Coffee Machine

PHILIPS 3100

Service
Service
Service

CMF

AMF

OTC

ServiceManual

Rev. 04 OCT 2017

TYPE	12NC	DESCRIPTION
HD8826/09	882882609870	PHI 3100 CMF BK 230 RU
HD8828/01	882882801100	PHI 3100 OTC BK 230 BE
HD8828/09	882882809870	PHI 3100 OTC BK 230 RU
HD8831/01	882883101010	PHI 3100 CMF BK 230 WE
HD8831/09	882883109300	PHI 3100 CMF BK 230 CEE
HD8831/11	882883111010	PHI 3100 CMF AN 230 WE
HD8832/01	882883201010	PHI 3100 AMF BK 230 WE
HD8832/05	882883205470	PHI 3100 AMF BK 220 KR
HD8832/09	882883209300	PHI 3100 AMF BK 230 CEE
HD8834/01	882883401010	PHI 3100 OTC BK 230 WE
HD8834/09	882883409300	PHI 3100 OTC BK 230 CEE
HD8834/11	882883411010	PHI 3100 OTC AN 230 WE
HD8834/19	882883419300	PHI 3100 OTC AN 230 CEE
EP3510/00	882860400010	PHI 3100 CMF BK 230/50
EP3510/00	882860400220	PHI 3100 CMF BK 230/50
EP3510/00	882860400300	PHI 3100 CMF BK 230/50
EP3519/00	882861100870	PHI 3100 CMF BK 230/50
EP3550/00	882860600010	PHI 3100 OTC BK 230/50

TYPE	12NC	DESCRIPTION
EP3550/00	882860600220	PHI 3100 OTC BK 230/50
EP3550/00	882860600300	PHI 3100 OTC BK 230/50
EP3550/10	882860610010	PHI 3100 OTC SL 230/50
EP3551/00	882861200010	PHI 3100 OTC BK 230/50
EP3551/00	882861200220	PHI 3100 OTC BK 230/50
EP3551/00	882861200300	PHI 3100 OTC BK 230/50
EP3551/10	882861210300	PHI 3100 OTC LAT MAC SL 230/50
EP3558/00	882862500870	PHI 3100 OTC RCA BK 230/50
EP3559/00	882861300870	PHI 3100 OTC BK 230/50
EP3360/00	882860500010	PHI 3100 OTC (LAT MAC) BLK 230/50
EP3360/00	882860500300	PHI 3100 OTC (LAT MAC) BLK 230/50
EP3362/00	882863900010	PHI 3100 OTC (LAT MAC) WHT 230/50
EP3362/00	882863900300	PHI 3100 OTC (LAT MAC) WHT 230/50
EP3363/10	882864010010	PHI 3100 OTC (LAT MAC) RED 230/50
EP3363/00	882864000010	PHI 3100 OTC (LAT MAC) RED 230/50
EP3363/00	882864010300	PHI 3100 OTC (LAT MAC) RED 230/50

HISTORY OF CHANGES TO THE SERVICE MANUAL				
From Rev.	**To Rev.**	**Chapter**	**Inserted**	**Modified**
Rev.03	**Rev04**			New layout

Published by Saeco International Group Subject to modification

EN 4219 400 00031

07/08/2015

PHILIPS

General Information	
Description	**Value**
Housing material	Thermoplastic material
Size (w x h x d)	215mm x 330mm x 429 mm
Weight	6.7 kg for CMF-AMF 7.5 Kg for OTC (data may vary depending on the model)
Power Cord length	120 cm
Cup size	Up to 152 mm
Water tank	1.8 litres - Removable type
Water fileter	EP models: Acquaclean filter 12NC-421944050461 (CA6902/00); HD models: Brita filter 12NC-996530071872 (CA6702/00)
Coffee bean hopper capacity	250 g
Coffee grounds drawer capacity	15
Milk carafe capacity	0,5 l (OTC Version)
Energy Efficiency Label	A
Energy saving mode consumption	< 1 Wh
Pump pressure	15 bar
Boiler	Stainless steel type
Safety devices	Thermal fuse
Nominal voltage - Power rating – Power supply	Data stored on the below label placed inside the service door
Serial Number TW90xxyy768226	TW90= product + production location - xxyy = year & Production week - 768226 = unique following number

Technical specification	
Description	**Value**
Power supply and output:	240 V~ 50 Hz 1850 W - 230 V~ 50/60 Hz 1850 W 120 V~ 60 Hz 1500 W
Power consumption:	During heating phase- approx. 5.6 A
Coffee heat exchanger output: Stainless steel	(230 V~) 1900 W - (120 V~) 1300 W - (100 V~) 1100 W 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 card
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 EP5/S GW approx. 13-15 bar with reciprocating piston and thermal switch 100°C 48 W, 230V, 50 Hz, 120V, 60Hz 100V, 50/60 Hz
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.

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CHAPTER 1

INTRODUCTION

1.1. New Portfolio coding Principles Full Automatic

As per February 2017 we installed a more consistent and intuitive coding structure in Full Automatic for new (SKU) launches only.
We moved from all FA having HD (household domestic) coding to:
Saeco models ⟶ EP(Espresso Philips)

1.2. Consumer Replaceable Parts (CRP) List

Consumer Replaceable Parts are parts which we encourage consumers to replace themselves (as required); these parts can be removed without help of a screwdriver

CRP CTN	12NC	Description	Compatible for (models):	Picture (assembled)
CP0165/01	421941308111	Dip tray	HD8826-HD8831-HD8832 - EP3510-EP3519	
CP0167/01	421941308131	Dip tray	HD8828 - HD8834-EP3550 - EP3551-EP3558-EP3559	
CP0654/01	421941311461	Dip tray	EP3360/00	
CP0649/01	421941311341	Dip tray	EP3362/00	
CP0650/01	421941311331	Dip tray	EP3363/00	
CP0150/01	996530073476	Water tank	HD8826-HD8828 - HD8831-HD8832- HD8834	
CP0228/01	421944052271	Water tank	EP3510-EP3519- EP3550-EP3551-EP3558-EP3559 - EP3360 - EP3362 - EP3363	
CP0166/01	421941308121	Coffee grounds container	ALL MODELS	
CP0151/01	421944034471	Drip tray cover	ALL MODELS	
CP0329/01	996530000926	Classic milk frothe	HD8826- HD8831 -EP3510-EP3519	
CP0152/01	421944031491	Automatic milk frother	HD8832	
CP0153/01	421944029451	Complete milk carafe	HD8828 - HD8834-EP3550 - EP3551-EP3558-EP3559-EP3360 - EP3362 - EP3363	
CP0154/01	421944032881	Transparent caraffe	HD8828 - HD8834-EP3550 - EP3551-EP3558-EP3559-EP3360 - EP3362 - EP3363	
CP0155/01	421941307041	Top cover carafe	HD8828 - HD8834-EP3550 - EP3551-EP3558-EP3559-EP3360 - EP3362 - EP3363	
CP0156/01	421944007561	Lid of milk carafe	HD8828 - HD8834-EP3550 - EP3551-EP3558-EP3559 - EP3360 - EP3362 - EP3363	

CP0157/01	996530067584	Milk tube	HD8828 - HD8834-EP3550 - EP3551-EP3558-EP3559 - EP3360 - EP3362 - EP3363	
CP0158/01	996530068626	Milk tube connector	HD8828 - HD8834-EP3550 - EP3551-EP3558-EP3559 - EP3360 - EP3362 - EP3363	
CP0159/01	421941306191	Water spout	HD8828 - HD8834-EP3550 - EP3551-EP3558-EP3559	
CP0229/01	421944052401	Brew group	ALL MODELS	
CP0164/01	421944033301	Coffee measuring scoop	ALL MODELS	
CP0504/01	421944070662	Lid of coffee bean container	EP3510- EP3550 - EP3551-EP3558-EP3559 EP3360 - EP3362 - EP3363(HD8826-HD8828 - HD8831 -HD8832-HD8834 FROM S/N. TW901645704032)	

1.3. 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
-	EPSC (Espresso Philips Service Center)	Tool used to flash the SW on the machines (for SW upgrade and diagnostics mode). Refer to SDA_114585.

1.4. Maintenance Products

12NC Code	Material	Description
-	Thermal paste	Heat resistance > 200°C
996530067222	Descaler	“ACC SAE DECALCIFIER 5 L 1 UNIT”
132253695601	Jar of Grease	“PARALIQ GB 363”
996530045784	Silicone grease	“ACC TUBE FIN FOOD GREASE 2 400 ML”

1.5. Safety warnings

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

The technicians to operate under safety conditions, must:
1. Use personal safety devices;
2. Turn off the machine by the power switch is not an adequate safety precaution;
3. Disconnect the appliance from the power mains before repairing;
4. Before and after repair, it is recommended to perform dielectric strength tests (This domestic appliance is rated as insulation class 1).

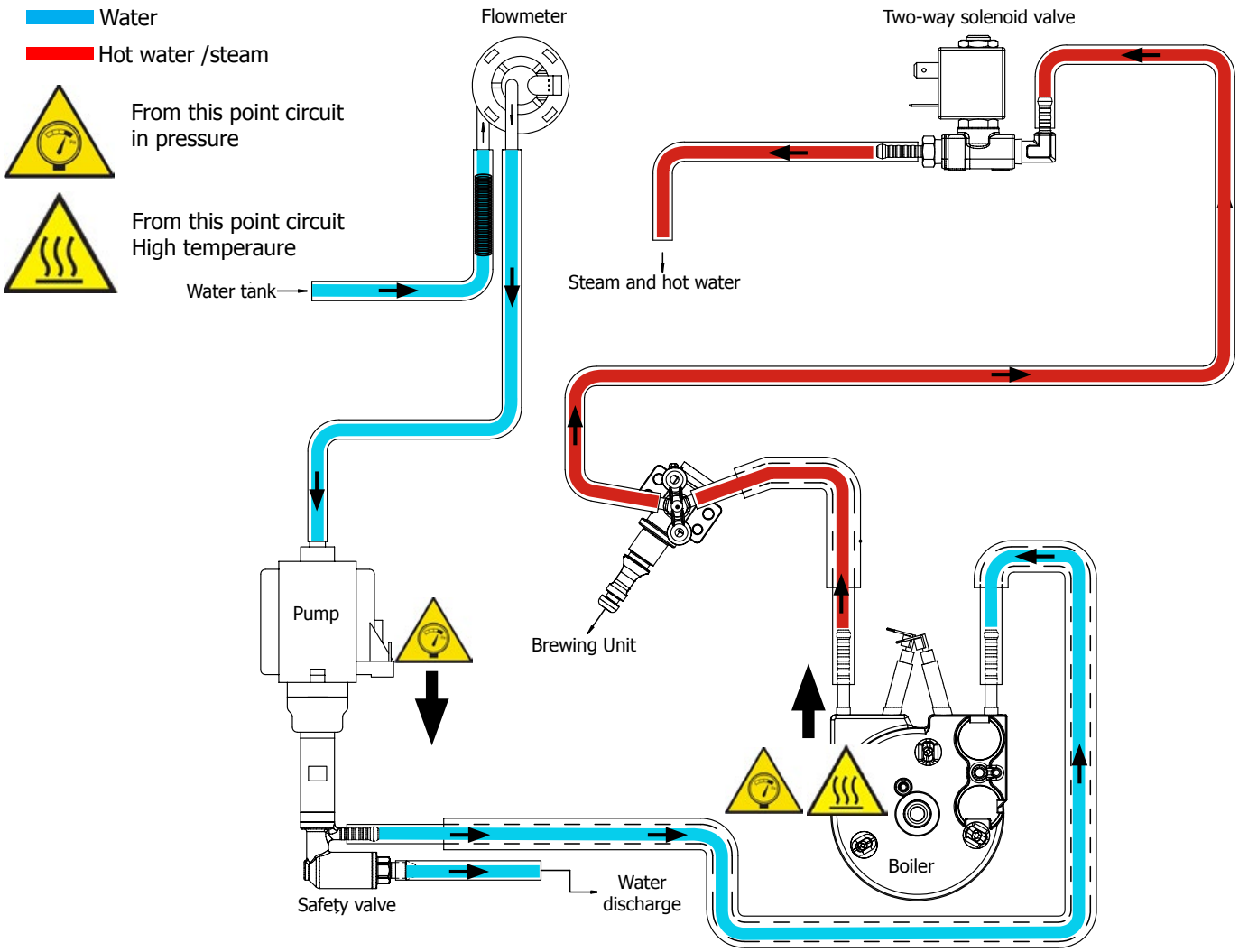
During the machine disassembly the operator has to pay attention to hot and under pressure parts.
All parts involved can be find in the hydraulic circuit below schema (Image 1-par.1.7.).
The machine hydraulic circuit can reach maximum pressure of 16/18 bar.

To operate under safety condition is recommended to perform the Steam Out procedure in order to remove the pressure and hot water inside the hydraulic circuit.

