Coffee Machine

Service
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Service

Gaggia Cadorna




SUP 049EU | SUP 049EP | SUP 049E | SUP 049

ServiceManual

Rev. 00 JULY 2019

TYPE	SUP	12NC	DESCRIPTION
RI9600/01	SUP049	886960001010	GAG.CADORNA STY CMF BK 230V WE
RI9601/01	SUP049E	886960101010	GAG CADORNA PLUS CMF BK 230V
RI9603/01	SUP049EP	886960301010	GAG CADORNA MILK BK 230V
RI9604/01	SUP049EU	886960401010	GAG.CADORNA PRES OTC AN 230 WE

Published by Philips | Subject to modification | EN 4219 400 00051

2019-May-06

GAGGIA®

GAGGIA CADORNA

Technical specification	
Power supply and output:	230V ~ 50Hz 1900W
Power consumption:	During heating phase- approx. 5.6 A
Boiler: Stainless steel	230V ~ 1900W 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/FMGW 230V, 50 Hz approx. 13-15 bar with reciprocating piston and thermal switch 100°C 48 W.
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:	115-160 mm (SUP049E-SUP049EP-SUP049EU) 75-120 mm (SUP049)
Housing material	Thermoplastic material
Size (w x h x d)	260 x 385 x 400 mm (SUP049E-SUP049EP-SUP049EU) 260 x 345 x 400 (SUP049)
Weight	11,5 kg (SUP049E-SUP049EP) 12,0 Kg (SUP049EU) 10,5 Kg (SUP049)
Power Cord length	1200 mm
Cup size	Up to 160 mm (SUP049E-SUP049EP-SUP049EU) up to 120 mm (SUP049)
Water tank	1,5 litres - Removable type
Water fileter	Brita Filter 12NC-996530010484(RI9113/60 for EUR-ASIA) / 12NC-996530010528(RI9113/67 for US-CAN)
Coffee bean hopper capacity	300 g
Coffee grounds drawer capacity	10 pucks
Milk carafe capacity	0,6 l (SUP049EU) 0,5 l (SUP049EP)
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 TU901721042631	TU90= product + production location - 1721 = year & Production week - 042631 = unique following number

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"
132253695601	Jar of Grease	"PARALIQ GB 363"
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.

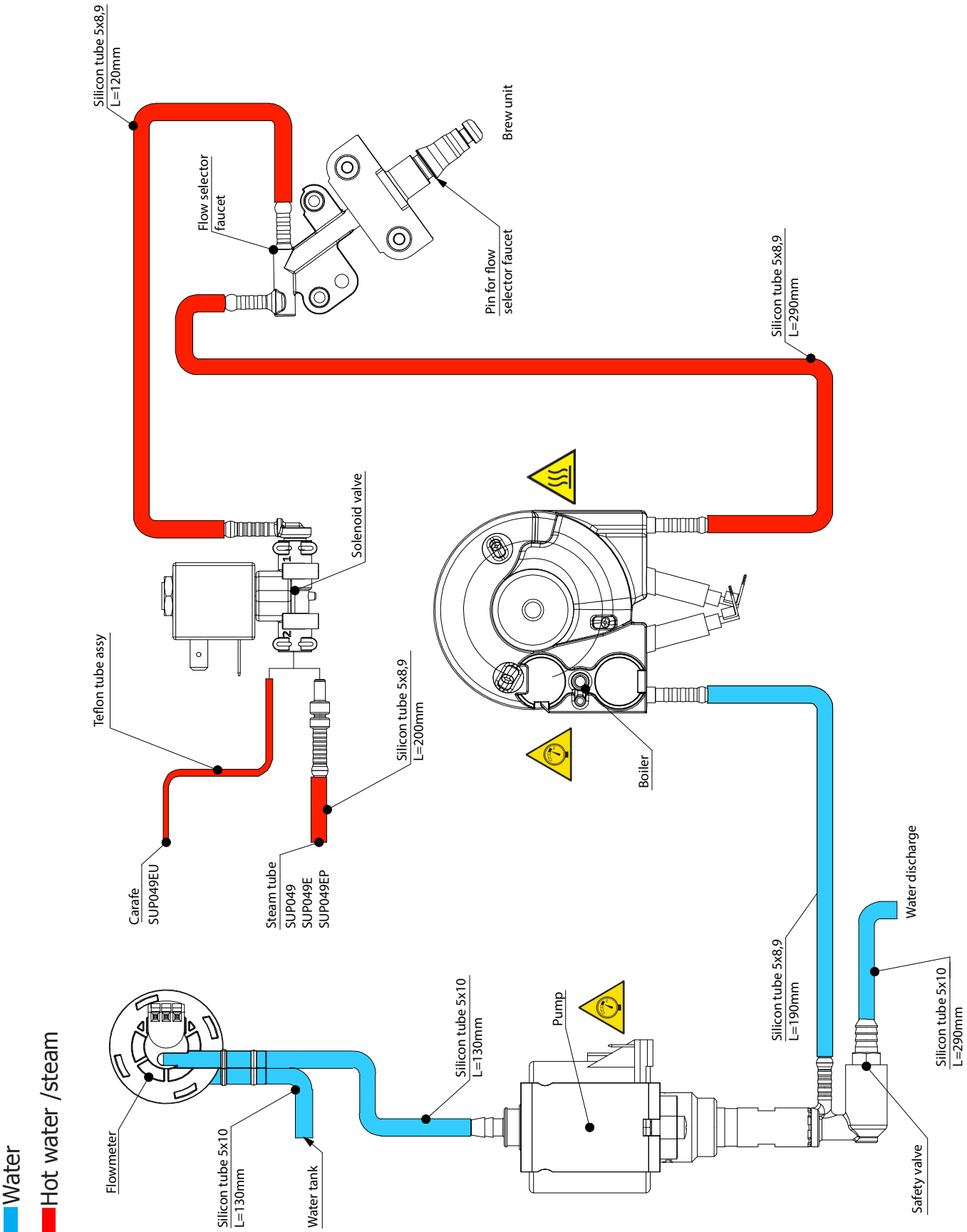
When the machine arrives at the Service Center in descaling mode interrupted, or making Descaling , take EXTREME CARE to avoid any unintentional contacts with the descaler.

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.

