

SERVICE MANUAL CITIZ COFFEE MACHINES



Citiz

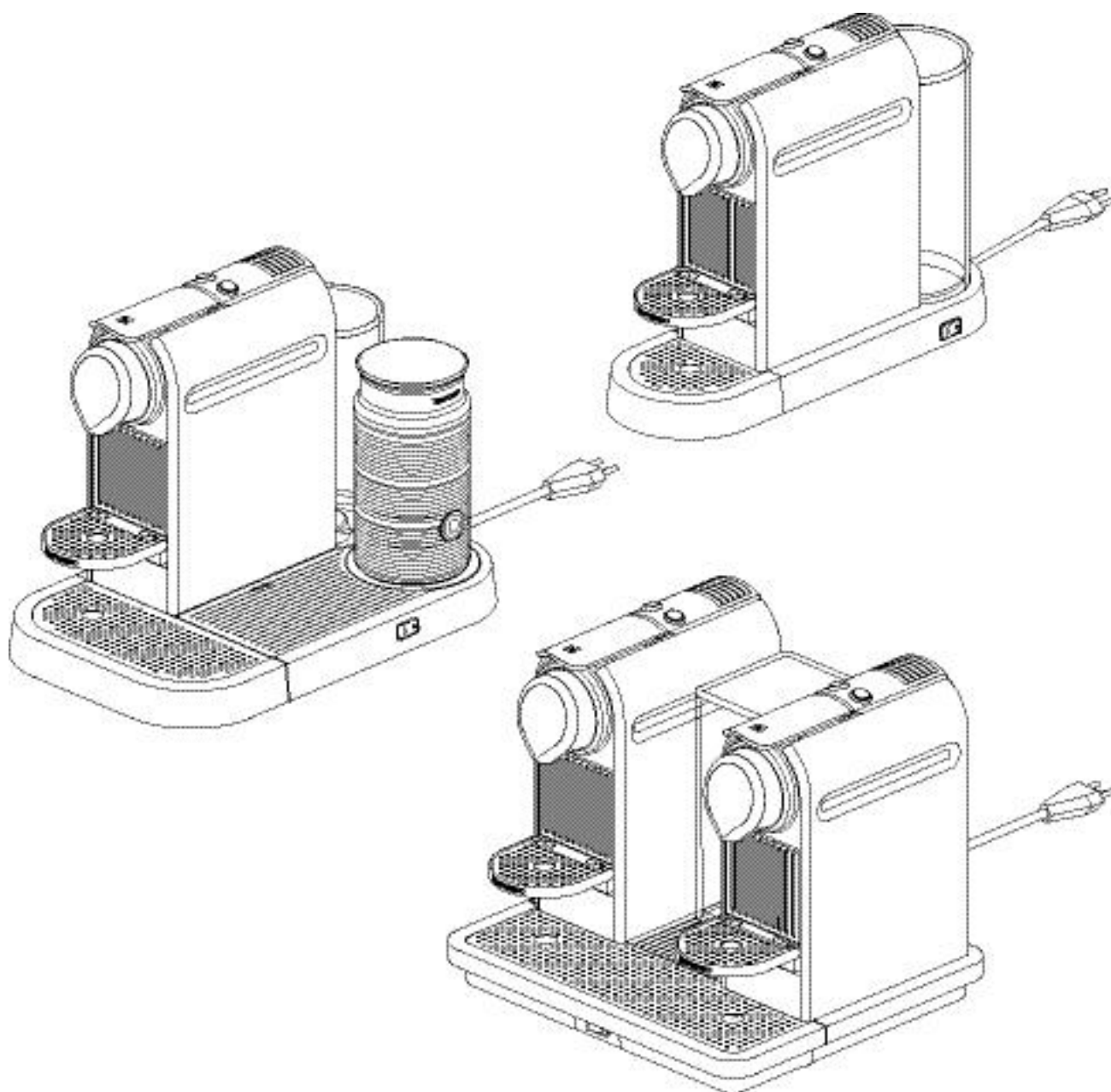
EF 483/484

Citiz & milk

EF 485/486

Citiz & Co

EF 487/488





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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 Citiz coffee machine types EF 483/484, EF 485/486 and EF 487/488.

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.

For fast access to information directly from the PC or MAC monitor, this service manual is available as PDF file and can be downloaded from the *Nespresso* technical website under <https://business.nespresso.com>.

The required utility software to read PDF files (Adobe Reader®) for PCs and MAC computers can be downloaded (under <http://www.adobe.com>) for free - please click the logo:



CONTENT UPDATES

Version 1.2

- Chapter "Function tests": correction of the protective insulation test (connection of the test equipment to both neutral and phase pins instead of ground pin). See subtitle "Test sequence" on page 145, steps 1 till 3 (connection of the measuring cable).
- Service manual is available in additional languages: French, German, Spanish and Italian

Version 1.1

- First released service manual version, in English only.

Version 1.0

- Test version for proofreading, in English only.

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

i 2 PDF versions of this service manual can be selected:

- A highly compressed version with low picture resolution and small file size.
- A version in print quality with hyperlinks, but with big file size.

i The version number of this service manual is printed on the lower right corner of the front page.



1 GENERAL SAFETY NOTES



Risk of fatal electrical shock and fire!

Mains voltage inside the coffee machine.

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

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



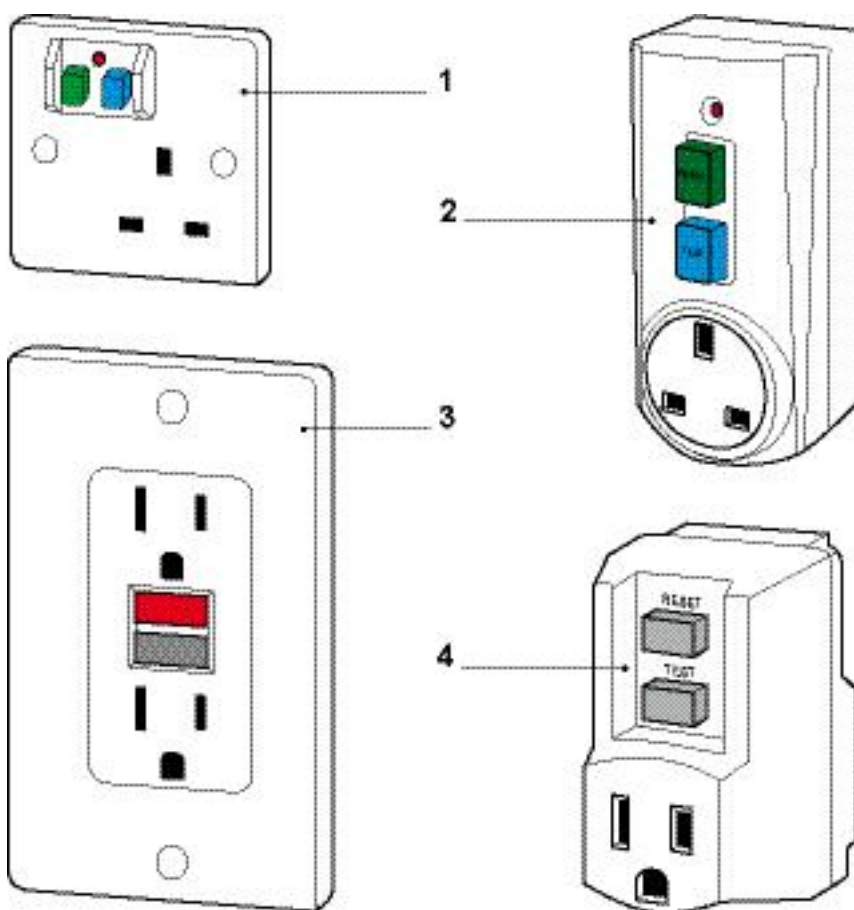
This device does not protect against electrical shock due to contact with both circuit conductors.



Example illustrations of typical devices.



Use a GFCI with a trip level of 4 - 6 mA (USA) resp. a RCD with a trip level of 15 - 30 mA (Europe). A trip level above 30 mA provides only very limited protection against harm from an electric shock.



- 1) RCD protected socket-outlet
2) Plug-in RCD unit

- 3) GFCI socket
4) Plug-in GFCI



Danger of burns!

Hot parts and water under pressure inside the coffee machine (particularly in the thermoblock).

- Let coffee machine cool down before cleaning or disassembly.

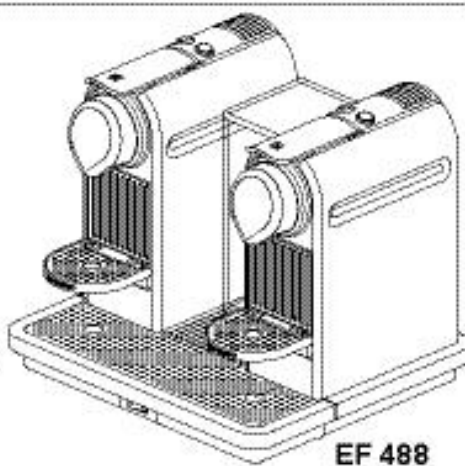
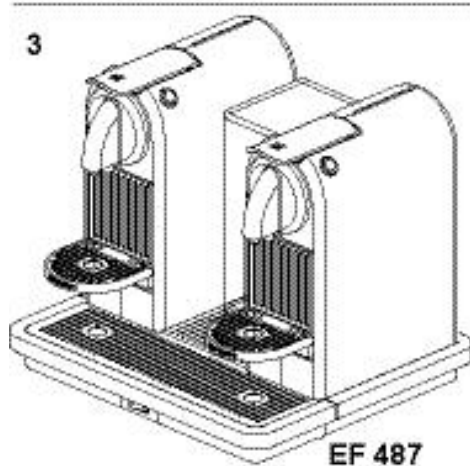
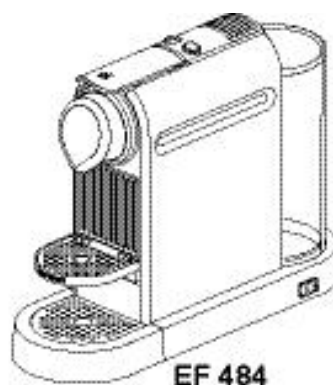
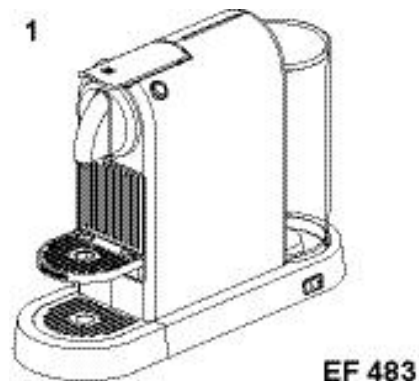


2 MODEL OVERVIEW

2.1 Model range

With core unit D-range:

With core unit C-range:



- 1) Citiz
- 2) Citiz & milk

- 3) Citiz & Co

Each model

- has a special platform
- is available in 2 different designs, depending on the core unit version (C- or D-range).

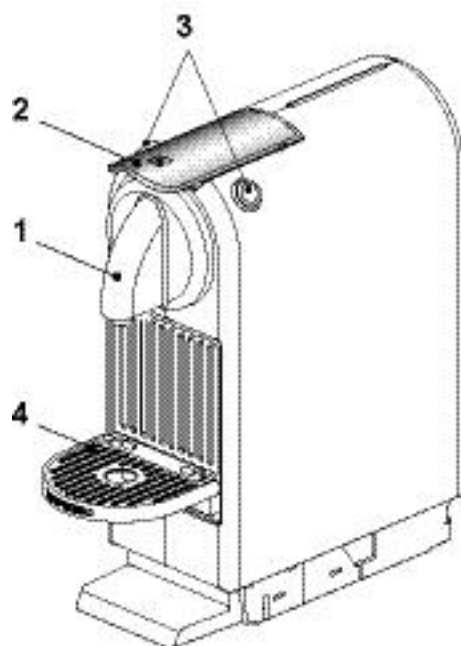
i A core unit is the actual coffee machine, mounted on a platform.



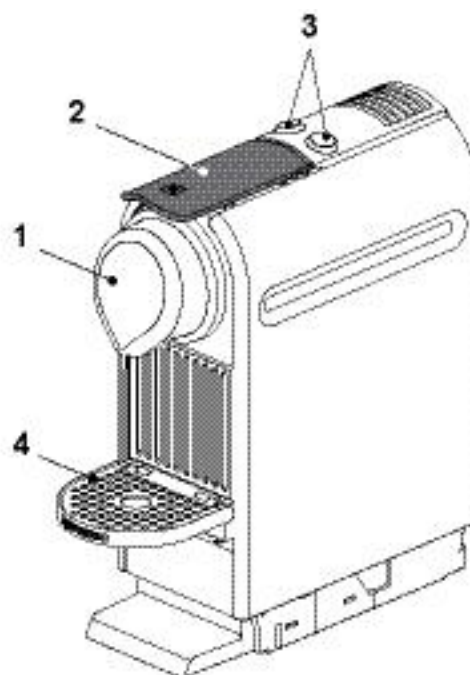
2.2 Core unit versions

i This comparison helps to identify the core unit version.

D-range



C-range



- 1) Coffee outlet
2) Closing handle

- 3) Coffee buttons
4) Cup holder

i There are additional differences between the 2 versions (covers, wiring etc.) not mentioned in the table.

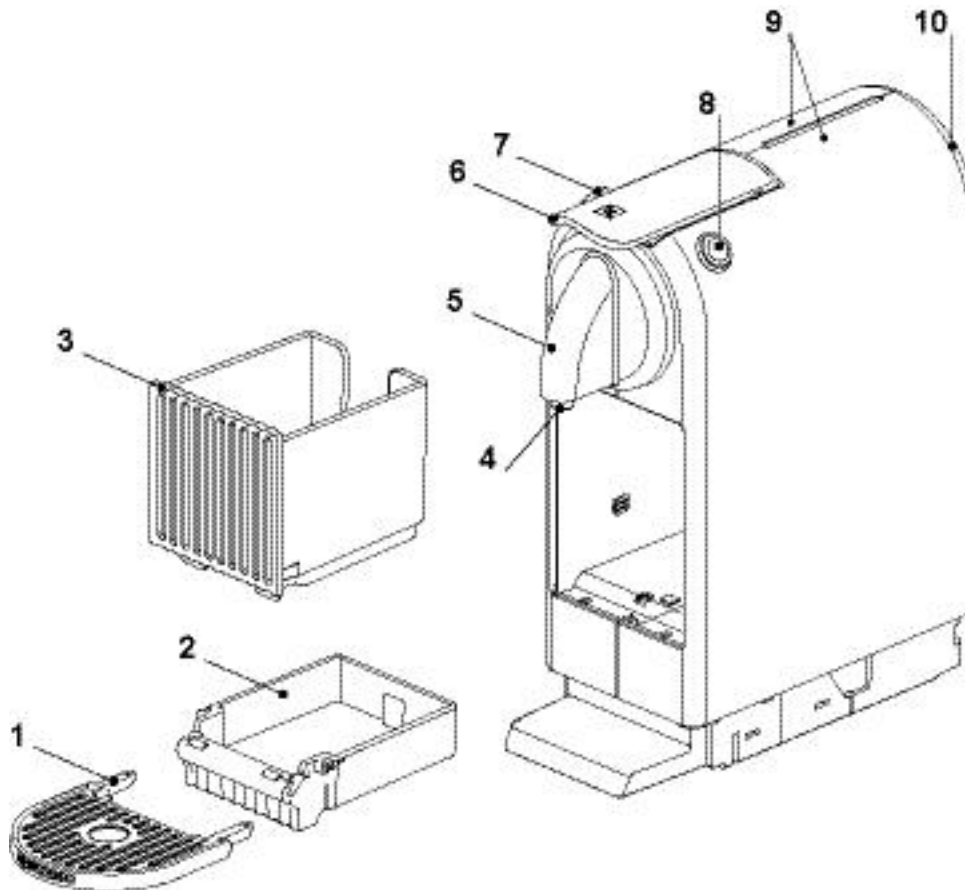
Different components	D-range	C-range
Coffee outlet (1)	contoured coffee outlet	"flat" coffee outlet
Closing handle (2)	chromium-plated closing handle	black closing handle
Coffee buttons (3)	arranged on both sides of the closing handle	arranged behind the closing handle
Cup holder (4)	cup holder with slotted recesses	cup holder with circular recesses



3 MAIN COMPONENTS

3.1 Overview - core unit, D-range

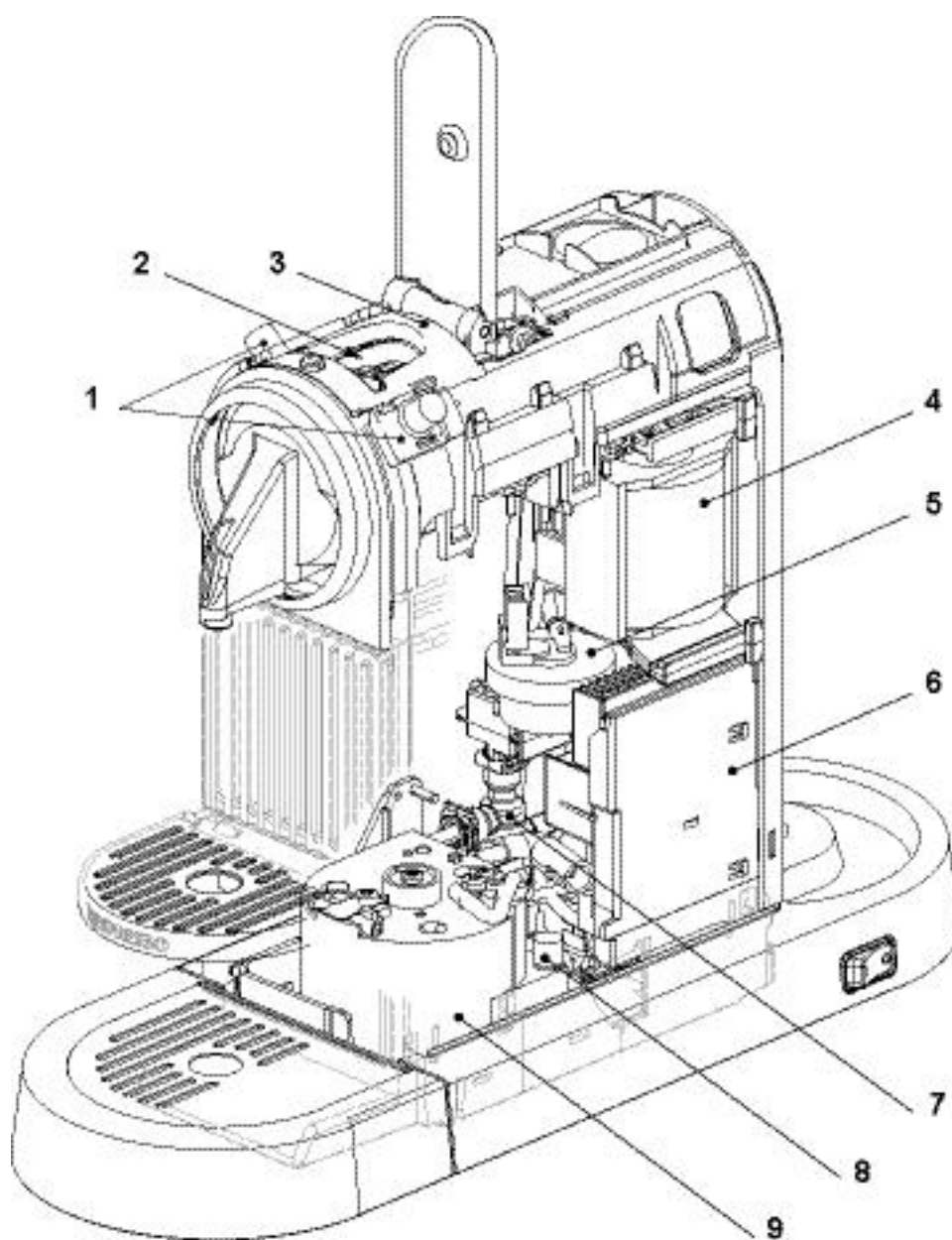
i For platform components refer to model overview.



- | | |
|--------------------------------------|----------------------------------|
| 1) Cup support | 7) Button "small cup" (Espresso) |
| 2) Waste water container | 8) Button "large cup" (Lungo) |
| 3) Capsule container (used capsules) | 9) Side panels left/right |
| 4) Coffee nozzle | 10) Rear cover |
| 5) Steam cover | |
| 6) Closing handle | |



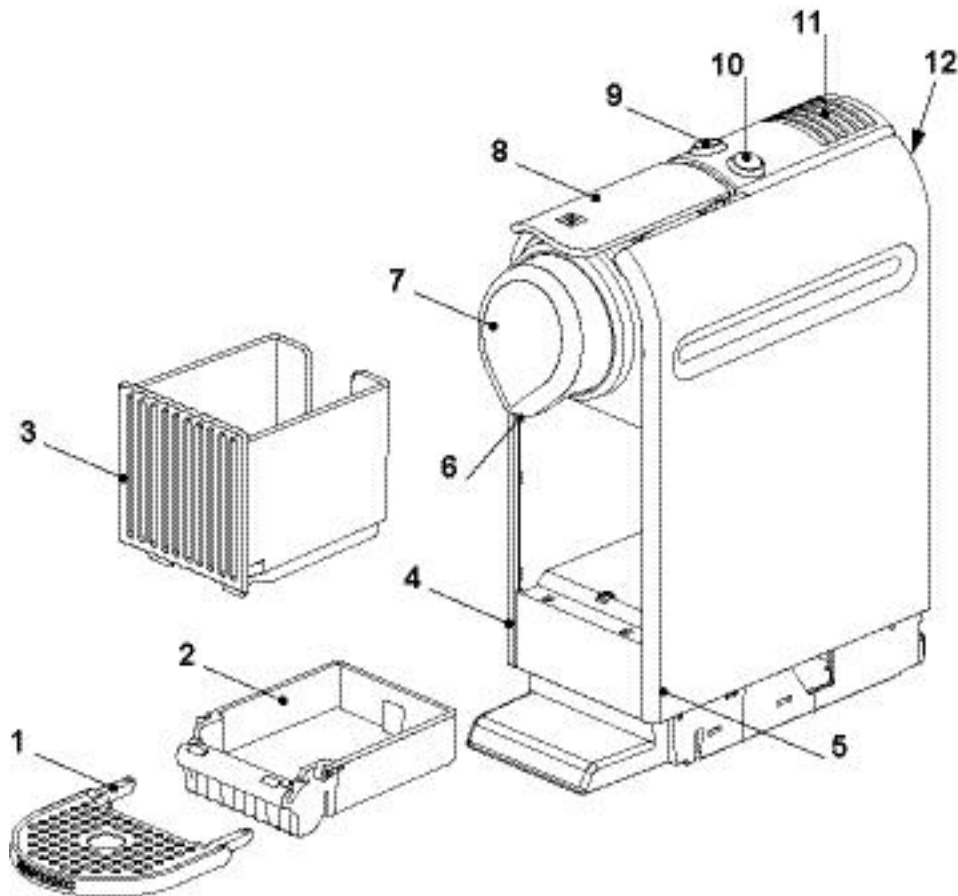
3.1.1 Interior view - core unit, D-range



- | | |
|--|---|
| 1) Button prints | 6) Electronic control board
(with protective covers) |
| 2) Capsule bay | 7) Self priming device (APD) |
| 3) Brewing unit (TMBU, Tolkien Mini
Brewing Unit) | 8) NTC temperature sensor |
| 4) Pump (Invensys CP4/SP) | 9) Thermoblock (EF 2003) |
| 5) Flowmeter (FHKSC12) | |



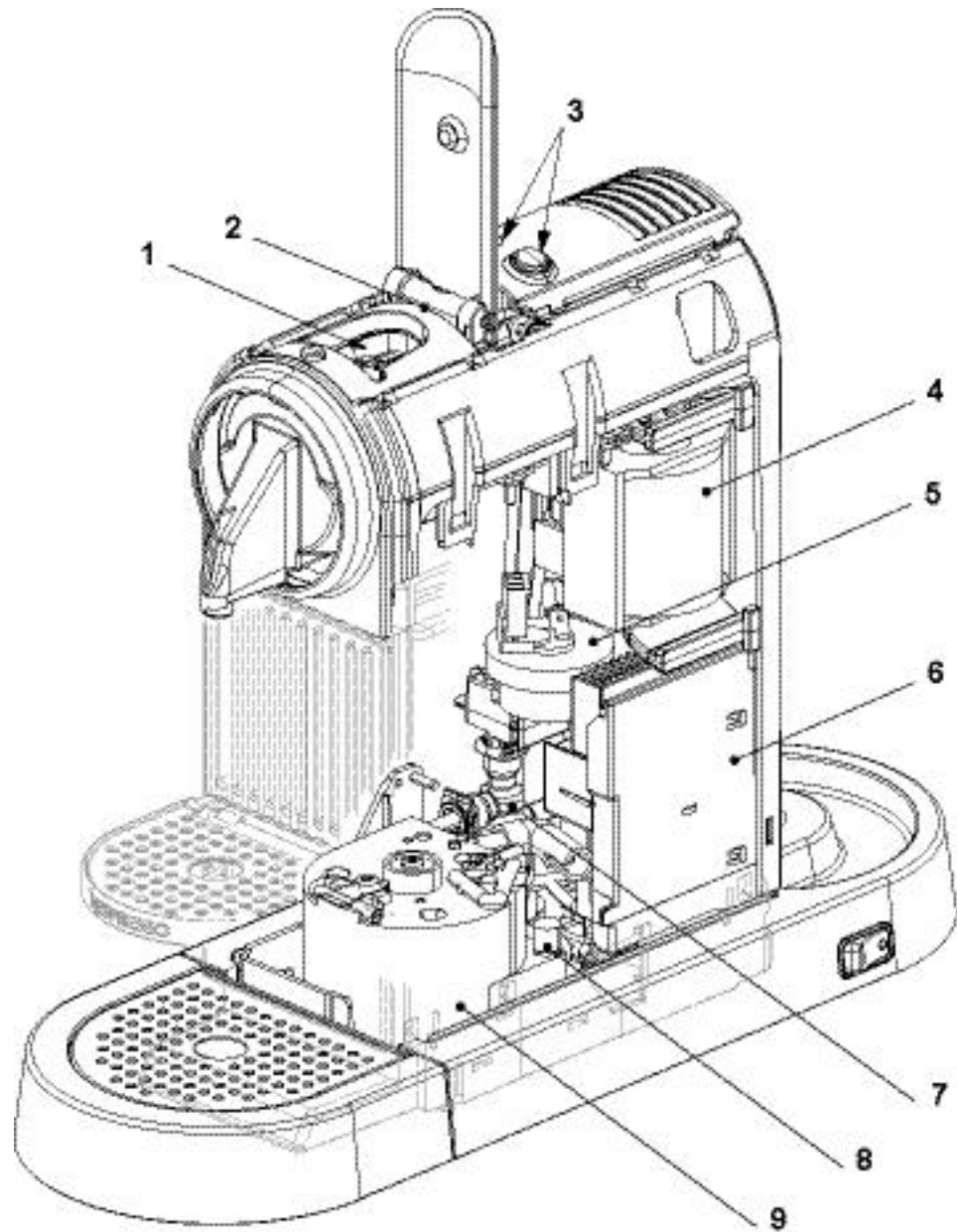
3.2 Overview - core unit, C-range



- | | |
|--------------------------------------|----------------------------------|
| 1) Cup support | 7) Steam cover |
| 2) Waste water container | 8) Closing handle |
| 3) Capsule container (used capsules) | 9) Button "small cup" (Espresso) |
| 4) Side panel, left | 10) Button "large cup" (Lungo) |
| 5) Side panel, right | 11) Top cover |
| 6) Coffee nozzle | 12) Rear cover |



3.2.1 Interior view - core unit, C-range

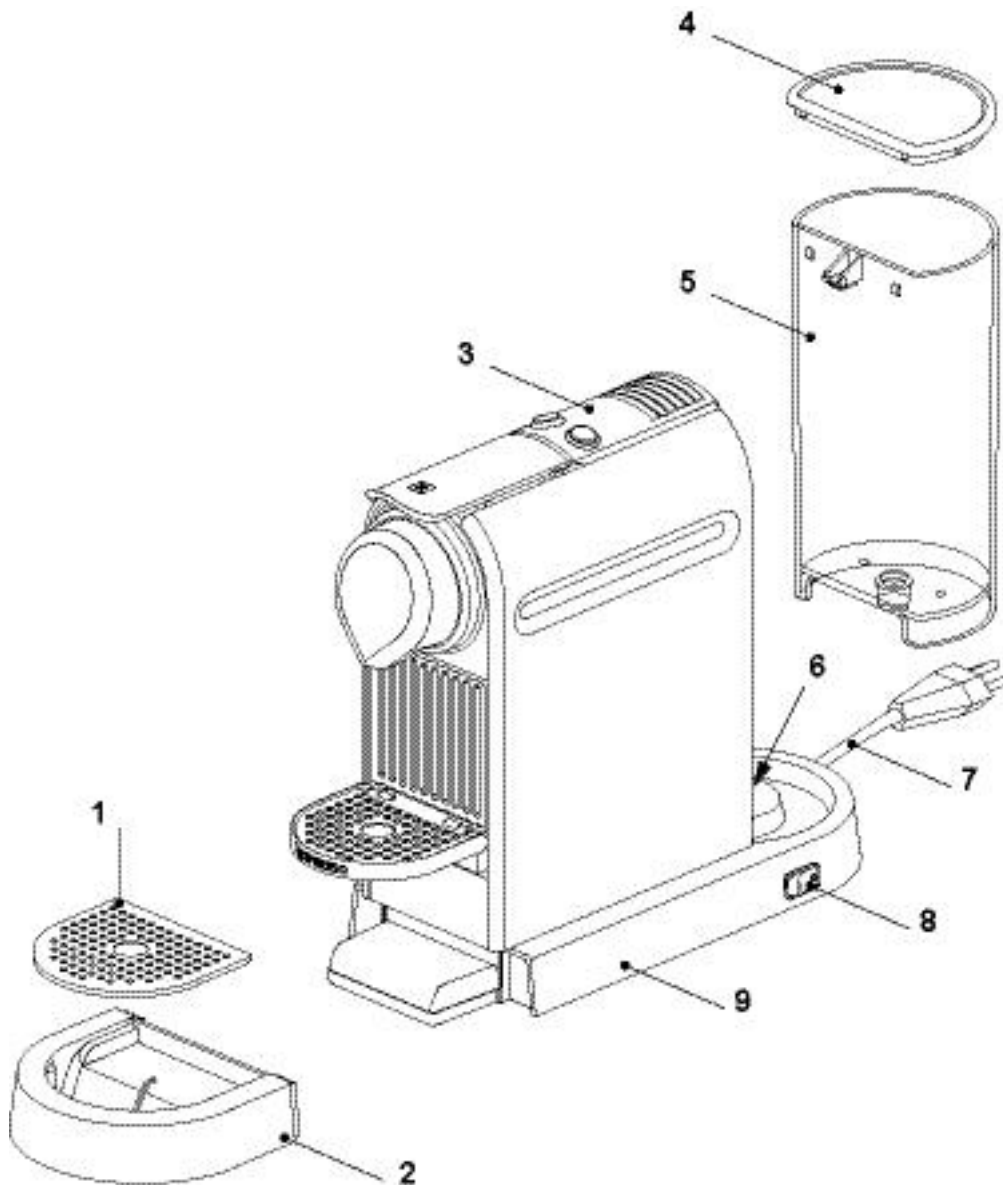


- | | |
|---|--|
| 1) Capsule bay | 6) Electronic control board (with protective covers) |
| 2) Brewing unit (TMBU, Tolkien Mini Brewing Unit) | 7) Self priming device (APD) |
| 3) Button prints (under top cover) | 8) NTC temperature sensor |
| 4) Pump (Invensys CP4/SP) | 9) Thermoblock (EF 2003) |
| 5) Flowmeter (FHKSC12) | |



3.3 Overview - model Citiz

i This model is pictured with a C-range core unit.



- | | |
|-----------------------------|---------------------------------|
| 1) Drip grid | 6) Water tank connector |
| 2) Drip tray | 7) Power cord |
| 3) Core unit (e.g. C-range) | 8) ON/OFF switch (mains switch) |
| 4) Water tank cover | 9) Platform |
| 5) Water tank | |

This is the basic model with the smallest platform (9).

The drip grid (1)

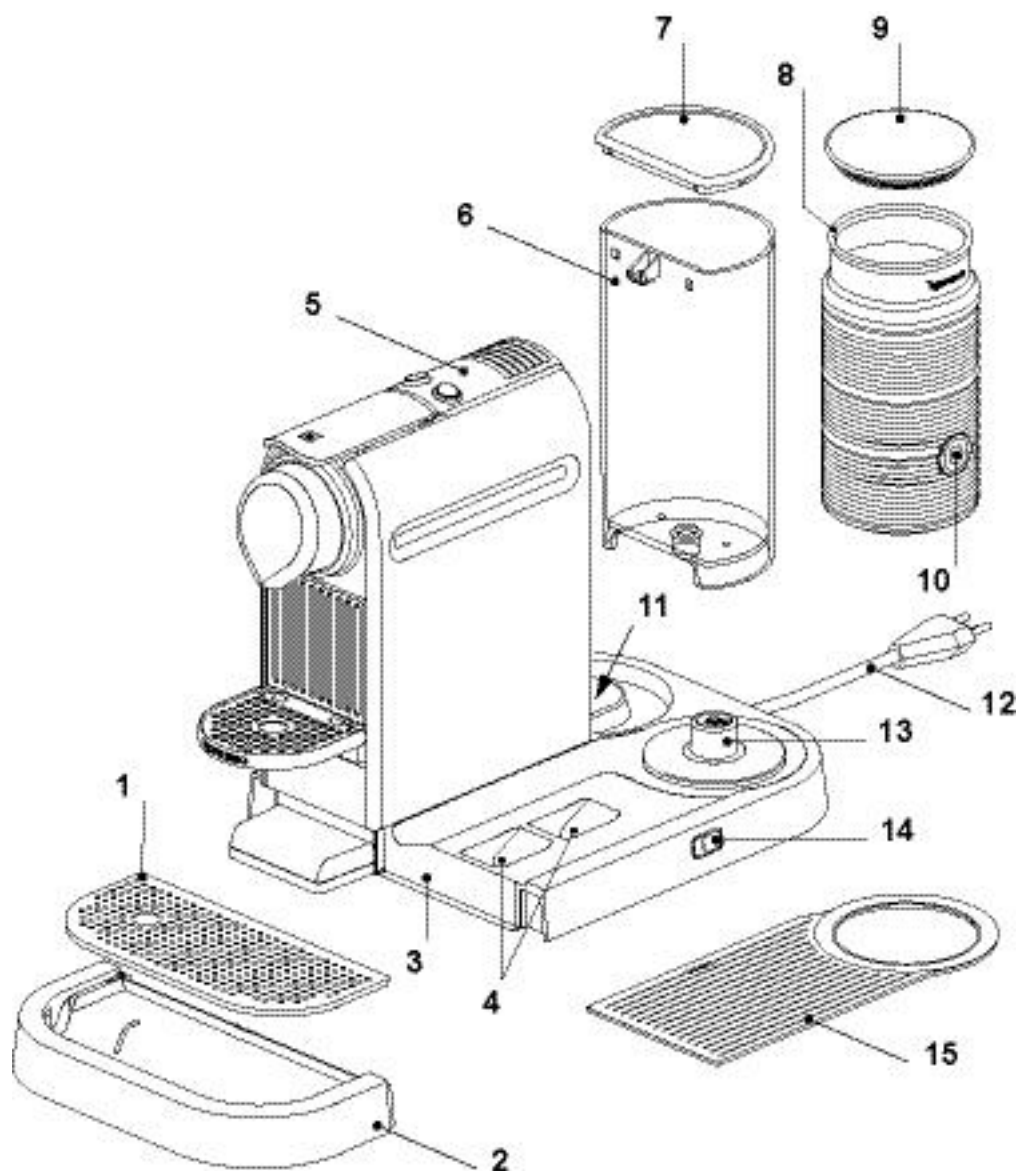
- exists in 2 versions,
- matches with the cup holder of the core unit version (e.g. circular recesses).

i The core units of model Citiz and Citiz & milk are not compatible due to different electronic control boards.



3.4 Overview - model Citiz & milk

i This model is pictured with a C-range core unit.



- | | |
|------------------------------|----------------------------------|
| 1) Drip grid | 9) Lid |
| 2) Drip tray | 10) Milk frother start button |
| 3) Platform | 11) Water tank connector |
| 4) Storage places for whisks | 12) Power cord |
| 5) Core unit (e.g. C-range) | 13) Milk frother connector |
| 6) Water tank | 14) ON/OFF switch (mains switch) |
| 7) Water tank cover | 15) Cup storage (removable) |
| 8) Milk frother (Aero 3) | |

i The core units of model Citiz and Citiz & milk are not compatible due to different electronic control boards.

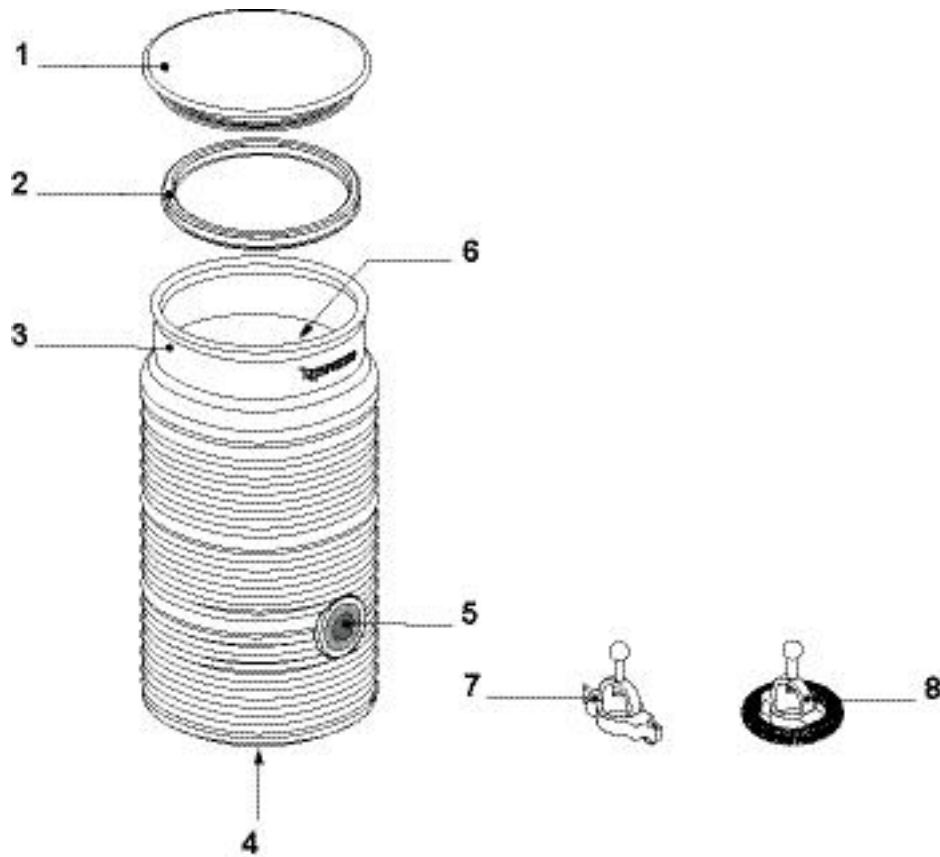
The platform of this model is equipped with a milk frother (8).

The drip grid (1)

- exists in 2 versions,
- matches with the cup holder of the core unit version (e.g. circular recesses).



3.4.1 Overview - milk frother AERO3



i The milk frother AERO3 is part of the standard equipment of the model Citiz & milk.

- | | |
|--|---|
| 1) Lid | 6) Indication of 2 max. milk levels (120 ml/240 ml) |
| 2) Seal | 7) Mixer for hot milk |
| 3) Jug | 8) Spring whisk for milk foam |
| 4) Power plug | |
| 5) Start button (red/blue backlighted) | |

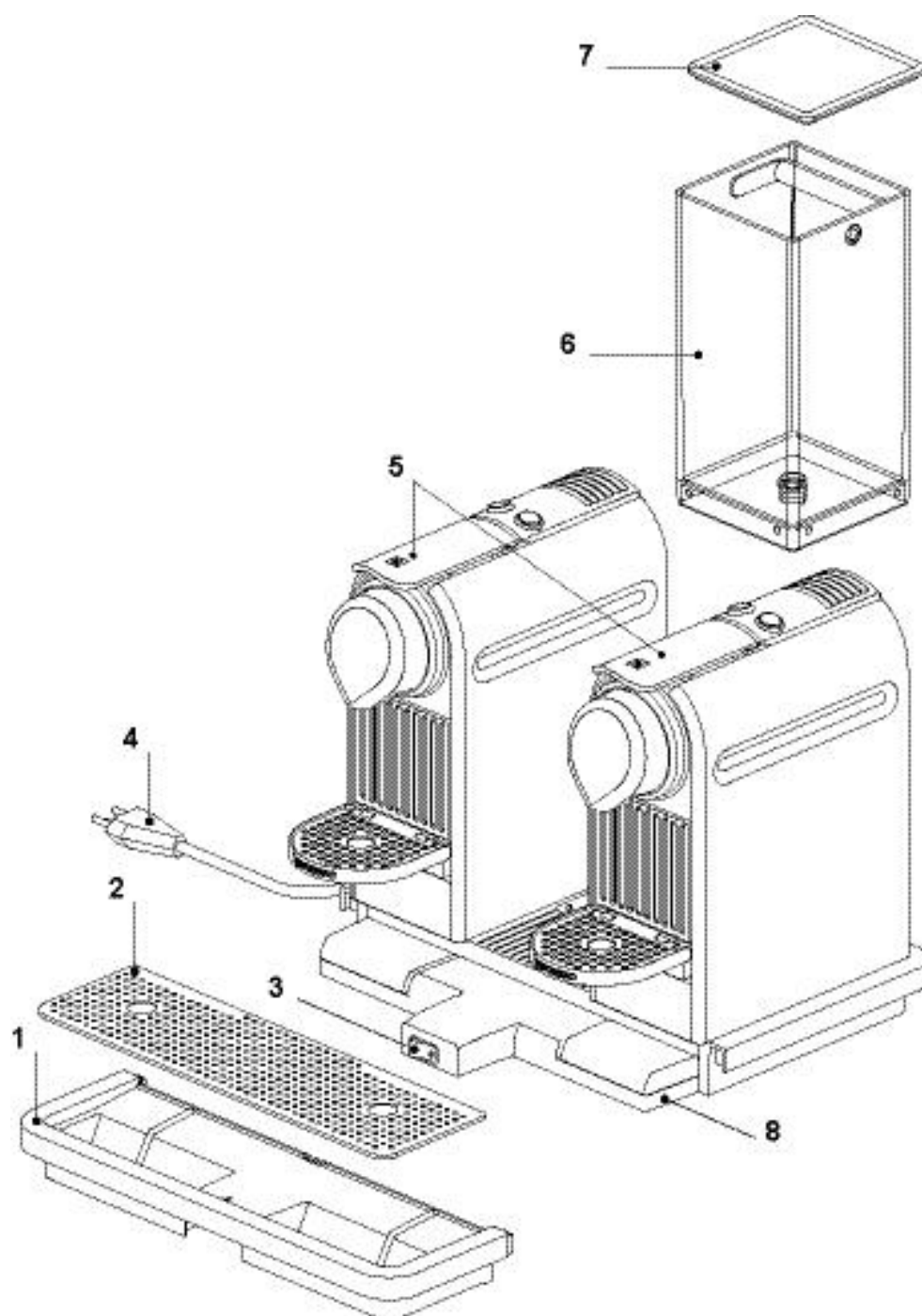
The inside of the jug (3)

- has level marks (6),
- is surface-coated for easy cleaning.



3.5 Overview - model Citiz & Co

i This model is pictured with a C-range core unit.



- | | |
|---------------------------------|----------------------------------|
| 1) Drip tray | 5) Core units (e.g. 2 x C-range) |
| 2) Drip grid | 6) Water tank |
| 3) ON/OFF switch (mains switch) | 7) Water tank cover |
| 4) Power cord | 8) Platform |

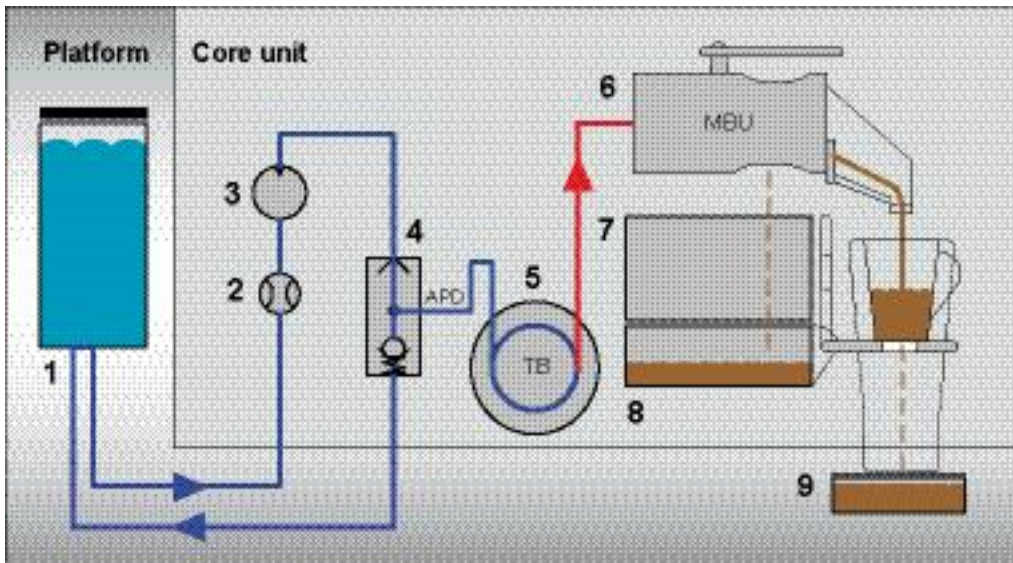
The drip grid (1)

- exists in 2 versions,
- matches with the cup holder of the core unit version (e.g. circular recesses).



3.6 Fluid System

3.6.1 Water circuit diagram of core unit (all Citiz versions)



- | | |
|------------------------|----------------------------|
| 1) Water tank | 6) Mini brewing unit (MBU) |
| 2) Flow meter | 7) Capsule container |
| 3) Pump | 8) Waste water container |
| 4) Self priming device | 9) Drip tray |
| 5) Thermoblock | |

Legend:

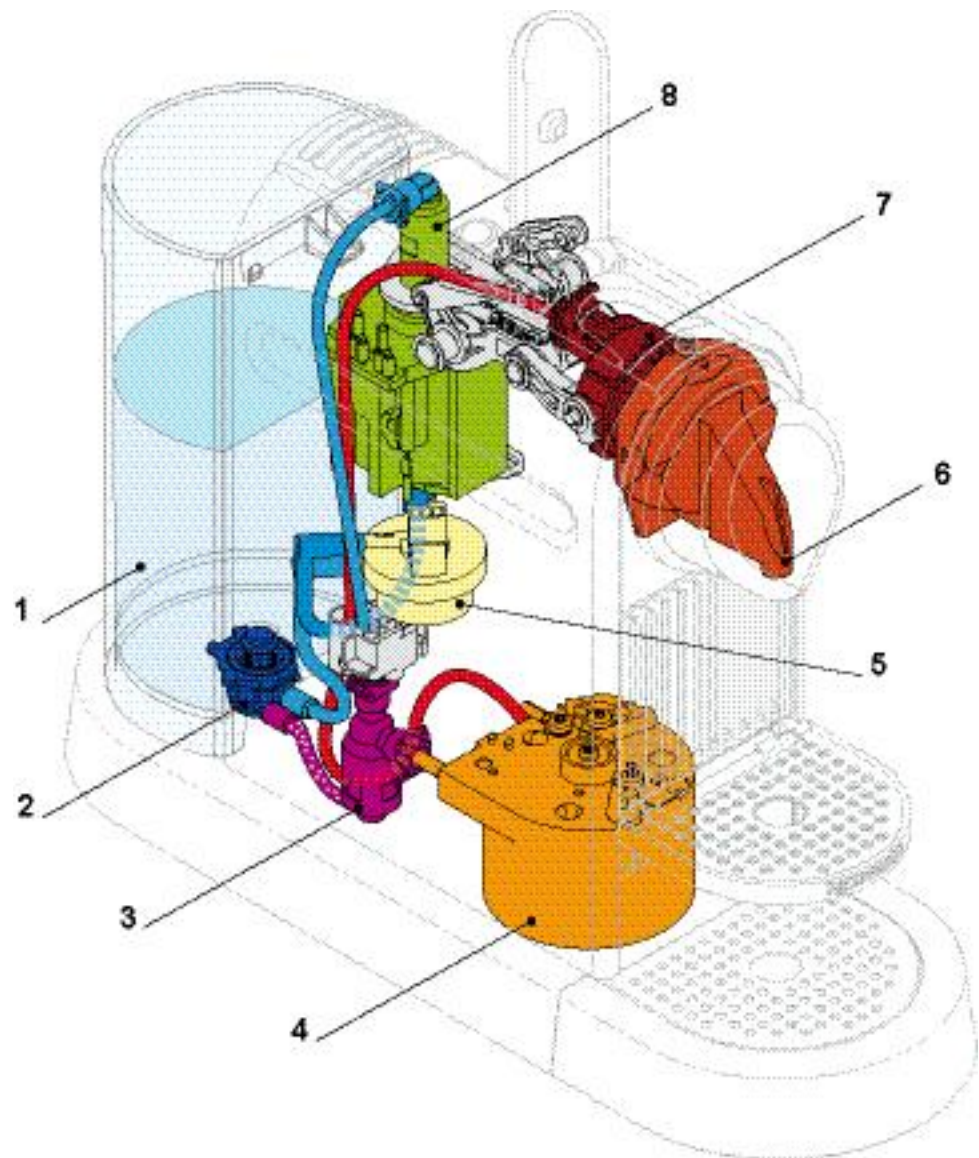
Fresh cold water	
Fresh hot water	
Coffee	
Waste/drip water	

The self priming device (4)

- allows the pump to suck water when it is filled with air (new machine, empty water tank etc.)
- removes air bubbles from the water circuit
- feeds a water/air mix back into the water tank.



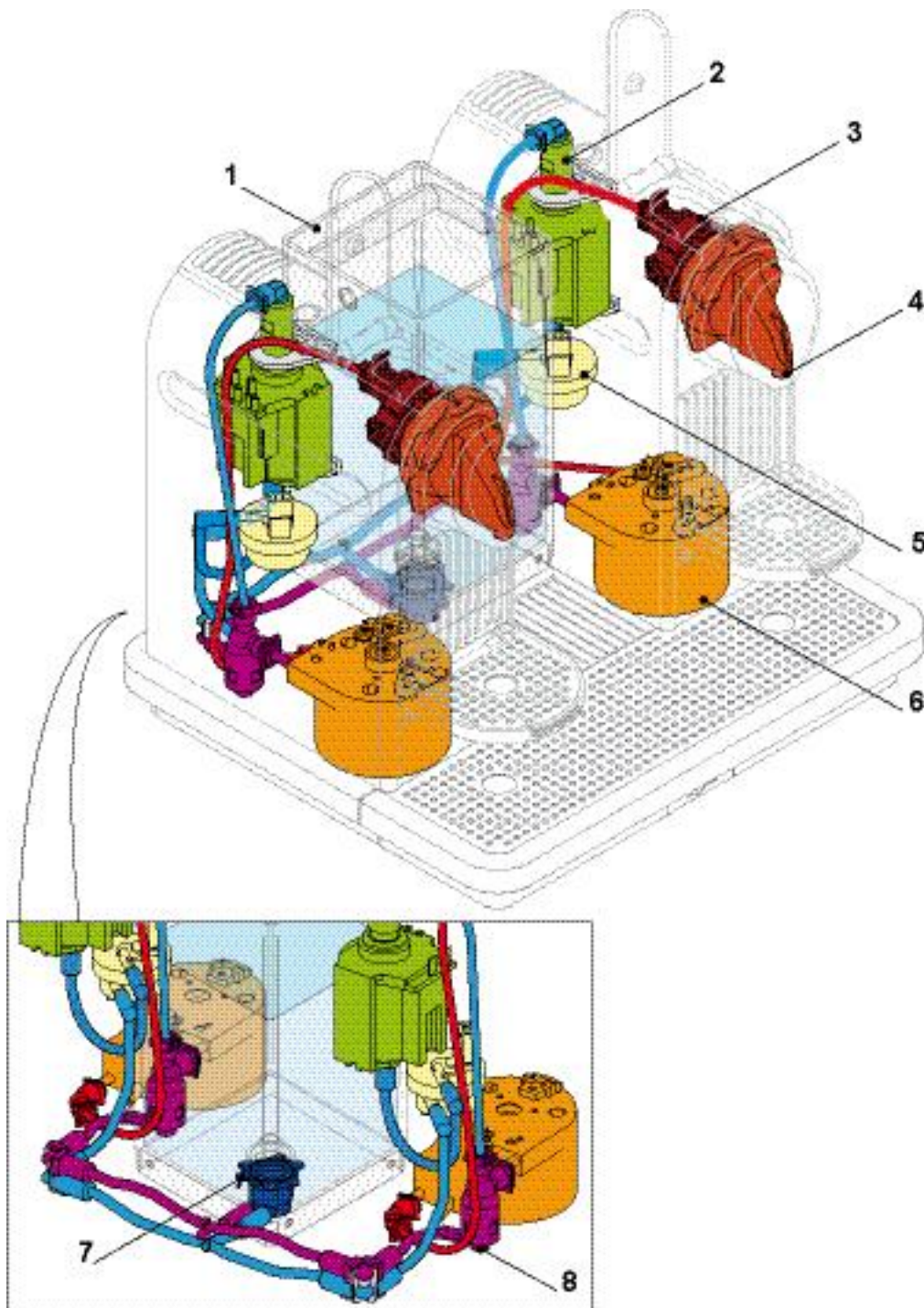
3.6.2 Water circuit of models Citiz/Citiz & milk



- | | |
|-------------------------|------------------|
| 1) Water tank | 5) Flow meter |
| 2) Water tank connector | 6) Coffee outlet |
| 3) Self priming device | 7) Brewing unit |
| 4) Thermoblock | 8) Pump |



3.6.3 Water circuit of model Citiz & Co



- | | |
|------------------|-------------------------|
| 1) Water tank | 5) Flow meter |
| 2) Pump | 6) Thermoblock |
| 3) Brewing unit | 7) Water tank connector |
| 4) Coffee outlet | 8) Self priming device |



4 TECHNICAL DATA

4.1 Rating plates

i The type plate can be found at the bottom of the coffee machine's platform.

i This overview shows examples of various brands and is subject to alterations.

4.1.1 Examples of brand specific rating plates

Nespresso, EU-version



EF484 Citiz C110 red



EF483 Citiz D110 black



EF486 Citiz & milk C120 red



EF485 Citiz & milk D120 black



EF488 Citiz & Co C130 red



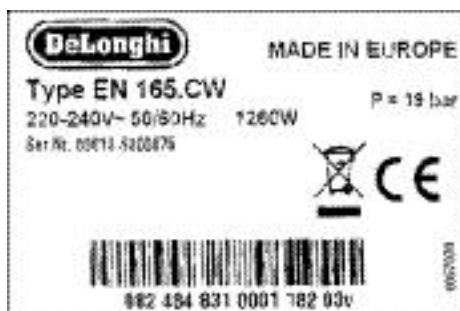
EF487 Citiz & Co D130 black



DeLonghi, EU-version



EF483 Citiz D110 Limousine black/DeLonghi EN165.B



EF483 Citiz D110 60's White/DeLonghi EN165.CW

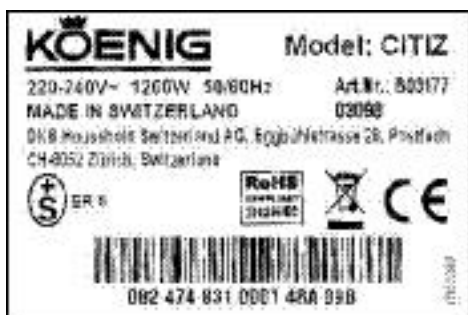


EF485 Citiz & milk D120 Limousine black/DeLonghi EN265.BAE

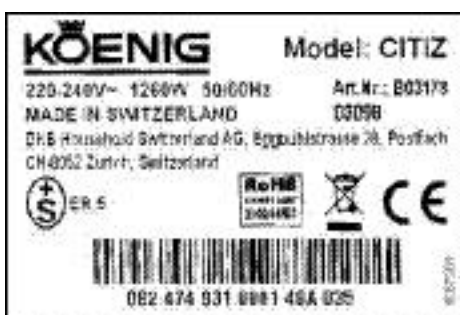


EF487 Citiz & Co. D130 Limousine black/DeLonghi EN325.B

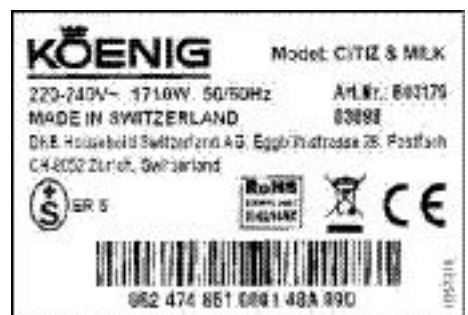
Koenig, CH-version



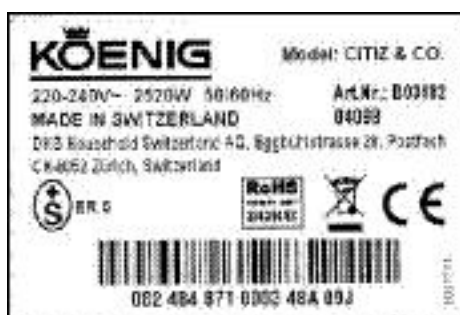
EF483 Citiz D110 Limousine black/Koenig Citiz



EF483 Citiz D110 60's White/Koenig Citiz



EF485 Citiz & milk D120 Limousine black/Koenig Citiz & milk



EF487 Citiz & Co. D130 Limousine black/Koenig Citiz & Co.

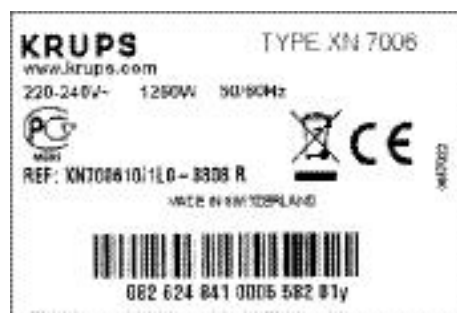


TECHNICAL DATA

Krups, EU-version



EF484 Citiz XN700510 grey



EF484 Citiz XN700610 red



EF486 Citiz & milk XN710610 red



EF488 Citiz & Co XN750510 grey

Magimix, EU-version



EF483 Citiz M190 - Ref 11290 black



EF483 Citiz M190 - Ref 11291 cream



EF485 Citiz M190 Milk - Ref 11300 black



EF487 Citiz M190 Duo - Ref 11305 black



Turmix, AT-version



EF484 Citiz C110 fire engine red/ Turmix TX 170 - Citiz



EF484 Citiz C110 steel grey/Turmix TX 170 - Citiz

EF486 Citiz & milk C120 fire engine red/
Turmix TX 270 - Citiz & milkEF488 Citiz & Co. C130 steel grey/
Turmix TX 370 - Citiz & Co.

