Service Manual : New Gaggia Accademia

Rev.00 01/09/2022

TYPE	SUP	12NC	DESCRIPTION
RI9781/01	SUP052	886978101010	GAGGIA NEW ACCADEMIA GLASS BK 230V
RI9781/46	SUP052	886978146540	GAGGIA NEW ACCADEMIA GLASS BK 120V

Published by Gaggia.

Subject to modification

PROUDLY MADE IN ITALY

GAGGIA NEW ACCADEMIA

Technical specification	
ON/OFF button:	To switch the machine on or off, by keeping the button pressed for a few seconds.
Power supply and output:	230V ~ 50Hz 1900W / 120V ~ 60Hz 1300W
Power consumption:	During heating phase- approx. 8,4A (230V); 12,2A (120V)
Boiler: Stainless steel	230V ~ 1900W / 120V ~ 1300W for coffee, hot water and steam dispensing
Safety system:	2 thermostats at 190°C one shot
Temperature monitoring:	(NTC) variable resistor sensor - transmits the value to the electronic board
Automatic dosage:	Dose adjustment controlled by the electronic system
Gear motor:	2 rotation directions; power supply 24VC
Coffee grinder	Direct current motor with flat ceramic grinder blades
Pump:	Ulka Type EP5FMGW 230V-50Hz 48 W/ EFP5/S 120V-60Hz 52 W approx. 13-15 bar with reciprocating piston and thermal switch 120°C.
Overpressure valve:	Opening at approx. 16-18 bar
Water circuit filling time:	Approx. 15 sec Max. on first filling cycle
Heating time:	Approx. 45 sec.
Grinding time:	Approx. 8-10 sec.
Auto shut off time:	Can be set by the consumer
Adjustable spout height:	80-120 mm.
Housing material	Thermoplastic material and glass finishes
Size (w x h x d)	280 x 380 x 440 mm
Weight	14,20 kg
Power Cord length	1200 mm
Cup size	Up to 110 mm with coffee dispenser, 155mm without it.
Water tank	1,6 litres
Water fileter	Brita Filter 12NC-996530010484(RI9113/60 for EUR-ASIA) / 12NC-996530010528(RI9113/67 for US-CAN)
Coffee bean hopper capacity	350 g
Coffee grounds drawer capacity	13-14 pucks
Milk carafe capacity	0,5 l
Energy Efficiency Label	B
Energy saving mode consumption	< 0,5 Wh
Pump pressure	15 bar
Boiler	Stainless steel type
Safety devices	2 Thermostat Open/Close 190°C/-35°C
Nominal voltage - Power rating – Power supply	Data stored on the below label placed inside the service door

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CHAPTER 1

INTRODUCTION

1.1. Specific tools and equipment

As well as the standard equipment, the following is required:

12NC	Description	Notes
-	Flathead screwdriver	# 0, # 2
-	Torx screwdriver	(T10,T20)
-	Cutter	
-	Cable tie tightening tool	
-	Pliers for Oetiker clamps	
-	Digital Thermometer	Type K (accuracy for temperature of 0,05 % or ± 0,3°C)
-	Temperature probe	80PK-22 (80AK-A Thermocouple adapter required)
-	Scale	KERN EMB 500-1 or comparable device with a base accuracy of 0,05 % or ± 0,5 g
-	Power meter	Voltcraft EnergyCheck 3000 or comparable device with a base accuracy of 1 % or ± 5W
-	Stopwatch	Basic model
996530009845	Serkit	Tool needed for programming with our service tool

1.2. Maintenance Products

12NC Code	Material	Description
-	Thermal paste	Heat resistance > 200°C
996530067222	Descaler	"ACC SAE DECALCIFIER 5 L 1 UNIT"
996530045784	Silicone grease	"ACC TUBE FIN FOOD GREASE 2 400 ML"

1.3. Safety warnings

Please, read the Service manual of the machine before starting any maintenance.
Operation, maintenance and/or repair of this device has to be carried out only by qualified persons, trained for work at or with electric devices.

The technicians to operate under safety conditions, needs to:
1. Use personal safety devices;
2. Disconnect the appliance from the power mains before repairing;
3. Before and after repair, it is recommended to perform dielectric strength tests (This domestic appliance is rated as insulation class 1).

During the machine disassembly the operator has to pay attention to hot and under pressure parts.
All parts involved can be find in the hydraulic circuit below schema.
The machine hydraulic circuit can reach maximum pressure of 16/18 bar.

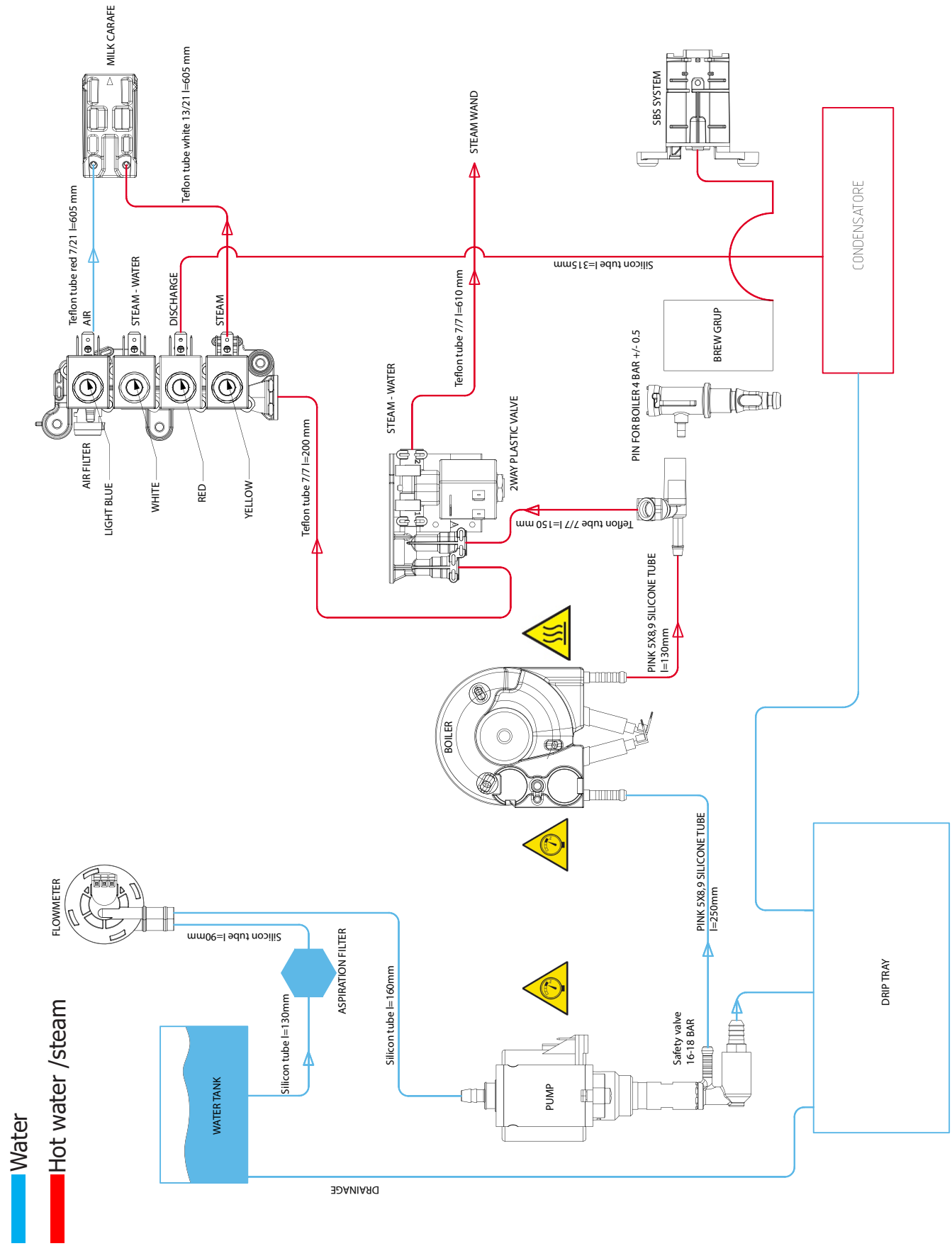
When the machine arrives at the Service Center in descaling mode interrupted, or making Descaling , take EXTREME CARE to avoid any unintentional contacts with the descaler.

After the product has been repaired, it should function properly and has to meet the safety requirements and legal regulations as officially laid down at this moment.

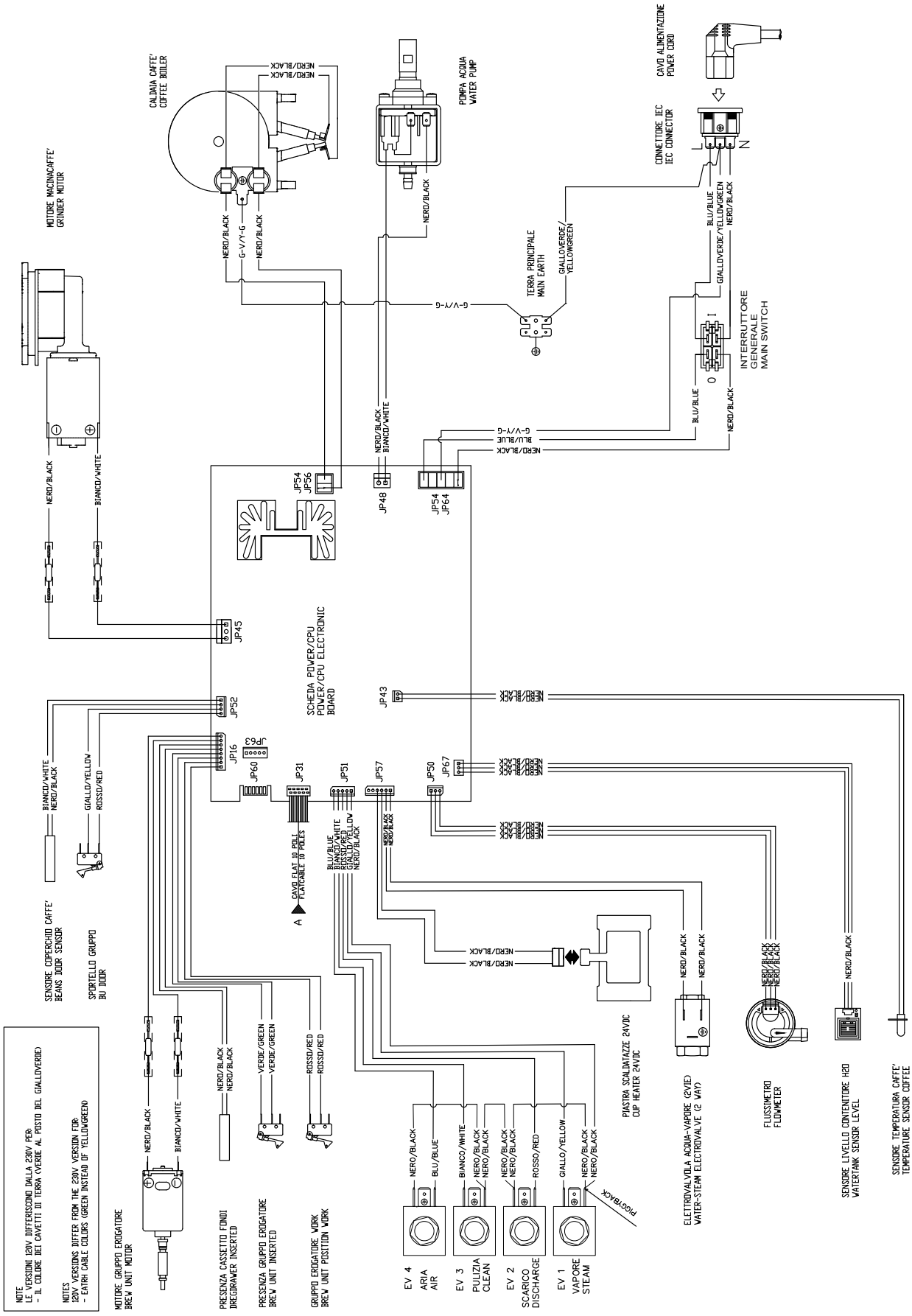
1.4. Water circuit diagram

From this point circuit in pressure

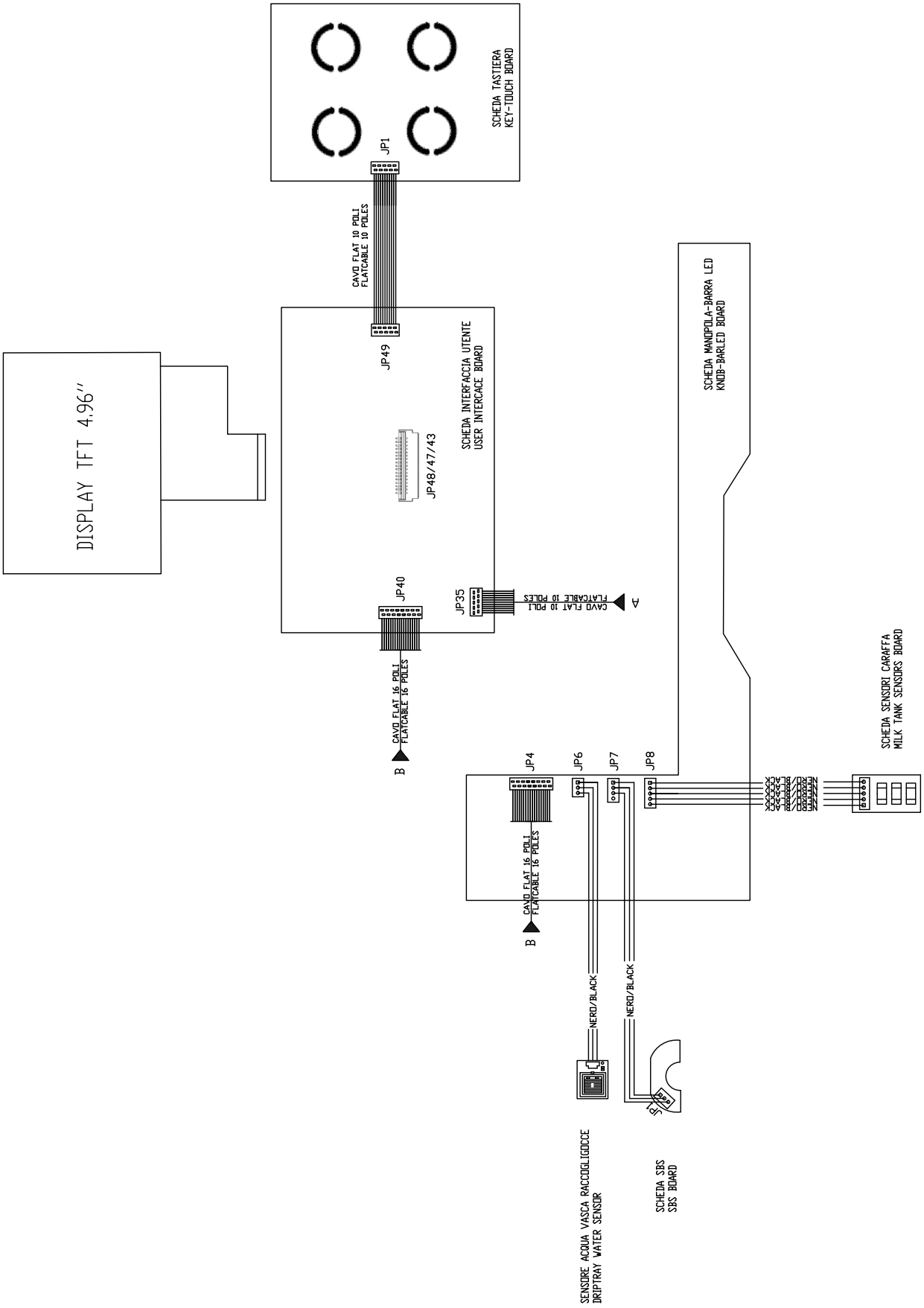
From this point circuit High temperaure



1.5. Electrical diagram Power CPU



Electrical diagram User Interface Board

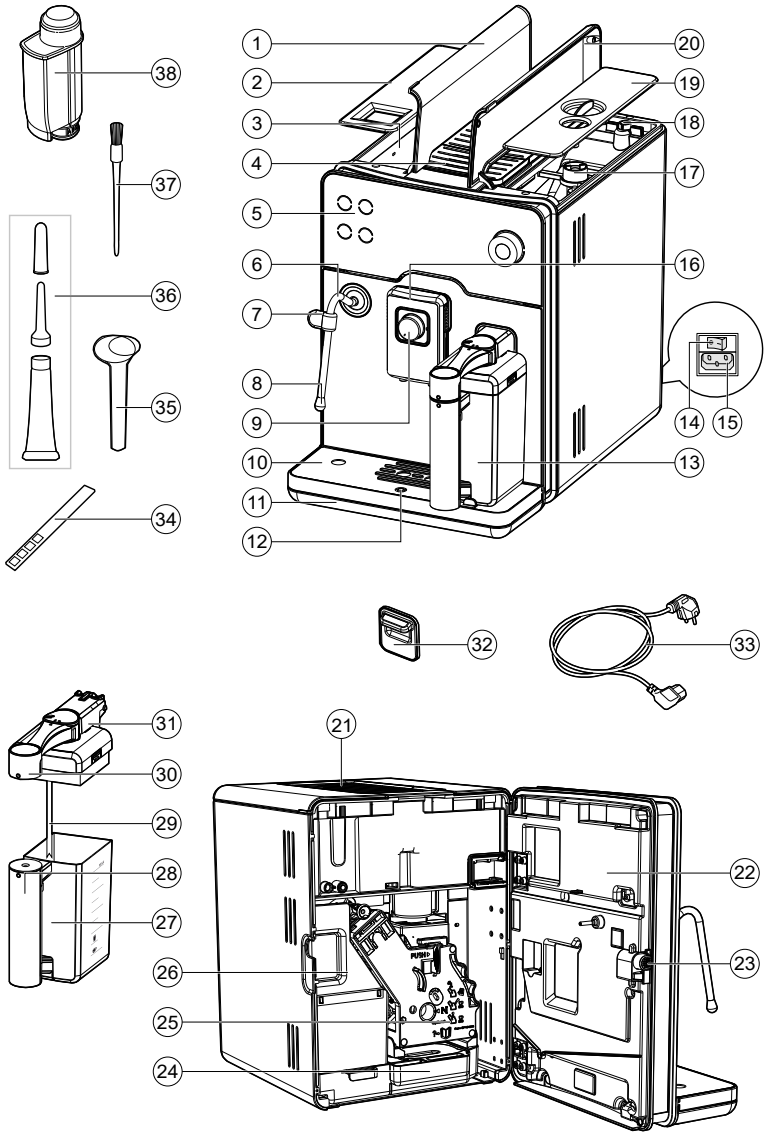


1.6. Service POLICY grid as used for coffee machine

During the repair is always recommended to use, if possible, single parts rather than the correspondent assembly.