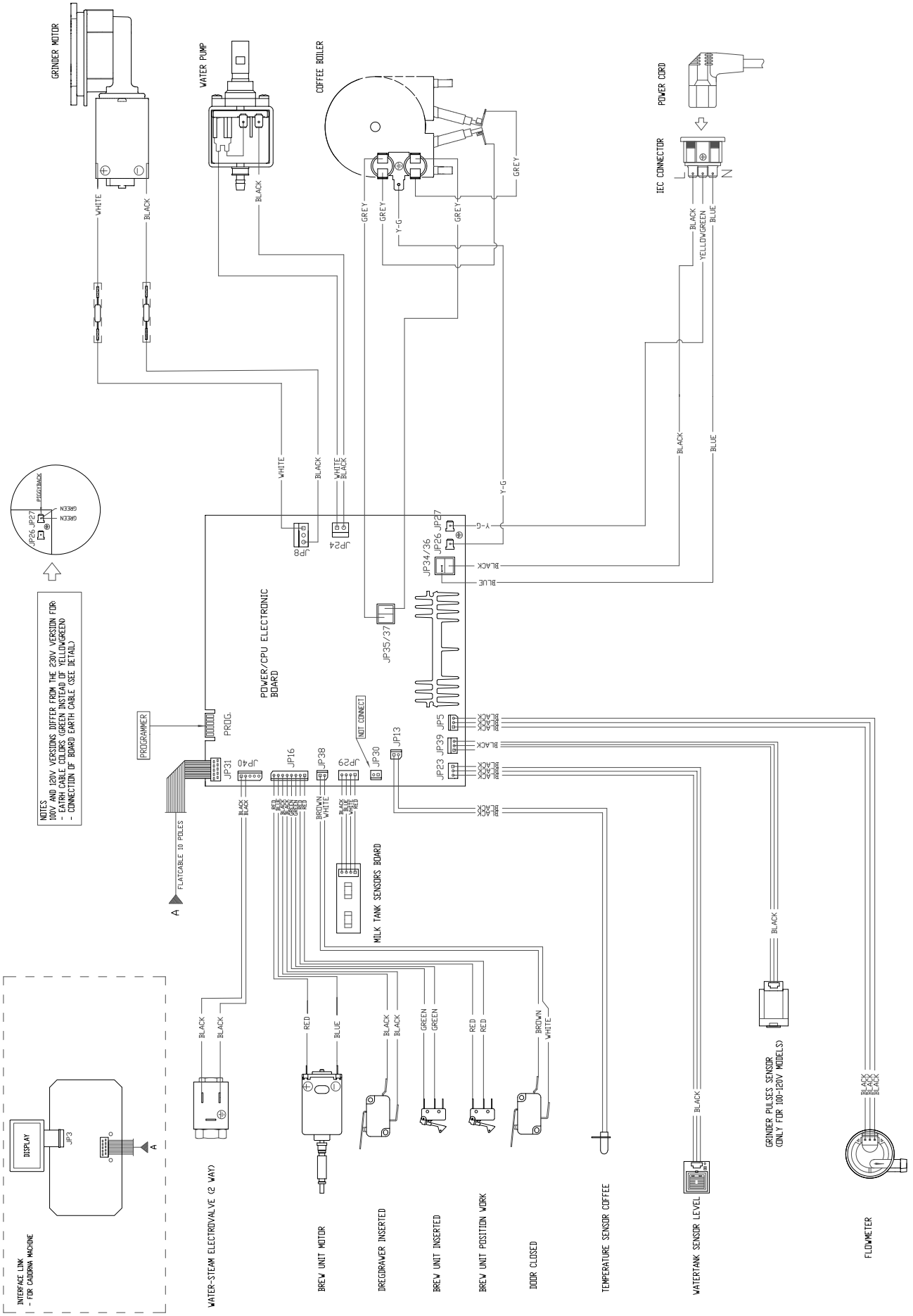
1.4. Water circuit diagram

From this point circuit in pressure

From this point circuit High temperaure



1.5. Electrical diagram

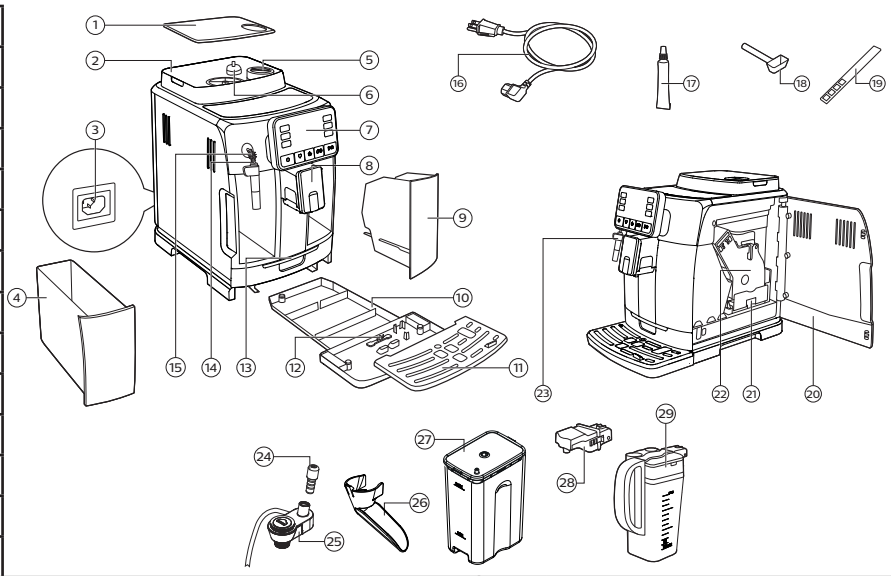


1.6. Service POLICY grid as used for coffee machine

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

1.7. External machine parts

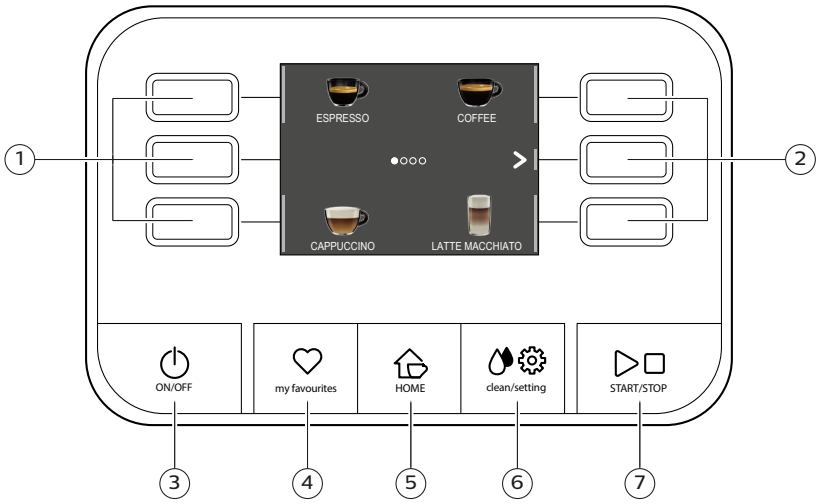
1	Bean coffee container lid
2	Bean coffee containe
3	Cup socket
4	Removable water tank
5	Ground coffee hopper lid
6	Bean coffee grinder insert
7	Display
8	Coffee spout
9	Dump box
10	Drip tray
11	Grate for drip tray
12	Float for drip tray
13	Rest cups (SUP049E-SUP049EP-SUP049EU)
14	Steam tube (SUP049-SUP049E-SUP049EP)



15	Rubber (SUP049-SUP049E-SUP049EP)	20	Service door	25	Cappuccinatore (SUP049EP)
16	Power cable	21	Brew unit drawer coffee	26	Capincup (SUP049EP)
17	Grease	22	Brew unit	27	Carafe (SUP049EP)
18	Coffee measure smart	23	Pannarello (SUP049-SUP049E)	28	Water spout (SUP049EU)
19	Sticker for water hardness	24	Steam tube insert (SUP049EP)	29	Carafe (SUP049EU)

Display

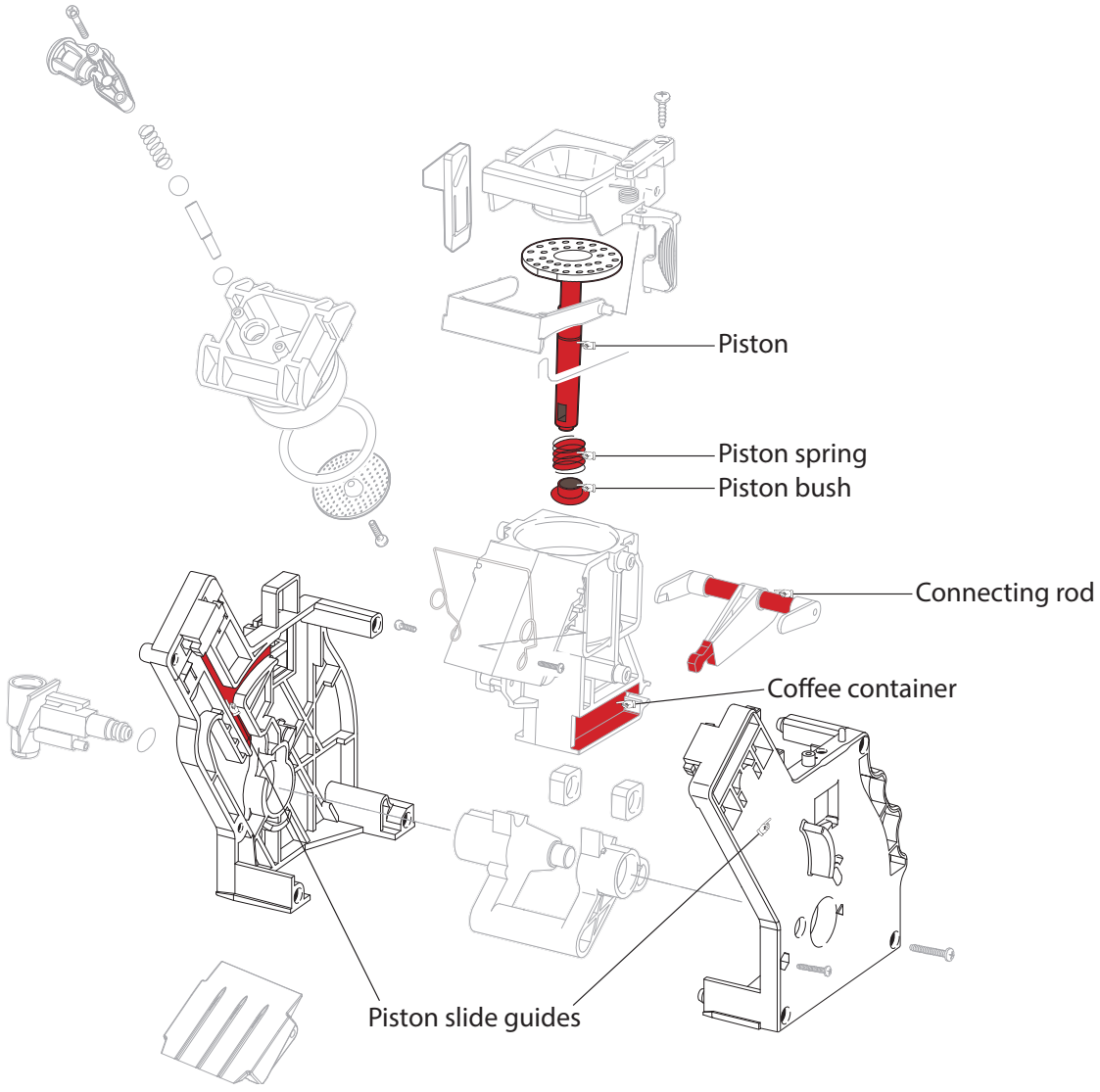
1/2	Multifunction buttons
3	On/off button
4	My favourites button
5	Home button
6	Clean/setting button
7	Start/stop button



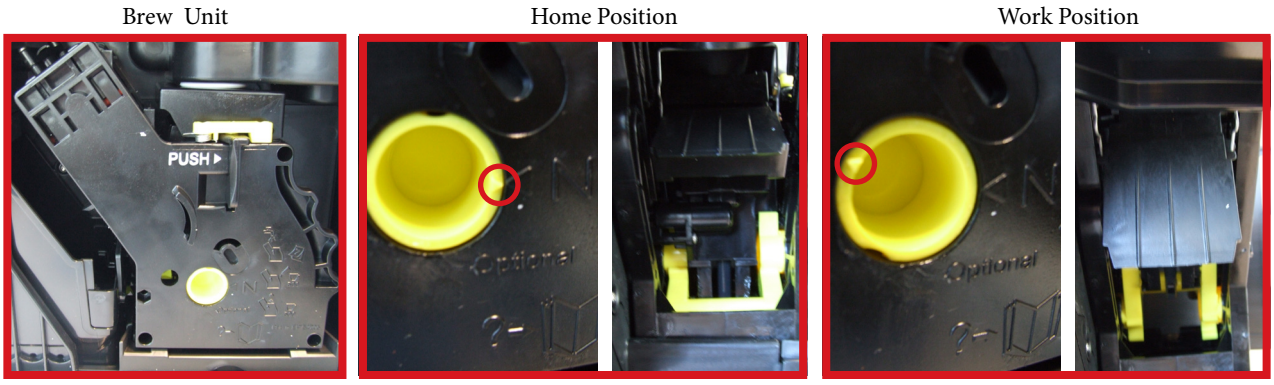
1.8. Error codes

ERROR CODES	DESCRIPTION
01	The coffee grinder is blocked
02	The grinder is disconnected (Only coffee grinder without electronic sensor)
03	The brewing unit is blocked in work position
04	The brewing unit is blocked in home position
05	The hydraulic circuit is clogged
10	The temperature sensor is in short circuit
11	The temperature sensor is opened
14	The temperature was up to 170°
19	The net is not stable
20	Boiler coffee overheating