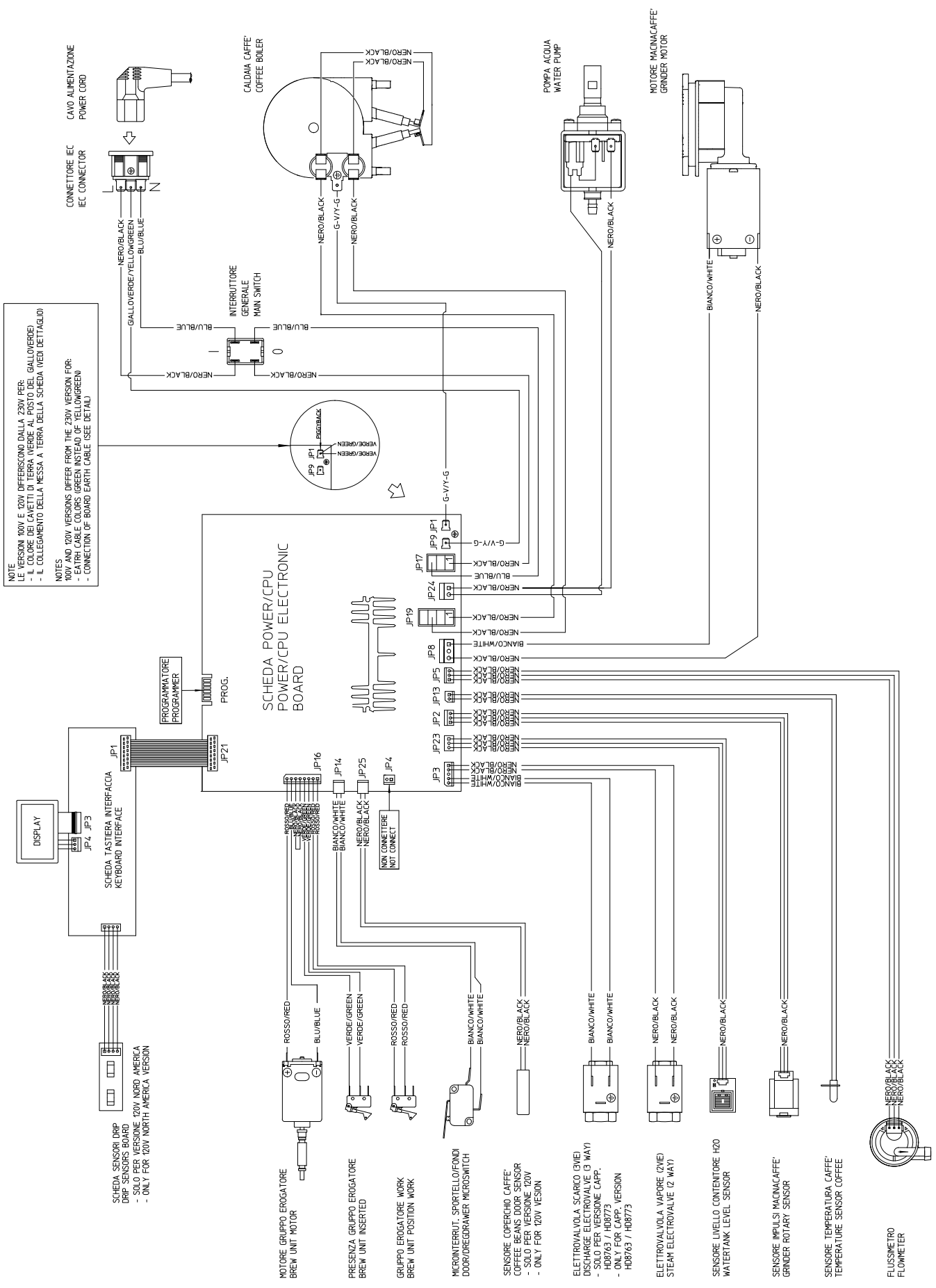
When the machine arrives at the Service Center in descaling mode interrupted, or making Descaling , take EXTREME CARE to avoid any unintentional contacts with the descaler.
After the product has been repaired, it should function properly and has to meet the safety requirements and legal regulations as officially laid down at this moment.

1.6. Water circuit diagram

Image 1



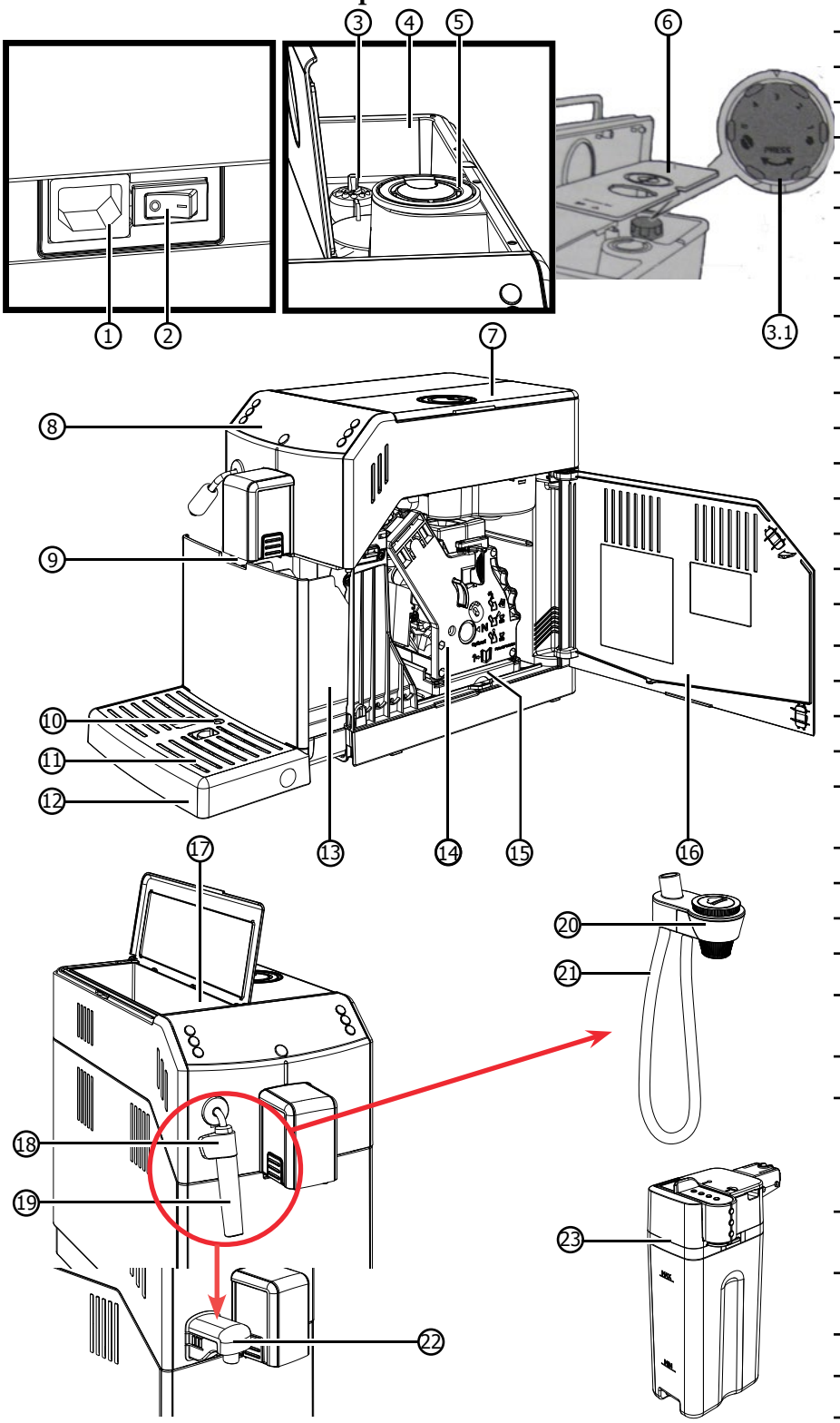
1.7. Electrical diagram



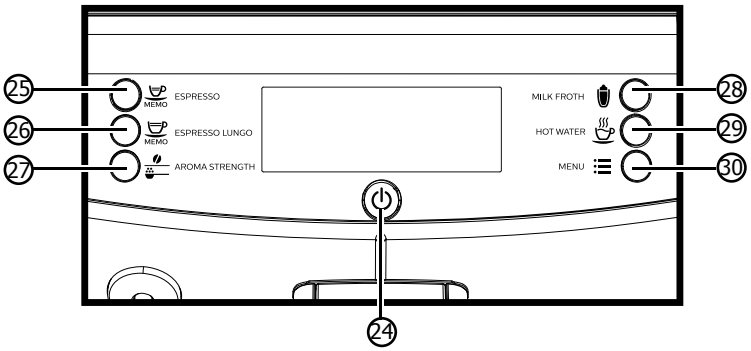
1.8. Service POLICY grid as used for coffee machine

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

1.9. External machine parts



1	Power cord socket
2	Power button
3	Grinder adjustment knob (HD models)
3.1	Grind setting knob (EP models)
4	Coffee bean hopper
5	Pre-ground coffee compartment
6	Bean hopper (EP models)
7	Coffee bean hopper lid
8	Control panel
9	Coffee dispensing spout
10	Full drip tray indicator
11	Cup holder grill
12	Drip tray
13	Coffee grounds drawer
14	Brew group
15	Coffee residues drawer
16	Service door
17	Water tank + Lid
18	Wand protective gripper
19	Classic Milk Frother (CMF)
20	Automatic Milk Frother (AMF)
21	Suction tube for Automatic Milk Frother (AMF)
22	Water dispensing spout (OTC)
23	Milk carafe (OTC)
24	ON/OFF button
25	Espresso brew button
26	Long espresso brew button (HD MODELS)
26	COFFEE button (EP MODELS)
27	“Aroma” - Pre-ground coffee button (CMF-AMF HD MODELS AND EP3510-3519-3559-3551-3360-3362-3363)
27	Cappuccino brew button (OTC HD MODELS AND EP3550-3558)
28	Steam button (CMF HD MODELS AND EP3510-3519)
28	Milk froth button (AMF HD MODELS)
28	Special (OTC HD MODELS)

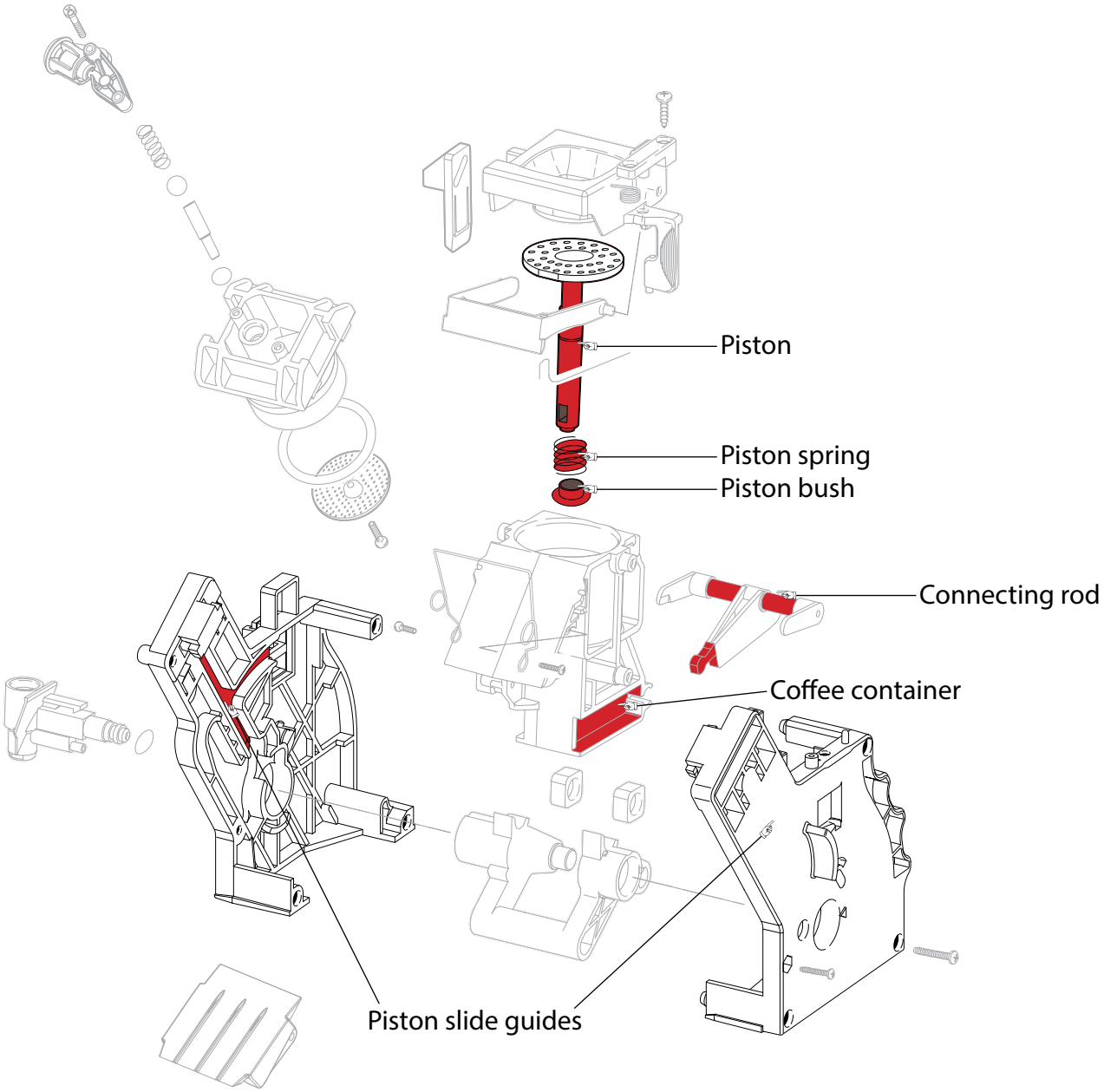


28	Hot water button (EP3550-3558)
28	Cappuccino button (EP3551-3559)
29	Hot water button (CMF-AMF HD MODELS AND EP3510-3519)
29	“Aroma” - Pre-ground coffee button (OTC HD MODELS AND EP3550-3558)
29	Latte macchiato button (EP3551-3559-3360-3362-3363)
30	Menu button

1.10. Error codes

ERROR CODES	DESCRIPTION
01	The coffee grinder is blocked (grinder blades jammed or sensor not reading properly)
03	The brewing unit is blocked in work position (microswitch not released in up position after 3", torque error trying to move down, descent time out exceeded)
04	The brewing unit is blocked in home position (microswitch not released in down position after 3", torque error trying to move up, ascent time out exceeded)
05	Water circuit / flow meter problems (water circuit blocked or no flow meter signal)
10	Boiler temperature sensor short circuited
11	Boiler temperature sensor open circuit
14	The boiler temperature has exceeded the maximum allowed value (165°c)
15	The boiler temperature has not increased by x°C in y sec (boiler power supply disconnected, incorrect boiler fitted must be a 1300W boiler, partial power supply to boiler, cut out thermostat tripped)
19	Mains voltage trouble
22	interface missing or unknown

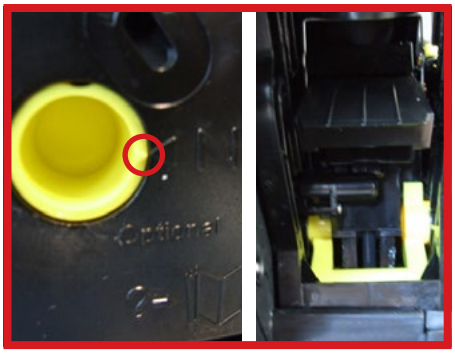
1.11. Brew Unit mainteinance: Where to grease.