4.1.2 Rating plate details



- | | |
|---|--|
| 1) Brand name | 7) Serial number |
| 2) Voltage and power rating | 8) Machine type |
| 3) Place of manufacture | 9) Special disposal icon
(do not dispose with ordinary waste) |
| 4) National approval sign of Russia
(GOST R) | 10) Sign of conformity (CE) |
| 5) National approval sign of Germany
(VDE) | 11) Conform with RoHS guidelines (lead
free solder, etc.) |
| 6) Barcode | 12) Article number of the rating plate |

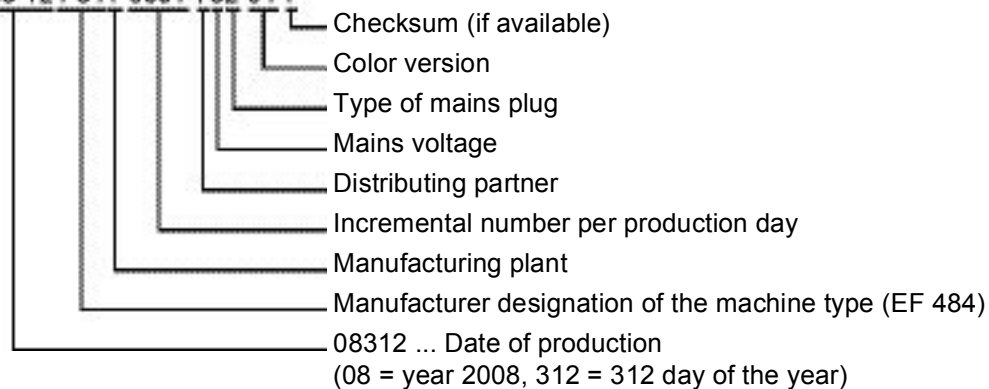


i By decoding the date of production and machine type, the coffee machine can be identified exactly.

Decoding the alphanumeric serial number

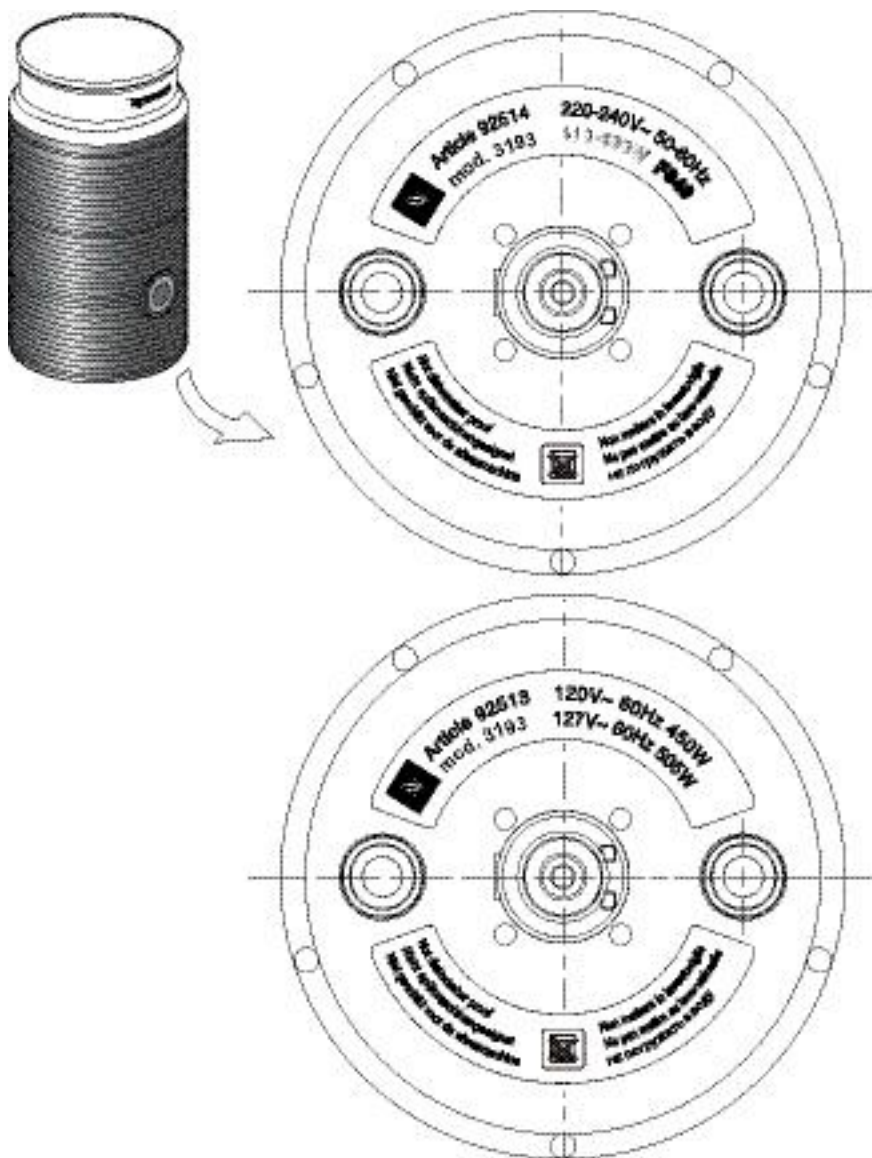
Example:

083 124 841 0001 782 0Y P



4.1.3 Rating plate of milk frother (model Citiz & milk)

i Note the mains voltage ranges of the different models.





4.2 Summary of technical data

4.2.1 Technical data of coffee machines

Mains voltage ranges

Mains voltage for Citiz

- Europe, RU, AU, CN, KR, SG, HK, ME, ZA, IL, BR, AR..... 220-240 V / 50-60 Hz
- USA, Canada, BR, MX 120-127 V / 50-60 Hz
- Japan 100 V / 50-60 Hz*

Mains voltage for Citiz & milk

- Europe, RU, AU, CN, KR, SG, HK, ME, ZA, IL, BR, AR..... 220-240 V / 50-60 Hz
- USA, Canada, BR, MX 120-127 V / 50-60 Hz

Mains voltage for Citiz & Co

- Europe, RU, AU, ME, IL..... 220-240 V / 50-60 Hz

i Technical data are valid for all Citiz models unless explicitly stated otherwise.

Approvals

Approvals for Citiz CE, UL "for USA and Canada", PSE, Gost R, Ctick, CCC, KTL, SPRING, SASO, SABS, ISI, IRAM, NOM

Approvals for Citiz & milk CE, UL "for USA and Canada", Gost R, Ctick, CCC, KTL, SPRING, SASO, SABS, ISI, IRAM, NOM

Approvals for Citiz & Co CE, Gost R, Ctick, SASO, ISI

Power ratings of coffee machine main components

(for all voltages and frequencies)

Thermoblock 1200 W*

*model Citiz & Co, Australia: 1080 W

Pump..... 55/60 W

Performance data of core unit

Heating up

- Citiz approx. 7.6 Wh
- Citiz & milk approx. 7.6 Wh
- Citiz & Co approx. 14.9 Wh

1 small cup (40 ml*)

- Citiz approx. 4.3 Wh
- Citiz & milk approx. 4.3 Wh
- Citiz & Co (both heads) approx. 7.6 Wh

* Default setting



TECHNICAL DATA

1 large cup (110 ml*)

- Citiz approx. 8.7 Wh
- Citiz & milk approx. 8.7 Wh
- Citiz & Co (both heads) approx. 14.8 Wh

* Default setting

Standby operation (in 1 hour)

- Citiz approx. 0.7 Wh
- Citiz & milk approx. 0.7 Wh
- Citiz & Co approx. 2.2 Wh

Pump

Pump pressure

- Max. permissible 17.5 bar $\pm$ 1.5 bar
- During coffee preparation (depending on the type of coffee) 9-16 bar

Flow performance 120-240 ml/min. at 12 bar

Capacities

Water tank

- Citiz 1.0 l
- Citiz & milk 1.0 l
- Citiz & Co 1.4 l

Drip tray

- Citiz 100 ml
- Citiz & milk 180 ml
- Citiz & Co 250 ml

Capsule container

- Citiz, Citiz & milk 9-11 capsules
- Citiz & Co 2x (9-12) capsules

Temperatures

Operating temperature + 5 °C up to + 45 °C

Storage temperature - 25 °C up to + 60 °C

Safety temperature (thermal cut-off) 167 °C

Coffee temperature at outlet 86 °C $\pm$ 3 °C

Various data

Noise during brewing cycle max. 60 dB(A)*

* model Citiz & milk: measured without milk frother

* model Citiz & Co: measured with only one core unit running

Preheating time approx. 60 sec

Cable length approx. 1.2m

i Advised water tank capacities to avoid spilling.



4.2.2 Technical data of milk frother (model Citiz & milk)

Mains voltage

Europe 220-240 V / 50-60 Hz

USA/Canada 120-127 V / 50-60 Hz

The milk frother

- is available in 2 different models, depending on above mains voltage ranges,
- has to match the mains voltage range of the associated coffee machine.

i If replacing a defect milk frother, check mains voltage range.

Power rating (depending on mains voltage)

220-240 V, 50-60 Hz 410-490 W

110-127 V, 50-60 Hz 380-505 W

Standby operation < 1 W

Power consumption

Preparation	Voltage	120 V	127 V	220 V	230 V	240 V
	Unit					
Froth milk: hot (starting with cold device)						
Measured power	W	452	506	407	445	485
Intensity	A	3.77	3.98	1.85	1.93	2.02
Consumption for 2 test preparations	Wh	19	19	19	19	19
Froth milk: cold (starting with cold device)						
Measured power	W	1.98	2.24	2.72	2.80	3.01
Intensity of current (cos. = 0.58)	A	40.93	44	30.82	27.51	25.97
Consumption for 2 test preparations	Wh	0.08	0.09	0.11	0.12	0.13
Hot milk (starting with cold device)						
Measured power	W	452	506	407	445	485
Intensity of current	A	3.77	3.98	1.85	1.93	2.02
Consumption for 2 test preparations	Wh	37	37	37	37	37

Capacity

Hot milk max. 240 ml

Hot/cold milk for milk froth max. 130 ml



TECHNICAL DATA

Performance data

Whisk speed	2'000-2'700 rpm
Preparation times (with full, semi-skimmed or skimmed milk at 8 °-10 °C fridge temperature)	
Hot milk froth (120 ml)	50-80 sec
Cold milk froth (120 ml)	60-80 sec
Hot milk (240 ml)	120-180 sec

Temperature

Hot milk	+ 60 °C to + 70 °C
Foam milk	+ 60 °C to + 70 °C

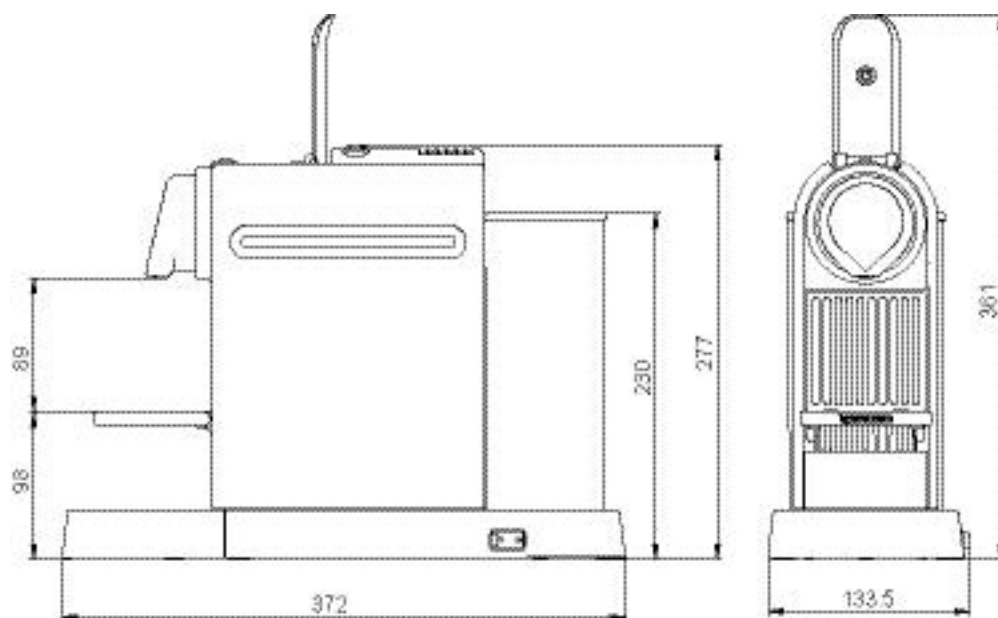
Various data

Noise emission	max. 55 dB(A)
----------------------	---------------

4.2.3 Dimensions and weight - model Citiz

i The overall dimensions are the same for both core unit versions (C- and D-range).

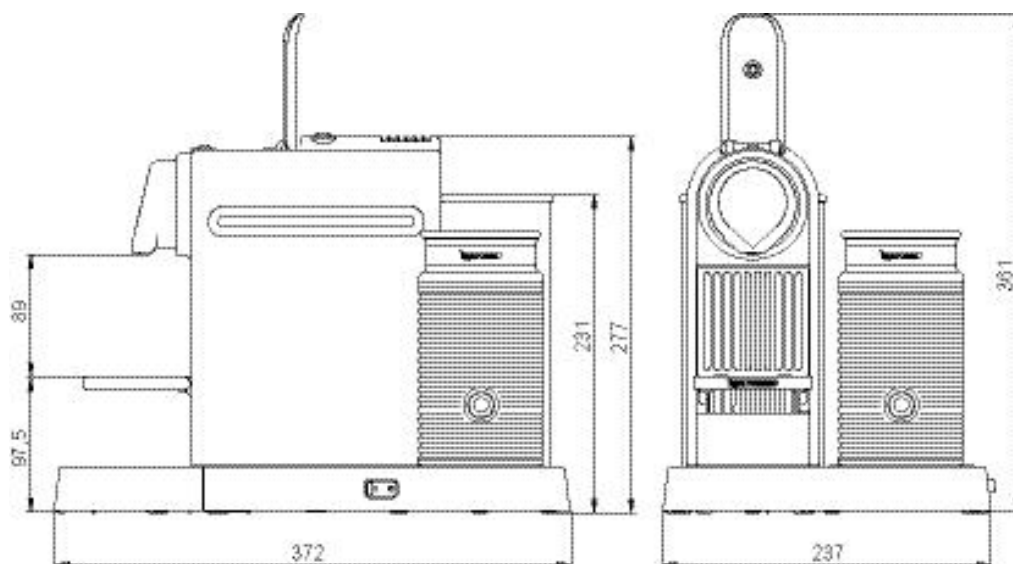
Dimensions in mm



Dimensions (width x height x length)	130 x 277 x 372 mm
Cup support down	85-90 mm, for espresso and lungo cups/glasses
Cup support up	150-155 mm, for macchiato glasses
Weight (without water)	approx. 3.4 kg



4.2.4 Dimensions and weight - model Citiz & milk



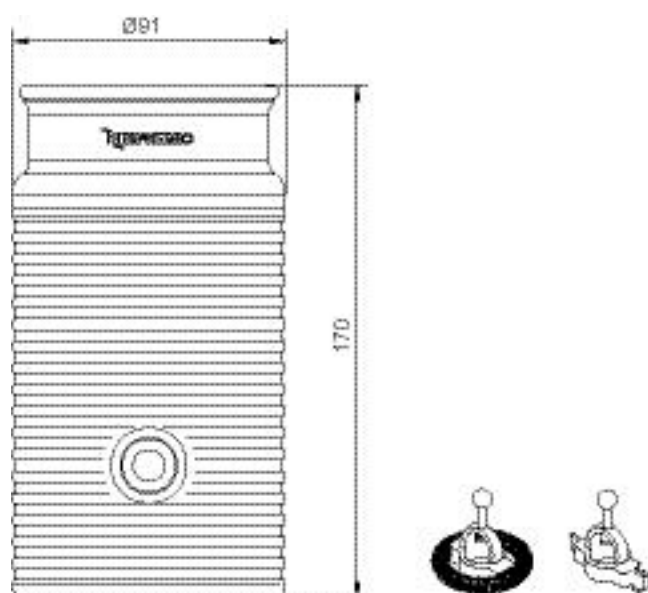
i The overall dimensions are the same for both core unit versions (C- and D-range).

Dimensions in mm

Dimensions (width x height x length) 237 x 277 x 372 mm

Weight (without water, milk frother included) approx. 4.6 kg

4.2.5 Dimensions and weight - milk frother



Dimensions of jug cpl. (diameter x height) 91 x 170 mm

Whisk for foam (diameter x height) 33 x 32 mm

Mixer for hot milk 15 x 34 x 32 mm

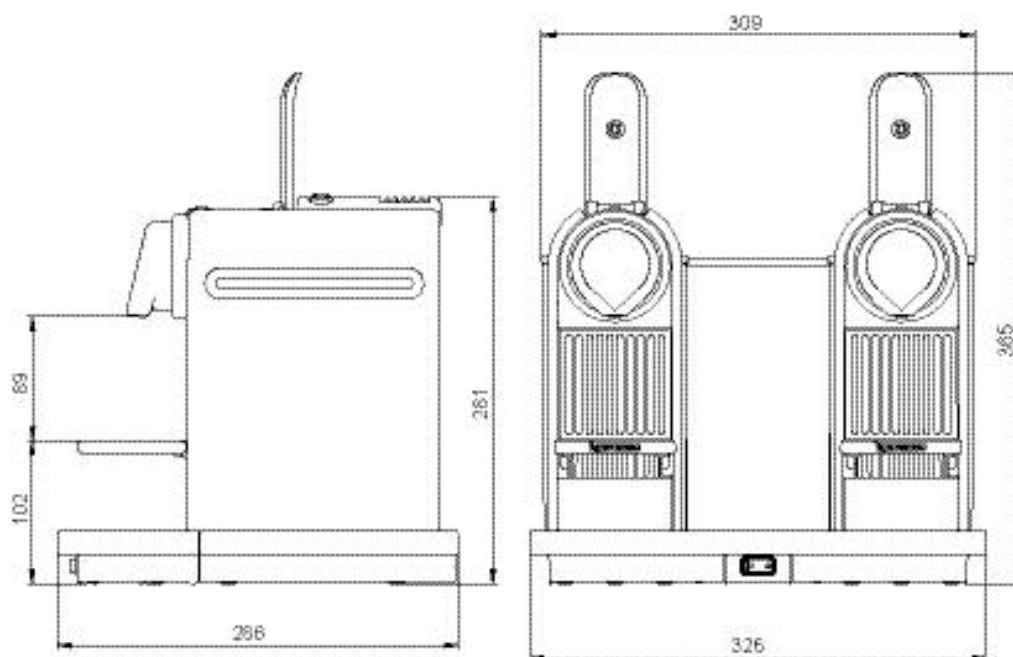
Weight (with whisk and mixer) 0.7 kg



i The overall dimensions are the same for both core unit versions (C- and D-range).

Dimensions in mm.

4.2.6 Dimensions and weight - model Citiz & Co



Dimensions (width x height x length)..... 326 x 281 x 286 mm

Weight (without water).....approx. 7 kg



5 OPERATION

5.1 General information

For an overview of operational controls see “Main Components” on page 9.

For basic operation of the machine such as preparing a coffee and other related information, refer to the user manual.

To simplify matters, the model Citiz with core unit C-range is used to exemplify throughout this chapter.

5.2 Status indication

5.2.1 Status indication of coffee machine

The two coffee buttons with green LED backlight show the status of the coffee machine according to the following table:

Machine status etc.	"Small cup" button	"Large cup" button	LED signal
Off			Both LED's off
Self test			Blinking 1 Hz, 0.5 s on, 0.5 s off
Error			Blinking fast (2 Hz, 0.25 s on/0.25 s off) 3 times every 2 seconds
Heat up			Blinking 1 Hz, 0.5 s on, 0.5 s off
Ready			Both LED's on
Brewing small cup			Blinking 1 Hz, 0.5 s on, 0.5 s off
Brewing big cup			Blinking 1 Hz, 0.5 s on, 0.5 s off
Rinse small cup			Blinking 1 Hz, 0.5 s on, 0.5 s off (same as brewing small cup)
Rinse big cup			Blinking 1 Hz, 0.5 s on, 0.5 s off (same as brewing big cup)



OPERATION

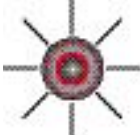
Machine status etc.	"Small cup" button	"Large cup" button	LED signal
Volume brewing small cup			Blinking 1 Hz, 0.5 s on, 0.5 s off (same as brewing small cup)
Volume brewing big cup			Blinking 1 Hz, 0.5 s on, 0.5 s off (same as brewing big cup)
Descaling ready			Blinking 2 Hz, 0.25 s on, 0.25 s off
Descaling pump on (descal)			Blinking 2 Hz, 0.25 s on, 0.25 s off (same as descaling ready mode)
Descaling pump off (descal)			Blinking 2 Hz, 0.25 s on, 0.25 s off (same as descaling ready mode)
Emptying / Evaporating			Blinking 2 Hz, 0.25 s on, 0.25 s off
Standby	 	 	Blinking 0.5 Hz, 1 s on, 1 s off alternately
Resetting			Blinking 2 Hz, 0.25 s on, 0.25 s off indication for 3 s
Power save	 	 	Blinking 0.2 Hz, 2.5 s on, 2.5 s off alternately
Overheat			Blinking 1 Hz, 0.5 s on, 0.5 s off (same as heat up)
Power save activation	 	 	Blinking 0.5 Hz, 1 s on, 1 s off alternately 5 times



Machine status etc.	"Small cup" button	"Large cup" button	LED signal
Power save deactivation (only for model Citiz & Co)			Blinking 0.5 Hz, 1 s on, 1 s off alternately 3 times

5.2.2 Status indication of milk frother AERO3

The operating button with red/blue backlight shows the status of the milk frother according to the following table:

Machine status etc.	Operating button	Light signal
Off		Backlight off
On - hot milk preparation		Red backlight on
On - cold milk froth preparation		Blue backlight on
Failure/malfunction (e.g. overheating because of burnt milk, too less or no milk)		Blinking red backlight (1 Hz, 0.5 s on, 0.5 s off)
Failure: milk frother has wrong mains voltage range		Fast blinking red backlight (2 Hz, 0.25 s on, 0.25 s off)

i To reset a red blinking backlight:

1. Remove milk frother from platform.
2. Remove cause of failure if possible.



5.3 Machine modes

5.3.1 Machine modes of Citiz coffee machines

This table helps to understand the operating modes of a Citiz coffee machine:

Machine mode	Enter mode	Actions	Exit mode
1 Heat up mode	Every time after switching on machine	Heats up thermoblock to ready temperature 90 °C within 60 s without overshooting target temperature	e.g. switching off machine
2 Self test mode	Every time after switching on machine	Tests: • NTC short circuit • NTC connected • Thermoblock heating curve Error handling: Tracking of the last 5 errors by a ring buffer	e.g. switching off machine
3 Ready mode	• After heat up and self test mode was ok • After brewing or volume brewing coffee • After reset mode • After leaving descaling mode	Keeps thermoblock temperature at 90 °C	e.g. switching off machine
4a Brewing mode 4b Volume brewing mode (programming cup size)	• Press and release large or small coffee button (brewing mode) • Press and hold large or small coffee button for more than 3 s (programming mode)		• Press and release large or small coffee button when machine was in brewing mode or automatic exit given by the flow meter • Release large or small coffee button when machine was in programming mode • Switching off machine
5 Descaling mode	• Switch on machine, wait until ready • Press and hold both coffee buttons for at least 3 s	• Regulate temperature to 65 °C (after pump was started) • Stop and start pump with any coffee button, no volume brewing in descaling mode	• Press and hold both coffee buttons for at least 0.5 s Note: When machine is switched off during any descaling mode, then it goes to descaling mode ready state after next switch on.



Machine mode	Enter mode	Actions	Exit mode
6 Emptying mode (evaporating)	1) Switch off machine 2) Press and hold small coffee button 3) Switch on machine	1) Start pump 2) Stop pump after 10 s 3) Heat up thermoblock to 105 °C (100% power) 4) Switch off thermoblock 5) Go to standby mode	Switch off machine
7 Resetting mode	1) Switch off machine 2) Press and hold large coffee button 3) Switch on machine	- Reset the programmed large and small coffee volumes to factory setting - Indicate the resetting mode for 3 s Factory settings: - small cup 40 ml - large cup ... 110 ml	proceeds with self test mode automatically
8 Power save mode	To enable power save mode: 1) Switch off machine 2) Press and hold both coffee buttons 3) Switch on machine 4) Coffee button LED's blink 5 times alternatively as confirmation After that automatically after 30 min of non use	- Reduce thermoblock temperature - Switch LED indication to power save mode (blinking alternately every 2 sec)	Press any coffee button to activate ready mode To disable power save mode: 1) Switch off machine 2) Press and hold both coffee buttons 3) Switch on machine 4) Coffee button LED's blink 3 times alternatively as confirmation
9 Failure mode	Automatically by following failures: a) NTC short circuit b) NTC not connected c) Heat up too slow	Machine indicates failure with coffee button LED's as long as the failure is present	When failure is fixed
10 Standby mode	Automatically after emptying mode	- Switch thermoblock off - Switch LED indication to standby mode	Switch off the machine

5.3.2 Machine modes of milk frother AERO3

Machine mode	Enter mode	Actions	Exit mode
1 Hot milk / milk froth preparation	Press start button briefly	Start button lights up red. Milk is heated and mixed.	Automatic switch-off after preparation
2 Cold milk froth preparation	Keep start button pressed for approx. 2 sec	Start button lights up blue. Milk is mixed only.	Automatic switch-off after preparation



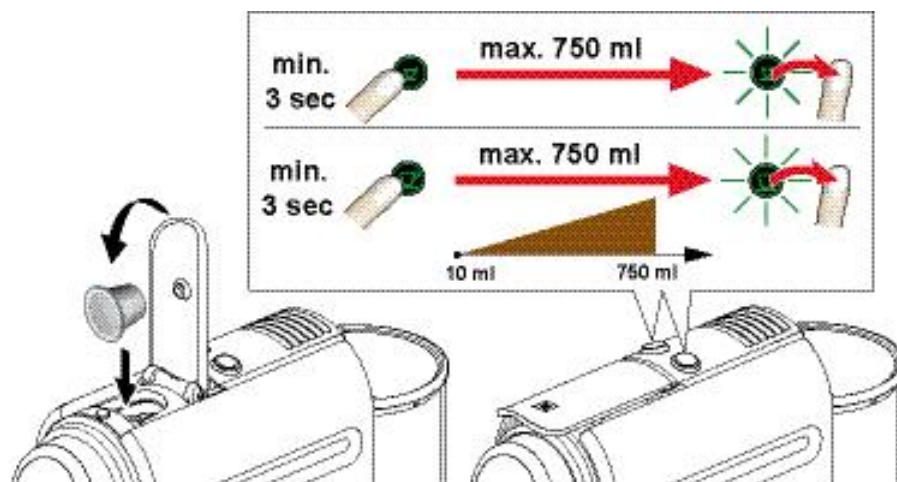
5.4 Program/reset fill up level

Each coffee button can be programmed with a coffee volume for an individual cup size. The procedure for programming/resetting is the same for both coffee buttons.

5.4.1 Programming the fill up level

Programmable volume range 10-750 ml

 Each new programming cycle starts with the min. volume (10 ml after 3 sec), regardless of a preprogrammed coffee volume.

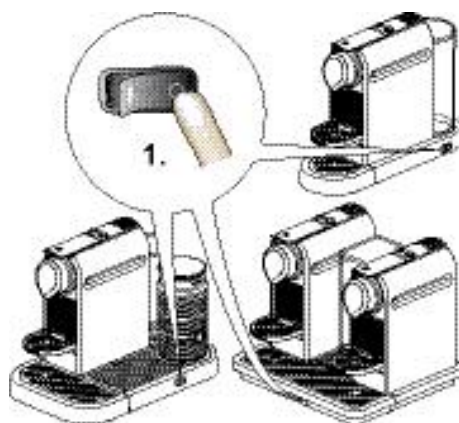


- 1) Prepare coffee as usual (see user manual), but keep the coffee button pressed for at least **3 seconds** in order to start programming mode.
- 2) Only release the button when the desired fill level is reached.

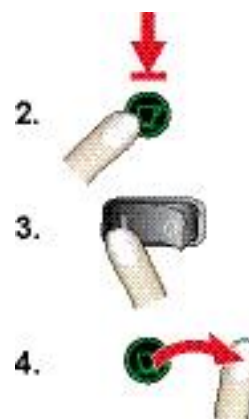
5.4.2 Resetting the fill up level

With the following procedure all programmed fill up levels will be set back to this factory settings:

Coffee button "small cup" 40 ml
Coffee button "large cup" 110 ml



- 1) Switch off the coffee machine.



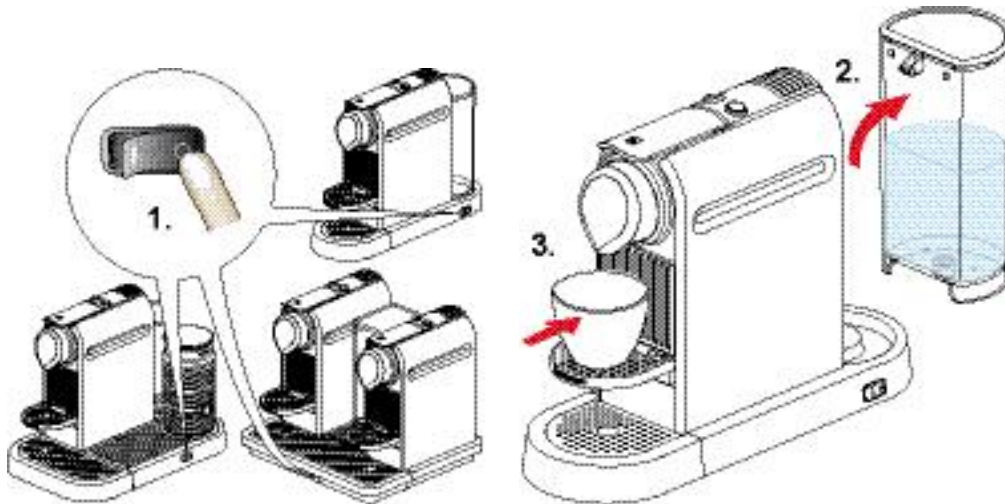
- 2) Press and hold the "large cup" button.
- 3) Switch on the coffee machine.
- 4) Release "large cup" button.



5.5 Empty water system

After every operation, some water remains in the coffee machine. Therefore the water system must be emptied

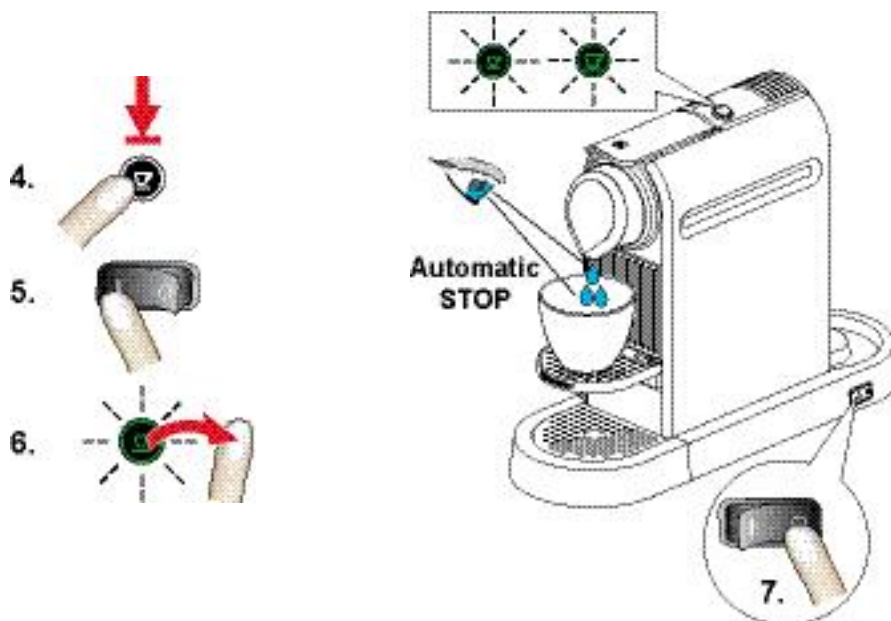
- if the coffee machine will not be used for a long time
- as antifreeze measure
- for repairs and shipment.



1) Switch off coffee machine.

2) Remove water tank.

3) Place a beaker under the coffee outlet.



- 4) Press and hold button "small cup".
- 5) Switch the coffee machine on again.
- 6) Release button "small cup".

- The pump starts to drain the water system and stops automatically.
 - The coffee buttons blink fast simultaneously.
- 7) After automatic stop, switch off the coffee machine.

i Model Citiz & Co:
Only one core unit
should be emptied at
the same time (danger of
mains supply overload).

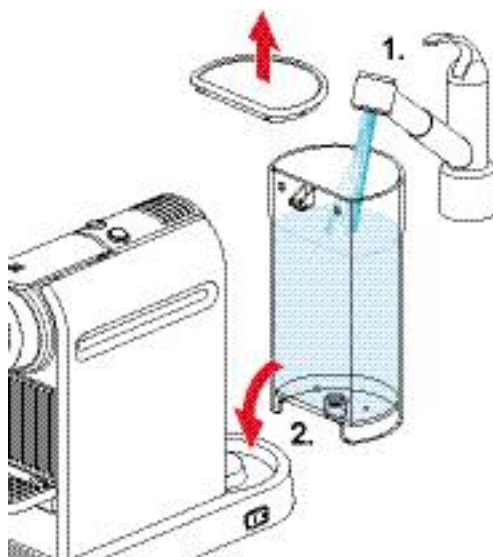
i After this procedure,
the coffee machine
will not be ready for
approx. 10 min (until the
thermoblock cools to below
100 °C).

6 MAINTENANCE

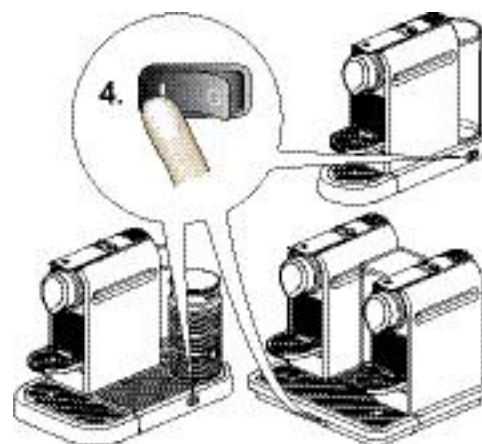
6.1 Daily maintenance and cleaning

6.1.1 Before first coffee or at the start of day

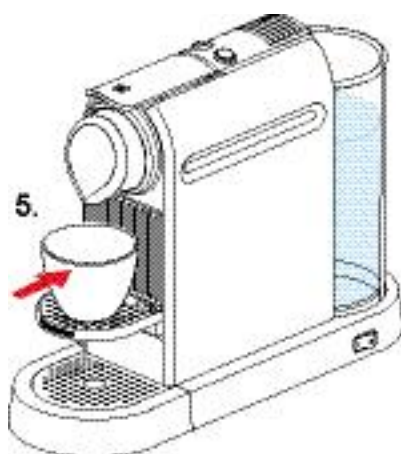
 The Citiz model is shown as example. Maintain and clean other models accordingly.



- 1) Fill water tank with fresh potable water.
- 2) Insert water tank.
- 3) For model Citiz & milk:
Attach whisk to milk frother. Place milk frother on base plate connector.



- 4) Switch machine on.



- After a longer period of non use:
- 5) Place a container under coffee outlet.



- 6) Rinse coffee machine by pressing button "large cup" about 6 times.

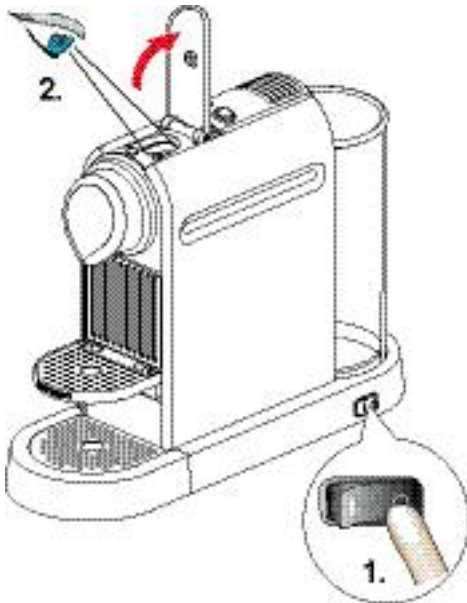


6.1.2 After last coffee or at the end of day

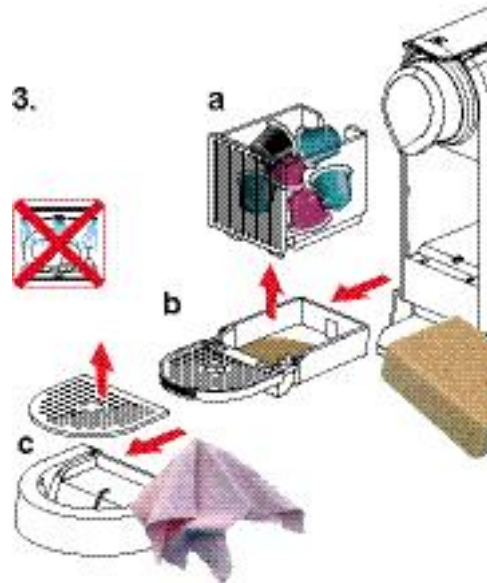


Risk of fatal electrical shock and fire!

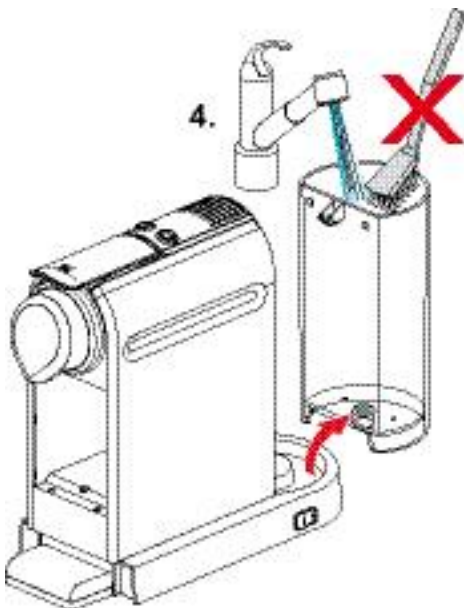
Never clean wet or immerse plug, cord or appliance in any fluid.
Unplug appliance and let it cool down to avoid burns.



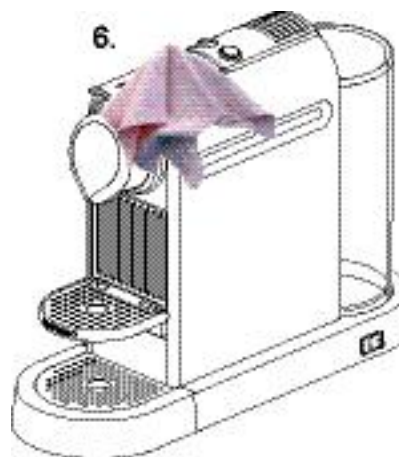
- 1) Switch machine off.
- 2) Check if capsule is ejected.



- 3) Empty and clean
 - capsule container (a)
 - waste water container with cup support (b)
 - drip tray with drip grid (c).



- 4) Empty, rinse and clean water tank.



- 5) Reassemble coffee machine.
- 6) Clean coffee machine with a damp cloth if necessary.

i Platform and drip tray surfaces are not abrasion-proof.

Never use brushes and/or cleaning agents that contain aggressive or chemical components resp. solvents.

Do not put any part in a dishwasher.

Use only a damp cloth or sponge and a mild cleaning agent if necessary

i Do not use a brush - the water tank can be scratched.



6.1.3 Milk frother of model Citiz & milk

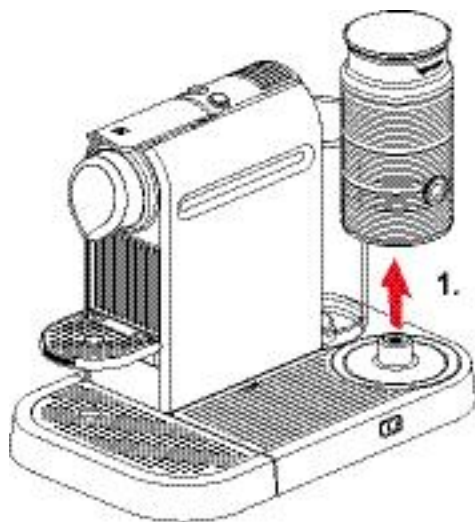
**Risk of damage!**

The inside of the jug is coated for easy cleaning.

Never use brushes and/or cleaning agents that contain abrasive or aggressive, chemical components resp. solvents.

Do not put any part in a dishwasher.

Use only a damp cloth and a mild cleaning agent if necessary.



1) Remove milk frother from platform.



2) Remove lid and dismantle whisk.

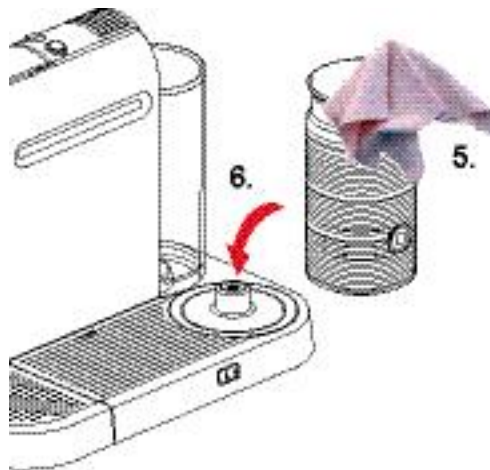


Keep connectors dry (on platform and at underside of milk frother).



3) Remove seal from lid.

4) Rinse and clean milk frother together with whisk or mixer, lid and seal.



5) Clean outside of milk frother with a damp cloth if necessary.

6) Reassemble milk frother.



6.2 Descaling



Only use *Nespresso* descaler or descaling kit - never use vinegar!
 Descaler can damage casing and contact surfaces.
 Immediately clean drops of descaling solution.

Water hardness:			Descal after:
fH	dH	CaCO ₃	
36	20	360 mg/l	300
18	10	180 mg/l	600
0	0	0 mg/l	1200



The descaling chart is based on a cup size of 40 ml.

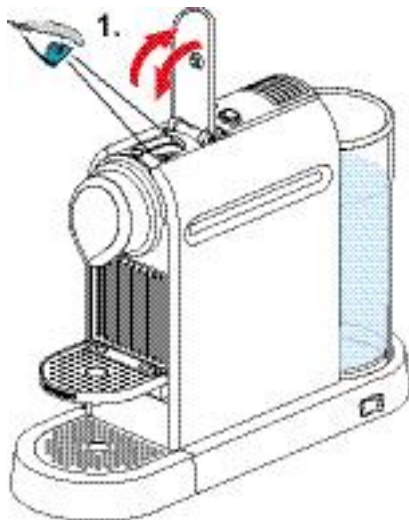
fH ... French grade

dH ... German grade

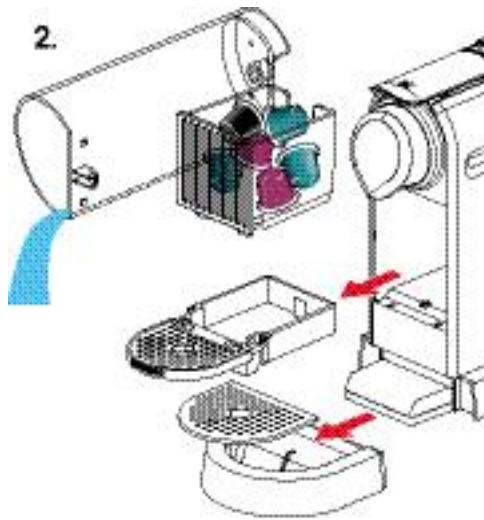
CaCO₃ ... Calcium carbonate

Use this chart to inform a customer when to descale the coffee machine depending on local water hardness and average coffee consumption. Double the estimated time interval for model Citiz & Co.

6.2.1 Descaling procedure for models Citiz and Citiz & milk



1) Eject capsule or check if capsule is removed.



2) Remove and empty capsule/waste water container, drip tray and water tank.



The Citiz model is shown as example.



MAINTENANCE



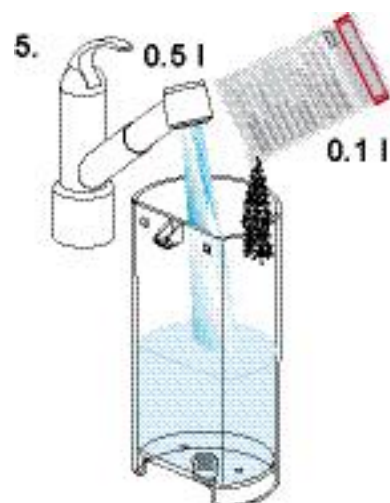
Observe the safety instructions on the descaler package.



Use a container with a capacity of 1 l min.



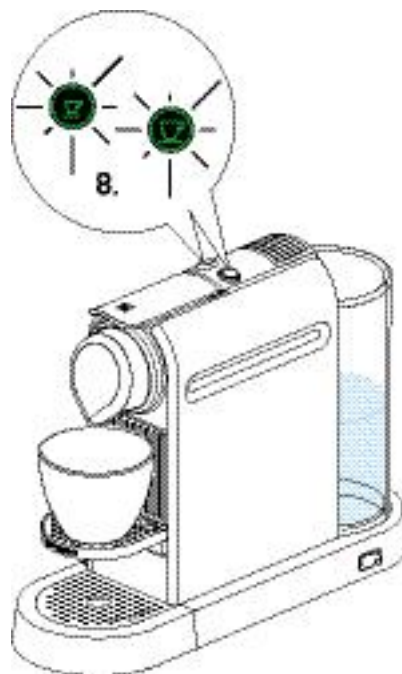
- 3) Reassemble coffee machine without water tank.
- 4) Place a container on the cup support.



- 5) Fill the water tank with 0.5 l decalcifier (1 bag) and 0.5 l water.
- 6) Insert water tank into the coffee machine.



- 7) Press both coffee buttons simultaneously for at least 3 sec.



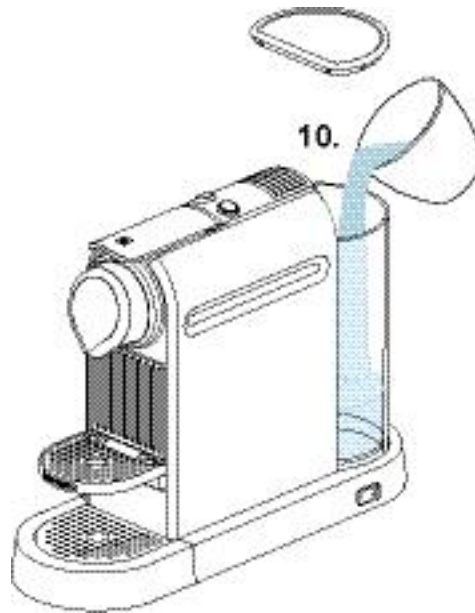
- 8) The machine is in descaling mode now (both buttons blinking fast).



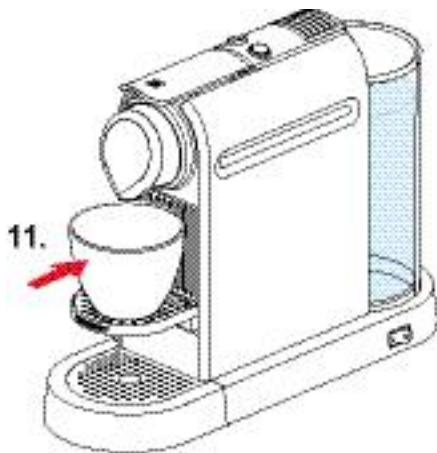
Danger!
Hot splashes of
descaling solution.
Do not open handle dur-
ing descaling process.



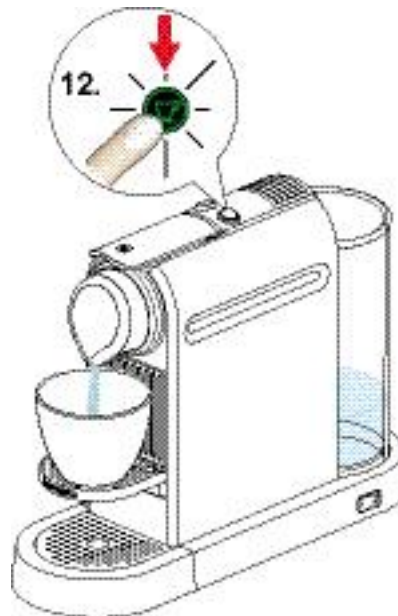
- 9) Press any button to start pump.
Let the entire solution in the tank run
through the system.



- 10) After water tank is empty, pour descal-
ing solution back into water tank.



- 11) Place empty container back on cup
support.

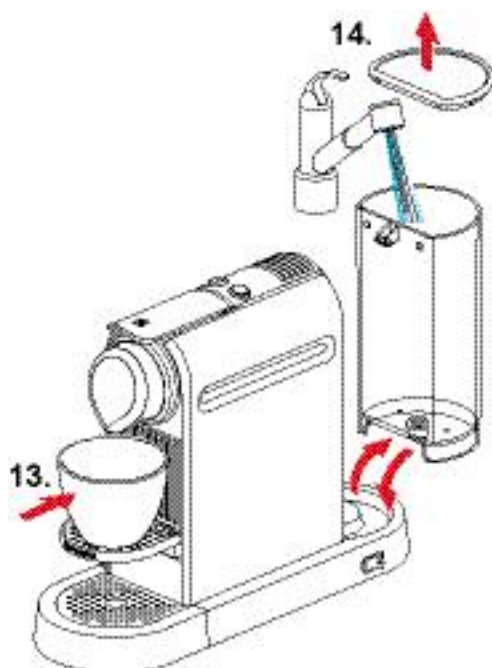


- 12) Descale again: press any button and
wait until water tank is empty.

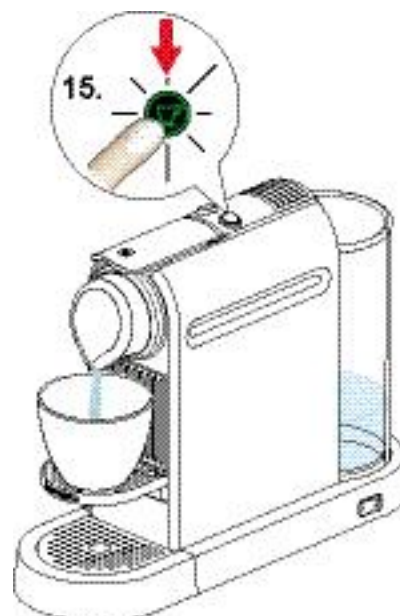


 **Danger of injury!**
Residual descaler
may be harmful.
Rinse thoroughly to
remove any residue.

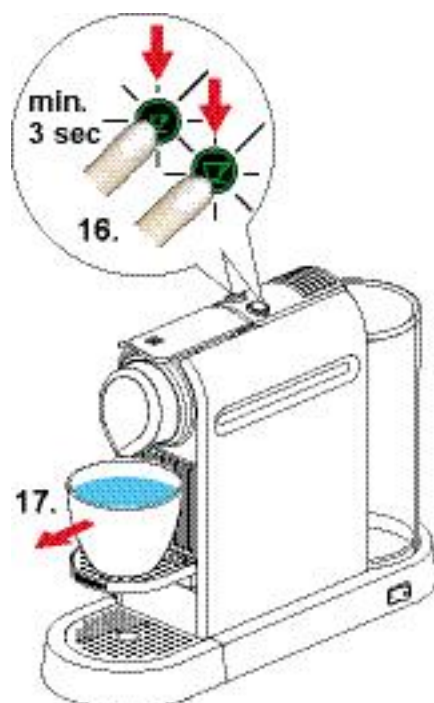
MAINTENANCE



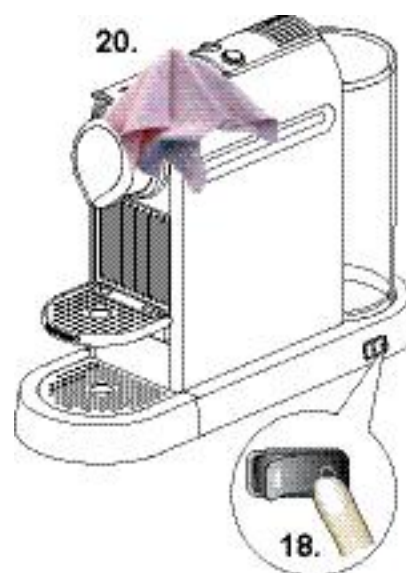
- 13) Empty container and put it back on cup support.
14) Rinse and clean water tank thoroughly and fill it with fresh potable water.



- 15) Rinse coffee machine by pressing any button and wait until water tank is empty.



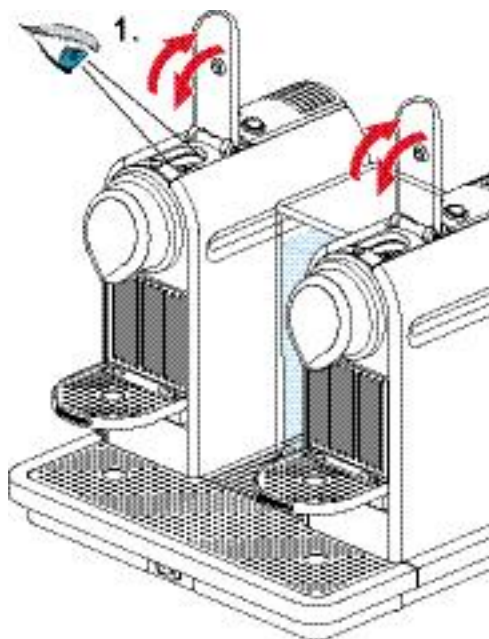
- 16) Press both coffee buttons simultaneously for at least 3 sec to end descaling mode.
17) Remove and empty container.



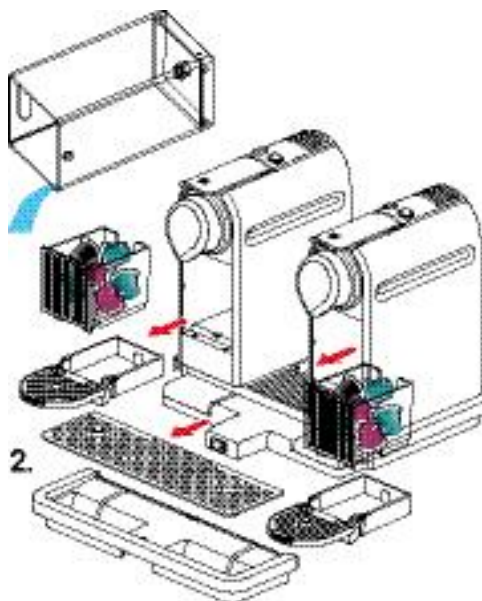
- 18) Switch off coffee machine.
19) Empty and clean capsule/waste water container and drip tray.
20) Clean coffee machine with a damp cloth if necessary.



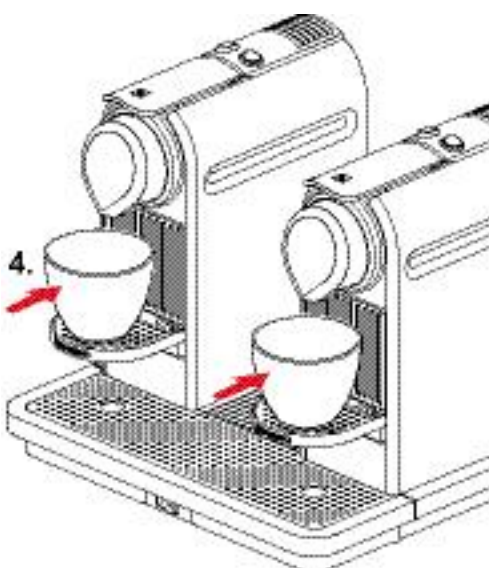
6.2.2 Descaling procedure for model Citiz & Co



1) Eject capsules or check if capsules are removed.

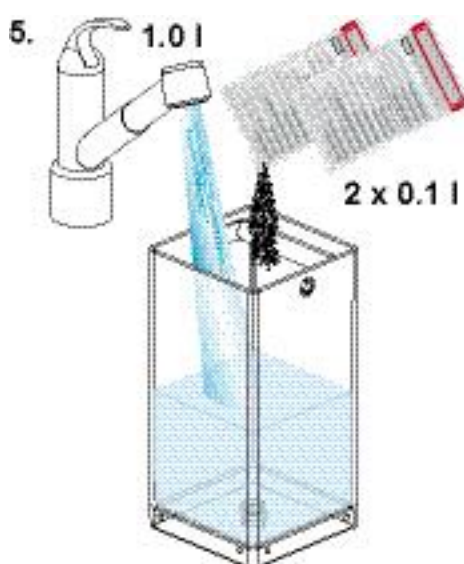


2) Remove and empty capsule/waste water containers, drip tray and water tank.



3) Reassemble coffee machine without water tank.

4) Place a container under each coffee outlet.

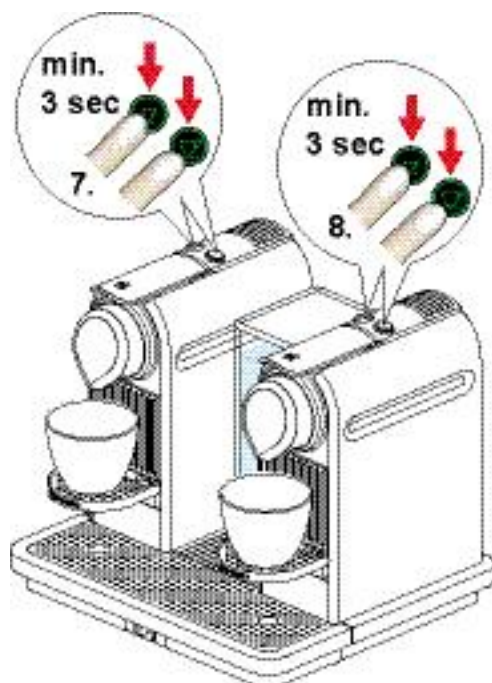


5) Fill the water tank with 0.2 l decalcifier (2 bags) and 1.0 l water.

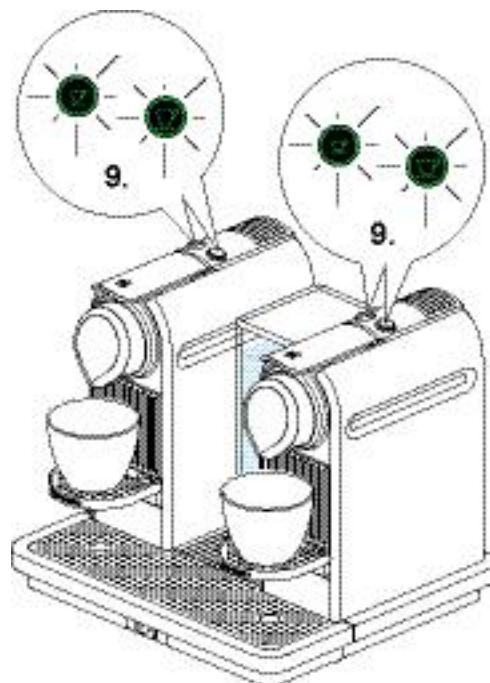
6) Insert water tank into the coffee machine.

Observe the safety instructions on the descaler package.

Use containers with a capacity of 1 l min.

