

Service  
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Philips Consumer Lifestyle

# Service Manual

## PRODUCT INFORMATION

### Safety

- This product meets the requirements regarding interference suppression on radio and TV.
- After the product has been repaired, it should function properly and has to meet the safety requirements as officially laid down at this moment.

## TECHNICAL INFORMATION

- Voltage : 220 - 240 V
- Frequency : 50 Hz
- Power consumption : 2450 W
  - Boiler : 1450 W
  - Thermo block : 1200 W
- Color setting : Pearl Silver
- Dimensions (WxDxH)
  - Appliance : 210 x 315 x 290 mm
  - F-Box : 285 x 390 x 334 mm
- Materials
  - Housing : PA, PP, ABS
  - Spout, collector : PP
  - Water container : PP
  - Drip tray : ABS
- Stand-by power consumption : <0,5 W
- Brewing pressure : < 1,6 Bar
- Steam pressure : < 1,0 Bar
- Water container capacity : 1,0 L
- Auto shut-off time : 15 min
- Volumes and recipes, see table:

## General Coffee and Milk specifications:

In-cup volume (in mL)	Black coffee		Milk recipe		
	Normal	Strong	Cappuccino	Latte Macchiato	Café Latte
General WEU version	122*	60*	160*	220*	190*
France specific version	100*	60*			

\* Influenced by personal coffee preference, to be programmed by the consumer plus or minus 37% of the indicated values.

Temperature indication (in °C) **	Black coffee		Milk recipe		
			Cappuccino	Latte Macchiato	Café Latte
General WEU	>74	>72	>69	>63	>67
France Specific					

## Measurement specifications:

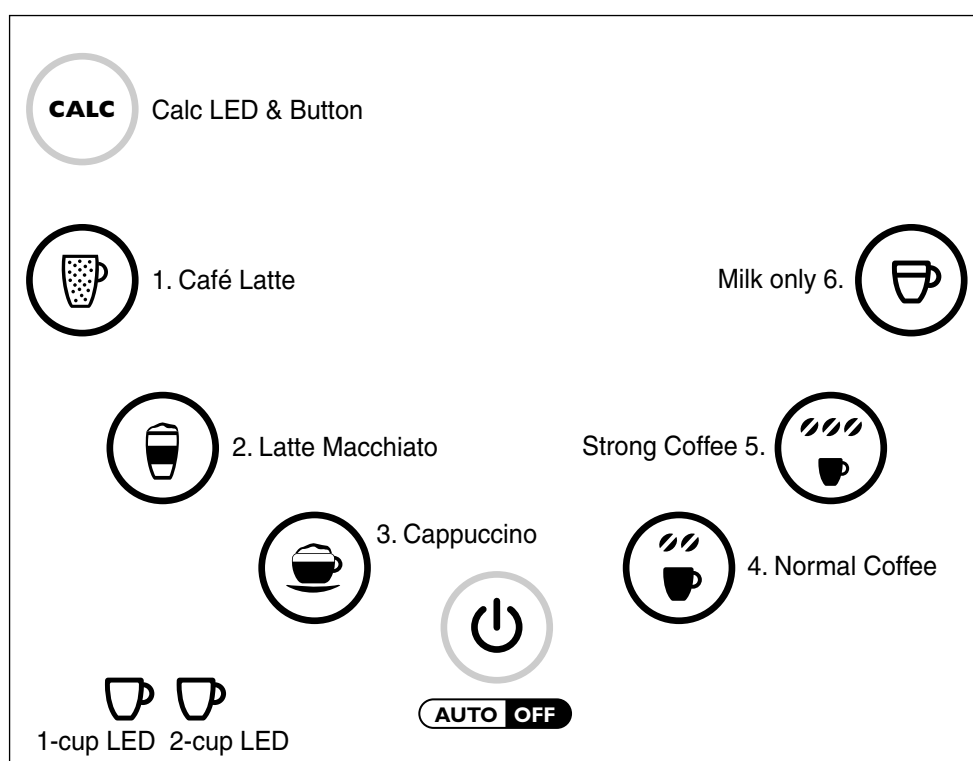
Water spec ** (without pod, in mL)	Black coffee		Milk recipe		
	General WEU	France Specific	Coffee (water)	Milk (water)	Total (water)
1-cup (with 1-cup podholder)	133 ± 10	111 ± 10	72 ± 10	68 ± 10	140 ± 10
2-cups (with 2-cups podholder)	2 x 133 ± 10	2 x 111 ± 10	2 x 72 ± 10	2 x 68 ± 10	2 x 140 ± 10