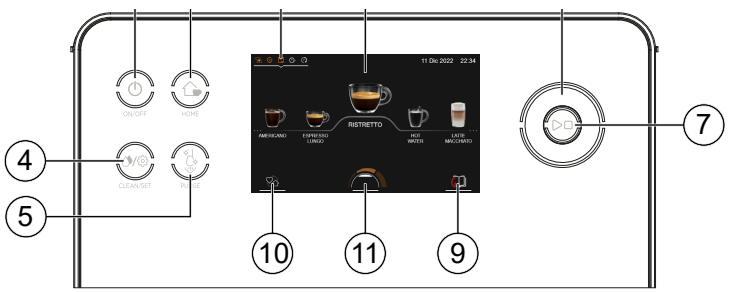
1.7. External machine parts

1	Water tank lid
2	Water tank inner lid
3	Water tank
4	Pre-ground coffee compartment
5	Control panel
6	Steam wand
7	Steam wand handle
8	Steam wand nozzle
9	Espresso Plus System
10	External drip tray grid
11	External drip tray
12	Full drip tray indicator
13	Milk carafe
14	Power button
15	Power cord socket
16	Adjustable coffee dispensing spout
17	Coffee grinder adjustment knob
18	Coffee bean container
19	Aroma lid
20	Coffee bean container lid
21	Cup warmer
22	Service door
23	Service door opening button
24	Internal drip tray
25	Brew group
26	Coffee pucks container
27	Milk container
28	Carafe handle
29	Milk suction hose



30	Carafe dispensing spout	33	Power cord	36	Lubricant
31	Milk dispensing unit	34	Water hardness measuring strip	37	Cleaning brush
32	Carafe coupling cover	35	Pre-ground coffee measuring scoop	38	Water filter

Display

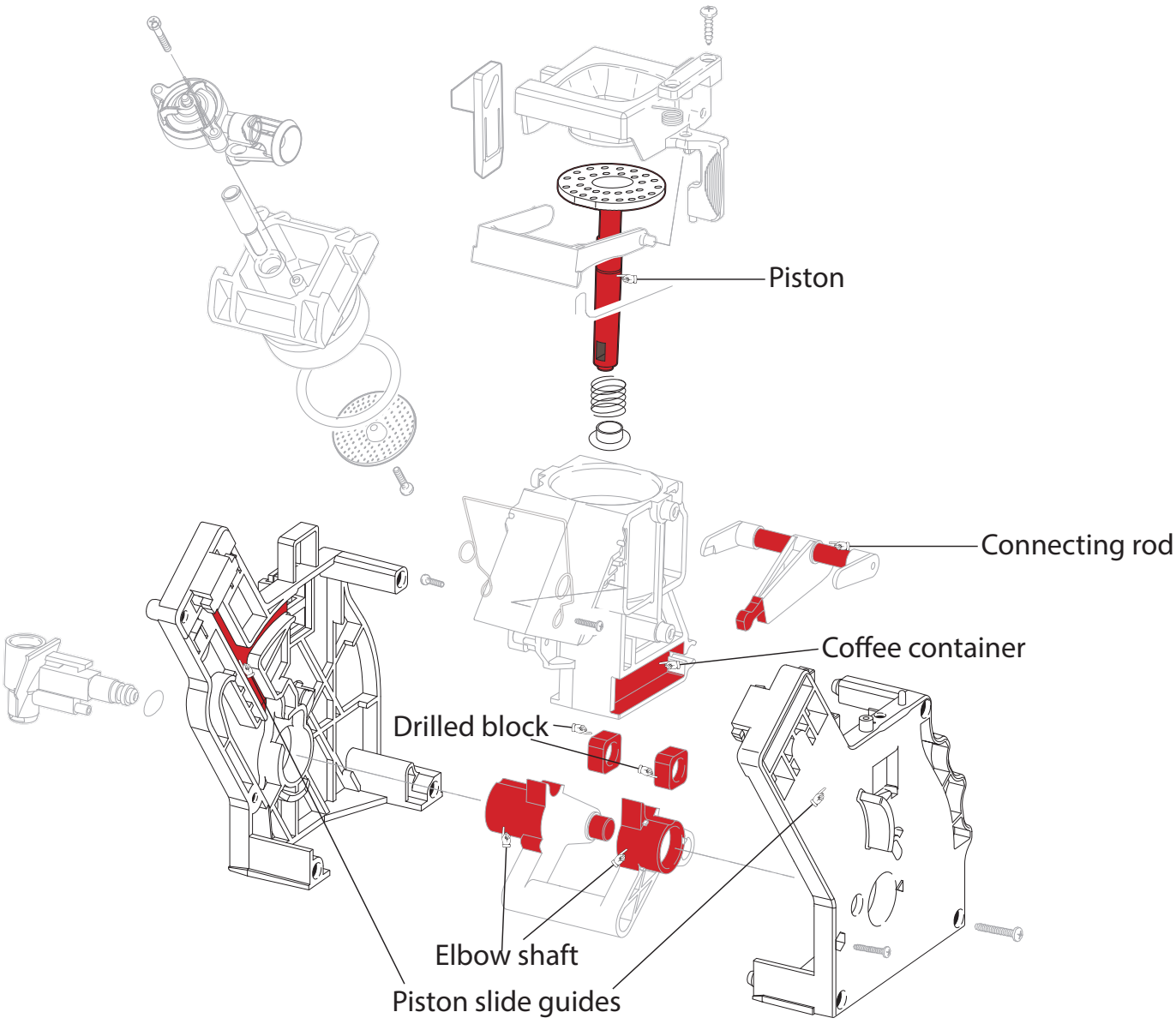


1	Touch screen
2	ON/OFF button
3	HOME button
4	CLEAN/SET button
5	Purge button
6	Knob
7	START/STOP button

1.8. Error codes

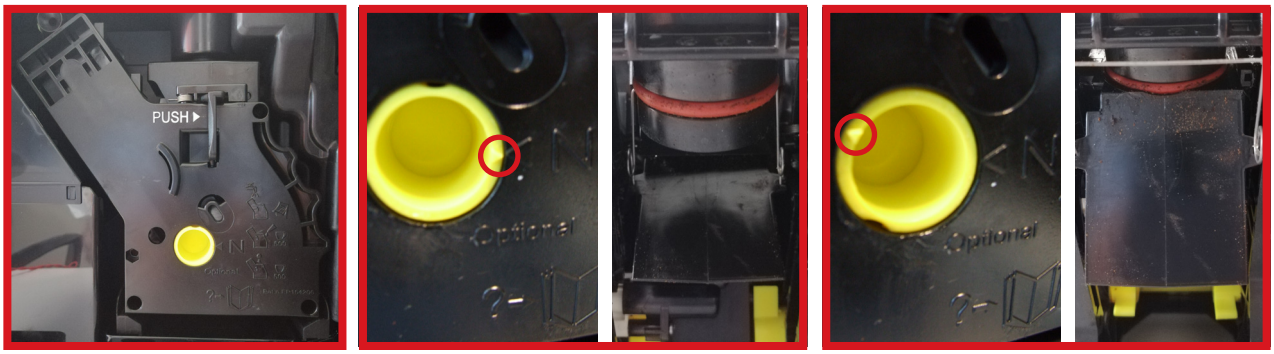
ERROR CODES	DESCRIPTION
01	The coffee grinder is blocked
02	The grinder is disconnected (Only coffee grinder without electronic sensor)
03	BU movement toward WORK fail
04	BU movement toward HOME fail
05	The hydraulic circuit is clogged
10	The temperature sensor is in short circuit
11	The temperature sensor is opened
14	Coffee boiler Time-Out, the machine cannot heat up
19	The net is not stable
20	Boiler coffee overheating
31	KeyBoard not present

1.9. Brew Unit mainteinance: Where to grease.

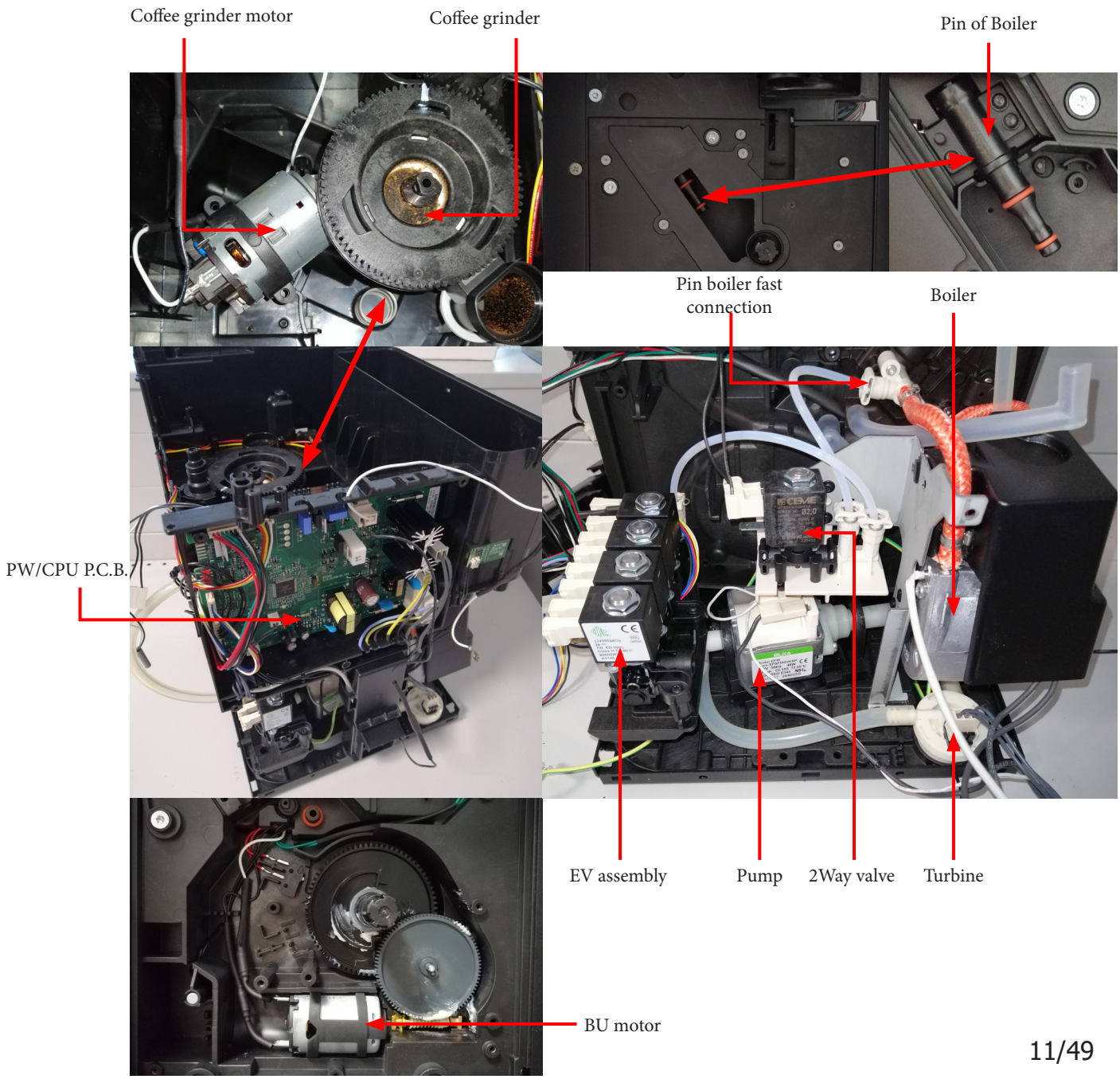


1.10. Position of the Brew Unit

Brew Unit | Home Position | Work Position



1.11. Internal machine parts



CHAPTER 2

TECHNICAL SPECIFICATIONS

2.1. Specification for the measurement of the coffee products temperature.

The below procedure is also contained in the Symptom Cure 97832.

The temperature is influenced by the flow from the dispenser and stratification of temperatures in the glass. In order to consider these phenomena and to introduce measures that allow comparisons in controlled conditions, below guidelines must be followed:
Conditions:

a) Water temperature in tank: 23°C (+/-2°C).
b) It must be used a plastic cup (see picture N°1).
c) It must be used a thermocouple thermometer (e.g. type K - see picture N°2).
d) The coffee machine is tested without any change of parameters or calibrations, which may affect the temperature of products, so the measurement of temperature must be done with machine in default factory setting.

Procedure:

1. The temperature must be measured in the cup, immediately after dispensing. Cup has to be placed on a non-metal surface using a thermocouple thermometer (Picture 1).

2. The temperature in the cup is measured by immersing the probe of the thermometer up to touch the bottom.The probe then must be moved in a circular motion for 5/6 rotations. At the of the rota- tions, stop in the center of the cup (Picture 2).

3. The highest temperature measured during the rotations is the value we are searching for, and that must be reported;

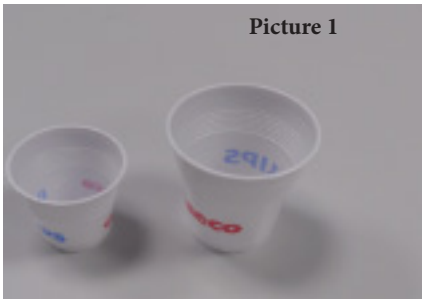
4. Test measurement: from end of dispensing to the end of rotations must be completed within 12 seconds.

5. The distance of the probe from the bottom of the glass is a function of the quantity of coffee dis- pensed: 10mm for 35gr - 17mm for 60gr - 35mm for 120gr and superior (Picture 3).

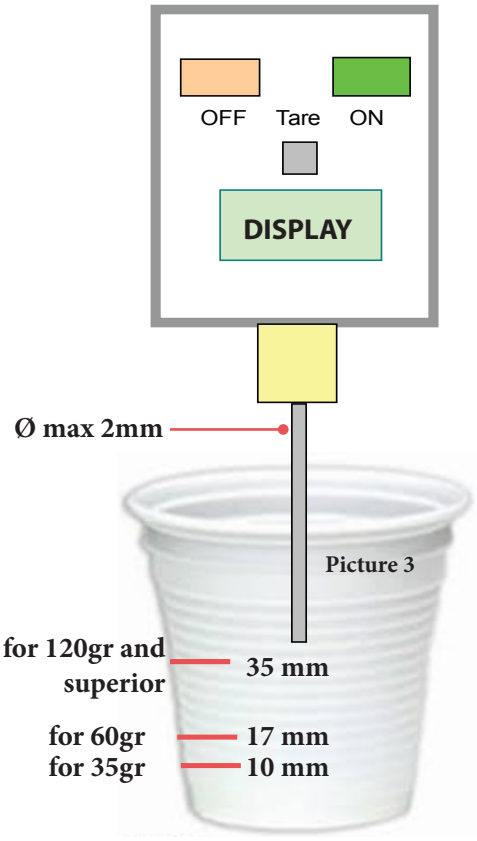
Limits of acceptability
The acceptance limits are divided by features and products and are the following:

Espresso Q.ty 40 ml (Default).
Temperature of 1st product 70°C ≤ 80°C
Temperature of 2nd product 72°C ≤ 85°C

Espresso Lungo Q.ty 80ml (Default).
Temperature of 1st product 70°C ≤ 80°C
Temperature of 2nd product 72°C ≤ 85°C


Picture 1


Picture 2



Picture 3

2.2. Specification for the measurement of the Milk products temperature.

Milk evaluation

To carry out the test, a partially skimmed UHT milk with a percentage of grease between 1.5-1.8% at a refrigerator temperature Trefr. (between 4 to 10°C) must be used.
The milk product must be checked on a beaker of 250 ml of capability and with an inner diameter of 70mm, brewing 100gr of product.