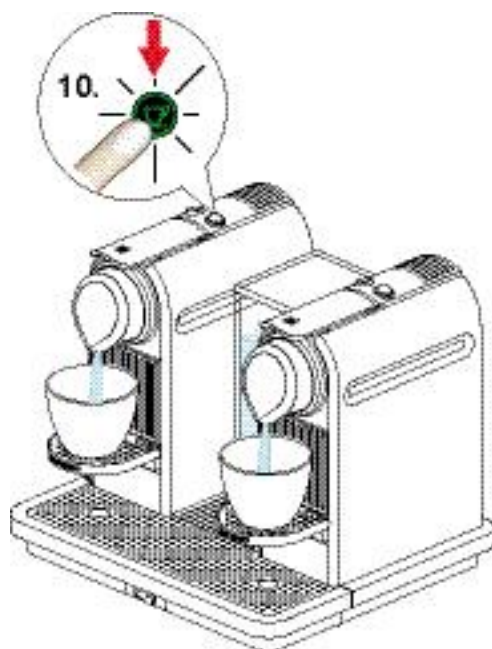


- 7) Press both coffee buttons simultaneously for at least 3 sec. on first core unit.
- 8) Repeat procedure with second core unit.

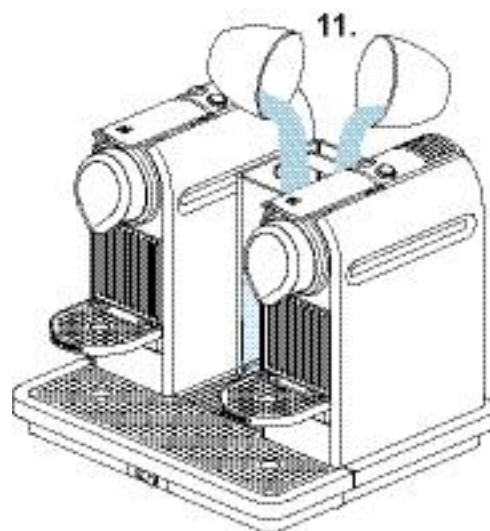


- 9) The machine is in descaling mode now (both coffee buttons blinking fast on core units).

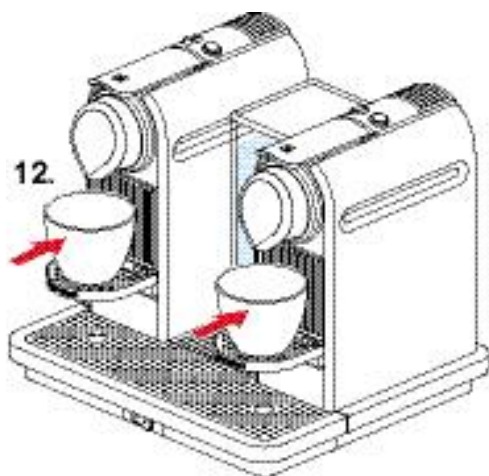
 **Danger of injury!**
Hot splashes of
descaling solution.
Do not open handles during
descaling process.



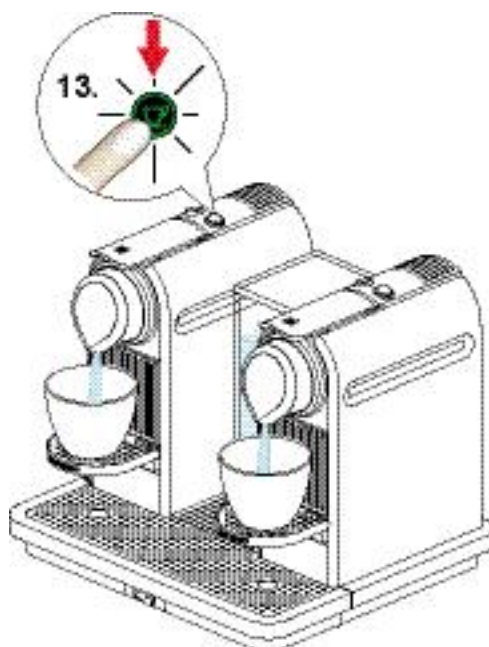
- 10) Press any button on a core unit to start pumps. Let the entire solution in the tank run through the system.



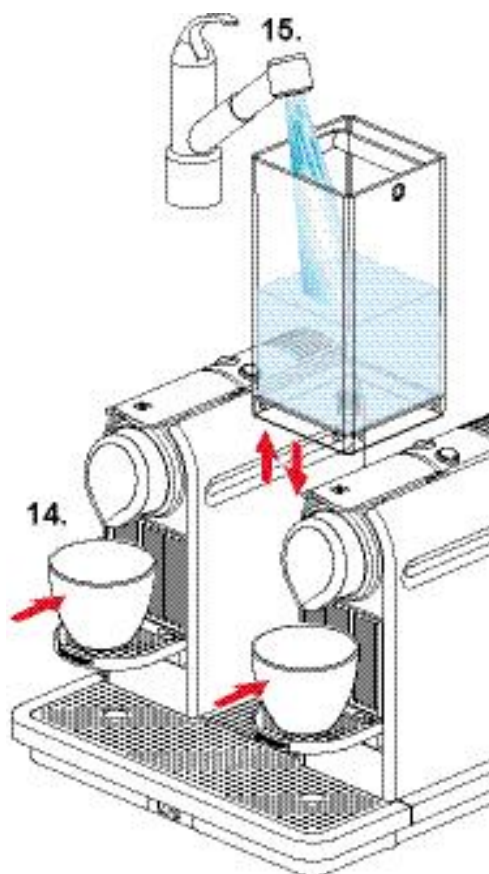
- 11) After water tank is empty, pour descaling solution from both containers back into water tank.



12) Place empty containers back on cup supports.

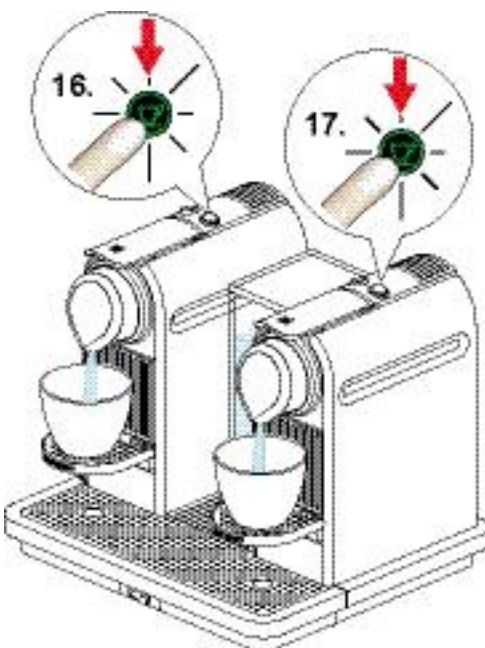


13) Descale again: press any button on a core unit and wait until water tank is empty.



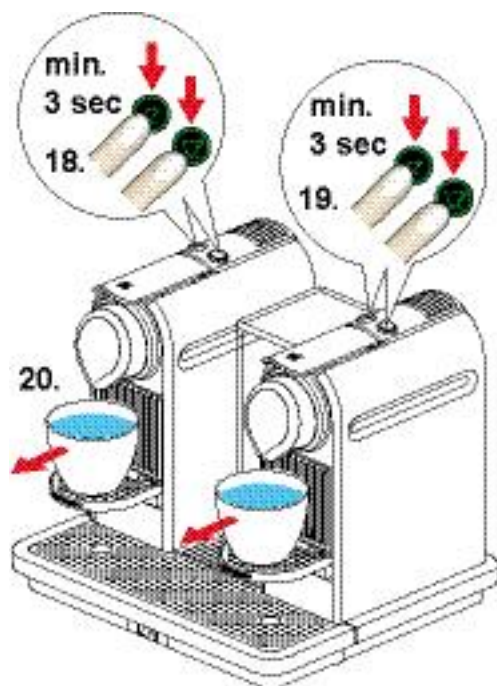
14) Empty containers and put them back on cup supports.

15) Rinse and clean water tank thoroughly and fill it with fresh potable water.

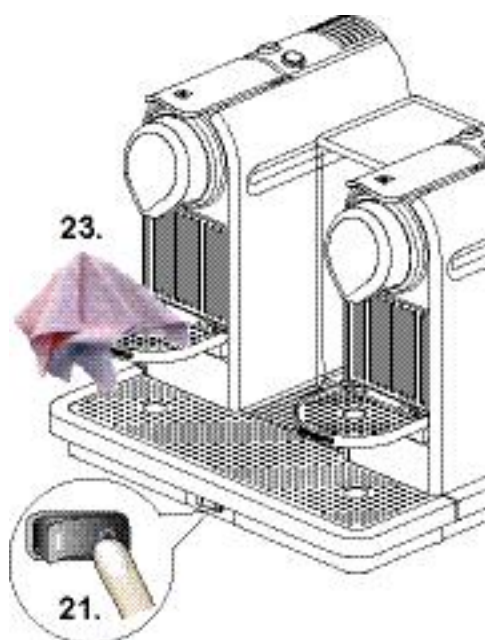


16) Rinse coffee machine by pressing any button on first core unit.

17) Repeat procedure on second core unit and wait until water tank is empty.



- 18) Press both coffee buttons simultaneously for at least 3 sec to end descaling mode.
- 19) Repeat procedure on second core unit to end descaling mode.
- 20) Remove and empty containers.



- 21) Switch off coffee machine.
- 22) Empty and clean capsule/waste water containers and drip tray.
- 23) Clean coffee machine with a damp cloth if necessary.



7 TROUBLESHOOTING

7.1 Check list for coffee machine (all models)

Check	Error symptoms	Measure / repair work	Further measures / repair work
1 Check the coffee machine for visible damage	1.1 Housing parts broken or damaged	YES - replace housing parts if necessary NO - continue	
	1.2 Power cord damaged	YES - replace power cord NO - connect power cord of machine to the mains and continue	
2 Check mechanical components	2.1 Cup support does not remain in vertical position	YES - check if the capsule and waste water container are correctly inserted and mounted NO - continue	YES - replace damaged or deformed capsule container and/or waste water container.
	2.2 Cup support rattles when folded down	YES - check if 2 rubber stoppers are mounted on waste water container NO - continue	NO - replace stoppers
	2.3 Closing handle malfunction	YES - it is very difficult or almost impossible to close the handle and to press it all the way down NO - continue	YES - replace the compact brewing unit
	2.4 Closing handle - unusual noise during actuation	YES - check if damper is mounted underneath closing handle NO - continue	NO - replace damper
	2.5 Capsule is not ejected correctly	YES - replace brewing unit (TMBU) NO - continue	
	2.6 Seal on capsule cage is damaged (check seal with your finger)	YES - replace brewing unit (TMBU) NO - continue	
3 Fill water tank	3.1 Water tank leaks	YES - replace water tank NO - continue	
4 Activate On/Off switch to perform automatic self test	4.1 Coffee machine is not working (does not function)	a) YES - power cord is okay (loose connection)	YES - continue NO - replace power cord
		b) YES - On/Off switch is okay	YES - continue NO - replace On/Off switch
		c) YES - pump works (press a coffee button)	YES - continue with point f) NO - continue with point d)
		d) YES- both coffee buttons are working	YES - continue NO - replace electronic control board
		e) YES - thermostat on pump is defective	YES - replace thermostat NO - replace pump
		f) YES- fine wire fuse(s) (167 °C) on thermoblock defective	YES - replace electronic control board, if necessary replace thermoblock NO - continue
		g) YES - wiring is okay NO - continue with point 4.3	YES - replace electronic control board NO - replace defective cables
	4.2 Both coffee buttons are blinking 3x fast	YES - thermoblock is hot NO - self test ok - continue	YES - replace NTC temperature sensor NO - replace thermoblock

i After an initial inspection in accordance with this check list, errors are quickly found and corrected with the appropriate measure. Therefore, adhere to the sequence of the check list. Repair every occurring error and work the check list through until it is completed.



TROUBLESHOOTING

Check	Error symptoms	Measure / repair work	Further measures / repair work
5 Measure coffee temperature during preparation (see page 136)	5.1 No coffee	YES - a) water system is empty	YES - replace self priming device (APD) NO - continue
		YES - b) flow meter blocked	YES - clean or replace NO - continue
		YES - c) pyramide plate blocked	YES - replace the compact brewing unit NO - continue
		YES - d) coffee machine is calcified NO - continue	YES - descale coffee machine (see page 41)
	5.2 Temperature is too low (below 83°C)	YES - descale coffee machine (see page 41) NO - continue	
	5.3 Temperature too high (over 89 °C)	YES - replace NTC temperature sensor NO - continue	
6 Check for leakage (see page 133) and measure flow rate (see page 132)	6.1 Compact brewing unit leaks	YES - replace compact brewing unit NO - continue	
	6.2 Hose connections leak	YES - replace defective hoses and seals NO - continue	
	6.3 Rate of flow not in the standard range	YES - coffee machine is calcified NO - continue with point 9	YES - descale coffee machine (see page 41) NO - replace pump
7 Descale coffee machine (if necessary)	7.1 Coffee machine is calcified	YES - descale coffee machine (see page 41) NO - continue with point 9	
8 Check water tank contents after descaling and rinsing	8.1 Particles of calcium and rust visible in water	YES - descale and rinse coffee machine again to clean water circuit (see page 41) NO - continue	YES - inform customer to descale coffee machine periodically and to use specified descaling product only.
9 Final cleaning (see page 38)		No errors found according to check list?	YES - for more information please contact <i>Nespresso</i> Service Division
End of check list			



7.2 Check list for milk frother

Check	Error symptoms	Measure / repair work	Further measures / repair work
1 Check milk frother and accessory for visible damage	1.1 Lid/seal broken or damaged	YES - replace lid/seal NO - continue	
	1.2 Inside coating of jug badly scratched	YES - replace milk frother in agreement with customer NO - continue	YES - inform customer how to clean milk frother
	1.3 Whisks broken or damaged	YES - replace whisks NO - continue	
4 Place milk frother on platform connector. Attach whisk. Switch on coffee machine. Press start button briefly (hot milk preparation).	4.1 Milk frother is not working (does not function)	YES - a) coffee machine is heating up	YES - continue NO - continue with check list for coffee machine
		YES - b) connector on platform is ok (test it with another milk frother)	YES - replace milk frother NO - replace connector on platform (see page 73)
	4.2 Abnormal noise during preparation	YES - replace milk frother NO - continue	
	4.3 Milk frother does not switch off automatically	YES - replace milk frother NO - continue	
5 Press start button for at least 2 sec (cold milk preparation)	4.4 Inside of jug stays cold	YES - replace milk frother NO - continue	
	5.1 Start button is not backlighted in blue	YES - replace milk frother	
6 Final cleaning (see page 40)		No errors found according to check list?	YES - for more information please contact <i>Nespresso</i> Service Division
End of check list			

 The milk frother is part of the Citiz & milk model.



8 REPAIRS

These repair instructions

- are based on exploded drawings with position numbers combined with repair and mounting tips,
- presuppose basic knowledge in repairing *Nespresso* coffee machines.

 **As a rule, identical components (e.g. pumps, thermoblocks etc.) are presented in detail only once.**

8.1 Safety instructions



Risk of fatal electrical shock!

Mains voltage inside the coffee machine.

Disconnect the mains plug before disassembly - the coffee machine must be free of voltage.



Danger of burns!

Hot parts and water under pressure inside the coffee machine (thermoblock in particular).

Let coffee machine cool down before disassembly.

8.2 Repair and mounting tips

These general advices are completed with specific repair tips in this chapter.

Additional information

For components not mentioned in this repair chapter, refer to the chapters "Explosion Drawings" on page 148 and "Parts List" on page 154.

Snap connections

Parts of the case and components of the coffee machine are connected screwless with latches.

 **When loosening these latches, proceed with care and patience to avoid causing any damage.**

The side panels of the core unit have delicate snap connections that can brake easily.

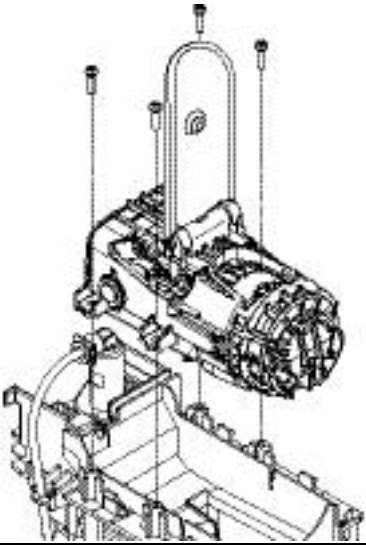
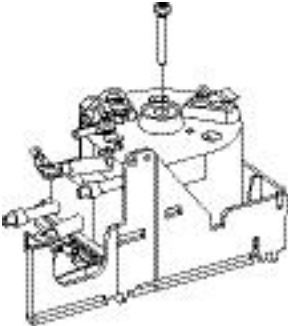
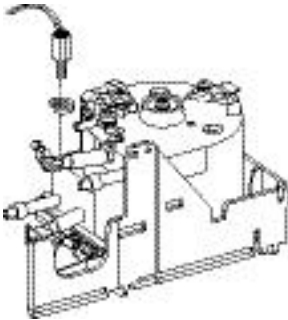
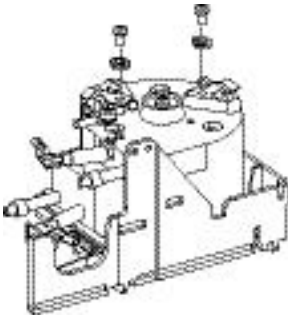
 **When removing these side panels, use the special disassembly tool and proceed according to the disassembly instructions.**

Screw connections

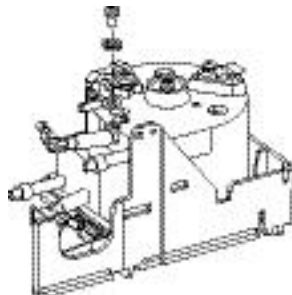
Do not overtighten screws. Plastic threads and inserts are delicate.

Observe max. torque for the screw connections according to the following table.



Screw / screw connection	Torque	Position
Screw with oval shaped head	50 (+30/-0) Ncm 0.5 (+0.3/-0) Nm	Bottom of platform
TX 10 screw (4 x) / brewing unit (TMBU)	50 (+30/-0) Ncm 0.5 (+0.3/-0) Nm	
TX 10 screw / thermoblock support (central)	150 (+30/-0) Ncm 1.5 (+0.3/-0) Nm	
NTC fixation on thermoblock	80-100 Ncm 0.8-1.0 Nm	
TX 20 screw (2 x) / thermo fuse fixations on ther- moblock	150 (+30/-0) Ncm 1.5 (+0.3/-0) Nm	



Screw / screw connection	Torque	Position
TX 20 screw / ground connection (PE) on ther- moblock	150 (+30/-0) Ncm 1.5 (+0.3/-0) Nm	

Designation of spare parts

The components in the following illustrations are indexed with position numbers. See separate spare parts list for corresponding spare part numbers.

 **Distinguish between spare parts of the different models and core unit versions.**

Electrostatic discharge protection

When installing a new electronic control board, the service technician must be earthed with a grounding band.

Wiring arrangement

Random changes in the wiring arrangement during a repair can cause

- electromagnetic interferences,
- squeezed wires,
- insulation defects due to contact with hot parts,
- insulation problems if low and high voltage wires are not separated.

Protective measures:

- Do not change the course of internal wiring during repair.
- Make sure that wires are distant from hot parts - use existing cable ducts and clips.

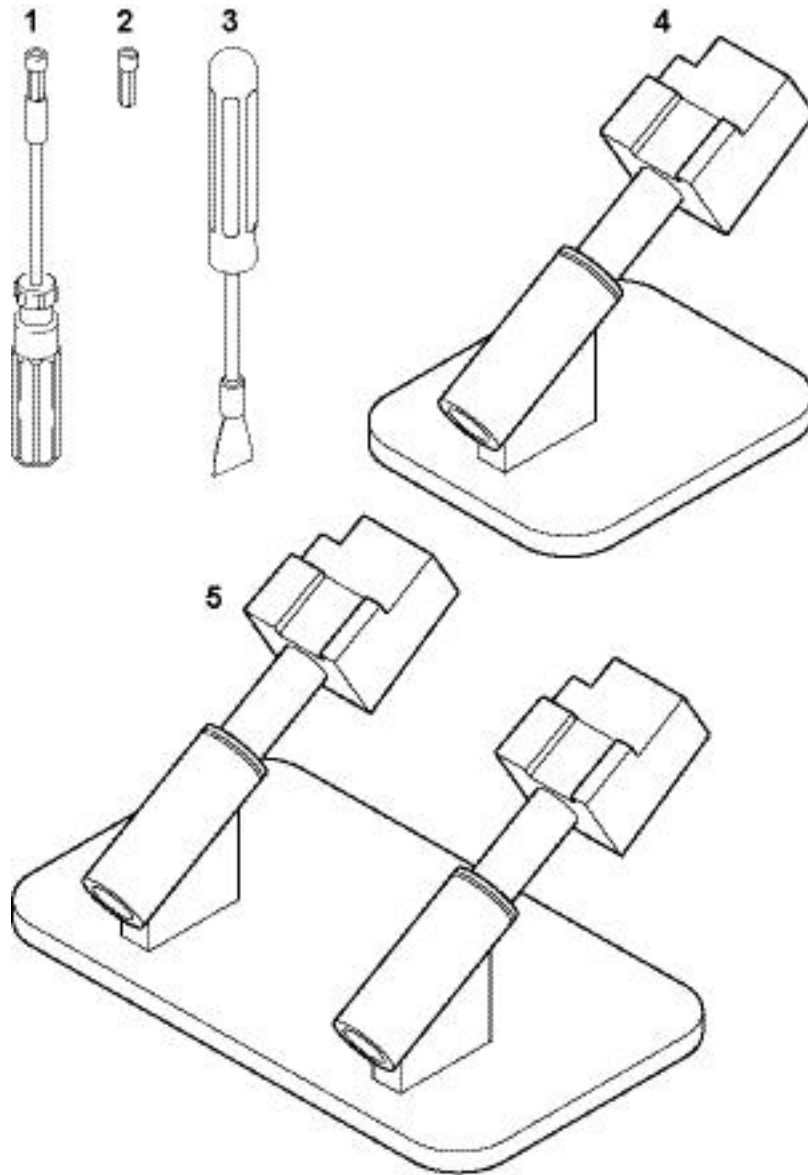
Residual water

- If it is necessary to pull off hoses from components, hold ready a small beaker and a towel to collect and wipe away leaking water.
- A special procedure is necessary to empty the fluid system of the coffee machine for repair or shipment (refer to "Empty water system" on page 37).



8.3 Tools and accessories

With the following assortment of tools, all repairs described can be made:



- | | |
|---|---|
| 1) Special screwdriver with short oval bit (EFR no. 0004872) | 6) TORX screwdriver (TX10, TX15) |
| 2) Short oval bit only (EFR no. 0004878) | 7) Screwdriver with approx. 4 mm tool tip |
| 3) Disassembly tool (for side panels etc.) (EFR no. 0060611) | 8) Hexagonal wrench SW 4 |
| 4) Repairing/service holder device for models Citiz and Citiz & milk (available from <i>Nespresso</i>) | 9) Flat wrench SW 14, 10 mm AF |
| 5) Repairing/service holder device for model Citiz & Co (available from <i>Nespresso</i>) | 10) Torque wrench |
| | 11) Long-nosed pliers |
| | 12) Flat pliers |
| | 13) Beaker and towel to catch and wipe away leaking water |

 A dynamometric screwdriver with suitable bits is recommended.

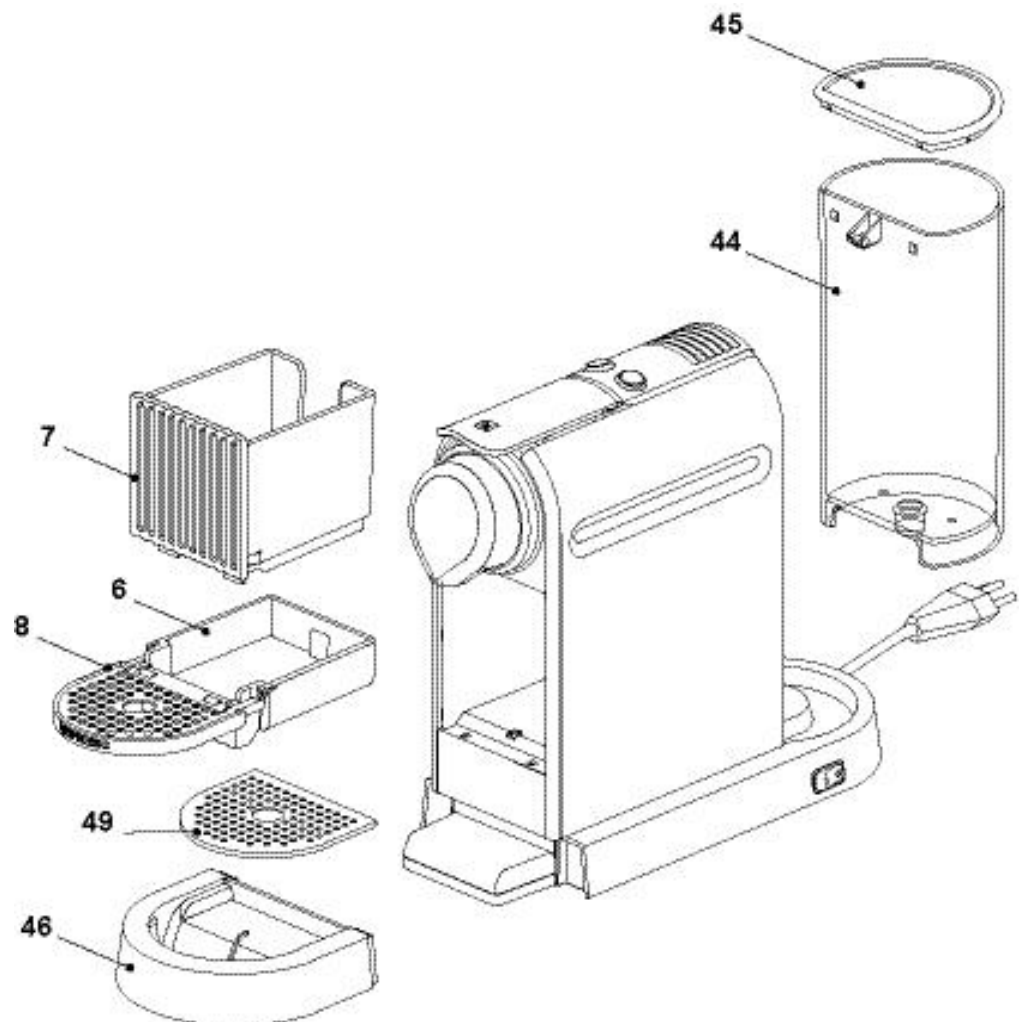


8.4 Platform disassembly - model Citiz

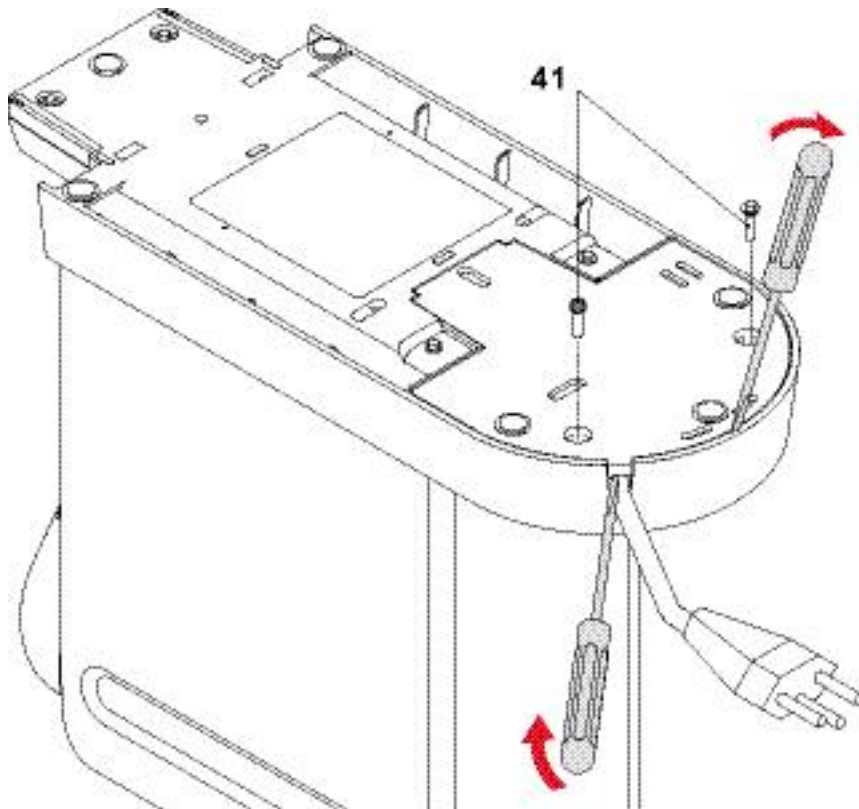
8.4.1 General disassembly

This general disassembly

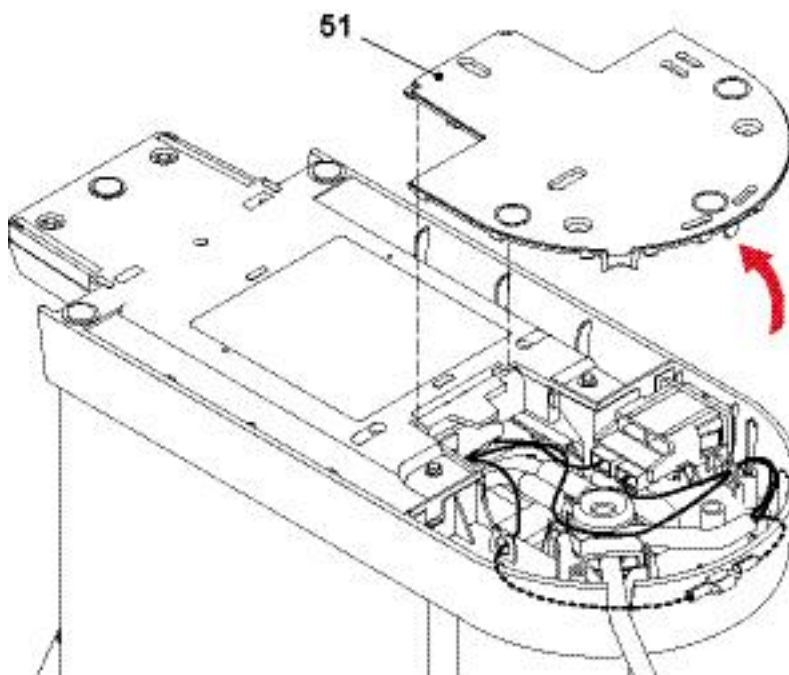
- is necessary before the removal/disassembly of a core unit is possible,
- gives access to the components and wiring of the platform.



- Take away all removable parts from platform and core unit
 - cup support (8) with waste water container (6)
 - capsule container (7)
 - drip tray (46) with drip grid (49)
 - water tank (44) with cover (45).



- Loosen 2 screws (41, oval shaped head) at the bottom side of platform.
- Use screwdriver to release latches. Start by inserting the screwdriver in the opening for the power cord.

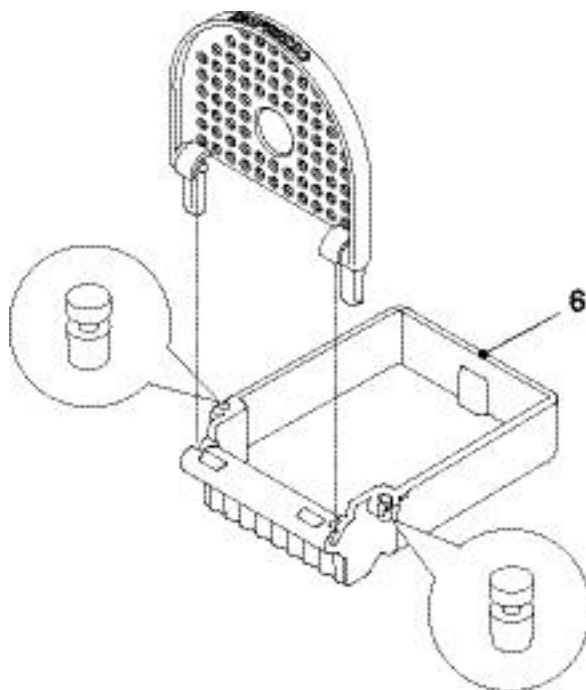


- Remove bottom cover (51) by swinging it up like shown.

 The bottom cover (51) is inserted into the platform with both edges of its small end. Only remove bottom cover by swinging up the round end.



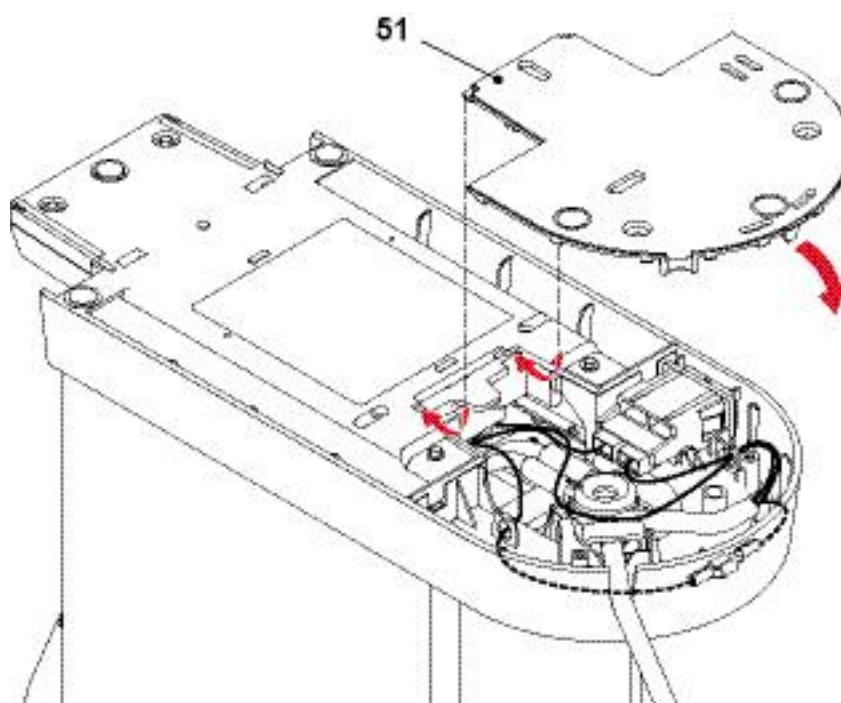
Assembly checkpoints



- Check if 2 rubber stoppers are mounted on waste water container (6).



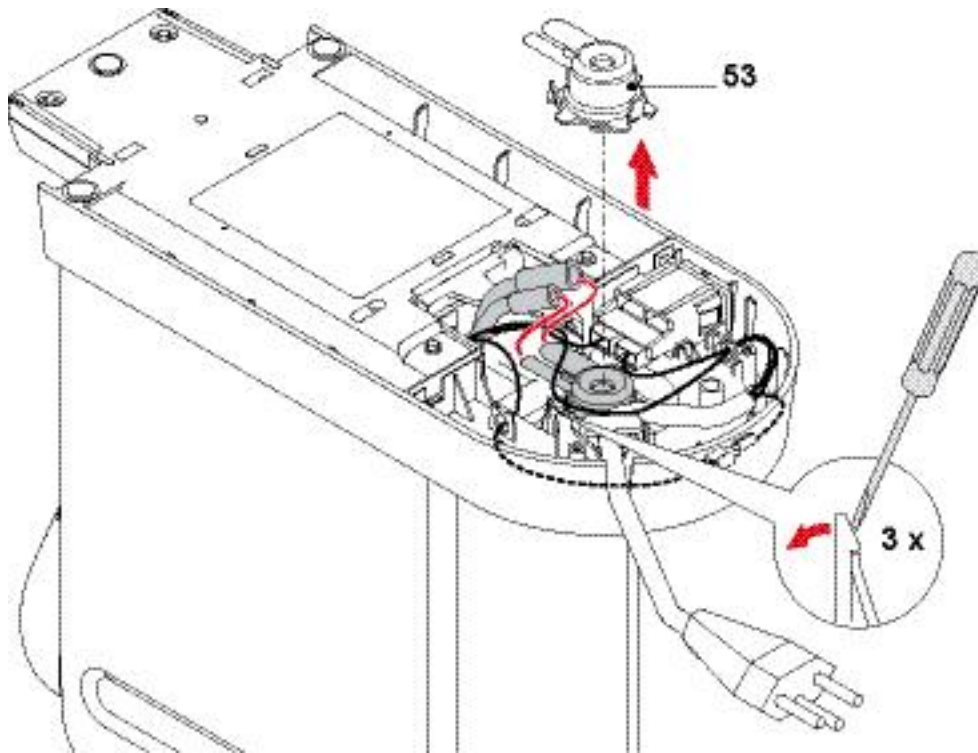
Take care not to jam any wires at the screw connections.



- Insert bottom cover (51) with small end into platform at first. Then fold it down and close latches.

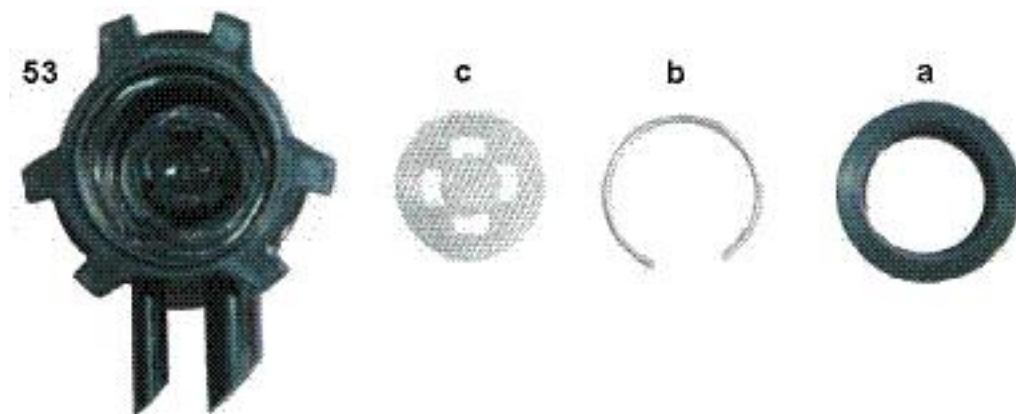


8.4.2 Replacing water tank connector



i The water tank connector (53) is replaced together with gasket, clamping ring and metal sieve.

- Pull off both hoses from water tank connector (53).
- Release the 3 latches around the water tank connector one after the other by pressing the top of their hooks outwards with a screwdriver (see detail) and lifting the water tank connector at the same time.



- Remove gasket (a) from water tank connector (53).
- With the help of a pair of tweezers, remove clamping ring (b) and metal sieve (c).
- Clean or replace parts.

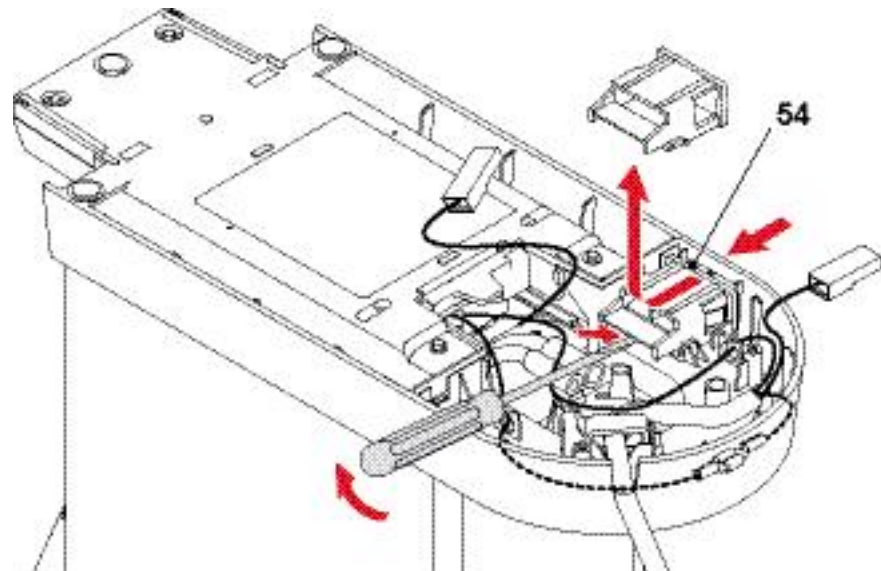


Assembly checkpoints



- Check that gasket is inserted in water tank connector (53) correctly.
- During assembly of the water tank connector on the platform, each of its 3 latches has to engage with an audible click.
- Mind the different diameters of hoses for the water tank connector.

8.4.3 Replacing mains switch



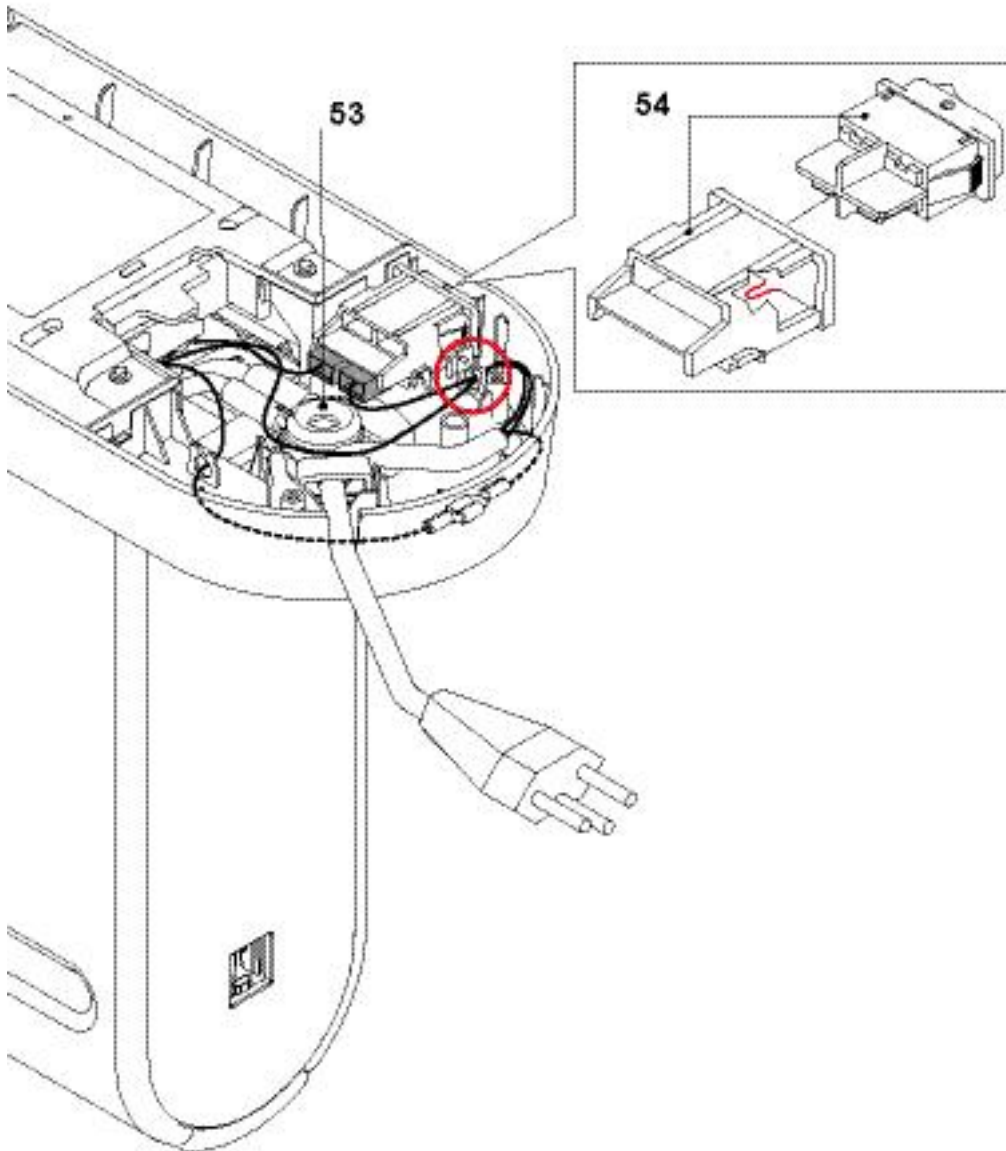
 The hoses can remain on the water tank connector.

 Use a pair of flat pliers to pull off insulating sleeve with receptacle.

- Remove water tank connector from platform first (see page 59).
- Remove both insulated faston receptacles from mains switch (54).
- Press blade of screwdriver between holder of mains switch and platform carefully. Lift holder with screwdriver slightly. Then press holder with mains switch (54) inwards until it can be removed.



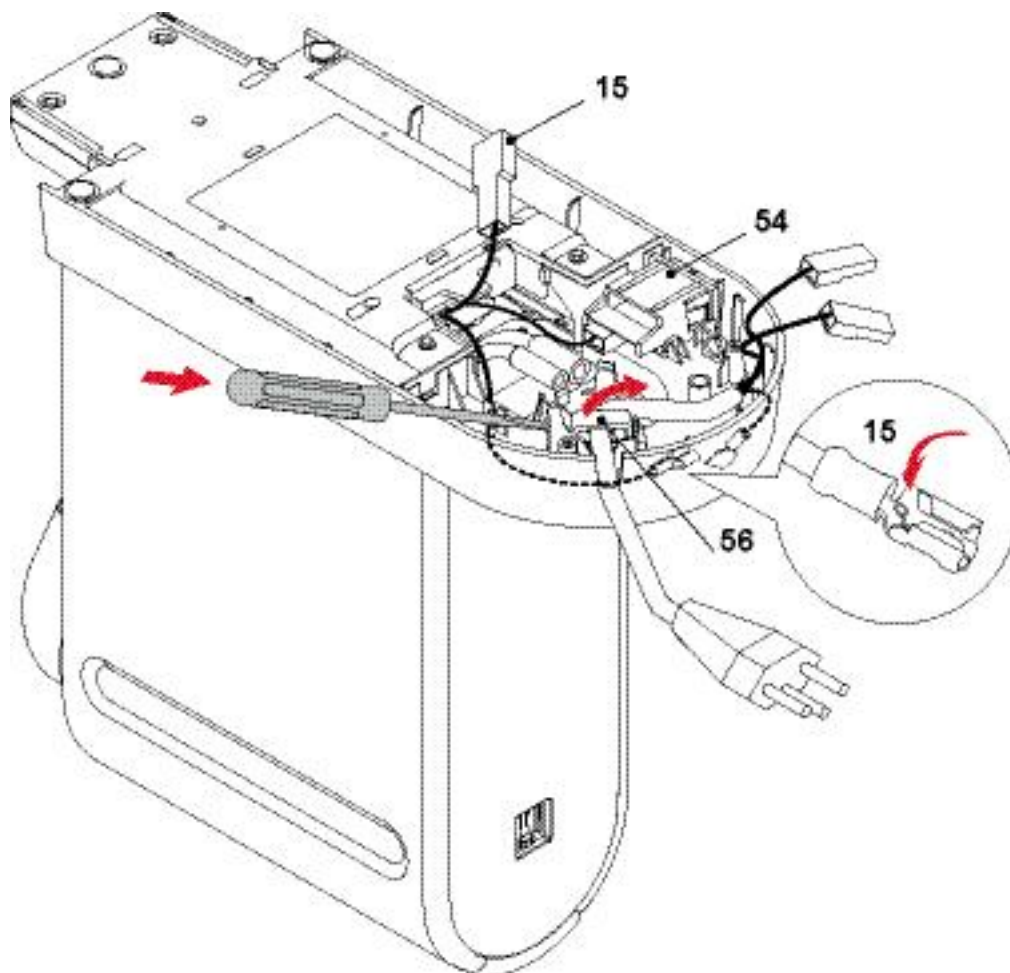
Assembly checkpoints



- Use marked cable guide to lay wires.
- The mains switch holder (54) has a notch: correct fitting position is with mains switch connections next to the platform (see detail).
- During assembly of the water tank connector (53) on the platform, each of its 3 latches has to engage with an audible click.



8.4.4 Replacing power cord



 The hoses can remain on the water tank connector.

 Use a pair of flat pliers to pull off insulating sleeve with receptacle.

 The flat receptacle on the ground wire has a special connector latching (see detail). Press down lever at first, then pull off receptacle.

 The cable bracket is under tension. Therefore, hold the cable bracket with your finger when unlatching it.

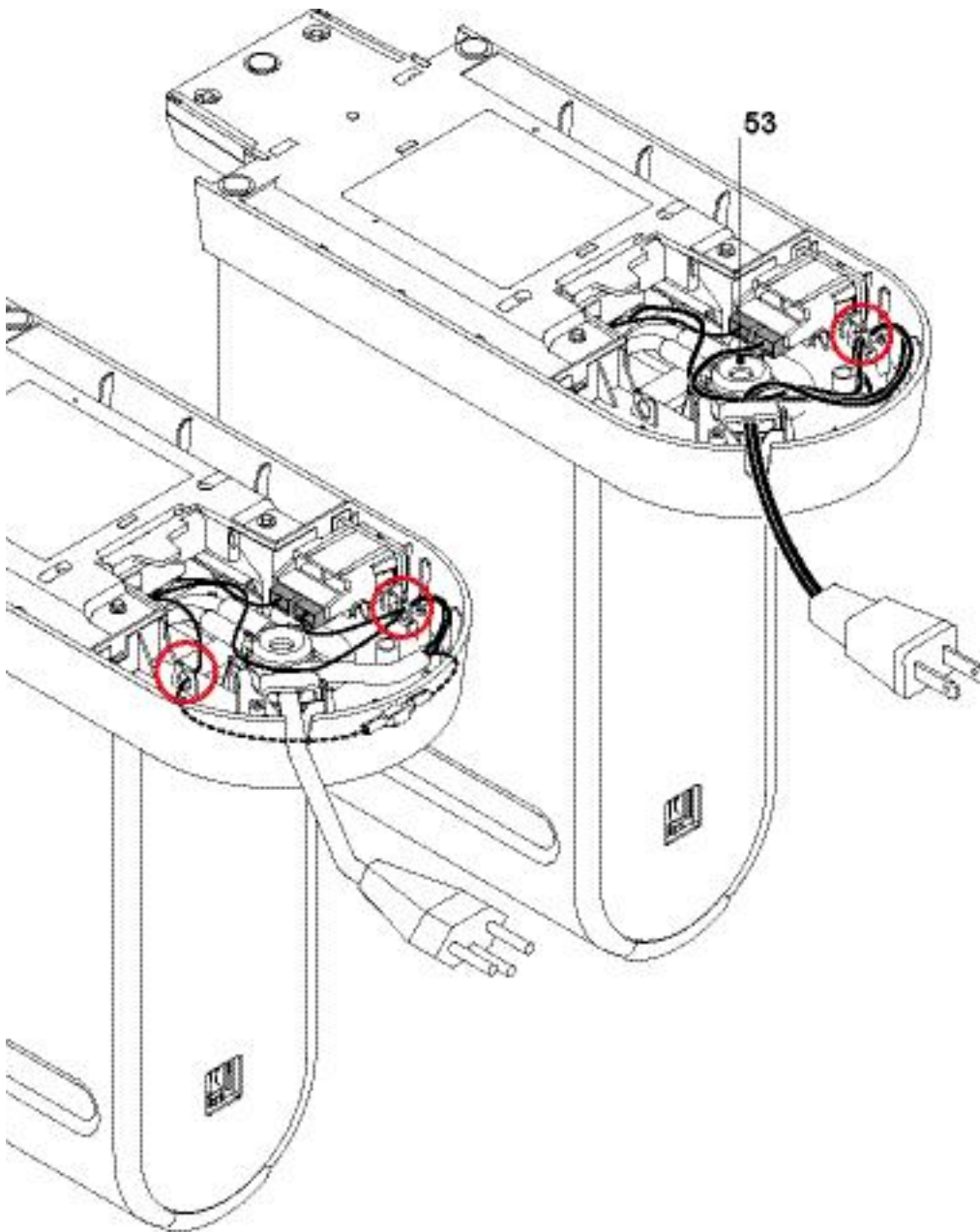
- Remove water tank connector from platform first (see page 59).
- Remove insulated faston receptacle of phase wire from mains switch (54).
- Disconnect adapter plug of neutral wire (15).
- If present, disconnect ground wire (15, see detail).
- Unlatch cable bracket (56) with screwdriver.



Assembly checkpoints

Wiring with three-core power cord:

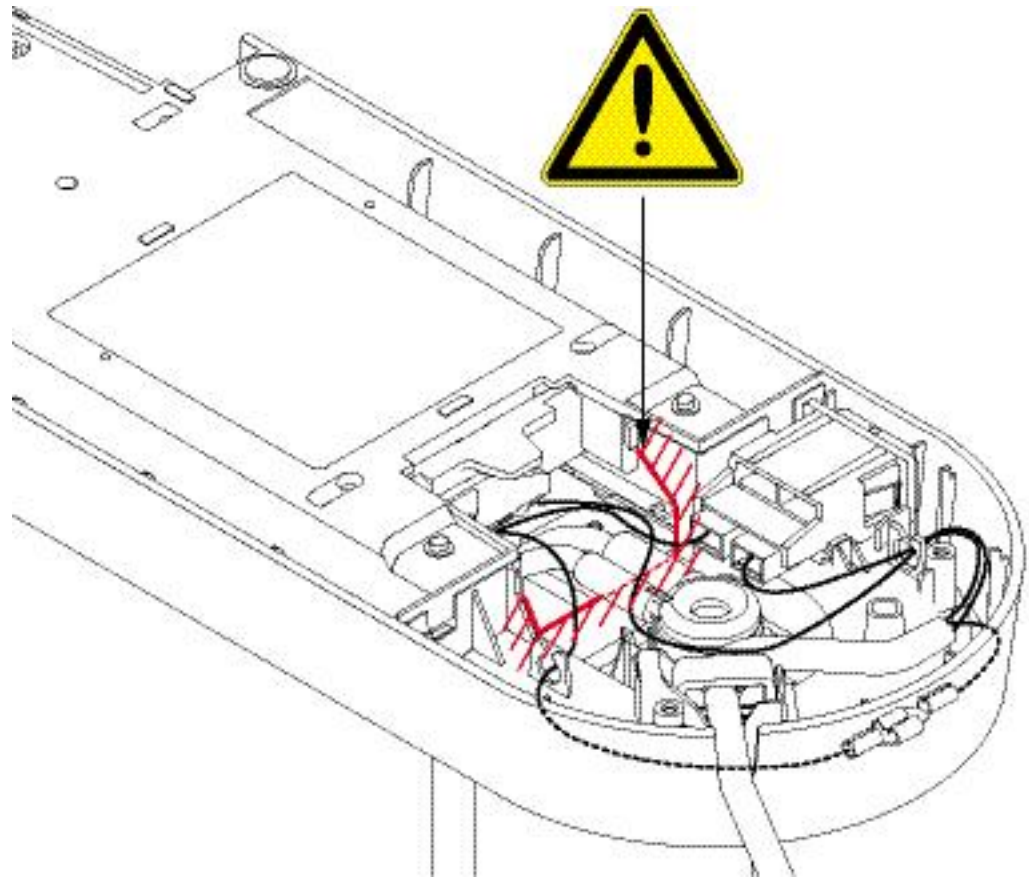
Wiring with two-core power cord:



- Use marked cable guides to lay wires.
- Check wiring (see "Wiring diagrams - model Citiz" on page 118 and following).
- During assembly of the water tank connector (53) on the platform, each of its 3 latches has to engage with an audible click.

8.4.5 Removing core unit

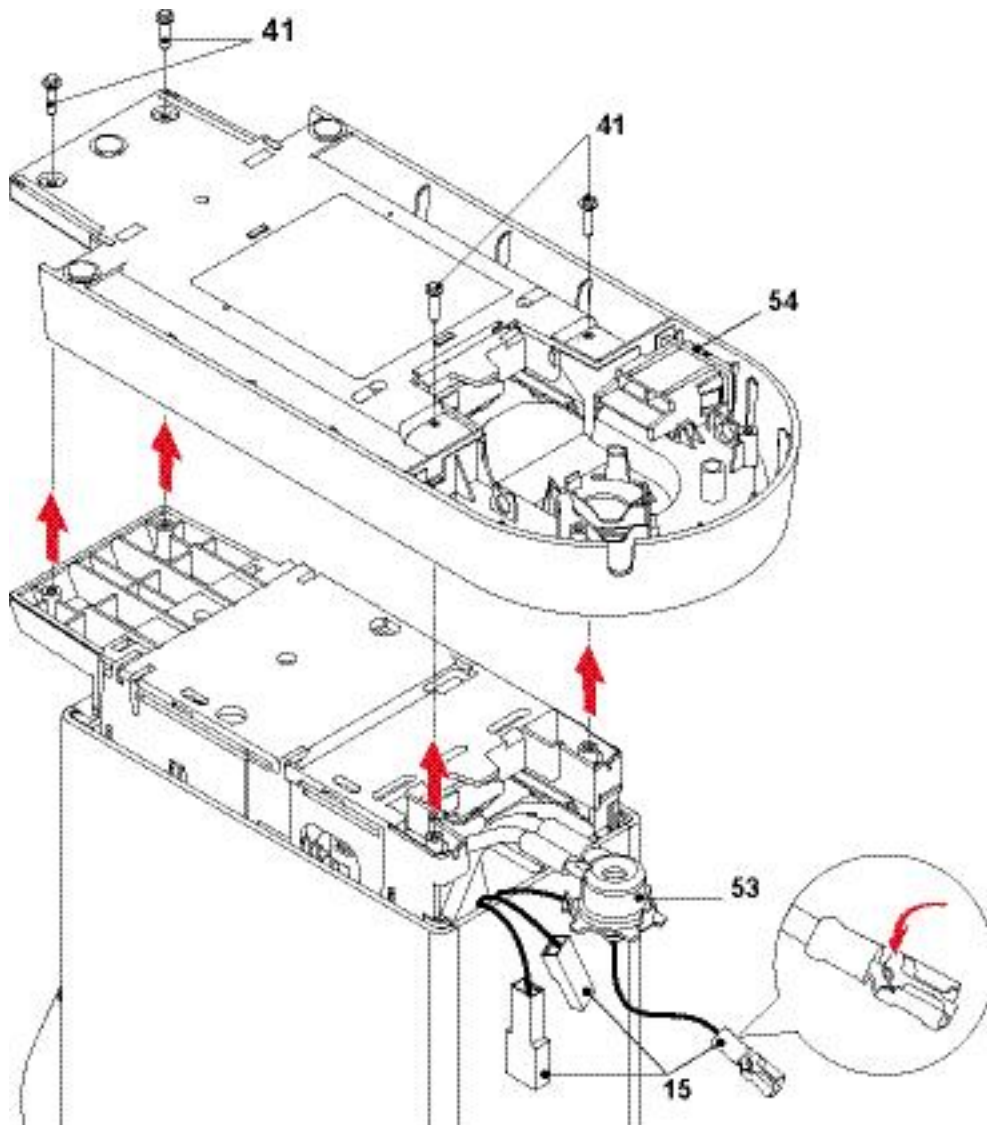
Pay attention to the following safety advice before removing the core unit.



Danger of insulation damages (cuts) on wires between core unit and platform (phase and neutral wire, ground wire if existing).

The sharp casing edges of the platform (marked red in above illustration) can damage the insulation of wires.

Do not stretch and reciprocate wires over sharp edges while removing the core unit.