Temperature indication water ** (in °C)	General WEU	France Specific
	>74	>72

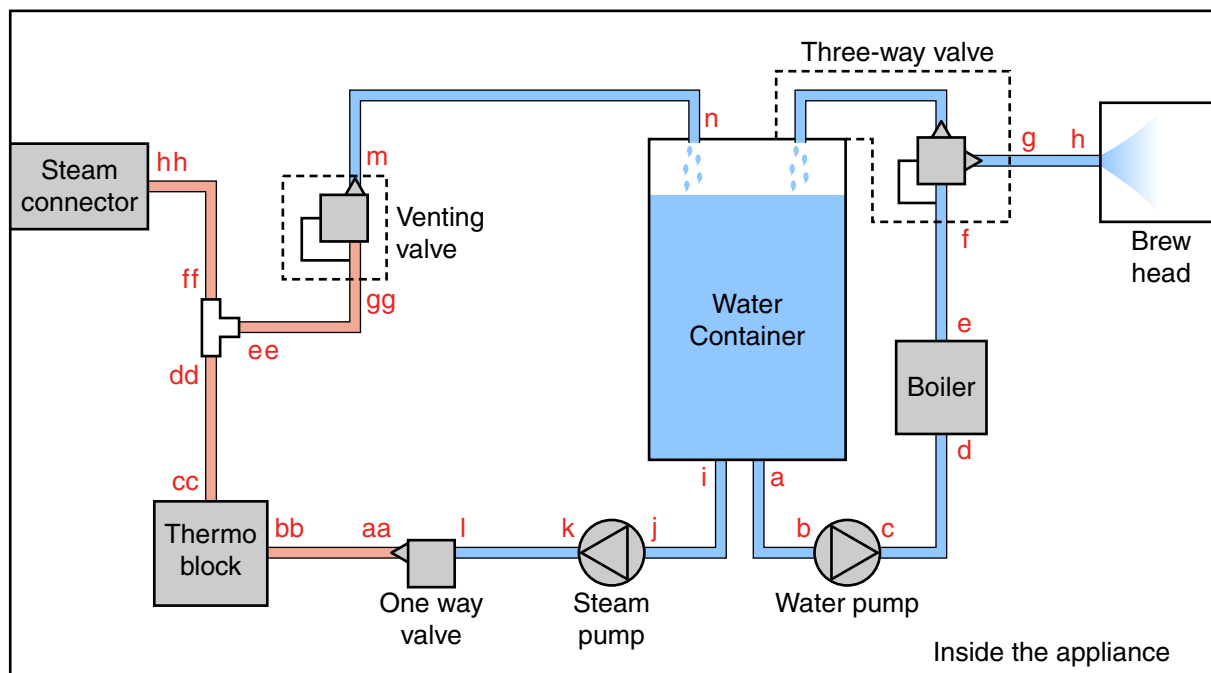
\*\* Only valid for the default personal coffee preference setting

**Note:** Please note that the HD7857 and HD7858 models are equipped with a personal preference for each recipe. Make sure to select the default setting. (Press CALC button + recipe to change, for 2 seconds, until the appliance beeps. To select default volume press the Milk only button 6. Next the appliance proceeds to make the desired recipe.)

## Capacitive User interface layout



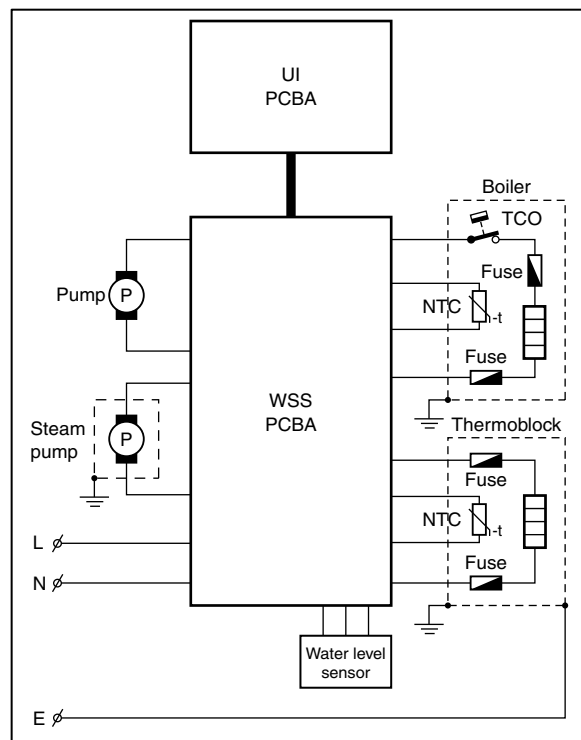
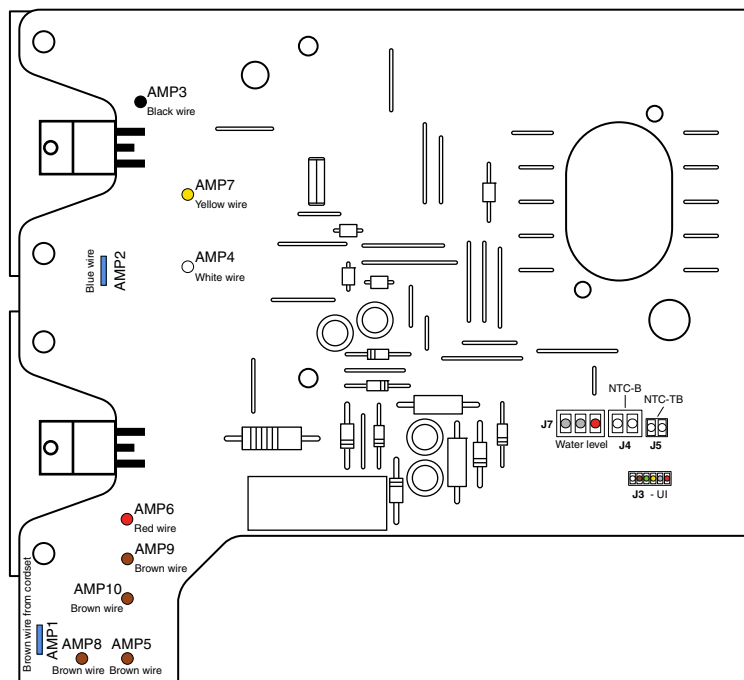
# Hydraulic flowchart