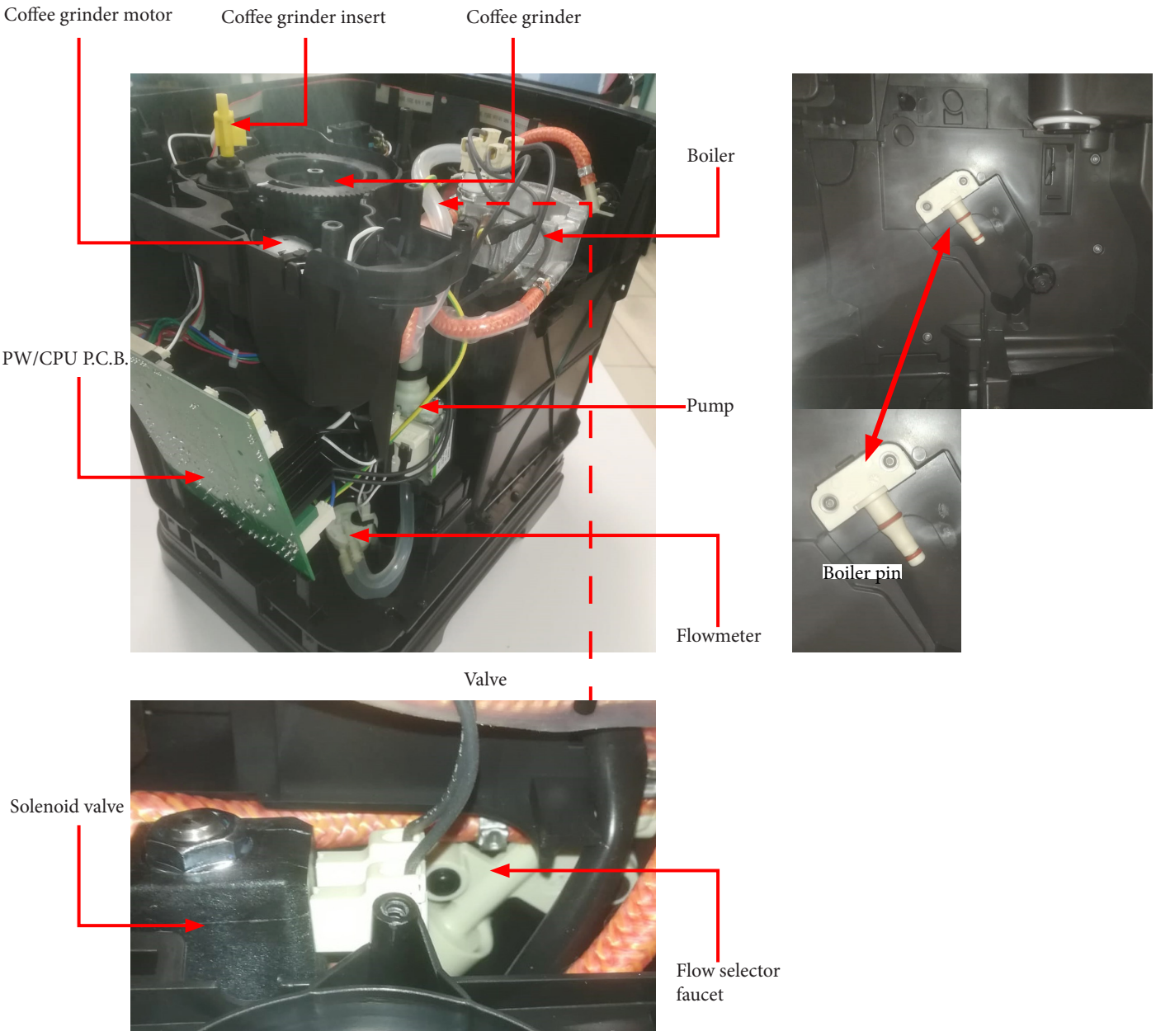
1.9. Brew Unit mainteinance: Where to grease.



1.10. Position of the Brew Unit



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 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

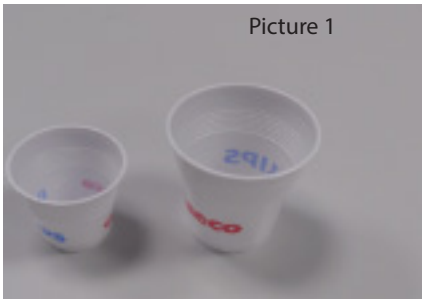
The acceptance limits are divided by features and products and are the following:

Espresso Q.ty 40 ml.

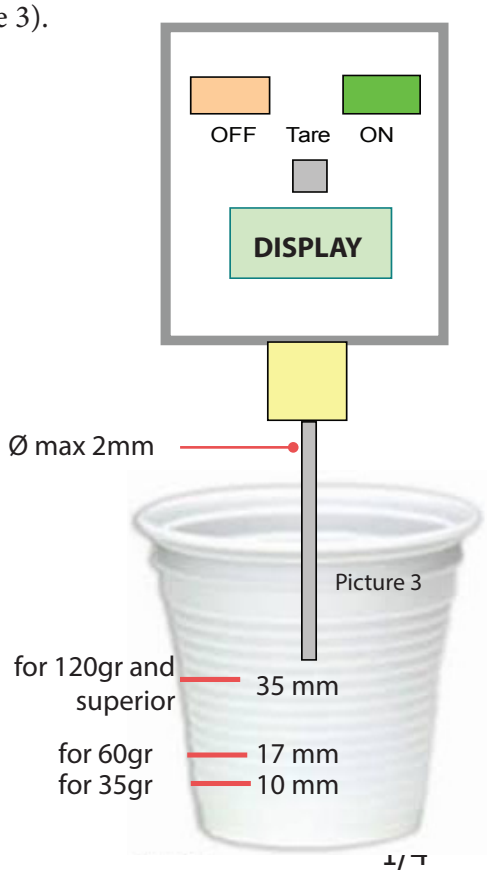
Temperature of 1st product 72°C ≤ 80°C
Temperature of 2nd product 75°C ≤ 85°C

Caffee Q.ty 120 ml.

Temperature of 1st product 72°C ≤ 80°C
Temperature of 2nd product 75°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:

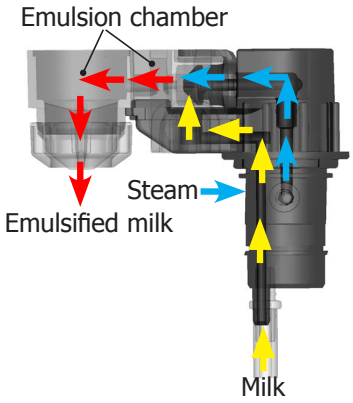
- Manual system (pannarello)
- Semi-Automatic system (cappuccinatore)
- Automatic system (carafe, Pinless wonder system)

Milk temperature in the beaker:

System with Pinless Wonder: With milk at Trefr. (about 4-10 °C): →Δ ≥ 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, Pinless wonder system ≥ 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. The measurement has to be taken at 10mm from the bottom of the beaker. Stir the milk before measuring to keep a constant temperature.

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 Trefr..

Manual systems (Pannarello)

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. Open the steam knob to discharger water circuit for 4 sec, then close the knob.
2. Place the beaker with the frother dipped in milk, open the steam knob to maximum and start the chronometer.
3. After about 30 to 60 seconds, close the knob and check the result on milk.

Semi-automatic systems (cappuccinatore)

Pours milk at Trefr. in a container ; with the machine in steam mode:

1. Open the steam knob to discharge water circuit for 4 sec. then close the knob.
2. 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 open the steam knob.
3. After having provided 100gr. of product, close the knob and check the result obtained on milk.

Note: The same applies to machines which have a steam key on the user interface and a solenoid valve in place of the steam tap.

Automatic: Carafe, Pinless Wonder System

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 Trefr..

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, 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

2.3. Machine parameters and performance

PRODUCT	SUP049-SUP049E	SUP049EP	SUP049EU	Default quantity coffee (ml)	Default quantity milk (ml)	Default quantity water (ml)
Ristretto	X	X	X	30 +/- 10%		
Espresso	X	X	X	40 +/- 10%		
Espresso lungo	X	X	X	80 +/- 10%		
Caffè	X	X	X	120 +/- 15%		
Americano	X	X	X	40 +/- 10%		110 +/- 15%
Cortado			X	40 +/- 10%	30 +/- 10%	
Cafè au lait		X	X	90 +/- 10%	90 +/- 10%	
Flat white			X	80 +/- 10%	80 +/- 10%	
Cappuccino		X	X	40 +/- 10%	120 +/- 15%	
Cappuccino XL			X	70 +/- 10%	180 +/- 20%	
Latte macchiato		X	X	40 +/- 10%	240 +/- 20%	
Latte macchiato XL			X	50 +/- 10%	300 +/- 20%	
Froth milk		X	X		180 +/- 20%	
Hot water	X	X	X			150 +/- 20%

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

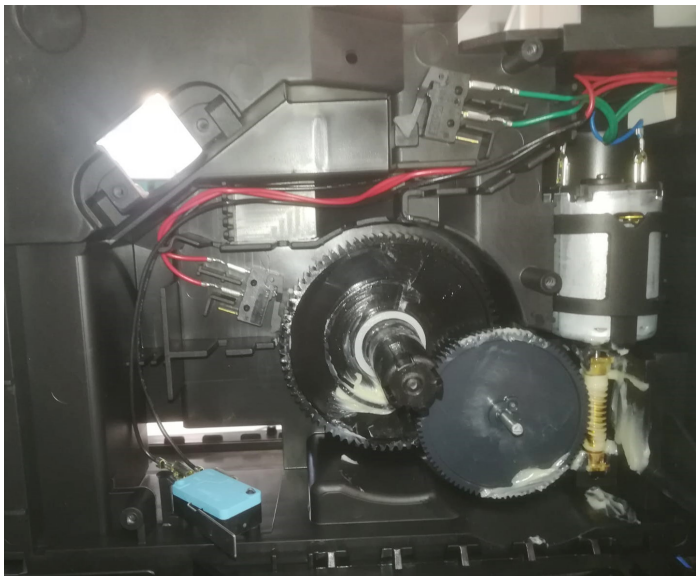
CHAPTER 3

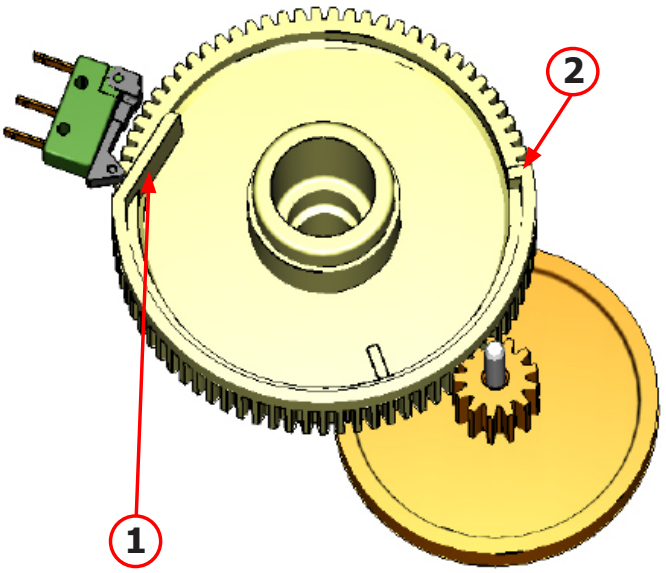
OPERATING LOGIC

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

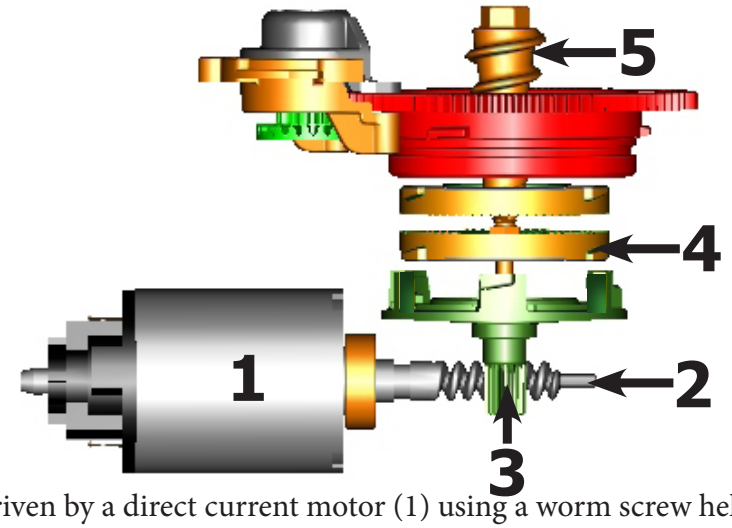
- Dispensing position: 2

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

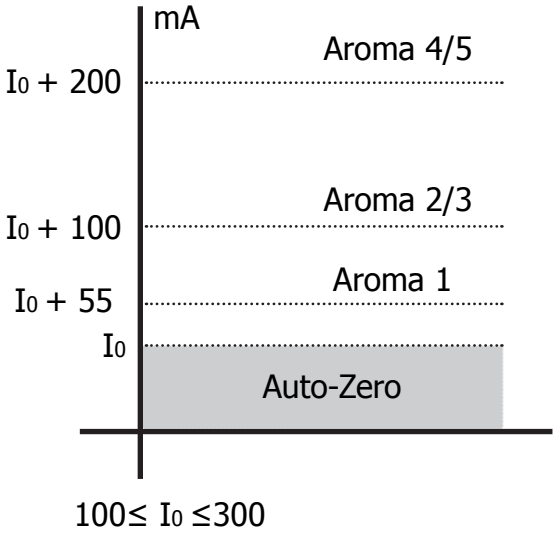
A thermistor, NTC type (Negative temperature coefficient), is used as a temperature sensor; in the event of overheating this reduces boiler element power consumption. The electronic system detects the current boiler temperature from the drop in voltage of the sensor and adjusts it accordingly. Heating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

