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### 8.5.1 General disassembly

### 8.5.2 Replacing water tank connector

### 8.5.3 Replacing milk frother connector

### 8.5.4 Replacing mains switch

### 8.5.5 Replacing power cord

### 8.5.6 Removing core unit

## 8.6 Platform disassembly - model Citiz & Co

### 8.6.1 General disassembly

### 8.6.2 Replacing water tank connector

### 8.6.3 Replacing mains switch

### 8.6.4 Replacing power cord

### 8.6.5 Removing core units

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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.
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.

![Diagram of RCD protected socket-outlet, Plug-in RCD unit, GFCI socket, Plug-in GFCI]

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: 

1) Citiz

2) Citiz & milk

With core unit C-range:

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).
This comparison helps to identify the core unit version.

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

### 2.2 Core unit versions

<table>
<thead>
<tr>
<th>Different components</th>
<th>D-range</th>
<th>C-range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee outlet (1)</td>
<td>contured coffee outlet</td>
<td>&quot;flat&quot; coffee outlet</td>
</tr>
<tr>
<td>Closing handle (2)</td>
<td>chromium-plated closing handle</td>
<td>black closing handle</td>
</tr>
<tr>
<td>Coffee buttons (3)</td>
<td>arranged on both sides of the closing handle</td>
<td>arranged behind the closing handle</td>
</tr>
<tr>
<td>Cup holder (4)</td>
<td>cup holder with slotted recesses</td>
<td>cup holder with circular recesses</td>
</tr>
</tbody>
</table>
3 MAIN COMPONENTS

3.1 Overview - core unit, D-range

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

For platform components refer to model overview.
3.1.1 Interior view - core unit, D-range

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

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

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

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).
3.4 Overview - model Citiz & milk

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

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

The inside of the jug (3)
- has level marks (6),
- is surface-coated for easy cleaning.
3.5 Overview - model Citiz & Co

The drip grid (1)
- exists in 2 versions,
- matches with the cup holder of the core unit version (e.g. circular recesses).

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

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

![Water Circuit Diagram]

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
2) Water tank connector
3) Self priming device
4) Thermoblock
5) Flow meter
6) Coffee outlet
7) Brewing unit
8) Pump
3.6.3 Water circuit of model Citiz & Co

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

4.1 Rating plates

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

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

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

4.1.2 Rating plate details

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

Example:

083 124 841 0001 782 0YP

- Checksum (if available)
- Color version
- Type of mains plug
- Mains voltage
- Distributing partner
- Incremental number per production day
- Manufacturing plant
- Manufacturer designation of the machine type (EF 484)
- 08312 ... Date of production
  (08 = year 2008, 312 = 312 day of the year)

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

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

### 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 ± 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
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.

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

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

Capacity
Hot milk........................................................................................................... max. 240 ml
Hot/cold milk for milk froth............................................................................... max. 130 ml
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

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

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
4.2.6 Dimensions and weight - model Citiz & Co

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

Dimensions in mm.

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:

<table>
<thead>
<tr>
<th>Machine status etc.</th>
<th>&quot;Small cup&quot; button</th>
<th>&quot;Large cup&quot; button</th>
<th>LED signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td></td>
<td></td>
<td>Both LED's off</td>
</tr>
<tr>
<td>Self test</td>
<td></td>
<td></td>
<td>Blinking 1 Hz, 0.5 s on, 0.5 s off</td>
</tr>
<tr>
<td>Error</td>
<td></td>
<td></td>
<td>Blinking fast (2 Hz, 0.25 s on/0.25 s off) 3 times every 2 seconds</td>
</tr>
<tr>
<td>Heat up</td>
<td></td>
<td></td>
<td>Blinking 1 Hz, 0.5 s on, 0.5 s off</td>
</tr>
<tr>
<td>Ready</td>
<td></td>
<td></td>
<td>Both LED's on</td>
</tr>
<tr>
<td>Brewing small cup</td>
<td></td>
<td></td>
<td>Blinking 1 Hz, 0.5 s on, 0.5 s off</td>
</tr>
<tr>
<td>Brewing big cup</td>
<td></td>
<td></td>
<td>Blinking 1 Hz, 0.5 s on, 0.5 s off</td>
</tr>
<tr>
<td>Rinse small cup</td>
<td></td>
<td></td>
<td>Blinking 1 Hz, 0.5 s on, 0.5 s off (same as brewing small cup)</td>
</tr>
<tr>
<td>Rinse big cup</td>
<td></td>
<td></td>
<td>Blinking 1 Hz, 0.5 s on, 0.5 s off (same as brewing big cup)</td>
</tr>
</tbody>
</table>
### LED Signal