Legend:

- Low pressure tube
- High pressure tube
- a - n Low pressure connections
- aa - hh High pressure connections

# PCBA layout and functional schematic



**Tools**

Tools required for repair and diagnostics are:

- Flathead screwdriver #0, #2
- Torx screwdriver (T15)
- Cutter
- Cable tie tightening tool
  
- Digital Multimeter
  - Fluke 116 or comparable device with a base accuracy for temperature of 0,05 % or  $\pm 0,3$  °C Temperature probe 80PK-22 (80AK-A Thermocouple adapter required)
- Scale
  - KERN EMB 500-I or comparable device with a base accuracy of 0,05 % or  $\pm 0,5$  g
- Power meter
  - Voltcraft EnergyCheck 3000 or comparable device with a base accuracy of 1 % or  $\pm 5$ W
- Stopwatch
  - Basic model

**Note:** All measurement devices need to be calibrated, certified and traceable to the international standards/laboratories.

## DISASSEMBLY- AND RE-ASSEMBLY ADVISE

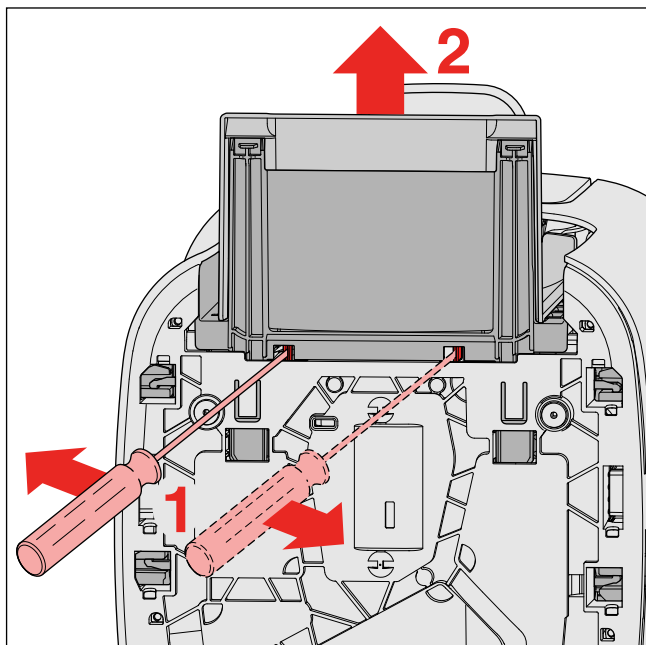
Remove all loose parts like Drip tray, water container and pod-holders.

### Remove the back cover.

- Remove the four Torx screws (A) (T15) from the back cover.
- Carefully unhook the back cover from behind the both side covers.
- Use a flathead screwdriver to undo both snap hooks on either side of the back cover
- The back cover can now be tilted forward.
- Two hoses are still connected to the water container socket, they can be removed for easy access.

### Remove the front cover.

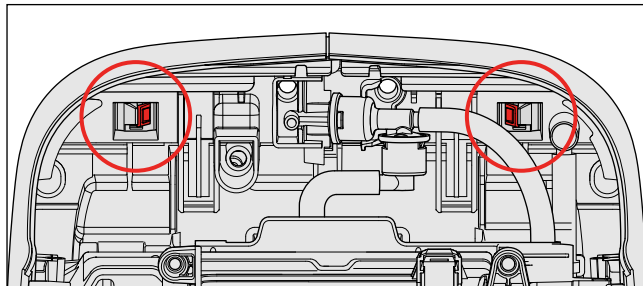
- Place the appliance on its backside, to be able to reach the underside.
- Use a flathead screwdriver to undo both snap hooks.



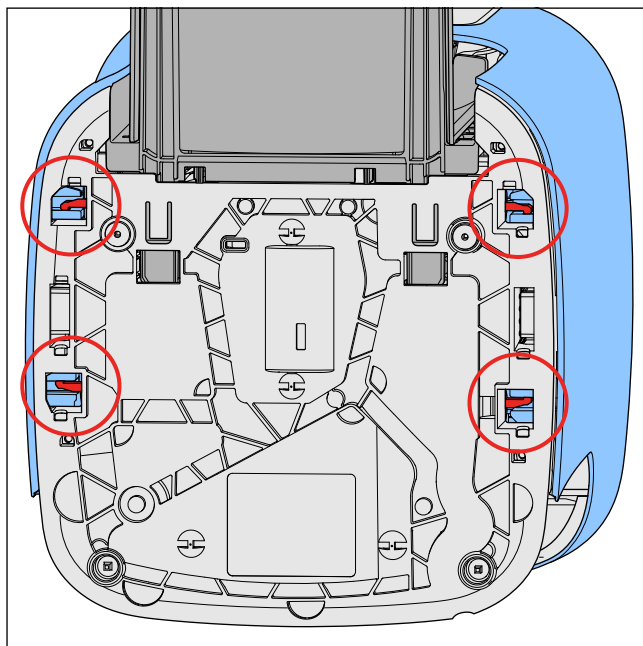
## HD7857/20/B / HD7857/21/B

### Remove the side covers.

- To be able to remove the side covers the top cover surrounding the lid needs to be removed, to do this two snap hooks need to be undone, they can be reached via the opening of the back cover.
- Unlatching the hooks needs some force, once undone you need to open the brewchamber to be able to completely remove the top cover.



