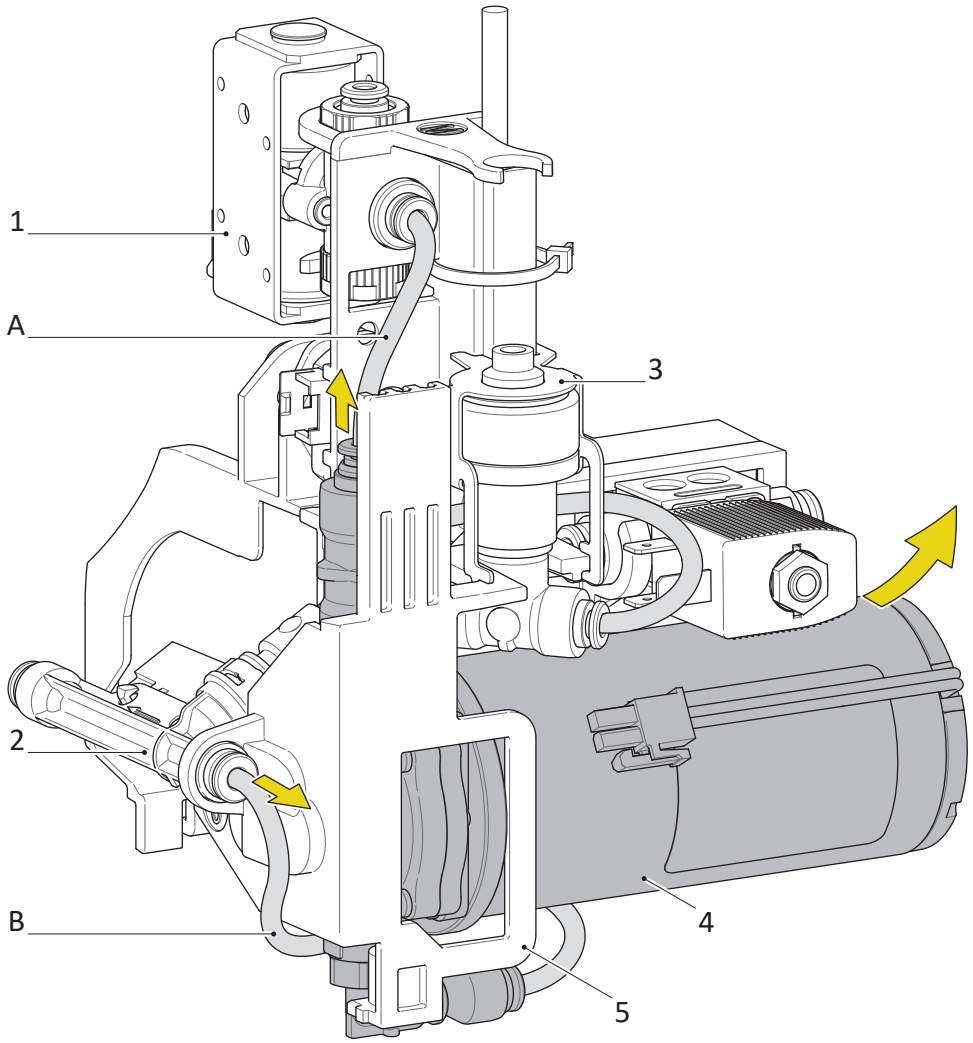


Fig. 147

Prerequisites

- Hydraulic components support is removed → p. 172.

Procedure

1. Remove the FEP tube (A) coming from the suction nozzle valve (1).
2. Remove the FEP tube (B) of the steam heating chamber (2).
3. Remove the FEP tube (C) coming from the air valve (3).
4. Pull the milk pump (4) out of the hydraulic components support (5).

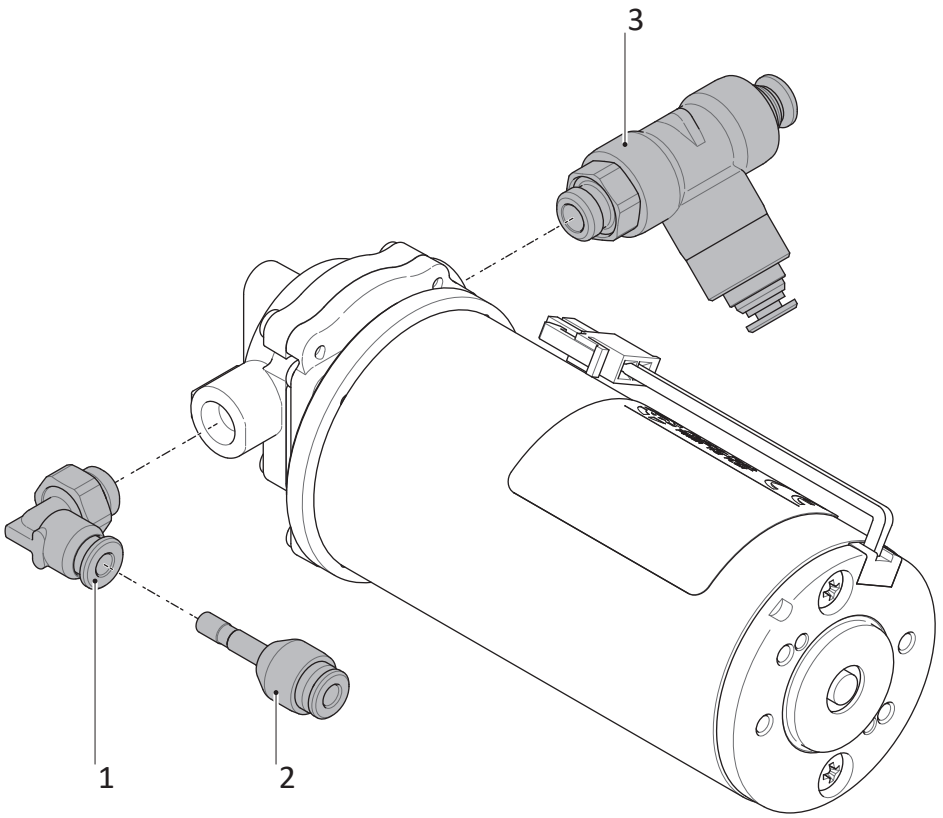


Fig. 148

5. Remove the remaining valves (1+3) using a fork wrench no.13.
6. Remove the valve nozzle (2) from the valve (1) if needed.

If the milk pump is replaced it needs to be calibrated. This can be done via the technician menu after reassembly of the machine → p. 41.

11.14 Milk Module Repairs (Metal Component Support)

11.14.1 Replace RF-Box

Removing FEP tubes: → p. 142

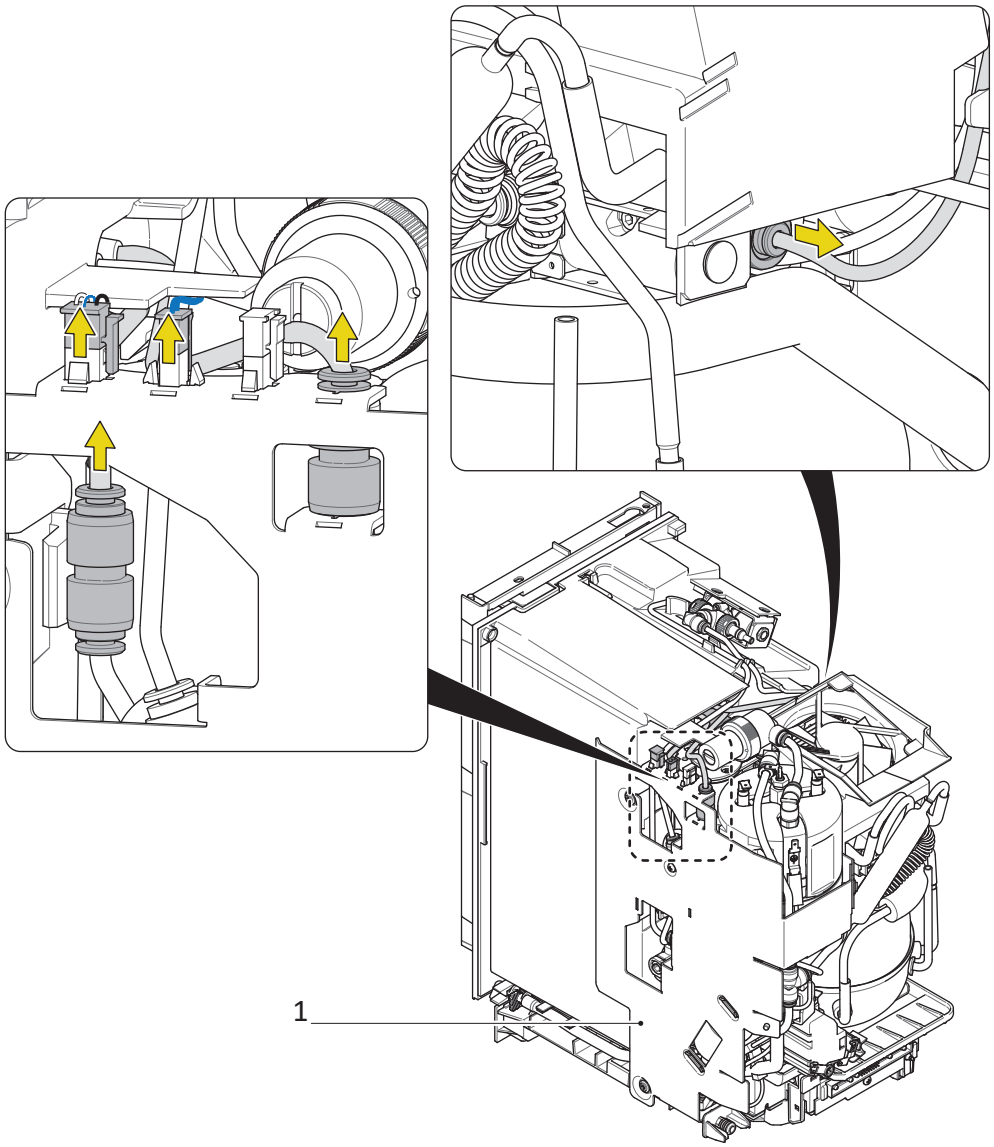


Fig. 149

Prerequisites

- Electrical connectors are removed from the outlet valve → p. 144.

Procedure

1. Unplug all of the electrical connectors and tubes (see details) on the hydraulic unit (1) coming from the RF-Box.

i The source valve (4) is just labelled in this illustration to identify it for preventive maintenance and is not part of the procedure.

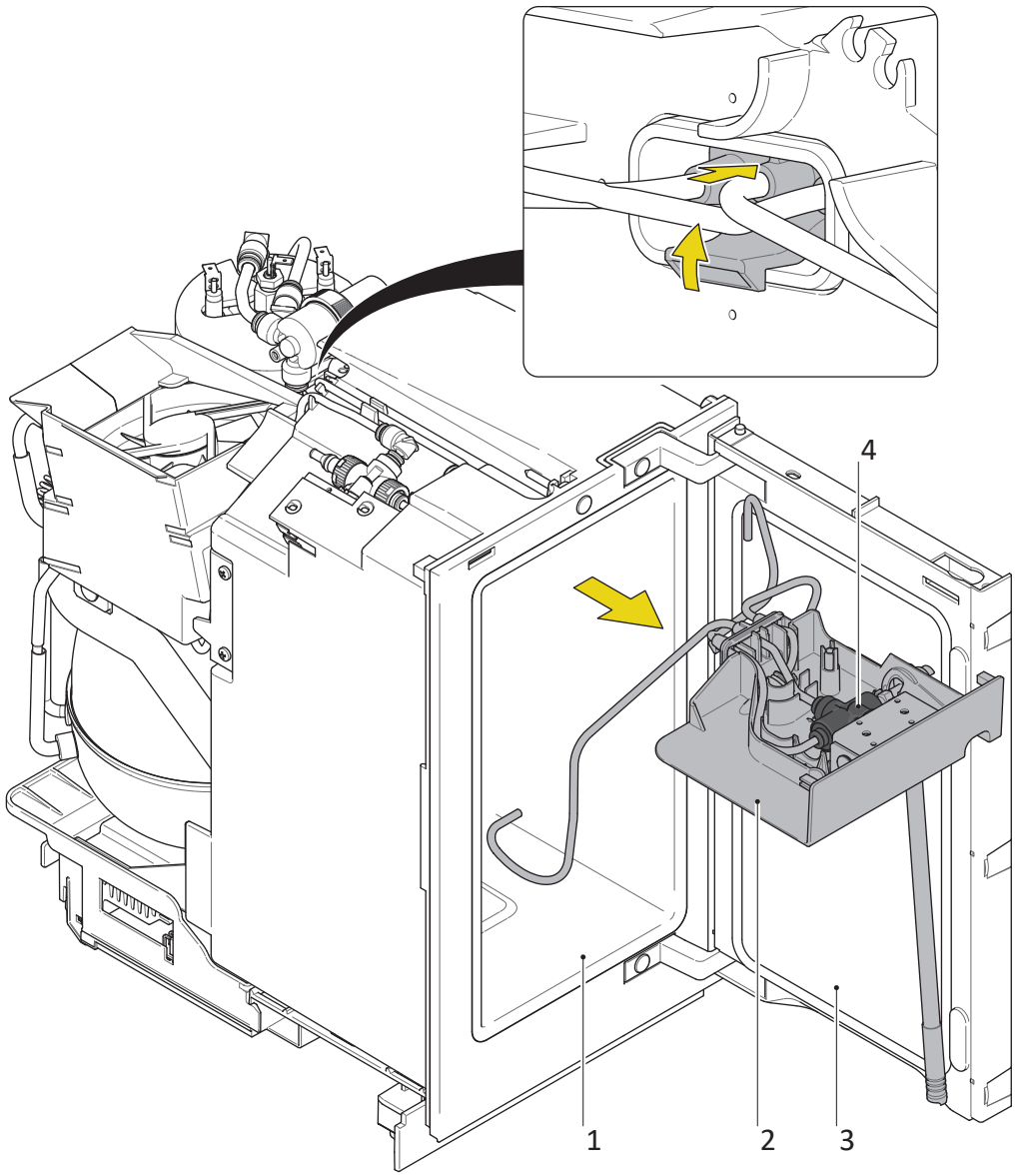


Fig. 150

2. Open the milk module door (3).
3. Release and push in the latch (see detail).
4. Pull the RF-Box (2) out of the module and lead the wires and tubes through the hole in the back of the fridge (1).

Assembly Tip

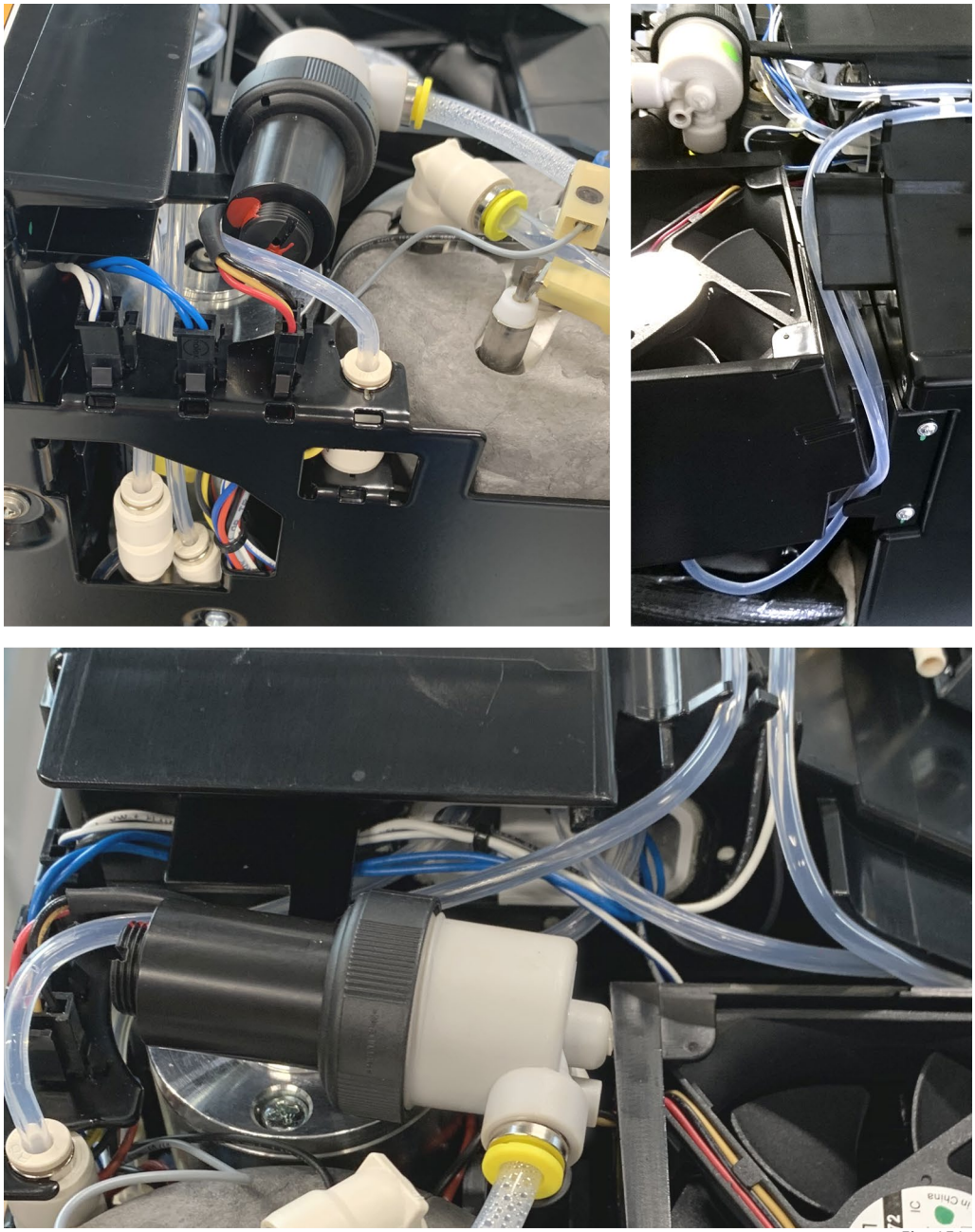


Fig. 151

- Route the tubes and wires according to the images above.