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

<table>
<thead>
<tr>
<th>Machine status etc.</th>
<th>&quot;Small cup&quot; button</th>
<th>&quot;Large cup&quot; button</th>
<th>LED signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power save deactivation (only for model Citiz &amp; Co)</td>
<td><img src="image" alt="Small cup button" /></td>
<td><img src="image" alt="Large cup button" /></td>
<td>Blinking 0.5 Hz, 1 s on, 1 s off alternately 3 times</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Machine status etc.</th>
<th>Operating button</th>
<th>Light signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td><img src="image" alt="Operating button" /></td>
<td>Backlight off</td>
</tr>
<tr>
<td>On - hot milk preparation</td>
<td><img src="image" alt="Operating button" /></td>
<td>Red backlight on</td>
</tr>
<tr>
<td>On - cold milk froth preparation</td>
<td><img src="image" alt="Operating button" /></td>
<td>Blue backlight on</td>
</tr>
<tr>
<td>Failure/malfunction (e.g. overheating because of burnt milk, too less or no milk)</td>
<td><img src="image" alt="Operating button" /></td>
<td>Blinking red backlight (1 Hz, 0.5 s on, 0.5 s off)</td>
</tr>
<tr>
<td>Failure: milk frother has wrong mains voltage range</td>
<td><img src="image" alt="Operating button" /></td>
<td>Fast blinking red backlight (2 Hz, 0.25 s on, 0.25 s off)</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Machine mode</th>
<th>Enter mode</th>
<th>Actions</th>
<th>Exit mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Heat up mode</td>
<td>Every time after switching on machine</td>
<td>Heats up thermoblock to ready temperature 90 °C within 60 s without overshooting target temperature</td>
<td>e.g. switching off machine</td>
</tr>
<tr>
<td>2 Self test mode</td>
<td>Every time after switching on machine</td>
<td>Tests: • NTC short circuit • NTC connected • Thermoblock heating curve Error handling: Tracking of the last 5 errors by a ring buffer</td>
<td>e.g. switching off machine</td>
</tr>
<tr>
<td>3 Ready mode</td>
<td>• After heat up and self test mode was ok • After brewing or volume brewing coffee • After reset mode • After leaving descaling mode</td>
<td>Keeps thermoblock temperature at 90 °C</td>
<td>e.g. switching off machine</td>
</tr>
<tr>
<td>4a Brewing mode</td>
<td>• 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)</td>
<td>• 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</td>
<td></td>
</tr>
<tr>
<td>4b Volume brewing mode (programming cup size)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Descaling mode</td>
<td>• Switch on machine, wait until ready • Press and hold both coffee buttons for at least 3 s</td>
<td>• Regulate temperature to 65 °C (after pump was started) • Stop and start pump with any coffee button, no volume brewing in descaling mode</td>
<td>• 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.</td>
</tr>
</tbody>
</table>
5.3.2 Machine modes of milk frother AERO3