Parameters to be respected:

The parameters to be respected are: milk temperature and height of the cream. Each of these parameters, however, must be evaluated depending on the type of system used for the production of hot milk. Actually three types of devices are present on the appliances:

- Manual system (Steam wand)
- Automatic system (carafe)

How to measure the milk cream.

The temperature (Trefr or Tamb) of the milk doesn't affect as much the test result on measuring the milk cream; by convection is assumed to always use milk at refrigerator temperature **T**refr..

Manual systems (Steam wand)

Pour 100cc. of milk at Trefr. in a beaker of 250 ml of capacity and with a inner diameter of 70 mm:

1. Place the beaker with the frother dipped in milk, perform the steam beverage.
2. After about 30 to 60 seconds, stop the steam beverage and check the result on milk.

Automatic system: Carafe

After setting the machine to brew of 100gr. of product:

1. Launch the "hot milk" function.
2. Collect the product in a beaker with a 250ml of capacity and with an inner diameter of 70 mm, and verify the result obtained on milk. Carry out the test using milk at a **T**refr..

In case the machine allows modify of the emulsion through the menu, use the machine with the default value.

Related to the above testing procedure derives the following table of acceptability:

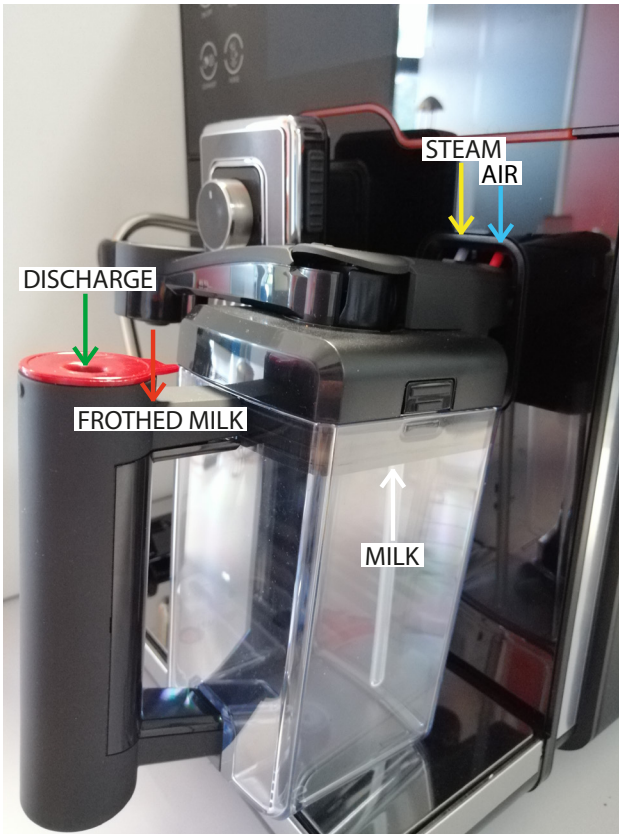
Manual and Automatic's Milk System	
Grams of Product	Minimun Height of the milk cream
≥ 130	≥ 30mm
120	≥ 25mm
110	≥ 22mm
100	≥ 20mm
90	≥ 16mm
80	≥ 13mm
70	≥ 11mm

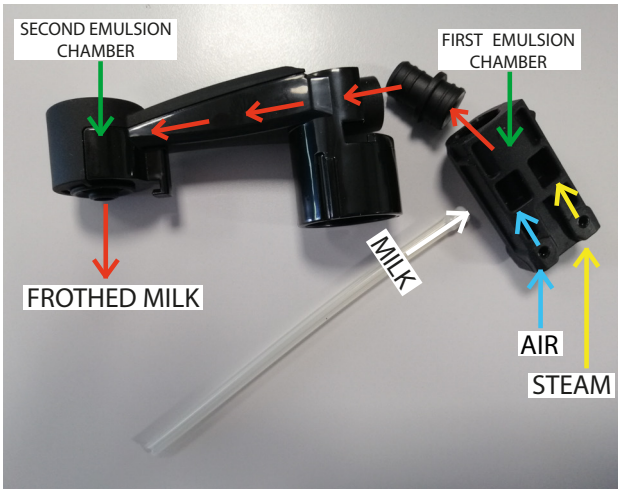
How to measure the temperature of the milk.

1. The measurement is carried out in the beaker, immediately after the end of milk brew, positioned on a non-metallic surface, using a thermocouple thermometer (eg. Type K). Stop the preparation of mixed product: at the end of milk brewing, where "One Touch product" function is present.
2. The temperature is measured by immersing the probe of the thermometer, positioning the probe inside the beaker at about 10mm from the bottom of the container, then the probe moves in a circular motion for 3-5 turns, stopping at the end, at the center of the beaker. It detects the maximum temperature reached in a time of relief between 3 to 5 seconds. The measurement has to be taken at 10mm from the bottom of the beaker. Stir the milk before measuring to keep a constant temperature.

Automatic system Carafe how does it work:

1. The milk is heated in the first chamber of the carafe thanks to the steam.
2. Then, it is mixed with air and frothed in the middle chamber.
3. Finally, in the outlet chamber, the 'typhoon effect' perfects the milk texture by removing the large bubbles





2.3. Machine parameters and performance

PRODUCT SUP052	Default quantity coffee (ml)	Default quantity milk (ml)	Default quantity water (ml)
Ristretto	30+/- 10%		
Espresso	40 +/- 10%		
Espresso lungo	80 +/- 10%		
Coffee	120 +/- 15%		
American Coffee	40 +/- 10%		110 +/- 15%
Café cortado	40 +/- 10%	30+/- 10%	
Macchiatone	40 +/- 10%	40 +/- 10%	
Melange	70 +/- 10%	70 +/- 10%	
Cappuccino	40 +/- 10%	120 +/- 15%	
Flat white	40 (x2) +/- 10%	80 +/- 10%	
Café au lait	90 +/- 15%	90 +/- 15%	
Cafè latte	60 +/- 10%	140 +/- 20%	
CappuccinoXL	70 +/- 10%	180 +/- 20%	
Latte macchiato	40 +/- 10%	240 +/- 20%	
Frothed milk		180 +/- 20%	
Hot milk		180 +/- 20%	
Hot Water			150 +/- 20%
Black tea 90°			150 +/- 20%
Green Tea 80°			150 +/- 20%
Steam	Max 180 seconds		

DREG DRAWER	Description and values
Time-out for dreg drawer	5 sec.
Reset dreg counter	Dreg emptying alarm, if the dreg drawer is removed for more than 5 seconds.

STANDBY	Description and values
Time (default)	30 minutes
Time programmed by Consumer/Service	Yes
Boiler temperature during Standby	Boiler OFF

WATER TANK	Description
Water reserve (pulses) with water filter	200
Water reserve (pulses) with no water filter	200
Water reserve modifiable by Production/Service departments	No
"Fill tank" alarm	Yes
Connect to water mains	No

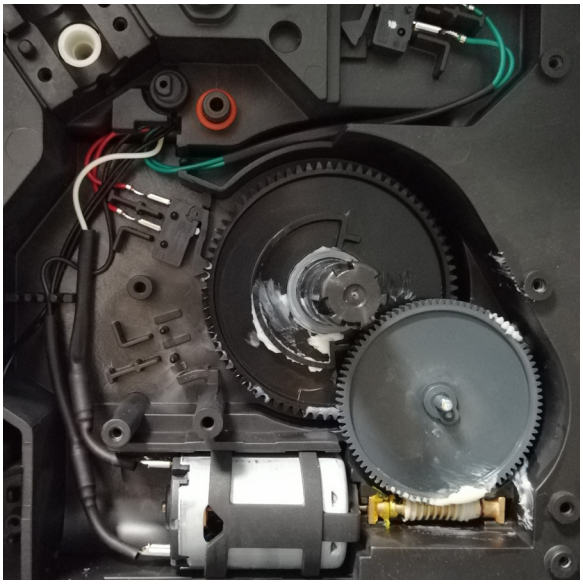
CHAPTER 3

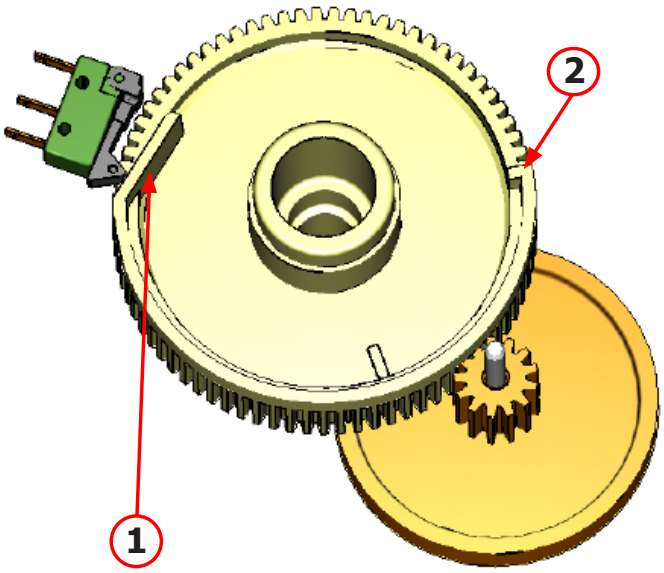
OPERATING LOGIC

3.1. Single microswitch gear motor

Switching on

When the machine is switched on, the gear motor repositions itself as follows:
- It acts on microswitch 1
- The gear motor changes its rotation direction and moves upwards again by approx. 1-2 mm.
- The boiler starts heating to heat the water for approx. 45 sec, in order to reach the optimal temperature.





The gear motor is powered by a direct current motor that engages with the smaller double toothed wheel using a worm screw. The unit is mounted on the axle of the large gear wheel and when a coffee is requested, it moves from the standby position to the dispensing position, and then back to the standby position again. The microswitch indicates to the gear motor when the brew group is in the work position or home position.

- Standby position: 1

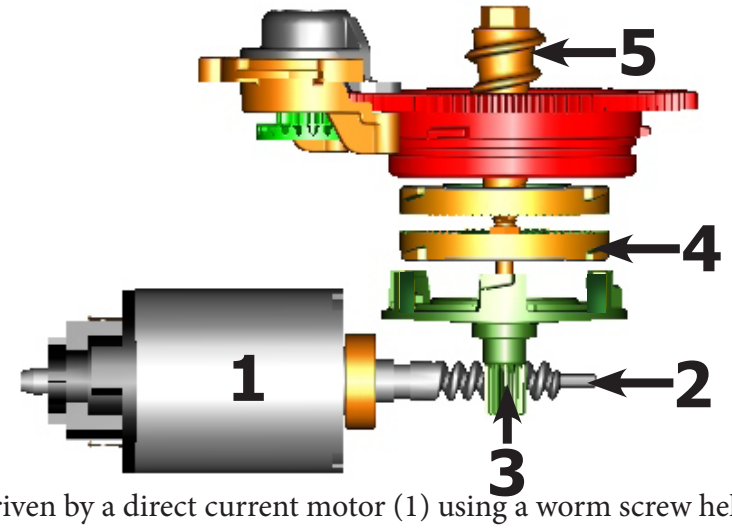
- Dispensing position: 2

3.2. Temperature sensor (adjustment)

Temp. (°C)	R nom (kΩ)	ΔR (+/- %)
20	61.465	8.6
50	17.599	5.9
75	7.214	4.1
80	6.121	3.7
85	5.213	3.4
90	4.459	3.1
100	3.3	2.5
125	1.653	3.9
150	0.893	5.1

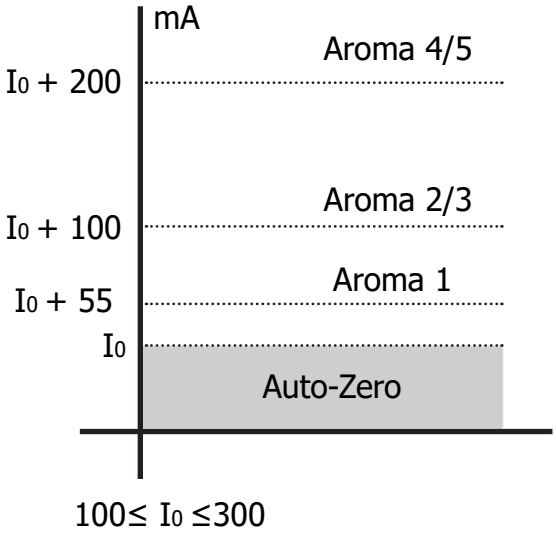
A thermistor, NTC type (Negative temperature coefficient), is used as a temperature sensor; in the event of overheating this reduces boiler element power consumption. The electronic system detects the current boiler temperature from the drop in voltage of the sensor and adjusts it accordingly. Heating element values and corresponding temperatures: see table Temperature sensor (adjustment)

3.3. Coffee grinder



The coffee grinder is driven by a direct current motor (1) using a worm screw helicoidal wheel transmission (2).
The worm screw (2) drives a plastic gear wheel (3), which turns the lower grinder (4) and the increment pin (5)

3.4. Autodose system description



I_0 = current when the BU is moving without load, i.e. without coffee. It occurs, for example, during the rinsing phase of coffee spout.

Current targets:

Aroma 1→55mA
Aroma 2/3→ 100mA
Aroma 4/5→ 200mA
100 mA ≤ I_0 ≤ 300 mA

If the BU current is ≤ the current target→ the grinding time ↑
If the BU current is ≥ the current target→ the grinding time ↓

1) When the system get the stability (i.e. the system got the current target) the coffee doses should be:

A1	A2/3	A4/5	
7,5	9,0	10	±1,5 grams

with medium grinding (500±60µm) and using coffee of test.