11.14.2 Detach Hydraulic Unit and PCB Assembly

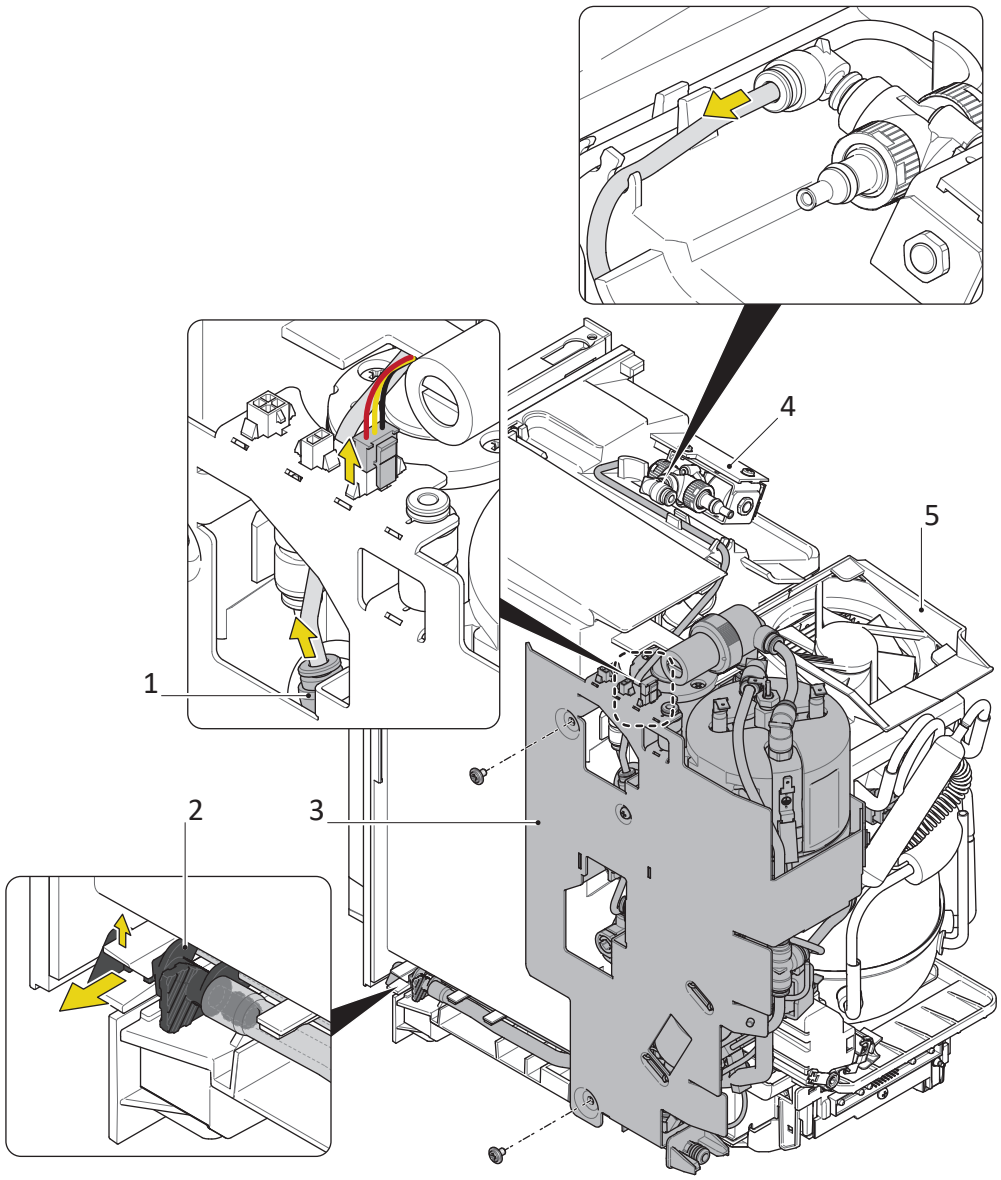


Fig. 152

Take special care to not push or bend any of the copper pipes around the compressor of the fridge!

Prerequisites

- Tubes and electrical connectors from the RF-box are unplugged on the hydraulic unit → p. 179.

Procedure

1. Unplug the electrical connector from the fridge fan (5) on the hydraulic unit (3).
2. Pull out the tube from the Y-connector (1, see detail).
3. Pull out the tube from the outlet valve (4, see detail).
4. Pull out the drain outlet (2, see detail) by hand.
5. Loosen 2 screws (crosshead) from the hydraulic unit (3).

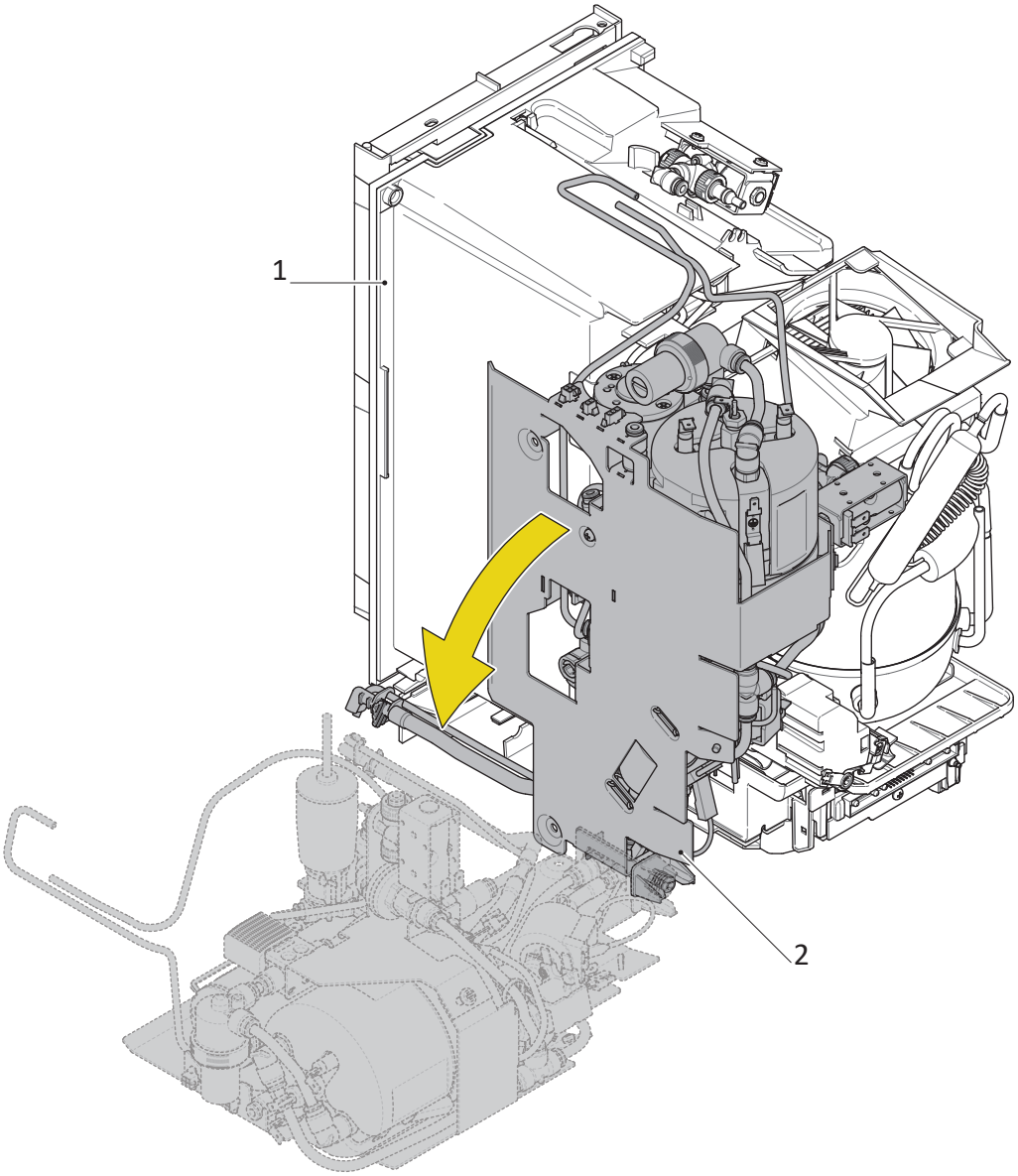


Fig. 153

6. Slightly lift up the hydraulic unit (2) by hand until you can feel it is releasing.
7. Pull the hydraulic unit (2) away from the fridge assembly (1) while releasing stuck wires and tubes if necessary, until it is possible to lay it down besides the fridge assembly (1).

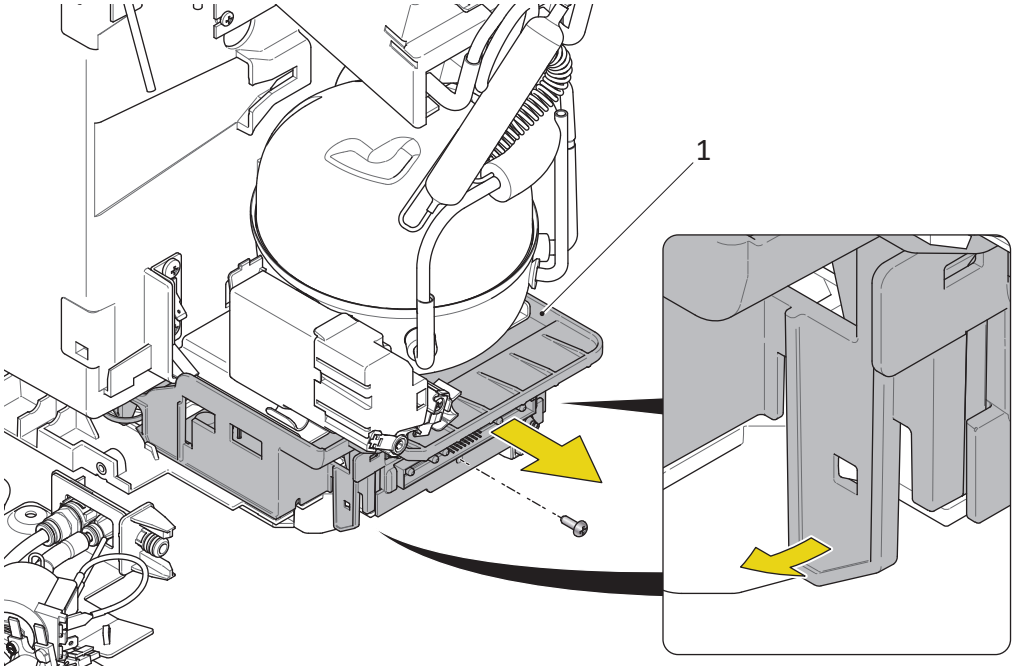


Fig. 154

8. Loosen 1 screw (crosshead) on the PCB assembly (1).
9. Release the latch (see detail) on each side of the PCB assembly (1) by hand.
10. Slide out the PCB assembly (1).

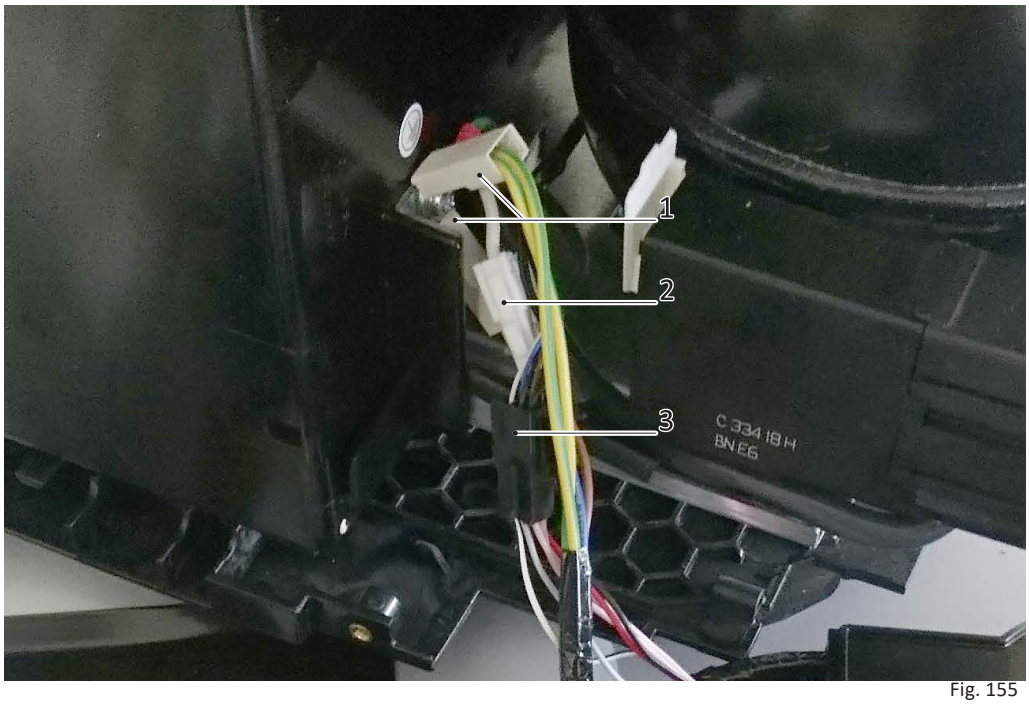


Fig. 155

11. Unplug the connectors to the compressor (2), reed sensor (3) and the ground wires (1).
12. The hydraulic unit and PCB assembly can now be separated from the fridge assembly.

Assembly Tips

- All connectors are keyed and cannot be plugged wrong.
- When reattaching the hydraulic unit, assemble the drain outlet first.
- Ensure that the PCB assembly is properly snapped in and cannot be moved.