- Unscrew both screws (B) on top side of the appliance, they were previously covered by the top cover.
- Place the appliance on its backside, now you can undo the snap hooks (two on either side), then you can remove the side panels.



With all covers removed you are able to reach all main components:

- Pump
- Boiler
- Steam pump
- 3-way valve
- Thermo block fuses
- Brew head

## DISASSEMBLY- AND RE-ASSEMBLY ADVISE

### Remove the brewhead.

- Unhook the 3-way valve from the Brew chamber back frame and undo the hose from the 3-way valve to the brew chamber.
- Unhook the boiler from the boiler support on the Brew chamber bottom.
- The Brew head can now be tilted forward and removed from the appliance.

### Remove the PCBA

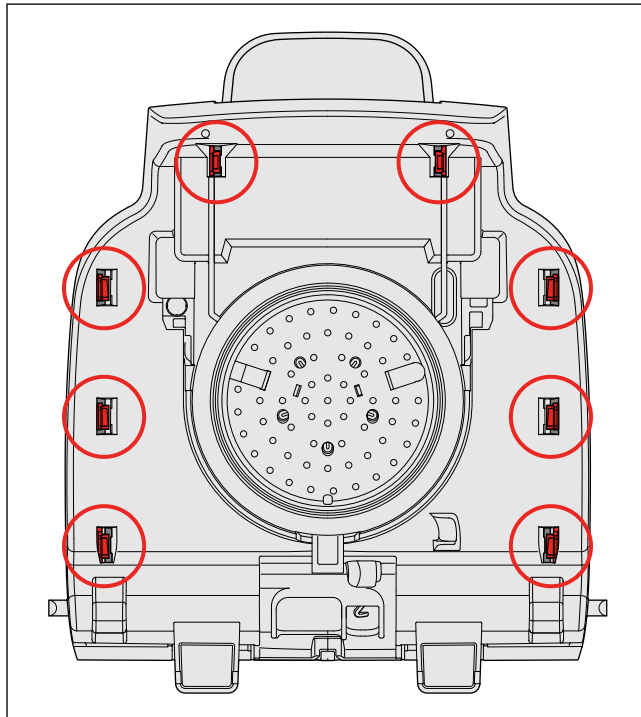
- To be able to remove or replace the PCBA it is the easiest to open the appliance up until you have the Brew head removed.
- Carefully unplug all connectors on the lower right side of the PCBA for the NTC's, Brew head switch and water level sensor.
- Disconnect the Brown and Blue lead from the Cordset on the left side of the PCBA
- Undo all fixed leads from their routing through the frame. They are going to: Boiler, Thermo block, Steam pump and Water pump.
- The PCBA is held in place by one screw (E) in the center of the PCBA.

### Open the brew head lid

- To be able to open the lid of the brew head, remove the front, back and side covers.
- Disconnect the UI cable from the Main PCBA (J3) to the brewhead, and undo its routing through the inner frame.
- Undo the hose from the 3-way valve to the brew head.
- Use a flathead screwdriver to unhook one side of the hinges of the brew head lid. Carefully feed the hose and cable through the frame.

## HD7857/20/B / HD7857/21/B

- To open the lid, undo the eight snaphooks holding the lid in place. To be able to remove the lid completely the lever needs to be in the Open position (flipped up).



**Note:** Please make very sure that all wires you have undone will be put back properly and with the same routing as they have originally been designed.

**Note:** Any tie-wrap that has been cut must be replaced by a new one as specified on the Parts list, and tightened with a force of 115 N.