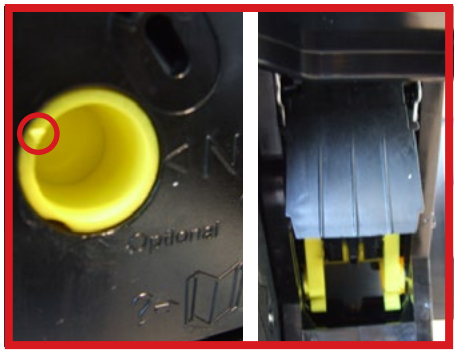
1.12. Position of the Brew Unit

Brew Unit

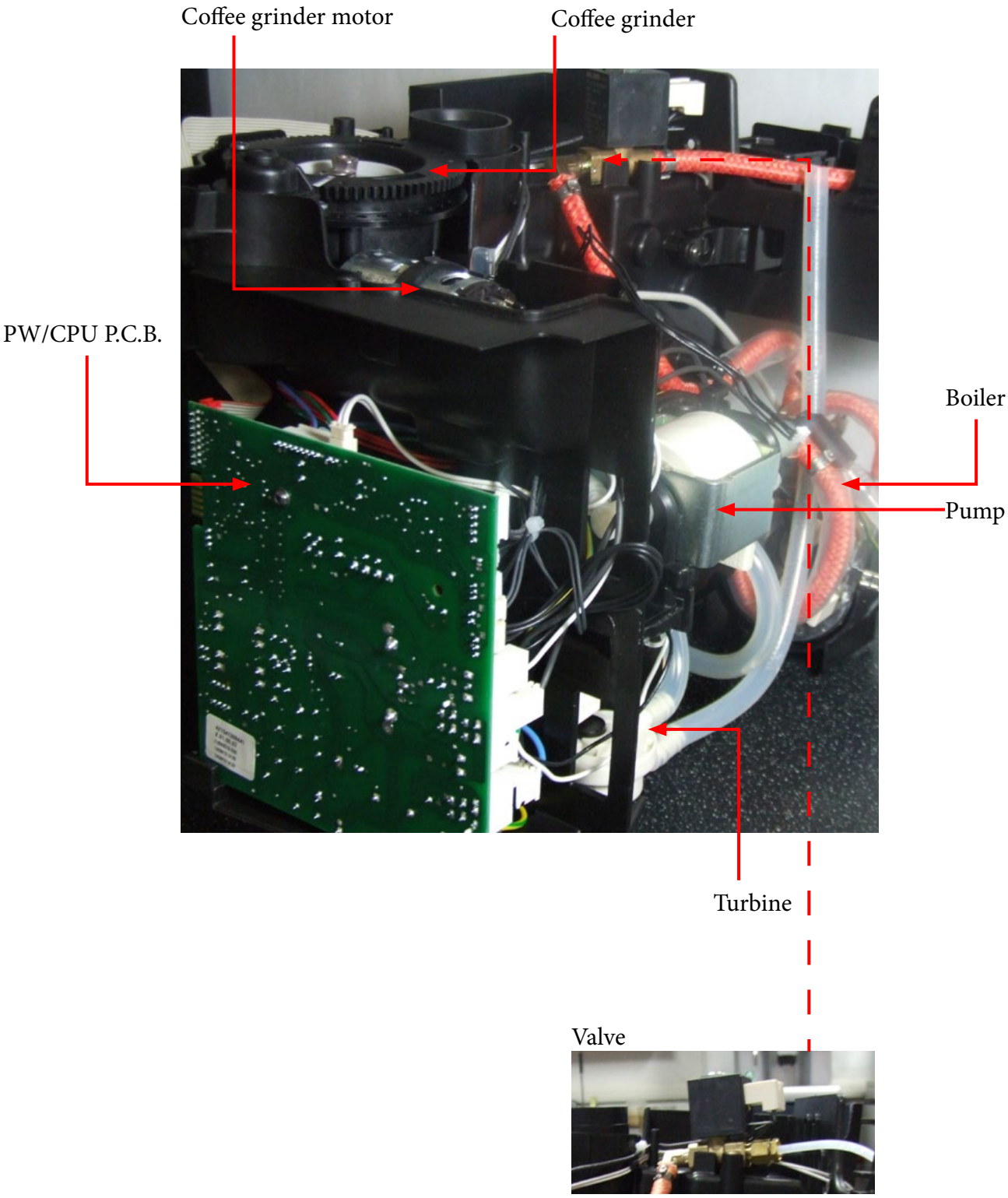
Home Position



Work Position



1.13. 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 bot tom.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;

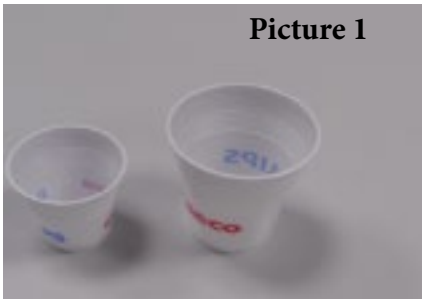
4. Test measurement: from end of dispensing to the end of rotations must be completed within 12 seconds.

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).

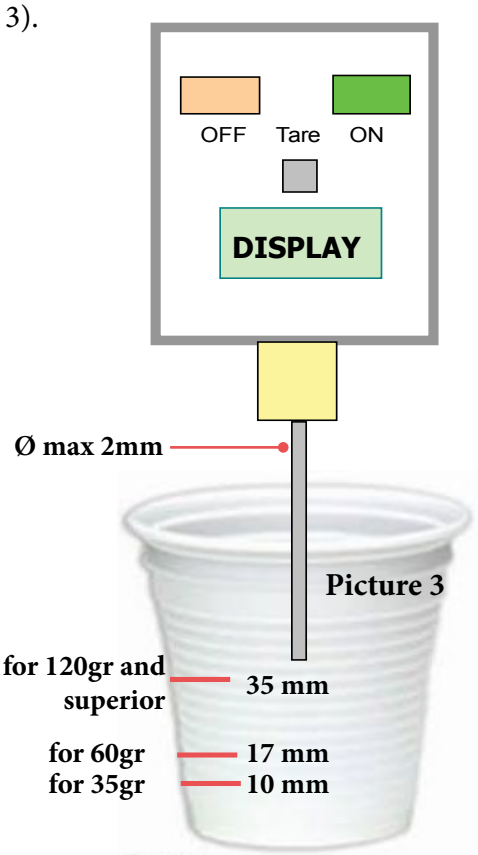
Limits of acceptability
The acceptance limits are divided by features and products and are the following:

Espresso Coffee Italy Q.ty 25/40 gr.
Temperature of 1st product 69°C ≤ 85°C
Temperature of 2nd product 72°C ≤ 85°C

Coffee Q.ty 70/120 gr.
Temperature of 1st product 69°C ≤ 85°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:

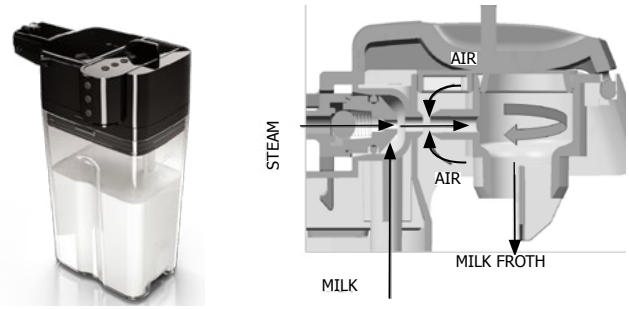
The parameters to be respected are: milk temperature and height of the cream. Each of these parameters, however, must be evaluated depending on the type of system used for the production of hot milk. Actually three types of devices are present on the appliances:

- Manual system (CMF)
- Semi-Automatic system (AMF)
- Automatic system (Carafe,etc.)

Milk temperature in the beaker:

System with Pinless Wonder: With milk at Trefr. (about 4-10 °C): $\rightarrow \Delta \geq 45$
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



Height of the milk cream in the beaker:

Manual system (pannarello) ≥ 15mm on 100gr. of brewed product

Semi-automatic system (cappuccinatore) ≥ 20mm on 100gr. of brewed product

Automatic system: carafe, cappuccinatore, Pinless wonder e.g. (New Royal, Energica Pure, Intelia EVO latte) ≥ 20mm on 100gr. of brewed product

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. It is important the mixing of milk before the measurement at 10mm from the bottom of the beaker. If the mixing is correct, temperature, for a few fractions of a second, during the measurement should not oscillate.

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 (CMF)
Pour 100cc. of milk at Trefr. in a beaker of 250 ml of capacity and with a inner diameter of 70 mm; with machine in steam mode:

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

Semi-automatic systems (AMF)
Pours milk at Trefr. in a container ; with the machine in steam mode:

1. Insert the silicone tube in the milk container, placing a beaker of 250 ml capacity and with an inner diameter of 70 mm under the cappuccino maker and dispensing steam.
2. After having provided 100gr. of product, stop the steam and check the result obtained on milk.

Automatic: Carafe, Cappuccino Pinless wonder
After setting the machine to delivery 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 emulsion set to the default value.

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

Manual, Semi-Automatic 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

NB: To verify better the height of the cream, a practical example is to add
to dispensed product a small amount of coffee. The addition of coffee immediately highlights the
the surface of separation between liquid and cream.

2.3. Machine parameters and performance

PRODUCT QUANTITY	Minimum amount (≃ ml)	Default amount (≃ ml)	Maximum amount (≃ ml)	**Programm. by the user**	**Machines**
Espresso	20	40	70	Yes	ALL MODELS
Cappuccino	10 + 10 sec. milk	50 + 34 sec. milk	230 + 75 sec. milk	Yes	OTC HD MODELS AND EP3550-3558
Latte macchiato	10 + 10 sec. milk	30 + 40 sec. milk	230 + 75 sec. milk	Yes	EP3551-3559-3360-3362-3363
Milk Frother	10 sec. milk	34 sec. milk	75 sec. milk	Yes	AMF HD MODELS
Coffee	100	120	240	Yes	ALL MODELS
Hot water	No timeout				ALL MODELS
Steam for frother	Max 180 seconds				ALL MODELS

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

STANDBY	Description and values
Time (default)	15 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

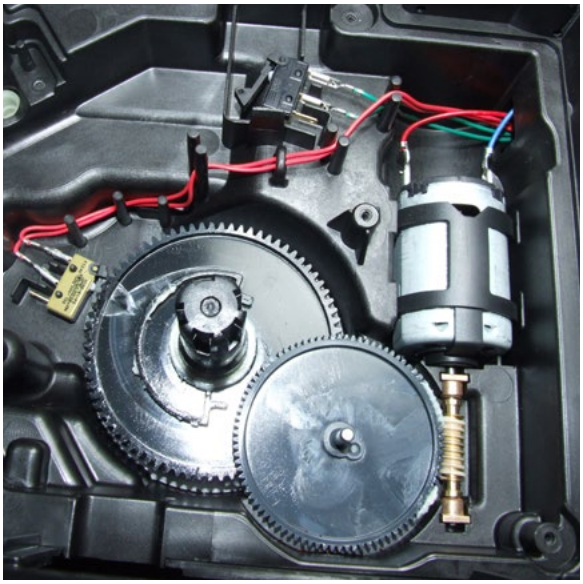
CHAPTER 3

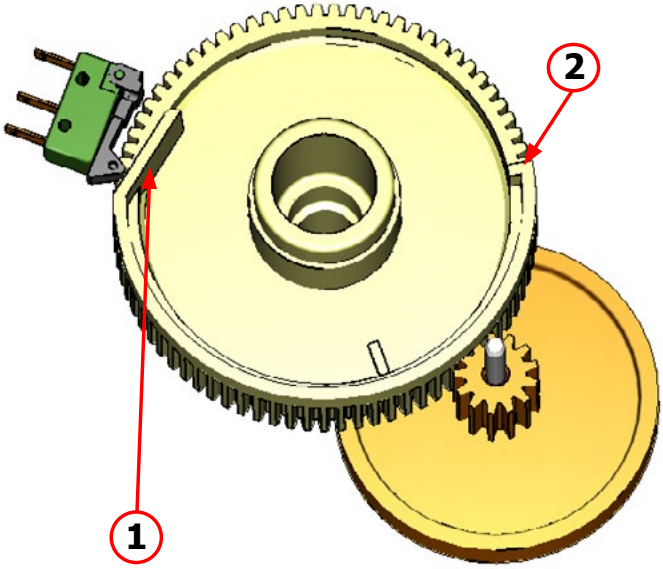
OPERATING LOGIC

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 begins to heat the water for approx. 45 sec, in order to reach the optimal temperature (established by the software).