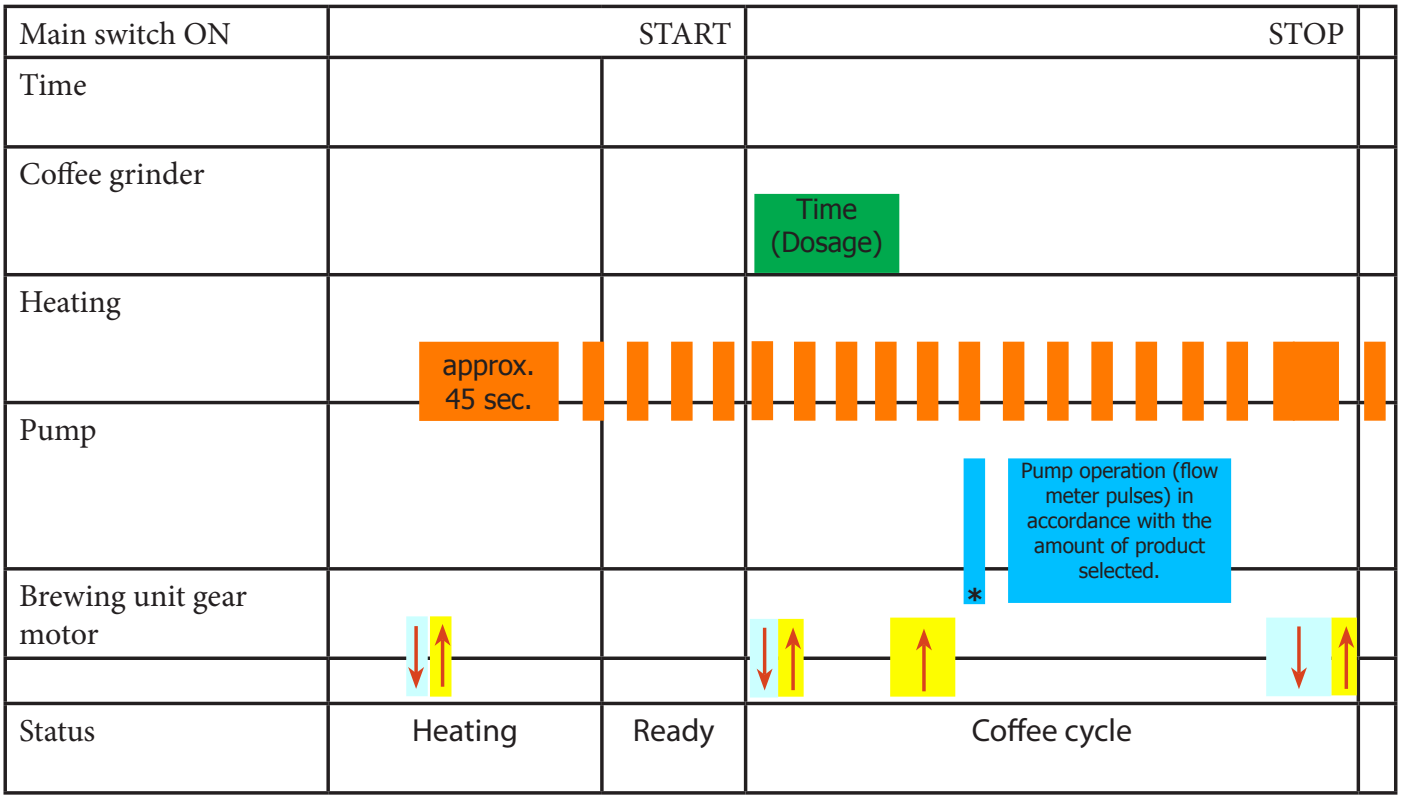
$4{,}0s \leq T_3 \leq 10s$ (10000ms)
$3{,}5s \leq T_2 \leq 9s$ (9000ms)
$3{,}0s \leq T_1 \leq 8{,}1s$ (8100ms)

			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

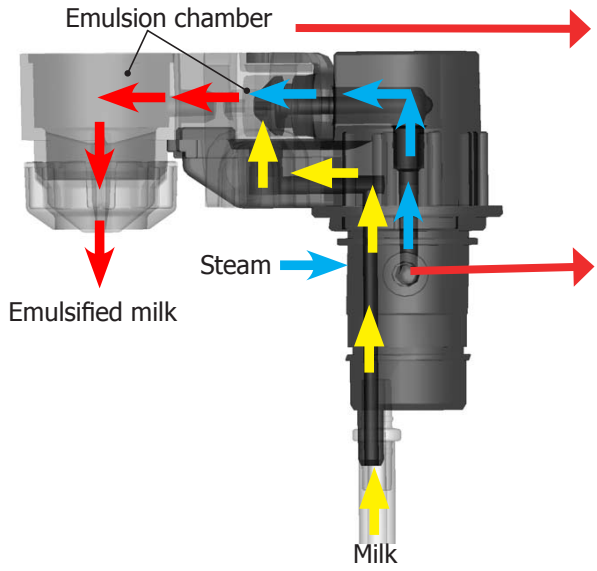
Coffee cycle

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 Milk Carafe

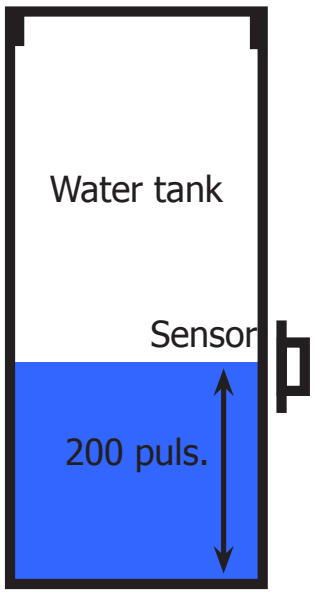
1)Steam input
2)Bring the cappuccino maker into dispensing position
3)Milk tank



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

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

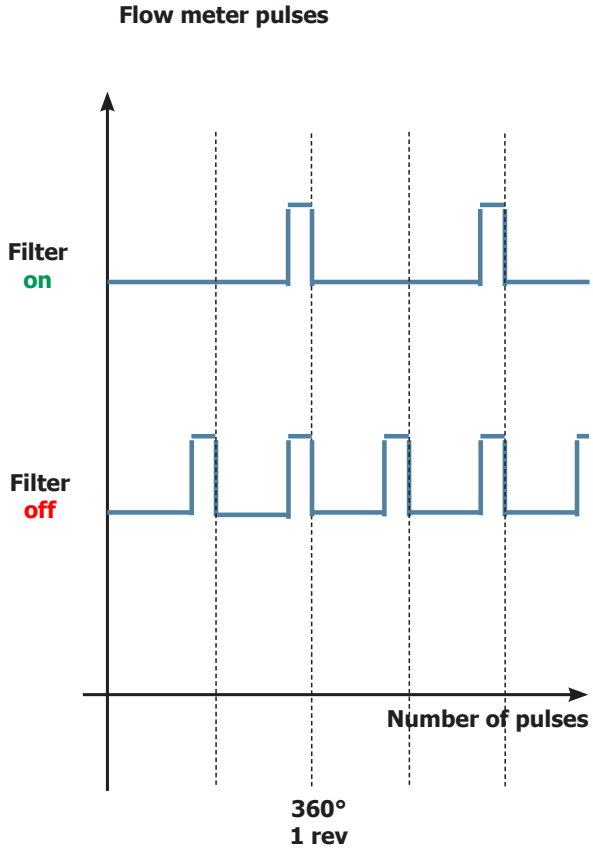
3.8. Water level detection (water tank)



"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.

3.9. Descaling request



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

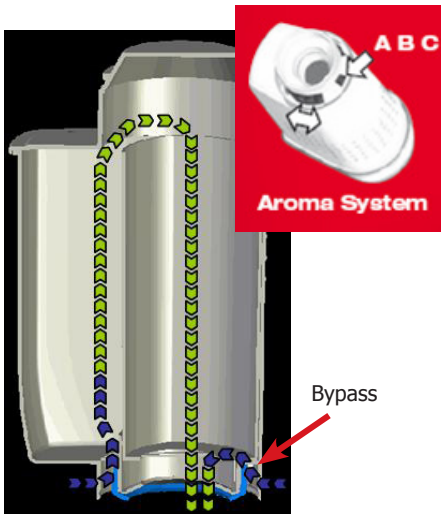
The water hardness is set on the basis of the regional water hardness analysis (1, 2, 3, 4).

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.

3.10. 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.