- Loosen 4 screws (41, oval shaped head) at the bottom side of platform.

For complete removal of the core unit proceed as follows:

- Remove water tank connector (53) from platform (see page 59).
- Remove insulated faston receptacle of phase wire (15) from mains switch (54).
- Disconnect adapter plug (15) of neutral wire.
- If present, disconnect ground wire (15, part of thermoblock assembly).

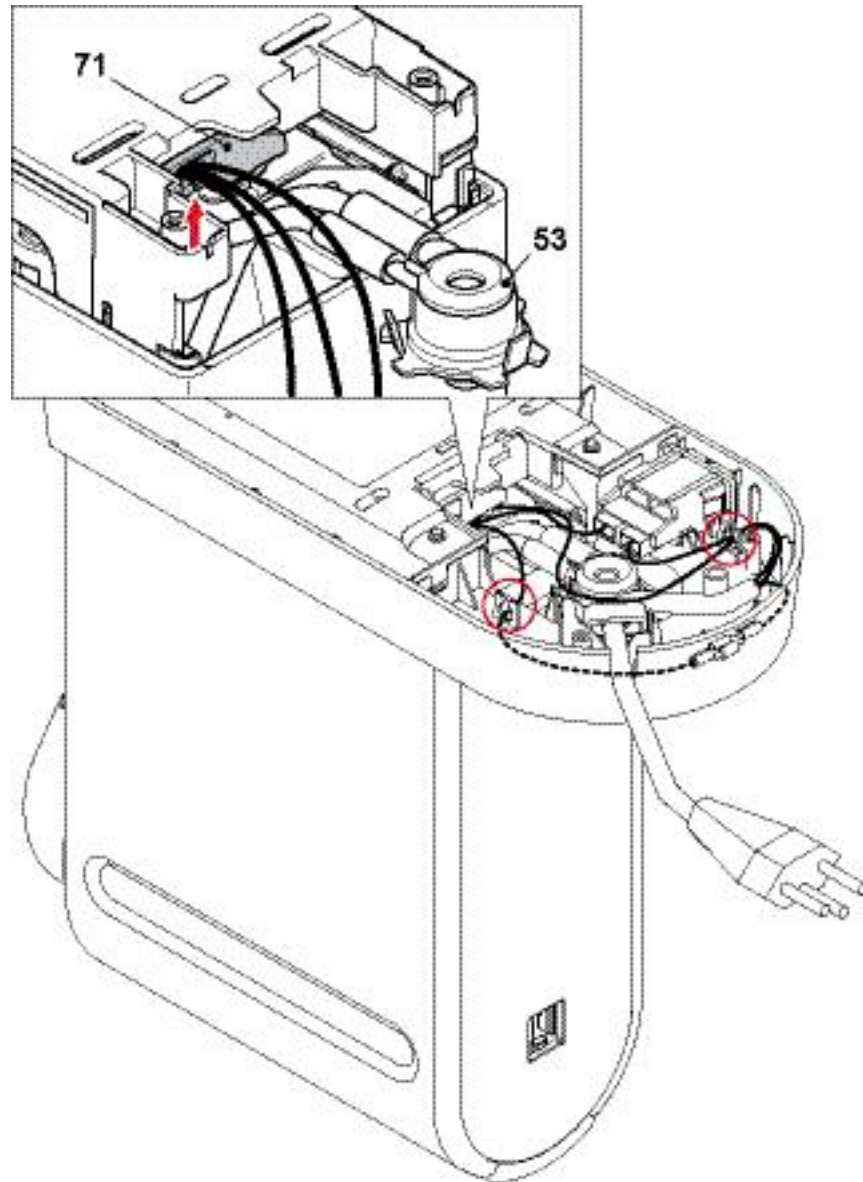
i After this repair step the core unit can be pulled out of the platform slightly (with still connected hoses and wires). Now the covers of the core unit can be removed.

The hoses can remain on the water tank connector.

Use a pair of flat pliers to pull off insulating sleeve with receptacle.

The flat receptacle on the ground wire has a special connector latching (see detail). Press down lever at first, then pull off receptacle.

Assembly checkpoints



- All covers are assembled on the core unit.
- Check that wiring between core unit and platform is led through cable fixation (71).
- Use marked cable guides to lay wires in platform (refer to "Replacing power cord" on page 62 and following).
- Check wiring (see "Wiring diagrams - model Citiz" on page 118 and following).
- During assembly of the water tank connector (53) on the platform, each of its 3 latches has to engage with an audible click.

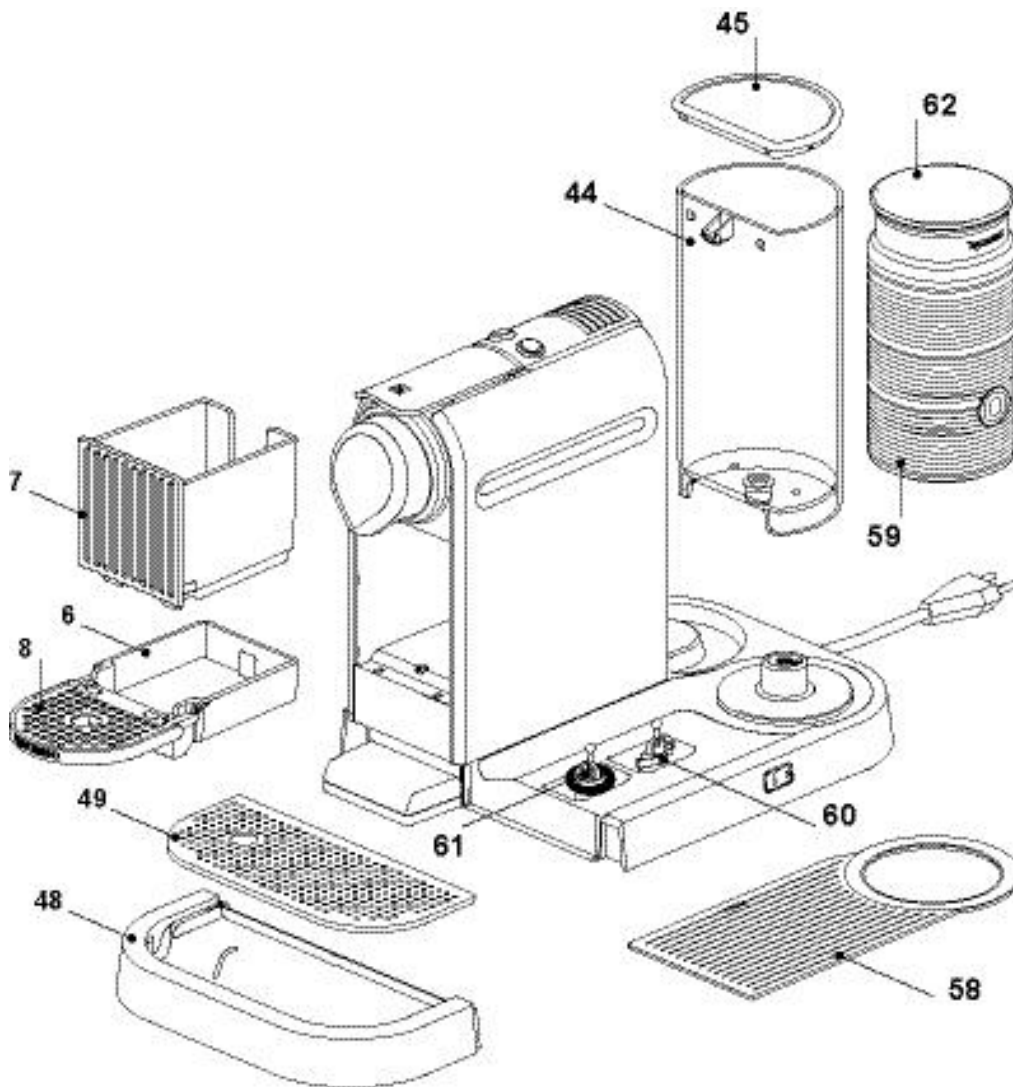


8.5 Platform disassembly - model Citiz & milk

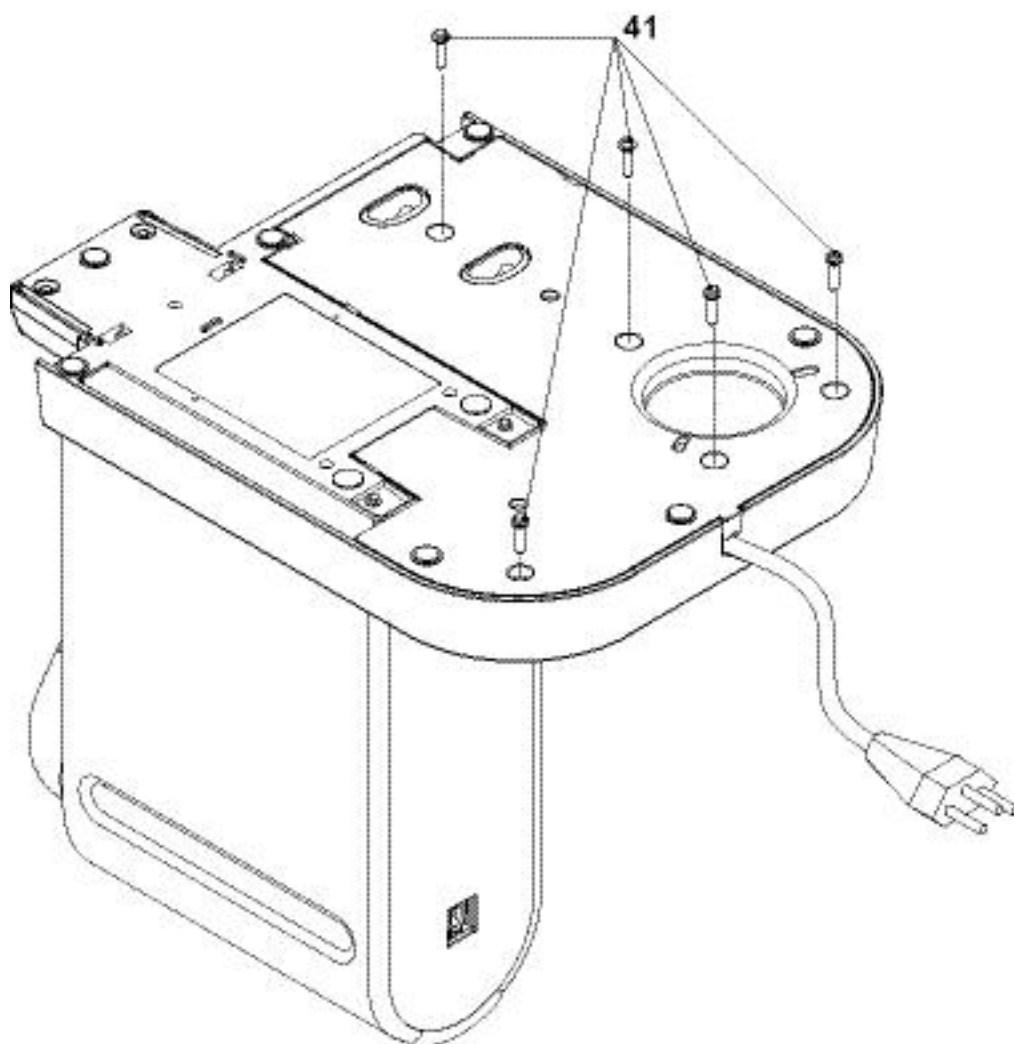
8.5.1 General disassembly

This general disassembly

- is necessary before the removal/disassembly of a core unit is possible,
- gives access to the components and wiring of the platform.



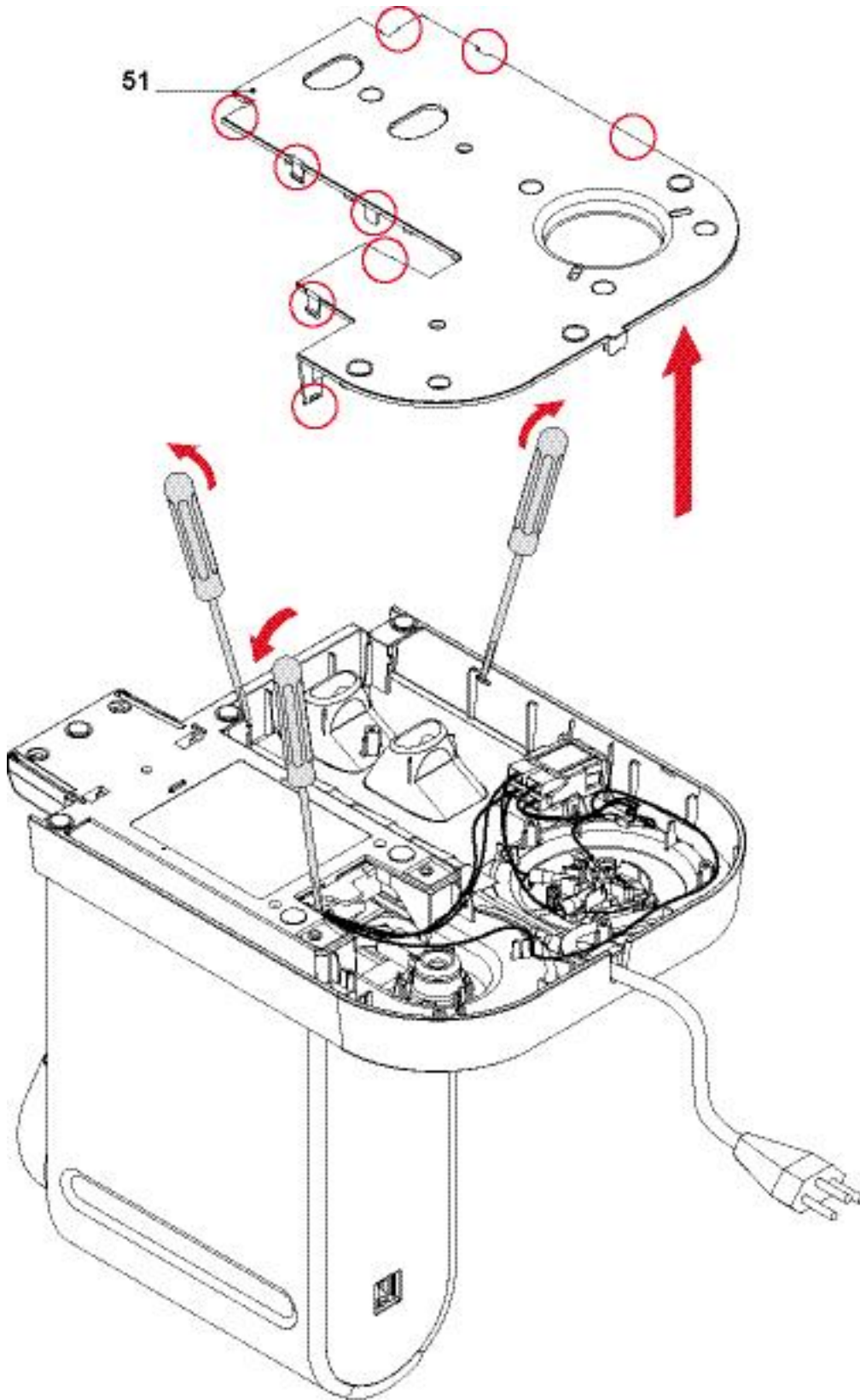
- Take away all removable parts from platform and core unit
 - cup support (8) with waste water container (6)
 - capsule container (7)
 - drip tray (48) with drip grid (49)
 - water tank (44) with cover (45)
 - milk frother (59) with lid and seal (62)
 - cup storage (58)
 - whisk for hot milk (60)
 - spring whisk for milk foam (61).



- At the bottom side of platform loosen 4 screws (41, oval shaped head).



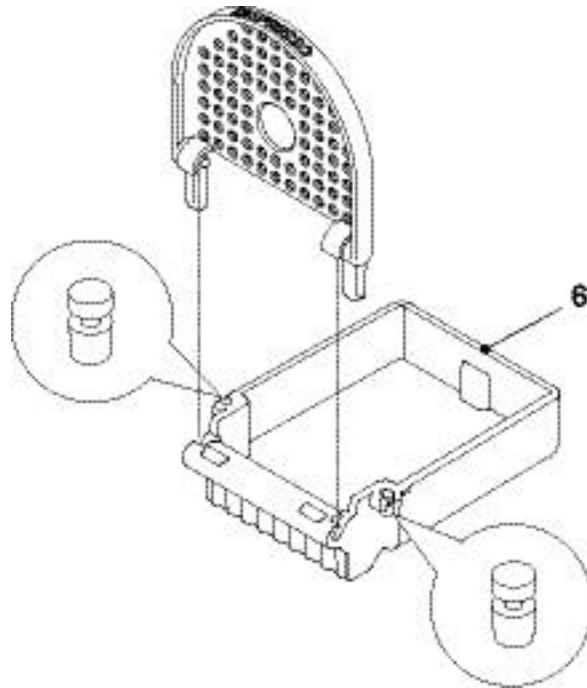
 Latches on the bottom cover (51) are red circled for easy identification.



- Insert screwdriver into recesses and swivel screwdriver to remove bottom cover (51).



Assembly checkpoints



- Check if 2 rubber stoppers are mounted on waste water container (6).

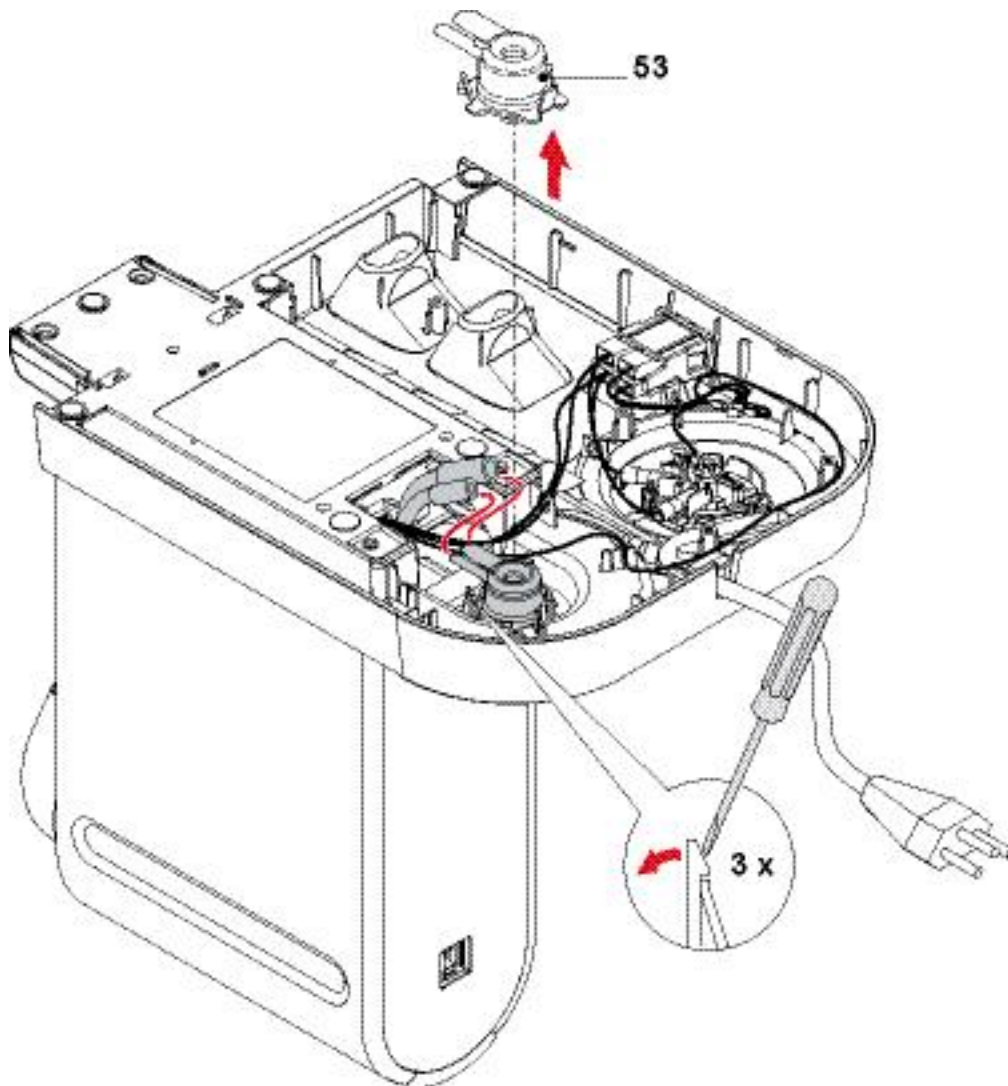


Risk of damage!

While assembling the protective cover at the platform, take care not to jam any wires at the screw connections.

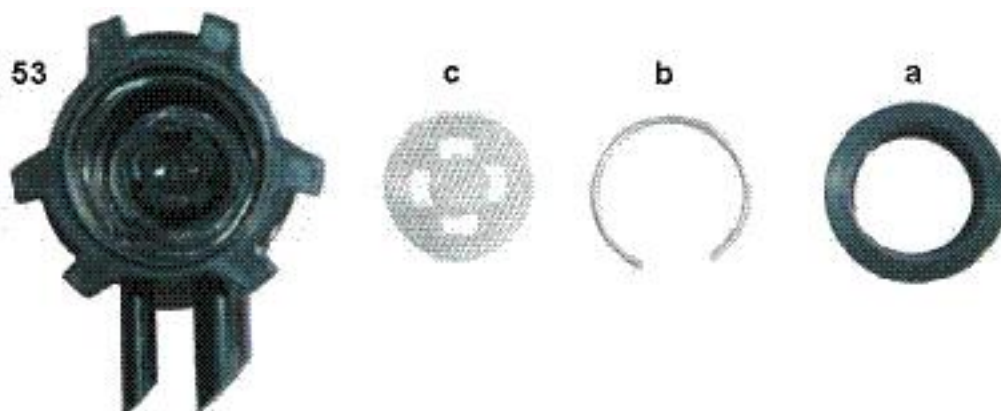


8.5.2 Replacing water tank connector



i The water tank connector (53) is replaced together with gasket, clamping ring and metal sieve.

- Pull off both hoses from water tank connector (53).
- Release the 3 latches around the water tank connector one after the other by pressing the top of their hooks outwards with a screwdriver (see detail) and lifting the water tank connector at the same time.



1. Remove gasket (a) from water tank connector (53).
2. With the help of a pair of tweezers, remove clamping ring (b) and metal sieve (c).
3. Clean or replace parts.

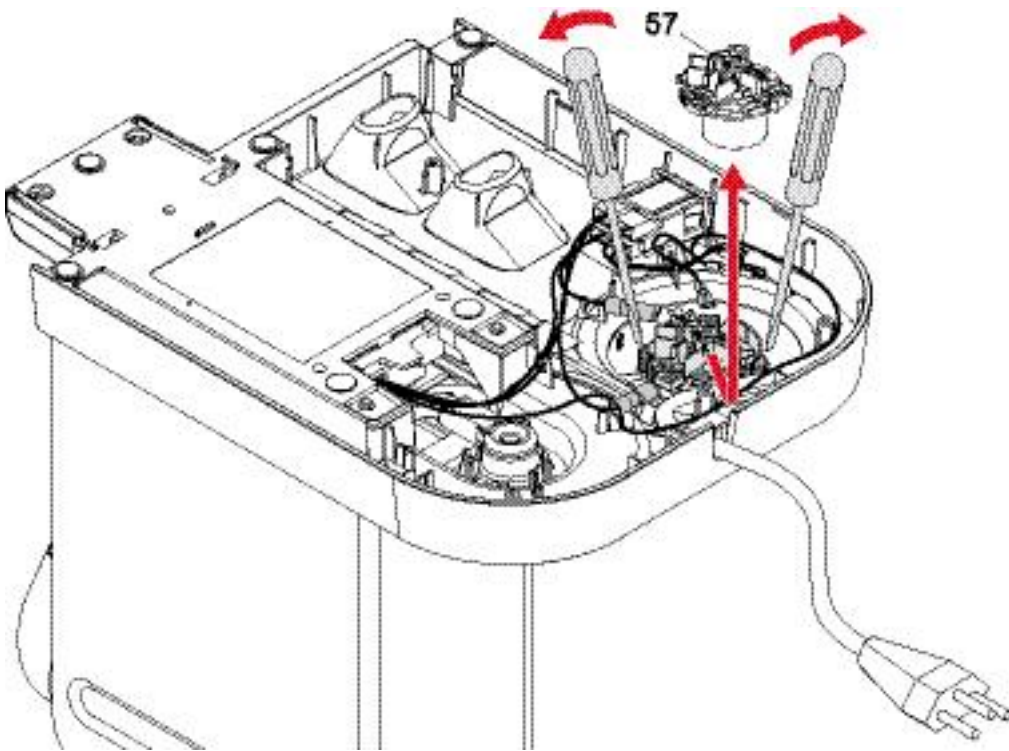
Assembly checkpoints



- Check that gasket is inserted in water tank connector (53) correctly.
- During assembly of the water tank connector on the platform, each of its 3 latches has to engage with an audible click.
- Mind the different diameters of hoses for the water tank connector.

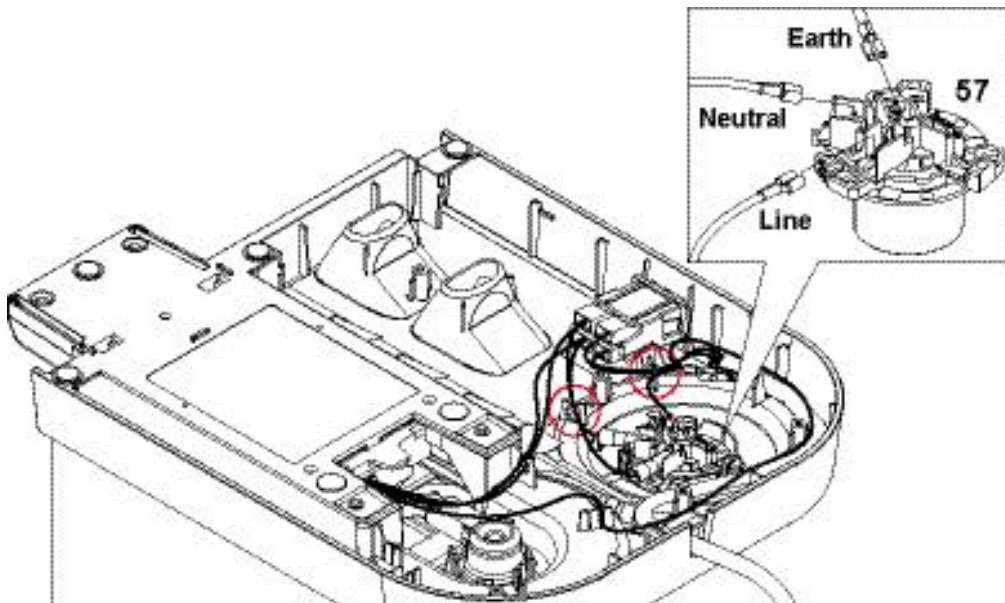


8.5.3 Replacing milk frother connector



- Remove 3 small faston receptacles from milk frother connector (57).
- Remove milk frother connector (57) by releasing 2 latches and swivel connector out from under the hook.

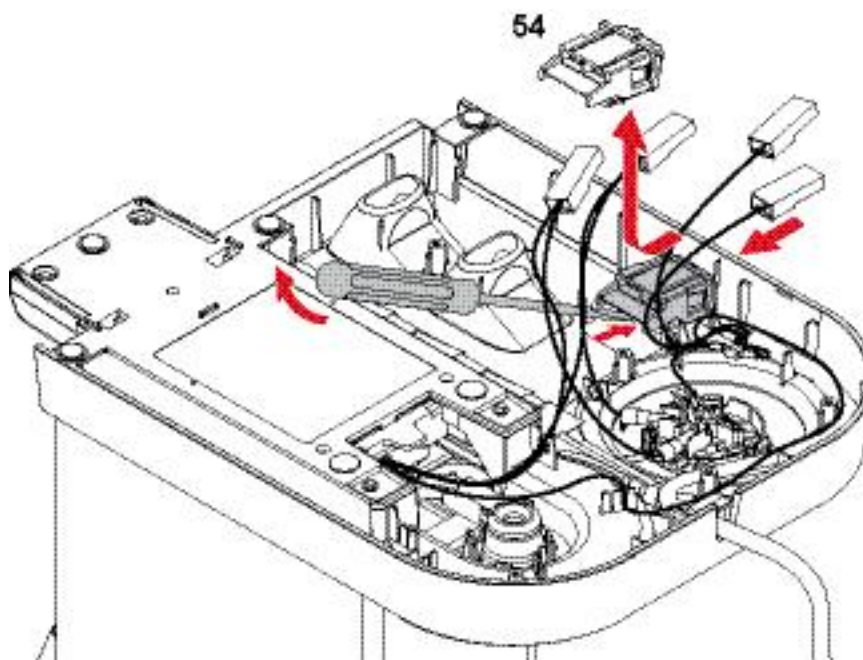
Assembly checkpoints



- Use marked cable guides to lay wires.
- Check wiring of milk frother connector (57), see detail.



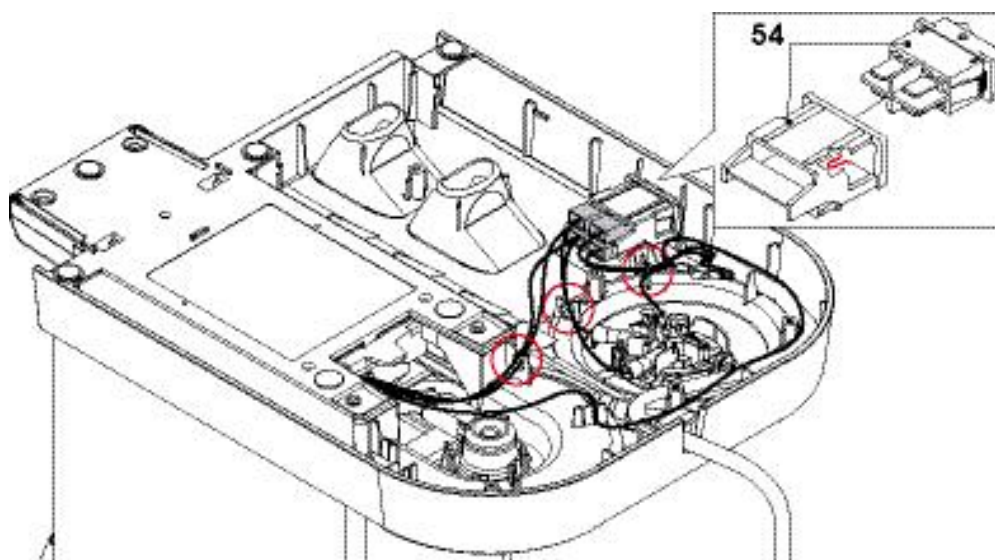
8.5.4 Replacing mains switch



 Use a pair of flat pliers to pull off insulating sleeves with receptacles.

- Remove 4 insulated faston receptacles from mains switch (54).
- Press blade of screwdriver between holder of mains switch and platform carefully. Lift holder with screwdriver slightly. Then press holder with mains switch (54) inwards till it can be removed.

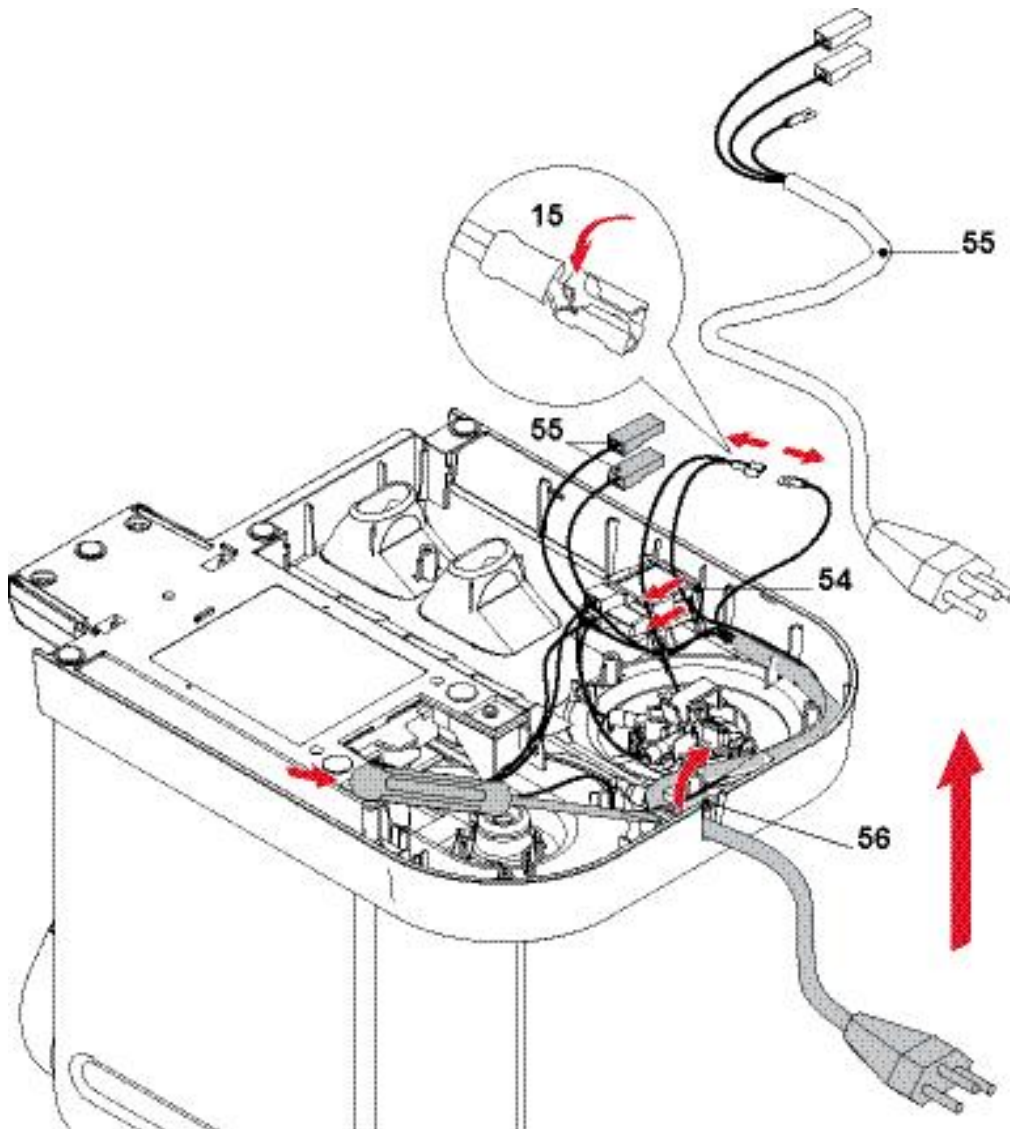
Assembly checkpoints



- The mains switch holder (54) has a notch (see detail) to ensure a correct fitting position.
- Use marked cable guides to lay wires.
- Check wiring of mains switch (see "Wiring diagrams - model Citiz & milk, EF 485/486" on page 124 and following).



8.5.5 Replacing power cord



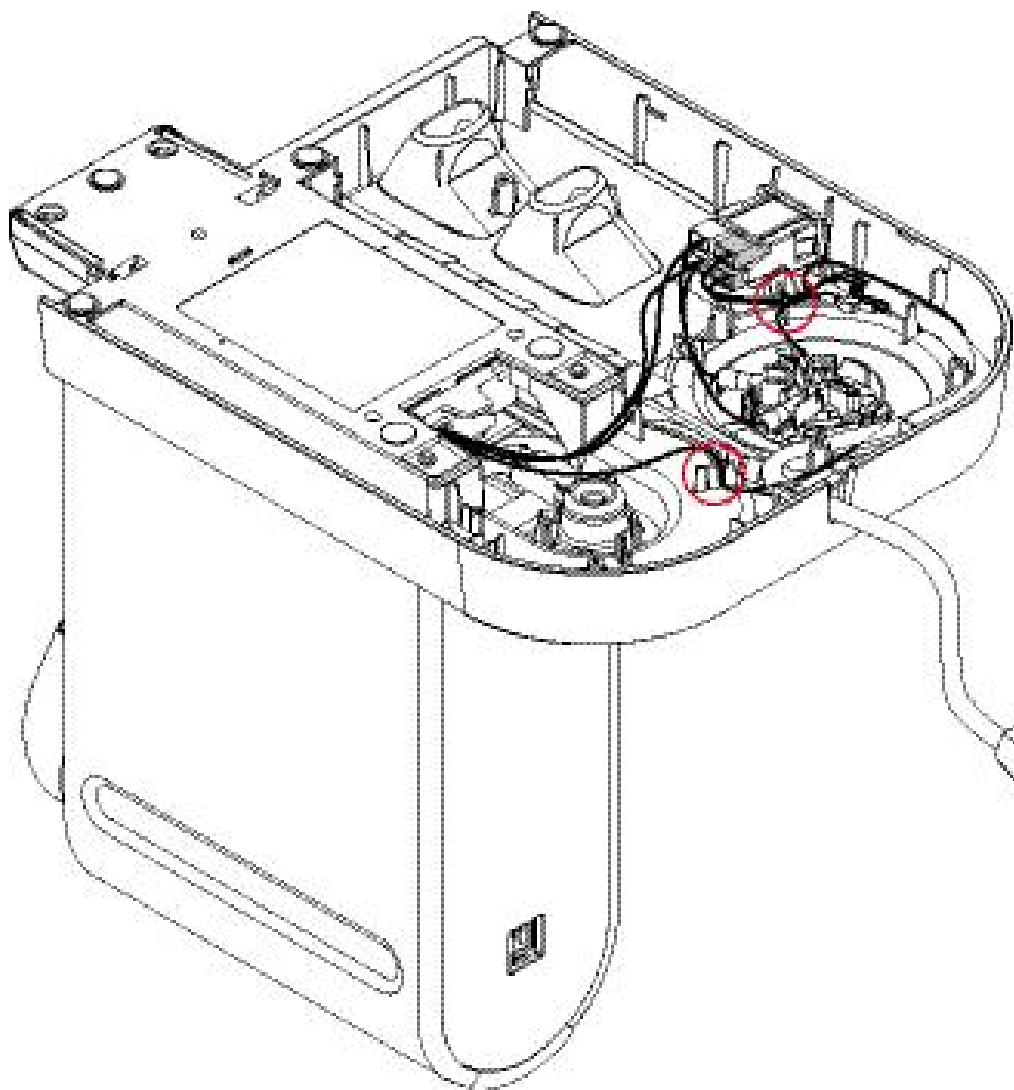
- Remove 2 insulated faston receptacles (55) from mains switch (54).
- If present, disconnect ground wire (15, part of thermoblock assembly).
- Unlatch cable bracket (56) with screwdriver.

 Use a pair of flat pliers to pull off insulating sleeve with receptacle.

 The counterpart, a flat receptacle, has a special connector latching (see detail). Press down lever at first, then pull off receptacle.

 The cable bracket is under tension. Therefore, hold the cable bracket with your finger when unlatching it.

Assembly checkpoints

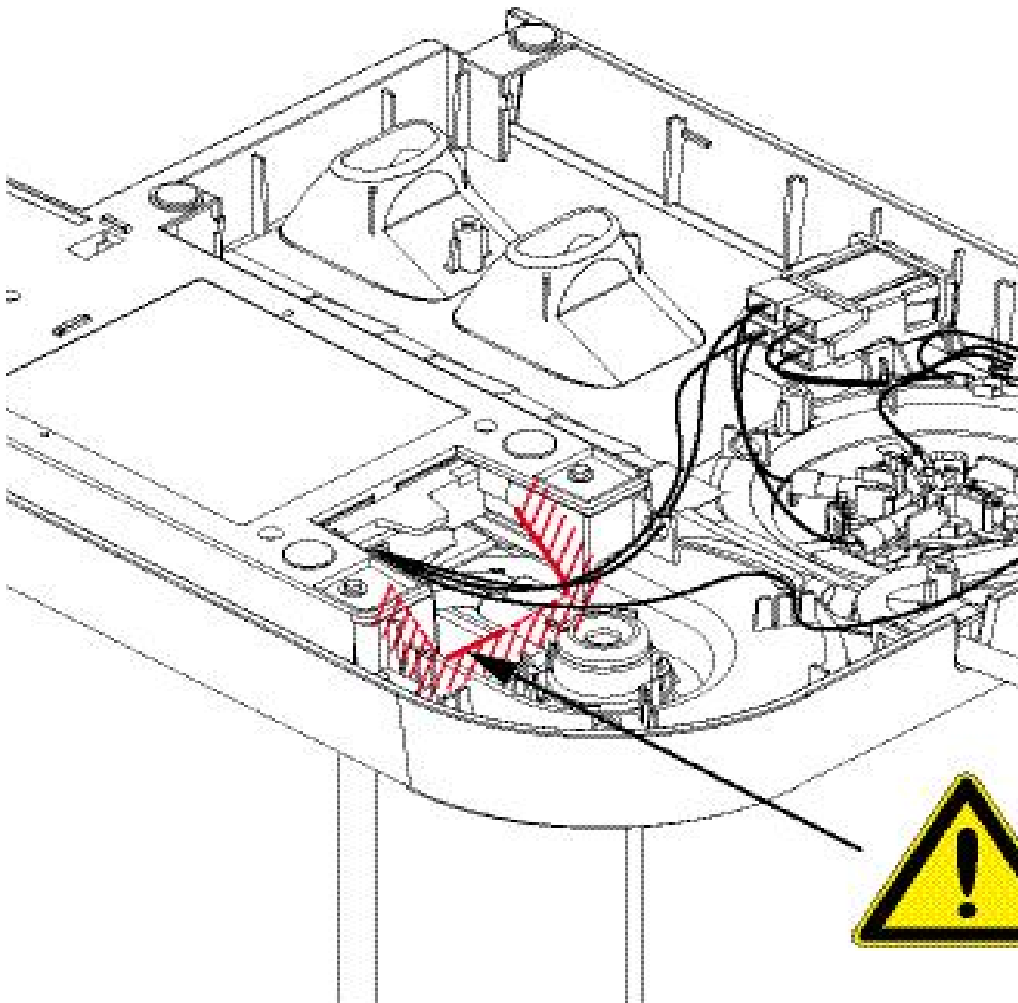


- Use marked cable guides to lay wires.
- Check wiring of power cord (see "Wiring diagrams - model Citiz & milk, EF 485/486" on page 124 and following).



8.5.6 Removing core unit

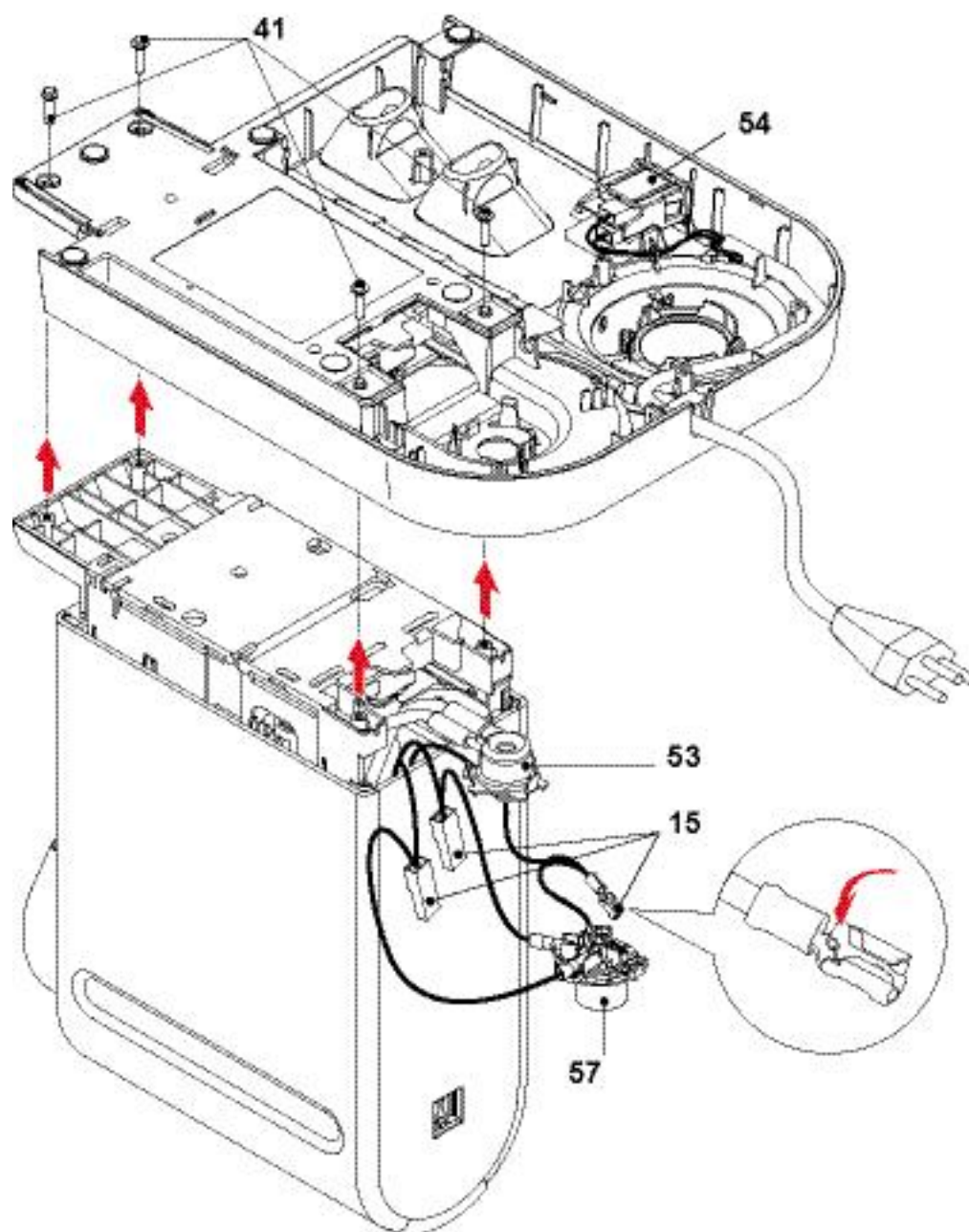
Pay attention to the following safety advice before removing the core unit.



Danger of insulation damages (cuts) on wires between core unit and platform (phase and neutral wire, ground wire if existing).

The sharp casing edges of the platform (marked red in above illustration) can damage the insulation of wires.

Do not stretch and reciprocate wires over sharp edges while removing the core unit.



i After this repair step the core unit can be pulled out of the platform slightly (with still connected hoses and wires). Now the covers of the core unit can be removed.



Use a pair of flat pliers to pull off insulating sleeve with receptacle.

- Loosen 4 screws (41, oval shaped head) at the bottom side of platform.

For complete removal of the core unit proceed as follows:

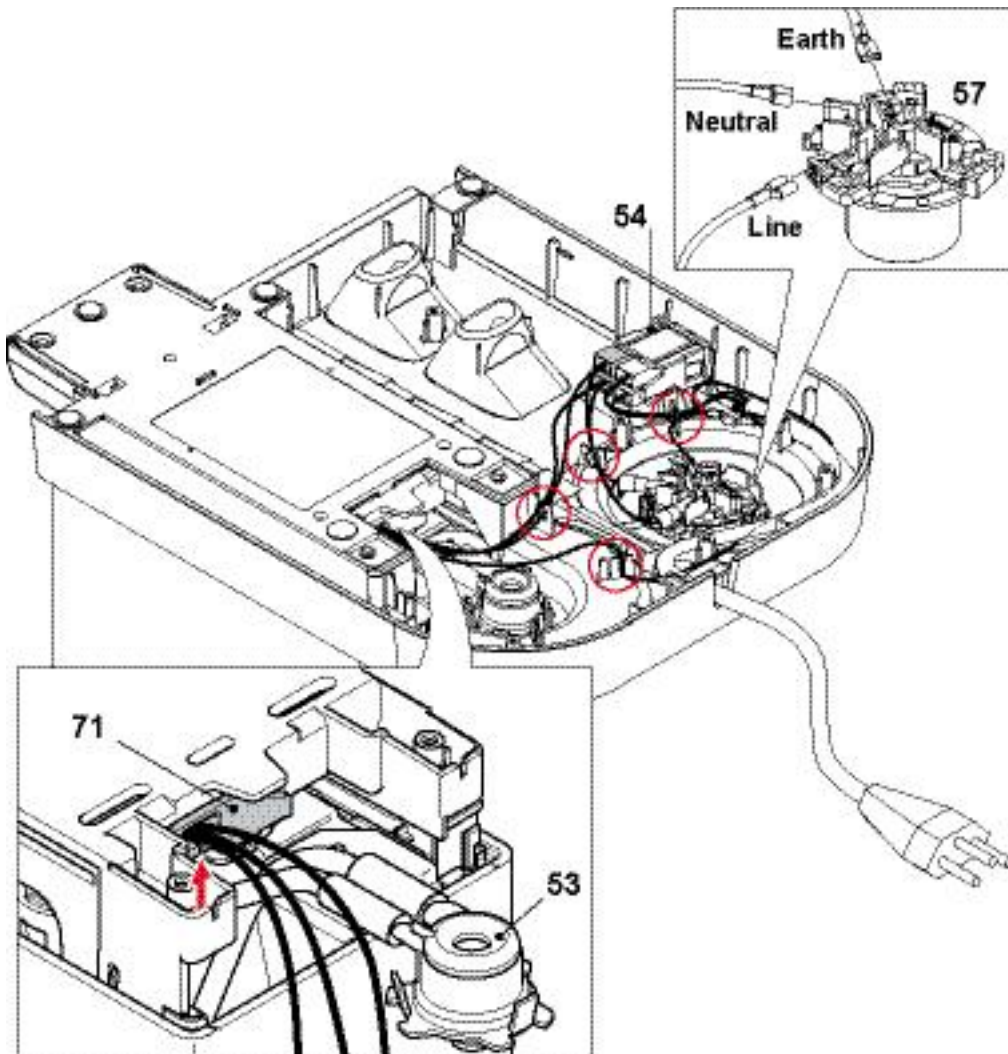
- Remove bottom cover (refer to page 56).
- Remove both insulated faston receptacles (15, part of thermoblock assembly) from mains switch (54).



- If present, disconnect ground wire (15, part of thermoblock assembly).
- If the thermoblock or core unit has to be replaced, disconnect milk frother connector (57). Otherwise the core unit can be removed together with this connector (see page 73).
- Remove water tank connector (53, see page 71).

 The flat receptacle on the ground wire has a special connector latching (see detail). Press down lever at first, then pull off receptacle.

Assembly checkpoints



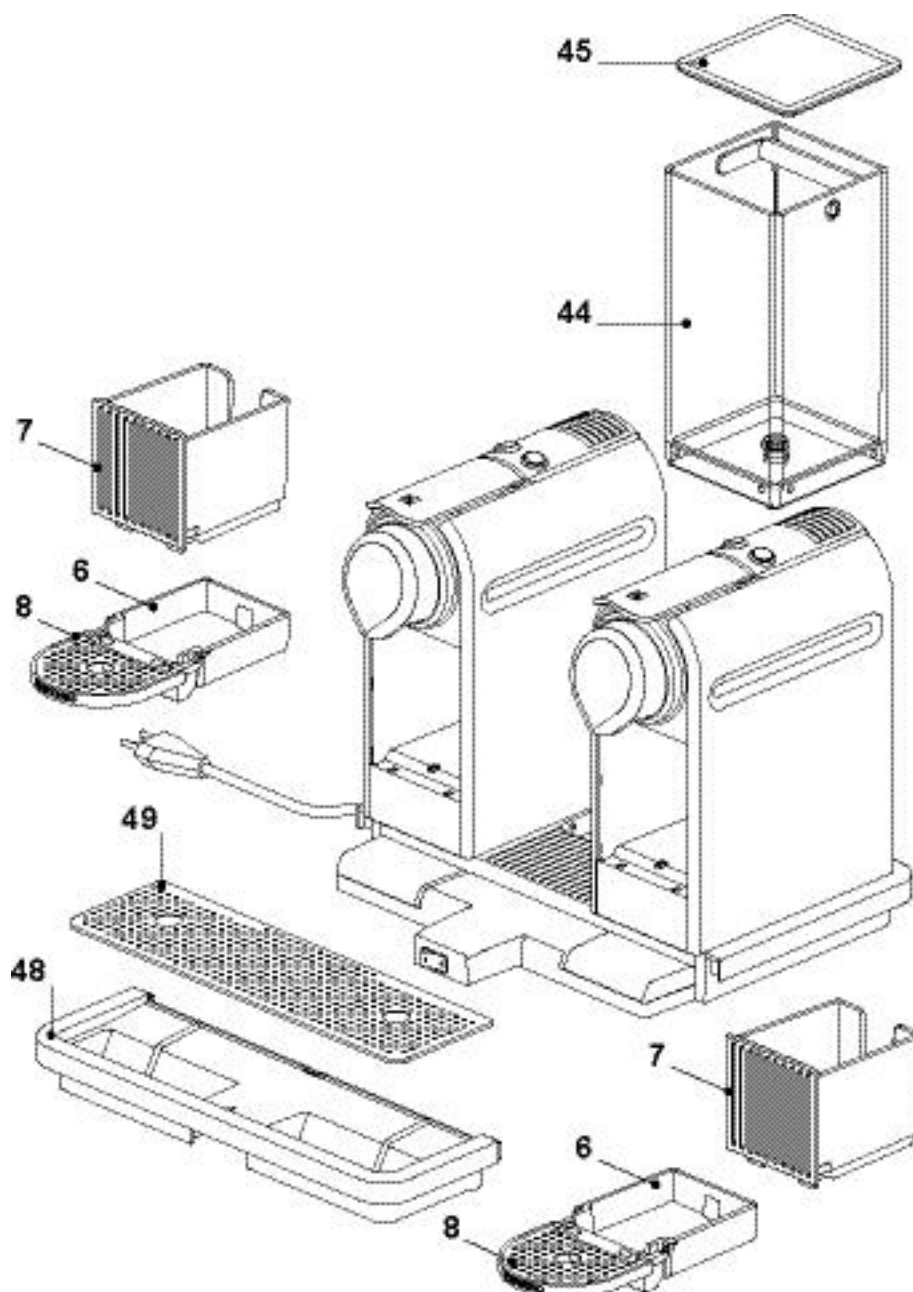
- All covers are assembled on the core unit.
- Check that wiring between core unit and platform is led through cable fixation (71).
- Use marked cable guides to lay wires.
- Check wiring of milk frother connector (57), see detail.
- Check wiring of mains switch (54), see "Wiring diagrams - model Citiz & milk, EF 485/486" on page 124 and following.
- During assembly of the water tank connector (53) on the platform, each of its 3 latches has to engage with an audible click.

8.6 Platform disassembly - model Citiz & Co

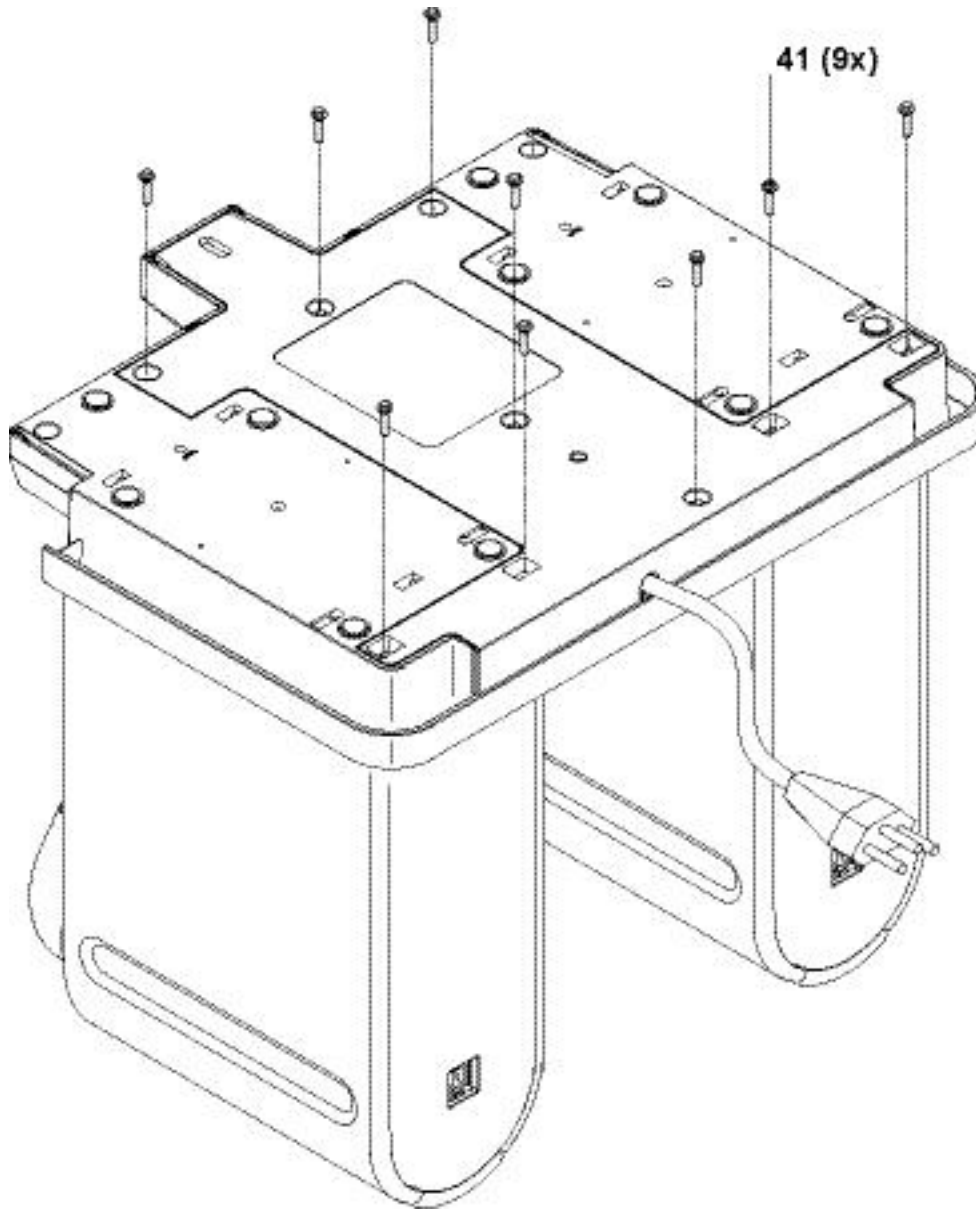
8.6.1 General disassembly

This general disassembly

- is necessary before the removal/disassembly of one or both core units is possible,
- gives access to the components and wiring of the platform.