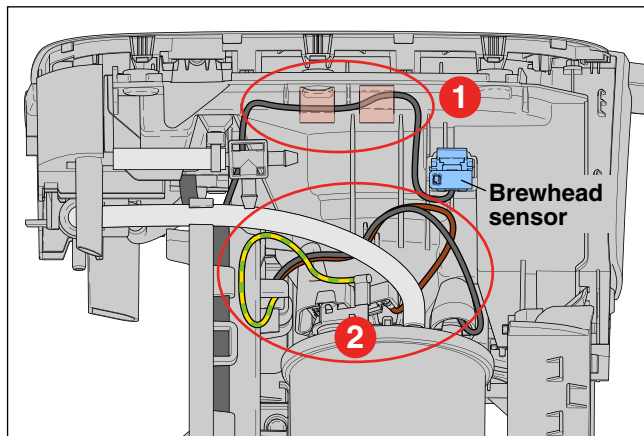
## REPAIR INSTRUCTION

### Boiler / Brew chamber

1. Brewhead sensor wire must be taped as far away from the boiler wires as possible. (EMC)

**Brewhead sensor + wiring removed production week 1506 onwards.**

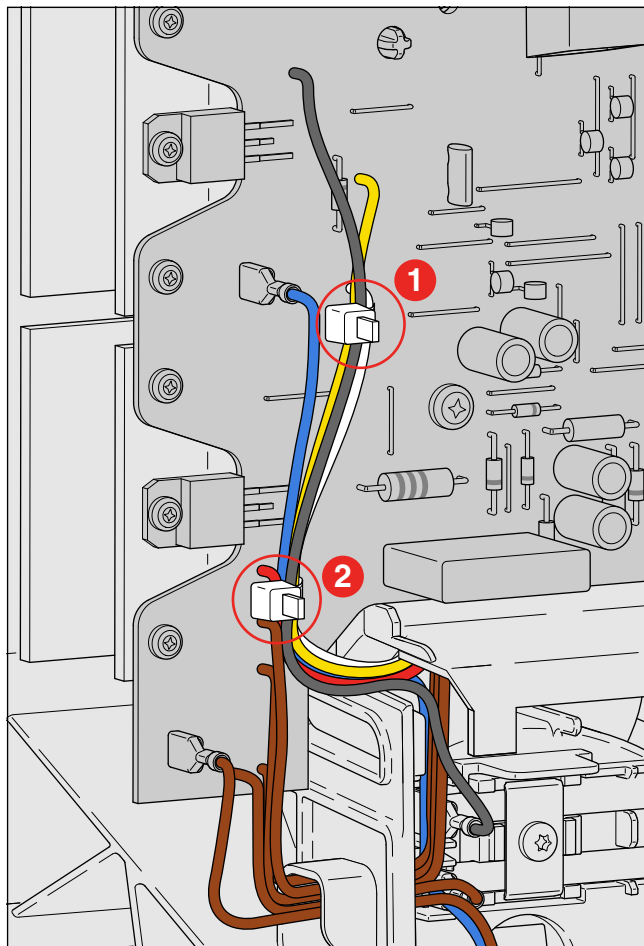
2. Boiler wires over the boiler, not behind or in front of the boiler. (Safety)




### PCBA – Ty wraps

After PCBA replacement:

1. Ty-wrap Black, Yellow and White lead close to the connection of the white lead on the PCBA. (Safety)
2. Ty-wrap Black, Yellow, White, Blue and Red lead close to the connection of the red lead on the PCBA. (Safety)

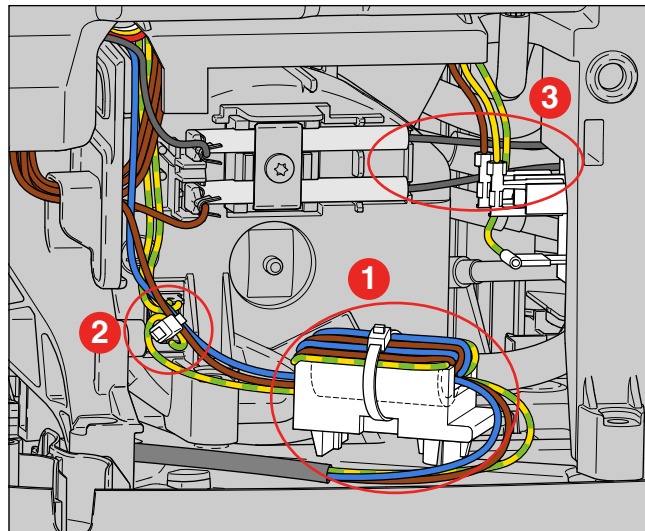


 = changed

## HD7857/20/B / HD7857/21/B

### Cordset, Earthwire and Thermoblock

1. Ferrite bead must be in place and ty-wrapped to filter out interference. (EMC)
2. “Clean” Brown and Blue wire must be ty-wrapped to Earth-wire close the Thermo-block. Earth-wire must be as far away from the cord-set as possible. (EMC)
3. Two Black fuse-wires to Thermo-block must run horizontal to the right, running behind the Steam-pump. (Safety)



### Descaling

Scale builds up inside the machine during use. It is essential to descale the SENSEO® coffee machine when the CALC light goes on. If the descaling procedure is not performed correctly, scale residue remains behind in the machine. This causes scale to build up more quickly and may cause permanent and irreparable damage to the machine.

Use the correct descaling agent Use SENSEO® Descaler (HD7012, HD7011, HD7006) only. It has been developed to ensure better machine performance and operation. Never use a descaling agent base on mineral acids such as Sulphuric acid, Acetic acid (vinegar) or Hydrochloric acid. These descaling agents may damage your SENSEO® coffee machine.

For detailed instructions please refer to the Directions for Use, Chapter Descaling.

## HD7857/20/B / HD7857/21/B

### Volume adjustment

**Note:** Volume adjustment may only be carried out in case the repair technician is sure there is no other underlying cause (e.g. leakage, incorrect voltage settings etc.) for the deviation in volume from the factory default.

#### How to adjust the volume output:

1. Make sure the boiler is filled properly, otherwise perform the Flush before first use procedure, according to the instructions in the DFU
2. Switch the appliance on, and wait until the unit is ready.
3. Place either the 1-cup or the 2-cup pod holder in the appliance **without** a coffee pod.
4. Calibrate a scale with the cup you are going to use for the measurement.
5. Press the Normal coffee button once, to make a normal cup of water. (when finished also pour the contents of water left in the pod holder into the cup)
6. Measure the output and compare to the specifications on Page 2.
7. Determine the deviation from the specification, the deviation can be adjusted in steps of 3,5 mL. The deviation divided by 3,5 will tell you how many steps you need to in-, or decrease.
8. Follow the steps as mentioned under Service modes - Manual pump calibration to re-calibrate the pump.
9. Measure the newly programmed volume.



**Service modes**

The appliance is equipped with a dedicated service mode. The service mode enables you to carry out some settings and tests.