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

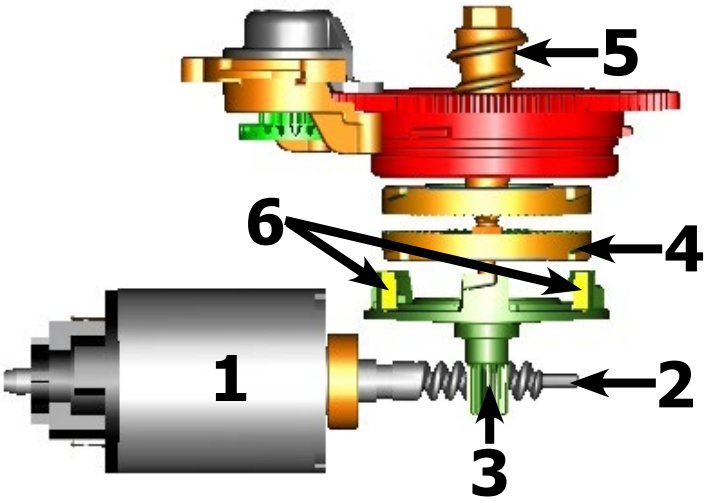
- Dispensing position: 2

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

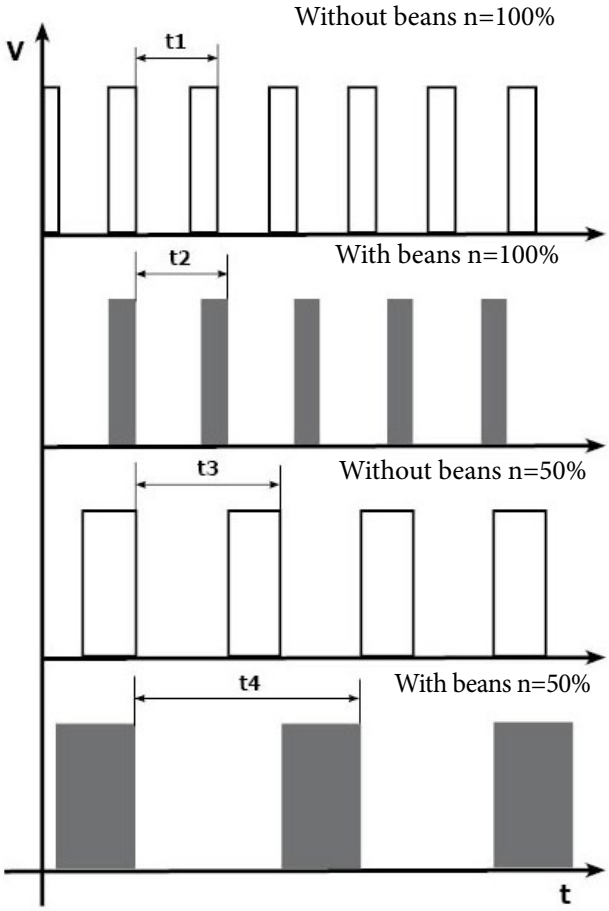
An NTC is used as a temperature sensor; in the event of overheating this reduces boiler element power consumption. The electronic system detects the current boiler temperature from the drop in voltage of the sensor and adjusts it accordingly. Heating element values and corresponding temperatures: see table.

3.3. Coffee grinder HD Models



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) There are two magnets (6) in the gear wheel; at every rotation these induce two pulses to a Hall sensor, which in turn transmits them to the electronic system to grind the correct amount of coffee.

3.4.1. Low bean level detection, dose quantity adjustment, coffee grinder blocked



No coffee
A low coffee bean level is detected by the Hall sensor, after variations in the pulse frequency (with or without coffee). If there are no coffee beans (operation while empty), the number of rotations – and therefore the number of pulses – will be greater.
t1 = no coffee indication

If, however, there are coffee beans, the number of rotations will be lower due to the force created by the grinding.
t2 = no indication

t3 and t4 = this measurement is performed at the end of each grinding process

Dose quantity adjustment
The dose quantity is adjusted in accordance with the pulses detected (number of rotations proportional to the selected flavor – mild, medium or strong) and those established by the softeware.

Coffee grinder blockage
If the coffee grinder becomes blocked for any reason, pulses will no longer be transmitted to the electronic system and the grinder will come to a stop.

3.4.2. Dose self-learning (SAS)

The aim of this function is to automatically regulate the average dose of ground coffee (SELF-LEARNING); this takes place with an algorithm based on the following values and setting by the user:
1. Number of coffee grinder pulses during the grinding cycle.
2. Max. average value of the power consumed by the gear motor during the coffee brewing cycle.
3. Aroma selected by the user.

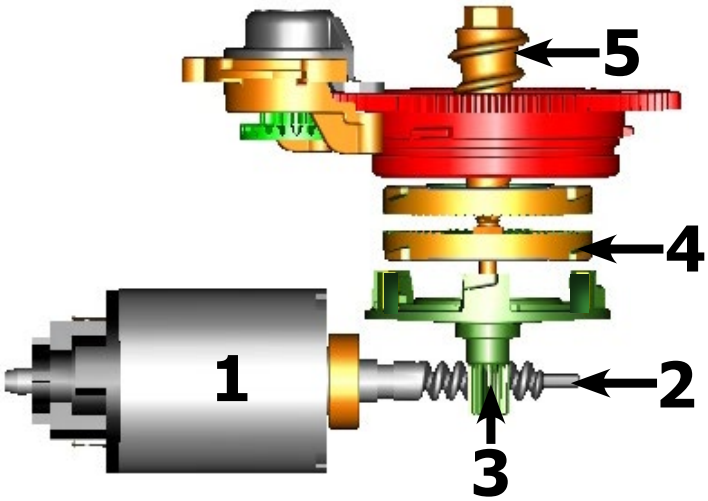
The algorithm compares the maximum average value of the power consumed by the gear motor with the value listed in the table for the selected aroma, in order to calculate the new grinding pulse value for the next coffee produced.
- If the power consumption value is less than the minimum current value, the grinding pulses will be increased by 2.
- If the power consumption value is greater than the maximum current value, the grinding pulses will be decreased by 4.
- If the power consumption value falls within the "over-torque" interval (800≤ MAX_CURRENT_mA ≤1000), the product will be dispensed and the grinding pulses will be decreased by 10.
- If the power consumption value falls within the "abort cycle" interval (MAX_CURRENT_mA>1000), the dreg will be expelled and the grinding pulses will be decreased by 10.
- If the "pre-ground" flavour is selected by the user, no modification will be made.

This guarantees that, regardless of the coffee type used, the grinding level setting and the wear on the grinders, the ground coffee dose always remains constant.

				DOSE ADJUSTMENT (NUMBER OF GRINDER IMPULSES) TO APPLY TO MED AROMA				
		3 levels	5 levels	+2	0	-4	-10 OVER-TORQUE	-10 CYCLE ABORTED
Aroma of the grinded product	A	Mild	Extra Mild	MAX_CURRENT_mA <150mA	<=150mA MAX_CURRENT_mA <=250mA	MAX_CURRENT_mA >250mA	MAX_CURRENT_mA >800mA	MAX_CURRENT_mA >1000mA
	B	Medium	Mild Medium	MAX_CURRENT_mA <250mA	<=250mA MAX_CURRENT_mA <=350mA	MAX_CURRENT_mA >350mA	MAX_CURRENT_mA >800mA	MAX_CURRENT_mA >1000mA
	C	Strong	Strong Extra Strong	MAX_CURRENT_mA <350mA	<=350mA MAX_CURRENT_mA <=500mA	MAX_CURRENT_mA >500mA	MAX_CURRENT_mA >800mA	MAX_CURRENT_mA >1000mA

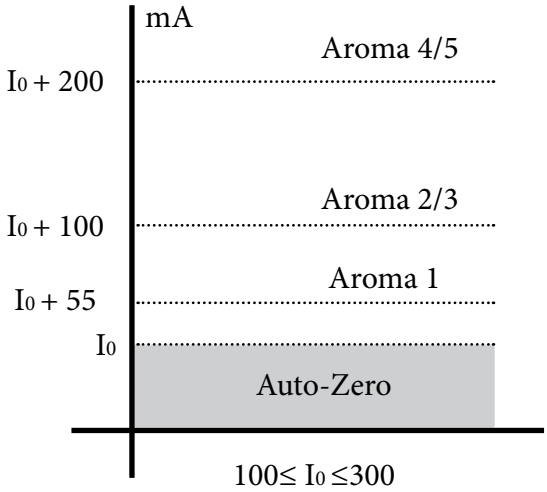
Important:
For perfect operation, machine adjustment should take place in the area of the fields highlighted in green (A, B, C). When the type or brand of coffee is changed, there may be variations in the size of the beans and their stickiness or roasting level. This leads to variations in power consumption (mA), with resulting excessive or insufficient doses (until the necessary adjustments have been made to compensate for this change).
Caution: In the case of excessive dosage, powder may be expelled into the dreg drawer. This is not a fault, but can occur during first usage or after repair.

3.5. Coffee grinder EP Models



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)

3.6.1 Autodose system description



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

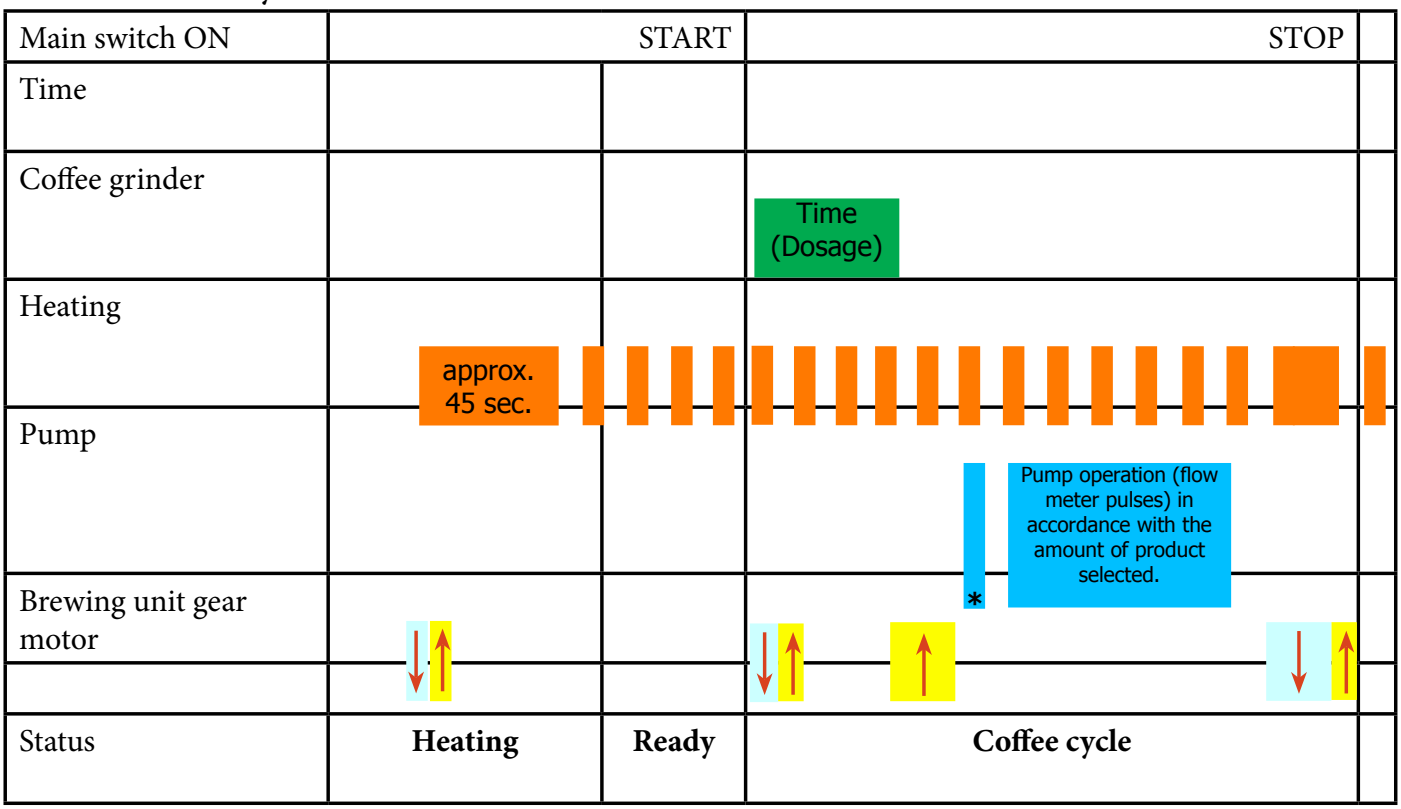
			DOSE ADJUSTMENT			
	5 levels		Grinder Time	Min Grinder Time	Max Grinder Time	Curret target
Aroma of the grinded product	Aroma1	Extra Mild	T_1	3s	8,1s	I_0 + 55mA
	Aroma2	Mild	T_2	3,5s	9s	I_0 + 100mA
	Aroma3	Medium				
	Aroma4	Strong	T_3	4s	10s	I_0 + 200mA
	Aroma5	Extra Strong				

This table shows, depending Aroma set, the grinding time and the current consumption of the coffee grinder with medium grinding (500±60µm) and using coffee of test.