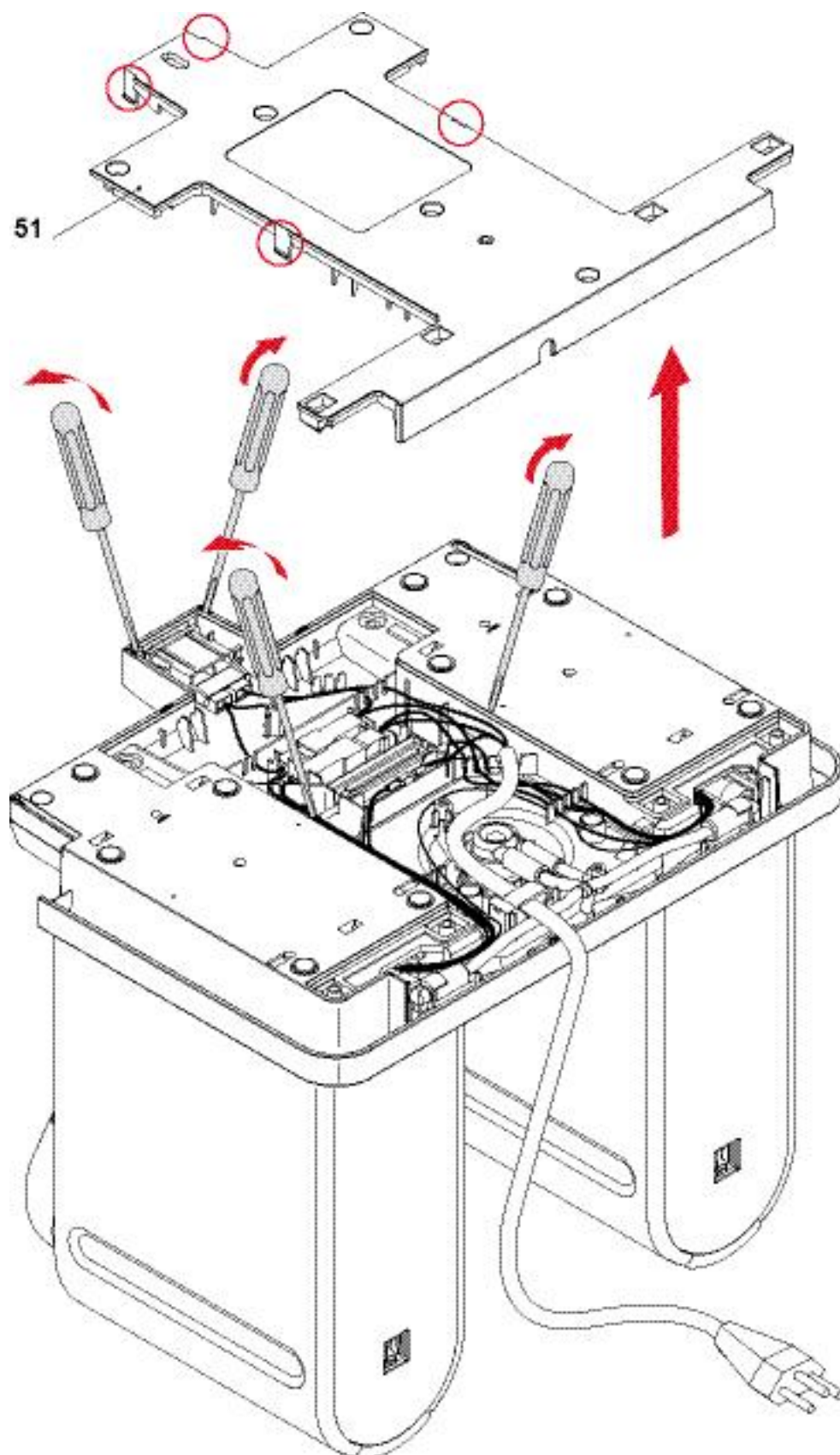


- Take away all removable parts from platform and core units
 - cup supports (8) with waste water containers (6)
 - capsule containers (7)
 - drip tray (48) with drip grid (49)
 - water tank (44) with cover (45).



- At the bottom side of platform loosen 9 screws (41, oval shaped head).

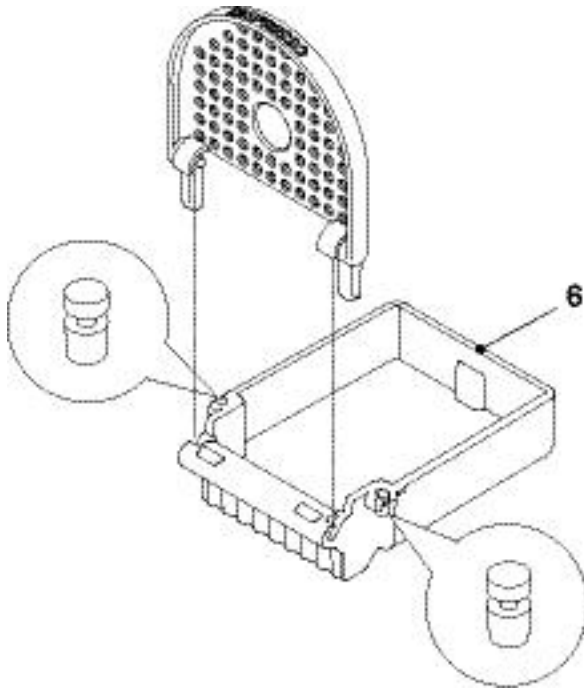
 The core units are fastened with some of these screws as well. Support both core units so that their remaining screw connection to the platform cannot be damaged.



- If necessary use a screwdriver to remove protective cover (51).



Assembly checkpoints



- Check if 2 rubber stoppers are mounted on each waste water container (6).

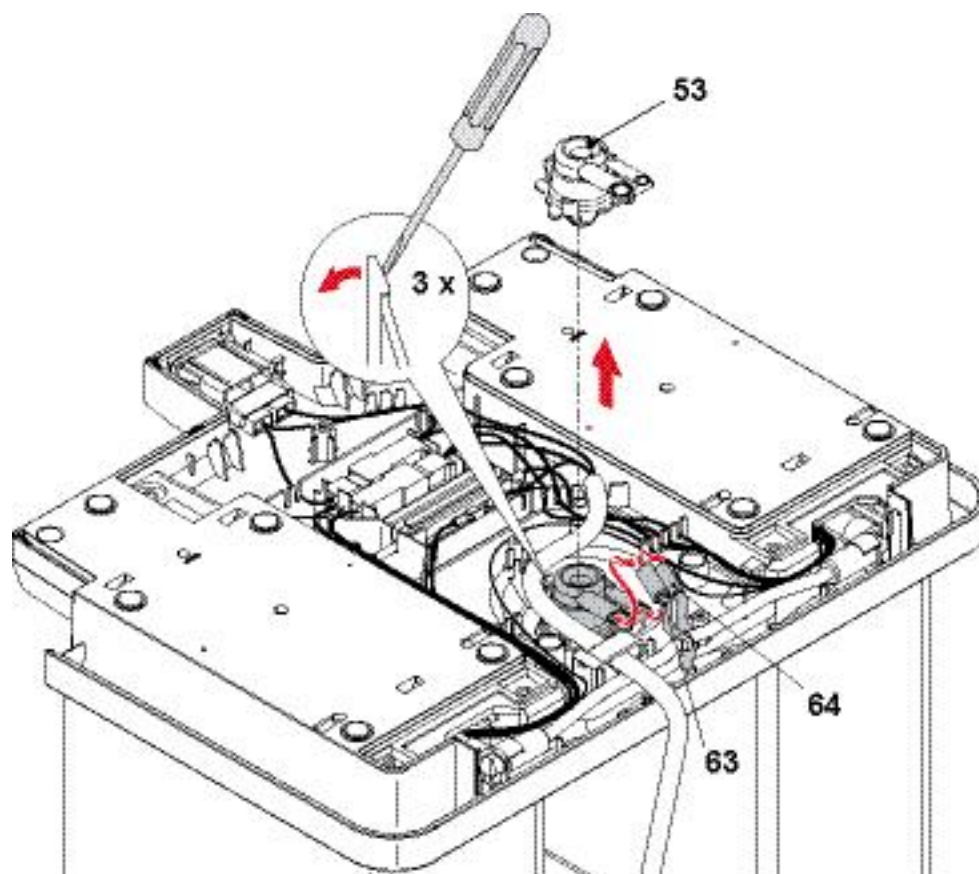
**Risk of damage!**

While assembling the protective cover at the platform, take care not to jam any wires at the screw connections.

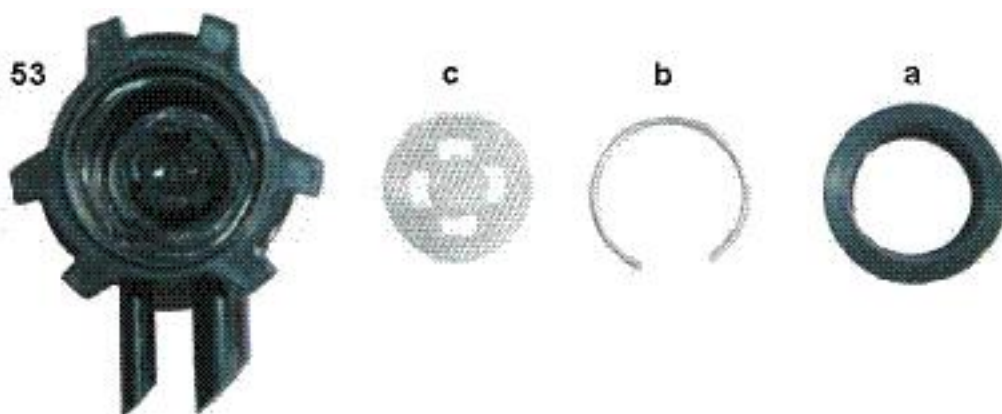


8.6.2 Replacing water tank connector

 The water tank connector (53) is replaced together with gasket, clamping ring and metal sieve.



- Pull off both hoses (63, 64) from water tank connector (53).
- Release the 3 latches one after the other by pressing the top of their hooks outwards with a screwdriver (see detail) and lifting the water tank connector at the same time.



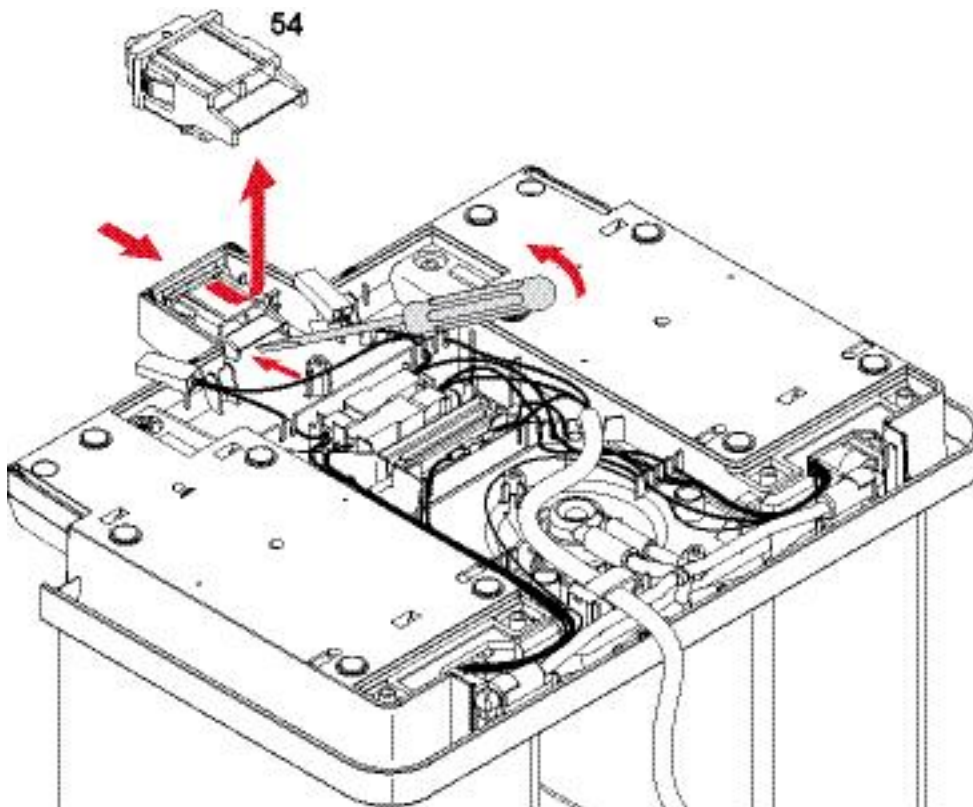
- Remove gasket (a) from water tank connector (53).
- With the help of a pair of tweezers, remove clamping ring (b) and metal sieve (c).
- Clean or replace parts.

Assembly checkpoints



- During assembly of the water tank connector (53) on the platform, each of its 3 latches has to engage with an audible click.
- Insert gasket correctly (see detail).

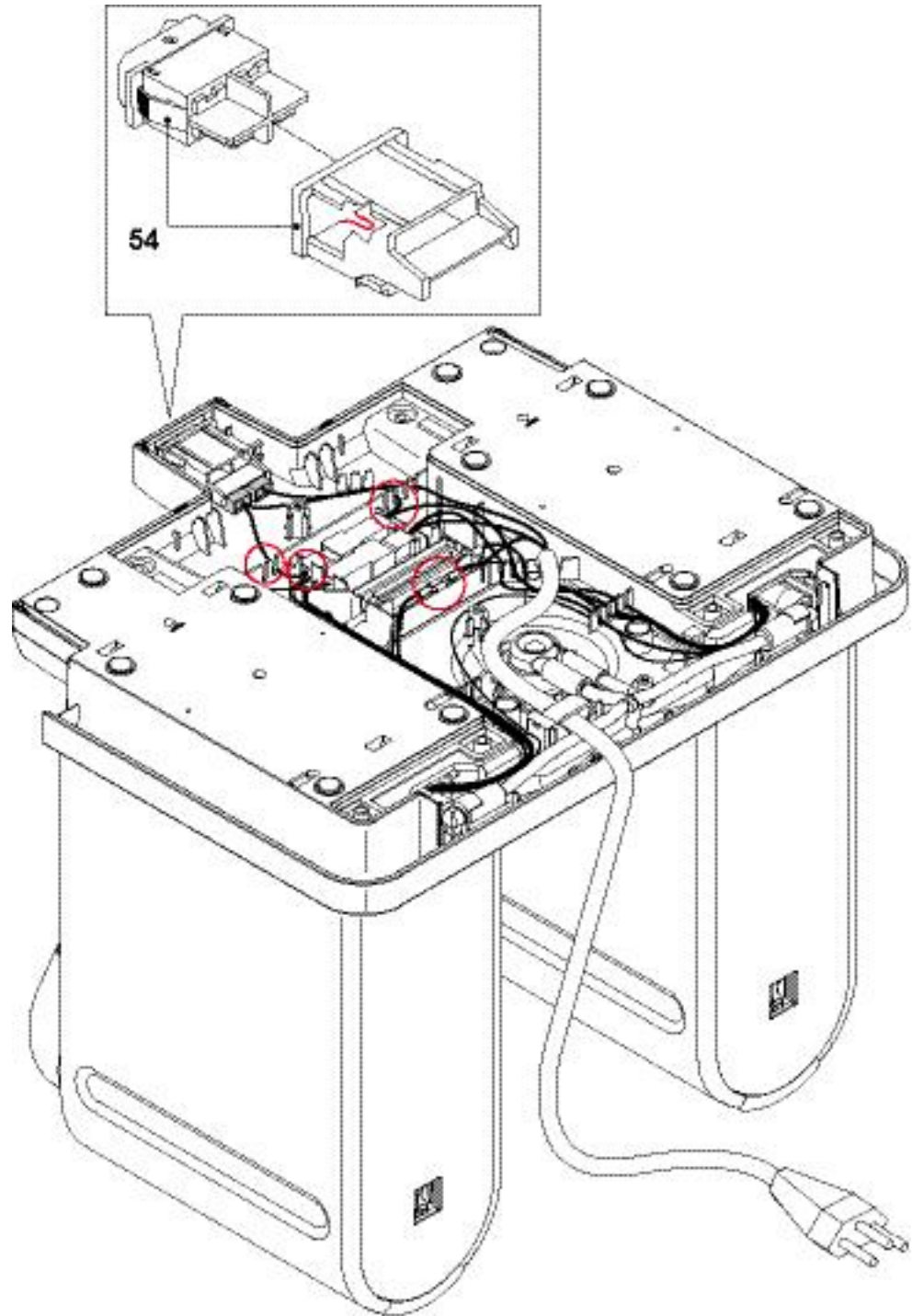
8.6.3 Replacing mains switch



- Remove 2 insulated faston receptacles from mains switch (54).
- Press blade of screwdriver between holder of mains switch and platform carefully. Lift holder with screwdriver slightly. Then press holder with mains switch (54) inwards till it can be removed.

 Use a pair of flat pliers to pull off insulating sleeves with receptacles.

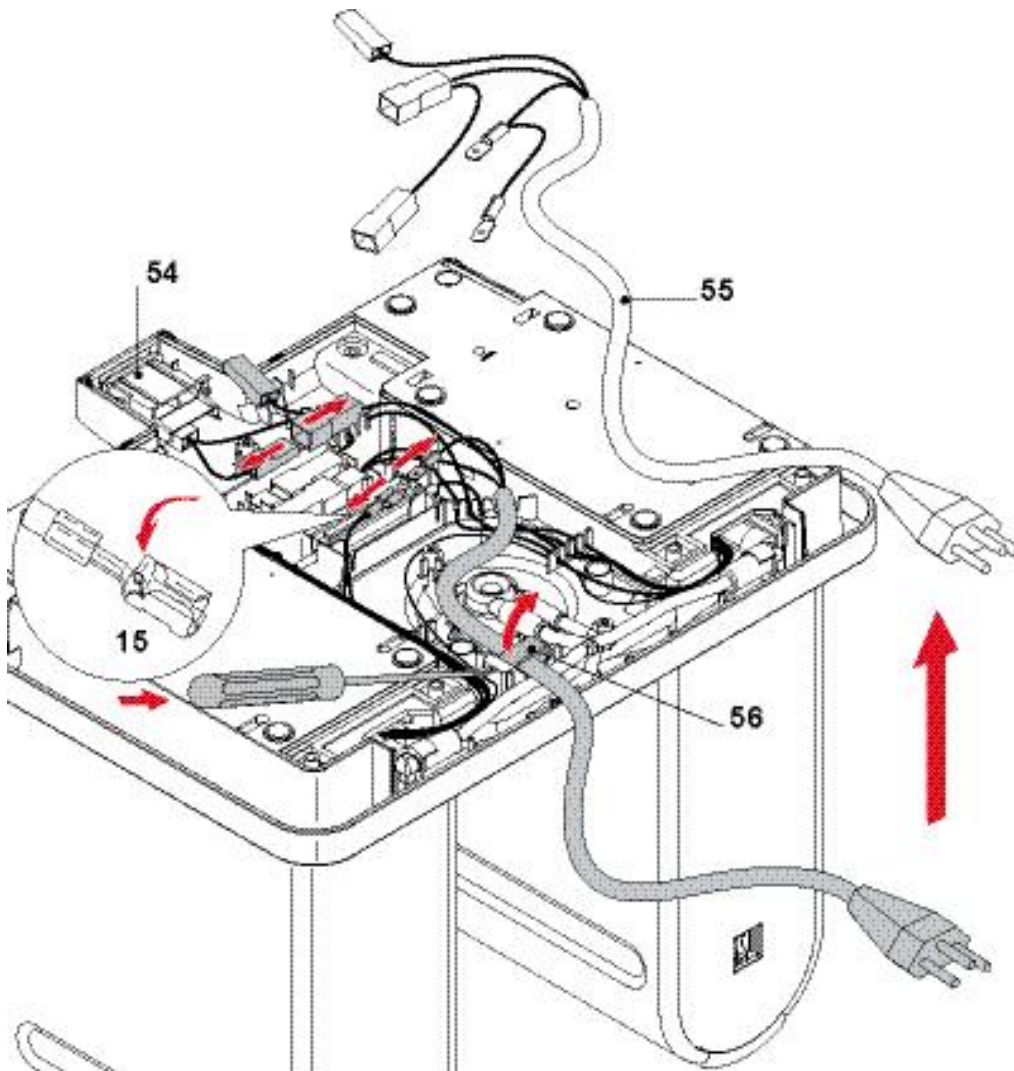
Assembly checkpoints



- Use marked cable guides to lay wires.
- The mains switch holder (54) has a notch: correct fitting position is with mains switch connections next to the platform (see detail).



8.6.4 Replacing power cord



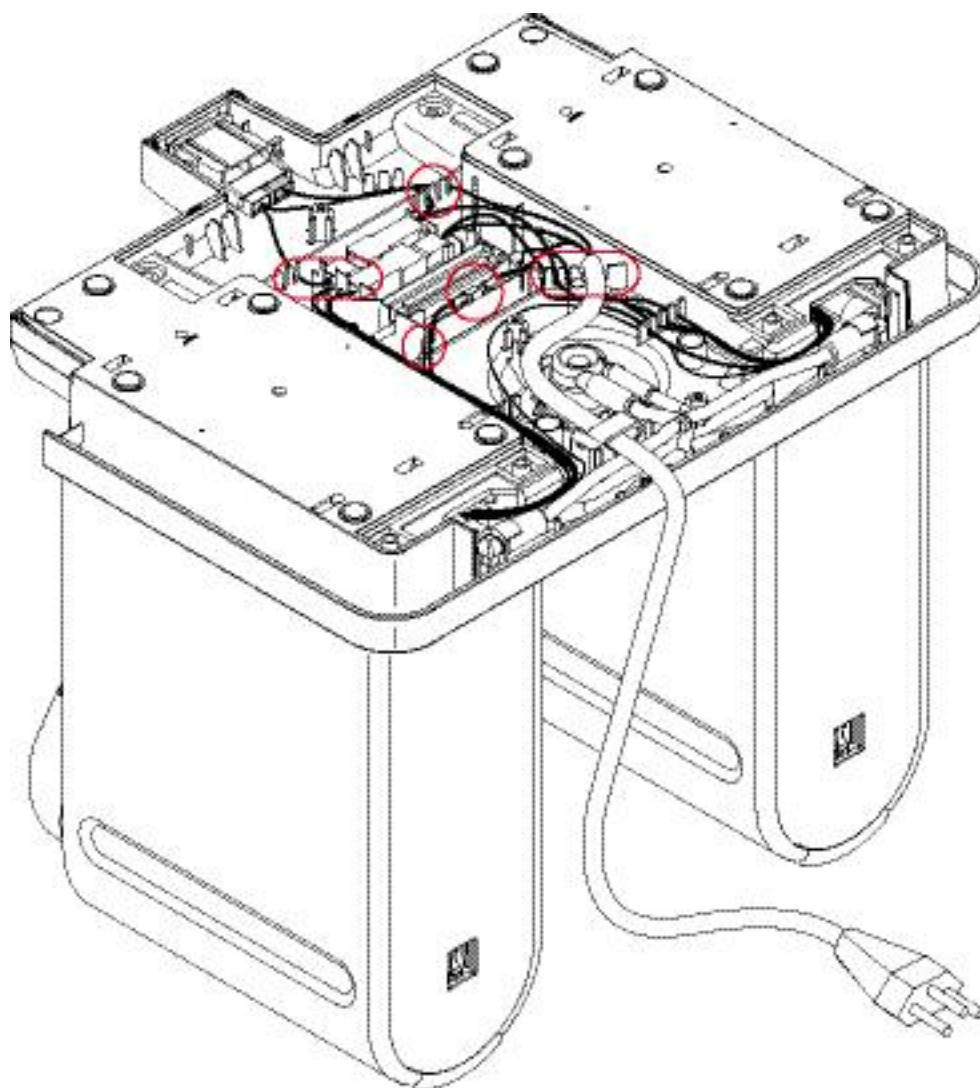
- Remove insulated faston receptacle of phase wire (55) from mains switch (54).
- Disconnect both insulated adapter plugs of neutral wire (55).
- If a ground wire is present, disconnect both flat receptacles (15).
- Unlatch cable bracket (56) with screwdriver.

 Use a pair of flat pliers to pull off insulating sleeve with receptacle.

 The flat receptacles of the ground wire connections (15) have a special connector latching (see detail). Press down lever at first, then pull off receptacle.

 The cable bracket is under tension. Therefore, hold the cable bracket with your finger when unlatching it.

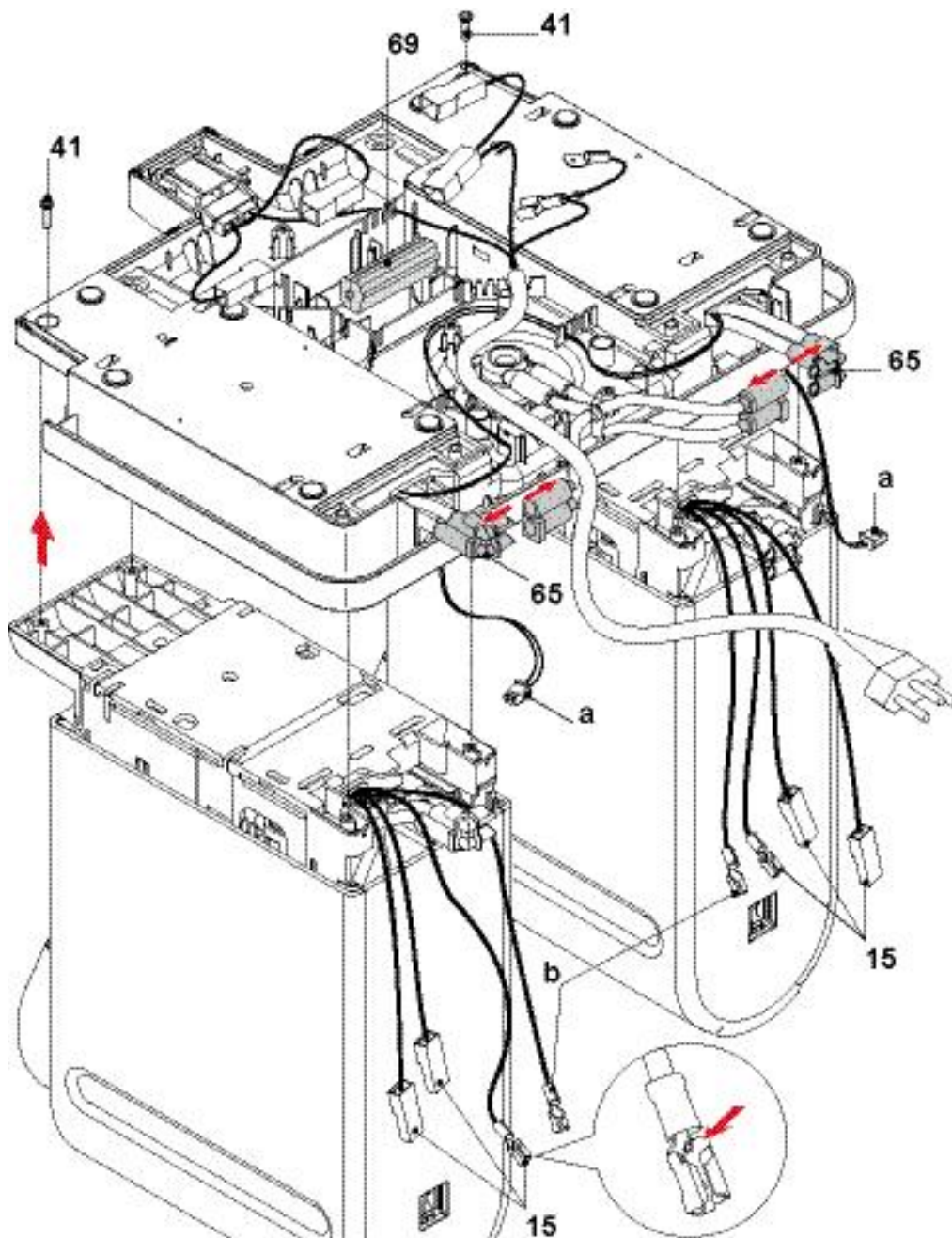
Assembly checkpoints



- Use marked cable guides to lay wires.
- Check wiring of power cord (see "Wiring diagrams - model Citiz & Co, EF 487/488" on page 128 and following).



8.6.5 Removing core units



i Both core units can be removed the same way.

- For each core unit loosen 1 remaining screw (41, oval shaped head) at the bottom side of platform.

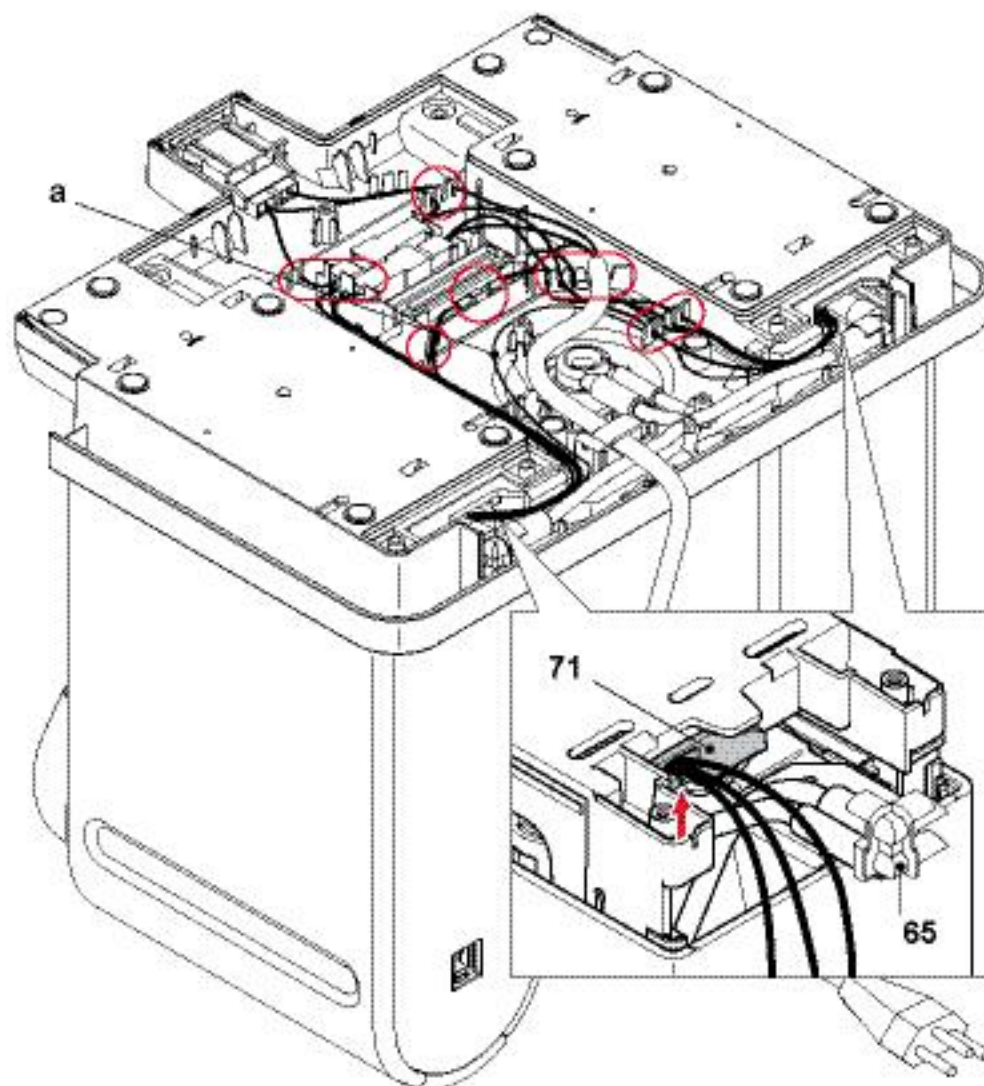
For complete removal of a core unit proceed as follows:

4. Disconnect 2 insulated adapter plugs (15, phase and neutral wire).
5. If a ground wire (15, part of thermoblock) is present, disconnect flat receptacle.
6. Open protective case (69) with screwdriver and disconnect connection cable (b).
7. Pull out core unit from platform slightly to disconnect synchronization cable plug (a) from electronic control board.
8. Pull off both hoses from angled H-connector (65).
9. Lift core unit out of platform.

i After the first repair step the core unit can be pulled out of the platform slightly (with still connected hoses and wires). Now the covers of the core unit can be removed.

⚙ The flat receptacle on the ground wire has a special connector latching (see detail). Press down lever at first, then pull off receptacle.

Assembly checkpoints



- All covers are assembled on the core unit.
- Use marked cable guides to lay wires.
- Check wiring (see "Wiring diagrams - model Citiz & Co, EF 487/488" on page 128 and following).
- Make sure to reconnect synchronization cable plugs (a) on electronic control boards.
- Mind the hose positions on angled H-connector (65).
- Check that wiring between core units and platform is led through cable fixations (71).



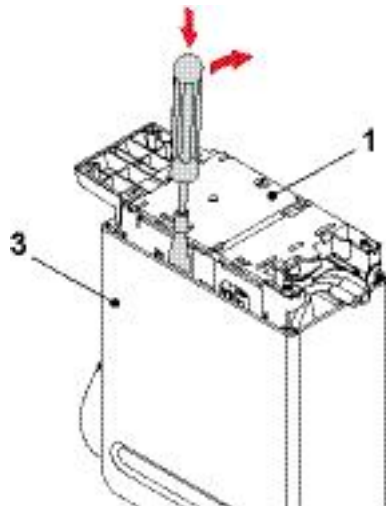
8.7 Disassembly of core unit, C-range

8.7.1 General disassembly

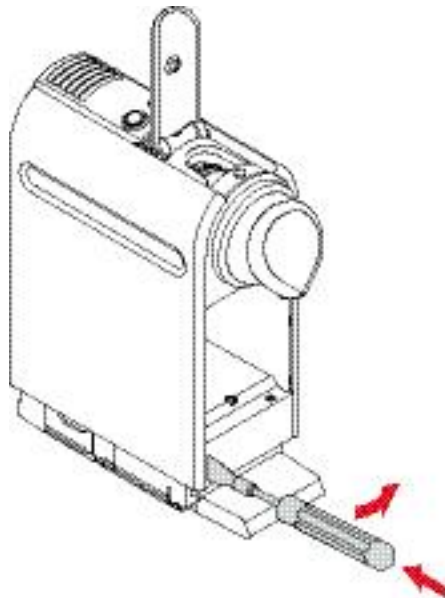
The core unit has to be removed from the platform at first (see according chapter "platform disassembly"). It is possible to perform a general disassembly of the core unit with intact hose and wire connections to the platform (e.g. for repair, leakage check).

After general disassembly of the core unit a repairing / service holder device is helpful for further repair work.

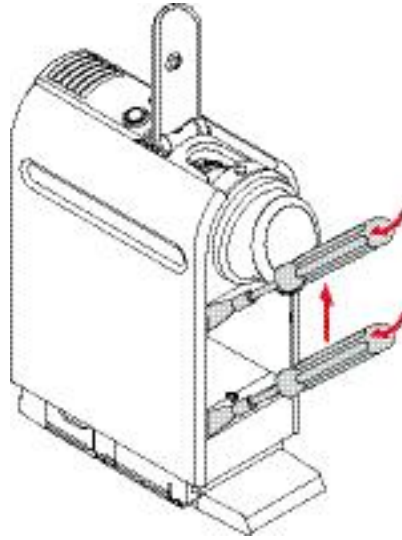
Remove left side panel



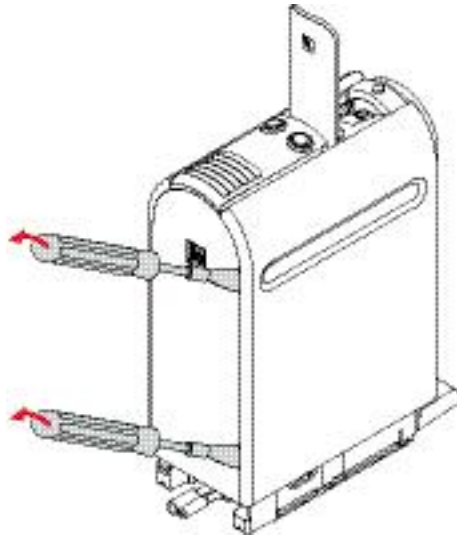
1. Insert disassembly tool between bottom of left side panel (3) and chassis (1).
2. Swivel disassembly tool till latch opens at the bottom.



3. Insert disassembly tool into lower gap at the front.
4. Carefully turn disassembly tool slightly to the right to open the latch.

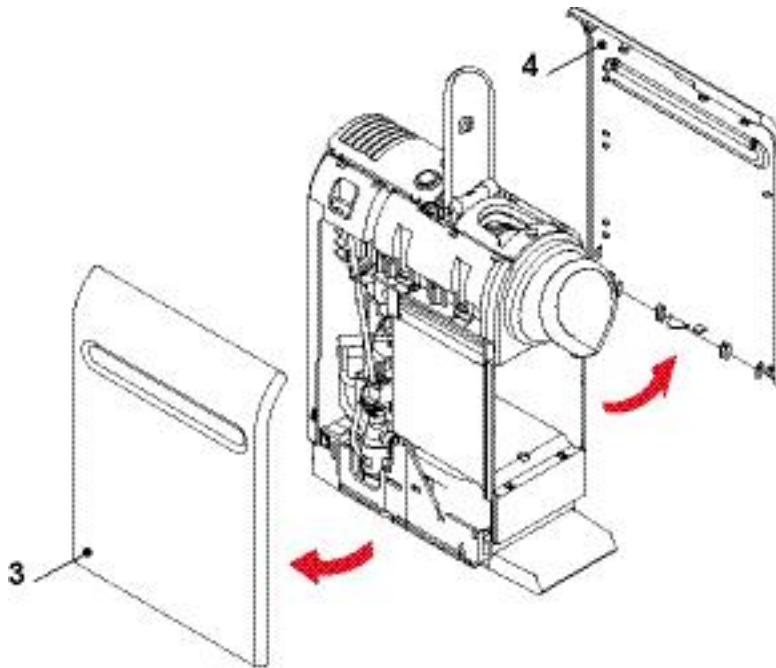


5. Insert disassembly tool laterally into the gap above.
6. Carefully turn disassembly tool slightly forward to open the next latch.
7. Move disassembly tool upwards and open remaining latch the same way.



 Insert disassembly tool at right angles only. Otherwise the shadow gap can be damaged.

8. At the back insert disassembly tool into shadow gap of left side panel.
9. Swivel disassembly tool carefully to open first latch.
10. Move disassembly tool upwards and open the other two latches the same way.

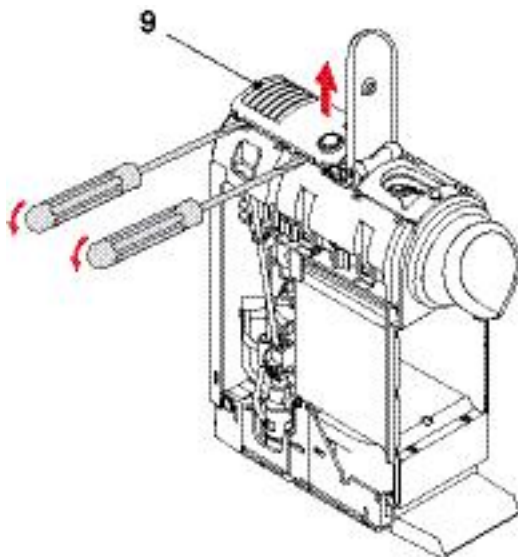


11. Swing up and remove left side panel.

Remove right side panel

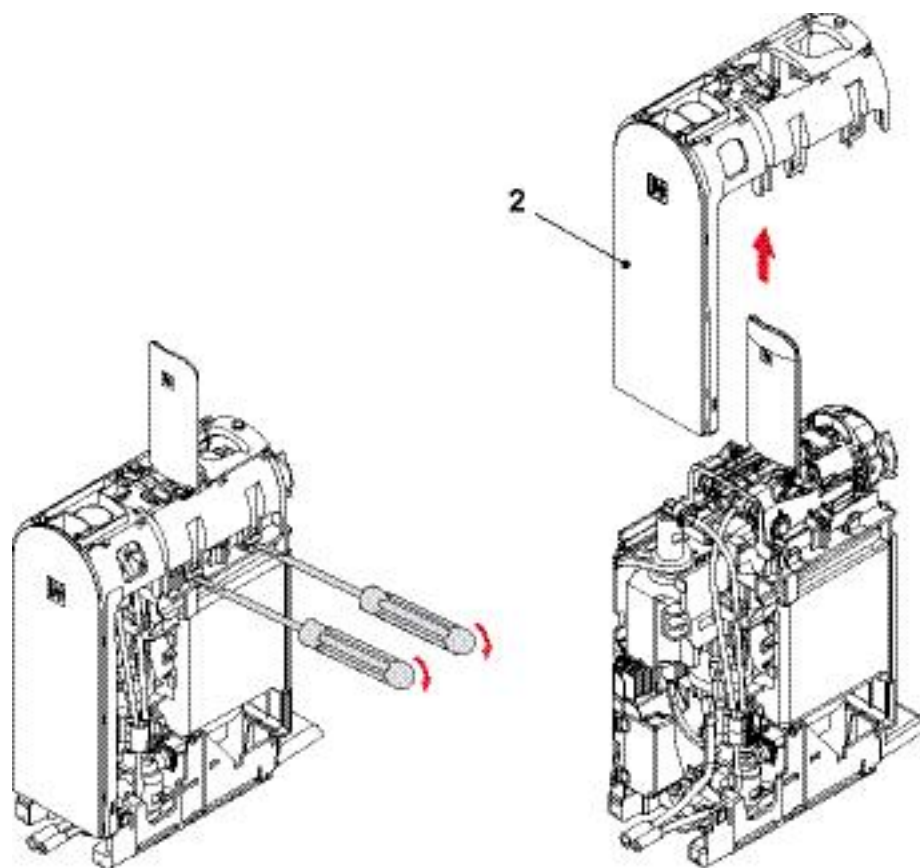
Remove the right side panel (4) in the same sequence as for the left side panel (3).

Remove blind



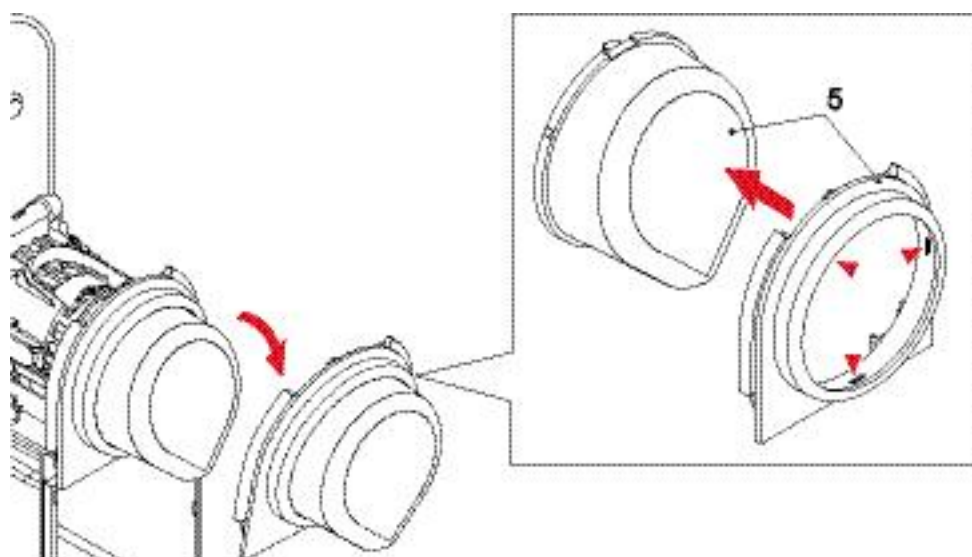
1. Open 2 latches on each side of blind (9) with screwdriver.
2. Remove blind together with coffee buttons and wiring.

Remove cover



1. Use a screwdriver to release 2 latches on each side.
2. Lift and remove cover (2).

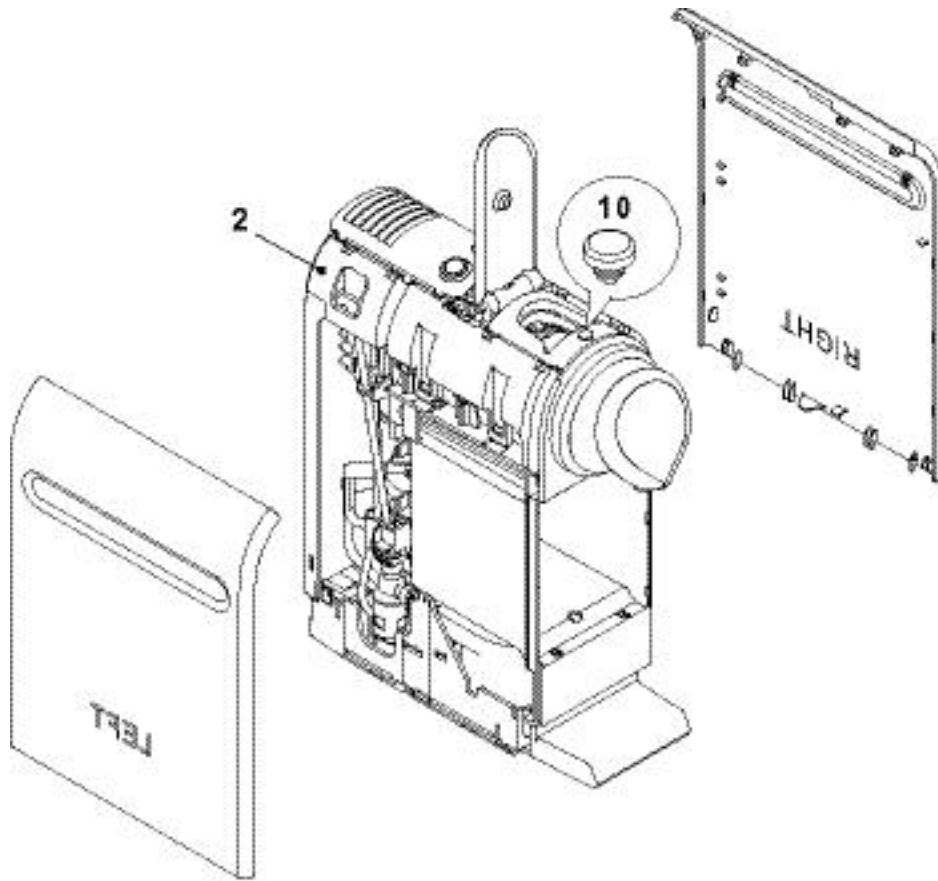
Remove front cover with outlet



1. Release 3 latches on front cover by hand and press out outlet (5, see detail).



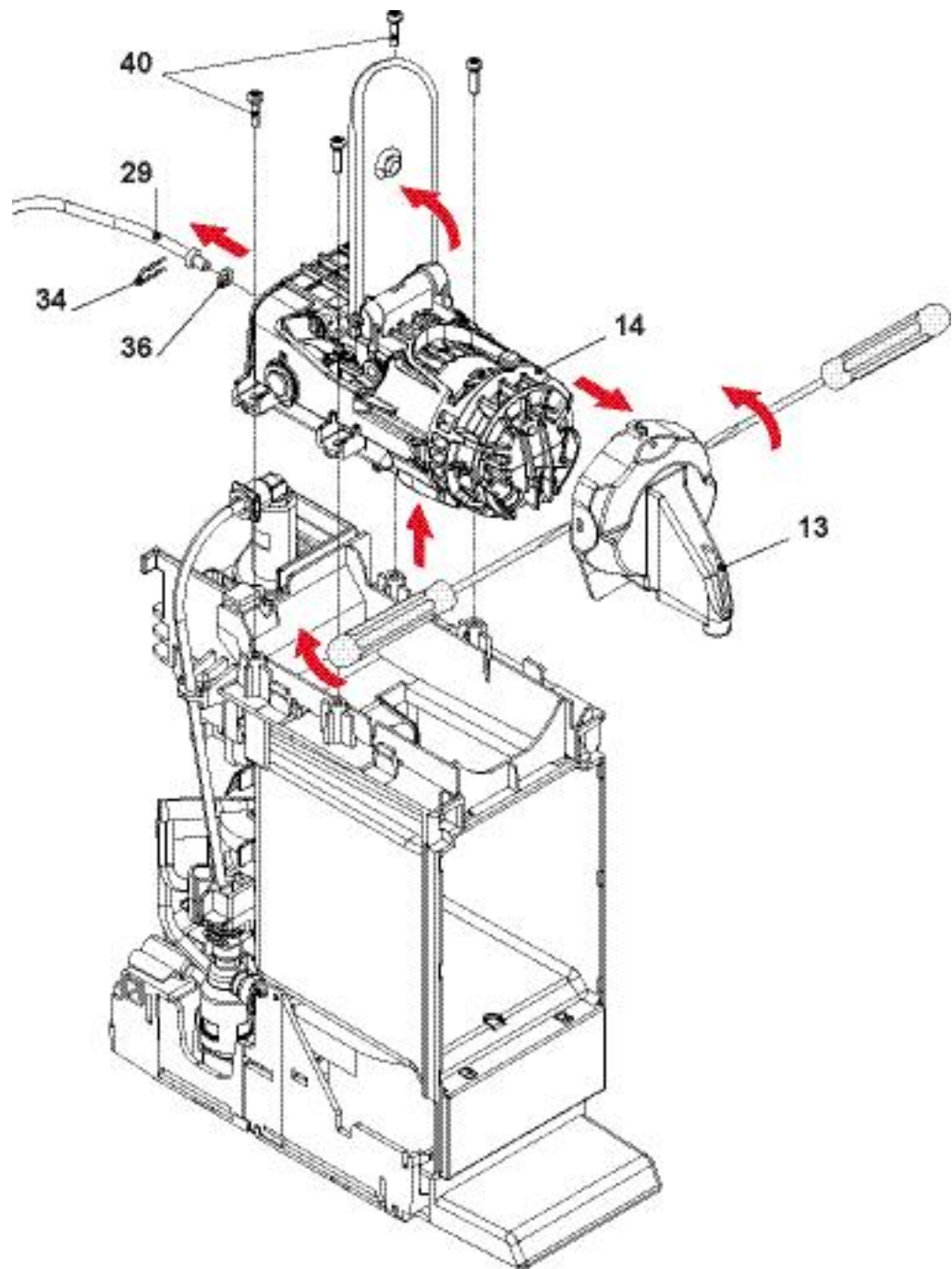
Assembly checkpoints



- For easy identification, the side panels are marked with "RIGHT" or "LEFT" on the inside.
- Check if damper (10) for closing handle is installed on cover (2).
- Check that all connection wires to the platform are led through cable fixation (71).



8.7.2 Replacing compact brewing unit

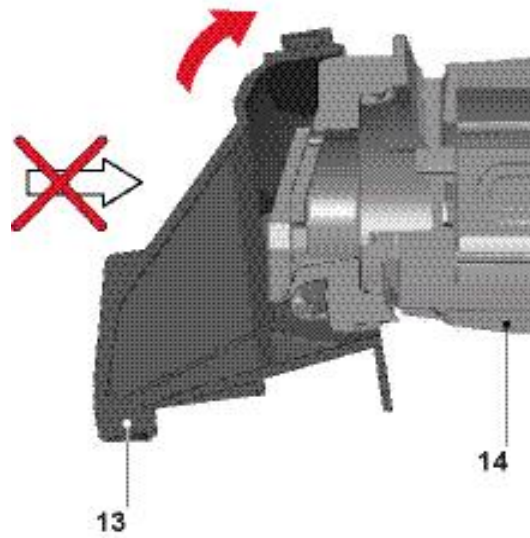


 Open closing handle to get access to hose connection.

- Use a pair of pointed pliers to remove connector clip (34) and hose (29) with O-ring (36).
- Use Torx screwdriver TX10 to loosen 4 screws (40).
- After removal of compact brewing unit (14), release 2 latches with screwdriver and remove steam cover (13).



Assembly checkpoints

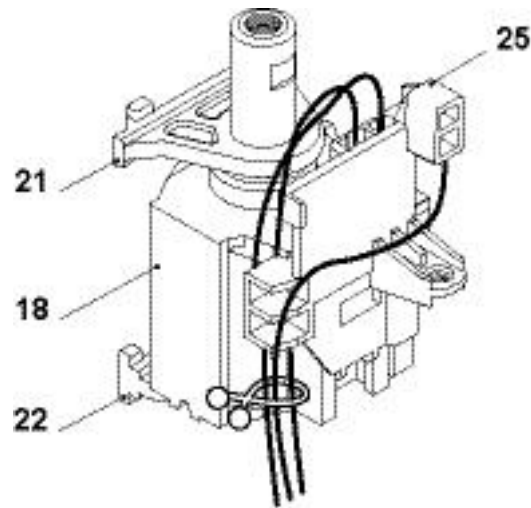


- At first assemble steam cover (13) on new compact brewing unit (14) as shown.
- Replace O-ring (36) of hose connection on compact brewing unit.



8.7.3 Replacing pump

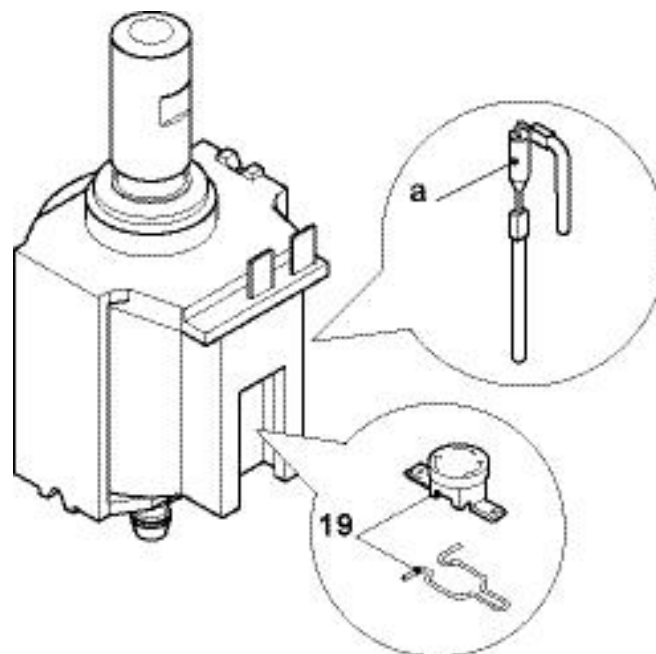
General



The pump (18) can only be replaced as assembly consisting of

- pump, prewired with thermostat (19, see below) or thermal cut off fuse (a)
- 2 pump supports (21, 22)
- pump cover (25).

i The pump is equipped either with a thermal cut off fuse or a thermostat depending on the voltage range or manufacturer.



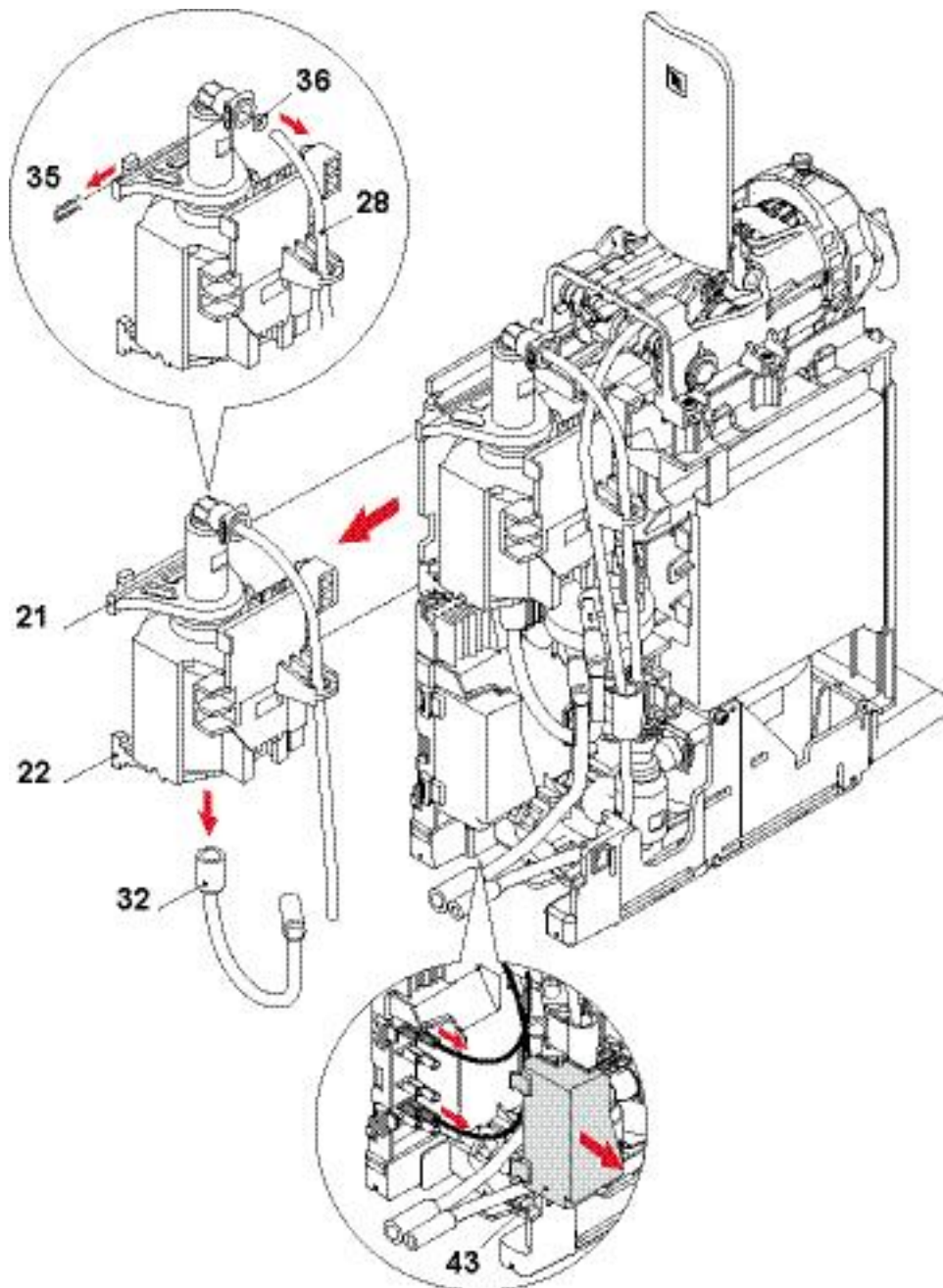
a) Thermal cut off fuse

19) Thermostat with retaining clip

A blown thermal cut off fuse (a) has to be replaced together with the pump assembly.
A tripped thermostat (19) resets after about 30 min automatically.

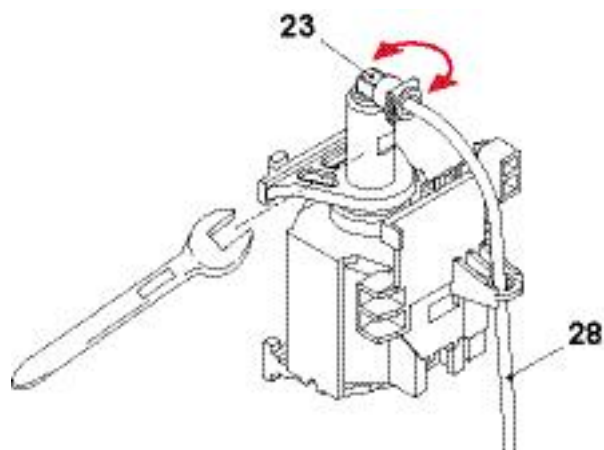


Replacing pump assembly



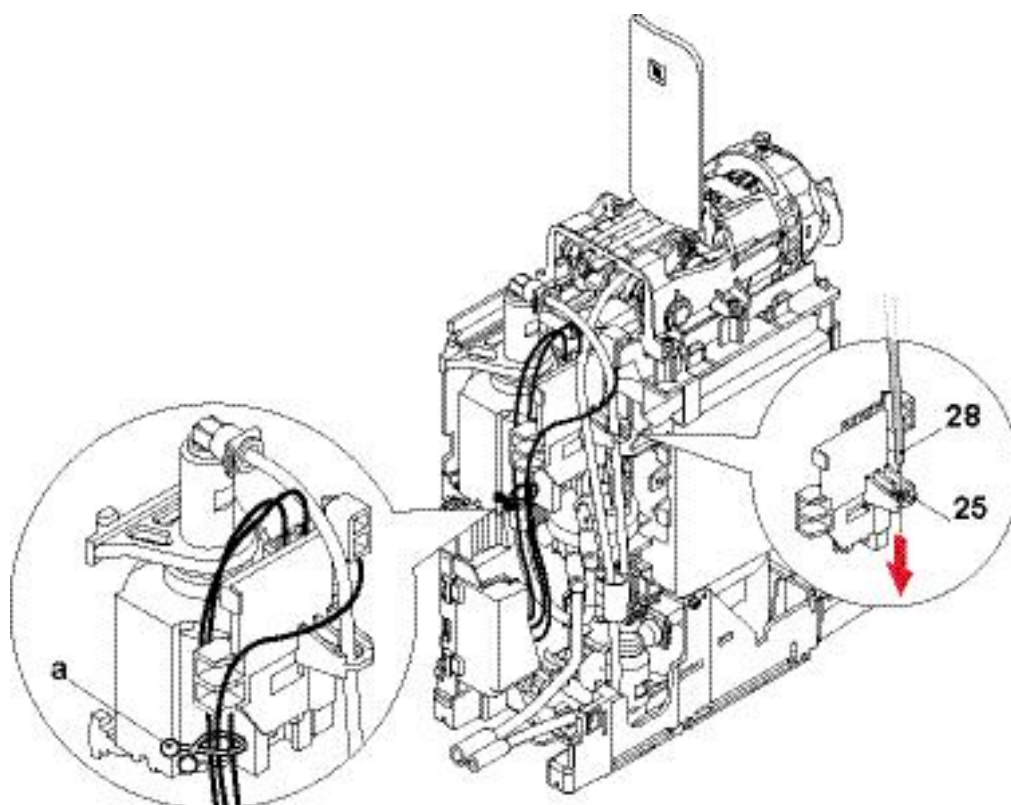
- Remove both hoses (28, 32) from pump. Use a pair of pointed pliers to remove connector clip (35) with O-ring (36).
- Remove cover (43) from electronic control board and disconnect 2 faston receptacles of pump wires.
- Pull out supports (21, 22) together with complete pump assembly.