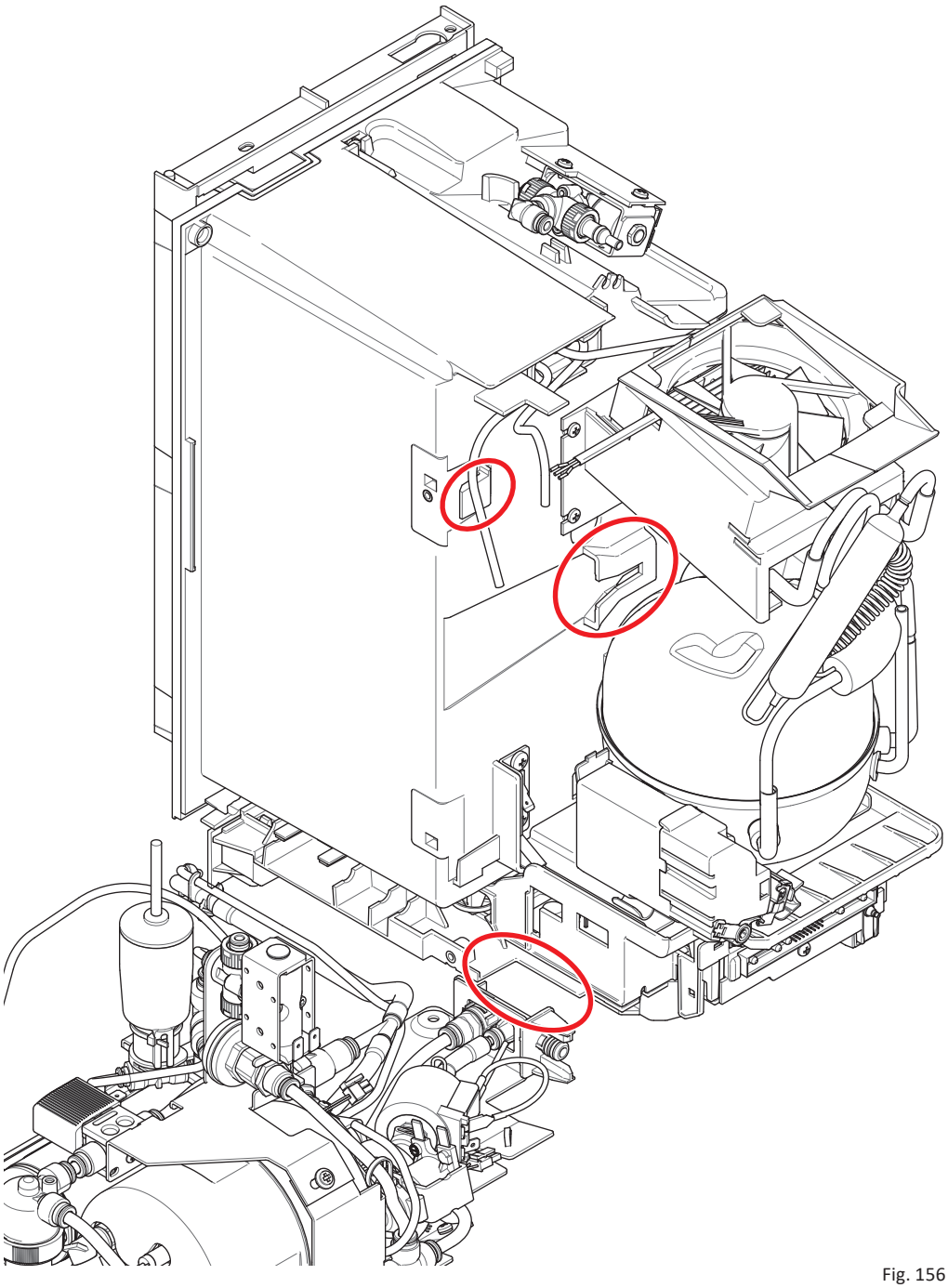


Fig. 156

- Use the guide rails and hooks (circled in red) to properly align the hydraulic unit with the fridge assembly.
- If you are having problems with the alignment of the holes for the two screws, try to screw in the bottom one first.

Take special care to not push or bend any of the copper pipes around the compressor of the fridge!

11.14.3 Replace Pressure Sensor

Removing FEP tubes: → p. 142

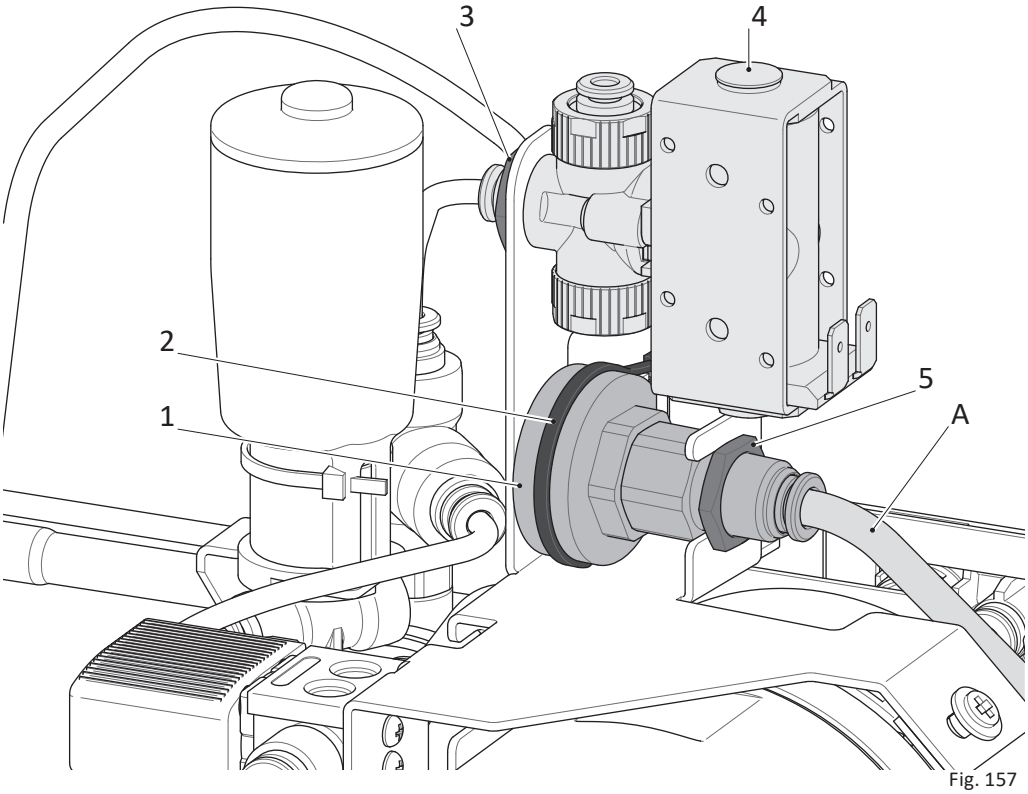


Fig. 157

This component and connected pipes are under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

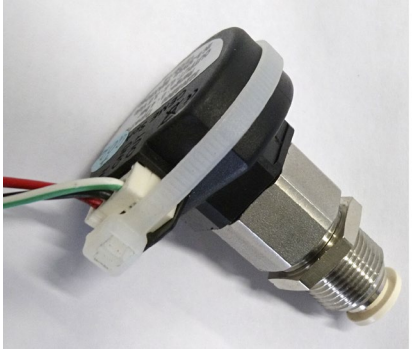
- Hydraulic unit and PCB assembly are detached → p. 182.

Procedure

1. Remove the FEP tube (A) from the pressure sensor (2).
2. Loosen 1 screw nut (3) from the suction nozzle valve (4) so you can push it to the side and get easy access to the screw nut (5) of the pressure sensor (1).
3. Loosen the screw nut (5) of the pressure sensor (1) and slide the pressure sensor (1) out of the holding plate.
4. Cut the cable tie (2) and unplug the connector of the pressure sensor (1).

Assembly tip

- Don’t forget to fix the pressure sensor’s connector with a cable tie.



11.14.4 Replace Air Valve

Removing FEP tubes: → p. 142

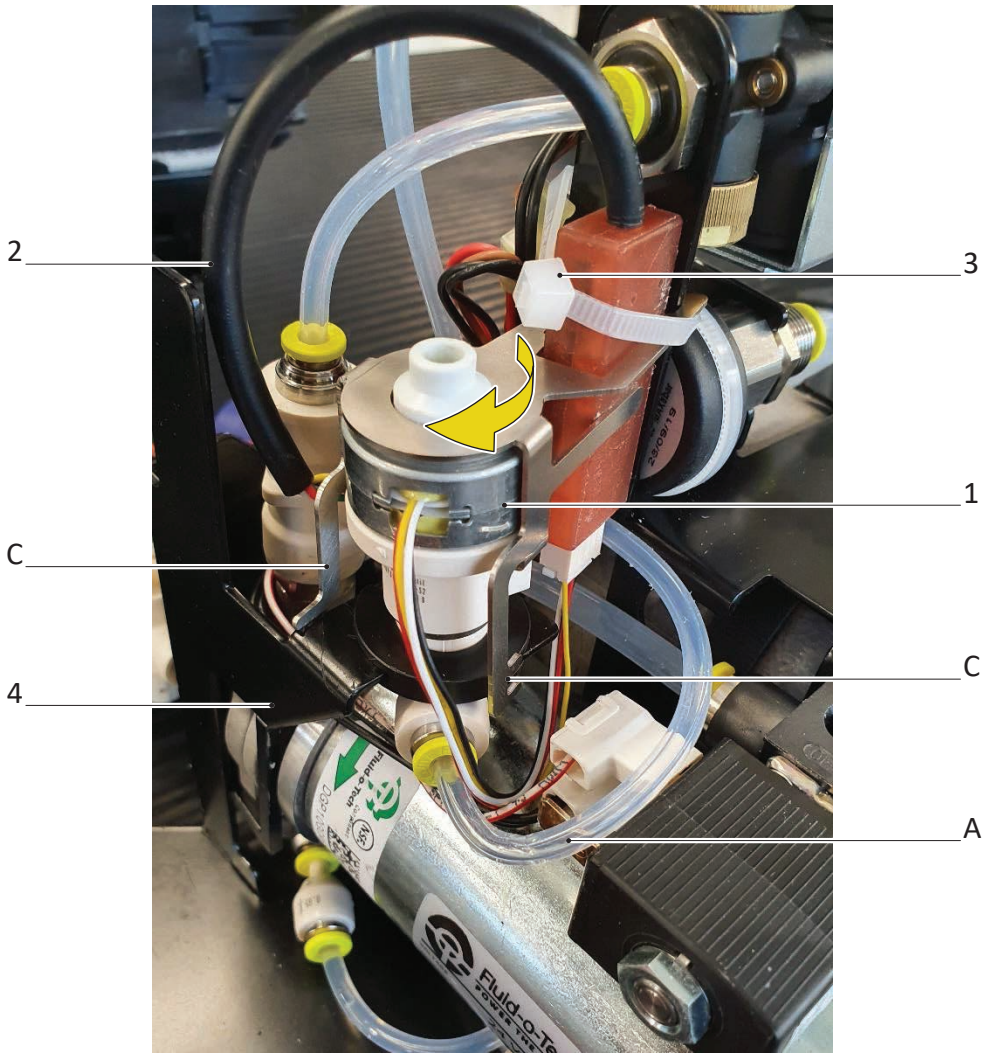


Fig. 158

Prerequisites

- Hydraulic unit and PCB assembly are detached → p. 182.

Procedure

1. Remove the FEP tube (A).
2. Unplug the air valve (1) electronics connector (2).
3. Remove the cable tie (3)
4. Turn the air valve (1) clockwise to loosen the fixation (C).
5. Slide the air valve (1) out of the holding plate (4).

11.14.5 Replace Steam Pressure Regulator

Removing FEP tubes: → p. 142

Never try to adjust the steam pressure regulator via the adjustment screw!

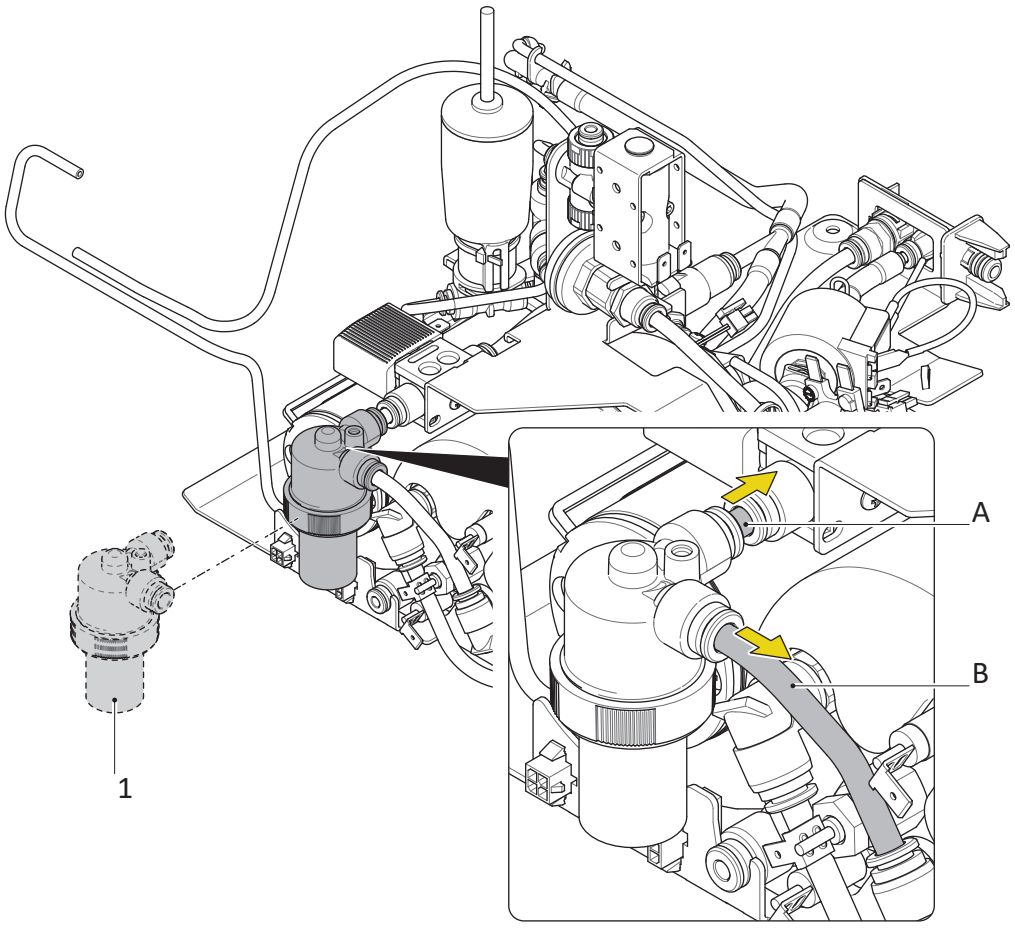


Fig. 159

This component and connected pipes are under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- (Optional) Hydraulic unit and PCB assembly are detached → p. 182.

It is possible to replace the steam pressure regulator without detaching the hydraulic unit first.

Procedure

1. Remove the FEP tubes (A and B) from the steam pressure regulator (1).
2. Remove the steam pressure regulator (1)

11.14.6 Replace Emptying Valve

Removing FEP tubes: → p. 142

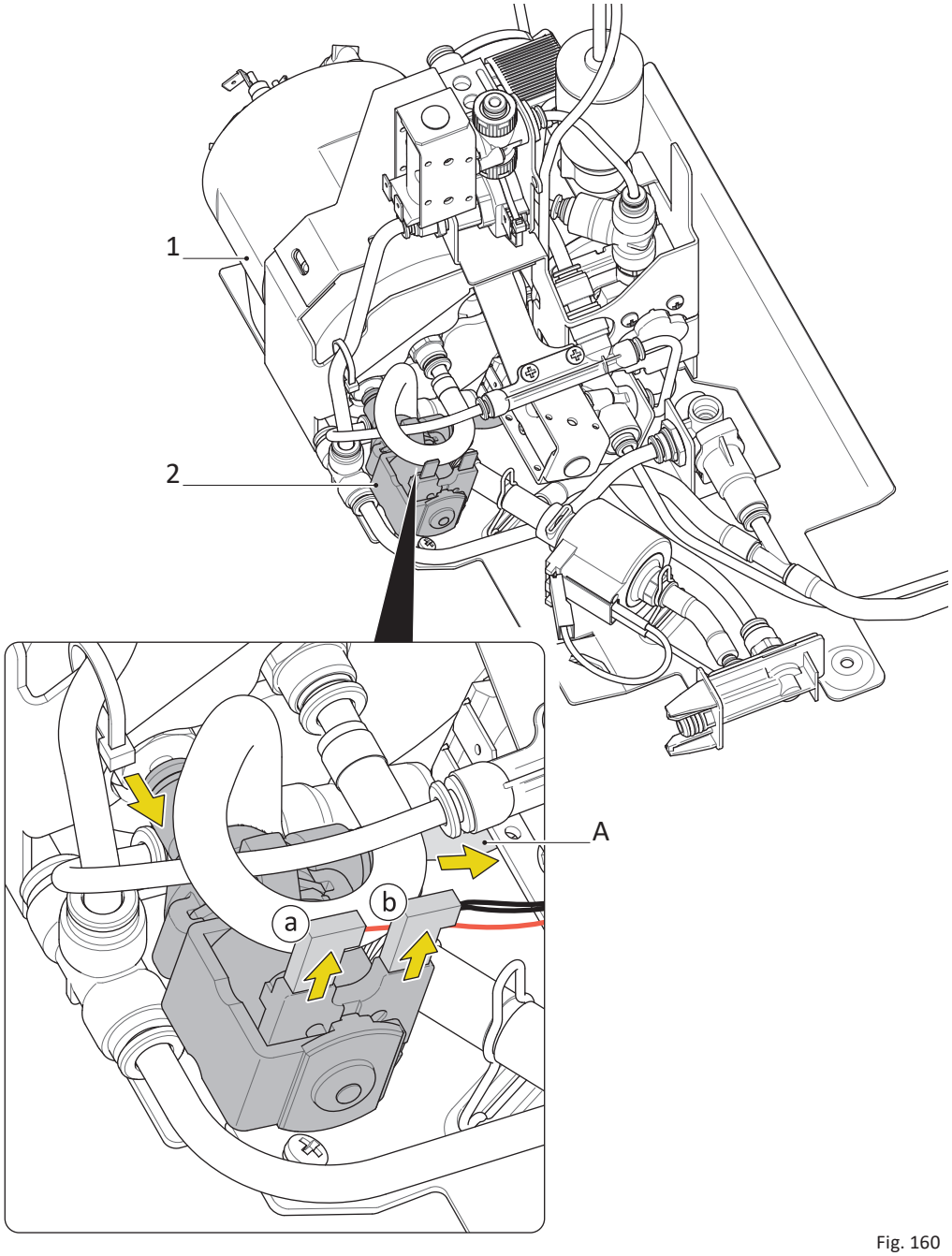


Fig. 160

This component and connected pipes are partially under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- Hydraulic unit and PCB assembly are detached → p. 182.