2) the 3 grinding times are always:

$$T_1 < T_2 < T_3$$

beside, every grinding time is, respectively:

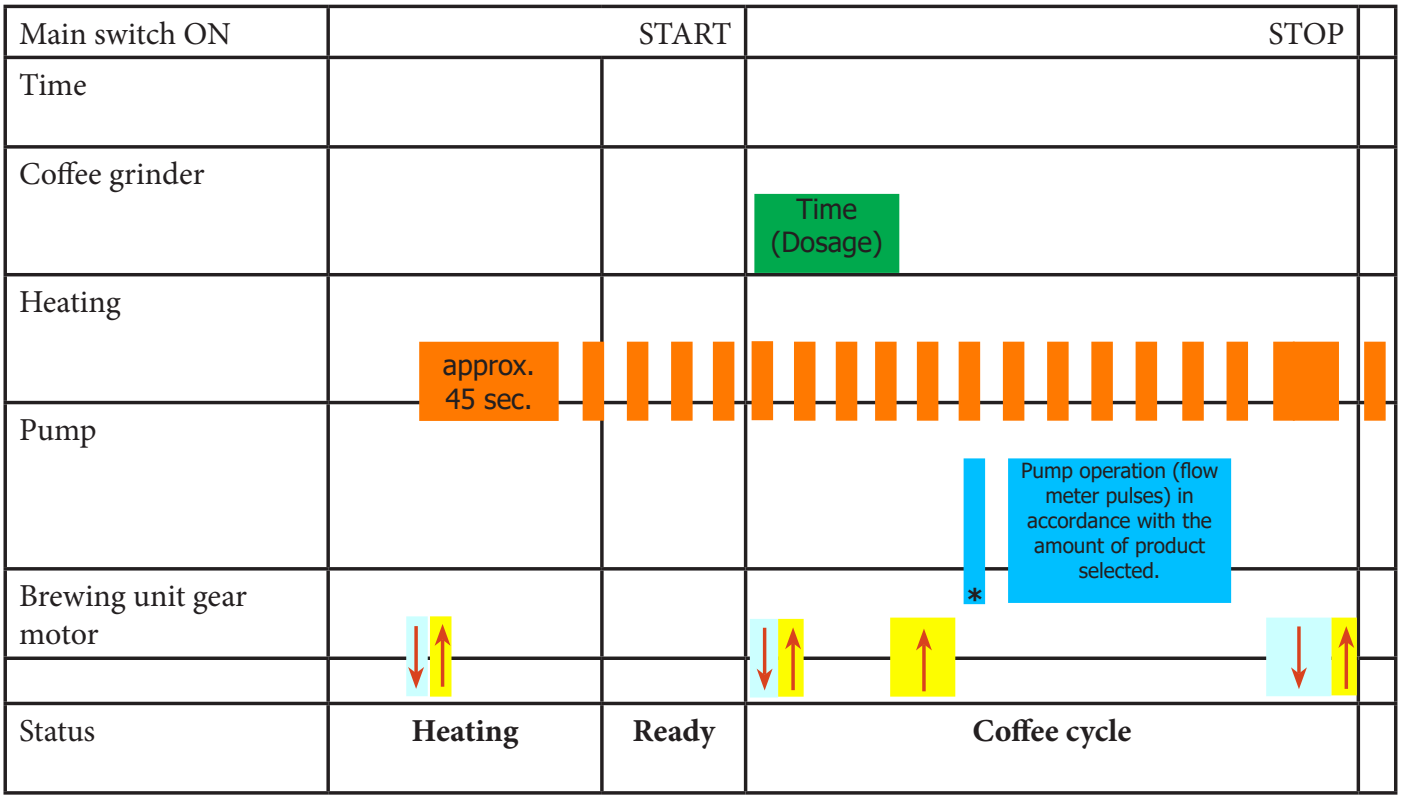
4,0s ≤T_3 ≤10s (10000ms)
3,5s ≤T_2 ≤9s (9000ms)
3,0s ≤T_1 ≤8,1s (8100ms)

			DOSE ADJUSTMENT			
	5 levels		Grinder Time	Min Grinder Time	Max Grinder Time	Curret target
Aroma of the grinded product	Aroma1	Very Light	T_1	3s	8,1s	I_0 + 55mA
	Aroma2	Light	T_2	3,5s	9s	I_0 + 100mA
	Aroma3	Med				
	Aroma4	Strong	T_3	4s	10s	I_0 + 200mA
	Aroma5	Very Strong				

3.5. Coffee lack detection and coffee grinder blocked

When the coffee grinder is working, the software monitors the current consumption. If the current value is very low, the machine concludes that coffee is missing; if the current value is very high, the machine concludes that the coffee grinder is blocked; instead, if the current value is in the middle, the machine concludes that all is ok and it goes on to do the product.
Because the current consumption of grinder changes depending on the situations (motor new or old, cold or hot, etc., coffee blends), these current thresholds are not static, but dynamic.

3.6. Coffee cycle



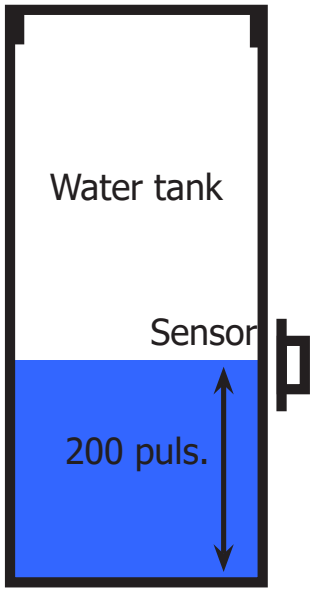
Notes: * Only with Pre-brewing

Coffee cycle

see below the steps related both coffee and milk cycle:

1. The coffee grinder starts the grinding process (controlled by Time);
2. The brewing unit moves to the brewing position;
3. The preliminary dispensing phase starts (short pump activity, short pause);
3.1. The solenoid valve opens (For milk products);
3.2. The dispensing milk phase starts (For milk products);
3.3. The solenoid valve closes (For milk products);
4. the machine starts dispensing coffee (the pump operation period is defined by the amount of product dispensed);
5. The gear motor moves to its home position (the dregs are expelled automatically);

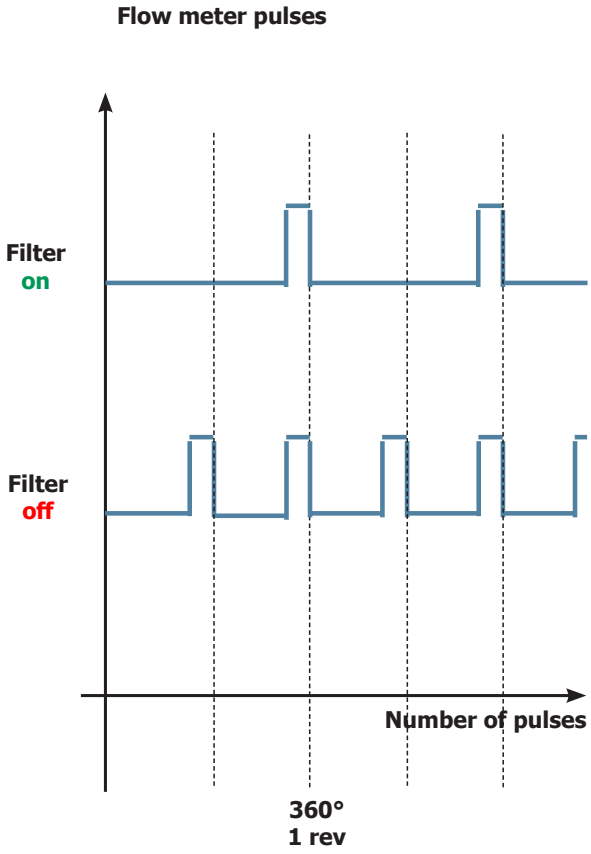
3.7. Water level detection (water tank)



“Water low” message (water reserve)

Function:
The water level is monitored by a capacitative sensor, located one third of the way up the water tank wall.
If the electronics assembly detects, by means of the sensor, that the amount of water in the tank has dropped below the above mentioned level, a water reserve remains available for the dispensing process underway (this will cover 200 flow meter pulses).
The product dispensing process will then come to an end.
If a dispensing cycle ends after the sensor has been triggered (in the reserve) then the display Water low” continues to be displayed during the following dispensing cycle.

3.8. Descaling request



“Descaling” – message with water filter inserted
(appliances with display only)

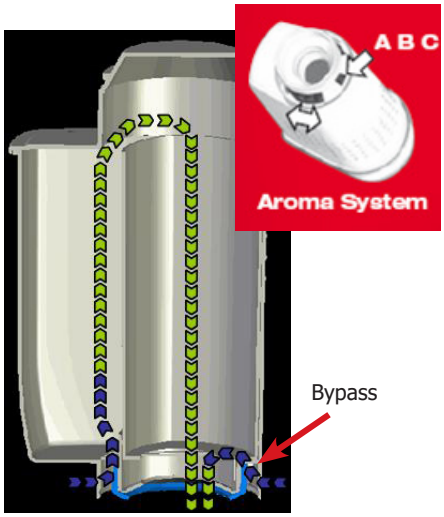
The water hardness is set on the basis of the regional water hardness analysis
(1, 2, 3, 4).

Filter off:
If the function is turned off the electronics assembly monitors the flow meter pulses, recording one pulse each turn.

Filter on:
If the function is turned on the electronics assembly monitors the flow meter pulses, recording one pulse every two turns.

“Change water filter” message
The electronics assembly uses the flow meter impulses to keep track of the amount of water which has flowed through; after the specified amount (set in accordance with the water hardness level), the “Replace filter” message appears.

3.9. Water filter



Function:

- Reduced limescale deposits which take longer to form.
- Improved water quality.
- Improved taste due to the ideal water hardness.

Life span / descaling performance:

- - 10 ° dH
- 60 litres
- 2 months

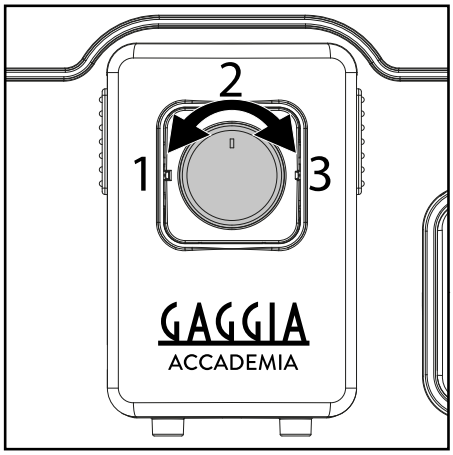
To achieve the best possible operating mode consistency over the total life span, the water is channelled using a 3-stage bypass (A, B, C) depending on the degree of hardness. See small image.

3.10. Descaling cycle frequency

Descaling cycle frequency			
Hardness	**WATER HARDNESS**	**With water filter**	**Without water filter**
1	Soft (up to 7°dH)	480 litres	240 litres
2	Medium (7° - 14°dH)	240 litres	120 litres
3	Hard (15° - 21°dH)	120 litres	60 litres
4	Very hard (over 21°dH)	60 litres	30 litres
The default water hardness level is 4. Each litre of water corresponds to approximately 1936 pulses.			

Note = the values indicated above take into account only the brew of water-based products, these may vary considering the steam. So they are to be considered indicative.

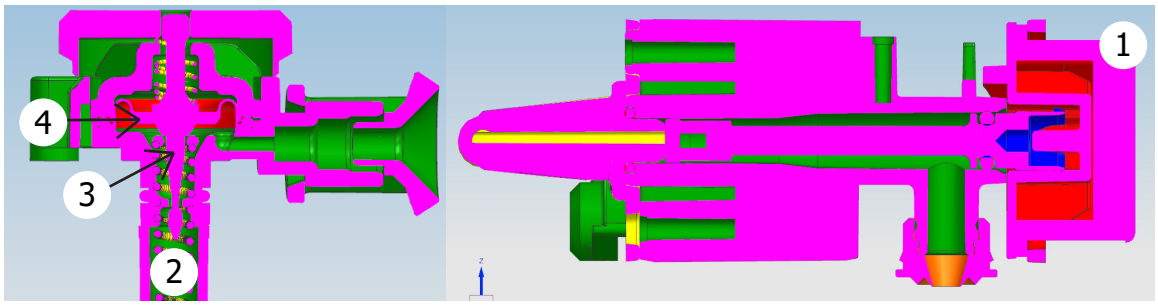
3.11. Espresso Plus System



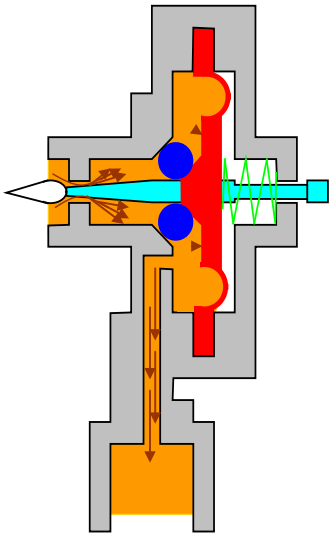
Turning the Espresso Plus System adjustment knob will trigger the brewing process in the coffee unit, where the flow speed is adjusted via a cream valve.

The adjusting the flow speed, which influences the contact time between the coffee and water, alters the extraction and therefore the taste intensity and strength of the coffee:
1 Lighter body, thinner crema;
2 Regular body and crema;
3. Full body, thick crema.

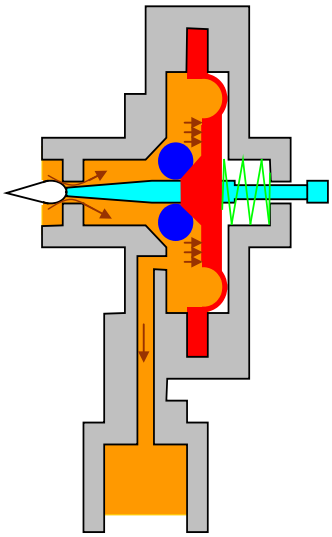
Cream valve adjustment



1. Espresso Plus System valve knob;
2. Espresso Plus System valve spring;
3. Espresso Plus System valve needle;
4. Espresso Plus System valve membrane.



Lighter body, thinner crema (1):
If the Espresso Plus System valve knob is open, the coffee flows easily because the pressure is lower and the membrane remains almost in its base position with the help of the spring.
The adjustment needle does not close the opening and the flow does not decrease.



Full body, thick crema (3):
The coffee is dispensed slowly with the Espresso Plus System valve knob closed due to the pressure created, which acts on the membrane and presses it to the side against the spring force.
Lastly, the valve needle closes the opening, thereby, reducing the flow.

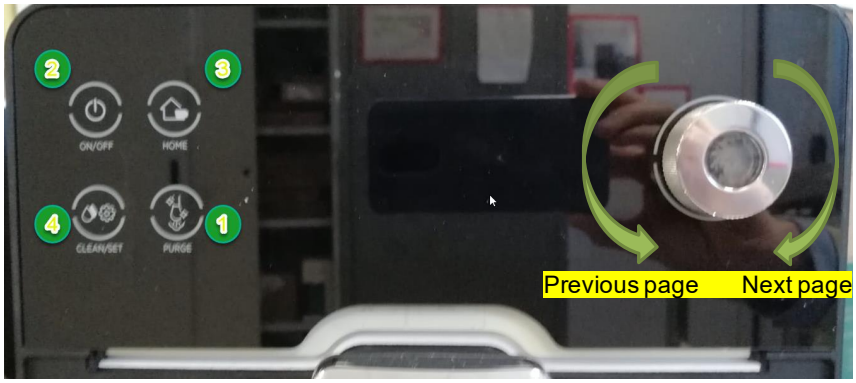
CHAPTER 4

DIAGNOSTIC MODE

4.1. Test Mode and Steam out

How to enter

When the display turns ON, press the keyboard buttons in the order described below:



Pressing the on/off button you can exit to the test mode

Description

When the machine is in Test Mode appears a windows divided in several sectors:
Page 1: Entering page;
Page 2: Key and led unit;
Page 3: Brewing Unit and microswitch testing;
Page 4: Hydraulic circuit testing;
Page 5: Grinder testing;
Page 6: Steam out perform.

The first row of each window is a title, the white sectors represents the functions (or loads) available to
activate or deactivate, the last row is used to show other info. When a function is enabled the corresponding
box becomes colored.

Activation of loads

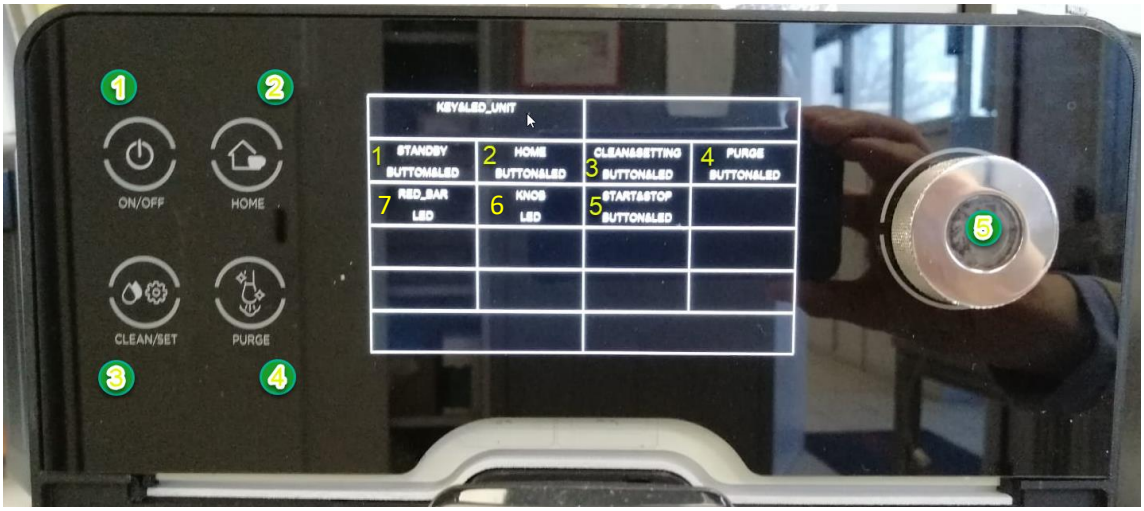
In Test Mode all loads are initially disabled.