Assembly checkpoints



The white plastic lid on the pump is rotatable and has a square seat for the fork wrench.

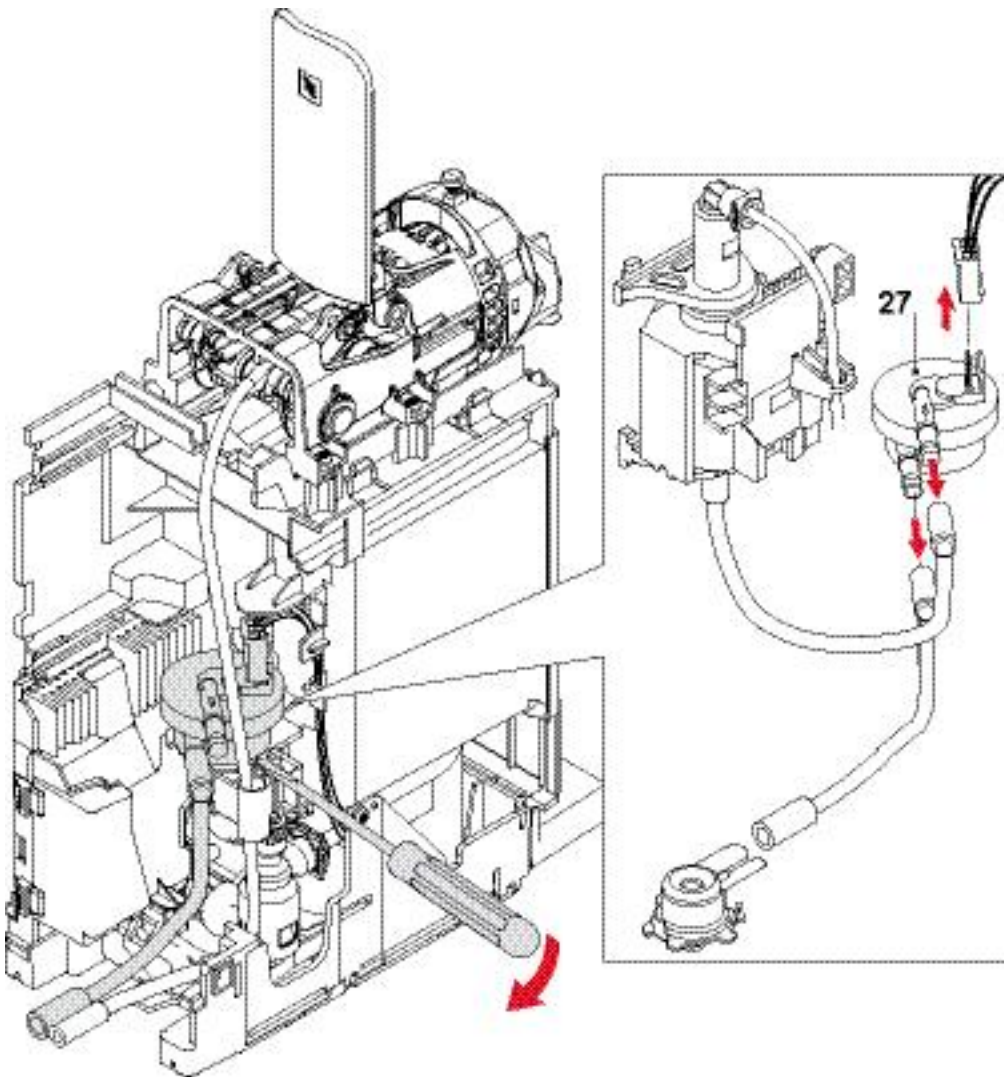
- Adjust position of pump connector (23) towards hose (28) if necessary.
- Check condition of supports (21, 22). Replace brittle supports.



- Pass hose (28) from pump to self priming device through lug on pump cover (25).
- Use a cable clamp (a) to fix pump wires (different location depending on thermo fuse/thermostat).



8.7.4 Replacing flow meter

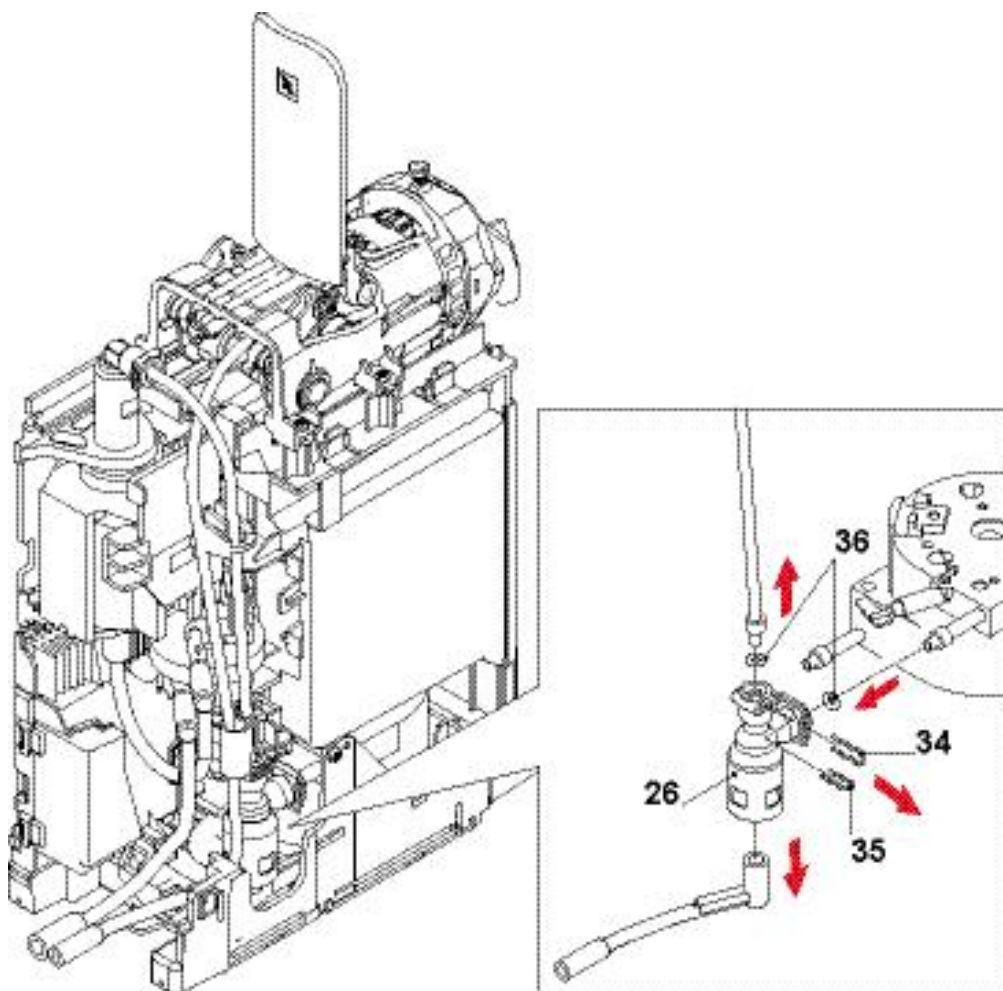


Assembly checkpoint



- Lay connection cable to flow meter (27) in bracket.
- Mind the hose positions on the flow meter.

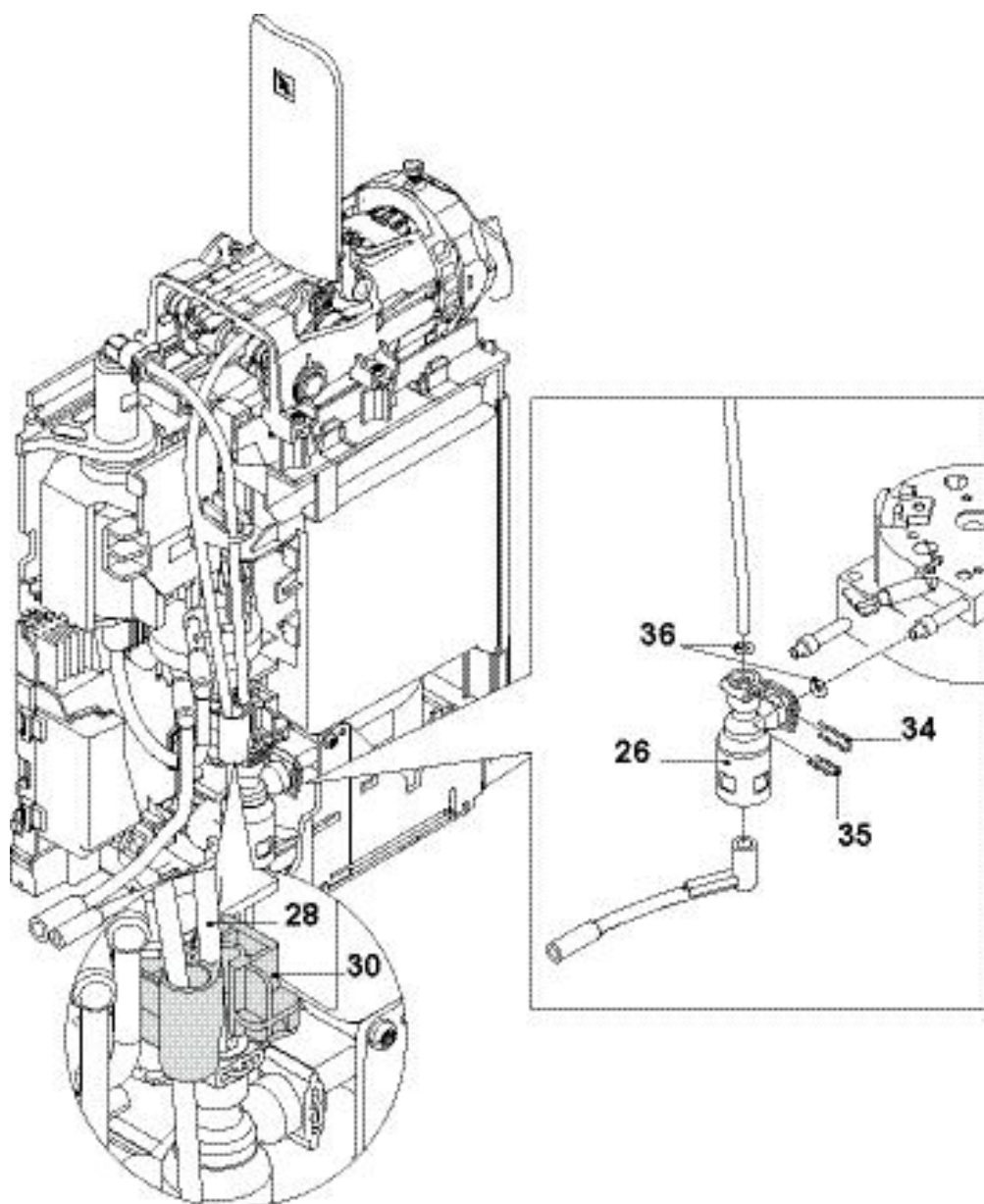
8.7.5 Replacing automatic priming device (APD)



- Use a pair of pointed pliers to remove connector clips (34, 35) from automatic priming device (26).



Assembly checkpoints



- Replace both O-rings (36) together with automatic priming device (26).
- Insert hose (28) in tube guiding (30).

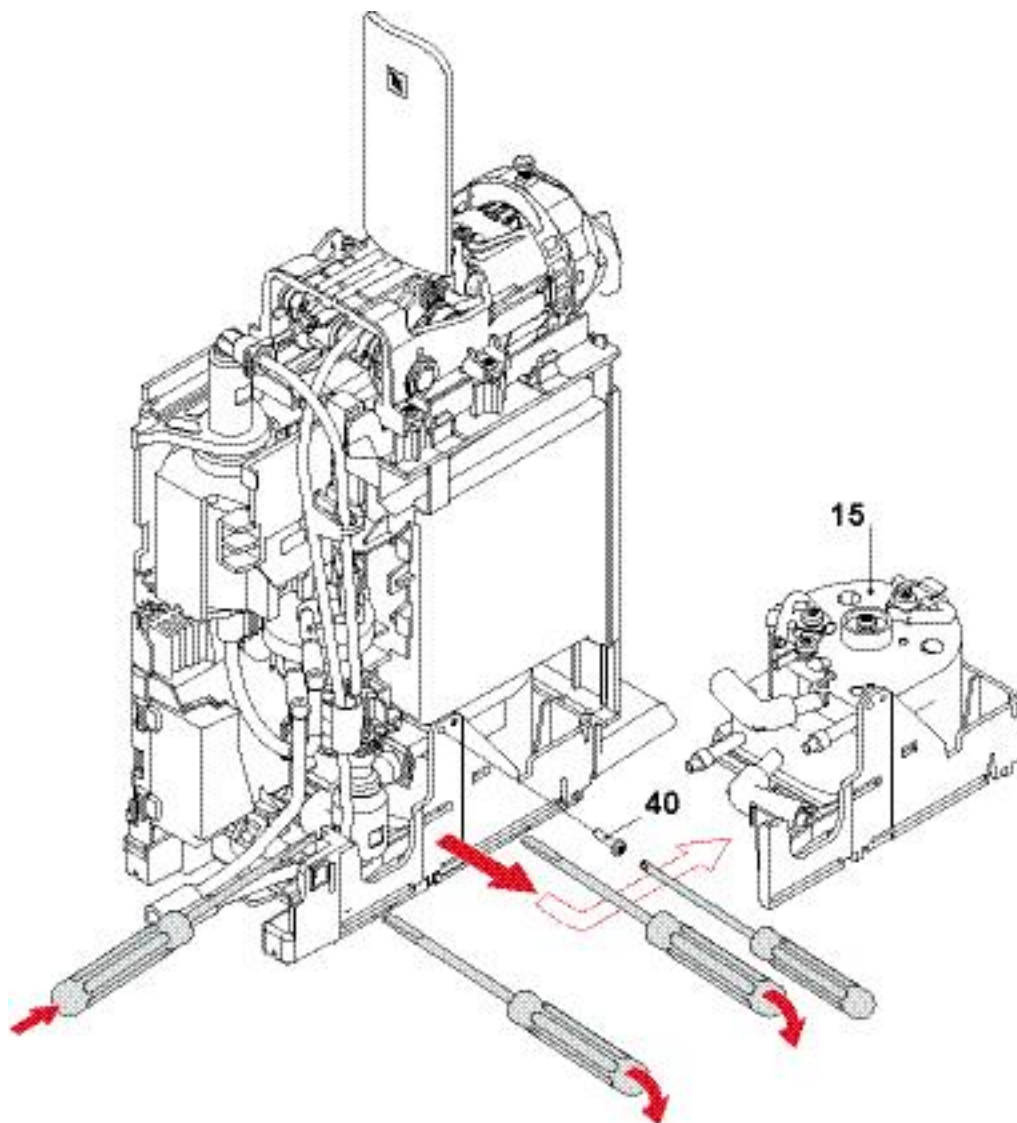


8.7.6 Replacing thermoblock with NTC sensor and fine wire fuse(s)

i Depending on national regulations, one or two fine wire fuses are mounted on the thermoblock (see "Wiring diagrams" on page 118 and following).

A defect thermoblock can only be replaced with an assembly consisting of

- thermoblock, prewired with NTC temperature sensor, fine wire fuse(s) and ground wire (only if required),
- thermoblock support.



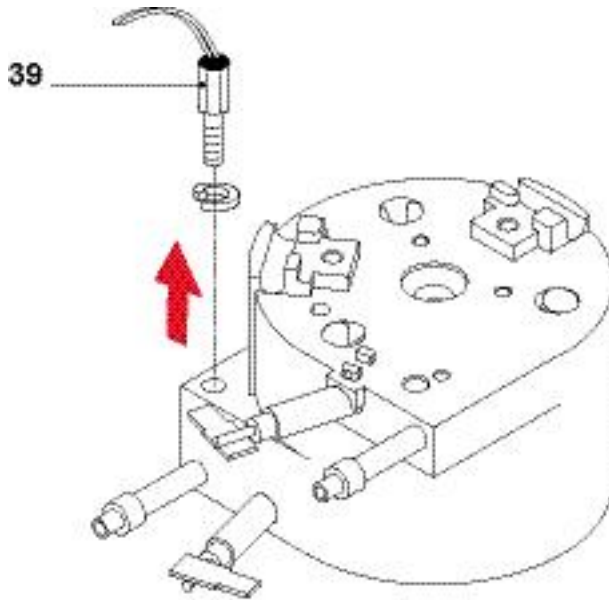
- Use Torx screwdriver TX10 to loosen screw (40).
- Release 3 latches and pull out support with thermoblock assembly (15).



Do not stress NTC cable when removing support.



Replacing NTC temperature sensor

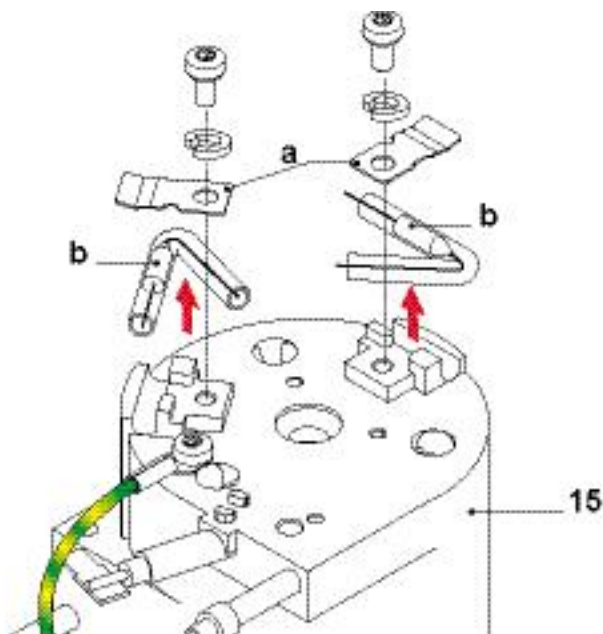


- Unplug NTC sensor cable from electric control board (42) first.
- Test NTC temperature sensor (39), see “NTC temperature sensor functionality” on page 139.

Assembly checkpoint - NTC temperature sensor

- Tighten the new NTC temperature sensor (39) and spring ring with a torque wrench (80 - 100 Ncm).

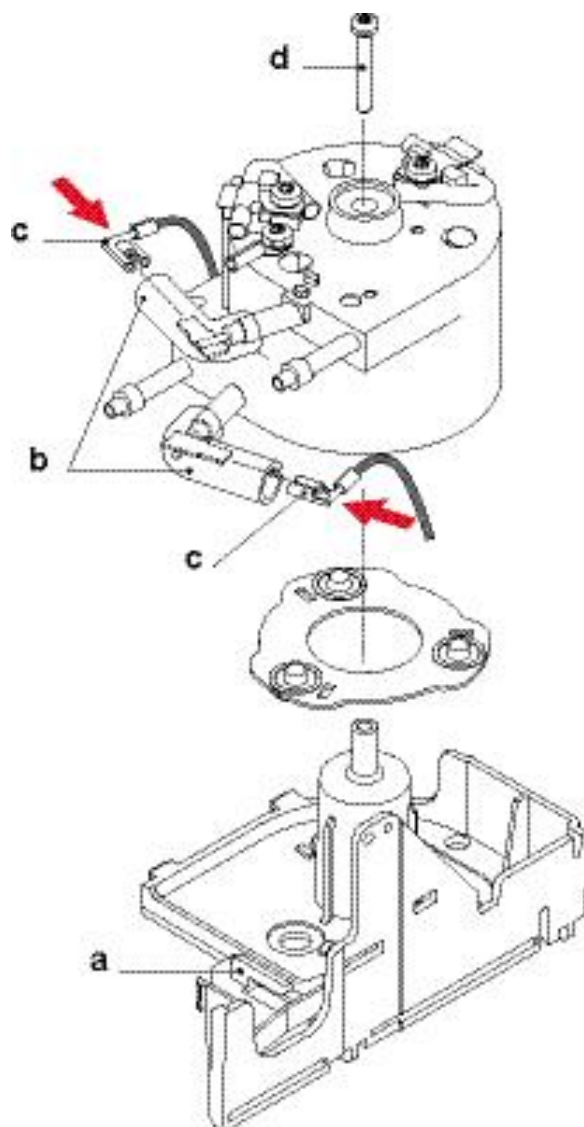
Replacing fine wire fuse(s)



Assembly checkpoints - fine wire fuse(s)

- When mounting a safety clip (a) on the thermoblock (15), make sure that the housing of the fine wire fuse (b) is positioned exactly below the safety clip.
- Tighten fastening screw and spring ring with a torque wrench (150 (+30/-0) Ncm).

Assembly checkpoints - thermoblock

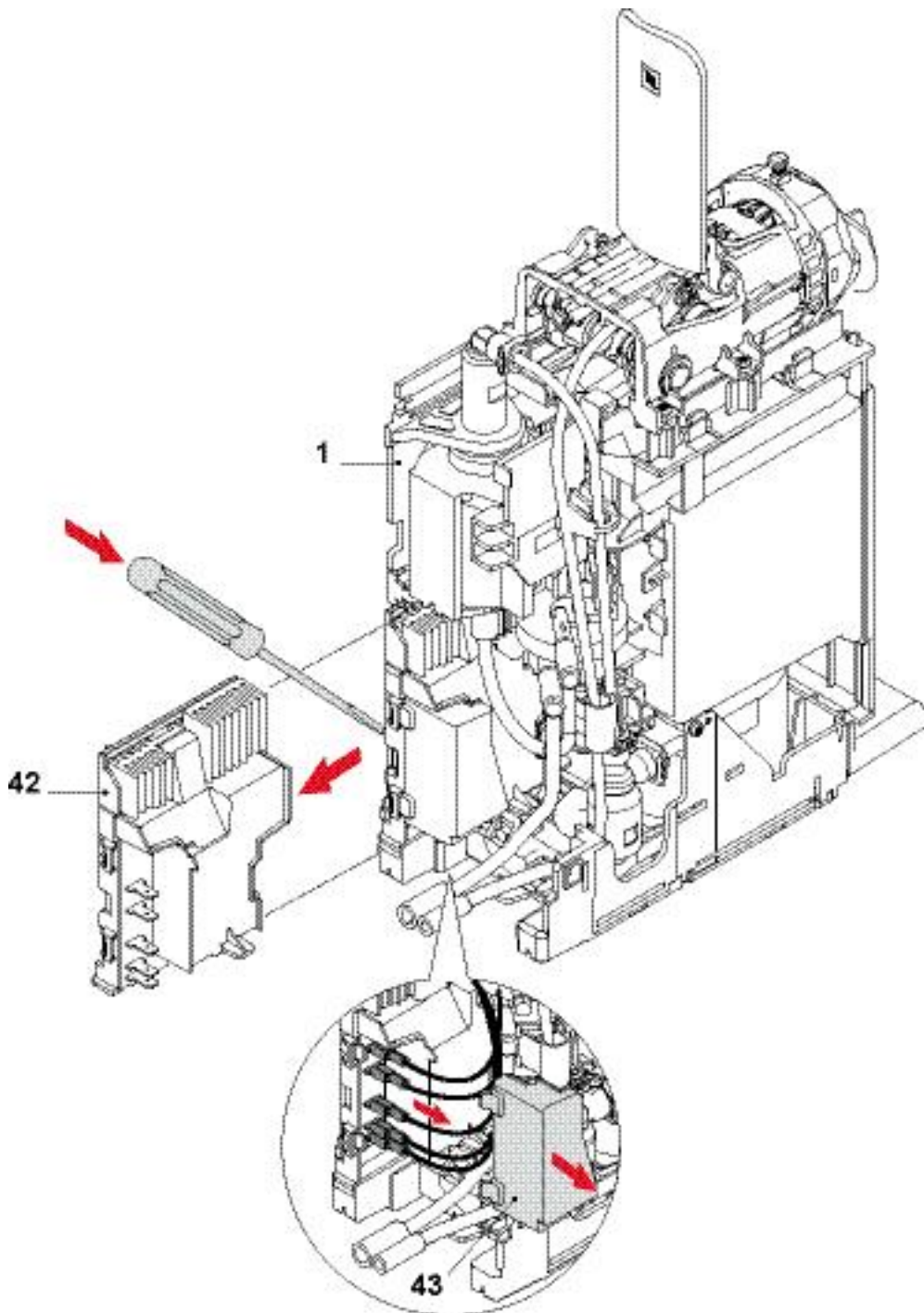


- All wires from thermoblock to platform must be led through the bracket (a) at the bottom of the support.
- The black grommets (b) on the electrical thermoblock connections are slitted at the end. If an angled Faston receptacle (c) is used, make sure that its wire runs through this slit.
- Tighten central fastening screw (d) with a torque wrench (150 (+30/-0) Ncm).



8.7.7 Replacing electronic control board with button prints

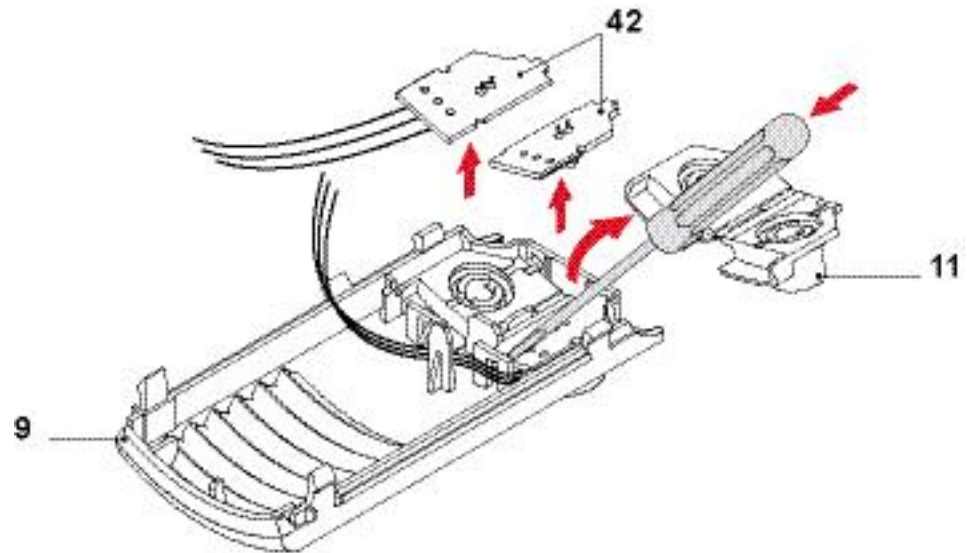
i The replacement board is equipped with protective housing and cover.



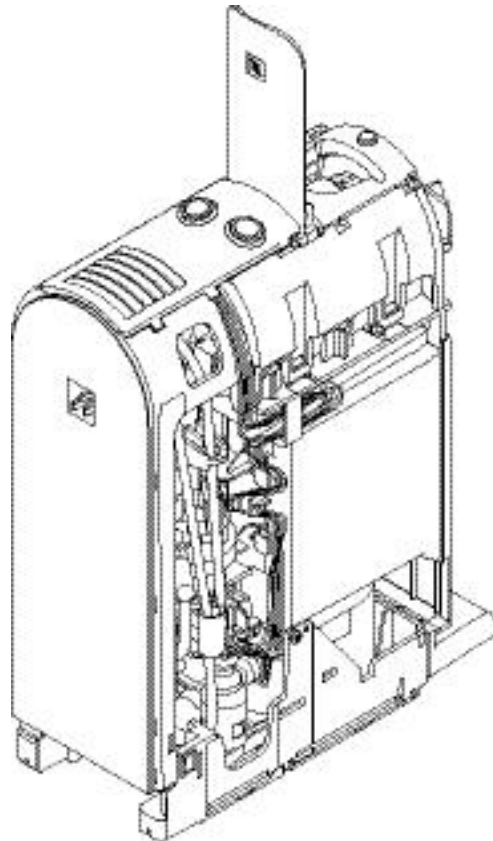
- Remove at first
 - NTC connector from electronic control board,
 - connector cable from flow meter,
 - electronic lid (43),
 - faston receptacles from electronic control board.
- Insert tip of screwdriver between chassis (1) and protective case of electronic control board (42) to release latches. Then pull out assembly.



Replacing button prints / coffee buttons



Assembly checkpoints



For installing and connecting a new electronic control board, the service technician must be earthed with a grounding band.

- After assembly check the plug arrangement of the electronic control board (see "Wiring diagrams" on page 118 and following).
- Lay connection wires to button prints in brackets and cable guide like shown.



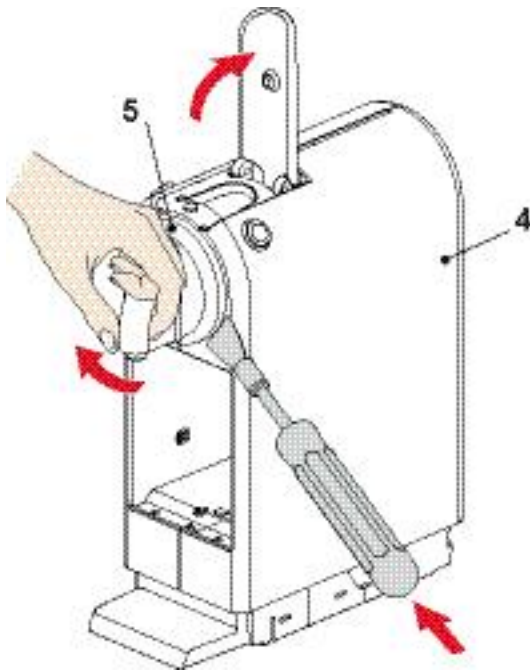
8.8 Disassembly of core unit, D-range

8.8.1 General disassembly

The core unit has to be removed from the platform at first (see according chapter "platform disassembly"). It is possible to perform a general disassembly of the core unit with intact hose and wire connections to the platform (for repair, leakage check etc.).

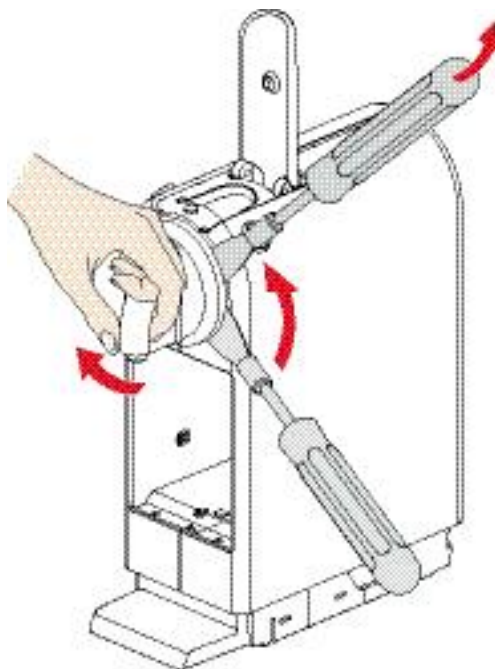
 After general disassembly of the core unit a repairing/service holder device is helpful for further repair work.

Remove outlet



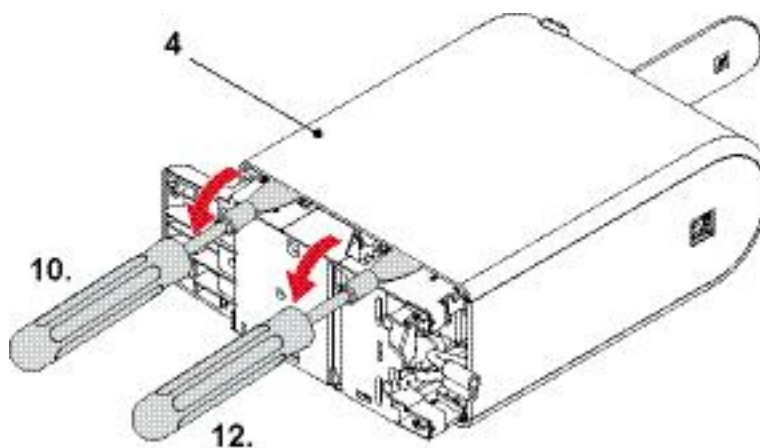
1. Open closing handle.
2. Press outlet (5) sideways by hand carefully.
3. Insert disassembly tool into gap between outlet and right side panel (4).

 The disassembly tool is necessary for removing outlet and side panels undamaged.

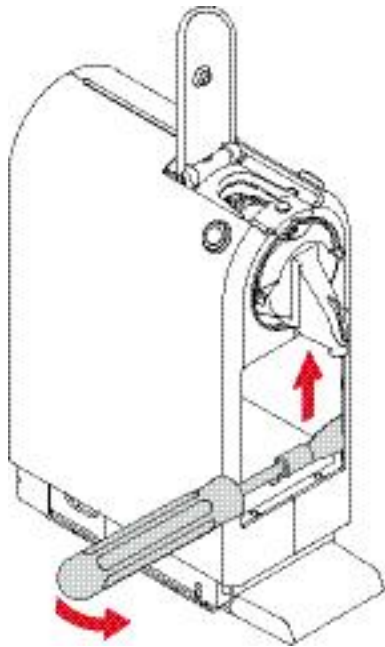


4. Hold and pull outlet.
5. At the same time move disassembly tool upwards.
6. Carefully turn disassembly tool slightly backward to open the latch.
7. Insert disassembly tool into gap on the other side of the outlet.
8. Move disassembly tool upwards and carefully turn it slightly backward to open the latch.
9. Remove outlet.

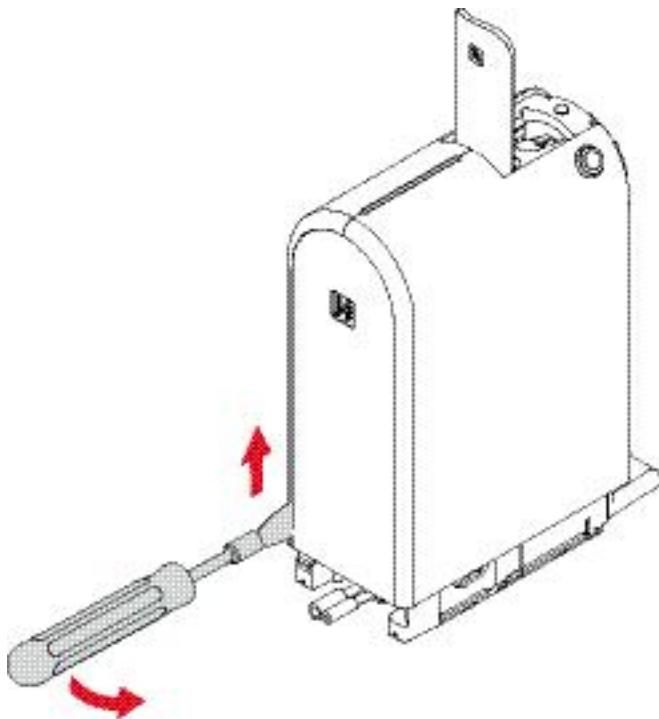
Remove right side panel



10. Insert disassembly tool between bottom of right side panel (4) and chassis.
11. Swivel disassembly tool till snap connection at the front opens.
12. Relocate disassembly tool and repeat procedure to open latch at the bottom of the side panel.

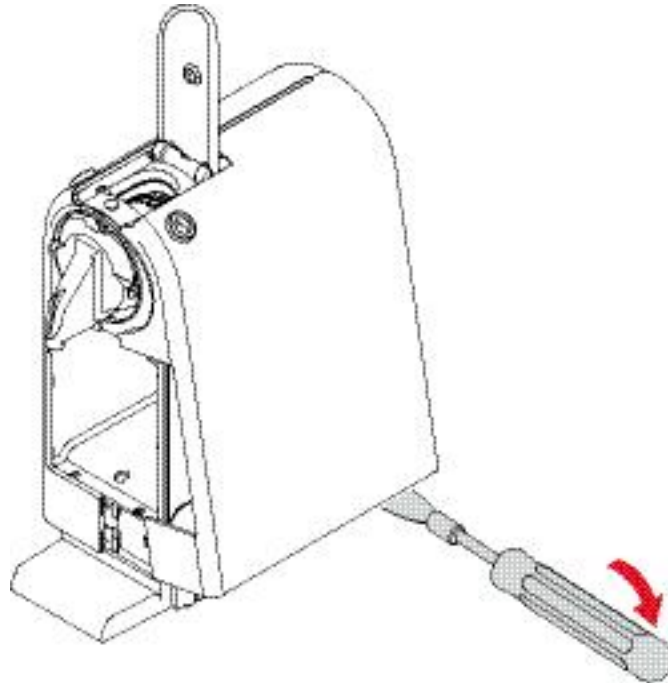


13. Insert disassembly tool laterally into gap at the front.
14. Carefully turn disassembly tool slightly forward to open the first latch.
15. Move disassembly tool upwards and open the other two latches the same way.



16. At the back insert disassembly tool into shadow gap of right side panel.
17. Swivel disassembly tool carefully to open first latch.
18. Move disassembly tool upwards and repeat procedure for the other 2 latches.

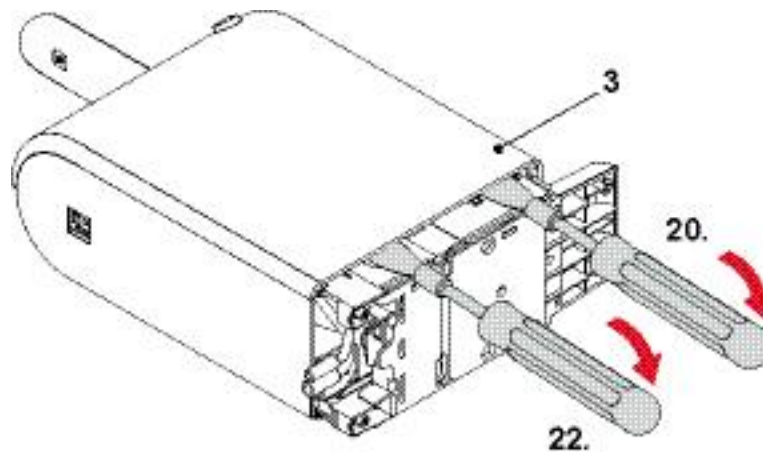
 Insert disassembly tool at right angles only. Otherwise the shadow gap can be damaged.



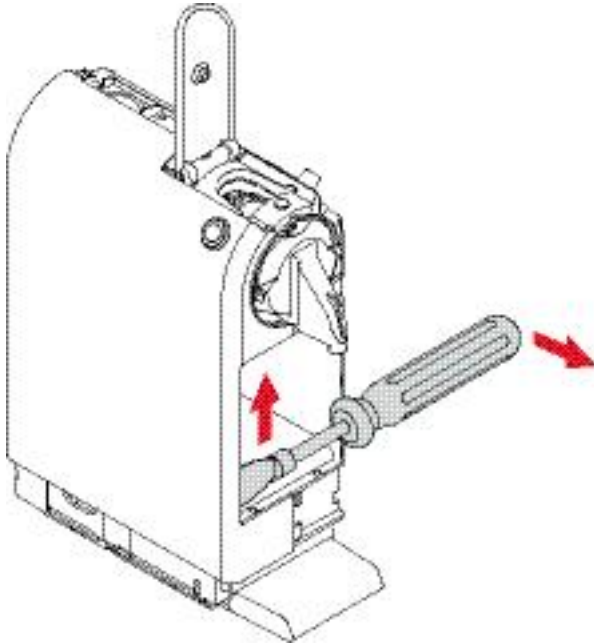
Closing handle must be opened.

19. Swing up and remove right side panel.

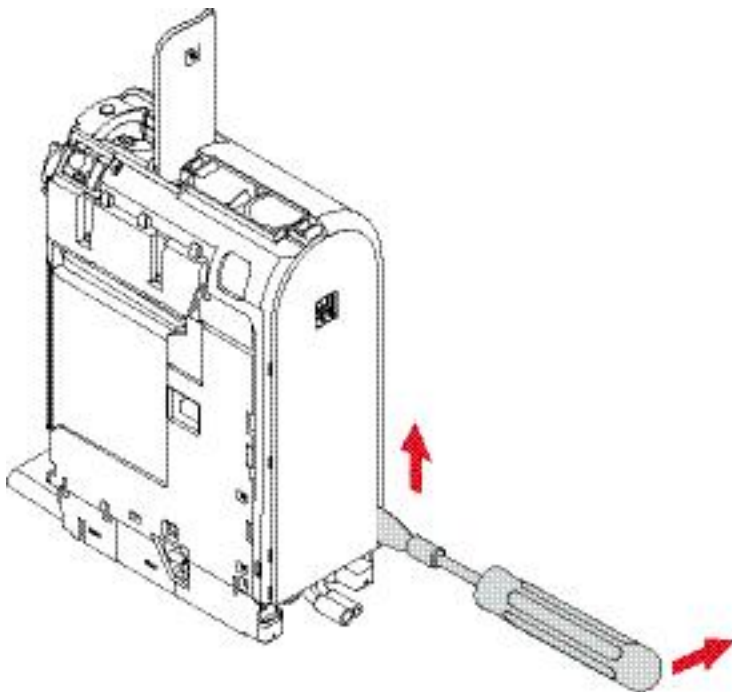
Remove left side panel



20. Insert disassembly tool between bottom of left side panel (3) and chassis.
21. Swivel disassembly tool till latch at the front opens.
22. Relocate disassembly tool and repeat procedure to open latch at the bottom of the side panel.

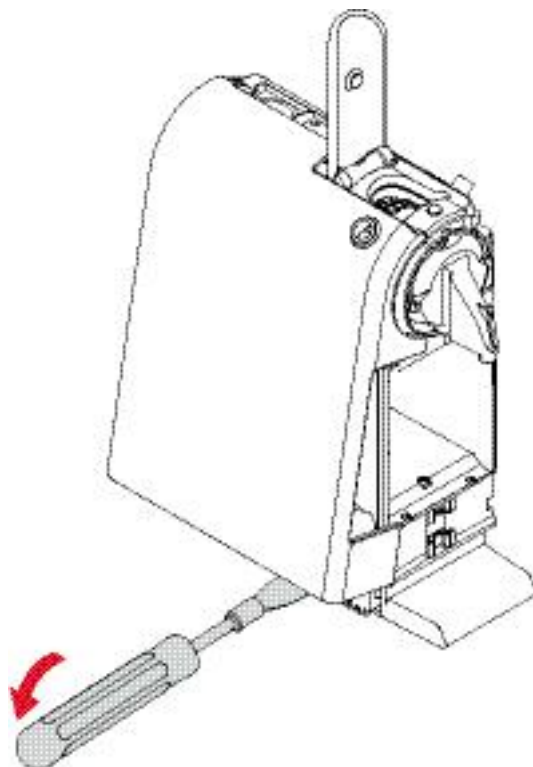


23. Insert disassembly tool laterally into gap at the front.
24. Carefully turn disassembly tool slightly forward to open the first latch.
25. Move disassembly tool upwards and open the other two latches the same way.



26. At the back insert disassembly tool into shadow gap of left side panel.
27. Swivel disassembly tool carefully to open first latch.
28. Move disassembly tool upwards and repeat procedure for the other 2 latches.

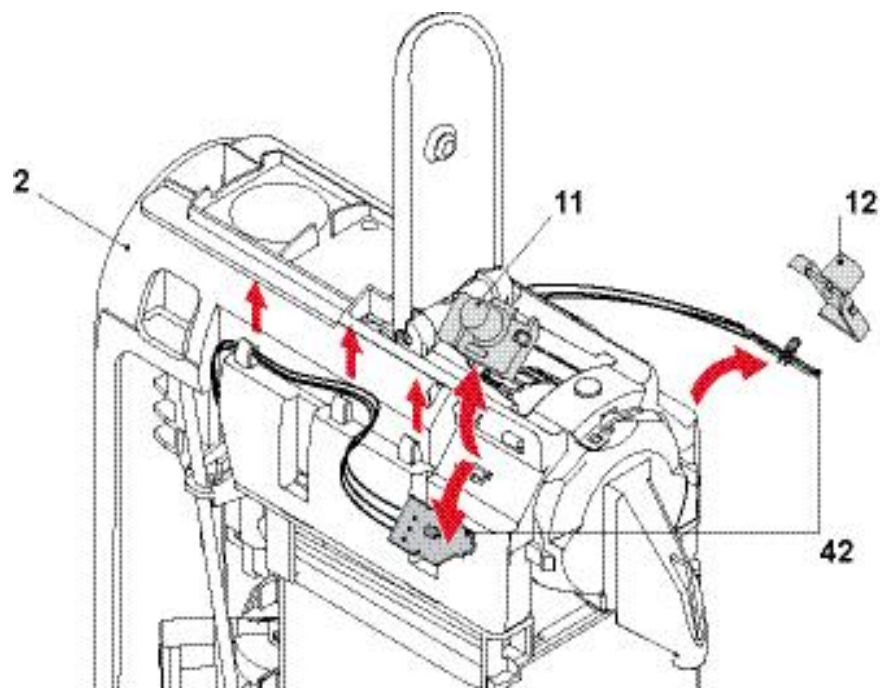
 Insert disassembly tool at right angles only. Otherwise the shadow gap can be damaged.



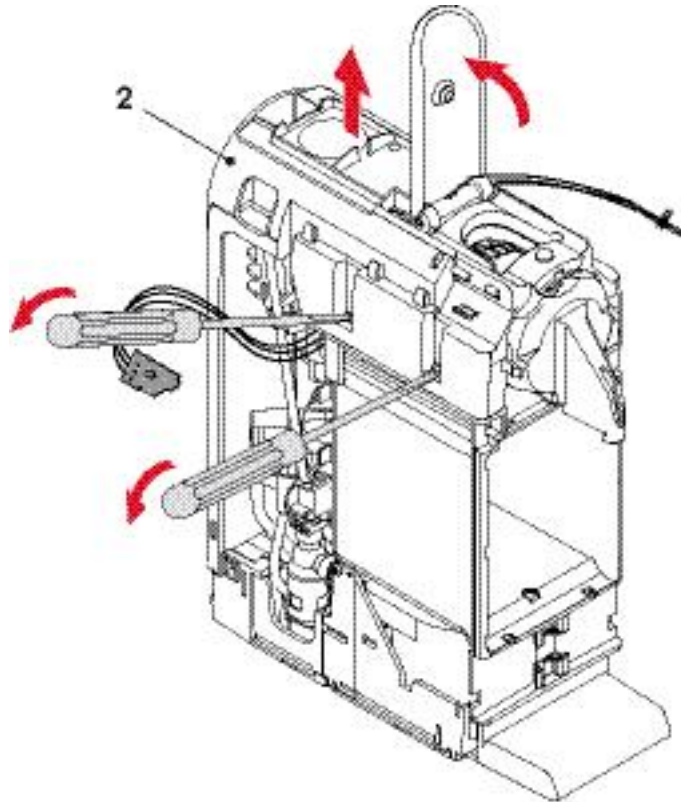
 Closing handle should be opened.

29. Swing up and remove left side panel.

Remove cover (2)

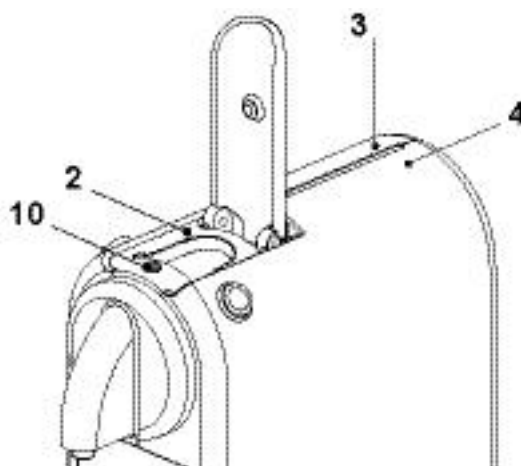


1. Remove both coffee buttons (11, 12) and prints (42) out of holder.
2. Remove wiring of coffee button prints from cable guides.



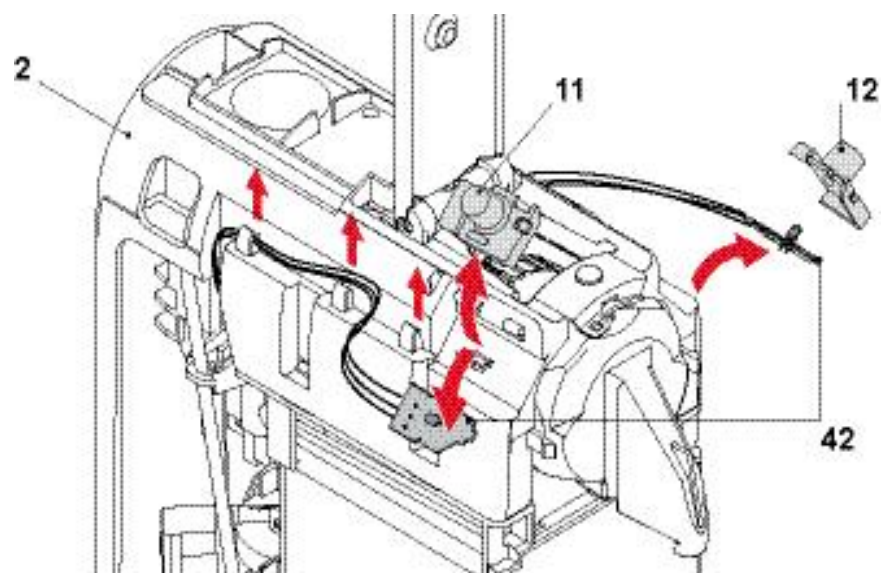
3. Use a screwdriver to release 4 latches.
4. Open closing handle.
5. Lift and remove cover (2).

Assembly checkpoints



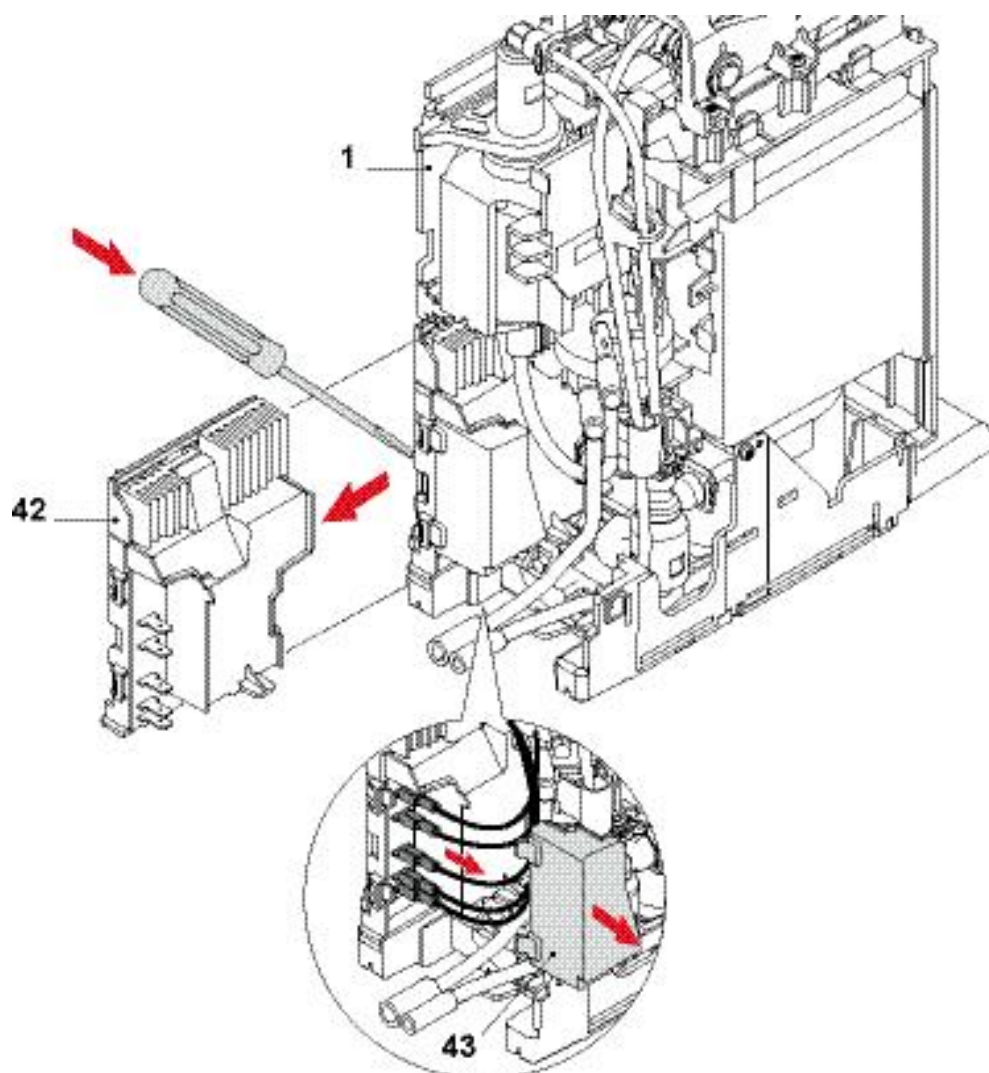
- Check if damper (10) for closing handle is installed on cover (2).
- For correct layout of the wires to the coffee button prints, see "Replacing electronic control board with button prints" on page 116.
- Assemble left side panel (3) first.
- Insert right side panel (4) into hinges at the top of the left side panel. Then fold down right side panel and click latches.
- Check that all latches are engaged.

8.8.2 Replacing electronic control board with button prints



- Refer to page 114 for removing cover (2).

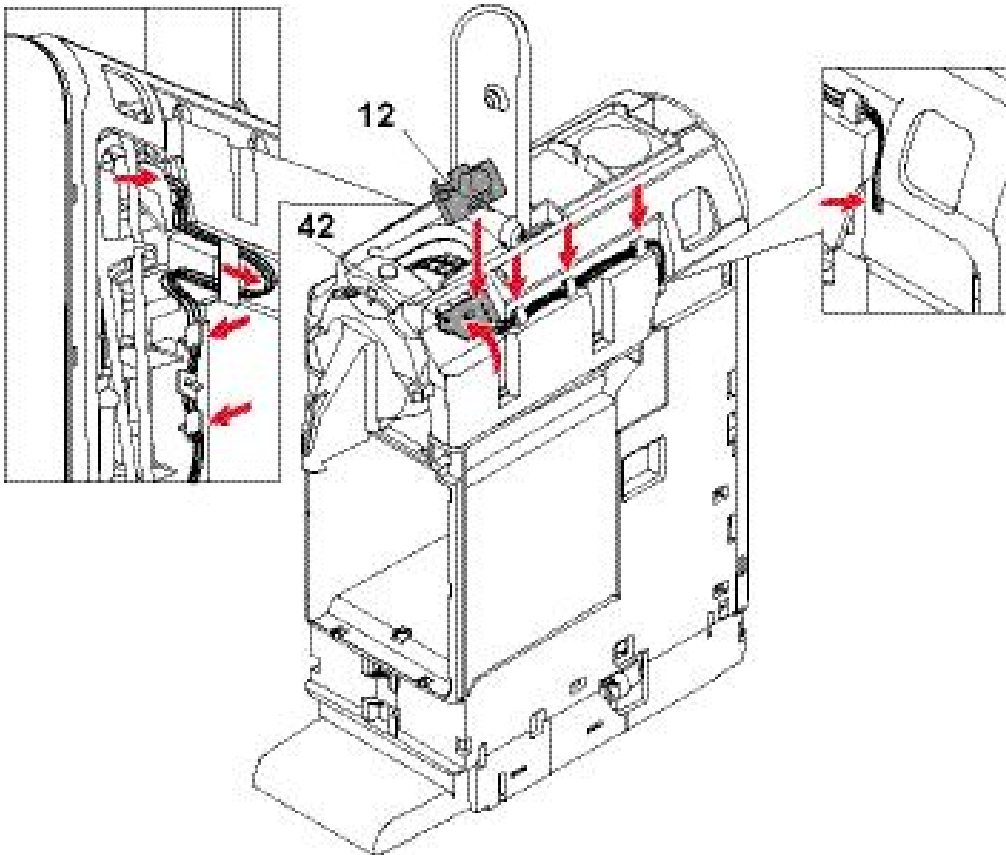
i The replacement board (42) is equipped with protective housing and cover.





- Remove first
 - NTC connector from electronic control board,
 - connector cable from flow meter,
 - electronic lid (43),
 - faston receptacles from electronic control board.
- Insert tip of screwdriver between chassis (1) and protective case of electronic control board (42) to release latches. Then pull out assembly.