<table>
<thead>
<tr>
<th>Machine mode</th>
<th>Enter mode</th>
<th>Actions</th>
<th>Exit mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Emptying mode (evaporating)</td>
<td>1) Switch off machine  2) Press and hold small coffee button  3) Switch on machine</td>
<td>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</td>
<td>Switch off machine</td>
</tr>
<tr>
<td>7 Resetting mode</td>
<td>1) Switch off machine  2) Press and hold large coffee button  3) Switch on machine</td>
<td>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</td>
<td>proceeds with self test mode automatically</td>
</tr>
<tr>
<td>8 Power save mode</td>
<td>To enable power save mode:  1) Switch off machine  2) Press and hold both coffee buttons  3) Switch on machine Coffee button LED’s blink 5 times alternatively as confirmation  After that automatically after 30 min of non use</td>
<td>• Reduce thermoblock temperature  • Switch LED indication to power save mode (blinking alternately every 2 sec)</td>
<td>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</td>
</tr>
<tr>
<td>9 Failure mode</td>
<td>Automatically by following failures:  a) NTC short circuit  b) NTC not connected  c) Heat up too slow</td>
<td>Machine indicates failure with coffee button LED’s as long as the failure is present</td>
<td>When failure is fixed</td>
</tr>
<tr>
<td>10 Standby mode</td>
<td>Automatically after emptying mode</td>
<td>• Switch thermoblock off  • Switch LED indication to standby mode</td>
<td>Switch off the machine</td>
</tr>
</tbody>
</table>
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

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".
7) After automatic stop, switch off the coffee machine.

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

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

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.

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.

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.

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.
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.

Keep connectors dry (on platform and at underside of 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.

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

- fH ... French grade
- dH ... German grade
- CaCO\textsubscript{3} ... Calcium carbonate

The Citiz model is shown as example.
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 0.1 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).
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 descaling 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.
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.

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

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)

<table>
<thead>
<tr>
<th>Check</th>
<th>Error symptoms</th>
<th>Measure / repair work</th>
<th>Further measures / repair work</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 Check the coffee machine for visible damage</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Housing parts broken or damaged</td>
<td>YES - replace housing parts if necessary  NO - continue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2 Power cord damaged</td>
<td>YES - replace power cord  NO - connect power cord of machine to the mains and continue</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2 Check mechanical components</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1 Cup support does not remain in vertical position</td>
<td>YES - check if the capsule and waste water container are correctly inserted and mounted  NO - continue</td>
<td>YES - replace damaged or deformed capsule container and/or waste water container.</td>
<td></td>
</tr>
<tr>
<td>2.2 Cup support rattles when folded down</td>
<td>YES - check if 2 rubber stoppers are mounted on waste water container  NO - continue</td>
<td></td>
<td>NO - replace stoppers</td>
</tr>
<tr>
<td>2.3 Closing handle malfunction</td>
<td>YES - it is very difficult or almost impossible to close the handle and to press it all the way down  NO - continue</td>
<td>YES - replace the compact brewing unit</td>
<td></td>
</tr>
<tr>
<td>2.4 Closing handle - unusual noise during actuation</td>
<td>YES - check if damper is mounted underneath closing handle  NO - continue</td>
<td>NO - replace damper</td>
<td></td>
</tr>
<tr>
<td>2.5 Capsule is not ejected correctly</td>
<td>YES - replace brewing unit (TMBU)  NO - continue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.6 Seal on capsule cage is damaged (check seal with your finger)</td>
<td>YES - replace brewing unit (TMBU)  NO - continue</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3 Fill water tank</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1 Water tank leaks</td>
<td>YES - replace water tank  NO - continue</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4 Activate On/Off switch to perform automatic self test</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1 Coffee machine is not working (does not function)</td>
<td>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 with point f)  NO - continue with point d)  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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2 Both coffee buttons are blinking 3x fast</td>
<td>YES - thermoblock is hot  NO - self test ok  NO - replace thermoblock</td>
<td>YES - replace NTC temperature sensor  NO - replace thermoblock</td>
<td></td>
</tr>
</tbody>
</table>
## TROUBLESHOOTING

### 5 Measure coffee temperature during preparation (see page 136)

<table>
<thead>
<tr>
<th>Check</th>
<th>Error symptoms</th>
<th>Measure / repair work</th>
<th>Further measures / repair work</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 No coffee</td>
<td>YES - a) water system is empty</td>
<td>YES - replace self priming device (APD) NO - continue</td>
<td></td>
</tr>
<tr>
<td></td>
<td>YES - b) flow meter blocked</td>
<td>YES - clean or replace NO - continue</td>
<td></td>
</tr>
<tr>
<td></td>
<td>YES - c) pyramide plate blocked</td>
<td>YES - replace the compact brewing unit NO - continue</td>
<td></td>
</tr>
<tr>
<td></td>
<td>YES - d) coffee machine is calcified</td>
<td>YES - descale coffee machine (see page 41)</td>
<td></td>
</tr>
</tbody>
</table>

| 5.2 Temperature is too low (below 83°C) | YES - descale coffee machine (see page 41) |
| 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)