To activate a load press the corresponding button on keyboard, to deactivate press again the same button. Other conditions for which a load may be switched off automatically without key presses are:

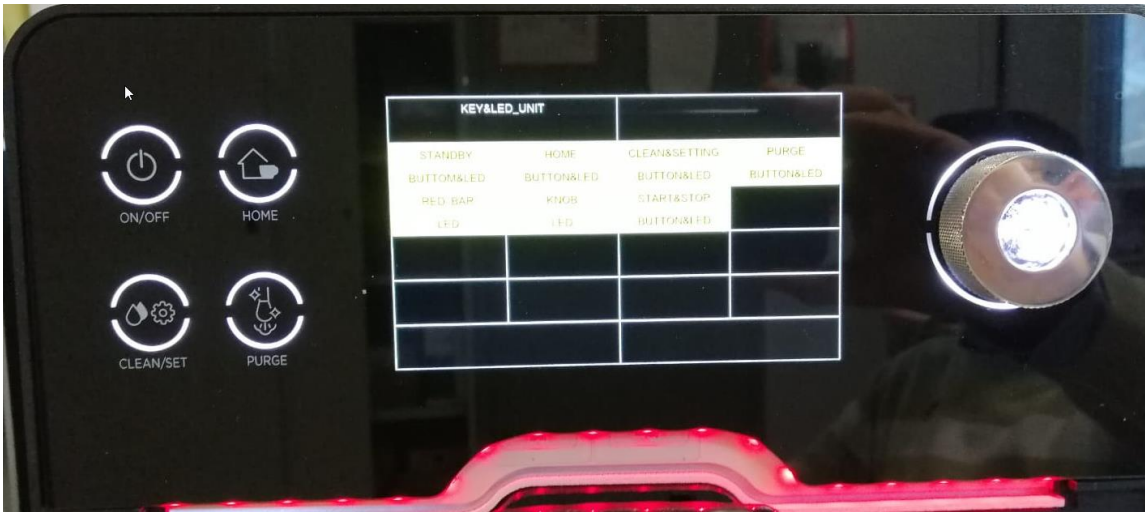
•If it is defined a working cycle, when this cycle ends (such as the grinder or brew unit)
•The achievement of 90°C for boiler

Page 1: Entering page
This is the first window of Test Mode. It show the version of UI and Main software

Page 2: Keyboard
This page allows you to test each key on the keyboard or screen, and the operation of the LEDs:



When a button is pressed, the corresponding box becomes with the yellow background and the button LED lights up, if it is pressed again it becomes a black background and the LED goes off.
Pressing the Knob Led cell (6) will turn on the led around the knob
Pressing the RED_BAR LED (7) the red LED bar will light up



Page 3: Brew Unit
This page allow to test the functionality of Brew Unit and the microswitchs

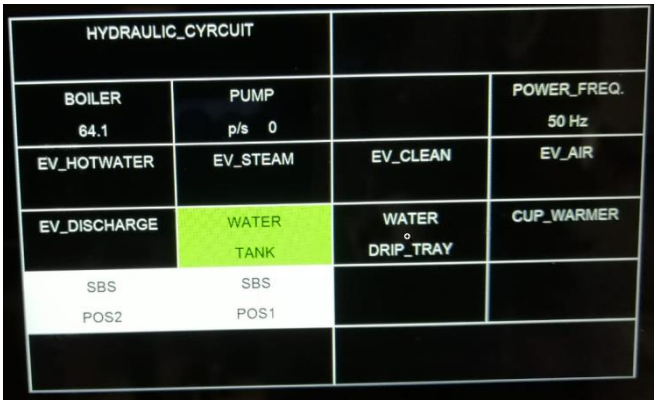
The meaning of the sectors are the following:

- BU GO_WORK: when pressed move the brew unit to WORK the cell will became white
- BU GO_HOME: when pressed move the brew unit to HOME the cell will became white

Info:

- BU_CURRENT mA: indicates the maximum current (in mA) absorbed by the brew unit in motion;
- HOME&WORK: The cell will becomes green when the Brew Unit reach HOME or WORK position;
- BU_PRESENT SWITCH: The cell will becomes white if the Brew Unit is present in machine;
- DREG_DROWER: The cell will becomes green if the Dump box is present in machine;
- FRONT_DOOR: The cell will becomes green if the Service Door is closed;
- DREG_COUNTER: number of products remaining before the alarm is displayed;
- CARAFE_MILK POS: The cell will becomes yellow if the carafe is in milk dispensing position;
- CARAFE_CLEAN POS: The cell will becomes yellow if the carafe is in clean position;
- CARAFE PRESENT: The cell will becomes yellow if the carafe is present.

Page 4: Hydraulic Circuit
This page allow to test the functionality of hydraulic circuit:

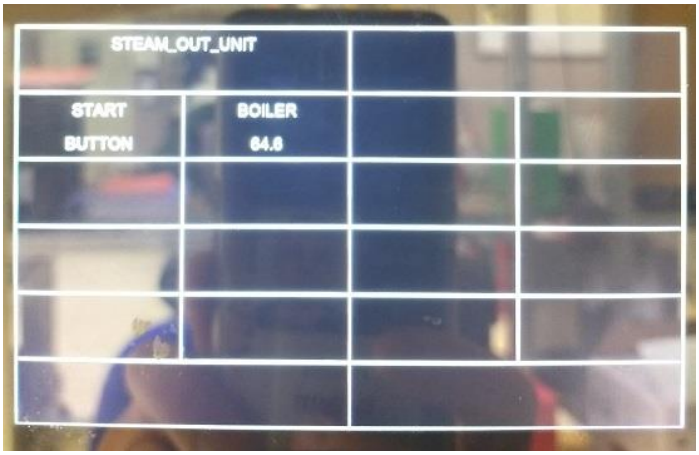


The meaning of the sectors are the following:

Command:
• Boiler: when pressed activate (white)/deactivate the boiler if the temperature is less than 90°C
• Pump: when pressed activate (white)/deactivate the pump
• EV_HOTWATER / EV_STEAM / EV_CLEAN / EV_AIR / EV_DISCHARGE: when pressed activate (blue)/deactivate electrovalves (24V Dc)

Info:
• Pump p/s: indicate the current number of water flow expressed in pulses/sec. When is activated the pump and one electrovalve the value measured must be equal to or greater than 10 p/s.
• Water Tank: The cell will becomes green when the water into tank reach sensor level
• Power_Freq.: indicate the frequency of mains voltage supply
• Boiler: indicate the boiler temperature in °C
• Water Drip_Tray: The cell will becomes green when the water into drip tray reach sensor level
• CUP_WARM: when pressed activate(yellow)/deactivate the cup warm;
• SBS POS1 and 2: The cell will becomes white when turn the SBS knob (all to the right closed).

Page 6: Steam Out
This page allow to execute the steam out process:



The meaning of the sectors are the following:

Command:
- Start: start the steamout process (the cell became white). At the end of process appears: Switch Off (the cell became green) at the top of the display (so it's possible to restart the machine with the default values)

Info:
- Boiler: It's enabled when the boiler is activated

CHAPTER 5

ESPRESSO PHILIPS SERVICE CENTER

5.1. Espresso Philips Service Center (EPSC)

The EPSC is a Service tool developed to upload the SW on the machine and run the diagnostic mode.
It can be downloaded from the following link: https://www.epsc.philips.com/ServiceCenterPortal/
The application can be used only in combination with the Saeco Programming Device:
Cod. 996530009845 "KIT PROGRAMMER SERKIT".
It can be ordered as Spare part and includes the programmer + connection cables.
All details related to the registration and operation are explained in the enclosed Quick start guide (QSG).

Espresso Philips Service Center– Quick Start Guide

Press the icon to view the document
To open the attached document is necessary to save the service manual on your PC.

The main Diagnostic Parameters description is available on the GDA_114331.
You can find it both in AYS or by using the below link.

Main Parameters description & standardization in the EPSC diagnostic tool.

Press the icon to view the document
To open the attached document is necessary to save the service manual on your PC.

CHAPTER 6

MACHINE REPAIR FLOW

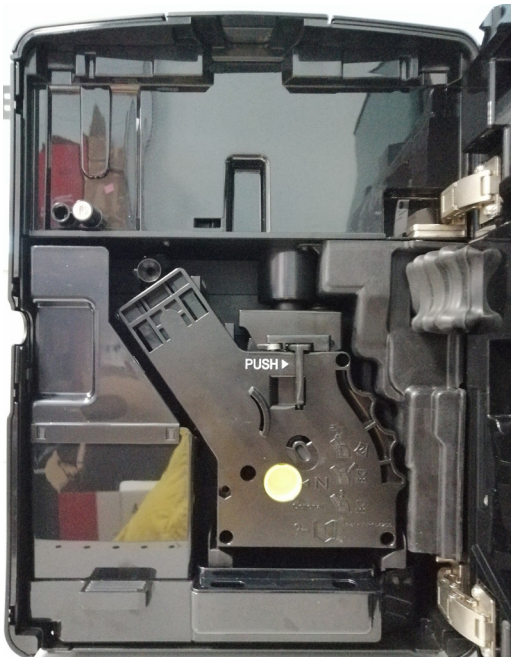
6.1. Repair Flow

Proces stap	Gaggia no.	Action
Intake	1	Visual inspection (transport damage) take care for pictures
	2	Check Type/serialnumber
	3	Log all available accessory, counter check with info from consumer
Diagnosis	4	**Check product for consumer complaint and main function**
	5	Run Diagnostic to get error codes and relevant set statistics (EPSC)
	6	Opening machine
Repair	7	Repairing the fault(s) encountered (Service Bullettin)
	8	Checking any modifications (Service Bullettin, new software, etc.)
	9	**Basic Functional test while the appliance is open** (linked to consumer complaint or what you may have detected) **Test Mode**
Coffee		*Make e 2 cups at the same time. Are the volumes equal?*
- Crema		*Blow on the coffee. Does the crema come back?*
		together Is the crema colour correct (Hazelnut)?
- Temperature		*Is the coffee temperature within spec? refer chapter 2.1 service manual*
Steam		*Does the steam work?*
Hot Water		*Does the hot water work?*
Milk		*(if applicable)*
- Cappuccino		*Does the cappuccinatore produce good froth?*
	10	check water circuit for any leakage, such as Oetiker clamps, boiler and valve connection and hoses
	11	Check mechanism for good movement and unexpected noise
	12	Assembly
Inspection	13	Do cabinet parts fit well together
- visual	14	Check for damages
- Power check	15	Will the set switch on
- Accesoires	16	Do the accessories match with the intake
- Consumer complaint	17	Check the product for the consumer complaint
Quick Functional test	18	Make 2 cups at the same time. Are the volumes equal ?
Coffee	19	Is the sound normal ?
Leakage	20	Did the product leak during the testing ?
Steam Out		**Steam out** before shipping out, if temperature is below 0° to prevent any damaged due to frozen water.
Claim Administration		**Keep track of repair ! Template example**
	21	Family | description of the issue | SN defective machines | Part code
Cleaning	22	Clean water reservoir, bean reservoir, brew chamber and conveyor
	23	Clean and dry brew unit, coffee bin and drip tray
	24	External cleaning (housing surface)
Safety check	25	Earth leakage, Isolation test, resistor of earth wire grounding, as requested in certain country's (VDE, ISO) or H-POT TEST
Visual	26	Check the mains cord for damages
Packing	27	Packing
	28	Check completeness (accessories)
	29	Neatly pack the product
Documentation	30	Info for Consumer by packed ? e.g. service brochure, FAQ, service bullettin etc....
	31	Descaling instruction with changed procedure (Service bullettin) if available
Repair report	32	Is there an answer to **ALL** consumer questions/complaints (see complaint)
	33	add consumer's report from EPSC
	34	Is it indicated which documents are added
	35	Are there tips how to prevent issues ?

CHAPTER 7

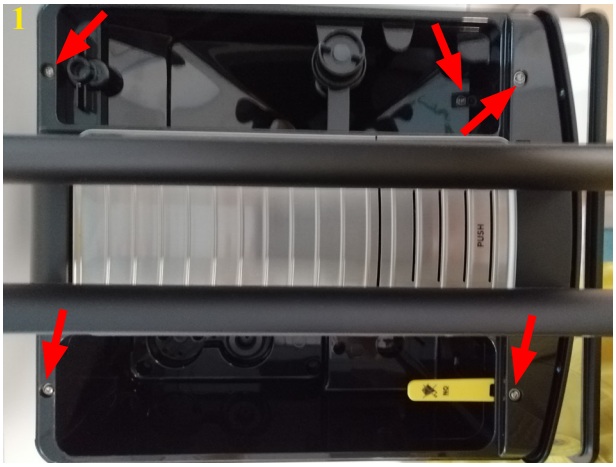
DISASSEMBLY

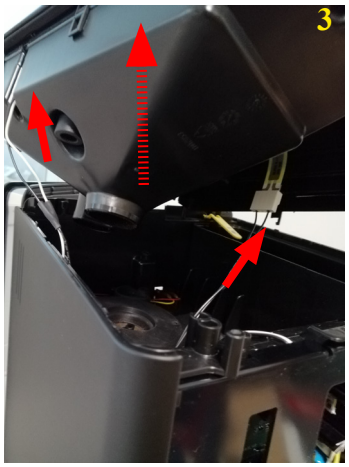
7.1. Outer Shell



Remove the water tank and it's lid, coffee aroma lid, internal drip tray and it's cover, dreg drawer, external drip tray and grate, brewing unit, caraffe, coffee dispenser.

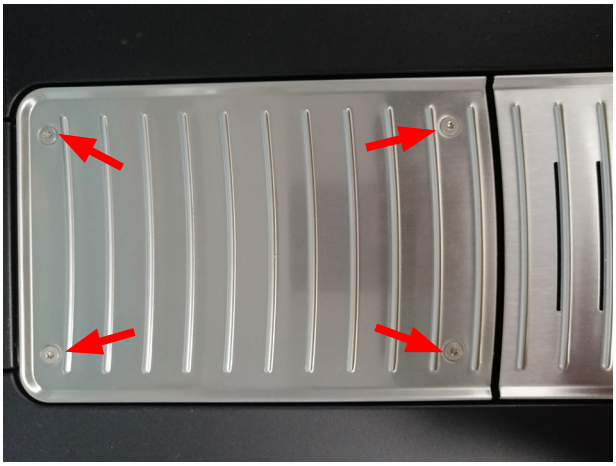
Upper cover

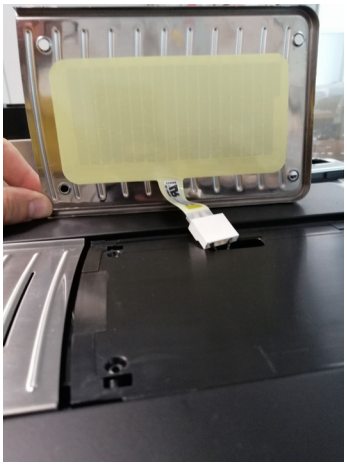




1-2 Unscrew the screw shown and lift the rear pannel

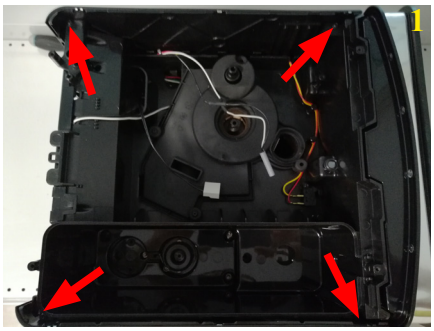
3 Lift the upper cover and disconnect the cup warm and sensor coffee lid



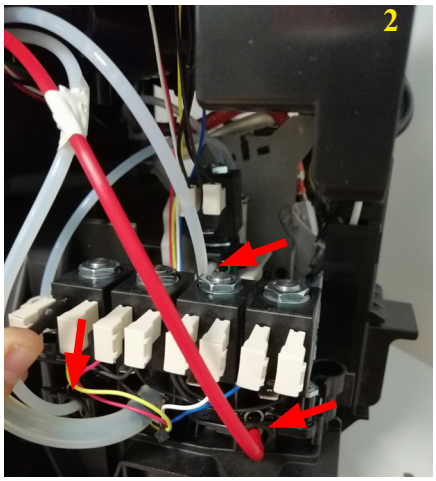


Unscrew the screw shown if you want replace the haet element+cover casing of cup warm (pos 108 of exploded view)

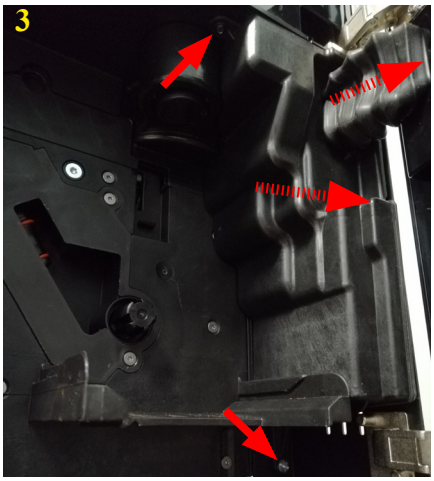
7.2. Disconnect front door



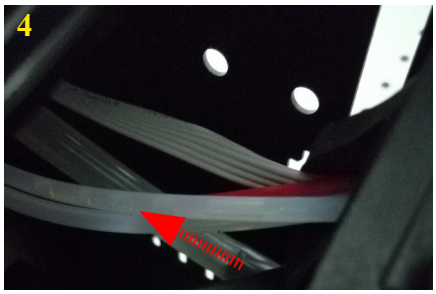
1 Unscrew the screw shown and lift the lateral pannels