3.11. Descaling cycle frequency

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

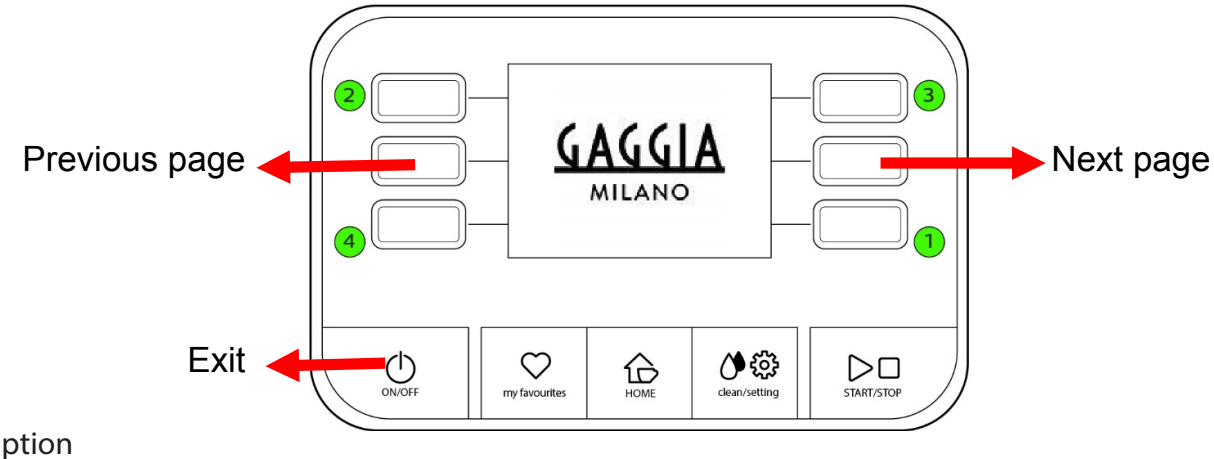
CHAPTER 4

TEST MODE AND STEAM OUT

4.1. Test Mode & Steam Out

How to enter

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



Description

When the machine is in Test Mode appears a windows divided in several sectors:
Page 1: Entering page;
Page 2: Keyboard and display testing;
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. The dotted sectors are used to show informations about the status of microswitch, sensors or other variables.

The presence of symbol (^) into a sector indicate that no function is associated to.

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

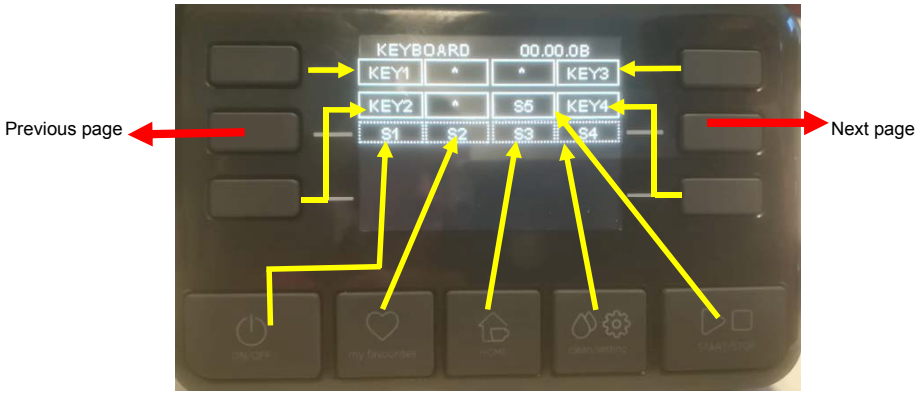
Navigation in Test Mode

Page 1: Entering page

This is the first window of Test Mode. It show the version of CPU software and Power board version.

Page 2: Keyboard and Display

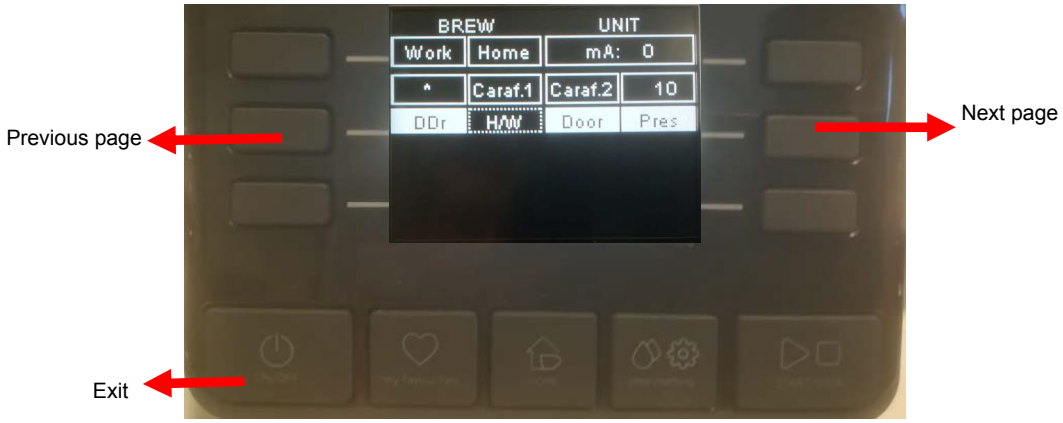
This page allow to test each button of keyboard (is shown its version) with the following correspondence:



When a button is pressed, the corresponding box becomes with the white background and the button LED lights up, if it is pressed again it becomes a black background and the LED goes off.

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:

- Work (my favorite bottom): when pressed move the brew unit to WORK
- Home (home bottom): when pressed move the brew unit to HOME

Info:
- mA: indicates the maximum current (in mA) absorbed by the brew unit in motion;
- H/W: Becomes active when the Brew Unit reach HOME or WORK position;
- Pres: Becomes active if the Brew Unit is present in machine;
- DDr: Becomes active if the Dump box is present in machine;
- Door: Becomes active if the Service Door is closed;
- Caraf 1: Becomes active if the water spout is present;
- Caraf 2: Becomes active 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 (Setting bottom): when pressed activate/deactivate the boiler if the temperature is less than 90°C
- Pump (my favorite bottom): when pressed activate/deactivate the pump
- Ev S (home bottom): when pressed activate/deactivate the Steam/Water electrovalve (24V Dc)

Info:
• 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.
• Tank: Becomes active when the water into tank reach sensor level
• Frequency: indicate the frequency of mains voltage supply
• Boiler Temperature: indicate the boiler temperature in °C

Page 5: Grinder

This page allow to test the functionality of grinder:

The meaning of the sectors are the following:

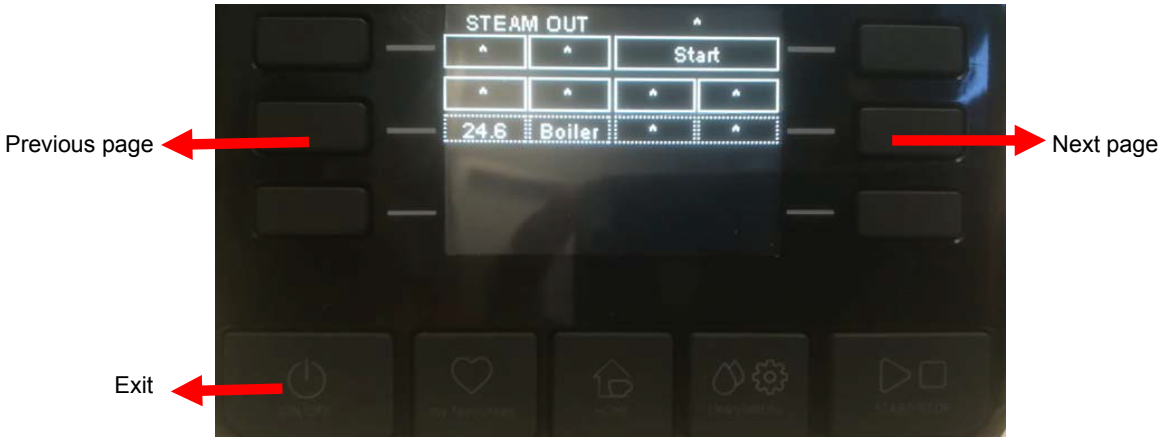
Command:
• A (my favorite bottom): Selected Coffee Strength. If pressed change the current coffee strength from A1 to A5
- A1: Very Mild
- A2: Mild
- A3: Regular
- A4: Strong
- A5: Very strong
• GTest (Home bottom): Activate/Deactivate the grinder for a time corresponding to the selected coffee strength.

Info:

• Time during grinding: indicate the time while the machine is grinding in msec
• Z-cr: Colored box indicate that the measure of zero crossing is FAIL.
• 230V: indicate the voltage power supply detected from PWR board.

Page 6: Steam Out

This page allow to execute the steam out process:



The meaning of the sectors are the following:

Command:

- Start (home bottom): start the steamout process. At the end of process appears: Switch Off at the bottom 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 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
	3	Log all available accessory, counter check with info from consumer
Diagnosis	4	**Check product for consumer complaint and main function** (NFF contact consumer)
	5	Run Diagnostic to get error codes and relevant set statistics (EPSC) refer SDA_114585
	6	Opening machine
Repair	7	Repairing the fault(s) encountered (view Service information in EPSC)
	8	Checking any modifications (view Service information, new software, etc.) **Refer EPSC**
	9	**Basic Functional test while the appliance is open** (linked to consumer complaint or what you may have detected)
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 of 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
- Accessories	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	21	**Steam out** before shipping out, if temperature is below 0° to prevent any damaged due to frozen water. **No need for those families:** Gaggia Velasca (Only 230V) and Babila (120-230V) **Please also check for GDA_113455**
Reset Error code	22	New devices have the possibility to reset the error code, once captured it need to be reset to see if it appear afterwards again
Claim Administration	23	**Provide precise IRIS code, according dedicated code table for Garment Care products. The location code from the part you have worked on MUST be completed always with the part reference from exploded view !** **Primary fault and corresponding IRIS code should be claimed first.**
Cleaning	25	Clean water reservoir, bean reservoir, brew chamber and conveyor
	26	Clean and dry brew unit, coffee bin and drip tray
	27	External cleaning (housing surface)
Safety check	28	Earth leakage, Isolation test, resistor of earth wire grounding, as requested in certain country's (VDE, ISO) or H-POT TEST
Visual	29	Check the mains cord for damages
Packing	30	Packing
	31	Check completeness (accessories) according income log refer #3
	32	Neatly pack the product
Documentation	33	Info for Consumer by packed ? e.g. service brochure, FAQ, NFF letter, s/c etc....
	34	Descaling instruction with changed procedure (S/C) if available
Repair report	35	Is there an answer to **ALL** consumer questions/complaints (see complaint)
	36	add set statistic and give, if needed clear instruction towards consumer
	37	Is it indicated which documents are added
	38	Are there tips how to prevent issues

CHAPTER 7

DISASSEMBLY

7.1. Outer Shell

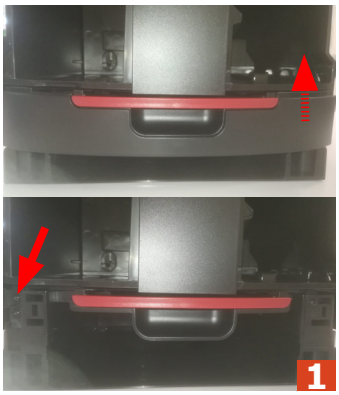
SUP 049EU SUP 049EP SUP 049E SUP 049

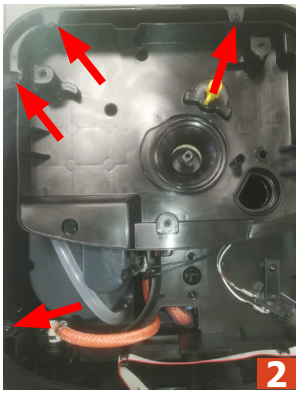
Remove the water tank, lid, drip tray, dump box, dreg drawer, brewing unit, caraffe/pannarello/capincup or cappuccinatore.