<table>
<thead>
<tr>
<th>Check</th>
<th>Error symptoms</th>
<th>Measure / repair work</th>
<th>Further measures / repair work</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 Compact brewing unit leaks</td>
<td>YES - replace compact brewing unit NO - continue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.2 Hose connections leak</td>
<td>YES - replace defective hoses and seals NO - continue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.3 Rate of flow not in the standard range</td>
<td>YES - coffee machine is calcified NO - continue with point 9 YES - descale coffee machine (see page 41) NO - replace pump</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 7 Descale coffee machine (if necessary)

<table>
<thead>
<tr>
<th>Check</th>
<th>Error symptoms</th>
<th>Measure / repair work</th>
<th>Further measures / repair work</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 Coffee machine is calcified</td>
<td>YES - descale coffee machine (see page 41) NO - continue with point 9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 8 Check water tank contents after descaling and rinsing

<table>
<thead>
<tr>
<th>Check</th>
<th>Error symptoms</th>
<th>Measure / repair work</th>
<th>Further measures / repair work</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1 Particles of calcium and rust visible in water</td>
<td>YES - descale and rinse coffee machine again to clean water circuit (see page 41) NO - continue</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>YES - inform customer to descale coffee machine periodically and to use specified descaling product only.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 9 Final cleaning (see page 38)

<table>
<thead>
<tr>
<th>Check</th>
<th>Error symptoms</th>
<th>Measure / repair work</th>
<th>Further measures / repair work</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 Final cleaning</td>
<td>NO errors found according to check list?</td>
<td>YES - for more information please contact Nespresso Service Division</td>
<td></td>
</tr>
</tbody>
</table>

End of check list
### 7.2 Check list for milk frother

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

End of check list
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.
<table>
<thead>
<tr>
<th>Screw / screw connection</th>
<th>Torque</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screw with oval shaped head</td>
<td>50 (+30/-0) Ncm</td>
<td>Bottom of platform</td>
</tr>
<tr>
<td></td>
<td>0.5 (+0.3/-0) Nm</td>
<td></td>
</tr>
<tr>
<td>TX 10 screw (4 x) / brewing unit (TMBU)</td>
<td>50 (+30/-0) Ncm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.5 (+0.3/-0) Nm</td>
<td></td>
</tr>
<tr>
<td>TX 10 screw / thermoblock support (central)</td>
<td>150 (+30/-0) Ncm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5 (+0.3/-0) Nm</td>
<td></td>
</tr>
<tr>
<td>NTC fixation on thermoblock</td>
<td>80-100 Ncm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.8-1.0 Nm</td>
<td></td>
</tr>
<tr>
<td>TX 20 screw (2 x) / thermo fuse fixations on ther-</td>
<td>150 (+30/-0) Ncm</td>
<td></td>
</tr>
<tr>
<td>moblock</td>
<td>1.5 (+0.3/-0) Nm</td>
<td></td>
</tr>
</tbody>
</table>
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)
2) Short oval bit only (EFR no. 0004878)
3) Disassembly tool (for side panels etc.) (EFR no. 0060611)
4) Repairing/service holder device for models Citiz and Citiz & milk (available from Nespresso)
5) Repairing/service holder device for model Citiz & Co (available from Nespresso)
6) TORX screwdriver (TX10, TX15)
7) Screwdriver with approx. 4 mm tool tip
8) Hexagonal wrench SW 4
9) Flat wrench SW 14, 10 mm AF
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.
Assembly checkpoints

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

- 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

- 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.

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

- 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

- 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).

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

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

- 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.

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

- 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.
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.

- 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).

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

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).
• 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

- 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.
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.
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

- 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.

Both core units can be removed the same way.

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).

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.

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.

---

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

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

- 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).