2 Disconnect showed tubes from electrovalve

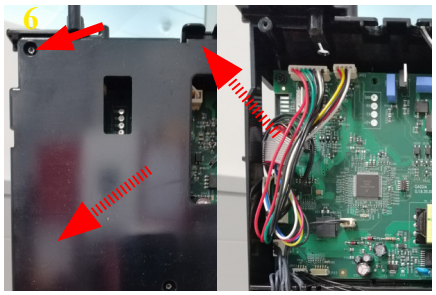


3 Unscrew the screw shown and lift the protections

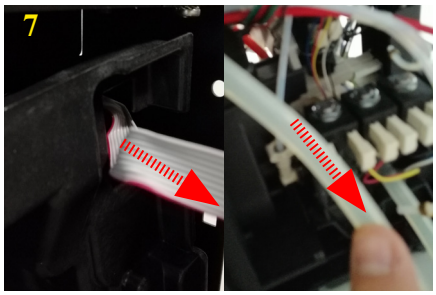


4 Disconnect the silicon tube

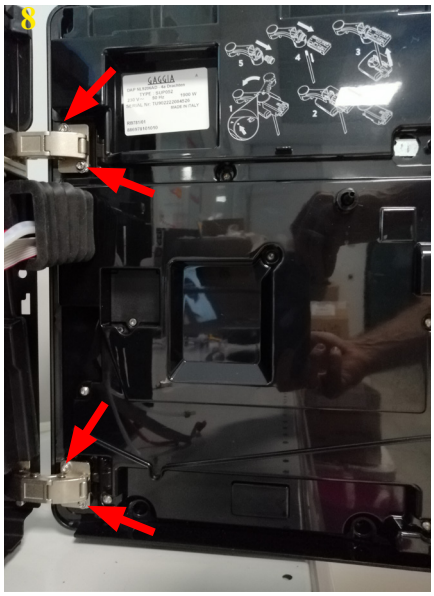
5 lift the tubes



6 Unscrew the screw shown lift the PWR board cover and disconnect the UI Flat cable

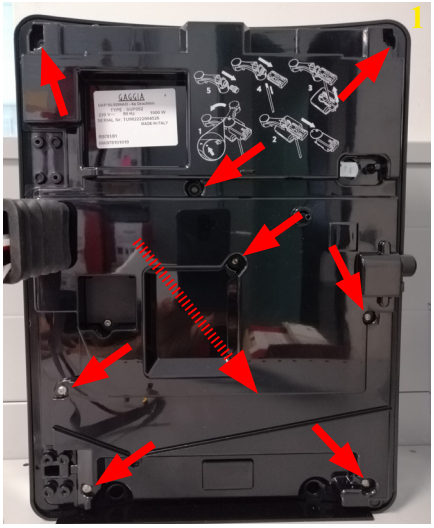


7 Lift the UI Flat cable and silicone tube



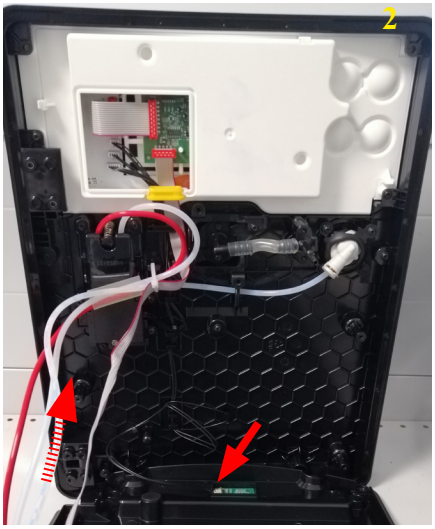
8 Unscrew the screw shown and lift the front door

7.3. Disassembly front door

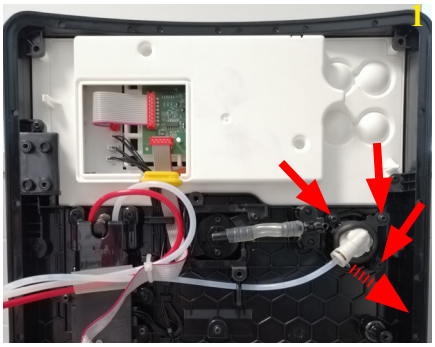


1 Unscrew the screw shown and lift the cover pannel

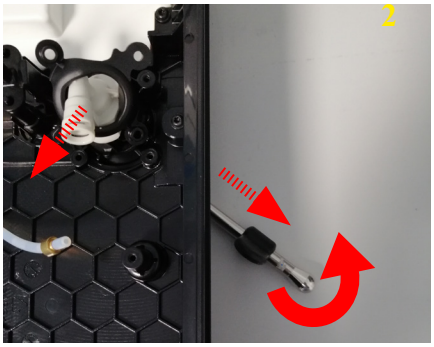
2 Lift the silicone tubes, UI flat cable and disconnect the wiring of CPU water level sensor of internal drip tray



7.4. Steam Tube

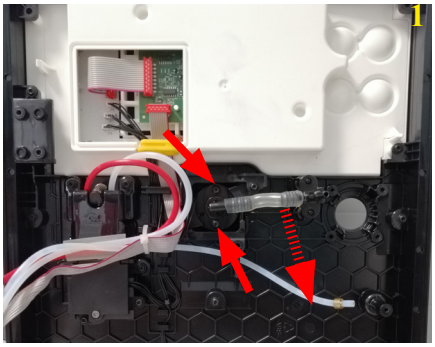


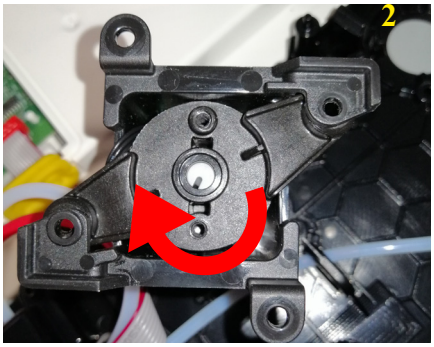
1 Unscrew the screw shown and lift the fork

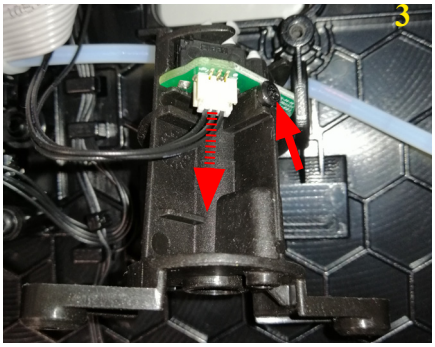


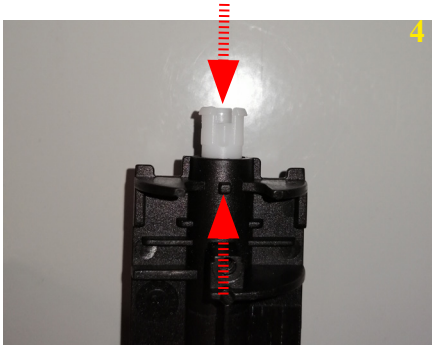
2 Unscrew the steam sprayer, lift the tube handgrip and the steam tube

7.5. Coffee dispenser support









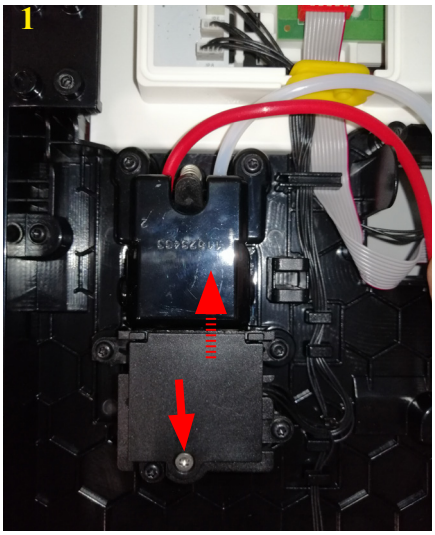
1 Unscrew the screw shown and lift the coffee inlet

2 Turn the coffee tube

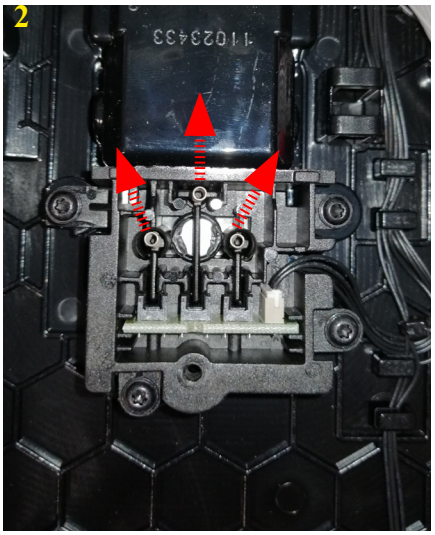
3 Unscrew the screw shown and disconnect the wiring

4 Pay attention when reassembling

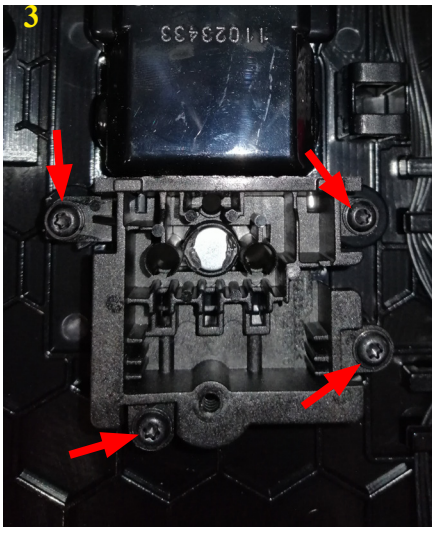
7.6. Disassembly front door



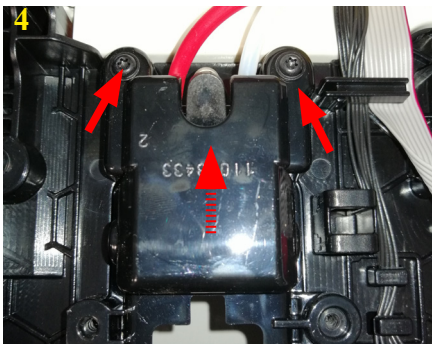
1 Unscrew the screw shown and lift the cover



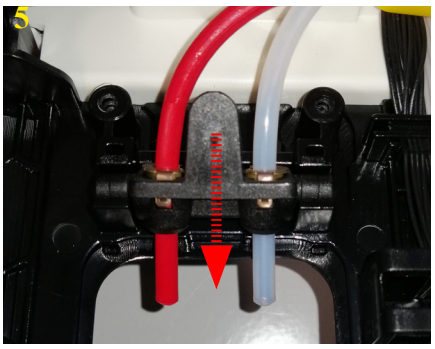
2 Lift the carafe micro insert



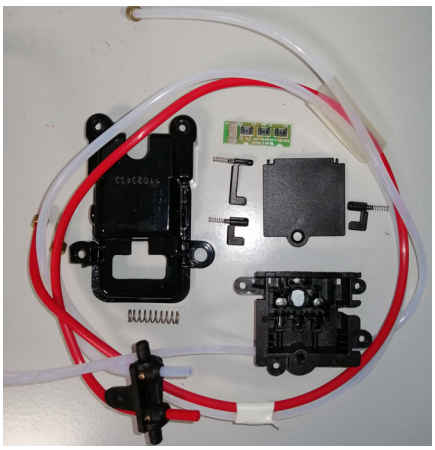
3 Unscrew the screw shown and lift the carafe voard support



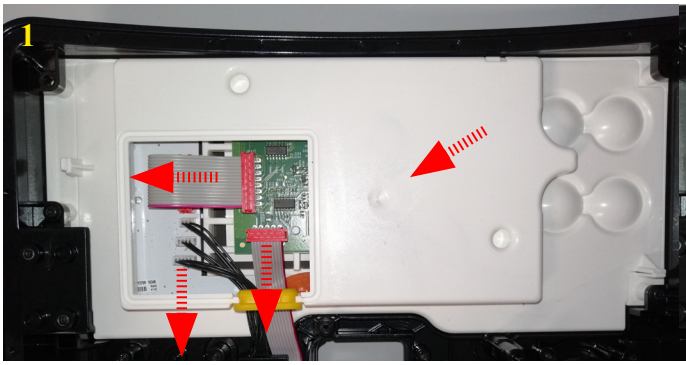
4 Unscrew the screw shown and lift the cover



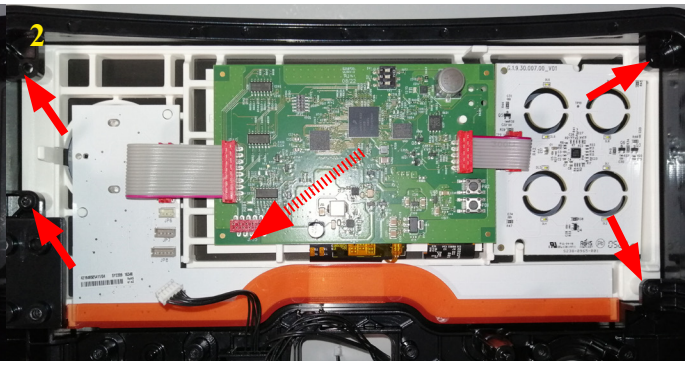
5 Lift the carafe tubes



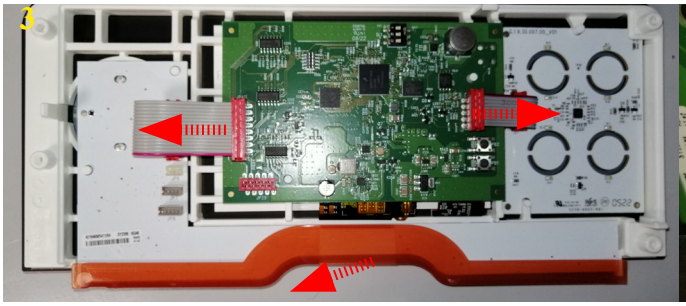
7.7. UI



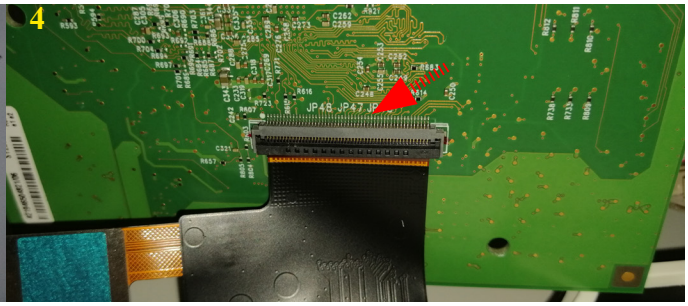
1 Disconnect the electrical parts and lift the cover



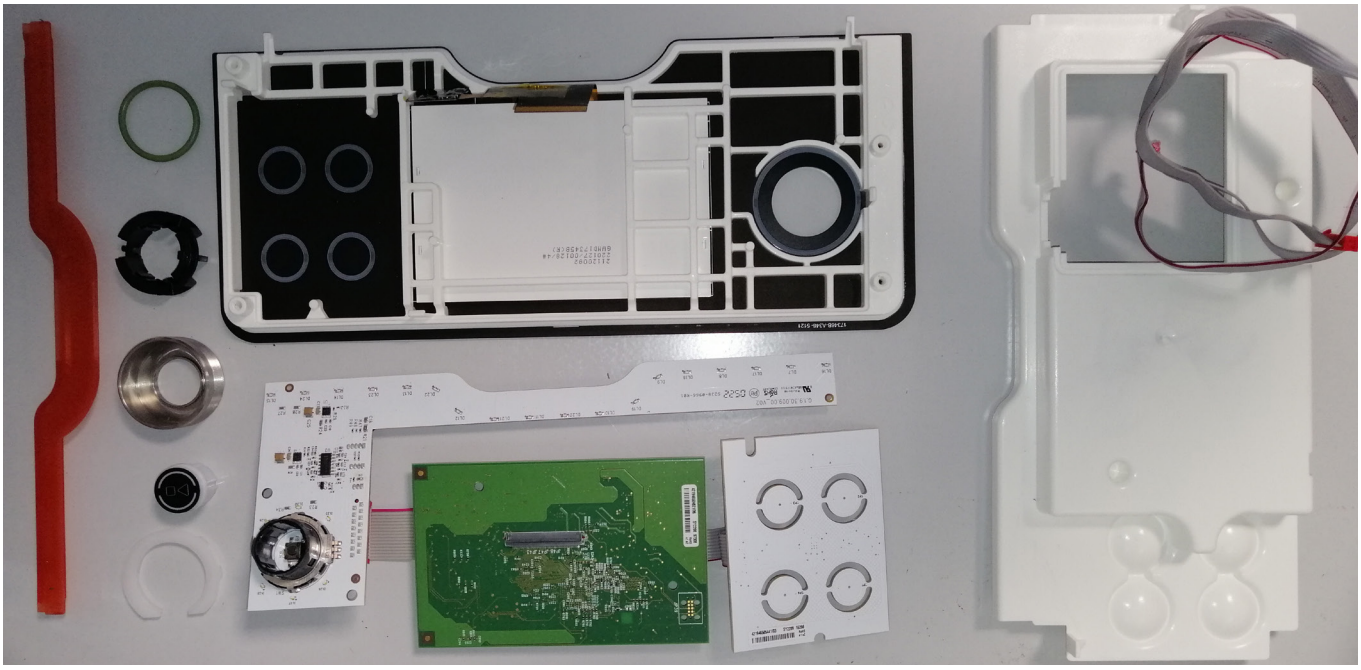
2 Unscrew the screw shown and lift the UI assy