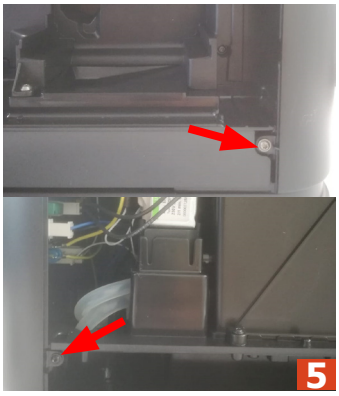
Upper cover

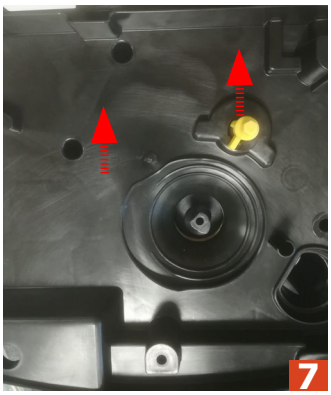
unscrew the screw shown and remove the bean coffee container and the upper casing cover.

Covers



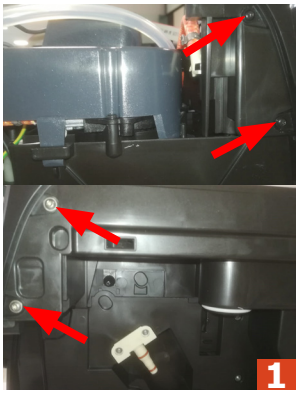


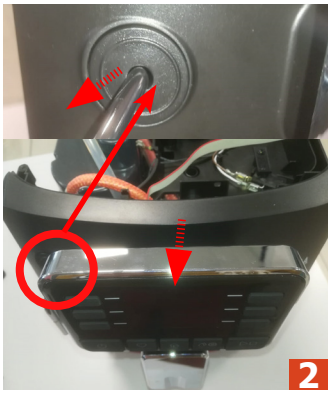




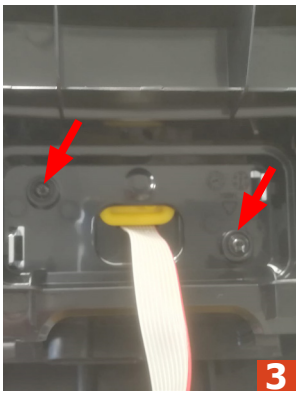
1. Slip off the casing bottom cover and unscrew the screw shown;
2. Unscrew the screw shown;
3. Slip off the left side casing;
4. Slip off the service door;
5. Unscrew the screw shown;
6. Slip off the rear casing;
7. Slip off the bean coffee grinder insert and coffee grinder soundproofing.

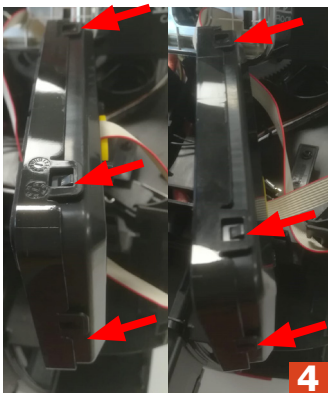
7.2. Display

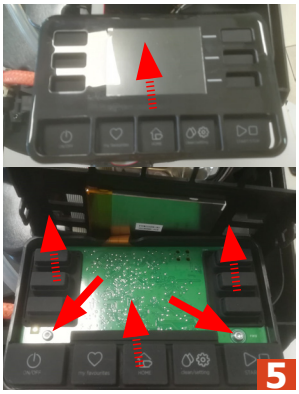


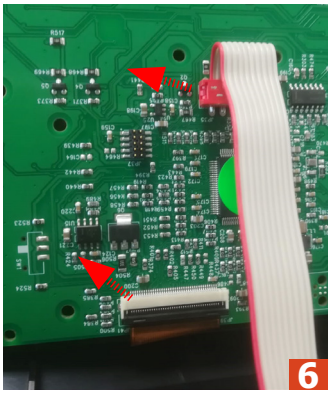


1. Unscrew the screw shown;
2. Slip off the frontal pannel cap (all except SUP049 EU) and the front pannel;
3. Unscrew the screw shown;
4. Slip off the frame;
5. Unscrew the screw shown and slip off the upper and the lower kayboard;
6. Slip off the electrical connection;

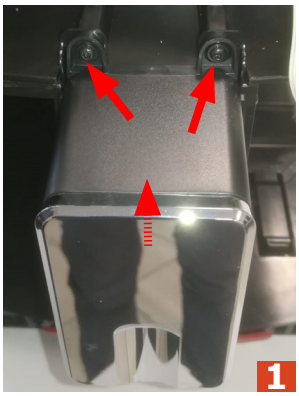


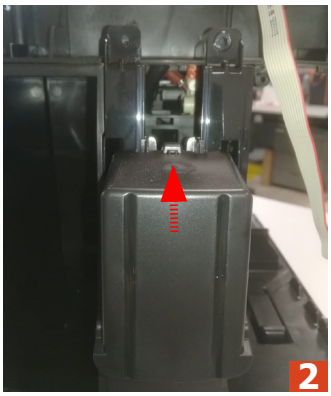


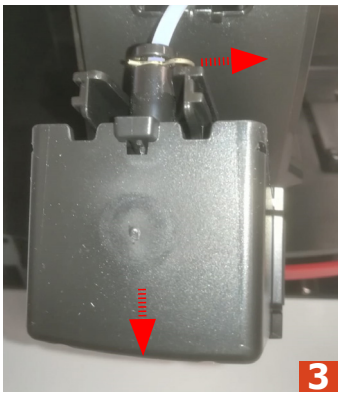




7.3. Coffee dispenser

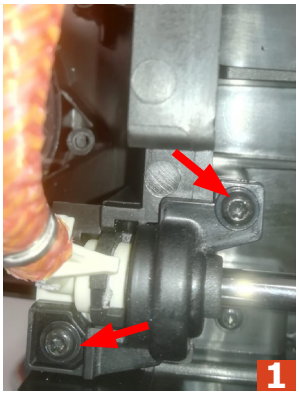


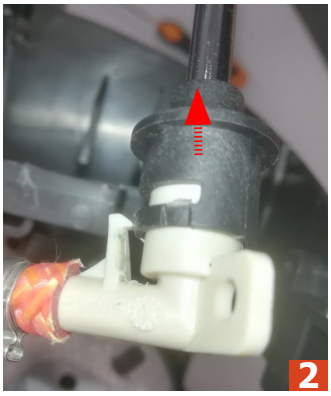


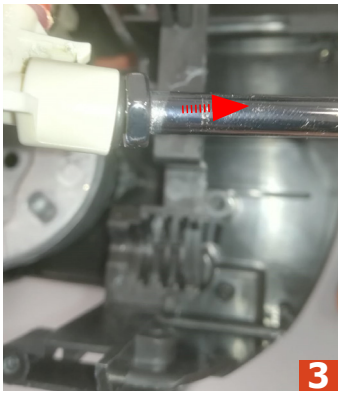


1. Unscrew the screw shown and slip off the coffee dispenser external body;
2. Slip off the coffee dispenser mobil part;
3. Slip off the fork and then the the coffee dispenser mobil part.

7.4. Steam tube (SUP049 - SUP049E - SUP049EP)

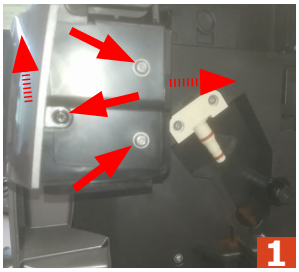


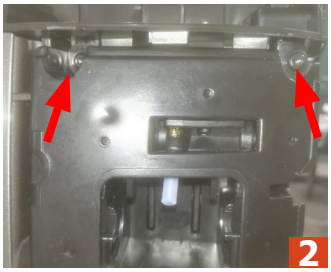


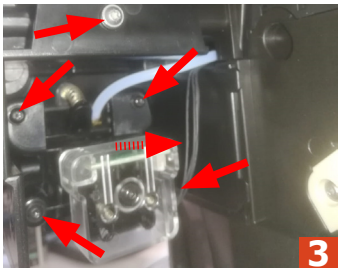


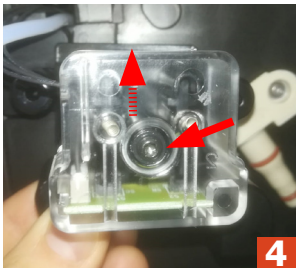
1. Unscrew the screw shown;
2. Slip off the bush for steam tube;
3. Slip off the steam tube.

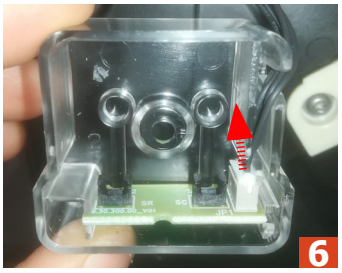
7.5. Carafe connection (SUP049EU)





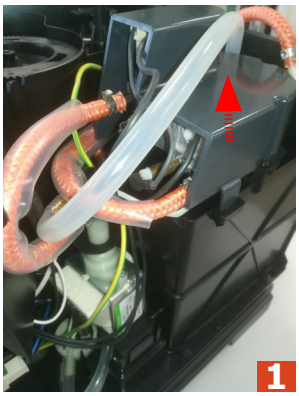


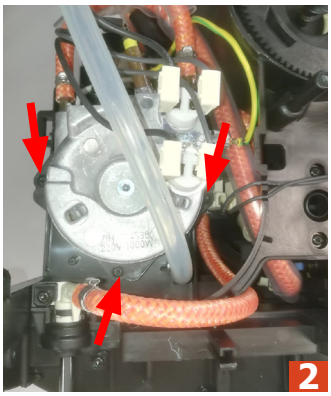


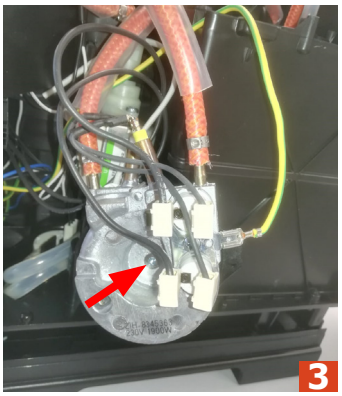


1. Unscrew the screw shown and slip off the insert body frontal cover and insert body rear cover;
2/3. Unscrew the screw shown and slip off the graft body insert;
4. Unscrew the screw shown and slip off the board cover;
5. Slip off the teflon tube assy;
6. Disconnect the electrical connection.