Procedure

1. Unplug the two electrical connectors (a+b) from the emptying valve (2).
2. Remove the emptying valve (2) from the boiler (1) in the same way as FEP tubes.
3. Remove the FEP tube (A) from the emptying valve (2).
4. Remove the emptying valve (2)

11.14.7 Replace NTC Fluid line

Removing FEP tubes: → p. 142

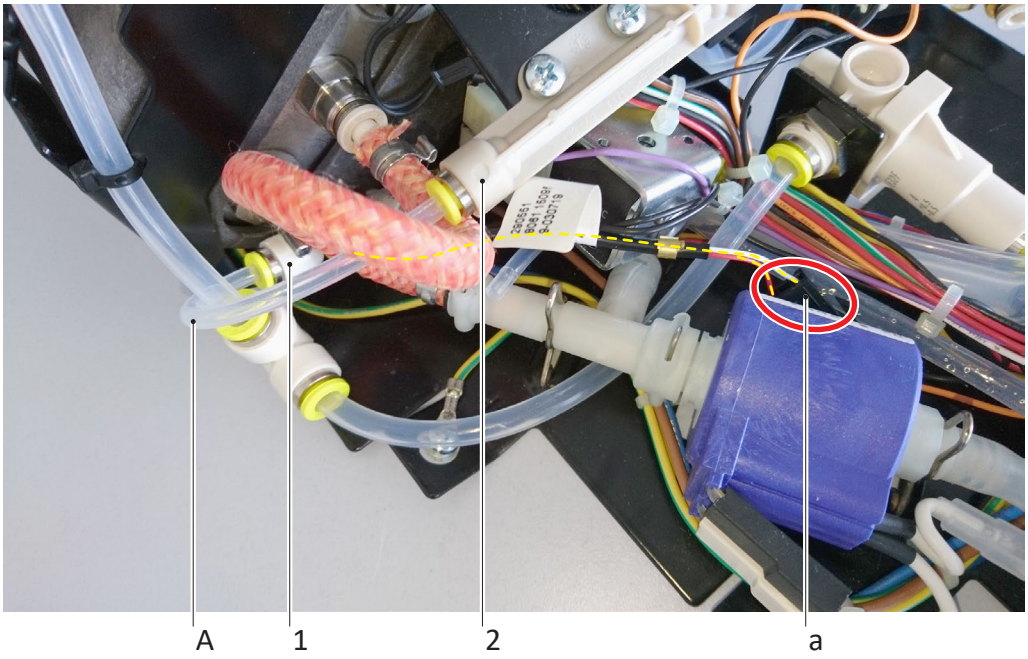


Fig. 161

This component and connected pipes are under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- Emptying valve is removed → p. 189.

Procedure

1. Remove the FEP tube (A) from the steam heating chamber (2).
2. Unplug the connector (a, circled in red) of the NTC (1).

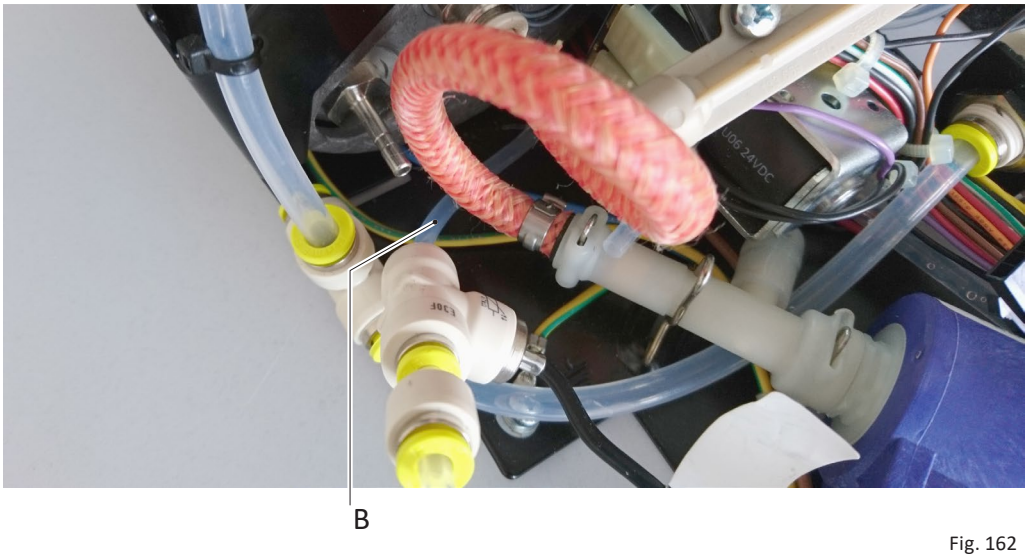


Fig. 162

3. Pull the NTC assembly out far enough to be able to remove the FEP tube (B).

11.14.8 Replace Water Pump

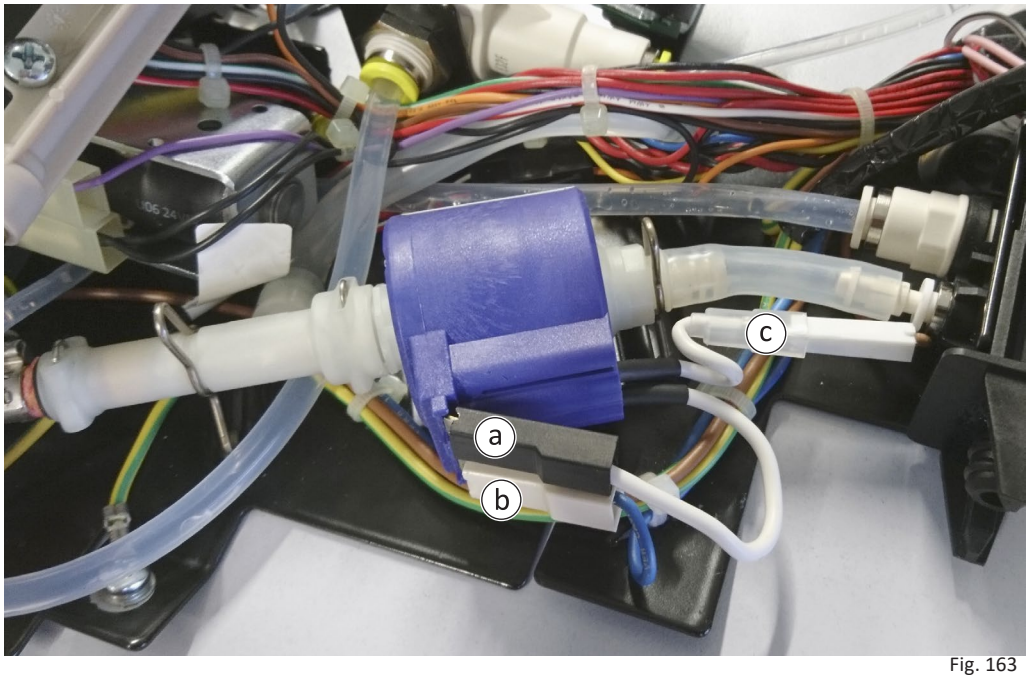


Fig. 163

This component and connected pipes are partially under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- Emptying valve is removed → p. 189.

Procedure

1. Remove the 3 electrical connectors (a+b+c) from the water pump.

Removing FEP tubes: → p. 142

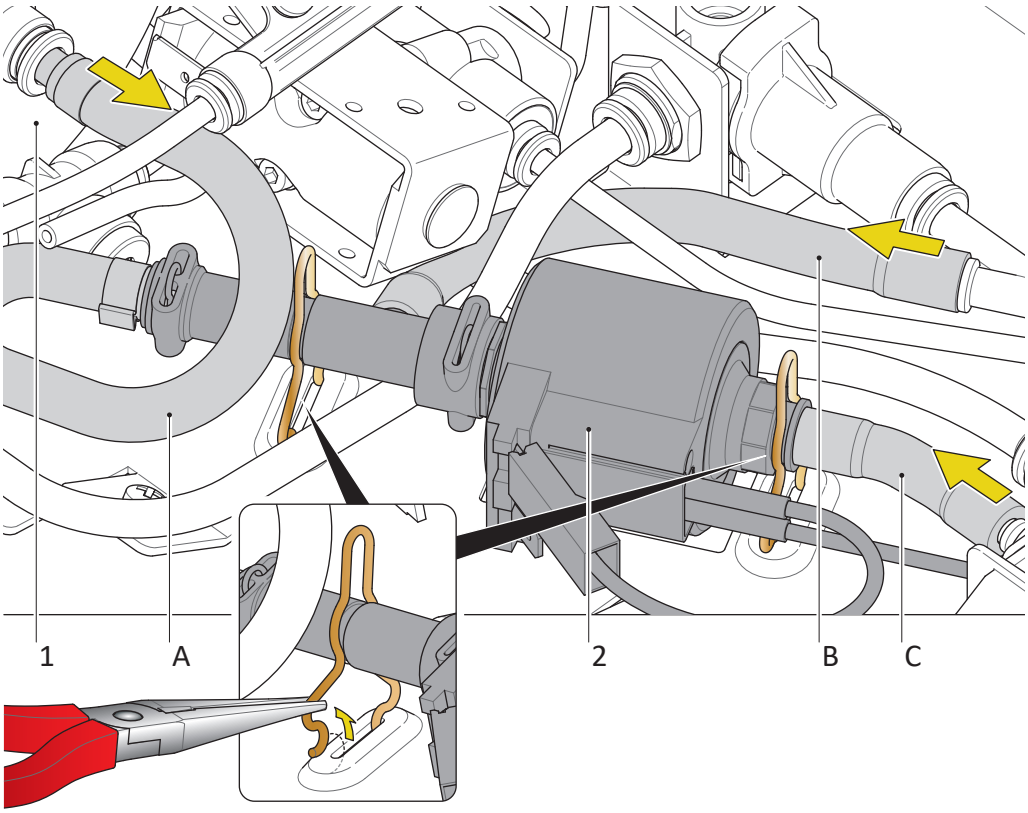


Fig. 164

2. Remove the tube (A) of the water pump (2) from the boiler (1) in the same way as an FEP tube.
3. Loosen the 2 clamps holding the water pump (2) in place (see detail).
4. Remove the tube (B) from the water pump (2) and tube (C) from the water coupling in the same way as FEP tubes.

11.14.9 Replace Boiler

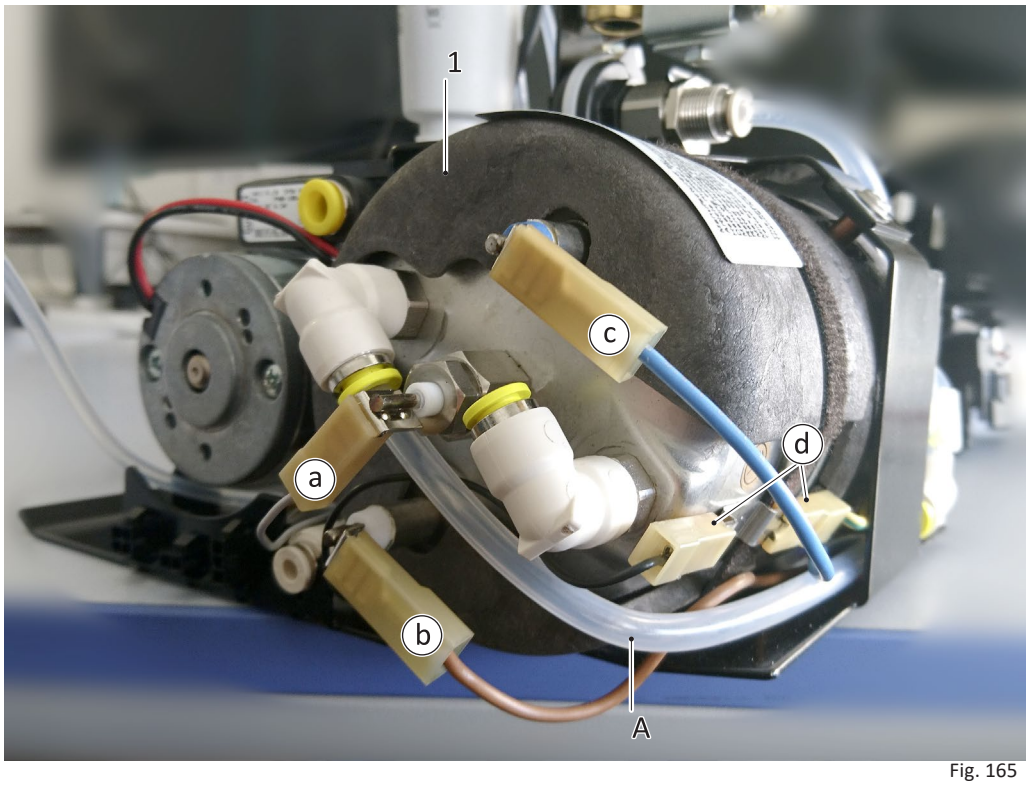


Fig. 165

Removing FEP tubes: → p. 142

This component and connected pipes are under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- Hydraulic unit and PCB assembly are detached → p. 182.
- Steam pressure regulator is removed → p. 188.

Procedure

1. Remove the following electrical connectors from the boiler (1):
   (a) Level detector (light grey)
   (b) Boiler heating (brown)
   (c) Boiler heating (blue)
   (d) 2 grounding wires (black (top), green-yellow (bottom))
2. Remove the FEP tube (A) from the top of the boiler (1).