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

- 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)

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).
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

- 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.

The replacement board is equipped with protective housing and cover.
Replacing button prints / coffee buttons

Assembly checkpoints

- 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.

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

Remove outlet

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

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

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.*
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.*
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).

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
Wiring diagram 220 V - 240 V IEC - model Citiz & Co, EF 487/488
9 FUNCTION TESTS

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

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

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.
FUNCTION TESTS

9.3 Measure flow rate

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

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.

The pressure adapter must sit firmly in the capsule bay.
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

1) Remove left side panel of core unit.
2) Insert core unit back into platform.
3) Fill and insert water tank.

4) Insert connecting unit of pressure adapter into capsule bay. Push back sealing cone into capsule cage.
5) Insert fixation unit of pressure adapter into capsule bay.
6) Press down operating lever.
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.

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.

CppObject The coffee temperature should be 86 °C ± 3 °C (187 °F ± 5.4 °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:

$$ x = \frac{H_2}{H_1} \times 100 $$

Approximate values:

- Direct after preparation: $x = 250$
- 60 sec after preparation: $x = 190$
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.
FUNCTION TESTS

NTC Diagram

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

Measurement table

<table>
<thead>
<tr>
<th>NTC temperature [°C]</th>
<th>NTC temperature [°F]</th>
<th>NTC min. resistance [kOhm]</th>
<th>NTC max. resistance [kOhm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>59</td>
<td>155.63</td>
<td>168.48</td>
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<td>86</td>
<td>76.83</td>
<td>82.12</td>
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<tr>
<td>35</td>
<td>95</td>
<td>60.90</td>
<td>65.86</td>
</tr>
</tbody>
</table>
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
9.8.3 Test sequence

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).

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

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.
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.
FUNCTION TESTS

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
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).