3.6.2. 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, coffee blends, etc.), these current targets are not static, but dynamic.

3.7. Coffee cycle



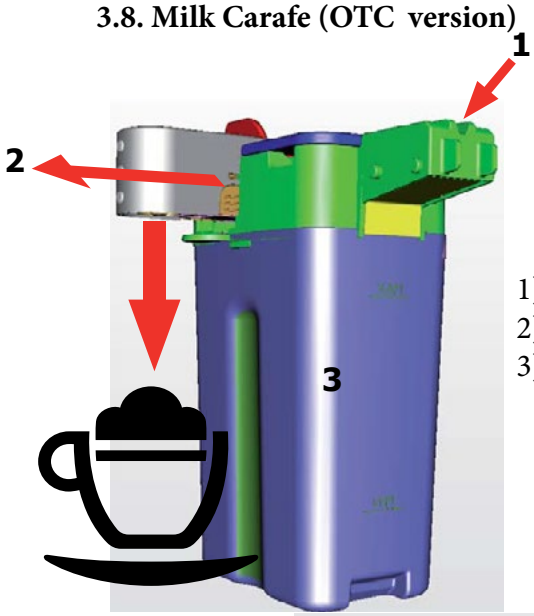
Notes: * Only with Pre-brewing

Coffee cycle

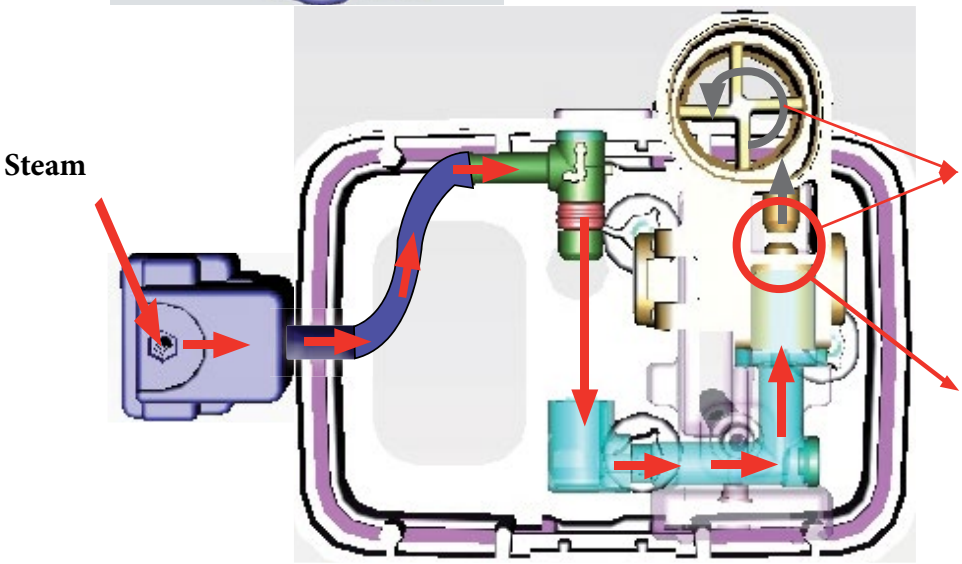
1. The coffee grinder starts the grinding process (controlled by Time);
2. The gear motor (brewing unit) moves to the brewing position;
3. Preliminary dispensing phase (short pump activity, short pause);
3.1. Solenoid valve opening (For products: Cappuccino and Frothed Milk);
3.2. Dispensing Milk (For products: Cappuccino and Frothed Milk);
3.3. Solenoid valve closing (For products: Cappuccino and Frothed Milk);
4. Coffee dispensing (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);

Note: For the product cafè au lait, the dispensing of the milk takes place after that of coffee.

3.8. Milk Carafe (OTC version)



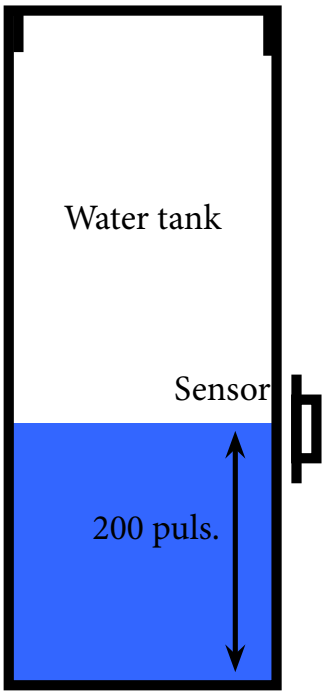
1) Steam inlet
2) Cappuccinatore
3) Milk tank



The milk is heated by the steam and taken towards the emulsion chamber where it is mixed with air and trans-formed into foam

The steam passes through the pipe creating a sucking effect that pulls the milk upwards

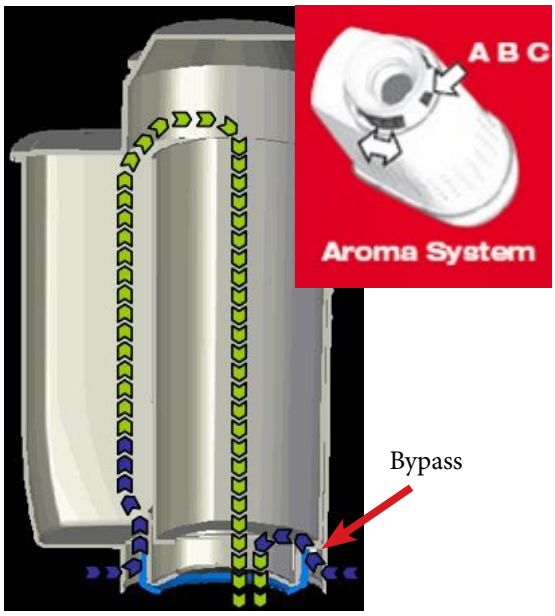
3.9. Water level detection (water tank)



"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.

3.10. Water filter HD models

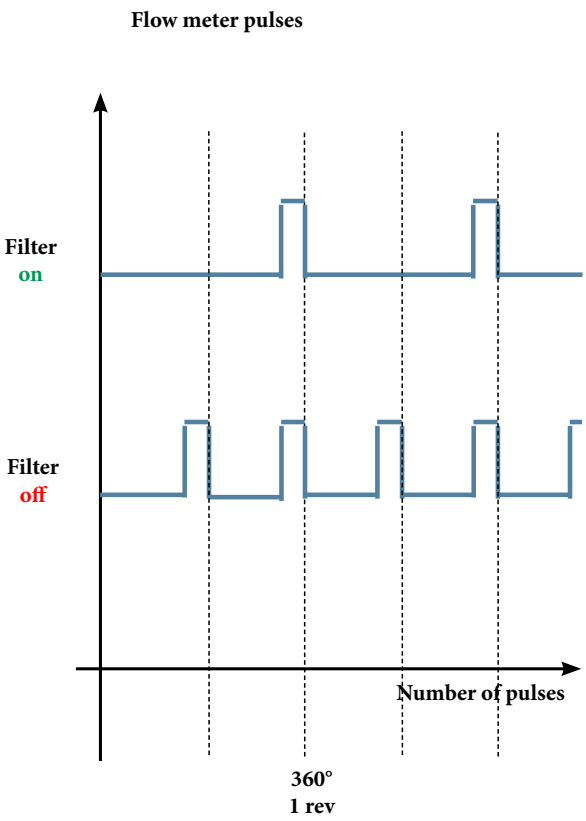


Function:
- Reduced limescale deposits which take longer to form.
- Improved water quality.
- Improved taste due to the ideal water hardness.

Life span / descaling performance:
- - 10 ° dH
- 60 litres
- 2 months

To ensure the operation of the machine in its life cycle, the water is channeled through a bypass to 3 stages (A, B, C) depending on the degree of hardness. See small picture.

3.11. Descaling request HD models



"Descaling" – message with water filter inserted

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 software 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.

Descaling cycle frequency with brita filter (HD models)			
Hardness	**Water hardness**	**Without water filter**	**With water filter**
1	Soft (up to 7°dH)	240 litres (480,000 pulses)	480 litres (960,000 pulses)
2	Medium (7° - 14°dH)	120 litres (240,000 pulses)	240 litres (480,000 pulses)
3	Hard (15° - 21°dH)	60 litres (120,000 pulses)	120 litres (240,000 pulses)
4	Very hard (over 21°dH)	30 litres (60,000 pulses)	60 litres (120,000 pulses)
The default water hardness level is 4. Each litre of water corresponds to approximately 1925 pulses.			

3.12. AquaClean water filter EP models

The AquaClean filter is designed to reduce limescale deposits in the coffee machine and provide filtered water to preserve the aroma and flavor of each cup of coffee. By using a series of 8 AquaClean filters, there is no need to descale the machine for 5000 cups (It depends both on the type of coffee used, rinsing and cleaning programs). We recommend installing the water filter AquaClean the first use of the machine to the maximum before using 5 L of water. The machine display will indicate when the filter needs to be replaced. The maximum limit is equivalent to 110 L of water. The conditions related to the filter work environment (water, therefore, an active environment for bacteria and microorganisms), require the replacement with a minimum frequency (we suggest 3 months from the activation to ensure the best performance). The filter starts' working from the time is filled with water and continues working even with the machine off. It cannot be deactivated manually, as it must end its life cycle. At the filter activation the display shows the icon with the percentage of use:

- Initially 100% then decreasing.

When the autonomy of the current filter becomes less than 8 L of water the display shows:

- The icon flashing slowly. It means 10%.

When the autonomy of the current filter becomes less than 2 L of water the display shows

- The icon flashing quickly. It means 0%.

After a maximum of 110 L of water supplied the flashing light turn off and the machine needs to be descaled.

The water tank of all Minuto EP models is designed to fit only with the AquaClean filter.

3.13. Descaling request EP models

Descaling cycle frequency with AQUACLEAN filter (EP models)					
The first activation must take place before dispensing 5,00 L of products, otherwise the machine recognizes the water hardness setting and calculates as in the table "Descaling cycle frequency with brita filter (HD models).					
Hardness	**Filter number**	**Percentual on display 10% the icon flashes slowly. (encourage the consumer to buy the filter)**	**Percentual on display 0% the icon flashes quickly. (tell the consumer to change the filter)**	**MAX Quantity water, the icon turns off. (replace filter)**	
Indifferent	From 1/8 to 7/8	8,00 l of product remaining	2,0 l of product remaining	110 l	Replace filter (you can not turn off)
	8/8				Descaling
If after descaling or after the use of a filter this is not reactivated , the machine recognizes the water hardness setting and calculates as in the table "Descaling cycle frequency with brita filter (HD models).					

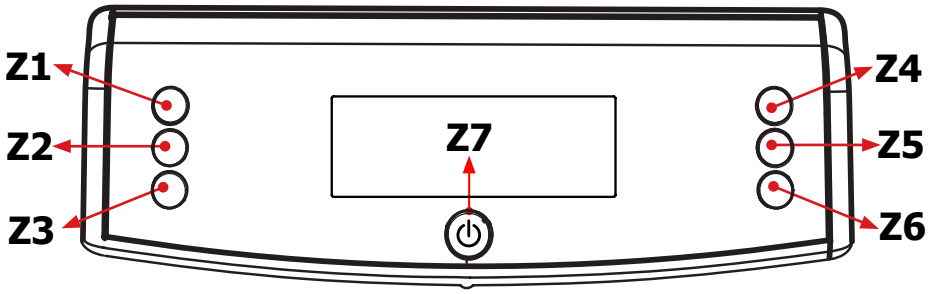
CHAPTER 4

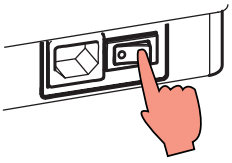
DIAGNOSTIC MODE

4.1. Test Mode

Introduction
This document describes the Test Mode of the Philips 3100 (CMF,AMF & OTC) Coffee Machine. This application is used to read out usage parameters and perform diagnostics test to identify the rootcause of the issue.

To enter Test Mode
The machine enters in Test mode by holding pressed together **Z1** and **Z6** buttons while switching on the machine by the main switch on the backside of the coffee appliance.
Once entered in Test Mode, the display shows the firmware version (Level 0).





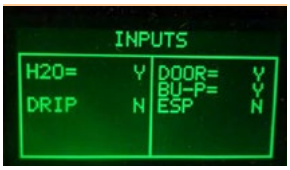
The Test Mode is organized into **6 different** pages, the user can change the page by pressing the **Z7** button. For each page the coffee machine can execute different tests.

Important Note: In all test mode the screens are green for HD Models and white for EP Models.