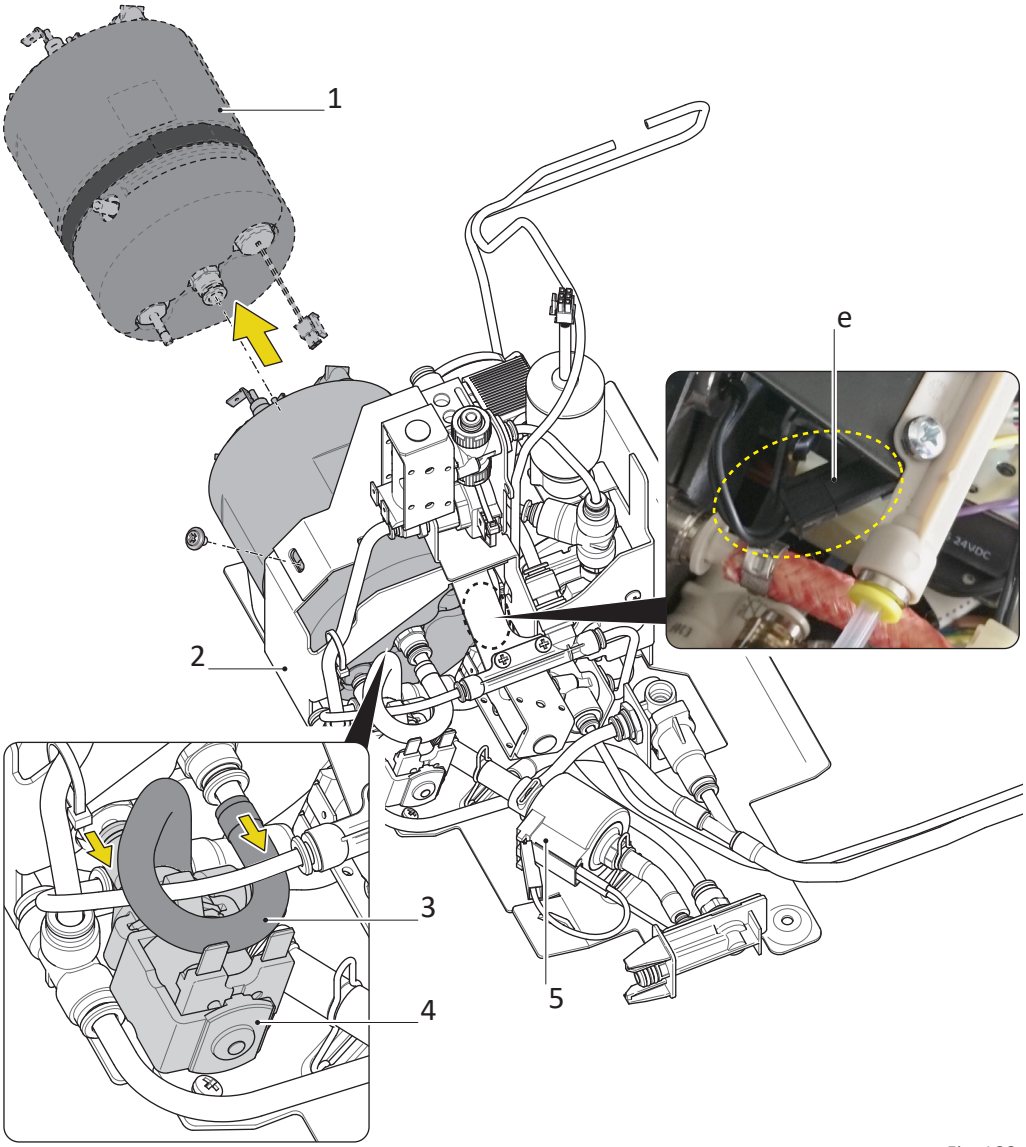


Fig. 166

3. Loosen 1 screw (crosshead) on the holding plate (2).
4. Remove the tube (3) coming from the water pump (5).
5. Remove the emptying valve (4) from the boiler (1) in the same way as FEP tubes.
6. Disconnect the boiler NTC connector (e).
7. Pull/push the boiler (1) out of the holding plate (2).

11.14.10 Replace Steam Valve

Removing FEP tubes: → p. 142

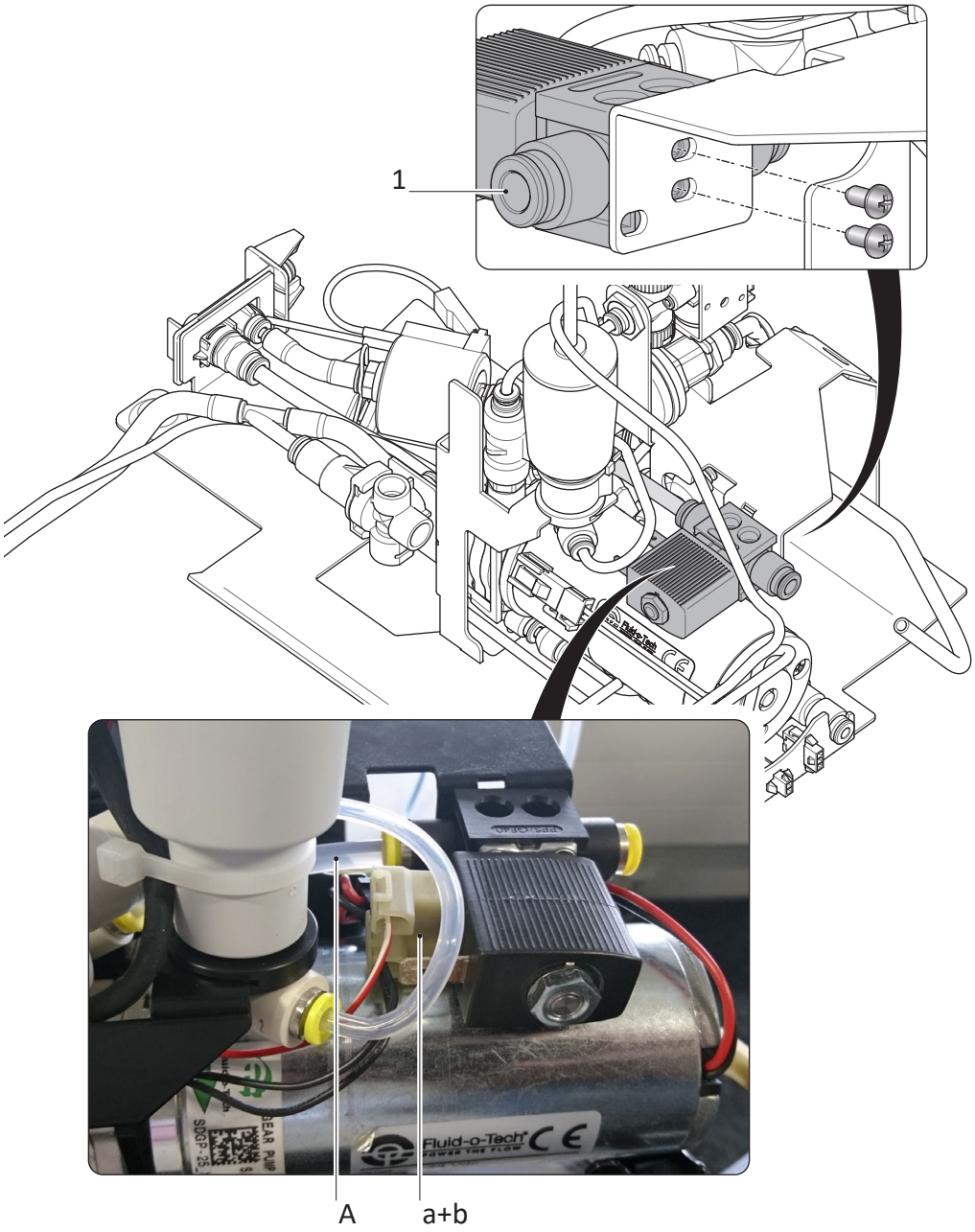


Fig. 167

This component and connected pipes are partially under pressure (→ p. 15), follow the instructions on page 140 in advance!

Prerequisites

- Boiler is removed → p. 193.

Procedure

1. Loosen 2 screws (crosshead).from the steam valve (1).
2. Remove the FEP tube (A) from the steam valve (1).
3. Unplug the two electrical connectors (a+b) from the steam valve (1).

11.14.11 Replace Steam Heating Chamber

Removing FEP tubes: → p. 142

The cleaning valve (3) is just labelled in this illustration to identify it for preventive maintenance and is not part of the procedure.

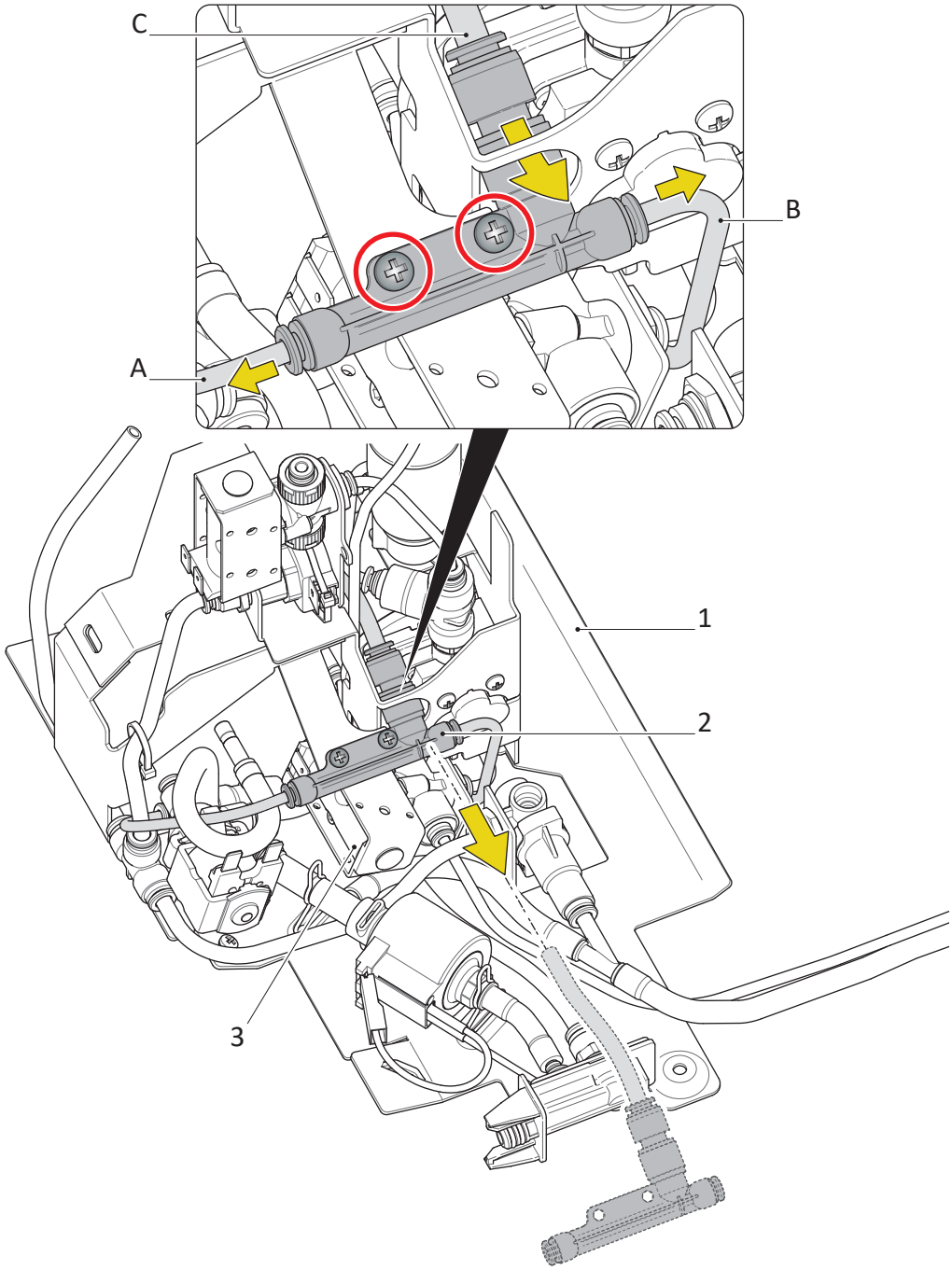


Fig. 168

Prerequisites

- Steam valve is removed → p. 195.

Procedure

1. Remove the FEP tubes (A+B) on both sides of the steam heating chamber (2).
2. Loosen 2 screws (crosshead, circled in red) from the steam heating chamber (2).
3. Pull the steam heating chamber (2) out of the holding plate (1) together with the FEP tube (C).

11.14.12 Replace Milk Pump

Removing FEP tubes: → p. 142

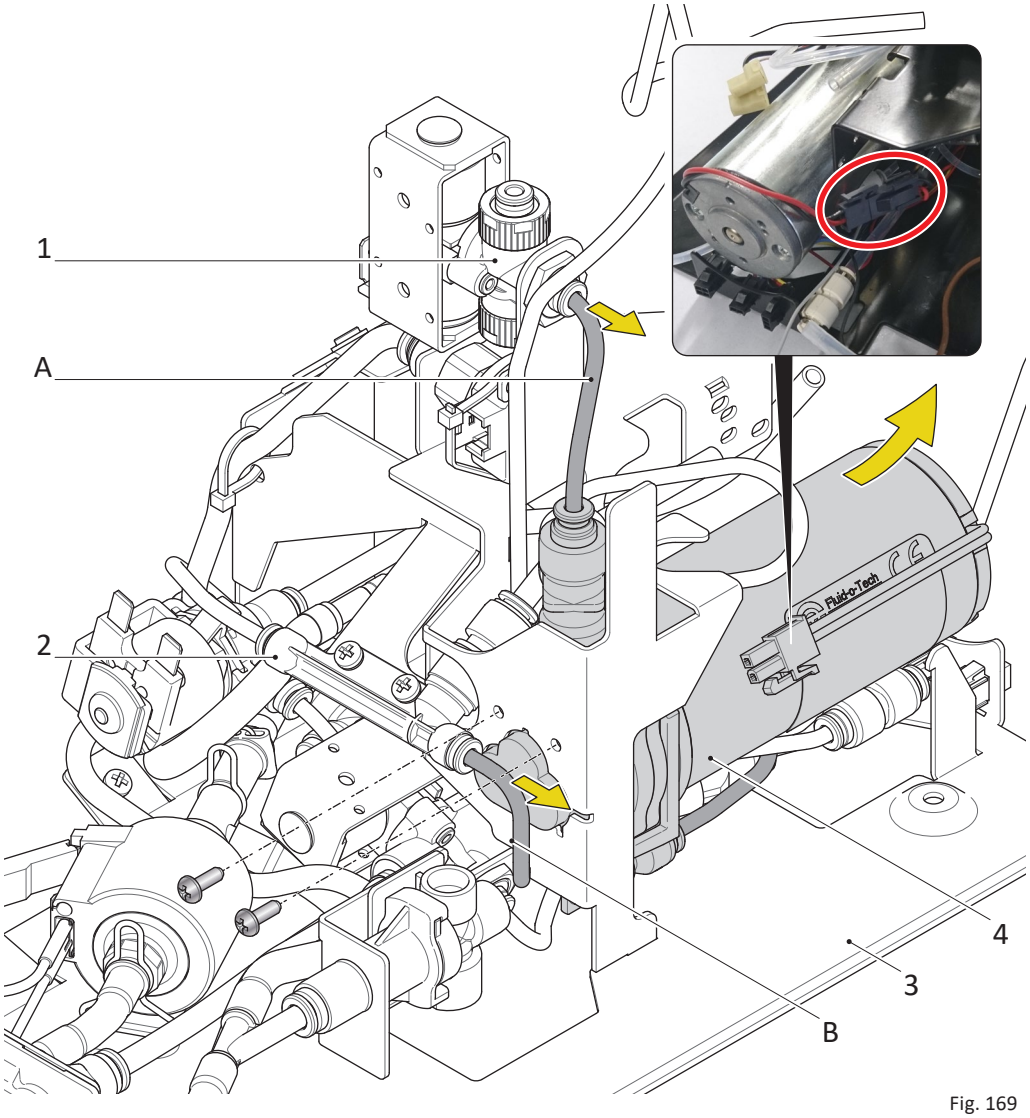


Fig. 169

Prerequisites

- Air valve is removed → p. 187.
- Boiler is removed → p. 193.
- Steam valve is removed → p. 195.

Procedure

1. Remove the FEP tube (A) from the suction nozzle valve (1).
2. Remove the FEP tube (B) from the steam heating chamber (2).
3. Unplug the connector (circled in red, see detail) from the pump (4).
4. Loosen 2 screws (crosshead) on the holding plate (3) to release the milk pump (4).
5. Pull the milk pump (4) out of the holding plate (3).