Assembly checkpoints



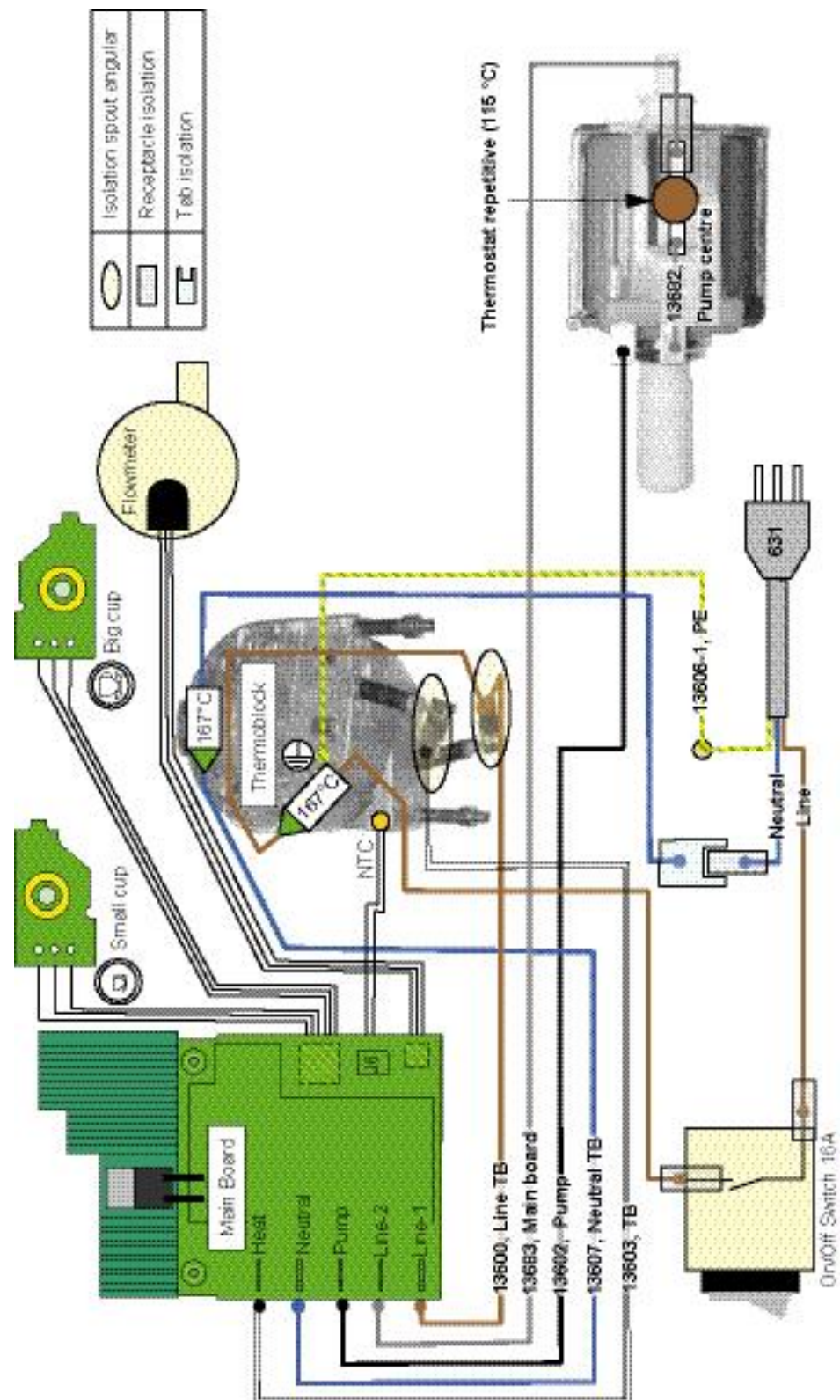
- The left and right button prints (42) are marked with "L" or "R" for easy identification.
- After assembly check the plug arrangement of the mainboard (see "Wiring diagrams" on page 118 and following).
- Lay connection wires to button prints in brackets and cable guides like shown.

 **For installing and connecting a new electronic control board, the service technician must be earthed with a grounding band.**

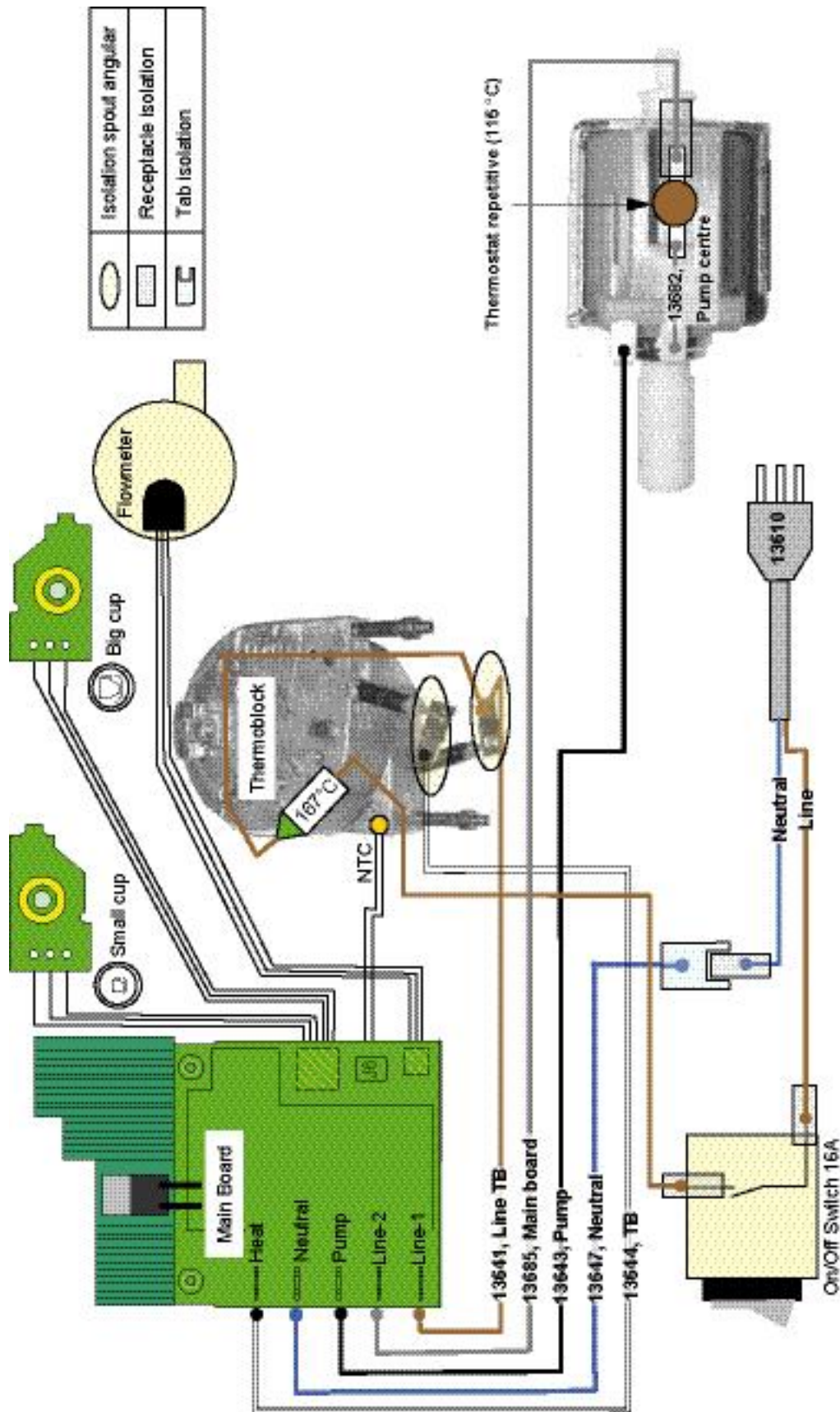
8.9 Wiring diagrams

8.9.1 Wiring diagrams - model Citiz

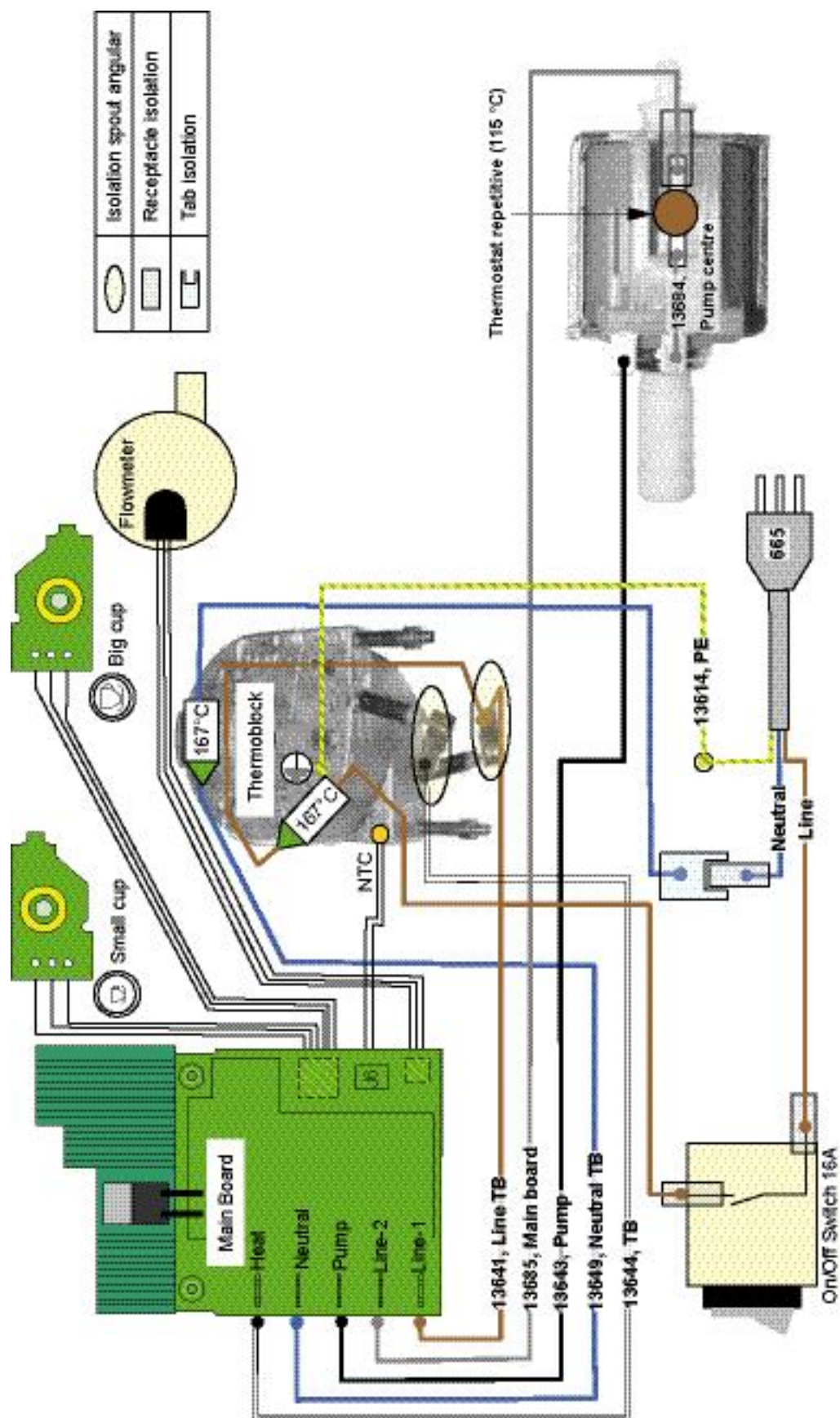
Wiring diagram 220 V - 240 V IEC - model Citiz, EF 483/484



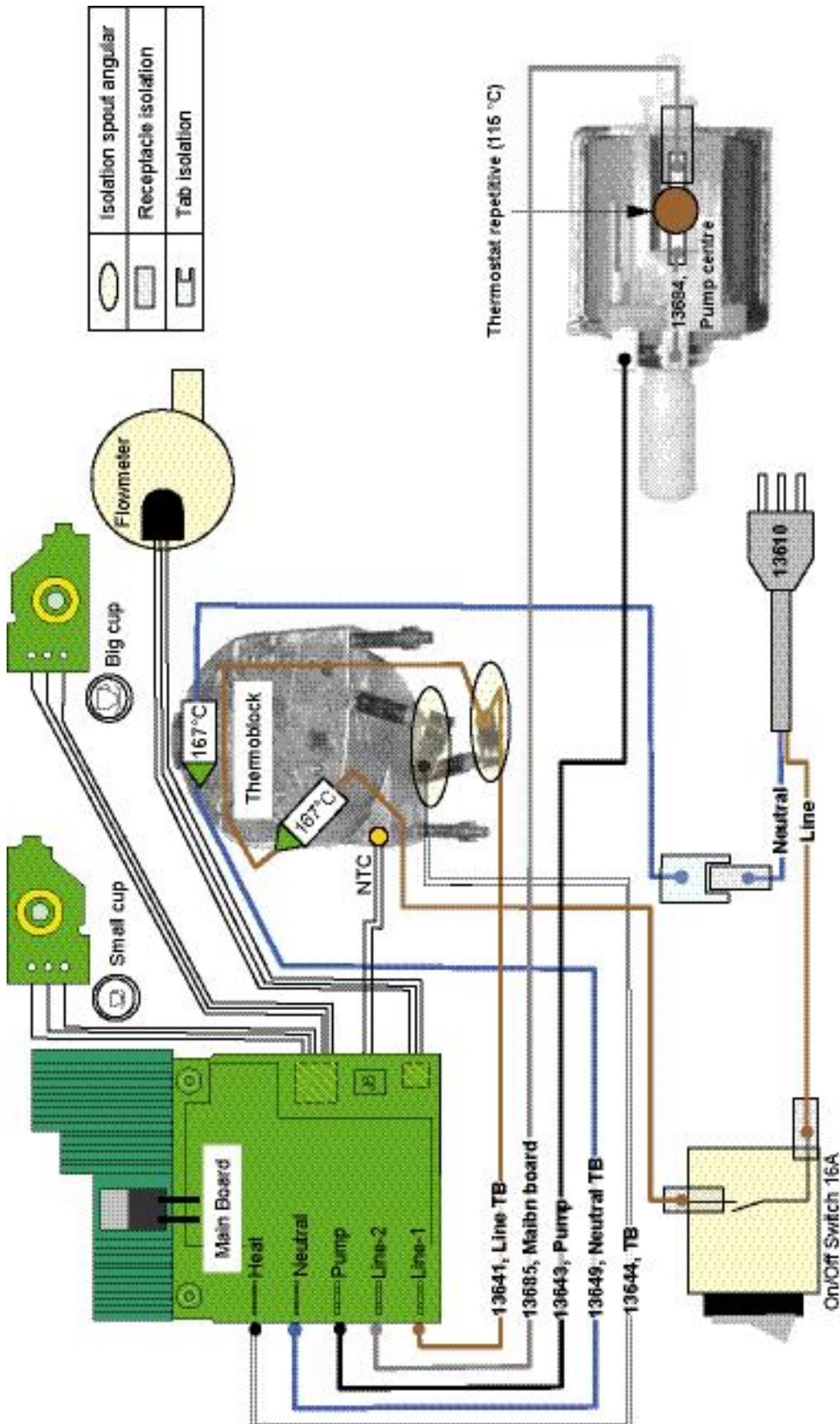
Wiring diagram 120 V UL (USA/Canada) - model Citiz, EF 483/484



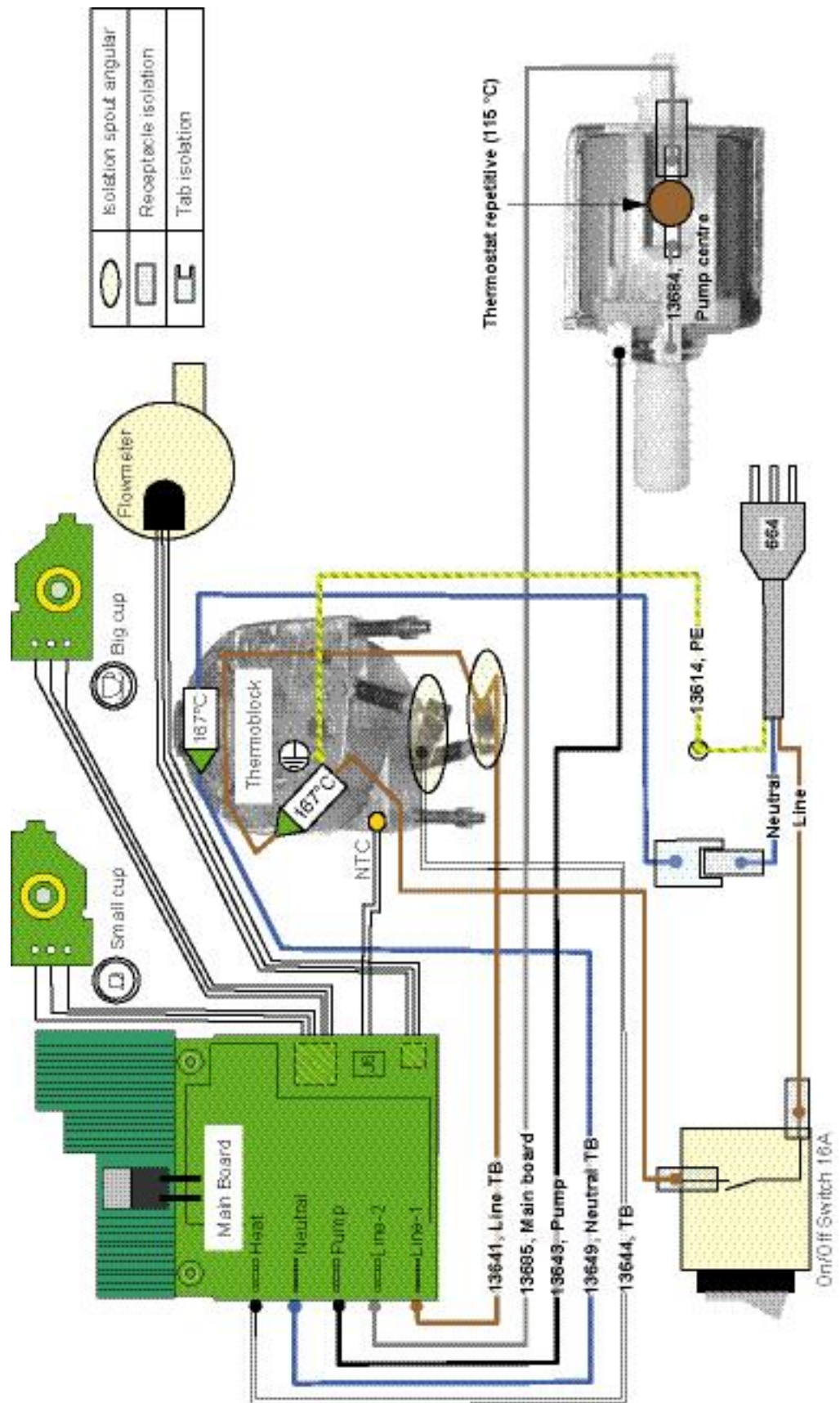
Wiring diagram 120 V - 127 V IEC (Brazil) - model Citiz, EF 483/484



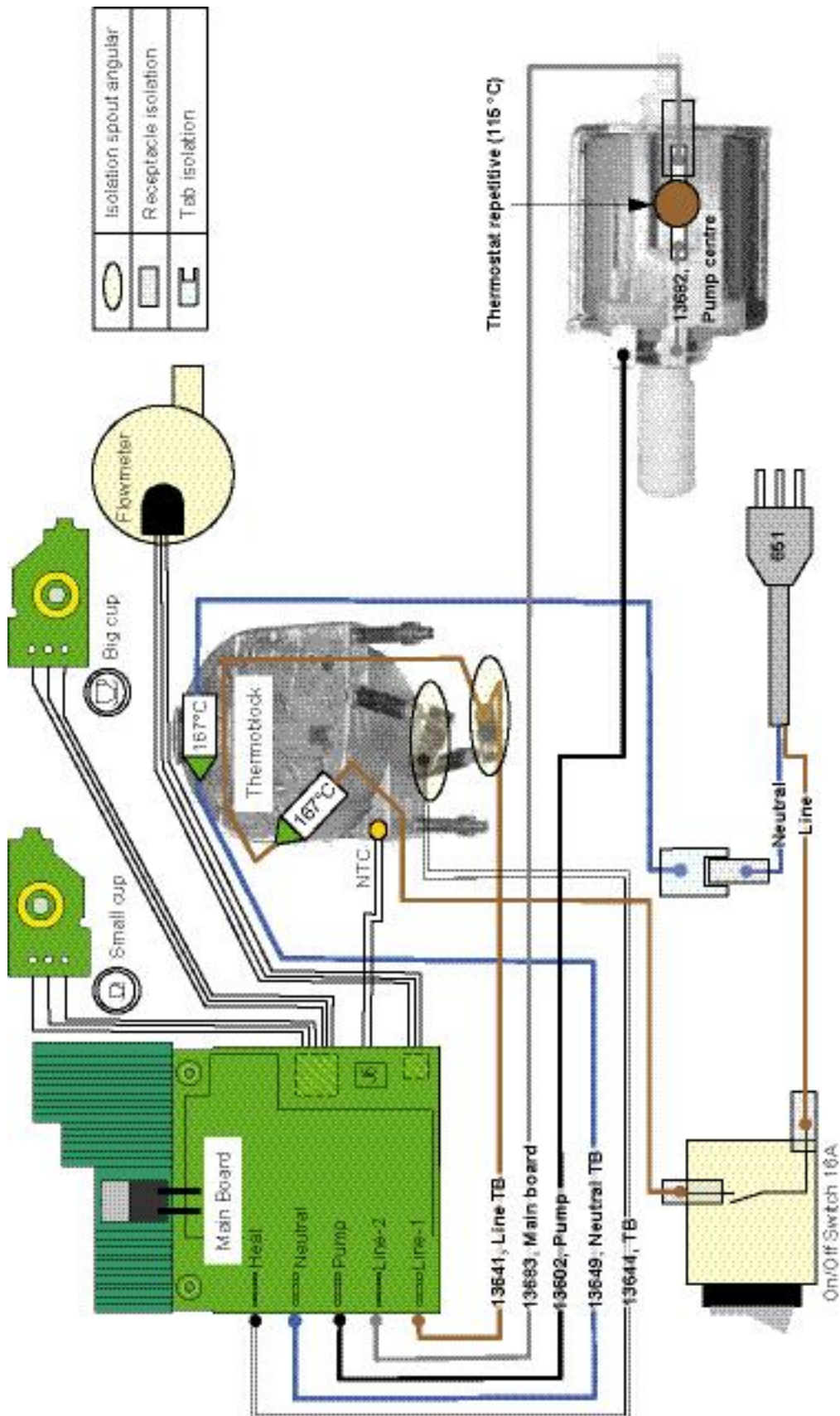
Wiring diagram 120 V - 127 V IEC (Mexico) - model Citiz, EF 483/484



Wiring diagram 110 V IEC (Taiwan) - model Citiz, EF 483/484

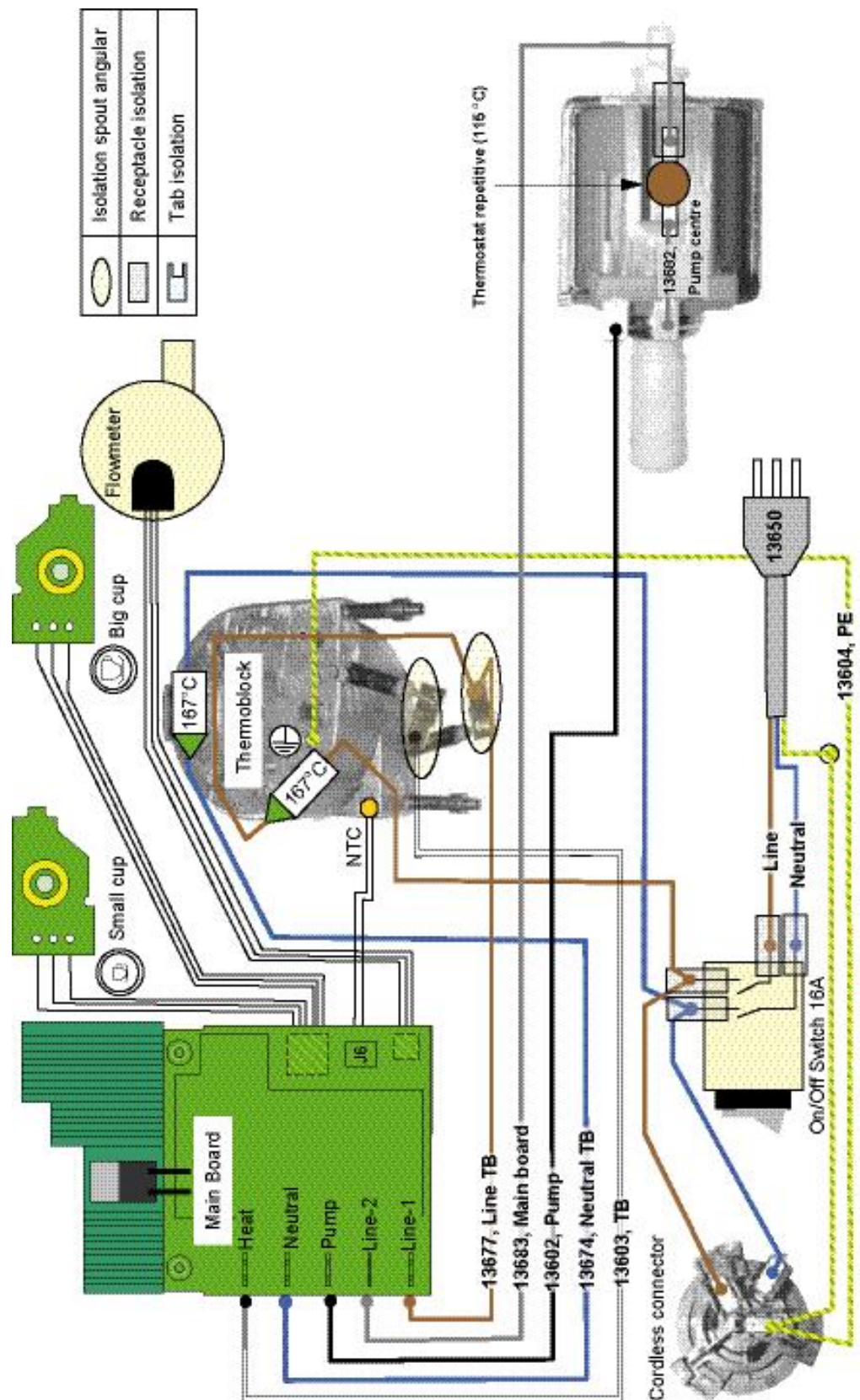


Wiring diagram 100 V IEC (Japan) - model Citiz, EF 483/484

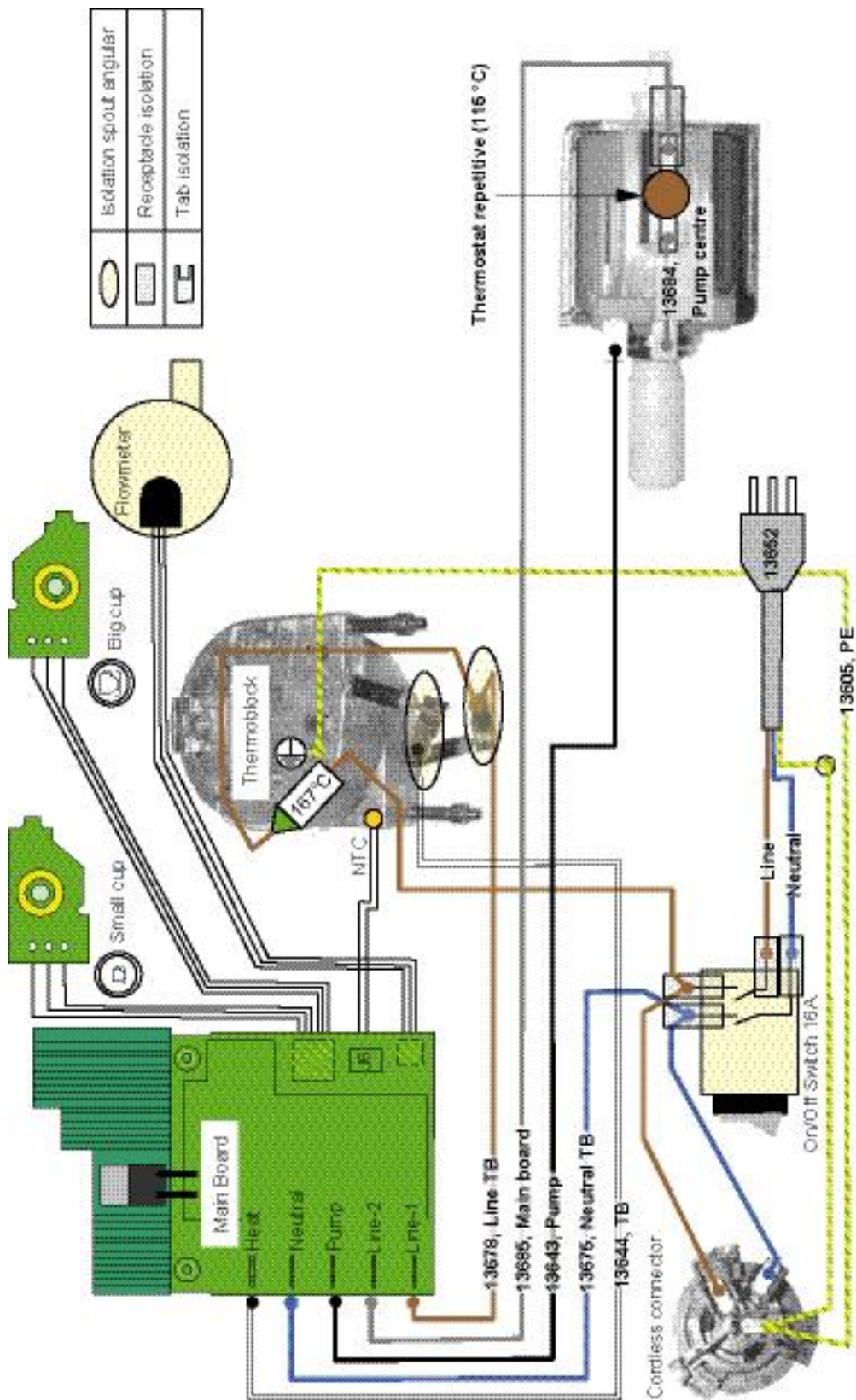


8.9.2 Wiring diagrams - model Citiz & milk, EF 485/486

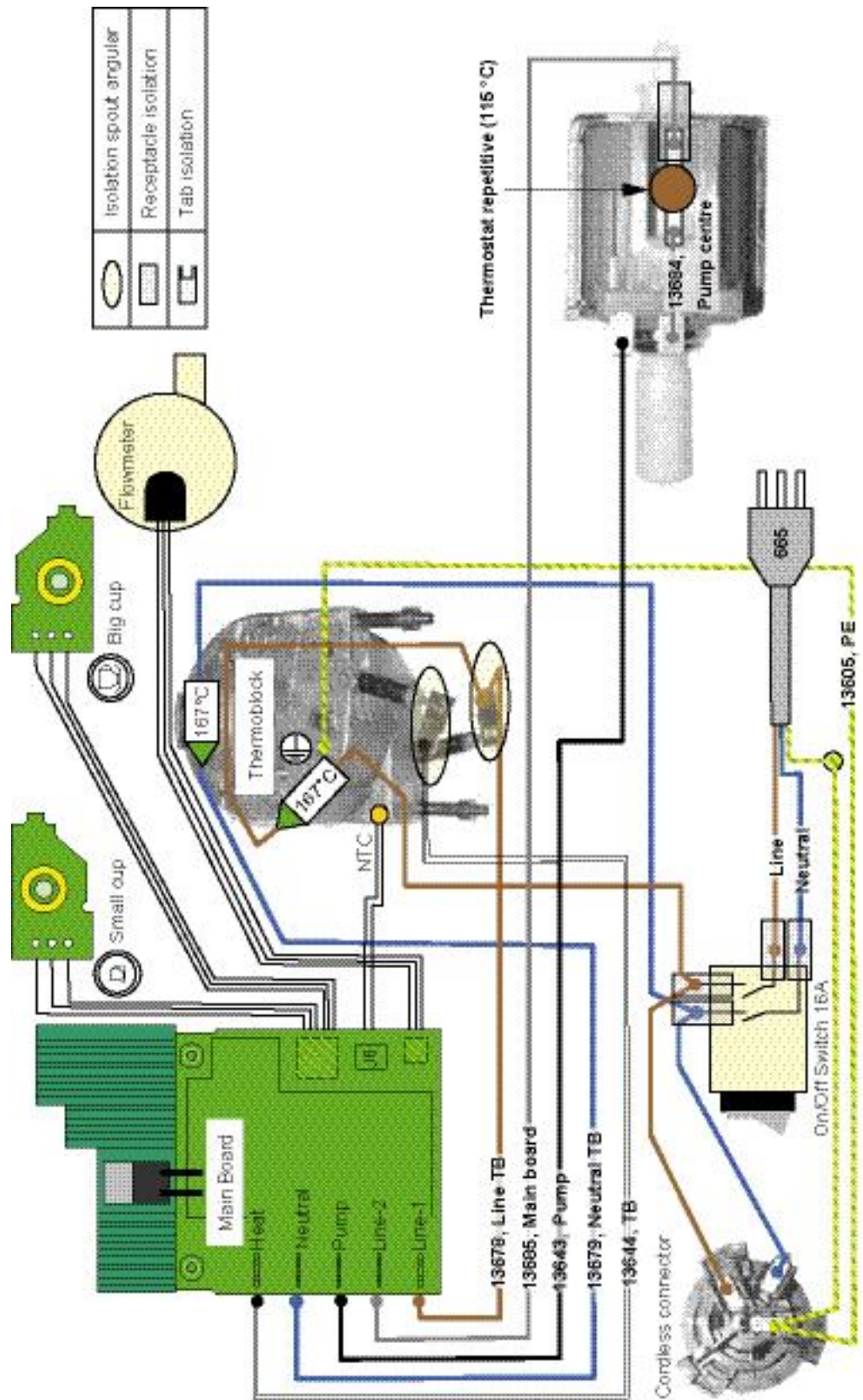
Wiring diagram 220 V - 240 V IEC - model Citiz & milk, EF 485/486



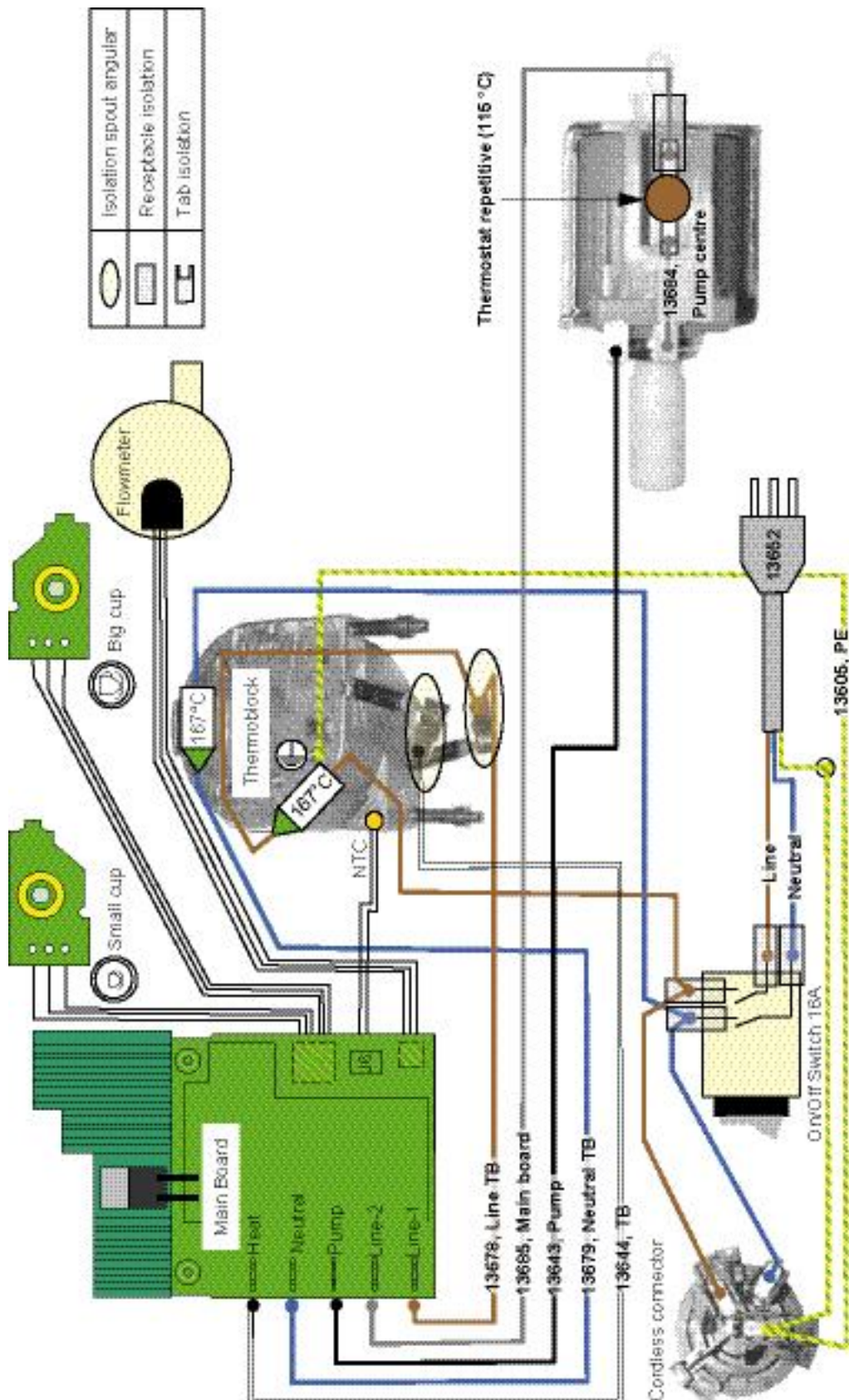
Wiring diagram 120 V UL (USA/Canada) - model Citiz & milk, EF 485/486



Wiring diagram 120 V - 127 V IEC (Brazil) - model Citiz & milk, EF 485/486

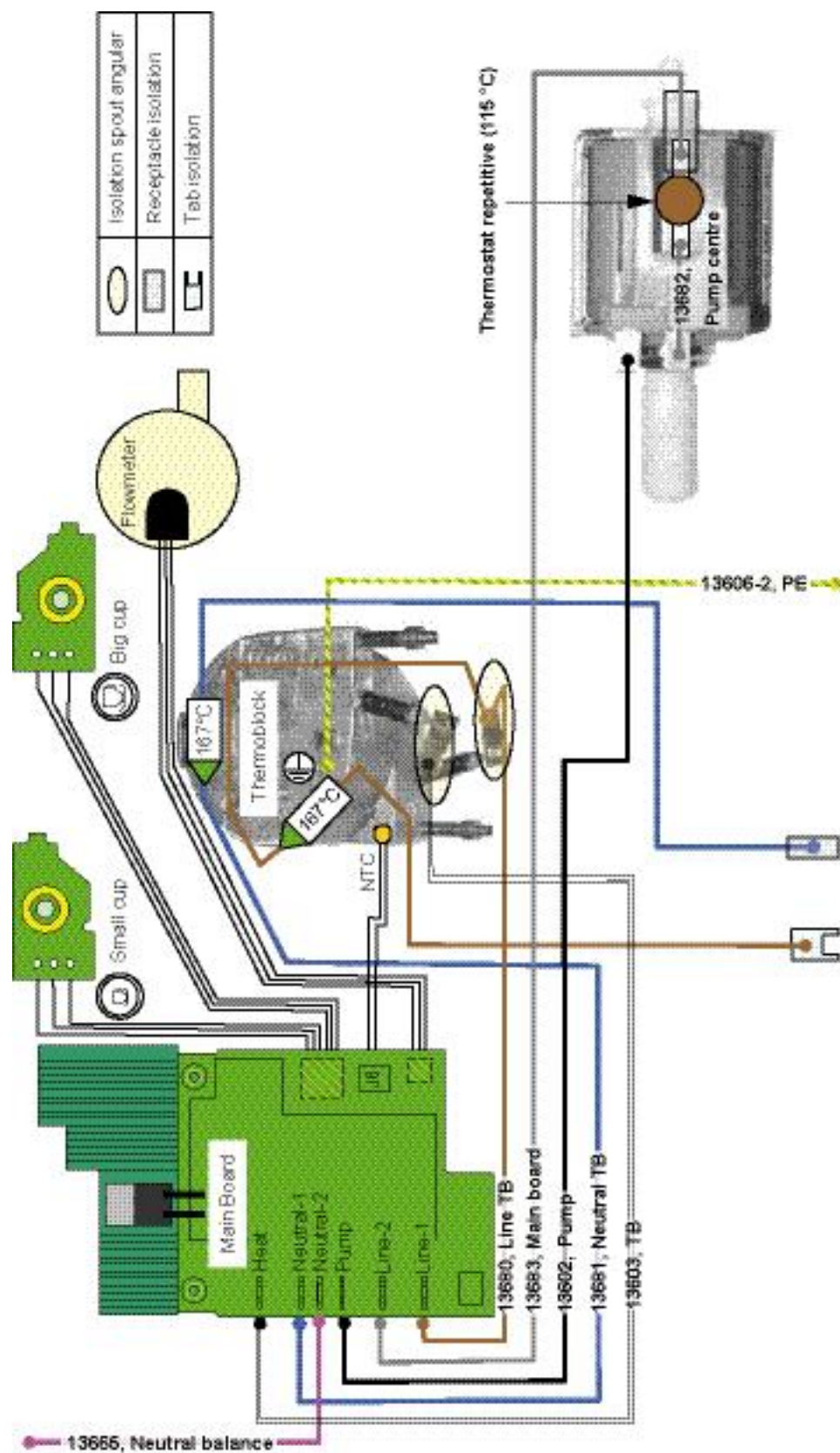


Wiring diagram 120 V - 127 V IEC (Mexico) - model Citiz & milk, EF 485/486



8.9.3 Wiring diagrams - model Citiz & Co, EF 487/488

Wiring diagram 220 V - 240 V IEC - core unit, model Citiz & Co, EF 487/488



The diagram illustrates the synchronization of two core units. Each unit (Core unit 1 and Core unit 2) consists of a Main Board, Thermal Jack, and Pump. The units are connected to a 13674 Line, Neutral, and Line. A 13657 plug is connected to the Neutral and Line. An On/Off Switch 16A is connected to the Line. A Synchronization section on the left shows the connection between the two units.



9 FUNCTION TESTS

 To simplify matters, the model Citiz with core unit "C-range" is used to exemplify throughout this chapter.

9.1 Safety instructions

Some function tests are performed with an energized, partly opened coffee machine.



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

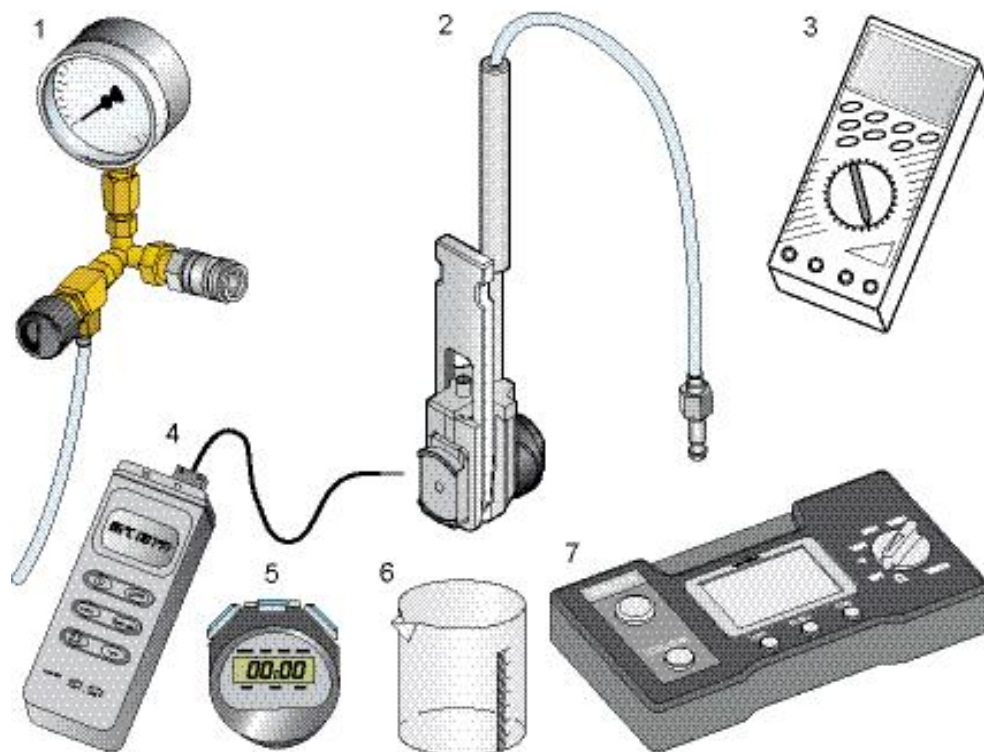


Danger of burns!
Hot parts and water under pressure inside the coffee machine.
Do not touch any hot parts while checking for leakages!
Always wear protective goggles.

9.2 Required equipment

9.2.1 Overview

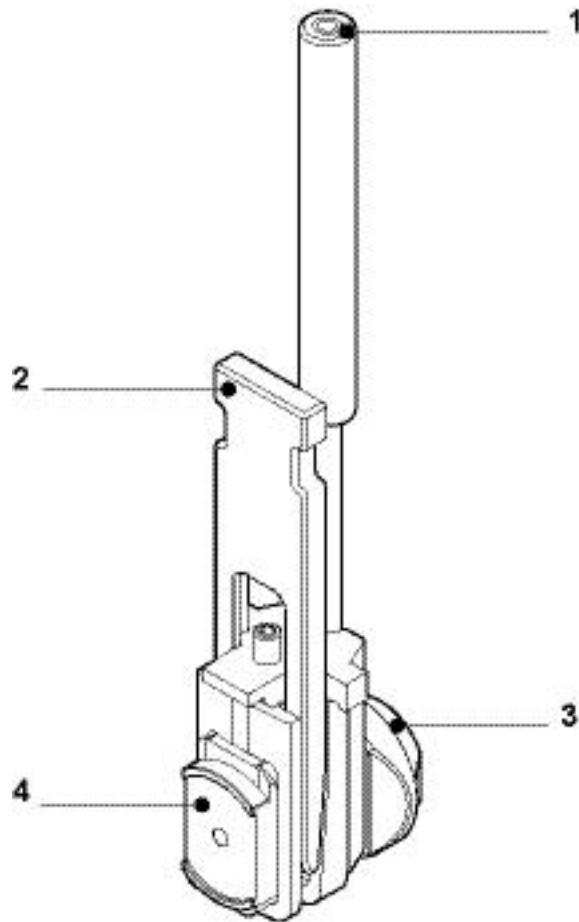
 Symbolic illustration of function test equipment.



- | | |
|--|---|
| 1) Pressure gauge
(EFR no. 16195) | 4) Electronic thermometer
(or digital multimeter suitable for temperature measurement) |
| 2) Citiz pressure gauge adapter | 5) Timer |
| 3) Digital multimeter
(for NTC temperature sensor test) | 6) Measuring beaker |
| | 7) Test equipment for protective earth continuity test and protective insulation test |



9.2.2 Citiz pressure gauge adapter



- | | |
|--|--------------------|
| 1) Quick action coupling for pressure hose | 3) Connecting unit |
| 2) Operating lever | 4) Fixation unit |

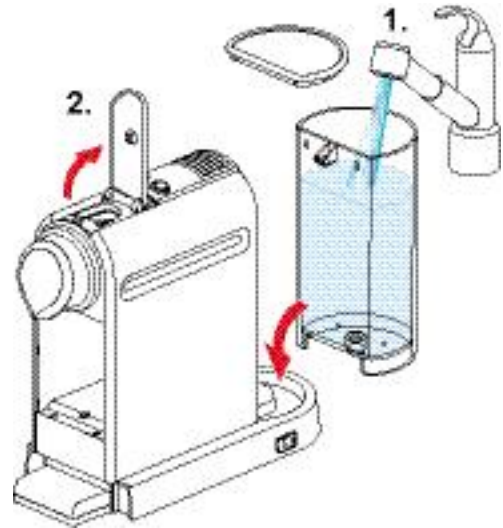
This pressure gauge adapter is designed for the Citiz coffee machines.

The pressure gauge adapter has 2 parts:

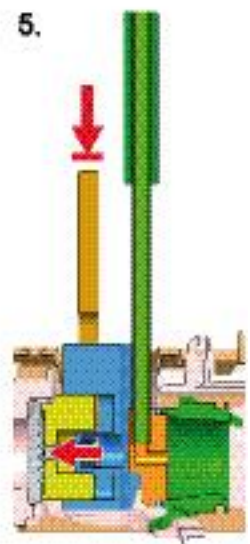
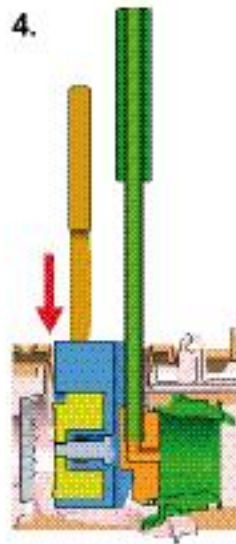
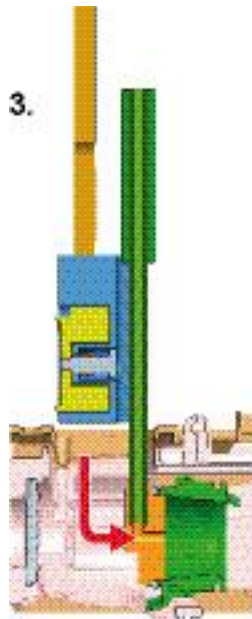
- A connecting unit (3) with a sealing cone that is inserted in the capsule cage of the brewing unit.
- A hand actuated fixation unit (4) to lock and seal the complete pressure gauge adapter in the brewing unit.

9.3 Measure flow rate

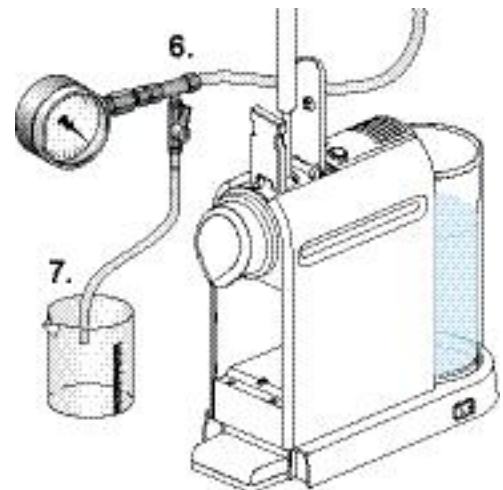
- 1) Fill and insert water tank.
- 2) Open closing handle.



i The pressure adapter must sit firmly in the capsule bay.



- 3) Insert connecting unit of pressure adapter into capsule bay. Push back sealing cone into capsule cage.
- 4) Insert fixation unit of pressure adapter into capsule bay.
- 5) Press down operating lever.
- 6) Connect pressure hose to pressure tester.
- 7) Place a measuring cup under the drain hose of the pressure tester.

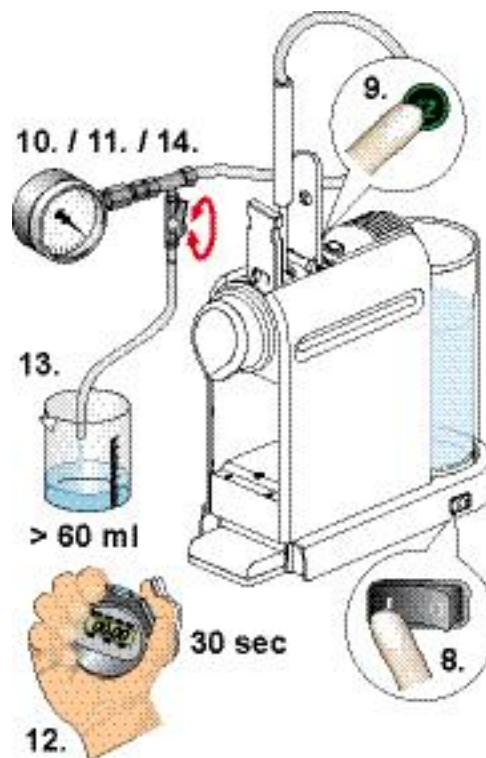




- 8) Switch on coffee machine.
- 9) After heating up, press the "small cup" button.
- 10) Open the valve until water begins to flow.
- 11) Close the valve until the pressure gauge indicates 12 bar.

☞ Constantly monitor the pressure gauge and if required readjust the valve. As the temperature increases, so does the pressure, readjust the pressure to 12 bar when required.

- 12) Carry out measurement for approx. 30 sec.
- 13) Control measuring cup: at least 60-120 ml of water must be in the measuring cup.
- 14) Open the valve and let water flow out of the pressure tester.



Notices:

- Should < 60 ml leak out, then the pump is defective or there is a leak in the water system.
- Large deviations in indicated pressure while measuring (± 4 bar) means that the pump is defective.

9.4 Pressure and leakage checks

Check the following parts of the coffee machine for leakages:

- Compact brewing unit
- Hose connections
- Thermoblock
- Pump
- Self priming device



Dangerous mains voltage inside the coffee machine!
Do not touch any parts under voltage while checking for leakages!



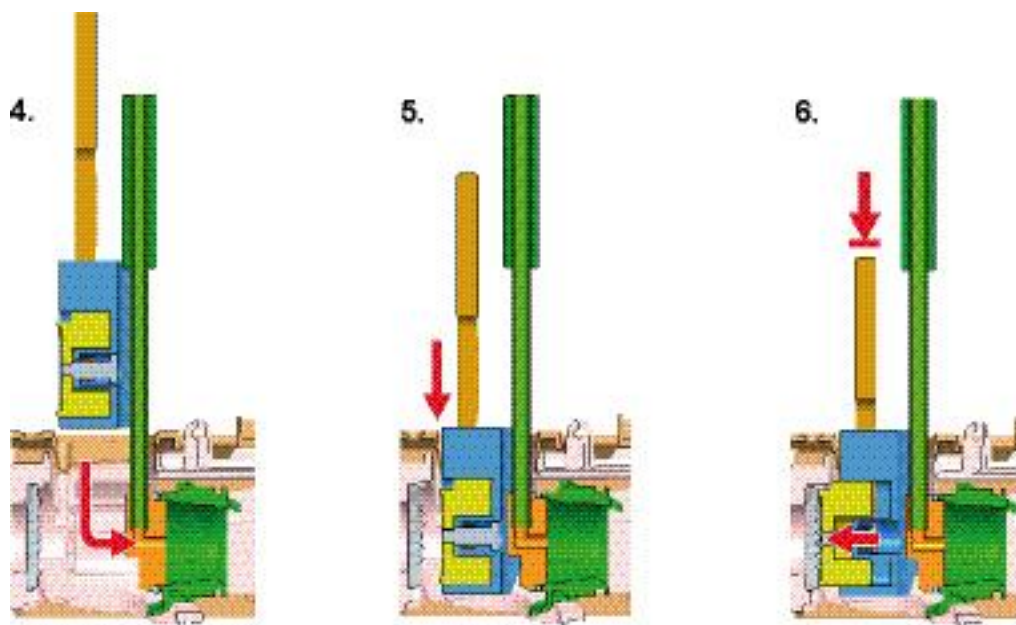
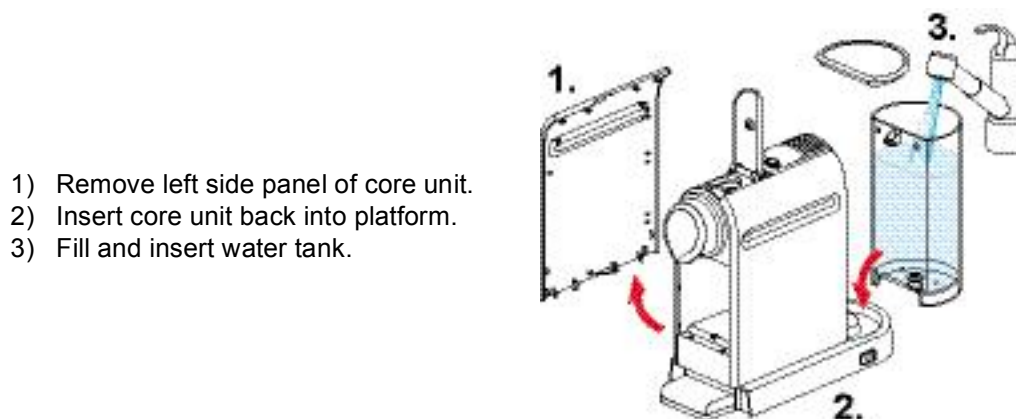
Dangerous hot parts under pressure inside the coffee machine!
Do not touch any hot/pressurized parts while checking for leakages!
Always wear protective goggles.



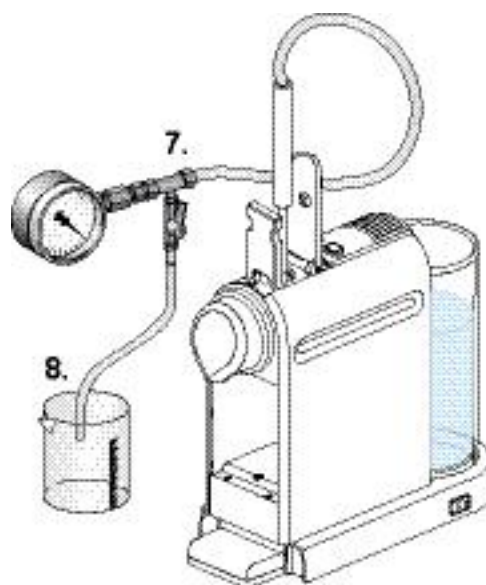
9.4.1 Preparations

i Depending on core unit range, refer to "Disassembly of core unit, C-range" on page 91 or "Disassembly of core unit, D-range" on page 109.

i The pressure adapter must sit firmly in the capsule bay.

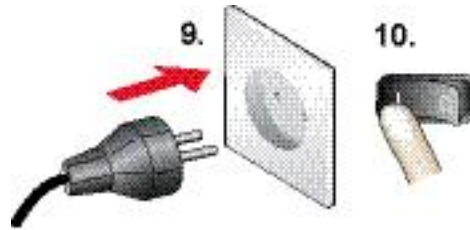


- 7) Connect pressure hose to pressure tester.
8) Place a measuring cup under the drain hose of the pressure tester.



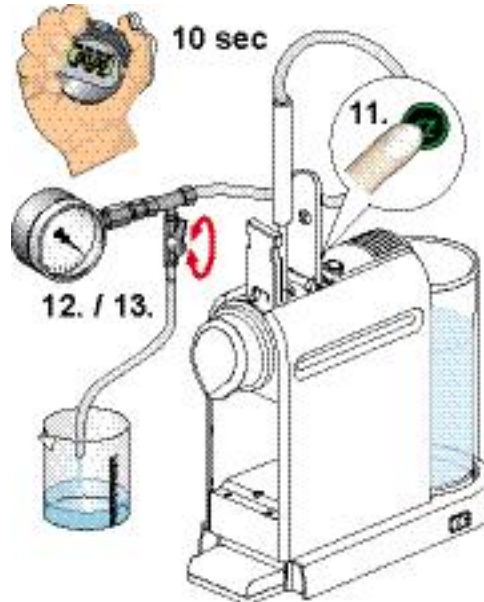


- 9) Connect mains cable.
- 10) Switch on coffee machine.



9.4.2 Test run

- 11) After heating up, press the "small cup" button.
- 12) Open the valve and let the water flow for approximately 10 sec out of the drain hose.
- 13) Close the valve completely. The pressure stabilizes after increasing briefly between 16-19 bar (pressure check).



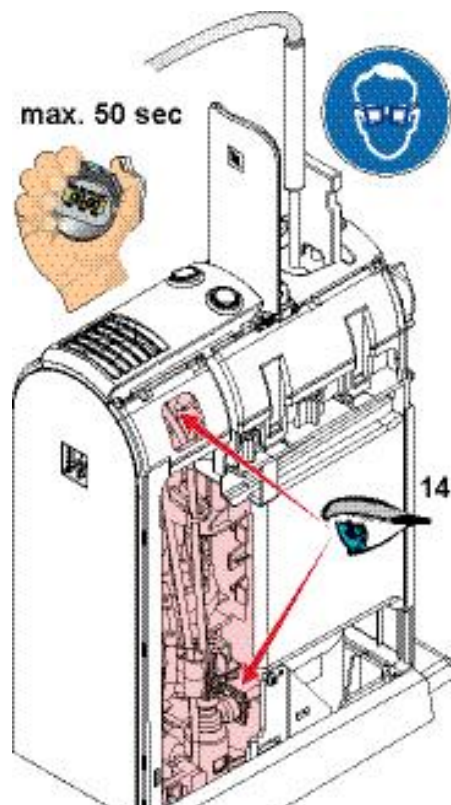
⚠ The pressure increases slowly with increasing temperature. Should the pressure exceed 23 bar, switch off the coffee machine and release the pressure by opening the valve.