7.6. Boiler

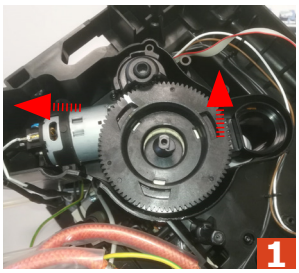


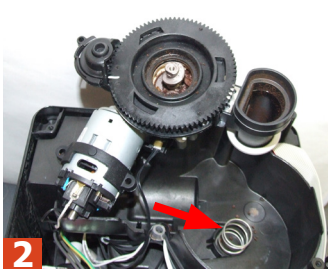




1. Slip off the boiler insulating cover
2. Unscrew the screw shown;
2. Unscrew the screw shown and slip off the electrical and hidraulic connection

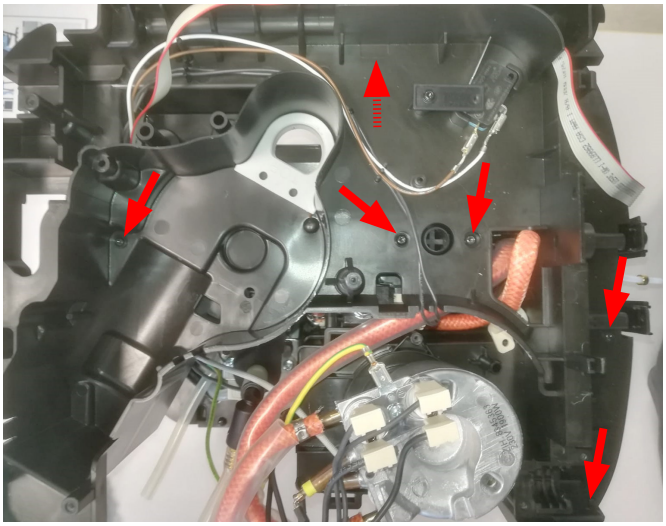
7.7. Coffee grinder





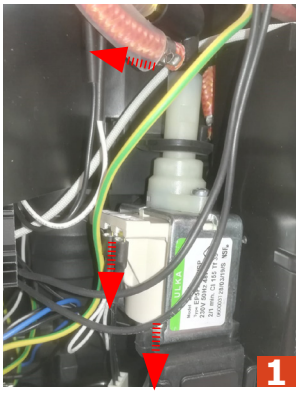
1. Slip off the coffee grinder and the electrical connection;
2. When reassembling the coffee grinder, make sure the spring is repositioned correctly.

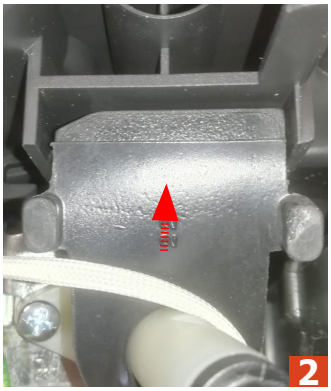
7.8. Coffee grinder support plate



Unscrew the screw shown and slip off the coffee grinder support plate

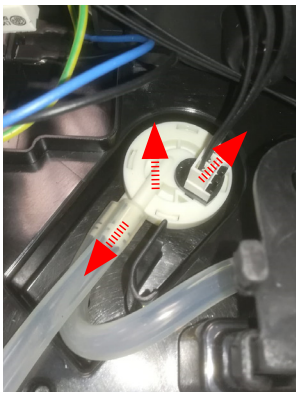
7.9. Pump





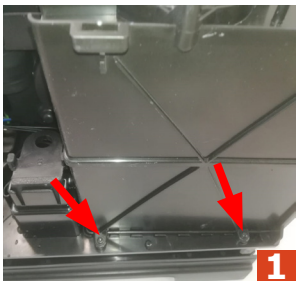
1. Slip off the electrical and hidraulic connection;
2. Slip off the upper pump support and than the pump.

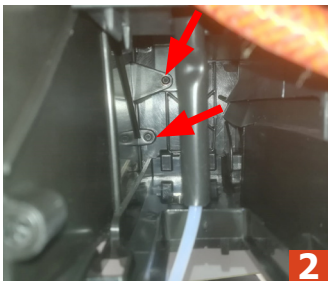
7.10. Flowmeter

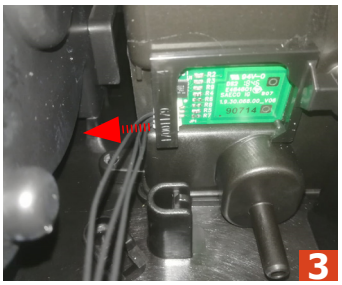


Slip off the electrical and hidraulic connection and than the flowmeter.

7.11. Casing bottom insert

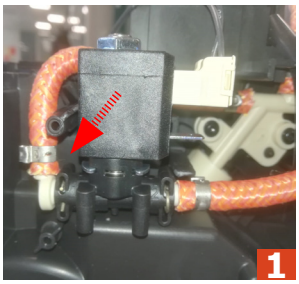


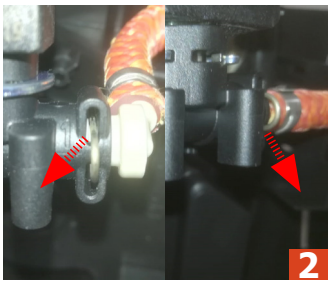


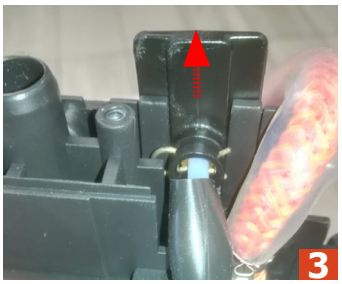


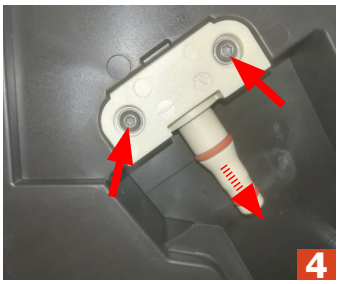
1. Unscrew the screw shown;
2. Unscrew the screw shown;
3. Slip off the electrical connection and than the casing bottom insert.

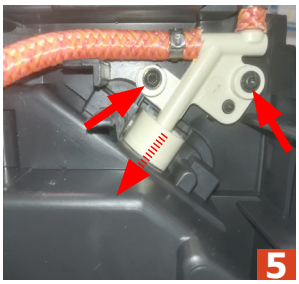
7.12. Valve and flow selector faucet





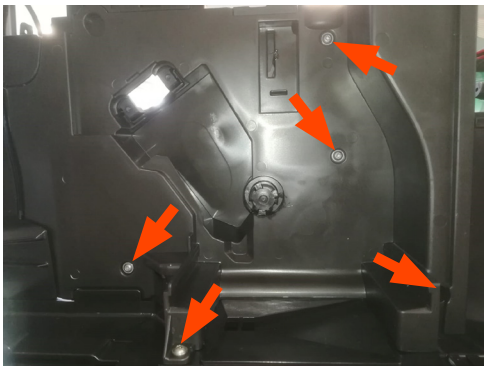




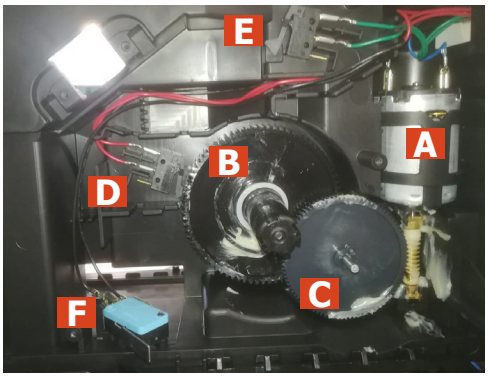


1. Slip off the valve;
2. Slip off the fork;
3. Slip off the teflon tube assy;
4. Unscrew the screw shown and slip off the pin for flow selctor faucet;
5. Unscrew the screw shown and slip off the flow selector faucet.

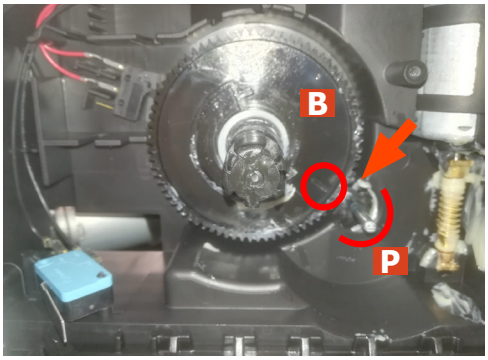
7.13. Gear motor



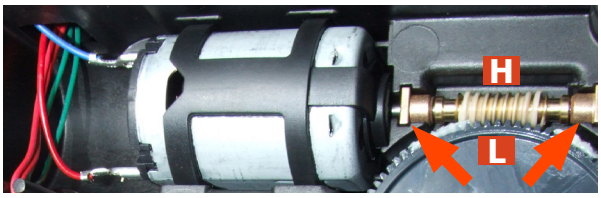
Unscrew the screw shown and slip off the gear motor cover.



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.
- Microswitch (F) detecting dump box presence.
- Remove the gear (C) that meshes with the motor transmission shaft.
- Remove the large gear (B).
- Remove the motor (A), complete with transmission shaft.

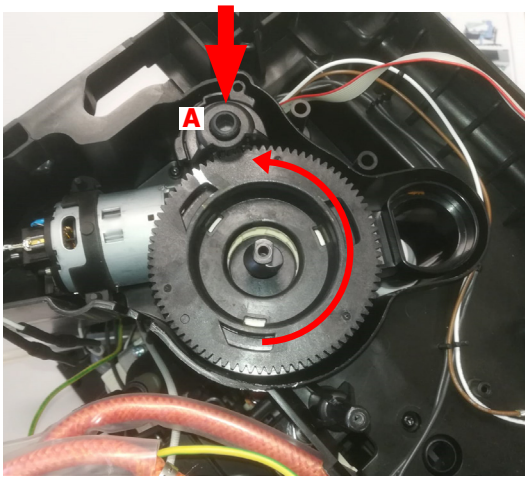


Replace the gear (B), making sure that the imprint of the arrow is aligned with the opening containing the pin (P).

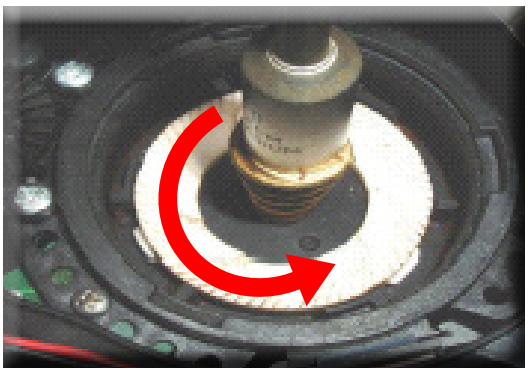


When replacing the motor and the transmission shaft, make sure the guide runners (L) are in the right position.
Grease the shaft thoroughly and evenly.