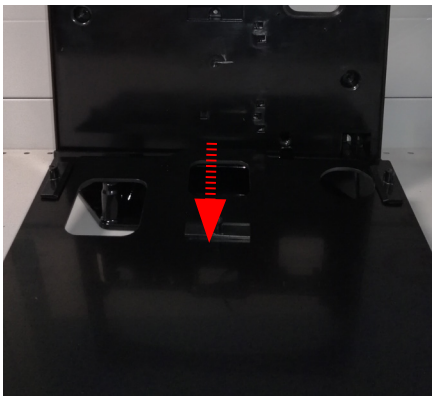
3 Lift the led cover, disconnect the cables and turn the prinipal CPU



4 Disconnect the CPU to the display

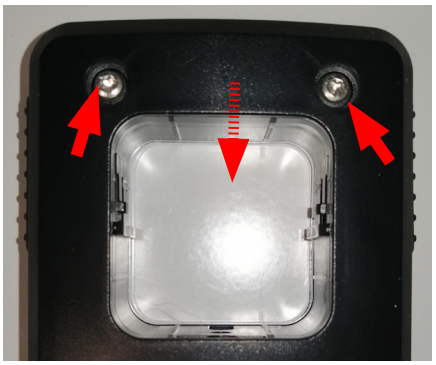


7.8. Glass lower pannel



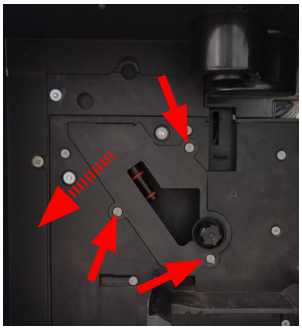
1 Unscrew the screw shown and lift the glass cover part

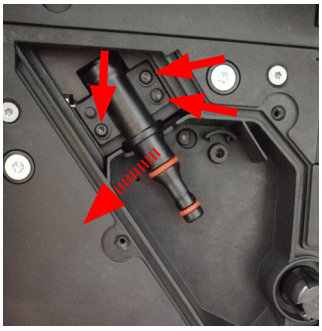
7.9. Coffee dispenser



Unscrew the screw shown and disassembled all parts

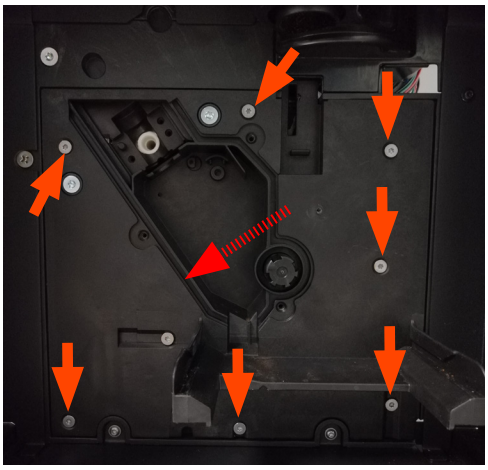
7.10. Pin boiler



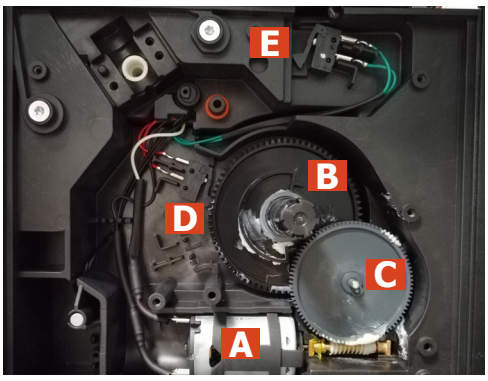


Unscrew the screw shown and remove first the boiler seat pin cover and then the pin boiler.

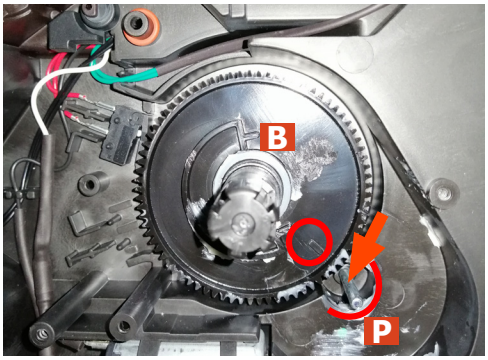
7.11. Gear motor



Unscrew the screw shown and remove the gear motor cover.

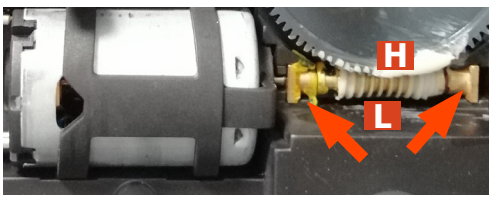


The following are located inside the compartment protected by the casing:
- Electric motor (A) with gears (B) and (C) for transmission and timing of the dispenser.
- Brewing unit present microswitch (E).
- Microswitch (D) detecting brewing unit home and work positions.
- Remove the gear (C) that meshes with the motor transmission shaft.
- Remove the large gear (B).
- Remove the motor (A), complete with transmission shaft.



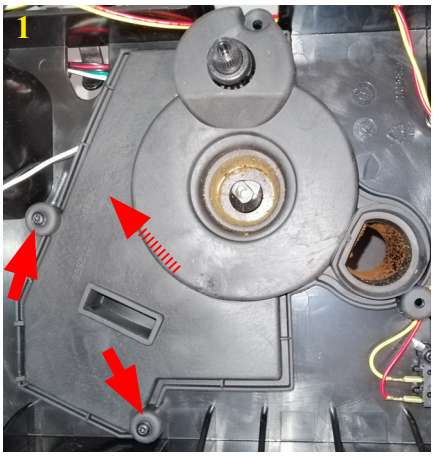
Replace the gear (B), making sure that the imprint of the arrow is aligned with the opening containing the pin (P).

Note: when reassembling the machine, before inserting the brew group, switch on for the initial autoreset

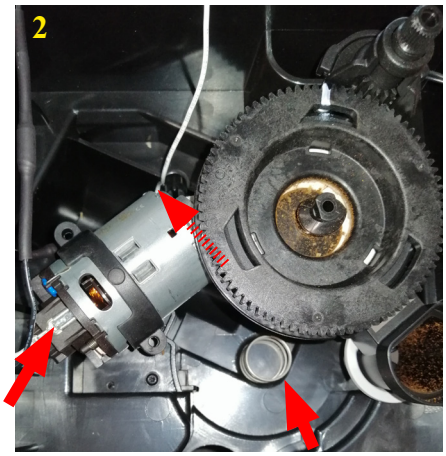


When replacing the motor and the transmission shaft, make sure the guide runners (L) are in the right position.
Grease the shaft thoroughly and evenly.

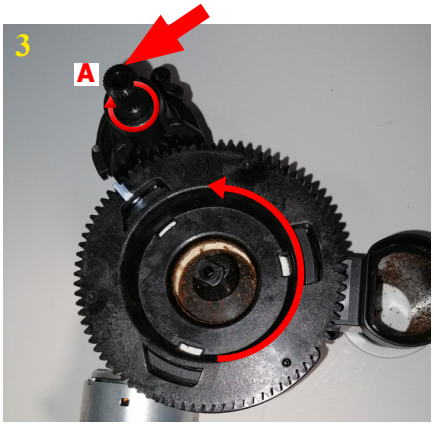
7.12. Coffee grinder



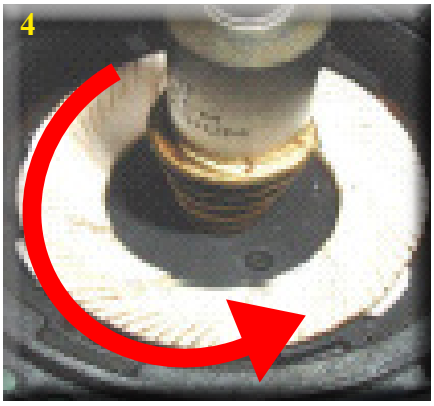
1. Unscrew the screw shown and remouve the Coffee grinder soundproofing.



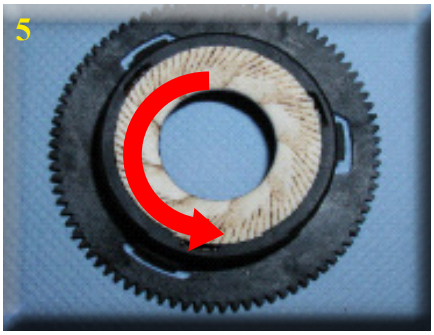
2. Lift the coffee grinder and disconnect the electrical wiring. When reassembling the coffee grinder, make sure the spring is repositioned correctly.



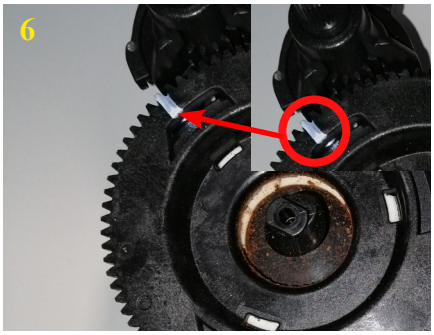
3. To extract the top support of the appliance, press on the grinding adjustment spindle (A) and turn the support anticlockwise until it unhooks.



4. Turn the grinder blades anticlockwise out of the support.

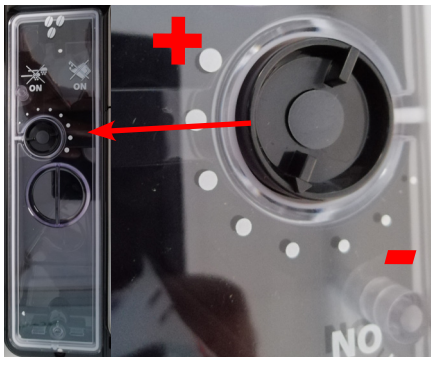


5. Turn the grinder blades clockwise out of the support. The bayonet connections can be accessed from the rear.



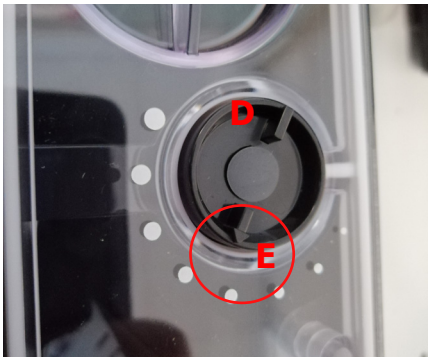
6. For a standard adjustment, both markings must be aligned.

7.13. Coffee grinder adjustment



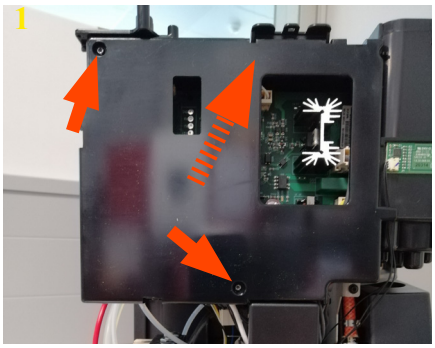
The grinding adjustment can be set by the user pressing and turning the grinder adjustment knob

To adjust grinding further, the engineer can work directly on the coffee grinder by pressing and turning the ring nut (D) shown. (clockwise + to increase the particle size of the coffee and anticlockwise - to decrease it).

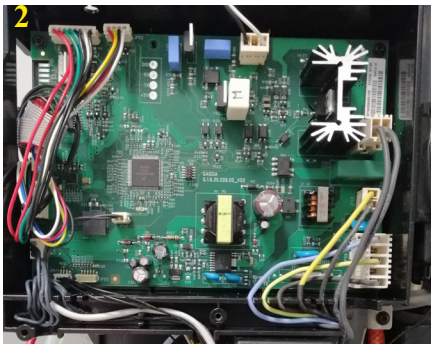


If there are coffee powder residues between the two grinding blades it is recommended to tighten by max. two brands at a time.
When the machine is reassembled, make sure that the center line of the “PRESS” (D) is in correspondence with the fin (E).

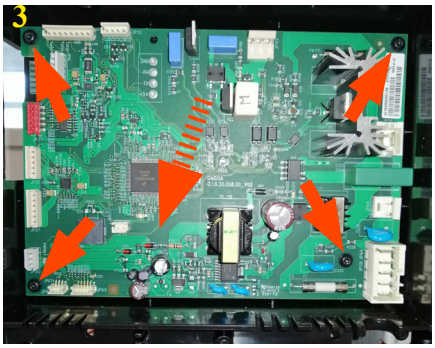
7.14. CPU board



1 Unscrew the screw shown and lift the cover

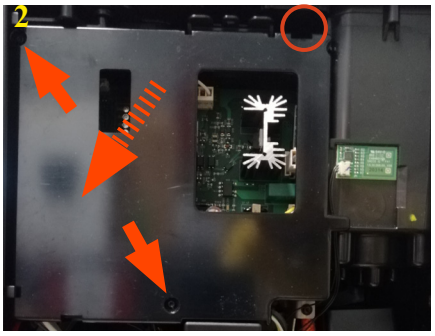


2 Disconnect all electrical wirings



3 Unscrew the screw shown and lift Main board

7.15. Programming access

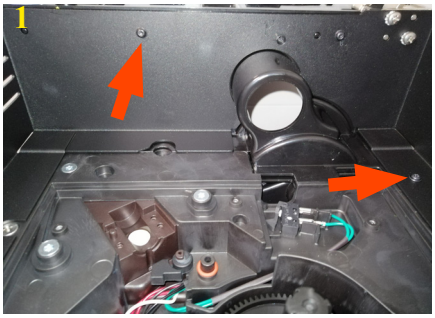


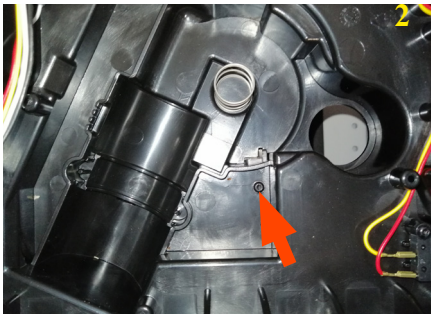
2 Unscrew the screw shown and lift the CPU cover, pay attention to the hook highlighted in the red circle

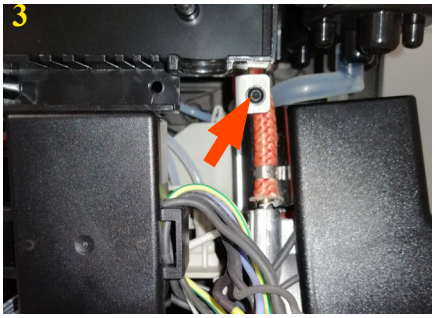
1 Unscrew the screw shown and lift the cover

3 Connect with EPSC:
1. with calbe code 996530005712
2. with calbe code 421946047151

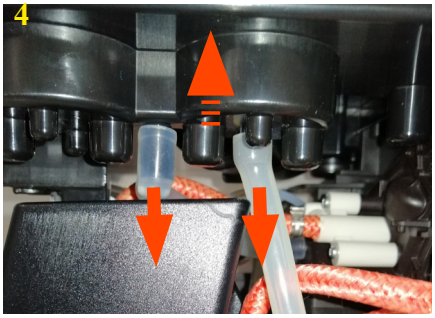
7.16. Central plate



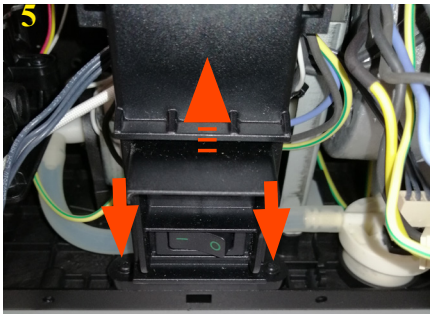




1-2-3 Unscrew the screw shown

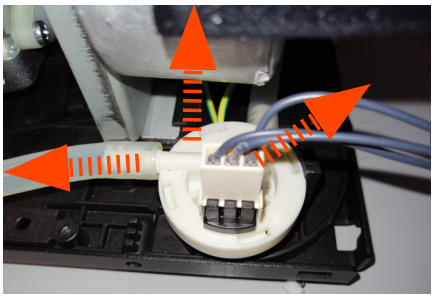


4 Disconnect the silicon tubes lift the horizontal mounting plate



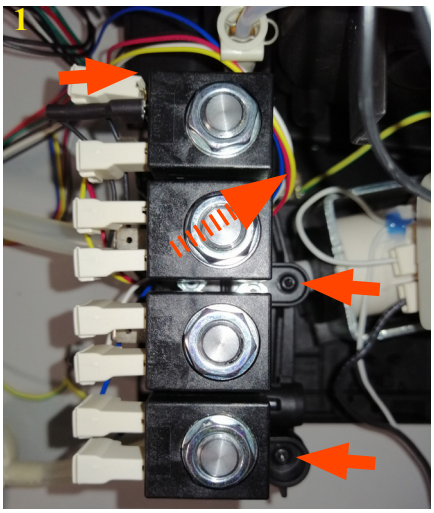
5 Unscrew the screw shown and lift the socket-switc support