💡 For better visibility use a flashlight.

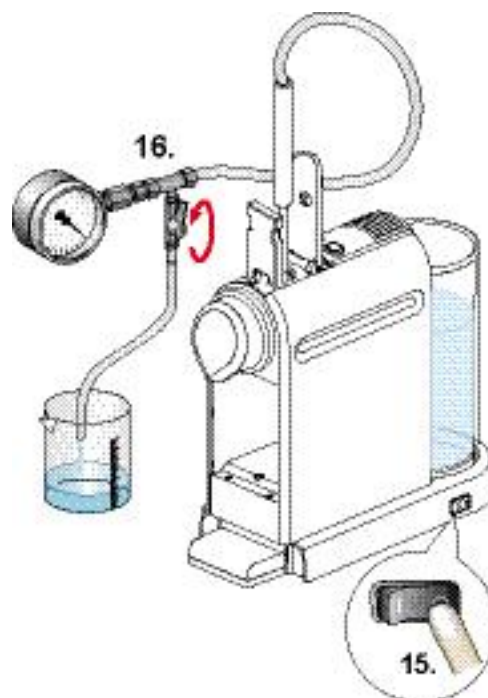
- 14) Check all connections under pressure for audible and visible leaks.



Do not run the pump for more than 50 sec with the valve closed.

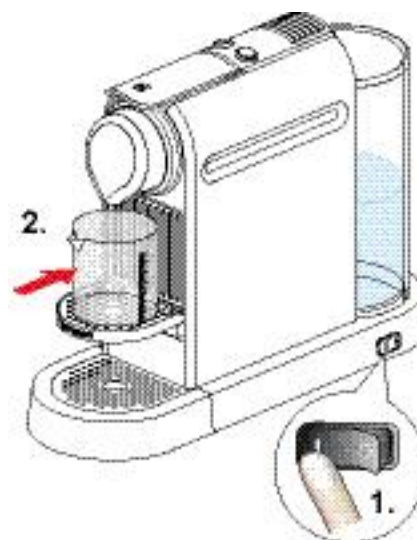


- 15) Switch off the coffee machine.
- 16) Open the valve and let water flow out of the pressure tester.



9.5 Measure coffee temperature

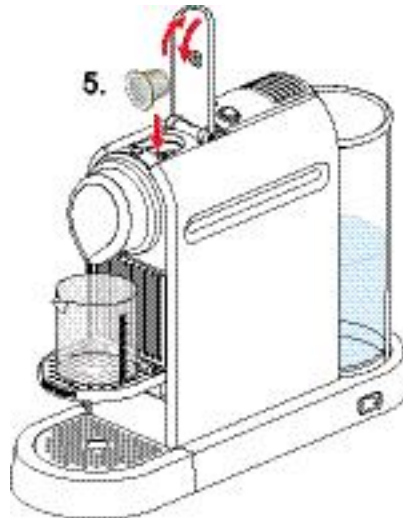
- 1) Switch on coffee machine.
- 2) Place a measuring cup on cup support.



- 3) After heating up, press the "small cup" button for approximately 10 sec to pre-heat the coffee outlet with hot water.
- 4) Empty measuring cup and place it back on cup support.

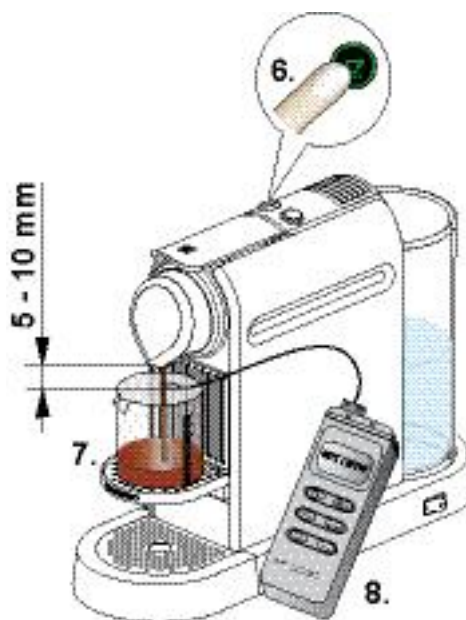


- 5) Insert capsule (Cosi is best suited).



- 6) Press the "small cup" button again.
- 7) Wait until the measuring cup contains 20 ml of coffee.
- 8) Then measure the coffee temperature approx. 5-10 mm under the coffee outlet.

The coffee temperature should be $86^{\circ}\text{C} \pm 3^{\circ}\text{C}$ ($187^{\circ}\text{F} \pm 5.4^{\circ}\text{F}$).





9.6 Milk frother tests

Prerequisite

Use newly opened UHT, full fat or semi-skimmed milk at fridge temperature (+ 8 °C till + 10 °C) for the following tests only.

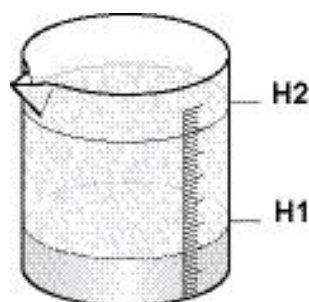
9.6.1 Measure hot milk temperature



- Prepare 240 ml hot milk in milk frother (use mixer without spring).
- Measure temperature immediately after preparation in jug.

The milk temperature should be between + 60 °C and + 70 °C (140 °F till 158 °F).

9.6.2 Measure milk froth ratio



- Prepare cold milk froth out of 120 ml milk in milk frother (use whisk with spring).
- Empty content of milk frother into measuring beaker.
- Determine the ratio x [%] of milk froth to liquid milk with following formula:

$$x = \frac{H2 - H1}{H1} \times 100$$

Approximate values:

direct after preparationx = 250

60 sec after preparationx = 190

The disregard of this specification can affect the measuring results.

Spattered milk may cause burns. Only use milk frother with lid.



9.7 NTC temperature sensor functionality

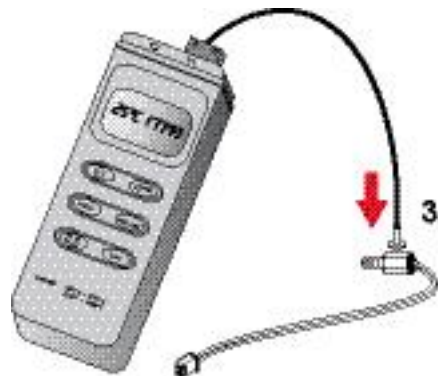
The resistance of the NTC temperature sensor must be within a defined range, otherwise the temperature regulation will not work properly and the coffee machine will stay/go into failure mode.

An easy way to check the functionality of the NTC temperature sensor is to measure the ohmic resistance at ambient temperature. With this measurement, most defect NTC temperature sensors can be detected.

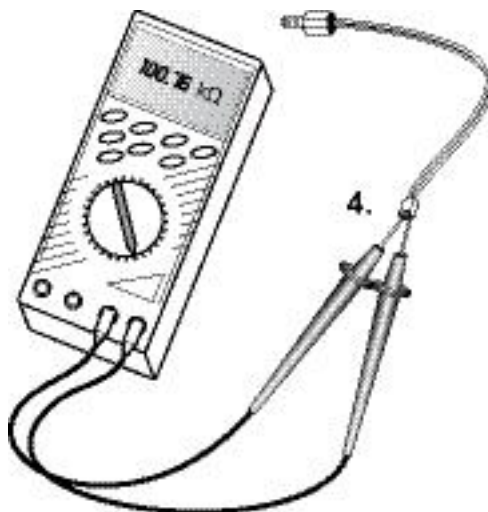
- 1) Unplug NTC temperature sensor from electronic control board.
- 2) Remove NTC temperature sensor from thermoblock (refer to page 104 and following).



- 3) Measure temperature of sensor body (do not touch either temperature or NTC sensor by hand).



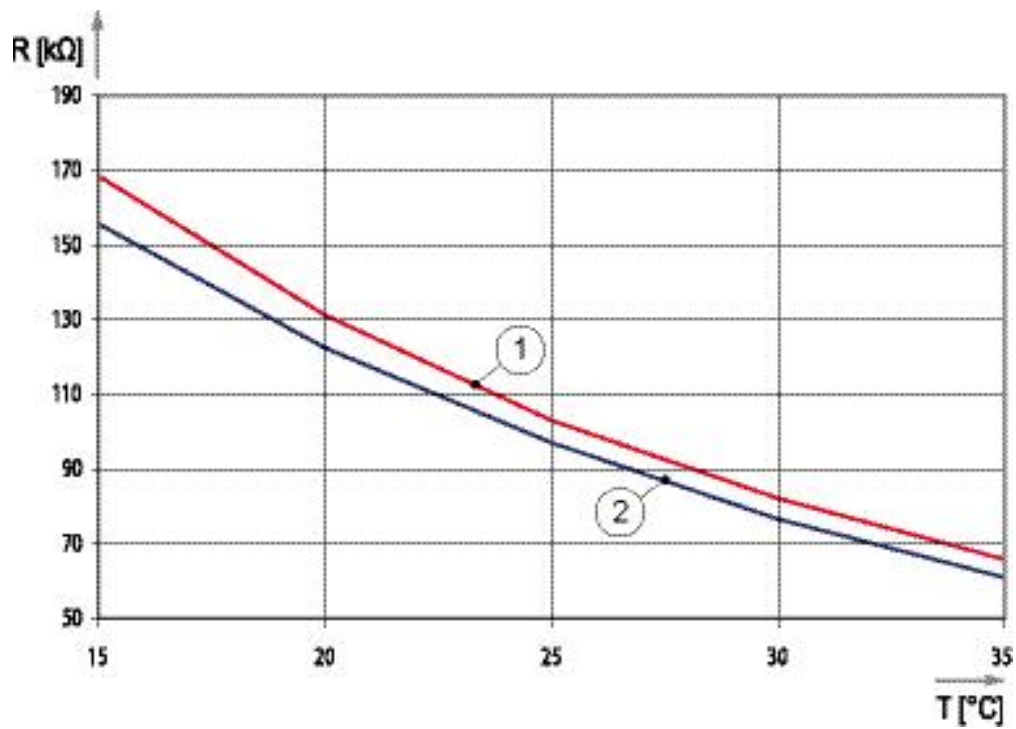
- 4) Measure resistance of NTC temperature sensor by connecting a multimeter at the plug.
- 5) Compare measuring values with following diagram or table.



i Avoid contamination of sensor contact surface during handling.



NTC Diagram



NTC temperature sensor, R/T characteristics

Graph 1 max. resistance value
Graph 2 min. resistance value

Measurement table

NTC temperature [°C]	NTC temperature [°F]	NTC min. resistance [kOhm]	NTC max. resistance [kOhm]
15	59	155.63	168.48
20	68	122.41	131.23
25	77	97.00	103.00
30	86	76.63	82.12
35	95	60.90	65.86



9.8 Protective earth (PE) continuity test

9.8.1 What coffee machine has to be tested and when?

This test is only necessary

- for class 1 equipment (three-wire power cord with protective earth)
- for **models Citiz & milk, EF 485/486**
- after a repair whenever a general disassembly of the platform and/or core unit was performed.

9.8.2 General

Legal regulation

In case of a repair/modification of the coffee machine, the repair centre is bound by law to protect the user/consumer by

- restoring the regular condition of the appliance and
- performing the respective tests according to EN/IEC 60335-1 "Safety of household and similar electrical appliances" and national regulations (e.g. DIN VDE 0701).

Description

Protective earth continuity measurements are made between the protective earth terminal and conductive, touchable parts of the coffee machine where dangerous voltage could occur if the basic insulation was to fail.

This test assures that

- the ground (earth) connection does not have an interruption between the plug and touchable, conductive housing parts
- the permissible ground resistance of those conductive, touchable parts is less than 0.3 Ohms (with a test current of 200 mA DC).

Test equipment

Special test equipment is needed that complies with the regulations to perform protective earth continuity measurements. Detailed requirements and tolerances must be verified by your local authorities or measurement supplier in any case.

Test report

For legal reasons a repair or test report should be prepared and filed with following information

- customer (name, address)
- type and serial number of coffee machine
- date of repair/test(s)
- performed test(s)/measuring value(s)
- used test equipment
- signature

 Ask *Nespresso* for recommendations about test equipment.



9.8.3 Test sequence

i This test sequence is not applicable for coffee machines with two-wire power cords (without ground pin).

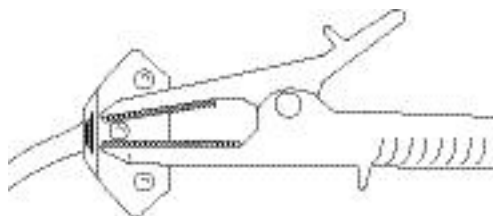


Danger of electrocution!

Do not plug in the coffee machine during the protective earth continuity test.

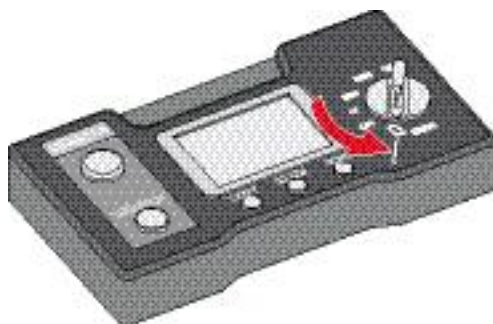
Read and observe safety instructions in user manual of test equipment.

- 1) Connect black measuring cable to ground pin of power plug with an alligator clip (example shown: Swiss power plug).

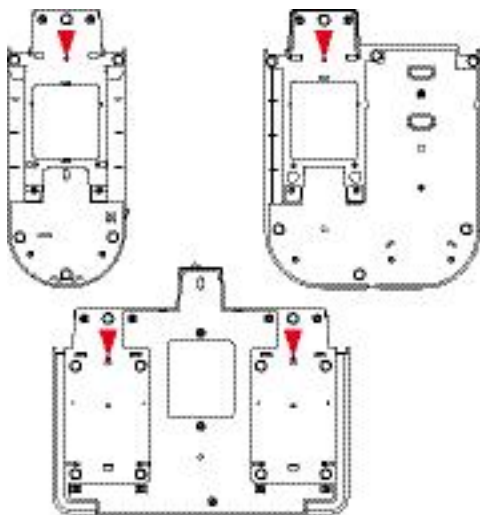


i Symbolic illustration of test equipment.

- 2) Switch on test equipment and select protective earth continuity test.



i The coffee machine Citiz & Co has 2 test holes to check both thermoblocks.

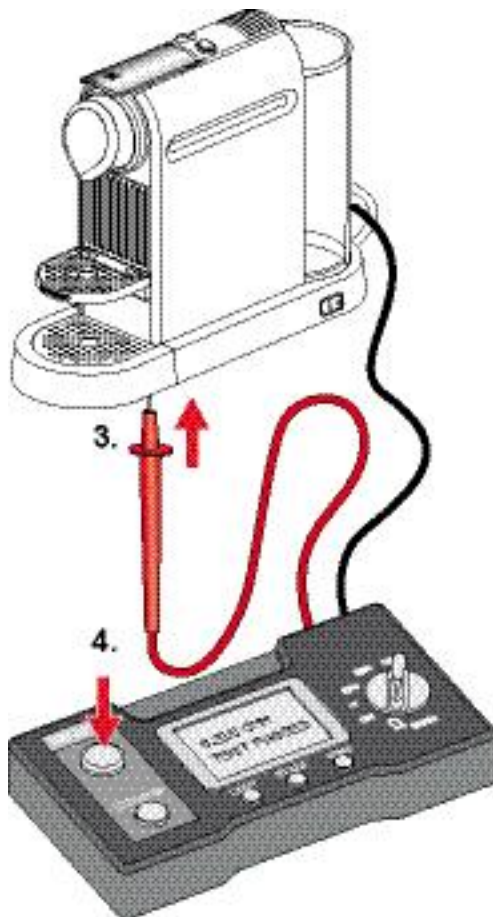


Test holes on bottom of Citiz / Citiz & milk / Citiz & Co platforms

- 3) Insert tip of red test probe in test hole and touch thermoblock.
- 4) Press "measure" button and read off displayed resistance.

⚠ The resistance must be lower than 0.3 Ohm.

- 5) Fill in measured value(s) in a test report.





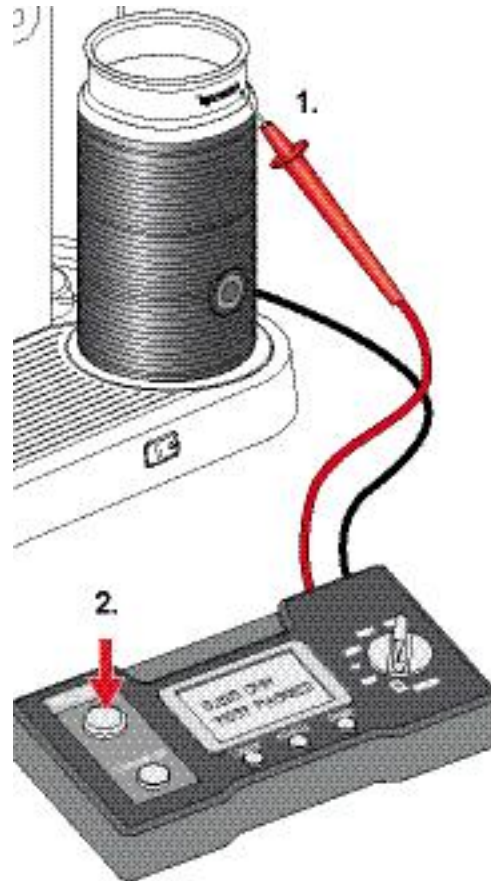
 Do not damage inside coating of milk frother jug with the probe tip.

Additional test for coffee machine Citiz & milk:

- 1) Touch upper metallic part of milk frother with red test probe.
- 2) Press "measure" button and read off displayed resistance.
- 3) Repeat measurement on another metallic spot of milk frother for verification.

 The resistance must be lower than 0.3 Ohm.

- 4) Fill in measured value(s) in a test report.



9.8.4 What to do if the protective earth continuity test fails

- Check/measure ground connection in platform (refer to page 75).
- Check/measure ground connection on milk frother connector (refer to page 73 and page 124 for wiring diagram). Replace milk frother connector if necessary.
- Clean ground contact on milk frother. Measure resistance between ground contact and jug of milk frother. Replace milk frother if necessary.



9.9 Protective insulation test

9.9.1 What coffee machines have to be tested and when?

This test is necessary

- for class 1 and 2 equipment (with/without protective earth)
- after a repair whenever a general disassembly of the platform and/or core unit was performed.

9.9.2 General

Legal regulation

In case of a repair/modification of the coffee machine, the repair centre is bound by law to protect the user/consumer by

- restoring the regular condition of the appliance and
- performing the respective tests according to EN/IEC 60335-1 "Safety of household and similar electrical appliances" and national regulations (e.g. DIN VDE 0701).

Description

The insulation test

- assures that wiring and insulation of the coffee machine fulfill the normative requirements after a repair,
- rates the insulation capability of the coffee machine,
- is a very dangerous test because of a high test voltage (500 V DC).

For the insulation test, phase and neutral wire are shunted at the power plug. Then a test voltage is applied between phase/neutral and selected parts of the coffee machine.

Test equipment

Special test equipment is needed that complies with the regulations to perform insulation and withstanding voltage tests. Detailed requirements and tolerances must be verified with your local authorities or measurement supplier in any case.

Ideally the test equipment has a national power socket for testing, so that the coffee machine can plugged in directly. Otherwise a special shunt is necessary to connect the phase and neutral pin of the coffee machine's power plug.

Test report

For legal reasons a repair or test report should be prepared and filed with following information

- customer (name, address)
- type and serial number of coffee machine
- date of repair/test(s)
- performed test(s)/measuring value(s), test points
- used test equipment
- signature

i Ask *Nespresso* for recommendations about test equipment.



9.9.3 Test sequence

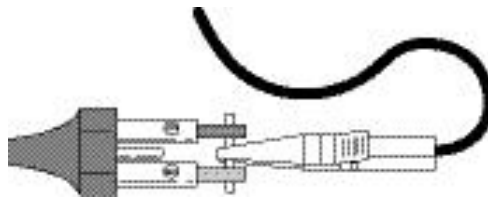


Danger of electrical shock/short circuit!
Do not plug in the coffee machine during insulation test.



Danger of electrical shock!
Do not touch tip of test probes.
Do not touch metallic parts of coffee machine during test.
Read and observe safety instructions in user manual of test equipment.

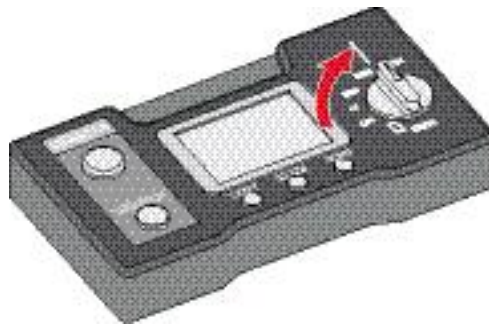
- 1) Connect the phase and neutral pin of the power plug together with a test adapter (procured by the repair centre).
- 2) Connect the black measuring cable to the test adapter (see image).
- 3) Turn the ON-OFF machine's main switch on position I (ON).



i A Swiss power plug is shown here as an example.

i Use a short circuit plug or special alligator clips etc. as substitute for this test adapter.

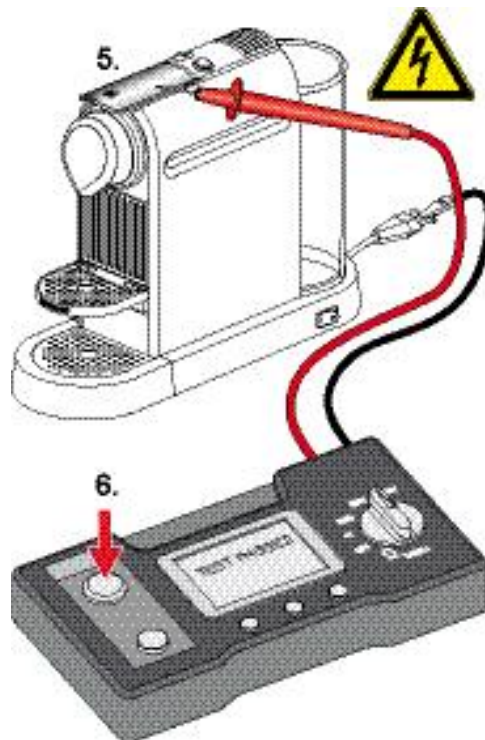
- 4) Switch on test equipment and select an insulation test voltage of 500 V DC.



i Symbolic illustration of test equipment.

- 5) Touch closing handle with red test probe.
- 6) Press "measure" button.
- 7) Read off displayed insulation resistance or test result.

⚡ The insulation resistance must be higher than 300 kOhm (300,000 Ohm).

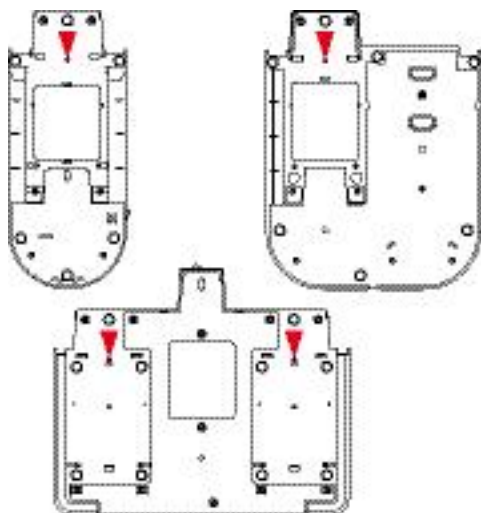


i Some test equipment displays test passed or failed instead of the insulation resistance.



i The coffee machine Citiz & Co has 2 test holes to check both thermoblocks.

FUNCTION TESTS

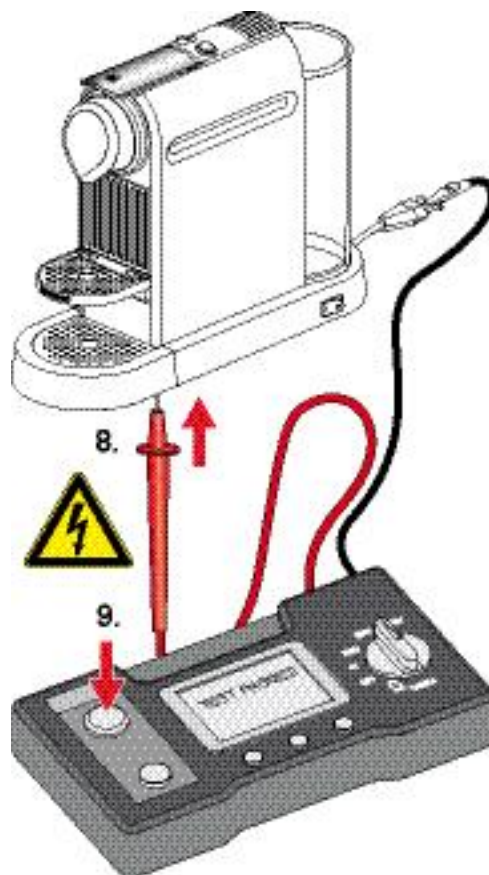


Test holes on bottom of Citiz / Citiz & milk / Citiz & Co platforms

- 8) Insert tip of red test probe in test hole and touch thermoblock.
- 9) Press "measure" button.
- 10) Read off displayed insulation resistance or test result.

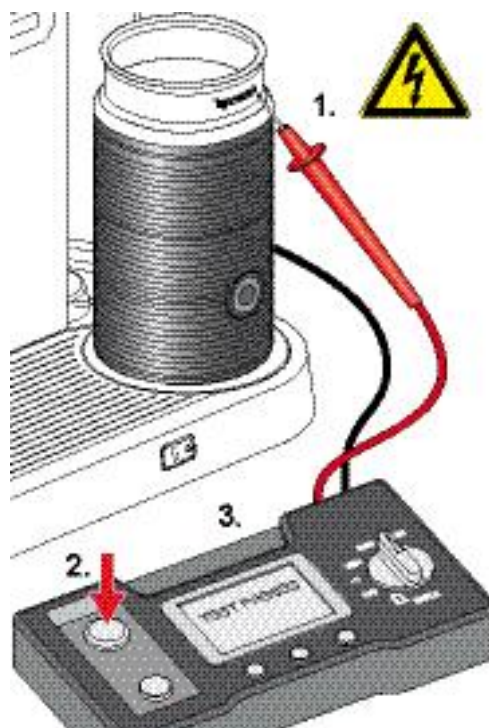
⚠ The insulation resistance must be higher than 300 kOhm (300'000 Ohm).

- 11) Switch off test equipment.
- 12) Short red with black test probe to make sure that test voltage is discharged.
- 13) Fill in results in a test report.



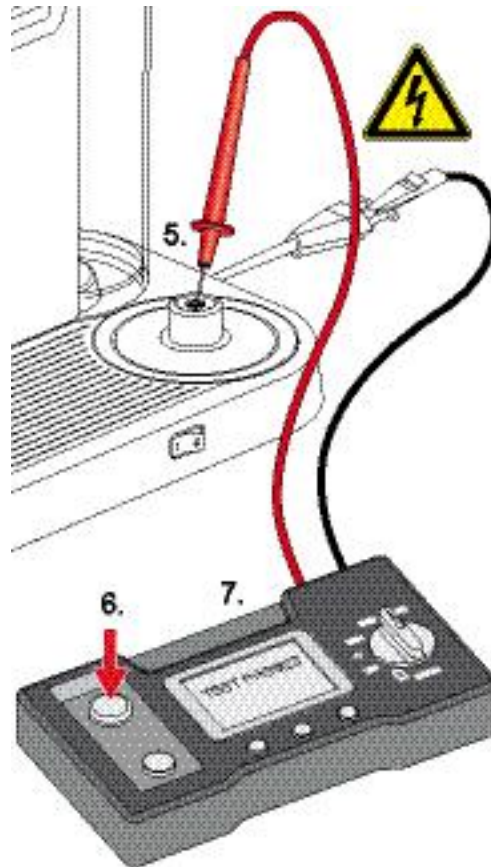
Additional tests for coffee machine Citiz & milk:

- 1) Touch upper metallic part of milk frother with red test probe.
- 2) Press "measure" button.
- 3) Read off displayed insulation resistance or test result.





- 4) Remove milk frother from platform.
- 5) Insert red test probe in central opening of milk frother connector (ground connection).
- 6) Press "measure" button.
- 7) Read off displayed insulation resistance or test result.
- 8) Switch off test equipment.
- 9) Short red with black test probe to make sure that test voltage is discharged.
- 10) Fill in result in test report.



9.9.4 What to do if the insulation test fails



Risk of damage!

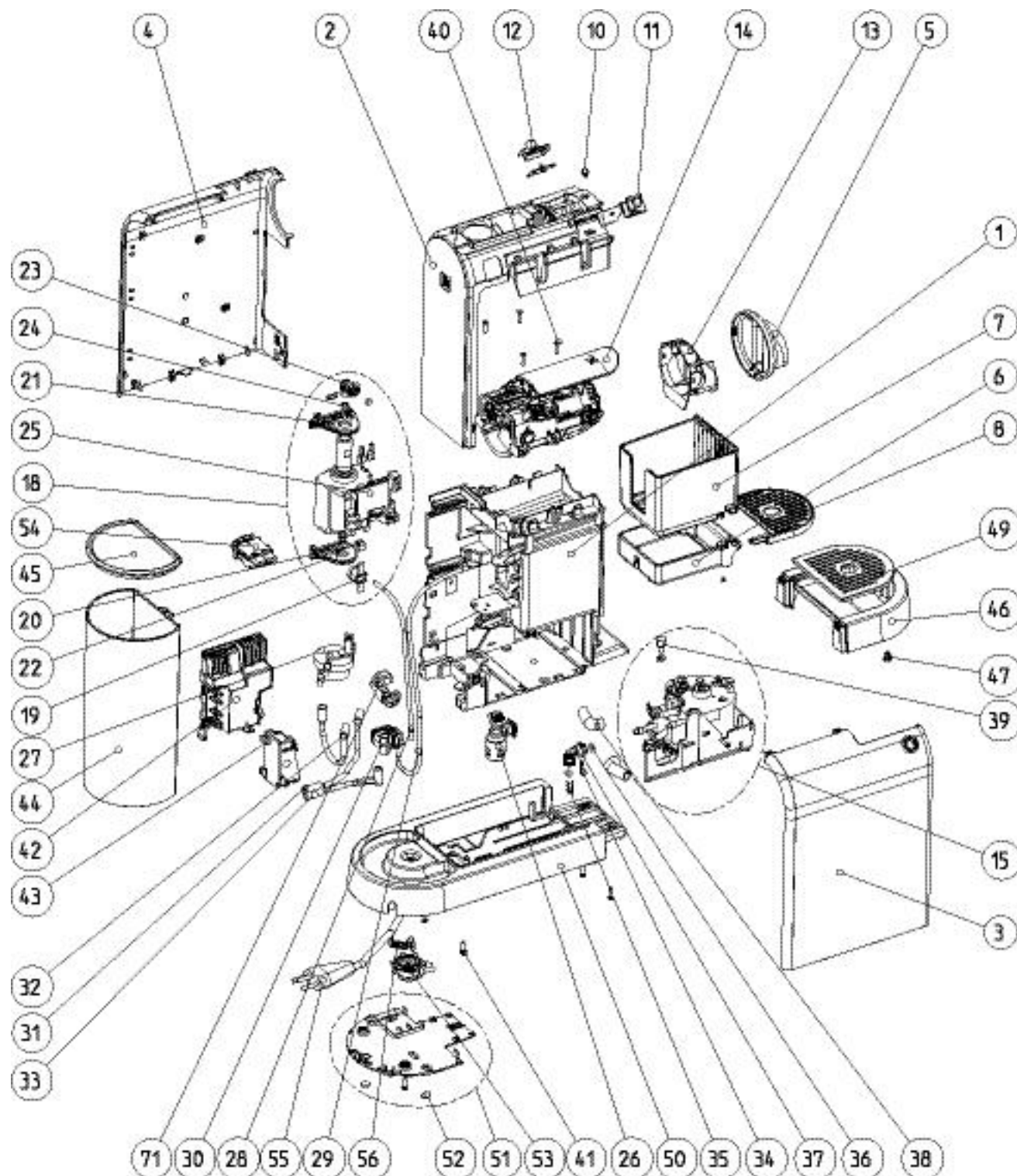
A sparkover can damage the electronic control board and sensors etc.

- Assume that the coffee machine is defect after a failed insulation test.
- Check wiring and locate fault. After fault clearance proceed with troubleshooting check list (see page 49).
- In case of doubt an insulation test on the milk frother alone can be carried out on the coffee machine Citiz & milk: touch phase and neutral contacts at the bottom with one test probe successively and the metallic upper part with the other test probe. If insulation test fails, replace milk frother.

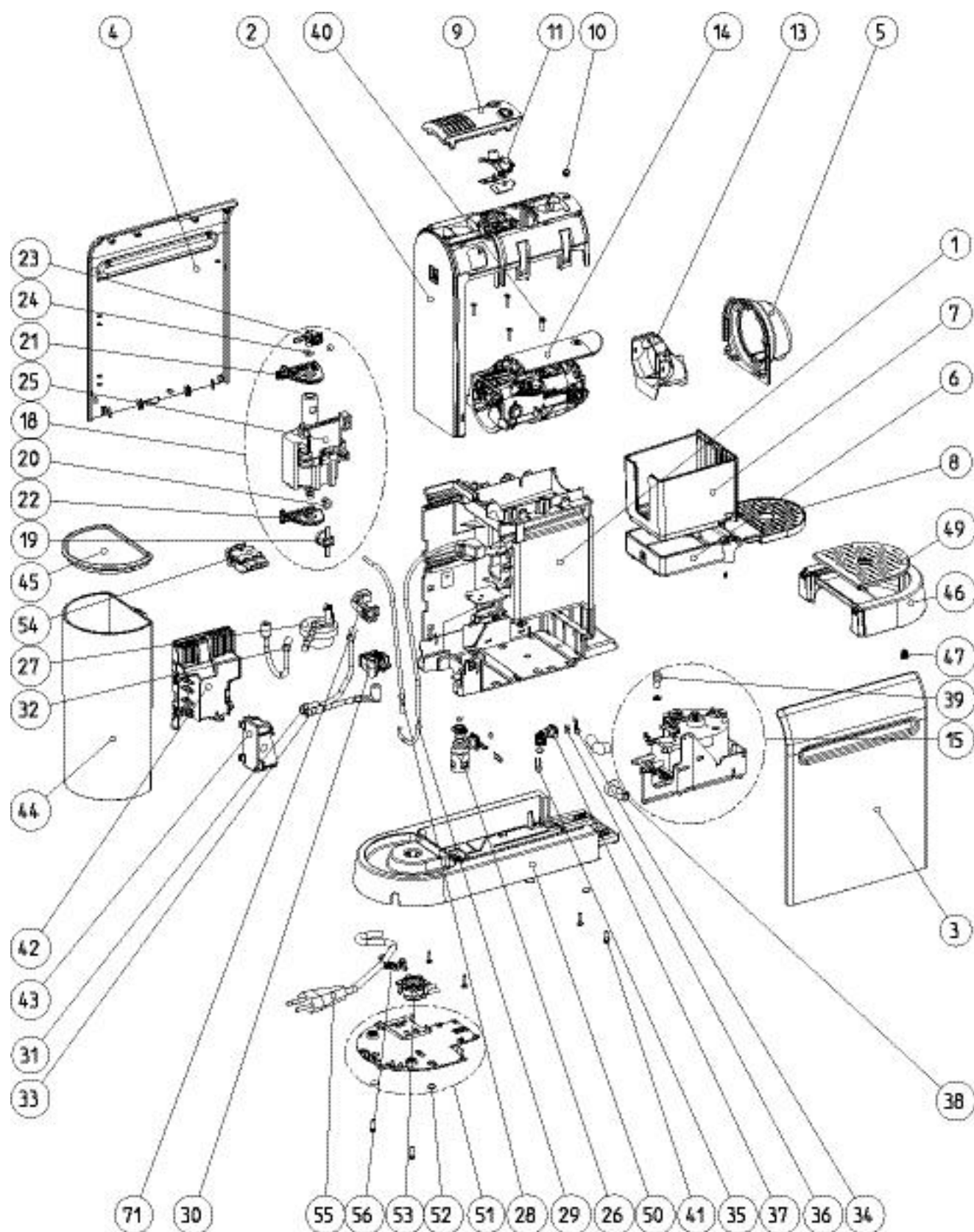


10 EXPLOSION DRAWINGS

10.1 Model Citiz, core unit D-range (EF 483)

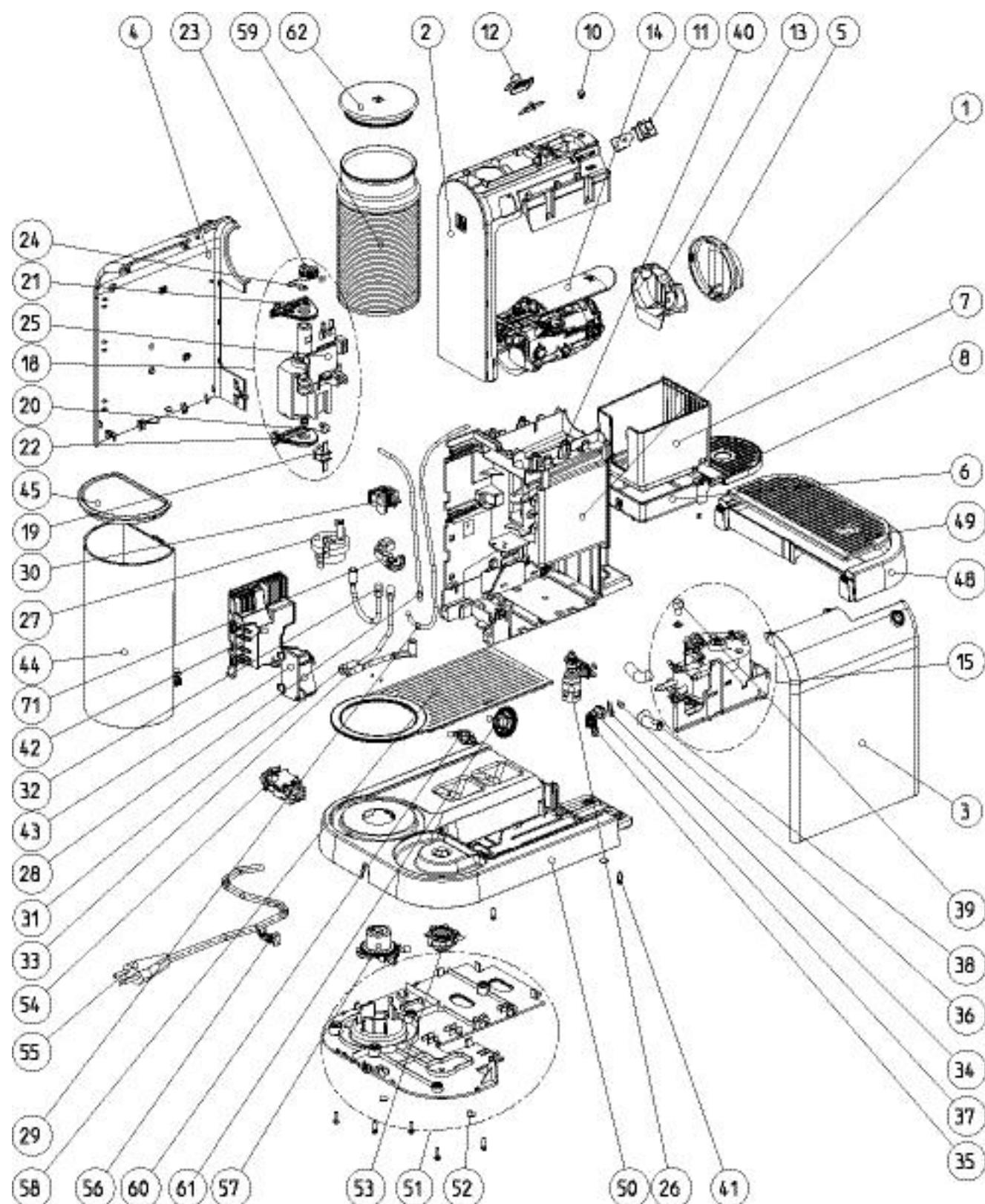


10.2 Model Citiz, core unit C-range (EF 484)

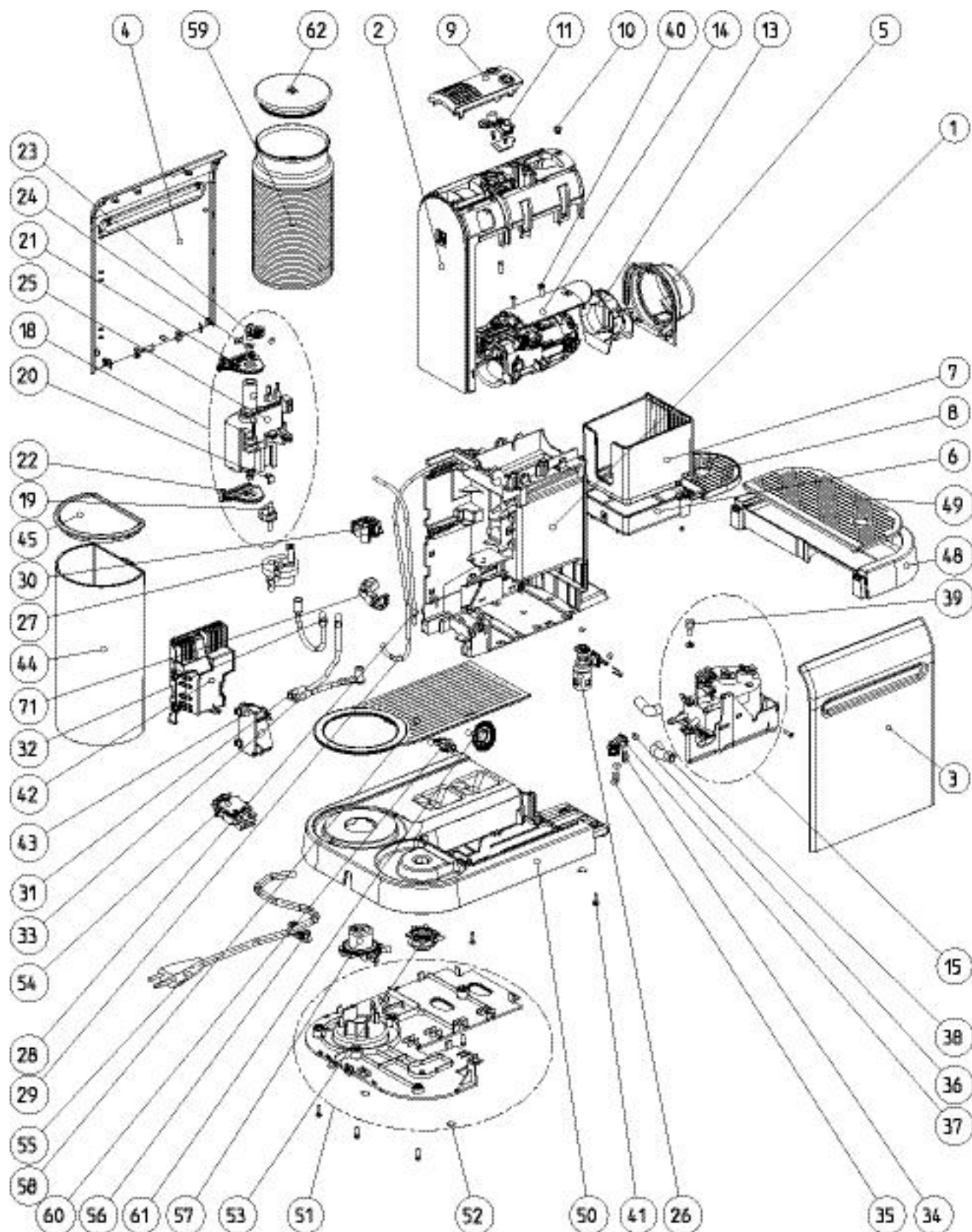




10.3 Model Citiz & milk, core unit D-range (EF 485)

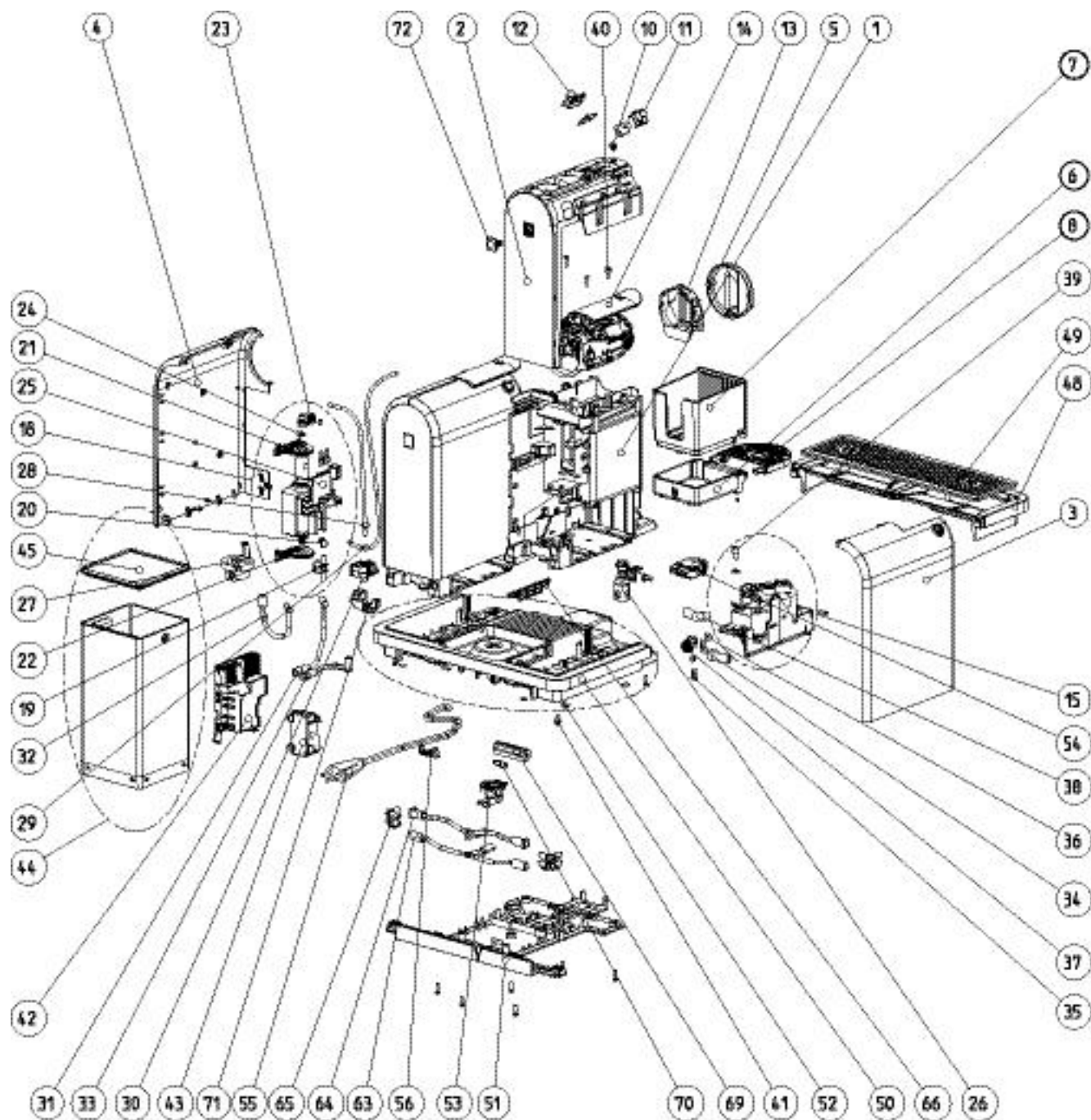


10.4 Model Citiz & milk, core unit C-range (EF 486)



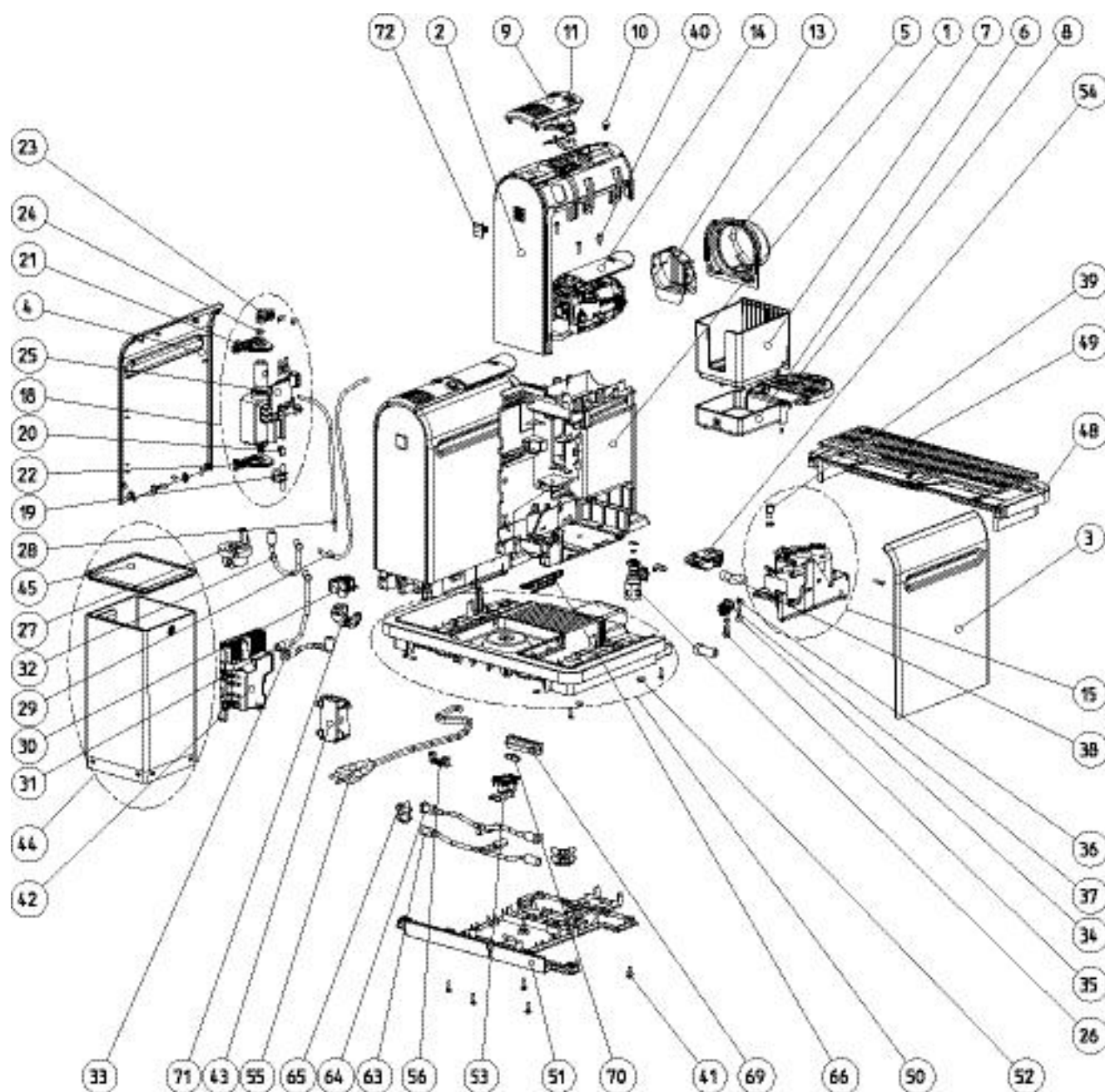


10.5 Model Citiz & Co, core unit D-range (EF 487)





10.6 Model Citiz & Co, core unit C-range (EF 488)





11 PARTS LIST

Pos.	Component	Remark
1	Chassis A	
1	Chassis B	
2	Cover A	
2	Cover B	
3	Side panel A left Ivory (old: Creamy White)	
4	Side panel A right Ivory (old: Creamy White)	
3	Side panel A left Black (old: Piano Black)	
4	Side panel A right Black (old: Piano Black)	
3	Side panel B left Grey (Slate)	
4	Side panel B right Grey (Slate)	
3	Side panel B left Red (old: Retro Red)	
4	Side panel B right Red (old: Retro Red)	
5	Outlet B spare, containing - Front Cover (1x) - Outlet B chrome (1x)	
5	Outlet A Chrome	
6	Waste water spare, containing - Waste water A+B (1x) - Cup support stop (2x)	
7	Capsule Container A+B	
8	Cup support A	
8	Cup support B	
9	Blind	
10	Damper MBU closing handle	
11	Espresso Button A	
12	Coffee Button A	
11	Coffee Button B	
13	Steam Cover	
14	TMBU	Handle A
14	TMBU	Handle B
15	Thermobloc 230 V	Complete assembly incl. support, complete wiring (safety), with NTC
15	Thermobloc 120 V (USA)	Complete assembly incl. support, complete wiring (safety), with NTC
15	Thermobloc 120 V (Brasilien/Taiwan)	Complete assembly incl. support, complete wiring (safety), with NTC
15	Thermobloc 120 V (Mexico)	Complete assembly incl. support, complete wiring (safety), with NTC
15	Thermobloc 230 V	Complete assembly incl. support, complete wiring (safety), with NTC
15	Thermobloc 120 V (USA)	Complete assembly incl. support, complete wiring (safety), with NTC
15	Thermobloc 120 V (Brasilien/Mexico)	Complete assembly incl. support, complete wiring (safety), with NTC
15	Thermobloc 100 V	Complete assembly incl. support, complete wiring (safety), with NTC
15	Thermobloc 230 V	Complete assembly incl. support, complete wiring (safety), with NTC



Pos.	Component	Remark
15	Thermobloc 230 V	Complete assembly incl. support, complete wiring (safety), with NTC
18	Pump 230 V	Incl. thermostat and both wires, pump cover, pump supports, 90° angle. Invensys, no Ceme, no Sysko
18	Pump 120 V	Incl. thermostat and both wires, pump cover, pump supports, 90° angle. Invensys, no Ceme, no Sysko
18	Pump 100 V	Incl. thermostat and both wires, pump cover, pump supports, 90° angle. Invensys, no Ceme, no Sysko
18	Pump 127 V IEC	Incl. thermostat and both wires, pump cover, pump supports, 90° angle. Invensys, no Ceme, no Sysko
19	Thermostat	
20	Clip Thermostat	
21	Pump support upside	
22	Pump support downside	
23	Pump connector 90°	
24	O-ring 5, 28 x 1, 78	
25	Pump cover	
26	APD	Complete
27	Flowmeter FHKSC12 4.5-24VDC, 5-13mA	(Birdy FS: 5.6V, 4-5mA) new standard
28	Hose Pump - APD	Delivery without o-rings (you can loose them)
29	Hose TB - TMBU	Delivery without o-rings (you can loose them)
30	Tube guiding	
31	Angle hose FM in	
32	Angle hose FM Pump	
33	Angle hose APD out	
33	Angle hose APD out M4	
34	Connector clip 5mm	
35	Connector clip 4mm	
36	O-ring 3.40 x 1.90	
37	Hose connector 55°	Also part of TB spare assembly
38	Isolation spout angular	Also part of TB spare assembly
39	NTC (Cable length =160 mm)	
40	PT Screw Torx K30 x 12	
41	PT Screw Oval K30 x 12	
42	Electronic Control Board M1+3 220-240 V 50/60 Hz	Incl. housing
42	Electronic Control Board M1+3 120-127 V 50/60 Hz	Incl. housing
42	Electronic Control Board M1+3 100-110 V 50/60 Hz	Incl. housing
42	Electronic Control Board M4 220-240 V 50/60 Hz	Incl. housing
43	Electronic lid	
44	Water tank 1	
44	Water tank 4	
45	Water tank 1 cover	
45	Water tank 4 cover	
46	Drip tray 1	Nespresso (incl. rubber feet)
46	Drip tray 1	Krups (incl. rubber feet)
46	Drip tray 1	Turmix (incl. rubber feet)
46	Drip tray 1	DeLonghi (incl. rubber feet)
46	Drip tray 1	Magimix (incl. rubber feet)
46	Drip tray 1	Koenig (incl. rubber feet)
47	Rubber feet (Drip tray 1)	
48	Drip tray 3	
48	Drip tray 4	



PARTS LIST

Pos.	Component	Remark
49	Drip Grid A 1	
49	Drip Grid B 1	
49	Drip grid A 3	
49	Drip grid B 3	
49	Drip grid A 4	
49	Drip grid B 4	
50	Base plate 1 top	Incl. rubber feet
50	Base plate 3 top	Incl. rubber feet
50	Base plate 4 top	Incl. rubber feet
51	Base plate 1 bottom	Incl. rubber feet
51	Base plate 3 bottom	Incl. rubber feet
51	Base plate 4 bottom	Incl. rubber feet
52	Rubber feet	
53	Water tank connector 1	Incl. filter & seal
53	Water tank connector 4	Incl. filter & seal
54	ON/OFF switch incl. support (spare parts)	2-pol
54	ON/OFF switch incl. support (spare parts)	1-pol new marquardt
55	Power supply cord JP 2pol	Incl. receptacle and isolation
55	Connection cable UL 1	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M1 (SEV)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M1 (AU)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M1 (IL)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M1 (UK)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M1 (Cebec)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M1 (AR)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M1 (KR)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M1 (ZA 220 V)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M1 (CN)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M1 (SG)	Incl. receptacle and isolation
55	Power supply cord TW 3pol	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M1 (BR 220 V)	Incl. receptacle and isolation
55	Power supply cord BR 3pol	Incl. receptacle and isolation
55	Power supply cord BR 3pol	Incl. receptacle and isolation
55	Connection cable UL M3 country spec	Incl. receptacle and isolation
55	Connection cable UL US/MX M3	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M3 (ZA)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M3 (BR 220 V)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M3 (UK)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M3 (AR)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M3 (AU)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M3 (SEV)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M3 (CN)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M3 (Cebec)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M3 (IL)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M3 (KR)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M3 (SG)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M4 (SEV)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M4 (Cebec)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M4 (UK)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M4 (AU)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M4 (IL)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M4 (AR)	Incl. receptacle and isolation



Pos.	Component	Remark
55	Connection cable 230 V country spec. M4 (SG)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M4 (ZA)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M4 (BR-220 V)	Incl. receptacle and isolation
55	Connection cable 230 V country spec. M4 (CN)	Incl. receptacle and isolation
56	Cable bracket UL 2-pol	
56	Cable bracket UL 3-pol	
56	Cable bracket IEC 3-pol	
57	Otter connector CS7	
58	Cup storage	
59	Aeroccino 3 220-240 V 50/60 Hz	
59	Aeroccino 3 120-127 V 50/60 Hz	
60	Mixer (hot milk)	
61	Whisk (foam)	
62	Aeroccino Lid incl. seal	
63	Angle hose water 4	
64	Angle hose venting 4	
65	Angle hard double M4	
66	Tank snap hook	
69	Connection isolation	
70	Double Tab 4.8-Sn	
71	Cable fixation TB	
72	Cover stopper	



NOTES

12 NOTES