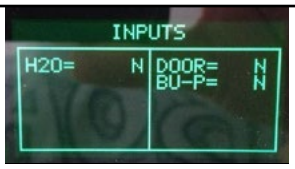
1.1 Page 0 (FIRMWARE) to verify:

- Firmware version on the display. - The machine model (FOCUS/CMF, CLASS/AMF or TOP/OTC). - The voltage of the main supply - The frequency of the main supply	
ERROR: If in machine model field is written “Unknow” and backlight of display is Yellow, check the jumper in interface (Only for HD models).	
Press the STAND_BY button	
The machine passes to the Page 1 (KEYBOARD)	
ERROR: The page does not change; Check the interface board and the flat cable (JP21 Electrical diagram)	

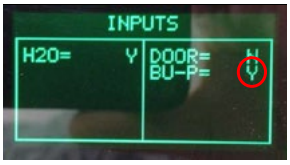
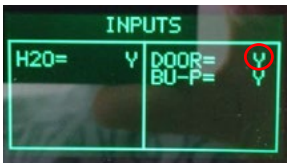
1.2 Page 1 (KEYBOARD): this test directs the correct operation of the keyboard.

Start condition	
Press buttons from 1 to 7	
Only when a button is pressed a O appears on the relative position of button pressed. In the middle of display appears the name of the button pressed. Pressing buttons on the left the backlight color changes from GREEN to YELLOW for HD Models, it remains white for EP Models. Pressing button on the right the backlight color changes from GREEN to RED for HD Models, WHITE to RED for EP Models. When a button is pressed, also the Stand-By led (RED) turn ON. Note: Press button Z7 as the last once, since it makes change the test page. Note: If 2 or more buttons are pressed the name that appears on display could be wrong.	 
ERROR: If nothing appears on display; check the interface board and the flat cable (JP21).	
- If during the movement the backlight remain green check the wiring (JP1) from the interface board and the display (HD Models); -If during the movement on the riht the backlight remain white, check the wiring (JP1) from the interface board and the display (EP Models);	
ERROR: The name displayed is wrong; check the position of jumper in interface. It must be the same of machine model (Only HD Models): • Jumper on JP7 for Focus machine model • Jumper on JP6 for Class machine model • Jumper on JP5 for Top machine model	
Press the Z7 button	
The machine passes to the level 2 (INPUTS)	

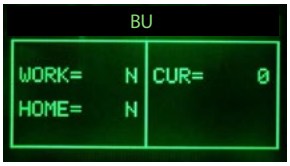
1.3 Page 2 (INPUTS): This test directs the correct operation of the sensor.

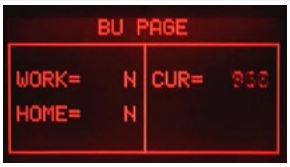
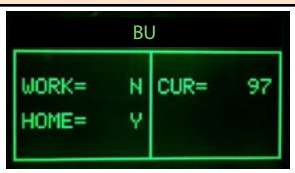
Start condition	

Warning: if the Lever sensor is not connected to interface will appear a warning message, screen yellow for HD models and Red for EP models.

Insert a full Water Tank	
The indication H20 changes from “N” to “Y”. NOTE: the switching from “N” to “Y” requires about 1-2 seconds.	
ERROR: The indication TANK-H2O doesn’t change; check the capacitive sensor (fixing) and the wiring (JP23 Electrical diagram)	
Insert the BrewUnit	
The indications BU-P changes from “N” to “Y”. NOTE: removing the BrewUnit the indication from “Y” to “N” requires about 2-3 seconds to switch.	
ERROR: Check the BU presence Microswitch and the wiring (JP16 Electrical diagram).	
Close the Door and Dreg Drawer	
The indication DOOR change from “N” to “Y”	
ERROR: The indication DOOR does not change; check the Microswitch for the door and the wiring (JP14 Electrical diagram). NOTE: without the Dreg Drawer correctly inserted the DOOR indication cannot change !	
Press the Z7 button	
The machine passes to the Page 3 (BU PAGE)	

1.4 Page 3 (BU): This test directs the correct operation of the Brew Unit

Start condition	
Press the Z1 button to move the BU to Work	
IMPORTANT NOTE: If the DREGDRAWER is not inserted or the DOOR is not closed the BU test cannot be performed. If these 2 inputs are not in the right position, a warning message will be shown and the display turns to yellow for HD models or red for EP models.	
When the BU reaches the work position the indication WORK changes from “N” to “Y”, the number of the current is less than 200mA (without BU) or 300mA (with BU).	

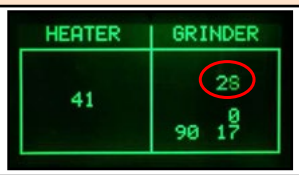
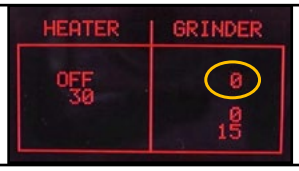
ERROR: The indication WORK doesn't change and remain "N", the display backlight changes from green (HD Models) or white (EP Models) to red; Check the work microswitch (broken?), the BU motor (blocked?) and the wiring (JP16 Electrical diagram).	
ERROR: (Without BU) The absorbed current is more than 200mA, the display backlight changes from green (HD Models) or white (EP Models) to red; check the motor (missing greasy?).	
ERROR: (With BU) The absorbed current is more than 300mA, the display backlight changes from green (HD Models) or white (EP Models) to red; check the BU (dirty?) and motor (missing greasy?).	
Press the Z3 button to move the BU to Home	
When the BU reaches the home position the indication HOME changes from "N" to "Y", the number of the current is less than 200mA (without BU) or 300mA (with BU).	
ERROR: The indication **HOME** doesn't change and remain "N", the display backlight changes from green (HD Models) or white (EP Models) to red; Check the work microswitch (broken?), the BU motor (blocked?) and the wiring (JP16 Electrical diagram).	
ERROR: (Without BU) The absorbed current is higher than 200mA, the display backlight changes from green (HD Models) or white (EP Models) to red; check the motor (missing greasy?).	
ERROR: (With BU) The absorbed current is higher than 300mA, the display backlight changes from green (HD Models) or white (EP Models) to red; check the BU (dirty?) and the motor (missing greasy?).	
Press the Z7 button	
The machine passes to the Page 4 (EV - PUMP)	

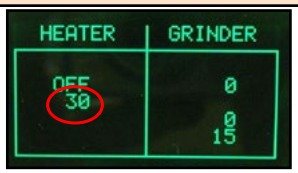
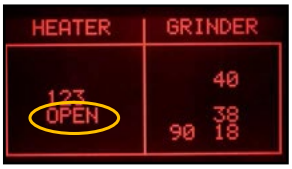
1.5 Page 4 (EV - PUMP): This test directs the correct operation of the electro valve and pump:

Start condition	

Press the Z1 button to open the Electro Valve	
IMPORTANT NOTE: If the DREGDRAWER is not inserted or the DOOR is not closed the EV test cannot be performed. If these 2 inputs are not in the right position, a warning message will be shown and the display turns to yellow for HD models or red for EP models.	
It is possible to hear the "click" from Electro Valve. The indication beside the **EV1** changes from "OFF" to "ON". If the indication **EV1** doesn't change and remain "OFF", check the electro valve, replace it (with a one of stock) and if doesn't change again, check the cable (disconnected?) or replace the CPU board.	
Press and Release the Z4 button to switch on the pump (100 impulses)	
The water goes out from Pannarello (CMF), cappuccinatore (AMF) or water spout (OTC) and the indication IMP (impulse) shows increasing numbers. The indication L/H (liters for hour) must be within the range 10-18.	
ERROR: The display backlight changes from green (HD Models) or white (EP Models) to red and the impulse remains 0; If water comes out the pipe: check the wiring from the flowmeter to the CPU/POWER board (JP5 Electrical diagram). If no water comes out the pipe: check the pump and the wiring from the pump to the CPU/POWER board (JP24 Electrical diagram).	
ERROR: The L/H value is zero or <10; the Electro Valve does not open. Check the wiring from the Electro Valve to the CPU/POWER board (JP3 Electrical diagram) and the Electro Valve	
Press the Z7 button	
The machine passes to the level 5 (Heater-Grinder)	

1.6 Page 5 (Heater-Grinder) HD Models: This test directs the correct operation of the Boiler and the Grinder:

Start condition	
Press the Z4 button to switch on the grinder	
The grinder rotates and in the indication GRINDER the number increasing up to 40. The other numbers inside the GRINDER box are not important for this test.	
ERROR: if the numbers remains 0 or the grinder does not run,or the display backlight changes from green (for HD models) or white (for EP models) to red; check the operation of the Grinder or the wiring from the Grinder to the CPU/POWER board (JP8 Electrical diagram)	

Check the temperature	
The number shows the heater temperature.	
ERROR: In the indication HEATER appears “SHORT”, the NTC temperature-sensor is shorted, the display backlight changes from green for to red.	
ERROR: In the indication HEATER appears “OPEN”, the NTC temperature-sensor is detached or broken, the display backlight changes from green to red; check the wiring from the NTC temperature-sensor to the CPU/POWER board (JP13 Electrical diagram).	
Press the Z1 button to switch on the Heater	
The absorbed current (Amperometer on the main supply) is OK, the indication HEATER changes from “OFF” to “ON” and the temperature starts increasing.	
If temperature is over 100°C, the backlight change from GREEN to YELLOW. This is a ALERT message to avoid heating the HEATER element over dangerous temperature.	
ERROR: the absorbed current is KO or the temperature does not increase; check the wiring from the boiler to the CPU/POWER board (JP19 Electrical diagram), the wiring of the NTC temperature-sensor (JP13 Electrical diagram) and its correctly operation.	

1.6 Page 5 (Heater-Grinder) EP Models

Start condition

Press the Z4 button to switch on the grinder.
The grinder rotates and in the indication **GRINDER** the number increasing up to 5000 (5seconds test). The other numbers inside the **GRINDER** box are not important for this test.

ERROR: The number remains 0 or the grinder does not run, the display backlight changes from white to red; check the Grinder and the wiring from the Grinder to the CPU/POWER board (JP8 Electrical diagram)

Check the temperature
The number shows the heater temperature.

ERROR: In the indication **HEATER** appears **"SHORT"**, the **NTC** temperature-sensor is shorted, the display backlight changes from white to red; check the wiring from the NTC temperature-sensor to the CPU/POWER board (JP13 Electrical diagram).

ERROR: In the indication **HEATER** appears **"OPEN"**, the **NTC** temperature-sensor is detached or broken, the display backlight changes from white to red; check the wiring from the NTC temperature-sensor to the CPU/POWER board (JP13 Electrical diagram).

Press the Z1 button to switch on the Heater
The absorbed current (Amperometer on the main supply) is OK, the indication **HEATER** changes from "OFF" to "ON" and the temperature starts increasing.

If temperature is over 100°C, the backlight change from WHITE to RED. This is a ALERT message to avoid heating the HEATER element over dangerous temperature.

ERROR: the absorbed current is KO or the temperature does not increase; check the wiring from the heater to the CPU/POWER board (JP19) and the wiring of the NTC temperature-sensor (JP13 Electrical diagram).

Press the **Z5** button for 3sec to reset a parameter of the Grinder (Only for EP models)

The aging parameter of the grinder is setted to his initial value → a screen with the text "RESET GRINDER PARAMETERS" is showed for 3sec.
ERROR: The display doesn't change

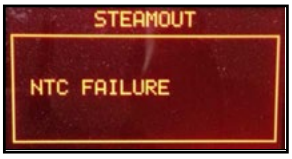
5.2. Steam Out

Not mandatory, but if necessary, before executing the steam out procedure, descale the machine taking care to remouve the Aquaclean filter from the appliance (EP models).
In case the filter on the machine is active (or it's in the machine) provide the consumer with a new one.

Introduction
This document describes the Steam-Out procedure; the application is used in order to empty the heater.

1 Steam Out
The machine enters in Steam-Out mode by holding pressed together:

- the ESPRESSO LUNGO button and the MENU button while switching on the machine.

Once entered the Steam Out mode the display shows the "STEAM OUT" indication. Buttons can be released	
IMPORTANT NOTE: to execute the Steam-out procedure the Ntc sensor must work correctly; if some errors occurs on Ntc during the steam-out, the procedure can't continue and an error message is shown on the display. Check the wiring of the NTC temperature-sensor (JP13 Electrical diagram) and its correctly operation.	

IMPORTANT NOTE: to execute the Steam-Out procedure the DREGDRAWER must be in place and the DOOR must be closed. If these 2 conditions are not respected a warning message is shown on the display and the Steam-Out is interrupted.	
The machine starts the Steam Out and the display change the backlight (yellow for HD Models or White for EP Models) and appears the indication “ON”. While the Steam Out runs the Electro valve is opened and water comes out the Water/ Steam pipe.	
When the Steam Out is complete the message “COMPLETE” is shown on the Display.The Electro valves automatically closes and the machine can be switched off.	