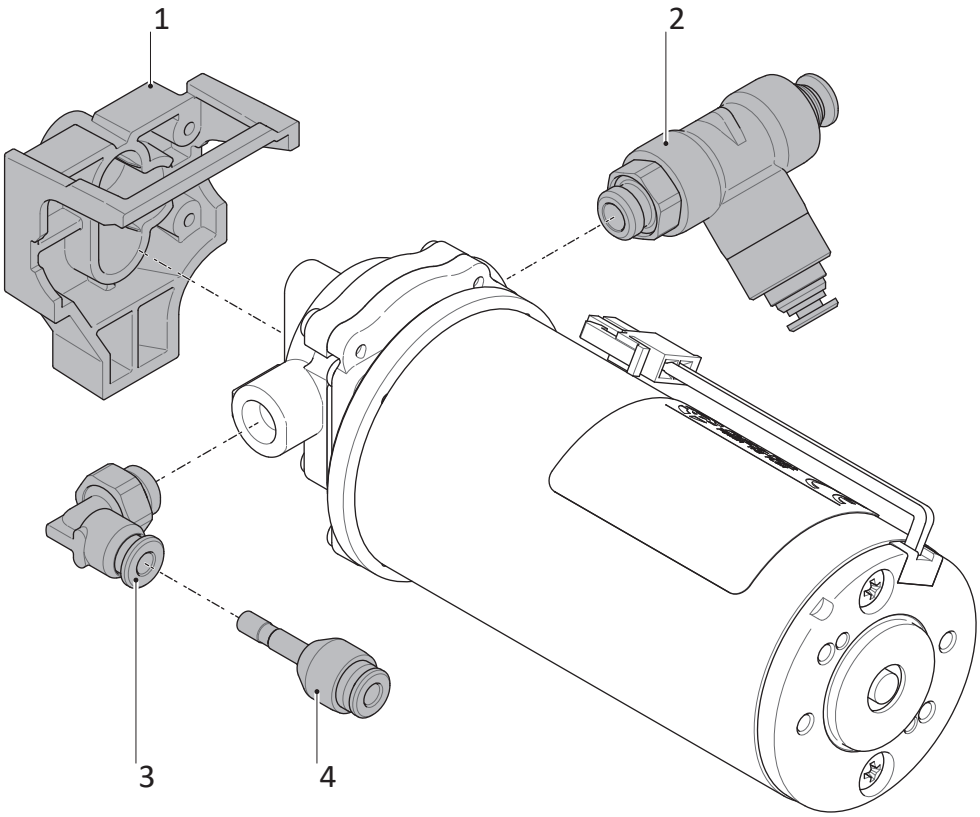


Fig. 170

6. Remove the remaining valves (2+3) using a fork wrench no.13.
7. Remove the valve nozzle (4) from the valve (3) if needed.
8. Unclip the pump holding plate (1).

If the milk pump is replaced it needs to be calibrated. This can be done via the technician menu after reassembly of the machine → p. 41.

Assembly Tip

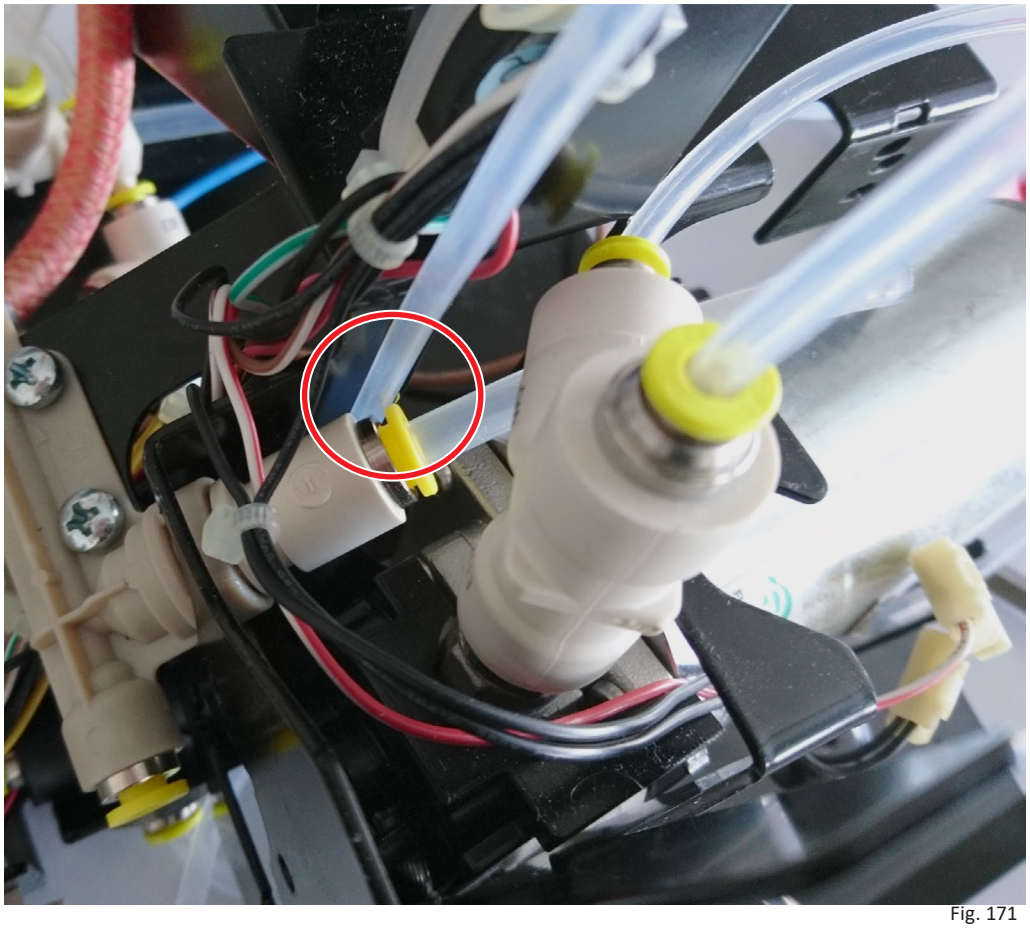
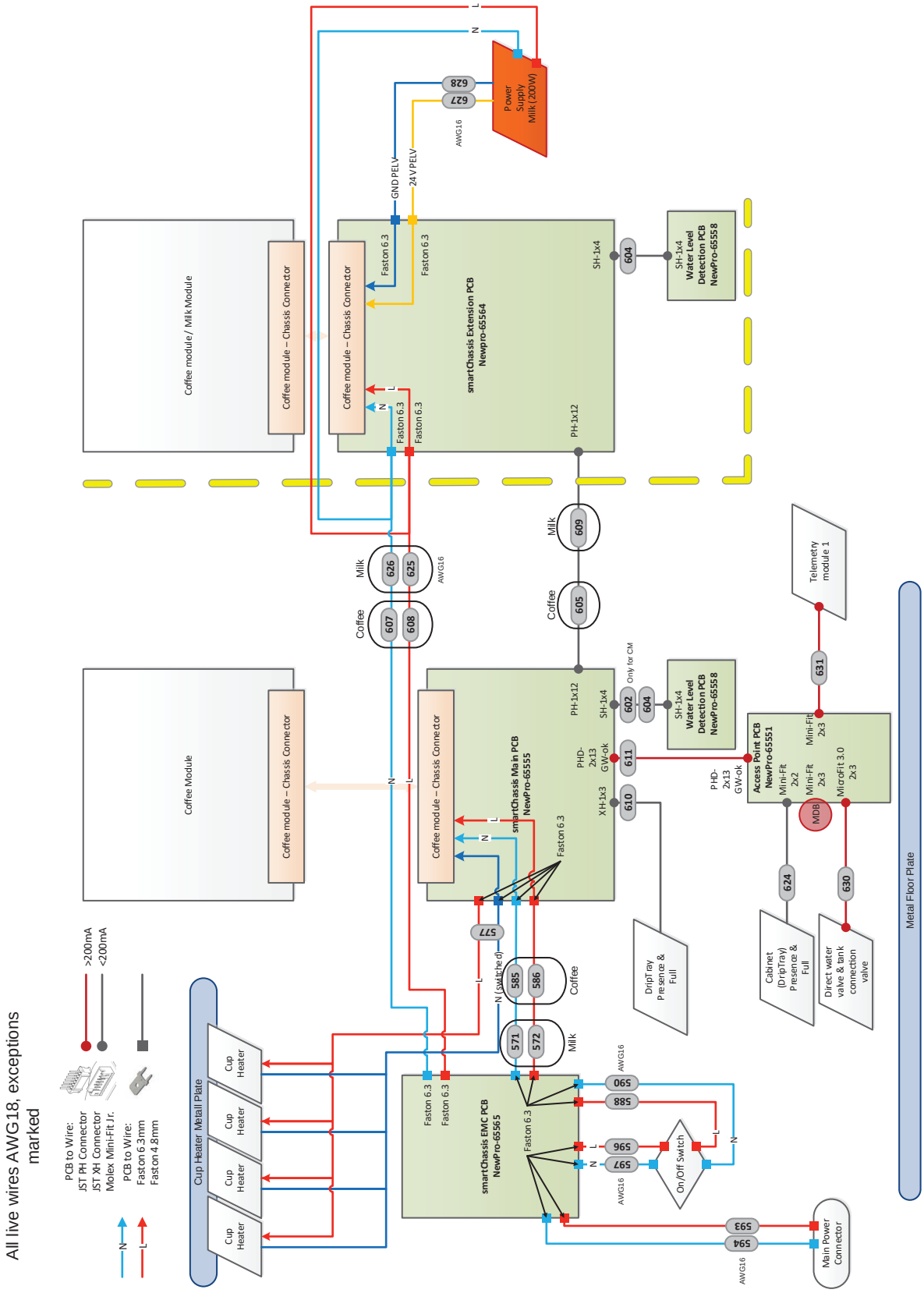


Fig. 171

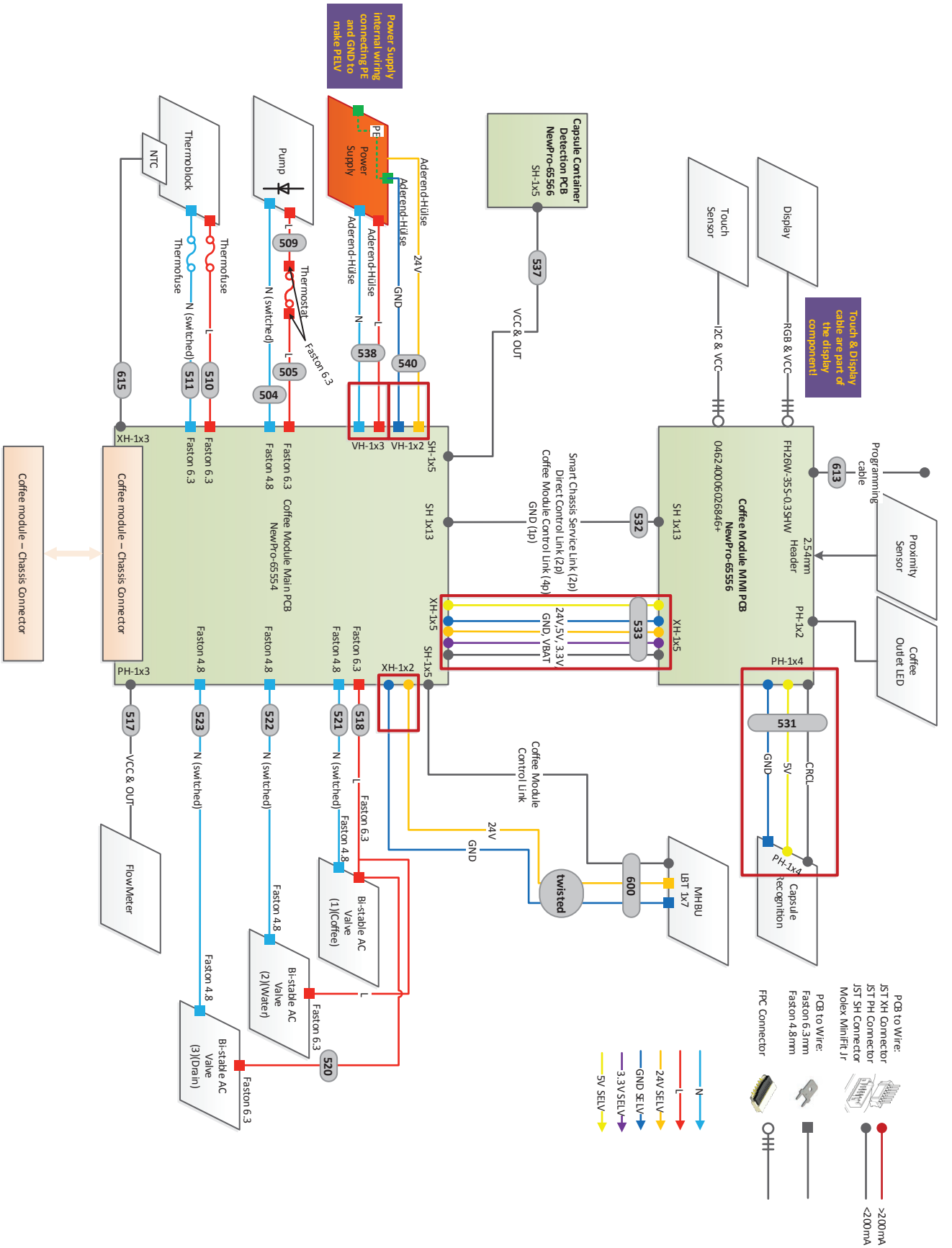
- Route the tube coming from the NTC fluid line between the pump and the pump holding plate during insertion, to make fitting the pump easier.