7.17. Flow-meter



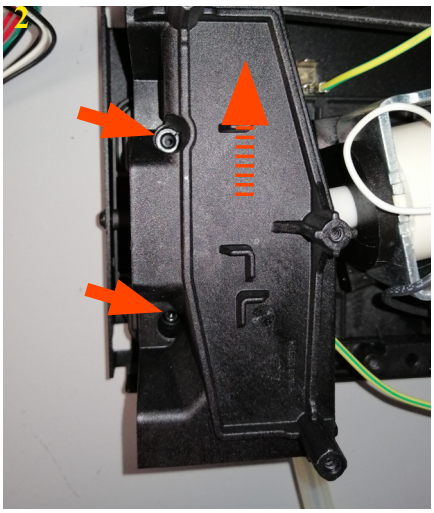
Lift the Flow-metet and disconnect all electrical and hidraulic parts

7.18. EV general assembly



1 Unscrew the screw shown and lift EV assebly

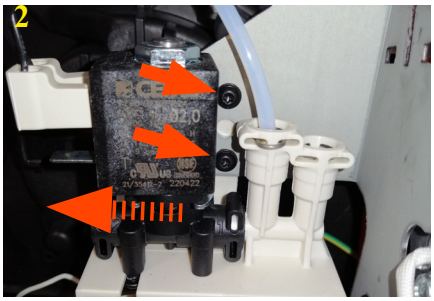
2 Unscrew the screw shown and lift EV support assebly



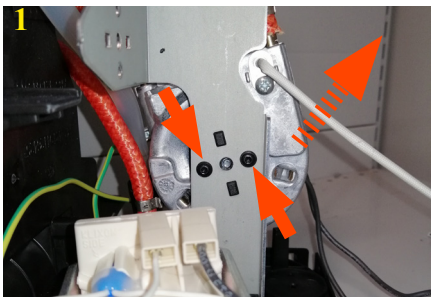
7.19. 2Way valve

1 Disconnect the silicon tubes

2 Unscrew the screw shown and lift 2way valve

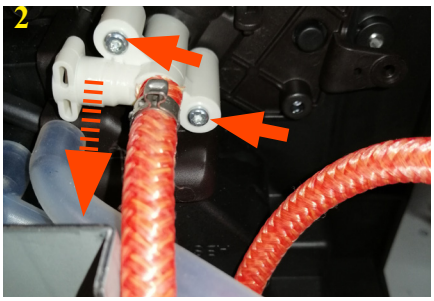


7.20. Boiler and pin boiler fast connection

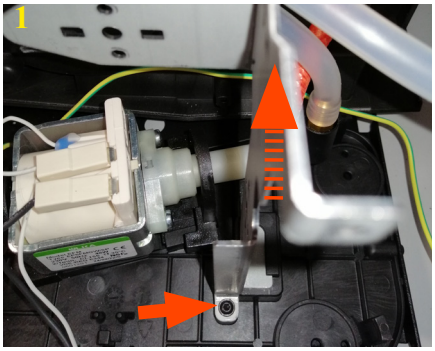


1 Unscrew the screw shown and lift the boiler

2 Unscrew the screw shown and lift the pin boiler fast connection

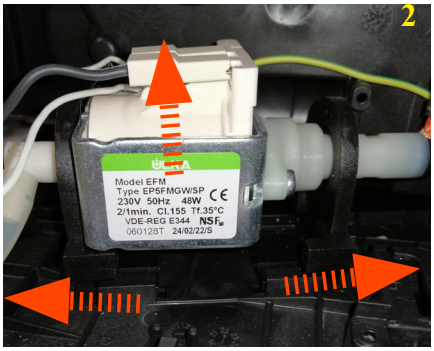


7.21. Pump

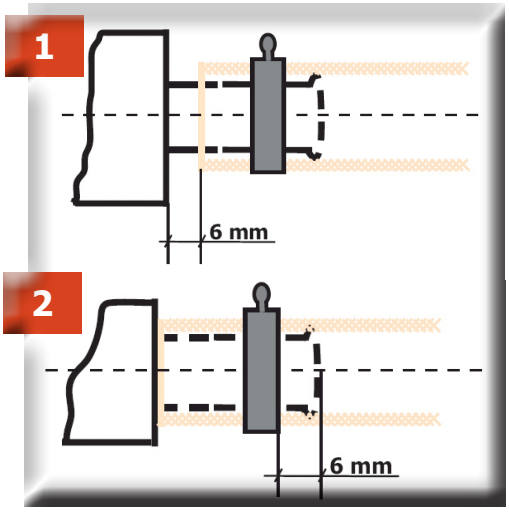


1 Unscrew the screw shown and lift the still slim tube boiler

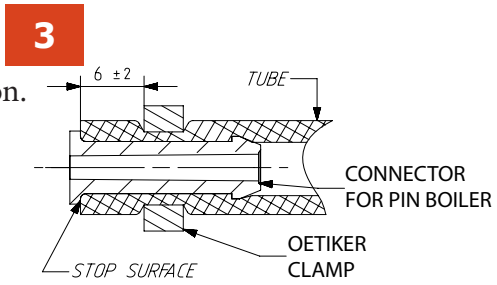
2 Lift first the pump support and than the pump



7.22. Fitting and removing Oetiker clamps

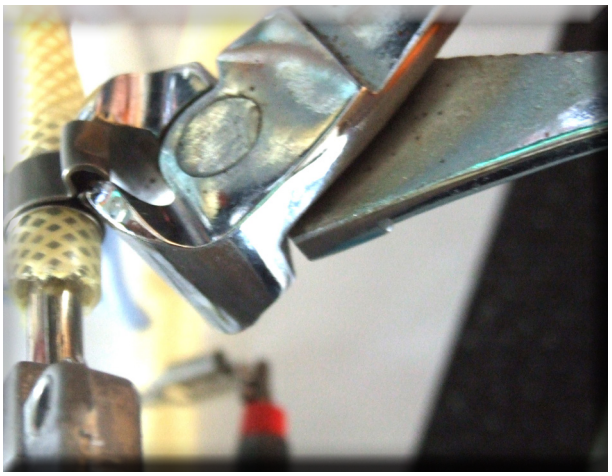


1) Boiler connection.



2) Other connections.

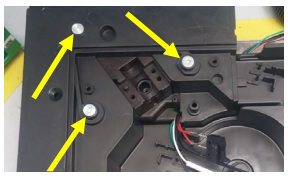
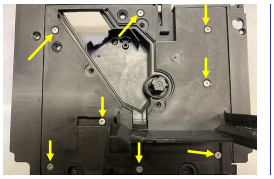
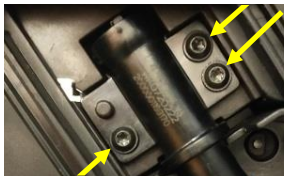
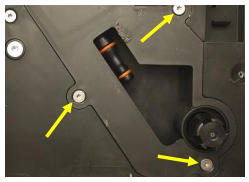
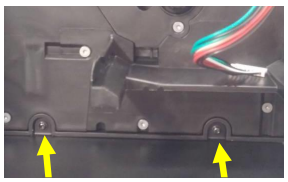
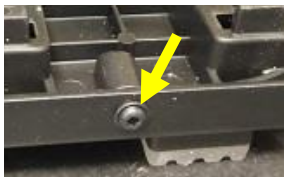
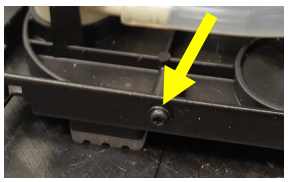
3) Connector for pin boiler

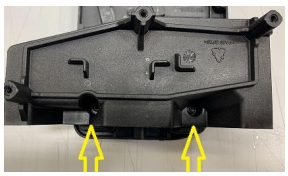
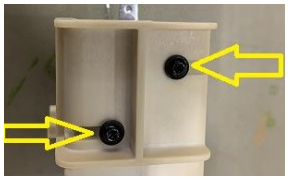
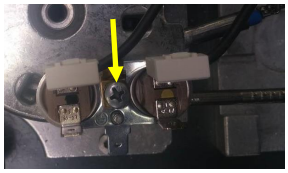


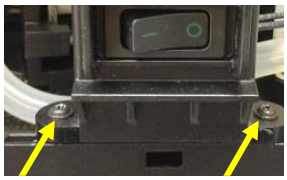
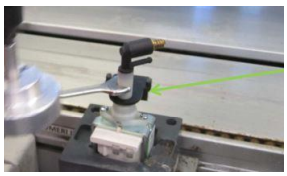
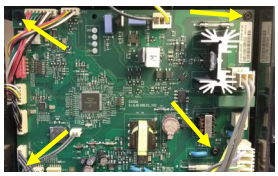
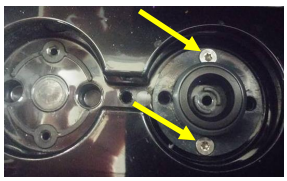
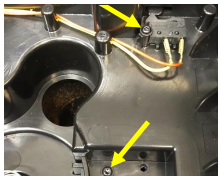
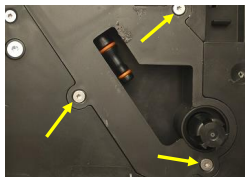
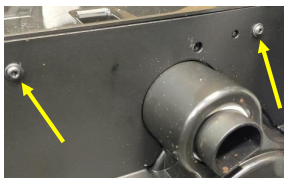
Use a suitable pair of pliers to remove the clamp (as illustrated).

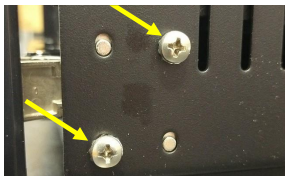
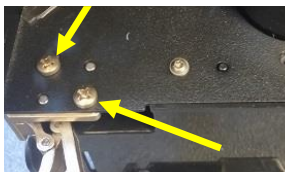
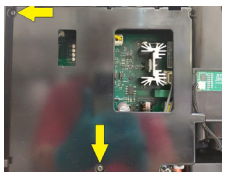
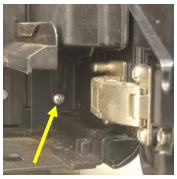
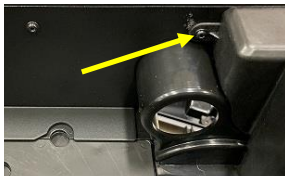
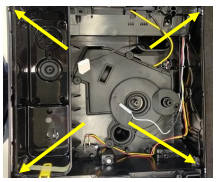
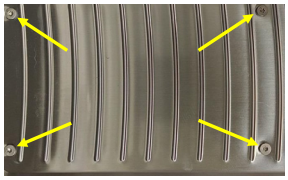
Tighten the clamp as illustrated.

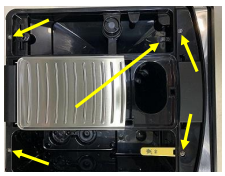
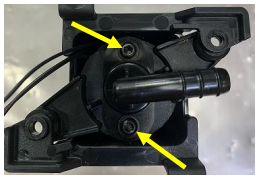
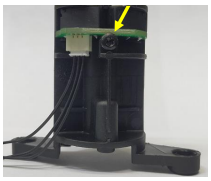
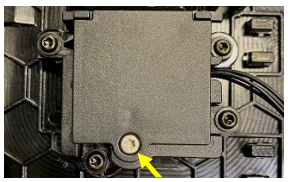
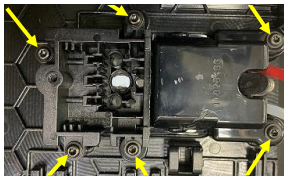
7.23. Tightening torques

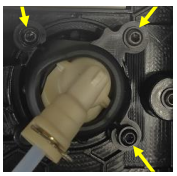
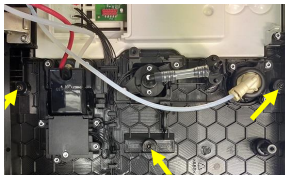
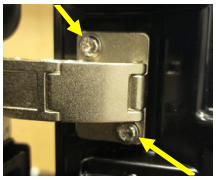
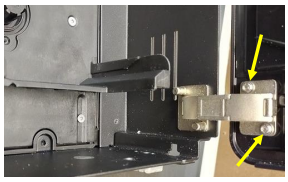
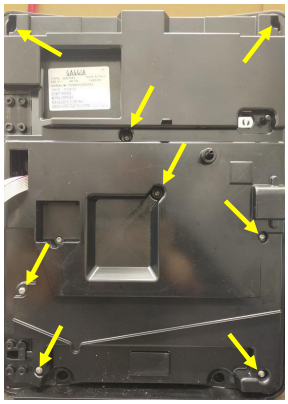
Screw	Quantity	Image	tightening torque
Pin of boiler fast connector	2		0,6 Nm ± 0,1
Vertical mounting plate	3		1,3 Nm ± 0,1
Vertical mounting plate	1		0,6 Nm ± 0,1
Vertical mounting plate	8		0,6 Nm ± 0,1
Pin of boiler	3		0,6 Nm ± 0,1
Pin of boiler cover	3		0,6 Nm ± 0,1
Vertical mounting plate	2		0,6 Nm ± 0,1
Lower plate 1	1		0,6 Nm ± 0,1
Lower plate 2	1		0,6 Nm ± 0,1

Screw	Quantity	Image	tightening torque
Steel slim tube boiler support	1		0,6 Nm ± 0,1
Boiler 1	2		0,6 Nm ± 0,1
EV support	2		0,6 Nm ± 0,1
EV assembly	3		0,6 Nm ± 0,1
2 way valve 1	2		0,6 Nm ± 0,1
2 way valve 2	2		0,6 Nm ± 0,1
Boiler 2	1		1,5 Nm ± 0,5
Boiler 3 (Sensor NTC)	1		2,0 Nm ± 0,5
Boiler 4	1		1,2 Nm ± 0,1

Screw	Quantity	Image	tightening torque
Socket-switch support	2		0,6 Nm ± 0,1
Safety valve	1		1,0 Nm ± 0,1
Main board	4		0,5 Nm ± 0,1
Water tank connection	2		0,5 Nm ± 0,1
Horizzontal mounting plate 1	2		0,6 Nm ± 0,1
Upper cover 1	1		0,6 Nm ± 0,1
Horizzontal mounting plate 2	1		0,6 Nm ± 0,1
Horizzontal mounting plate 3	1		0,6 Nm ± 0,1
Horizzontal mounting plate 4	2		0,6 Nm ± 0,1

Screw	Quantity	Image	tightening torque
Hinges 1	2		1,3 Nm ± 0,1
Hinges 2	2		1,3 Nm ± 0,1
Main board cover	2		0,6 Nm ± 0,1
Protector valve 1	1		1,5 Nm ± 0,1
Protector valve 2	1		0,8 Nm ± 0,1
Coffee grinder soundproffing	2		0,6 Nm ± 0,1
Lateral pannels	4		0,6 Nm ± 0,1
Grinder adjustament setting	1		0,6 Nm ± 0,1
Cup warmer	4		0,6 Nm ± 0,1

Screw	Quantity	Image	tightening torque
Coffee dispenser	2		0,6 Nm ± 0,1
Rear pannel	2		0,6 Nm ± 0,1
Upper cover	5		0,6 Nm ± 0,1
Coffee dispenser support 1	2		0,6 Nm ± 0,1
Coffee dispenser support 2	2		0,6 Nm ± 0,1
Coffee dispenser board	1		0,6 Nm ± 0,1
Carafe board cover	1		0,35 Nm ± 0,1
Carafe board support	6		0,6 Nm ± 0,1
UI support	2		0,6 Nm ± 0,1

Screw	Quantity	Image	tightening torque
Door magnet	1		0,4 Nm ± 0,1
Button for door release	2		0,6 Nm ± 0,1
Steam wand	3		0,6 Nm ± 0,1
Lover pannel	3		0,6 Nm ± 0,1
Door upper hinge	2		1,0 Nm ± 0,1
Door lower hinge	2		1,1 Nm ± 0,1
Drip tray support	2		1,9 Nm ± 0,1
Door cover pannel	8		0,6 Nm ± 0,1