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 SSC2”.
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	Saeco no.	Action
Intake	1	Visual inspection (transport damage) take care for pictures
	2	Check Type/serialnumber
		Log all available accessory
Diagnosis	3	Check product for consumer complaint (NFF contact consumer)
	4	Opening machine
		Run Diagnostic to get error codes and relevant set statistics (Saeco Service Center SSC)
	5	Visual inspection check for loosen parts, leaking etc..
	6	Operational tests
Repair	7	Repairing the faults encountered
		Checking any modifications (view Symptom Cure, new software, etc.)
	8	Refer Annex tabs per family
	9	*Service activities in accordance with the operating schedule*
		Check/Replace Waterfilter (the small filter, not the Britta filter)
		Check/Replace Water tank lip seal
		Check/Replace Boiler pin O-ring
		Clean/align Coffee grinder (Vacuum cleaner / brush)
		Descale the water Circuit
		Check/Replace Hot water/steam valve
	10	*Internal check / cleaning*
		Check/Clean/Grease Brewing unit
	11	Operational test while the appliance is open
		Check Hoses, attachments and Oetiker clamps
		Check Pump for operation & noise
		Check Gear motor for operation & noise
		Check for leakage
	12	Assembly
	13	Final inspection test
	14	Steam out before shipping out, if temperature is below 0° to prevent any demaged due to frozen water. No need for those families Minuto family (all platform); Incanto family new; Pico Baristo; Gran Baristo; Intelia V2; Philips 2000-2100; Incanto Executive; Moltio family (all platform). Please also check for GDA_113455
	15	Provide precise IRIS code, according dedicated code table for Coffee products. The location code from the part you have worked on MUST be completed always with the part reference from exploded view !
Inspection		
visual		Do cabinet parts fit well together
		Check for damages
Power check		Will the set switch on
Accesoires		Do the accessories match with the intake
Consumer complaint		Check the product for the consumer complaint
Coffee		Basic Functional test
Dispense		Make 2 * coffee. Are both amounts equal
		Make e 2 cups at the same time. Are the volumes equal
Noise		Is the sound normal
Crema		Blow on the coffee. Does the crema come back together
		Is the crema colour correct (Hazelnut)
Temperature		Is the coffee temperature within spec
Grinder		Is the grinder noise normal
Steam		
Steam		Does the steam work
Hot Water		Does the hot water work
Milk		(if applicable)
Cappuchino		Does the cappuccinatore produce good froth

Leakage		
Leakage	14	Did the product leak during the testing
	15	Draining the circuit (in winter)
Cleaning		Clean water reservoir, bean reservoir, brew chamber and conveyor
	16	Clean and dry brew unit, coffee bin and drip tray.
		Lubricating the brewing unit with suitable grease
		External cleaning
Safety check		
		Earth leakage, Isolation test, resistor of earth wire grounding, as requested in certain country's (VDE, ISO)
visueel		Check the mains cord for damages
Packing		
	18	Packing
		Check completeness (accessories) according income log
	19	Neatly pack the product
Documentation		NFF letter
		Descaling instruction with changed procedure (S/C)
		Other instructions according S/C
Repair report		Is there an answer to ALL consumer questions/complaints (see complaint) add set statistic and give, if needed clear instruction towards consumer Is it indicated which documents are added Are there tips how to prevent issues

CHAPTER 7

DISASSEMBLY

7.1. Outer shell

For EP Models

Change the fin for the AquaClean filter

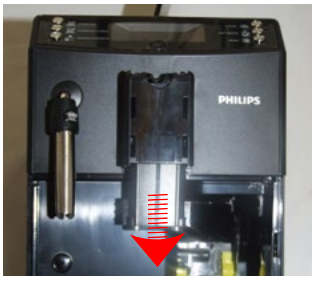
For HD Models

Remove the water tank, coffee container cover, drip tray, dreg drawer, brewing unit.

Coffee dispenser

Remove the dispenser cover leveraging the grooves

Unscrew the screws indicated



Remove the dispenser

Remove the cover

Upper cover

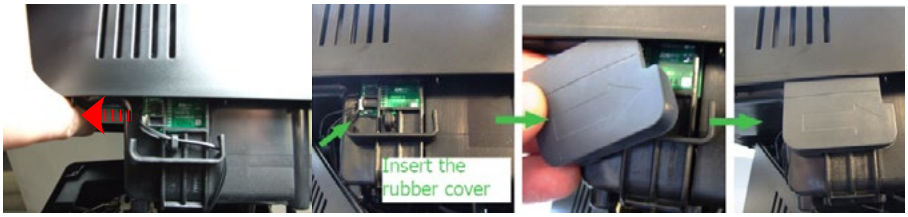
For EP Models

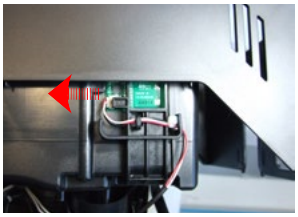
For HD Models

For HD Models

For EP Models

Unscrew the screws shown, raise the top cover and remove the water circuit connections.

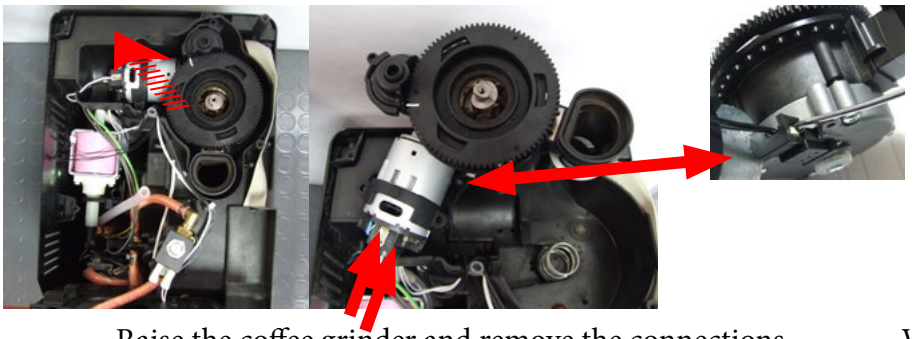




Note: before remove the electrical connections.

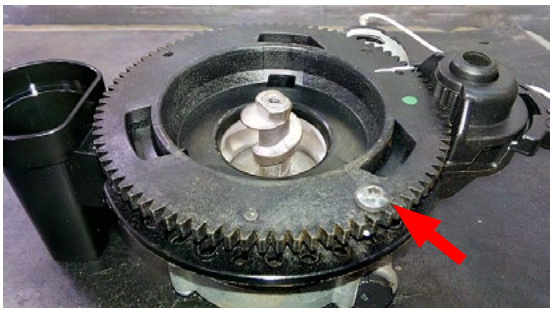
For HD Models UP TO S/N.TW901645704031 see SDA_112764. For HD models from S/N.TW901645704032 and EP models the position of water level sensor has been moved to avoid its oxidation (not inserted the rubber cover).

7.2. Coffee grinder



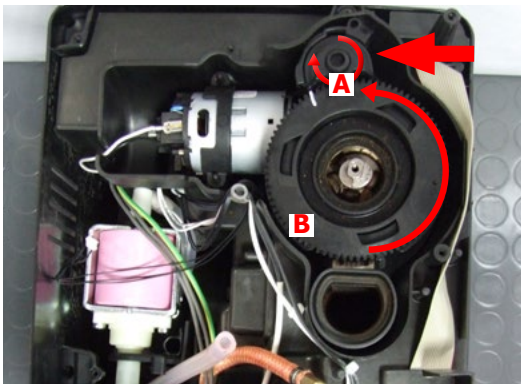
Raise the coffee grinder and remove the connections.

When reassembling the coffee grinder, make sure the spring is repositioned correctly (see photo).



The new machines have a coffee grinder with the screw to prevent the disassembly of the upper coffee grinder support (see photo).

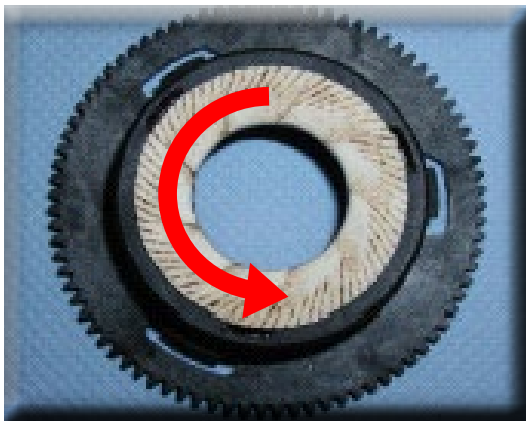
7.3. Grinder blades



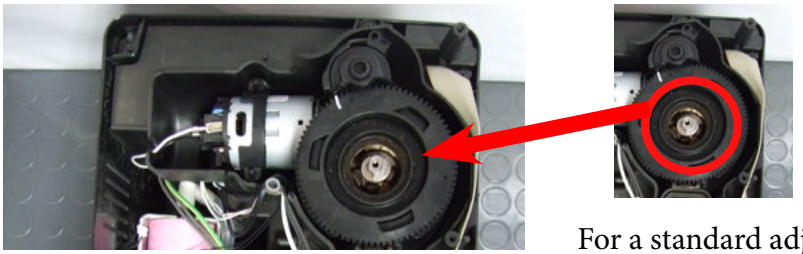
Caution in the new coffee grinder with the screw, Unscrew this last, before disassembly of the upper coffee grinder support.

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

Turn the grinder blades anticlockwise out of the support.

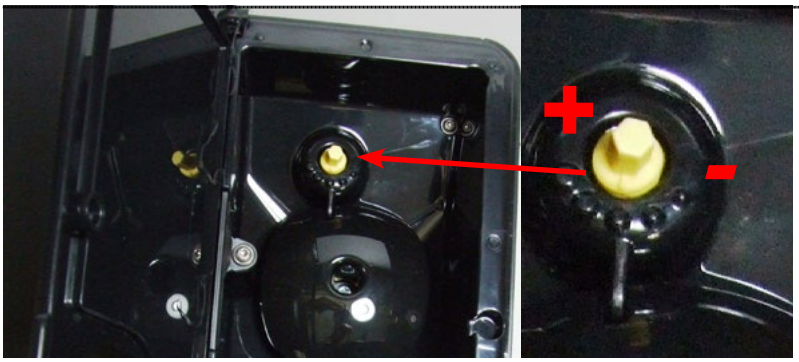


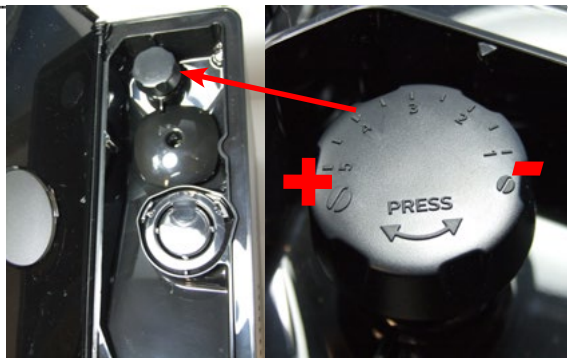
Turn the grinder blades clockwise out of the support. The bayonet connections can be accessed from the rear.



For a standard adjustment, both markings must be aligned.

7.4. Coffee grinder adjustment

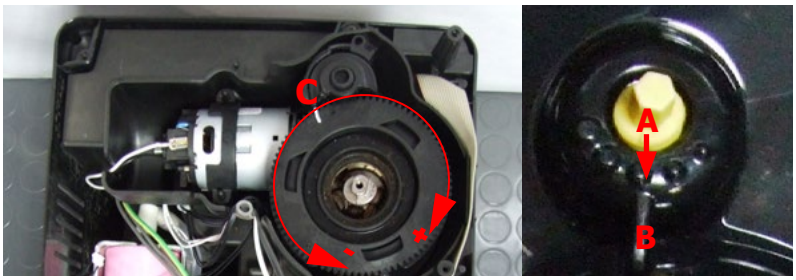


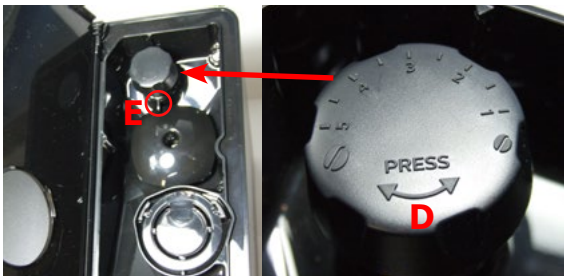


For HD Models UP TO S/N.TW901645704031 the grinding adjustment can be set by the user (only with the coffee grinder in operation) by pressing and turning (only by one click at a time) the insert inside the coffee bean hopper with the aid of the wrench supplied.

For HD Models from S/N.TW901645704032 and for EP models the grinding adjustment can be set by the user pressing and turning the grinder adjustment knob

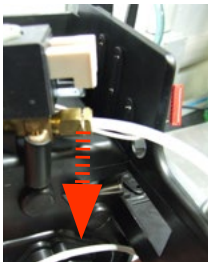
Adjustment by a service center





To adjust grinding further, the engineer can work directly on the coffee grinder by pressing and turning the ring nut (C) shown. (clockwise + to increase the particle size of the coffee and anticlockwise - to decrease it).
If there are any remains of coffee powder between the two grinding blades it is recommended to tighten by max. two marks at a time.
Lastly, move the arrow (A) on the adjustment knob to the center of the adjustment dots on the cover (B) for HD Models UP TO S/N.TW901645704031, instead for HD models from S/N.TW901645704032 and for EP models ascertain that the center line of the “PRESS” (D) is in correspondence of the fin (E).

7.5. Carafe connection and hot/steam water dispenser (OTC)



Slide out the fork as illustrated

Loosen the screws holding the carafe connection

When reassembling the assembly to be careful to correctly position the spring.