12 WIRING DIAGRAMS

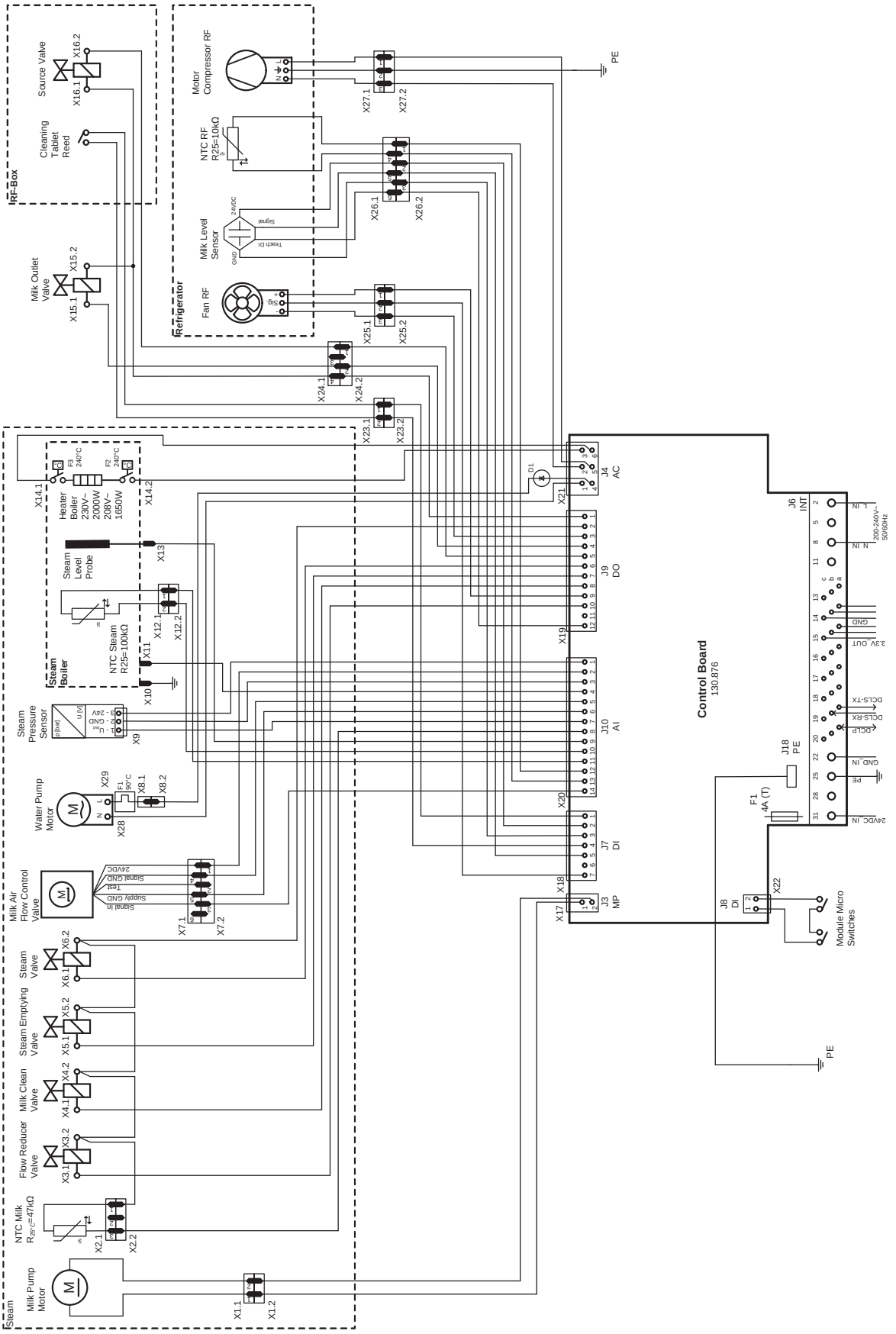
12.1 Momento 120/200 Chassis



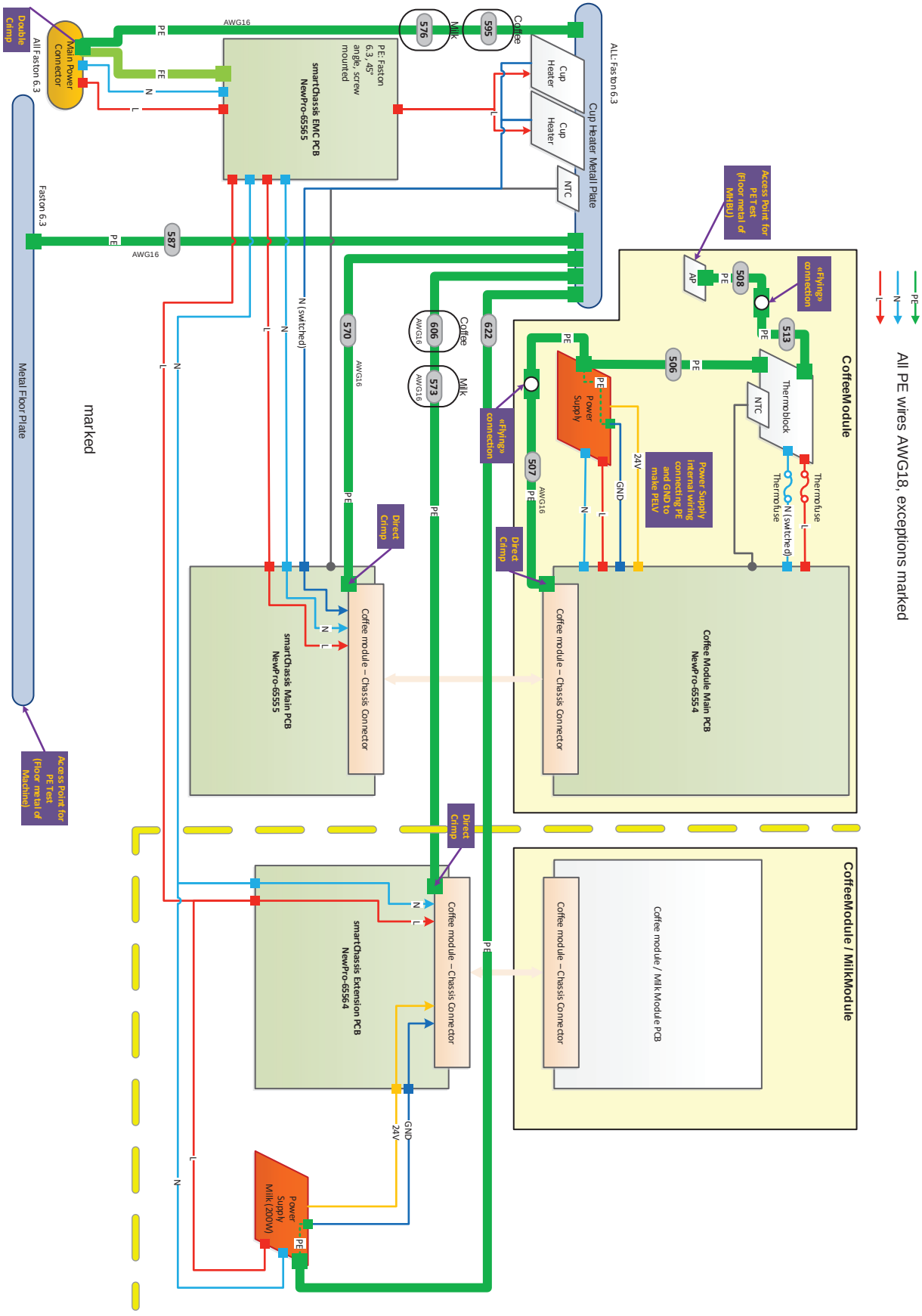
12.2 Coffee Module



12.3 Milk Module



12.4 PE Distribution



13 FINAL TESTS

A *Nespresso* technician with special training and test equipment is required for testing the coffee machine after the initial installation at the customer's side.

Required test equipment

- Portable electric safety tester
  - for tests according to EN/IEC 60335-1 and applicable national standards,
  - equipped with a national power socket and test probe(s).

Tests to be carried out

- Protective earth continuity test
- Protective insulation test
- Functional test of the milk module

Danger of electrocution!
Mains voltage inside the coffee machine.
Do not touch any live part while performing these tests.

Read and observe the safety instructions in the user manual of the test equipment.

The metal surface at a test point can oxidise. Scratch the metal surface with the tip of the test probe to achieve a good electrical contact.

13.1 Protective Earth (PE) Continuity Test

This test is necessary

- for class 1 equipment (three-wire power cord with protective earth),
- after each disassembly and repair (not for a simple module swap)

Therefore all Momento models have to be tested after disassembly, repair or preventive maintenance, except country specific models without a protective earth connection.

- Plug the power cord of the coffee machine into the power socket on the electric safety tester.
- Switch on the electric safety tester and start the protective earth continuity test.
- Touch the following test points with a test probe and check if the measured ground resistance is below **0.3 Ω**:

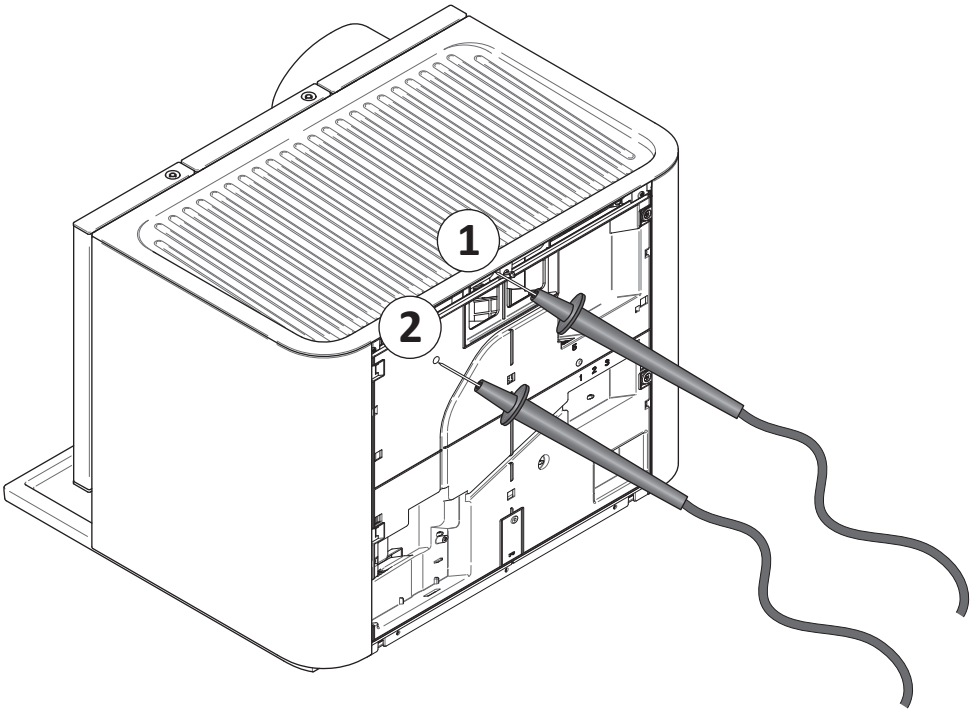


Fig. 172

1. Cup plate at the rear of the coffee machine: Touch the aluminium rib at the middle of the plate's underside with the test probe.
2. Touch the steam boiler through the testing hole.

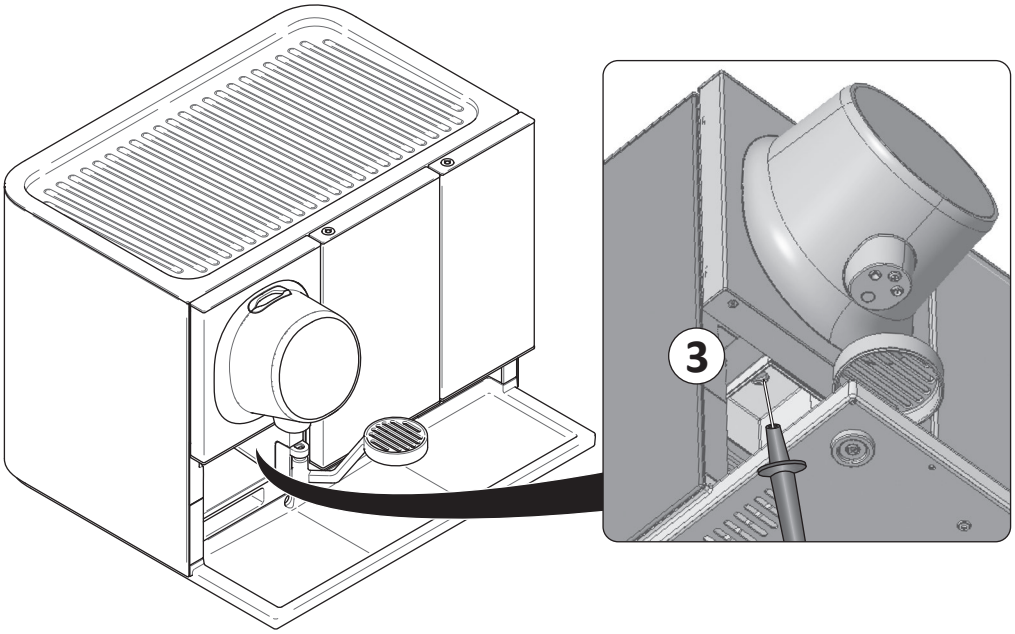


Fig. 173

3. At the coffee module: Insert the test probe into the test hole which is located in the capsule ejection opening.

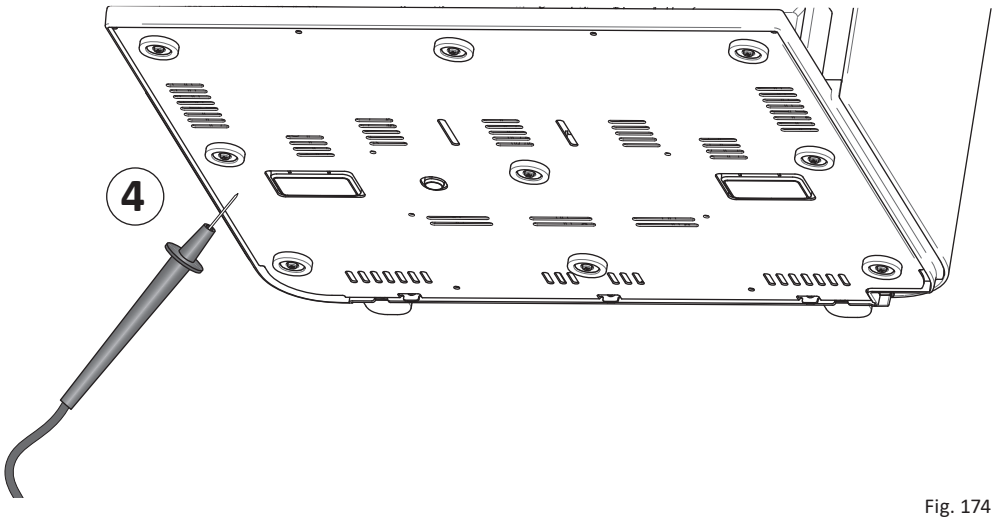


Fig. 174

4. Touch the bottom plate with the test probe.

What to do if this test fails?

- Remove the coffee and milk module. Check the ground wiring and ground terminals in the main housing and coffee module.
- Perform further, detailed measurements with the electric safety tester. Localise and rectify any faults occurring.
- Check/replace the power cord.

13.2 Protective Insulation Test

The protective earth (PE) continuity test must be executed successfully in advance for class 1 machines! → p. 205

This test is necessary

- for class 1 and 2 equipment (with/without protective earth),
- after each disassembly and repair (not for a simple module swap)

Therefore all Momento models have to be tested after disassembly, repair or preventive maintenance.

- Plug the power cord of the coffee machine into the power socket on the electric safety tester.

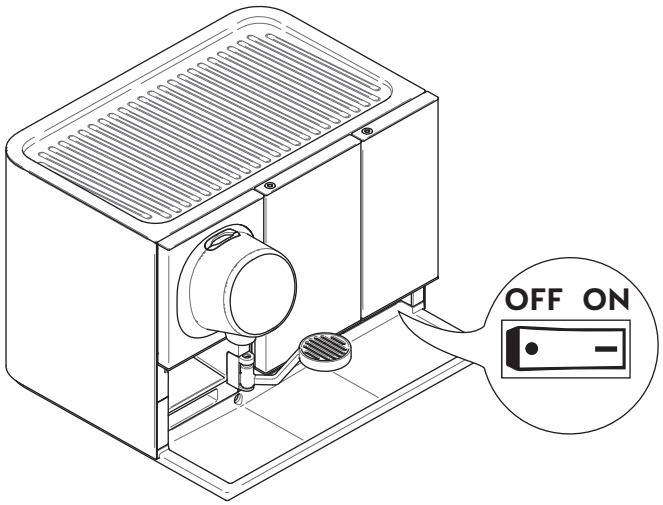


Fig. 175

- Switch on the coffee machine.
- Switch on the electric safety tester and start the protective insulation test.
- Touch the following test points with a test probe and a test voltage of **500 V DC** and check if the measured insulation resistance is above **2 MΩ**:

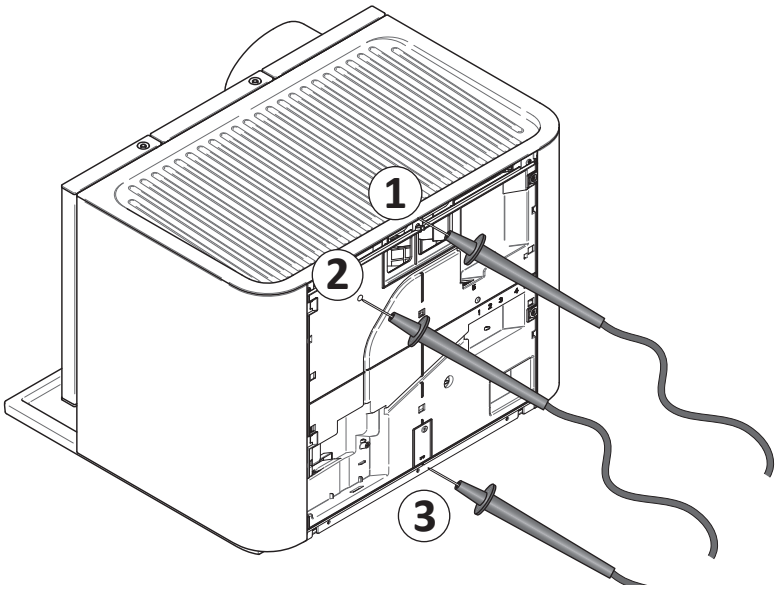


Fig. 176

1. Cup plate at the rear of the coffee machine: Touch the aluminium rib at the middle of the plate's underside with the test probe.
2. Touch the steam boiler through the testing hole.
3. Touch the bottom plate with the test probe.

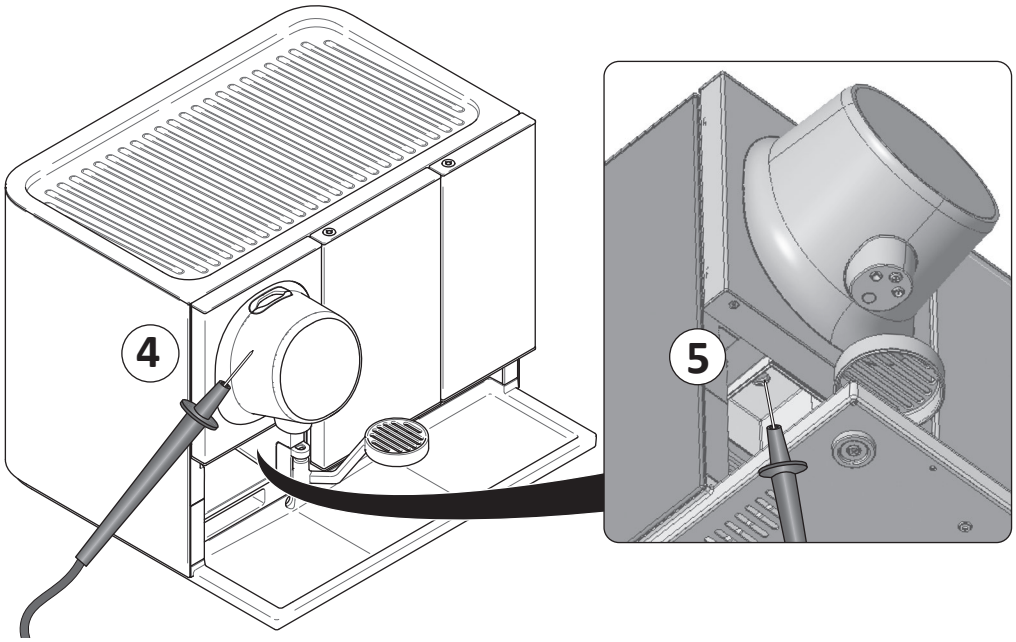


Fig. 177

4. At the coffee module: Touch the front cover with the test probe
5. Insert the test probe into the test hole which is located in the capsule ejection opening.