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

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).
FUNCTION TESTS

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

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

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Component</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chassis A</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Chassis B</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Cover A</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Cover B</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Side panel A left Ivory (old: Creamy White)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Side panel A right Ivory (old: Creamy White)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Side panel A left Black (old: Piano Black)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Side panel A right Black (old: Piano Black)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Side panel B left Grey (Slate)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Side panel B right Grey (Slate)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Side panel B left Red (old: Retro Red)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Side panel B right Red (old: Retro Red)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Outlet B spare, containing - Front Cover (1x) - Outlet B chrome (1x)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Outlet A Chrome</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Waste water spare, containing - Waste water A+B (1x) - Cup support stop (2x)</td>
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</tr>
<tr>
<td>7</td>
<td>Capsule Container A+B</td>
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</tr>
<tr>
<td>8</td>
<td>Cup support A</td>
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<td>Blind</td>
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<tr>
<td>10</td>
<td>Damper MBU closing handle</td>
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</tr>
<tr>
<td>11</td>
<td>Espresso Button A</td>
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</tr>
<tr>
<td>12</td>
<td>Coffee Button A</td>
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</tr>
<tr>
<td>11</td>
<td>Coffee Button B</td>
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<tr>
<td>13</td>
<td>Steam Cover</td>
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</tr>
<tr>
<td>14</td>
<td>TMBU Handle A</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>TMBU Handle B</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Thermobloc 230 V Complete assembly incl. support, complete wiring (safety), with NTC</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Thermobloc 120 V (USA) Complete assembly incl. support, complete wiring (safety), with NTC</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Thermobloc 120 V (Brasilien/Taiwan) Complete assembly incl. support, complete wiring (safety), with NTC</td>
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</tr>
<tr>
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<td>Thermobloc 120 V (Mexico) Complete assembly incl. support, complete wiring (safety), with NTC</td>
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<td>Thermobloc 230 V Complete assembly incl. support, complete wiring (safety), with NTC</td>
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<td>Thermobloc 100 V Complete assembly incl. support, complete wiring (safety), with NTC</td>
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</tr>
<tr>
<td>15</td>
<td>Thermobloc 230 V Complete assembly incl. support, complete wiring (safety), with NTC</td>
<td></td>
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<tr>
<td>Pos.</td>
<td>Component</td>
<td>Remark</td>
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<td>------</td>
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<tr>
<td>15</td>
<td>Thermobloc 230 V</td>
<td>Complete assembly incl. support, complete wiring (safety), with NTC</td>
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<tr>
<td>18</td>
<td>Pump 230 V</td>
<td>Incl. thermostat and both wires, pump cover, pump supports, 90° angle. Invensys, no Ceme, no Sysko</td>
</tr>
<tr>
<td>18</td>
<td>Pump 120 V</td>
<td>Incl. thermostat and both wires, pump cover, pump supports, 90° angle. Invensys, no Ceme, no Sysko</td>
</tr>
<tr>
<td>18</td>
<td>Pump 100 V</td>
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<td>Incl. thermostat and both wires, pump cover, pump supports, 90° angle. Invensys, no Ceme, no Sysko</td>
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<tr>
<td>19</td>
<td>Thermostat</td>
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<tr>
<td>20</td>
<td>Clip Thermostat</td>
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<tr>
<td>21</td>
<td>Pump support upside</td>
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</tr>
<tr>
<td>22</td>
<td>Pump support downside</td>
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</tr>
<tr>
<td>23</td>
<td>Pump connector 90°</td>
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<tr>
<td>24</td>
<td>O-ring 5, 28 x 1, 78</td>
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<td>25</td>
<td>Pump cover</td>
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<td>26</td>
<td>APD</td>
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<td>27</td>
<td>Flowmeter FHKSC12 4.5-24VDC, 5-13mA</td>
<td>(Birdy FS: 5.6V, 4-5mA) new standard</td>
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<td>28</td>
<td>Hose Pump - APD</td>
<td>Delivery without o-rings (you can loose them)</td>
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<td>Hose TB - TMBU</td>
<td>Delivery without o-rings (you can loose them)</td>
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<td>Tube guiding</td>
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<td>31</td>
<td>Angle hose FM in</td>
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<td>Connector clip 5mm</td>
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<tr>
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<td>Connector clip 4mm</td>
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<td>O-ring 3.40 x 1.90</td>
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<td>37</td>
<td>Hose connector 55°</td>
<td>Also part of TB spare assembly</td>
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<td>38</td>
<td>Isolation spout angular</td>
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<td>NTC (Cable length =160 mm)</td>
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<td>PT Screw Torx K30 x 12</td>
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<td>41</td>
<td>PT Screw Oval K30 x 12</td>
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<tr>
<td>42</td>
<td>Electronic Control Board M1+3 220-240 V 50/60 Hz</td>
<td>Incl. housing</td>
</tr>
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<td>Electronic Control Board M1+3 120-127 V 50/60 Hz</td>
<td>Incl. housing</td>
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<td>Electronic Control Board M1+3 100-110 V 50/60 Hz</td>
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<td>42</td>
<td>Electronic Control Board M4 220-240 V 50/60 Hz</td>
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<td>Water tank 1</td>
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<td>Water tank 1 cover</td>
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<td>Water tank 4 cover</td>
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<td>46</td>
<td>Drip tray 1</td>
<td>Nespresso (inc. rubber feet)</td>
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<td>Drip tray 1</td>
<td>Krups (inc. rubber feet)</td>
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<td>Drip tray 1</td>
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<td>Rubber feet (Drip tray 1)</td>
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<tr>
<td>50</td>
<td>Base plate 1 top</td>
<td>Inc. rubber feet</td>
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<tr>
<td>50</td>
<td>Base plate 3 top</td>
<td>Inc. rubber feet</td>
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<td>Base plate 4 top</td>
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<td>Base plate 3 bottom</td>
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<td>Inc. rubber feet</td>
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<td>Water tank connector 1</td>
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<td>ON/OFF switch incl. support (spare parts)</td>
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<td>Power supply cord JP 2pol</td>
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<td>Aeroccino 3 220-240 V 50/60 Hz</td>
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<td>Aeroccino 3 120-127 V 50/60 Hz</td>
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<td>60</td>
<td>Mixer (hot milk)</td>
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<td>61</td>
<td>Whisk (foam)</td>
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<td>Aeroccino Lid incl. seal</td>
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