7.6. Hot water dispenser (AMF-CMF)

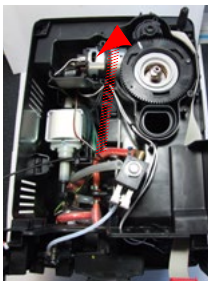

Removes the covers shown


unscrew the screws shown

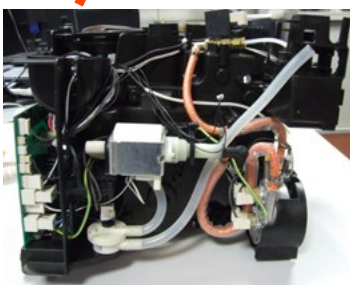
7.7. Central plate



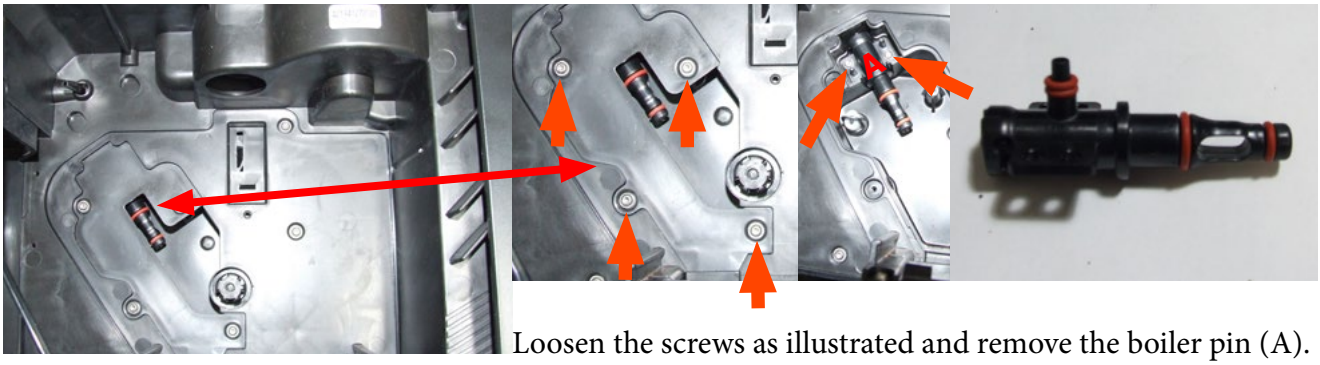
unscrew the screws shown



Lift up the center plate

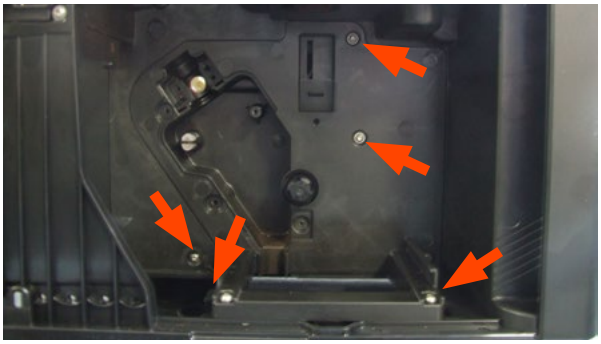


7.8. Pin boiler

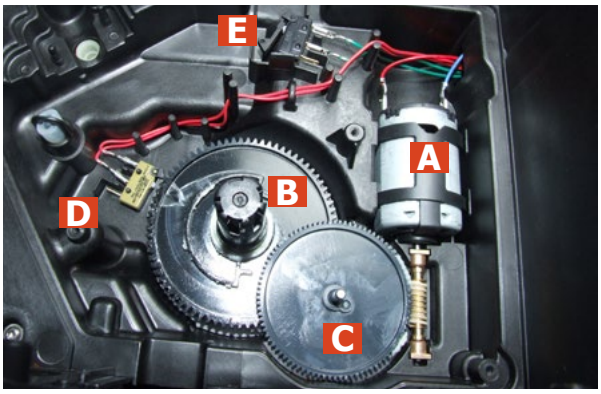


Loosen the screws as illustrated and remove the boiler pin (A).

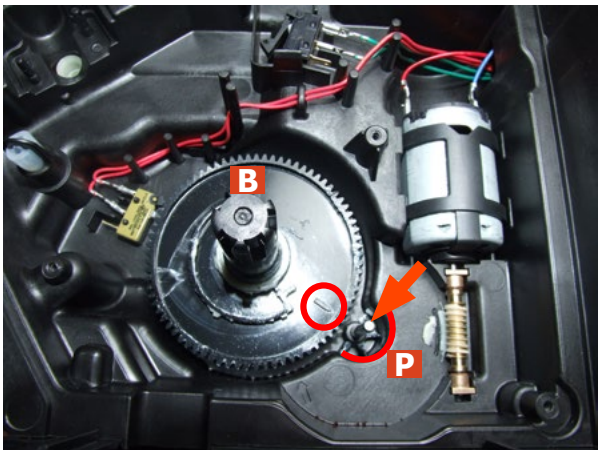
7.9. Gear motor



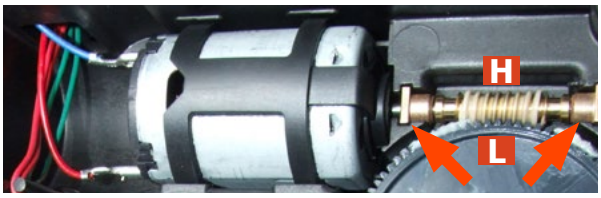
Loosen the screws as illustrated and remove the gear motor cover.



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.

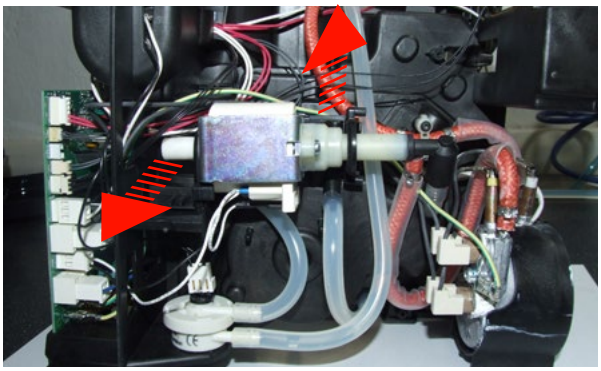


Replace the gear (B), making sure that the imprint of the arrow is aligned with the opening containing the pin (P).

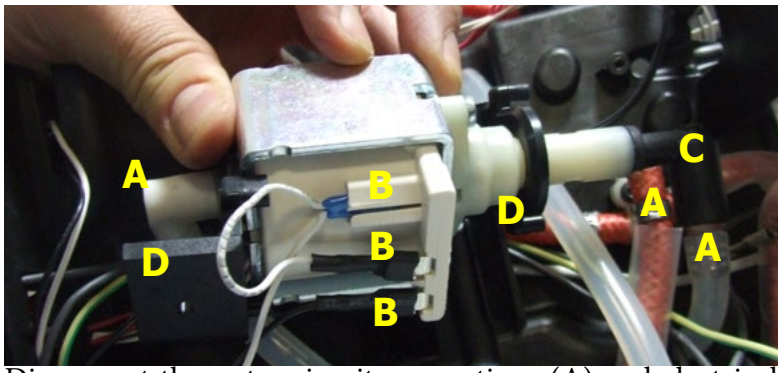


When replacing the motor and the transmission shaft, make sure the guide runners (L) are in the right position.
Grease the shaft thoroughly and evenly.

7.10. Pump

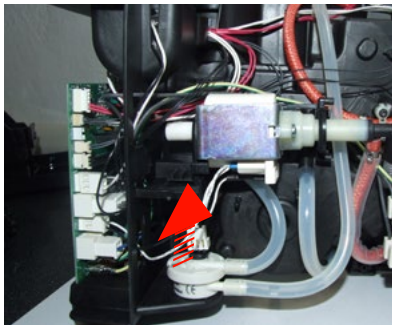


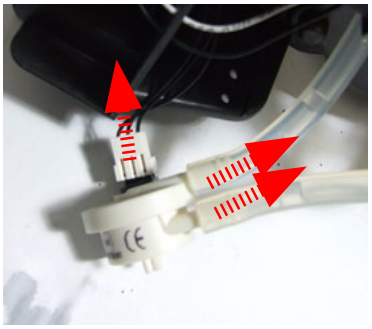
Unhook the pump from the supports.



Disconnect the water circuit connections (A) and electrical connections (B), loosen the safety valve (C) and slide the pump off the brackets (D).

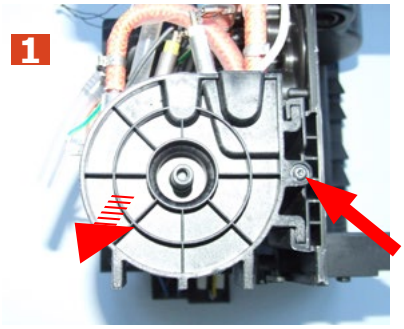
7.11. Flow-meter

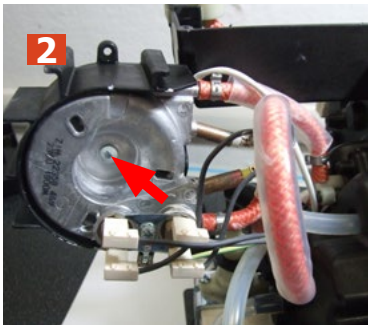




Lift the flow meter out of the casing assembly and remove the electrical and water circuit connections.

7.12. Boiler

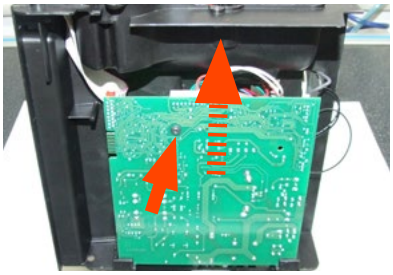




1. Unscrew the screw shown at unthread the support boiler

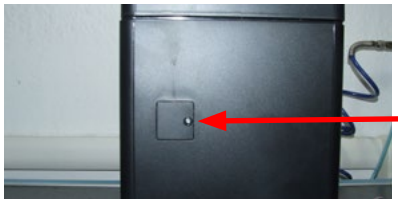
2. Unscrew the screw shown and remove the electrical and water circuit connections.

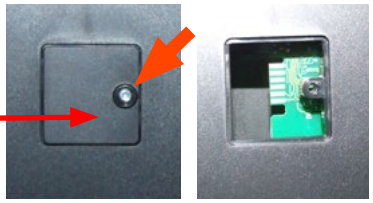
7.13. CPU board



Loosen the screws slide the card off the support and disconnect the electrical connections.

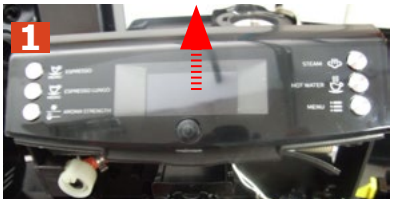
7.14. Programming access for SSC (Saeco Service Center)





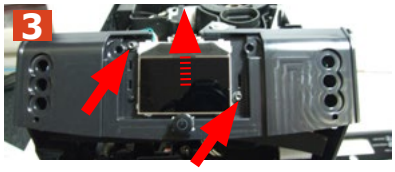
Loosen the screw for remove the cover.

7.15. KYB interface and display

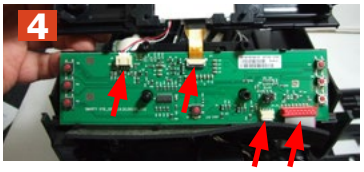


Remove the cover.

Remove the front panel membrane



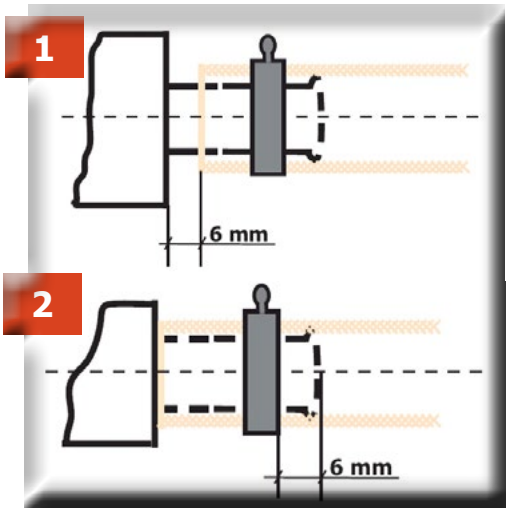
Loosen the screws for remove the cover.



Disconnect the electrical connections.

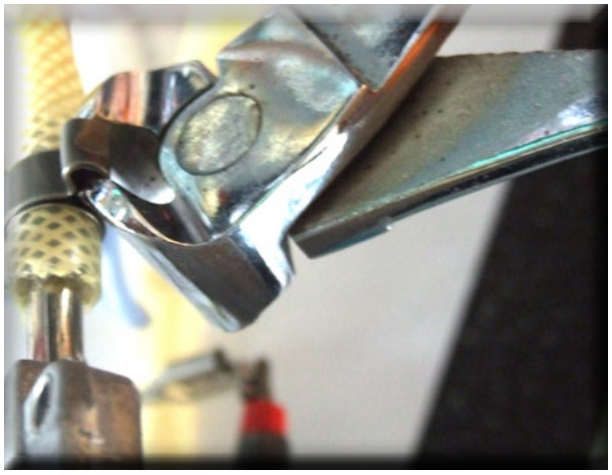
For HD models move the jumper, on the KYB interface, depending on the machine: CMF-AMF-OTC.
For EP models the position of the jumper is irrelevant.

7.16. Fitting and removing Oetiker clamps



1) Boiler connection.

2) Other connections.



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

Tighten the clamp as illustrated.