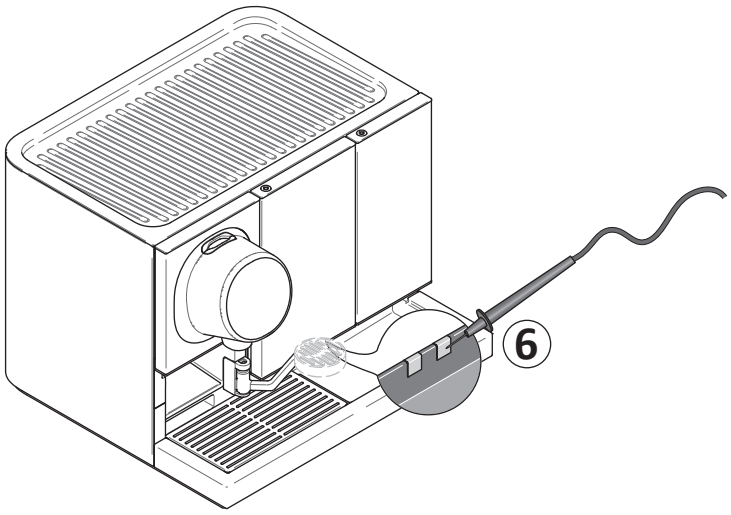


Fig. 178

6. Drip tray: Remove the right drip grid and touch the contacts with the test probe (see detail).

What to do if this test fails?

- Replace a defective assembly (e.g. coffee module).
- Perform troubleshooting and repair

13.3 Functional Test of the Milk Module

The protective earth (PE) continuity test must be executed successfully in advance for class 1 machines! → p. 205

The protective insulation test must be executed successfully in advance! → p. 207

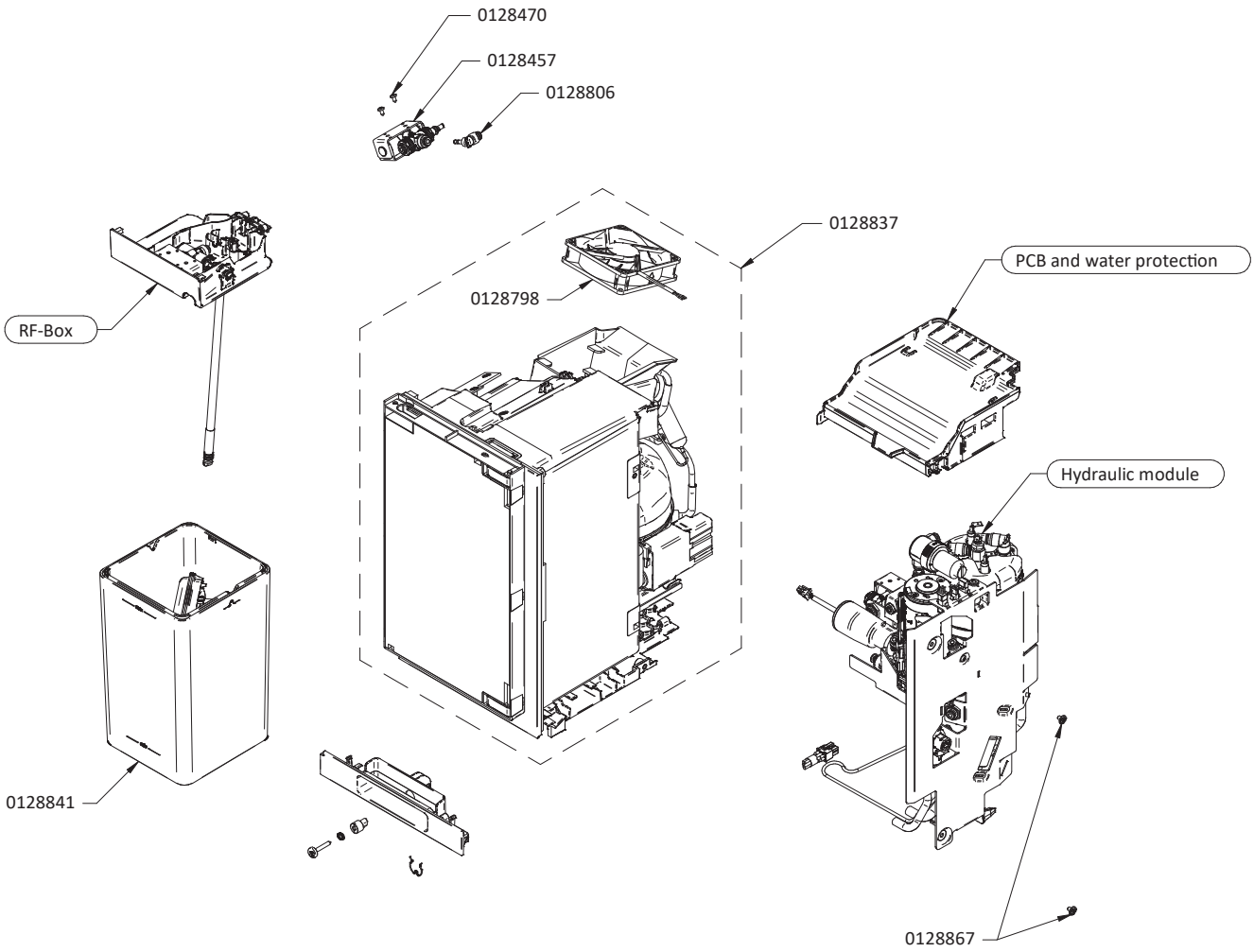
This test is necessary after each disassembly, repair or preventive maintenance.

Procedure

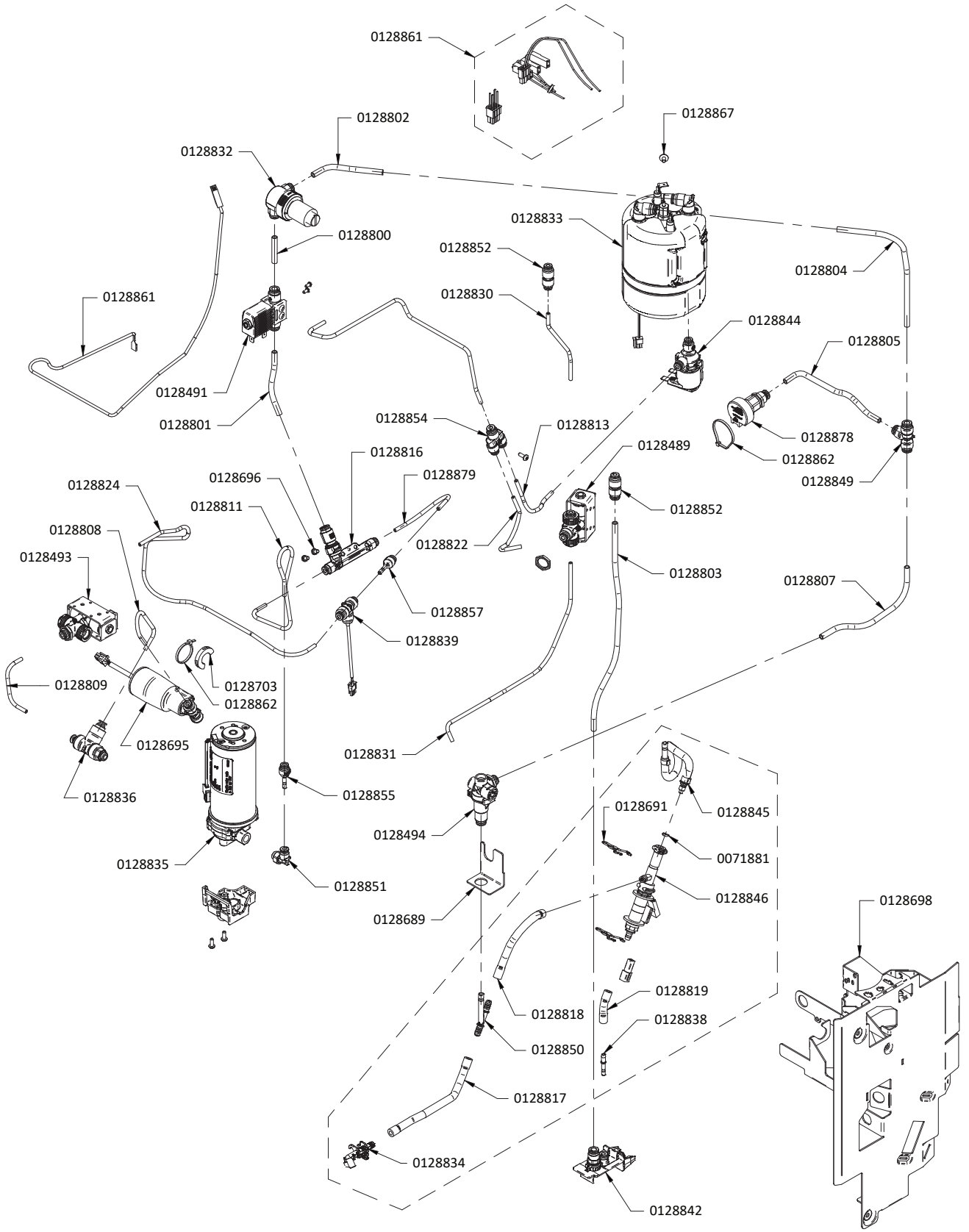
1. Carry out the calibration of the milk pump via the technician menu → p. 41.
2. Adjust the foam quality including the test products → p. 28.
3. Carry out a product quality check of hot milk and hot foam (temperature, volume, quality).
4. Perform a cleaning cycle → p. 44.

14 MILK MODULE SPARE PART DRAWINGS

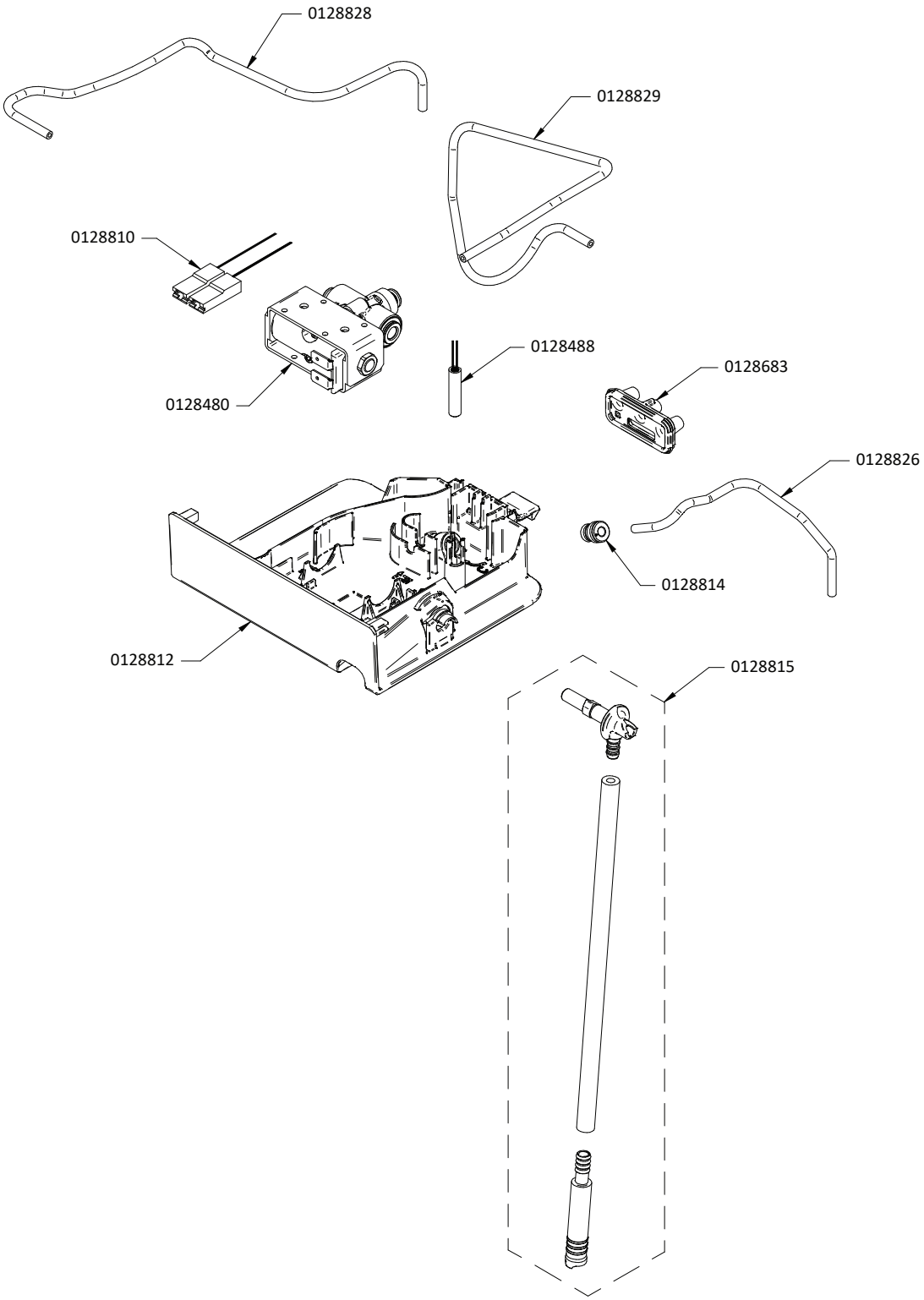
14.1 Milk Module



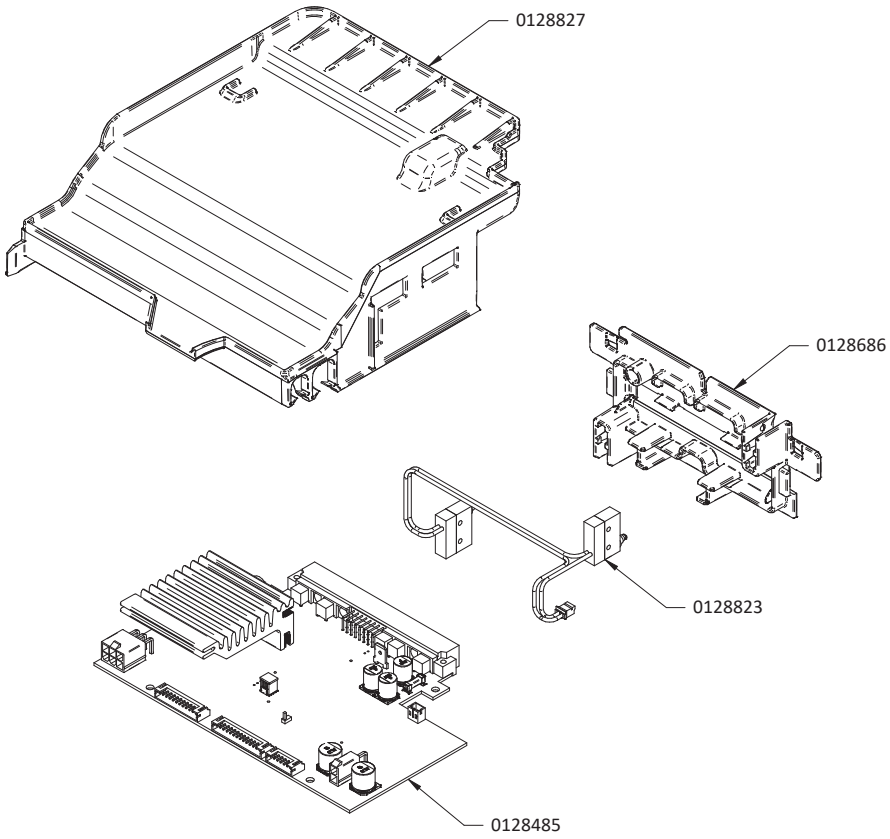
14.2 Hydraulic Module



14.3 RF-Box


0128828
0128829
0128810
0128480
0128488
0128683
0128826
0128814
0128812
0128815

14.4 PCB and Water Protection



NOTES