Please note, as the appliance is equipped with a capacitive touch panel as a user interface, special attention is required to be able to enter several service modes. The capacitive buttons need 0,5 seconds to initialize after the mains is connected. During this timeslot the capacitive buttons must not be touched, otherwise you will not be able to enter the service modes.

**• Manual pump calibration****Calibration-step 0: Entry to calibration mode**

1. Connect mains;
2. After 0.5 second and before 1.5 second operate Button 2 and Button 5 simultaneously.  
On/off LED will be switched ON.
3. Release all switches.  
On/Off LED will be switched OFF.

**Calibration-step 1A: Decrease calibration value**

1. Push (and release) button 2 to decrease the calibration value.  
The On/Off LED will be ON for 0.5 seconds.
2. Repeat step 1A.1 when required.

**Calibration-step 1B: Increase calibration value**

1. Push (and release) button 5 to increase the calibration value.  
The On/Off LED will be ON for 0.5 seconds.
2. Repeat step 1B.1 when required.

**Calibration-step 2: Store calibration value**

1. Operate the On/Off button.  
On/Off LED will blink fast for 1.0 seconds and the calibration value is stored.
2. Release all switches  
The On/Off and I-cup LED will be OFF

**Calibration-step 3: End mode**

1. Disconnect mains → End test program

## • Sensor & LED test

To validate the assembly and electrical correctness of an appliance, especially during testing and debugging phase, a sensor and LED test is very useful. Please keep in mind that it is not an automated test and only intended as indication.

### Test-step 0: Entry to test mode

1. Connect mains;
2. After 0.5 second and before 1.5 second operate Button 2, On/Off button and Button 5.
3. Release all switches.
4. All LEDs will be ON for 1.0 seconds and after that switch to OFF again.

### Test-step 1: Button identification

1. Manually operate a button.  
The related LED - refer to the table below - will be ON.
2. Release the button.  
The related LED - refer to the table below - will be OFF.

Sensor	LED	LED on	LED off
Decal button	Decal LED	Button pressed	Button released
Button 1	1-cup LED	Button pressed	Button released
Button 2	1-cup LED	Button pressed	Button released
Button 3	1-cup LED	Button pressed	Button released
On/Off button	On/Off LED	Button pressed	Button released
Button 4	2-cup LED	Button pressed	Button released
Button 5	2-cup LED	Button pressed	Button released
Button 6	2-cup LED	Button pressed	Button released

### Test-step 2: Entry sensor mode

1. Operate Button 2, On/Off button and Button 5.
2. Release all switches
3. All LEDs will be ON for 1.0 seconds and after that switch to OFF again.

### Test-step 3: Sensor identification

1. Manually operate a sensor.  
The related indicator - refer to the table below - will be activated.
2. Release the sensor.  
The related indicator - refer to the table below - will be deactivated.

Sensor	LED	LED on	LED off
NTC Boiler	On/Off LED	NTC error	NTC OK
NTC Thermo block	Decal LED	NTC error	NTC OK
Water level sensor	1-cup LED	Water present	Water low or no water present

### Test-step 4: End test

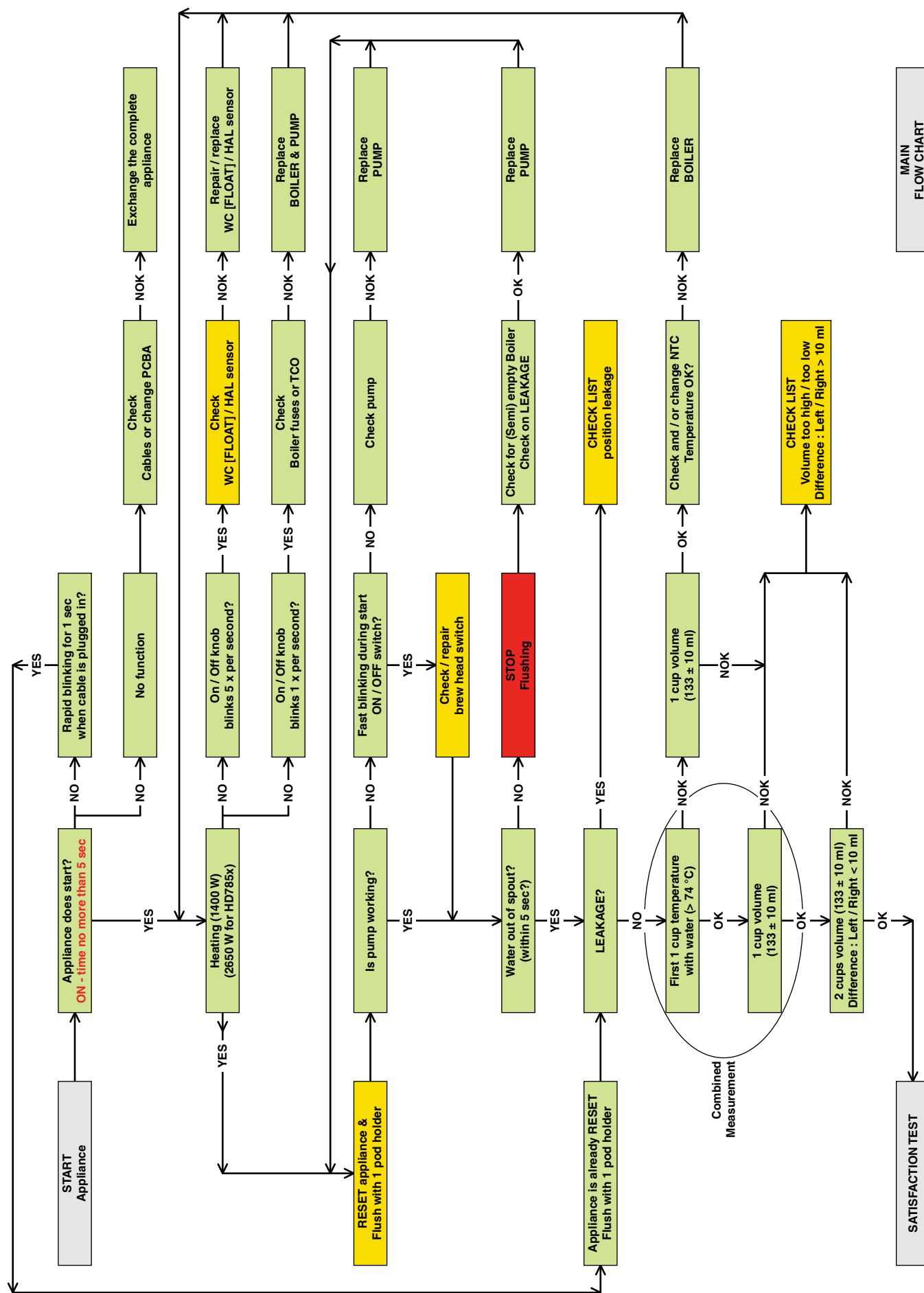
1. Disconnect mains → end test program

## • Boiler reset

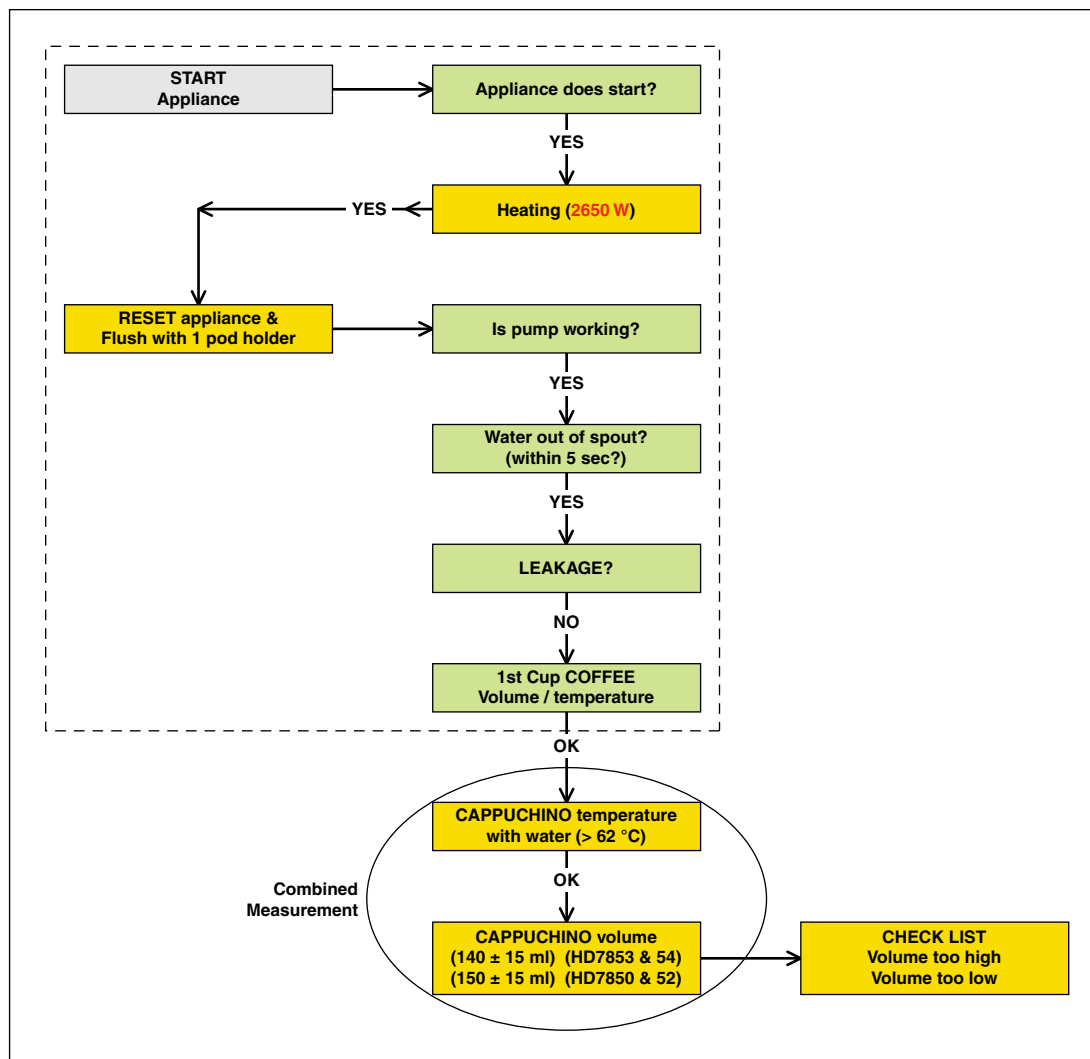
### Boiler reset-step 0: Entry to boiler reset mode

1. Connect mains.
2. After 0.5 second and before 1.5 second operate Button 3 and Button 4.
3. Release all switches  
The On/Off LED will blink fast for 0.5 second.

## Functional test diagram for milk-based appliances



## Additional functional test for milk recipe volume and temperature



**Note:** For all “action” boxes marked in **yellow** please refer to the latest version of the Senseo Repair Process.

**Note:** For new repair engineers it is advisable to start with the complete Senseo Repair Process, your contact in the Global Consumer Care organization can provide this to you.

Pos	Service code	Description	Remark
I	4222 259 5929I	Milk Frothing Unit (MFU) assy	Bright chrome / Star white
I10	4222 259 5651I	MFU spout cover	Chrome
I20	4222 240 60792	MFU lock	
I30	4222 247 71392	Setting chamber	
I40	4222 247 7134I	Steam nozzle assy	Star white
I50	4222 247 71372	Receptor house	
I60		MFU bottom cover	Star white
2		Milk hose assy HE	White
210	4222 259 5652I	Milk hose	White
220	4222 259 6067I	Riser pipe	White
3	4222 259 4421I	Pad holder assy	I-cup
4	4222 259 4422I	Pad holder assy	2-cup
5	4222 247 61280	Collector	
6		Coffee spout assy	Cashmere grey / Star white
610	4222 247 72142	Coffee spout cover	Star white
620	4222 247 71412	Coffee spout	Cashmere grey
8	4222 247 7217I	Drip tray cover	Cashmere grey
9	4222 247 71082	Drip tray	Star white
10	4222 259 5643I	Water container (WC) assy	Translucent
1010		Float spring	
<b>1012</b>		<b>Float spacer</b>	
1020		Float assy	
1030		Valve seal	
1040		Valve spring	
1050		Valve rod	
11	4222 247 71063	Top cover	Star white
12	4222 259 5641I	Back cover assy	Star white
1210		WC sealing	
1220		Filter	
1230		WC socket	
13	4222 247 59473	Housing Sensor Water level	
14	4222 259 5648I	Sensor Water level	
15	4222 259 5928I	Side panel Left	Pearl silver
16	4222 247 71022	Frame	Star white
17	4222 247 7107I	Front panel	Star white
18	4222 259 5927I	Side panel Right	Pearl silver
21	4222 259 5663I	Steam outlet assy	Cashmere grey
2110	4222 247 07942	O-ring	
22	4222 247 72163	BC back frame	
23	4222 259 5955I	3-way valve (3WV)	
24	4222 247 71052	PCB cover	

Pos	Service code	Description	Remark
25	4222 259 59266	Brew chamber (BC) assy	Star white / Cashmere grey, 6 pin connector
2510		Top lid assy printed	White
2520	4222 259 60431	Lever assy	Transparent White
2530	4222 247 61310	Push rod	
2540		Hose 3WV - BC	
2550	4222 240 01410	Slider spring	
2560	4222 247 71242	Lid frame	Dark grey
2570	4222 240 05990	Ejector pin	
2580	4222 247 06810	BC seal	
2590	4222 247 41920	Distribution disk	
25100	4222 240 01453	Lid spring	
25110		BC bottom	Cashmere grey
25120	4222 259 56381	MFU guidance assy	Cashmere grey
26	4222 247 61940	TCO cap	
27	4222 247 43690	Boiler pin cover	
28	4222 259 41620	NTC assy	
29		Hose B - 3WV	
30	4222 259 52091	Boiler v70	230V
31	4222 247 05134	O-ring (NTC)	
32		Thermoblock assy	230V 50 Hz
3210	4222 259 59231	Venting valve (VV)	
3220		Hose TP - VV	
3221		<b>Hose OV - TB</b>	
3222		Hose TB - TP	
3223		Hose TP - Steam outlet	
3230	4222 247 72081	T-piece (TP)	
3240	4222 259 41870	Fuse assy welded	1 piece
3250	4222 259 41750	Thermoblock (TB)	230V 50 Hz
33		Inner frame assy	
3310	<b>4222 259 60311</b>	WSS PCB assy HD7857	6 pin connector
3320		Clamp	
3330	4222 247 70981	Boiler support	
3340	4222 247 07891	Hose WP - B	
3341		<b>Hose VV - WC</b>	
3342		<b>Hose SP - OV</b>	
3343		<b>Hose Inlet - SP</b>	
3344	<b>4222 247 71473</b>	<b>Hose connector WP</b>	
3345		<b>Hose Inlet - WP</b>	
3360	<b>4222 259 60371</b>	<b>One way valve (OV)</b>	
3370	4222 259 41230	Steam pump (SP)	CEME E151
3371		Damper SP	

**PARTS LIST****HD7857/20/B / HD7857/21/B**

Pos	Service code	Description	Remark
3380	4222 259 56571	Earth wire assy	
3390	4222 259 37240	Pump (WP)	230V 50 Hz
3391	4222 247 04992	Damper WP	
3392	4222 240 06771	Spring WP	
33100		Inner frame WSS	
33110		Inner frame WP	
34	4222 247 72153	Base plate	Cashmere grey
35	4213 247 05256	Foot	
100	4222 244 50680	Ty-wrap	
101	4222 244 50692	Ty-wrap B	