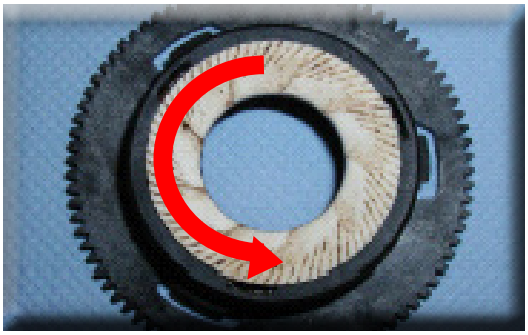
7.14. Grinder blades



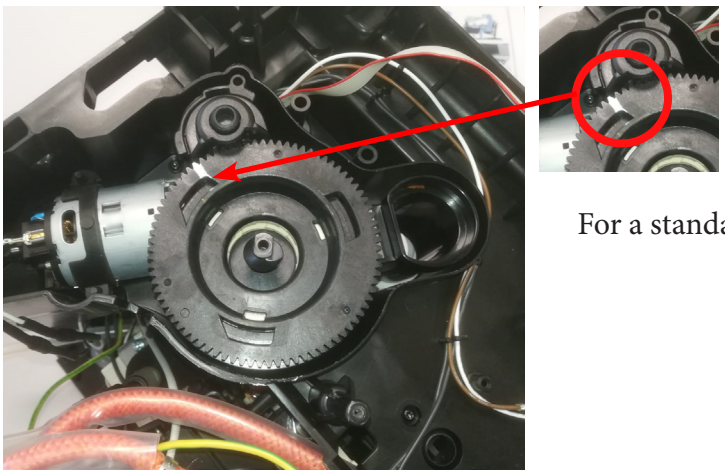
To extract the top support of the appliance, press on the grinding adjustment spindle (A) and turn the support anticlockwise until it unhooks.



Turn the grinder blades anticlockwise out of the support.

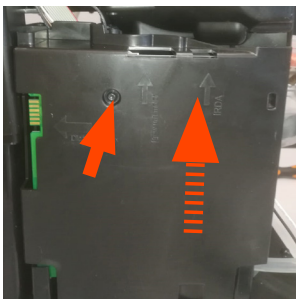


Turn the grinder blades clockwise out of the support. The bayonet connections can be accessed from the rear.



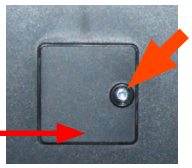
For a standard adjustment, both markings must be aligned.

7.15. CPU board



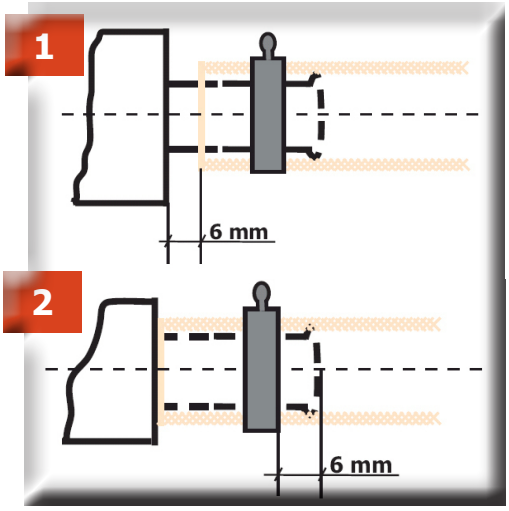
Unscrew the screw shown and slip off the CPU board cover and then disconnect the electrical connection

7.16. Programming access



Loosen the screw for remove the cover.

7.17. Fitting and removing Oetiker clamps



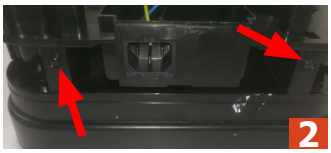
1) Boiler connection.

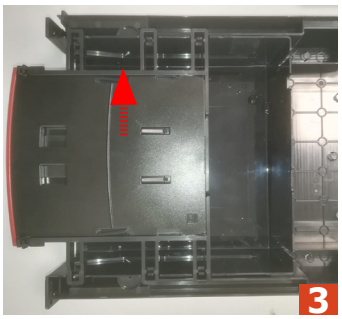
2) Other connections.

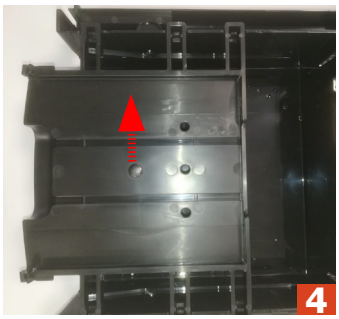
Use a suitable pair of pliers to remove the clamp (as illustrated).

Tighten the clamp as illustrated.

7.18. Casing bottom



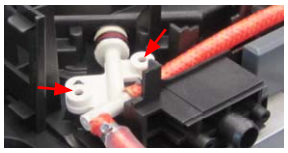
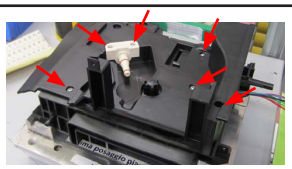
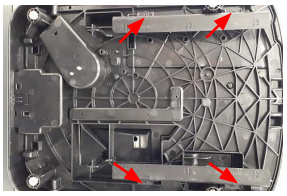
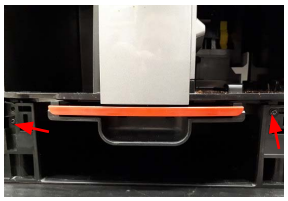
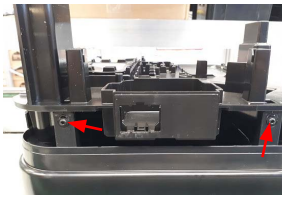


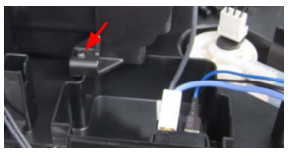
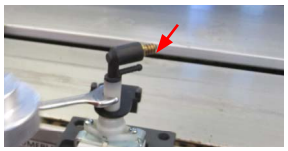
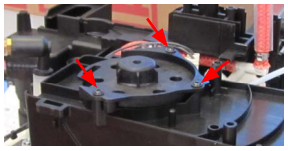
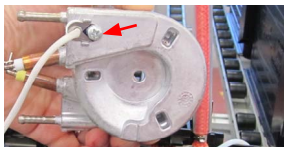
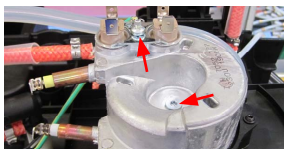
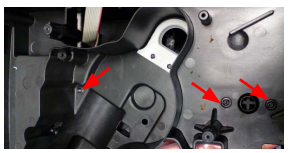
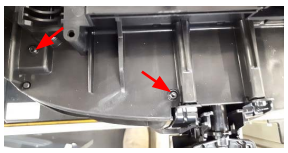
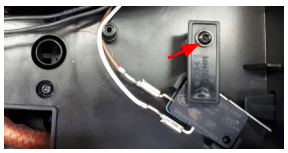
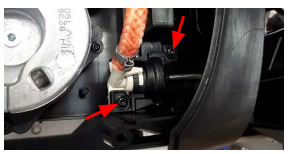


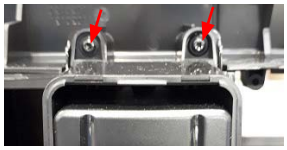
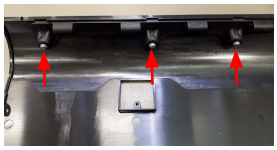
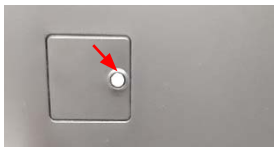
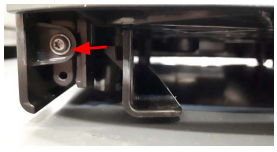
1/2. Unscrew the screw shown and slip off the Casing bottom
3.Slip off the rest cups assy;
4.Slip off the box rest cups.

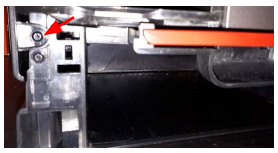
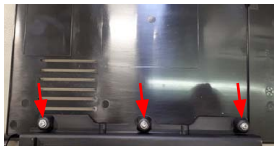
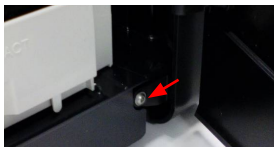
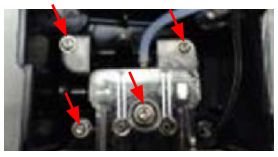
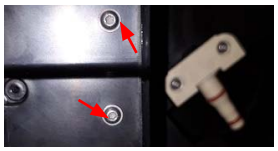
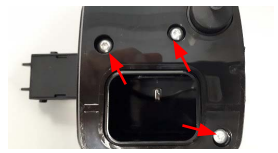
7.19. Tightening torques

The purpose of this paragraph is to define the correct tightening torque of each screw present on the Gaggia Cadorna machine models.
A manual dynamometer must be used to check the tightening torque.

Screw	Quantity	Image	tightening torque
Flow selctor faucet.	2		0,5 Nm ± 0,1
Mounting plate cover	6		0,65 Nm ± 0,1
Casing bottom	4		0,6 Nm ± 0,1
Casing bottom	2		0,7 Nm ± 0,1
Casing bottom	2		0,7 Nm ± 0,1
Mounting plate cover	1		0,6 Nm ± 0,1

Screw	Quantity	Image	tightening torque
Mounting plate	1		0,7 Nm ± 0,1
Water sensor	1		0,4 Nm ± 0,05
Safety valve	1		1,0 Nm ± 0,1
Casing bottom insert	4		0,6 Nm ± 0,1
Boiler support	3		0,6 Nm ± 0,1
Temperature sensor	1		2,0 Nm ± 0,5
Thermostat and boiler	2		1,5 Nm ± 0,5
Coffee grinder support plate	3		0,6 Nm ± 0,1
Coffee grinder support plate	2		0,6 Nm ± 0,1
Door microswitch	1		0,7 Nm ± 0,1
Steam tube support (SUP049-SUP049E-SUP049EP)	2		0,7 Nm ± 0,1

Screw	Quantity	Image	tightening torque
Coffee dispenser	2		0,6 Nm ± 0,1
KYB	2		0,4 Nm ± 0,1
Display	2		0,7 Nm ± 0,1
Front pannel	4		0,8 Nm ± 0,1
Power board cover	1		0,6 Nm ± 0,1
Hinge for rear casing cover	3		0,5 Nm ± 0,1
Reae casing cover	2		0,7 Nm ± 0,1
Rear casing programming insert	1		0,4 Nm ± 0,05
Reae casing cover	1		0,7 Nm ± 0,1
Left side casing	2		0,7 Nm ± 0,1
Left side casing (SUP049)	1		0,7 Nm ± 0,1

Screw	Quantity	Image	tightening torque
Left side casing (SUP049E-SUP049EP-SUP049EU)	1		0,7 Nm ± 0,1
Hange for door right	3		0,7 Nm ± 0,1
Rear casing cover	1		0,7 Nm ± 0,1
Coffee container	3		0,7 Nm ± 0,1
Bean container finger protection	1		1,2 Nm ± 0,1
Carafe graft body insert (SUP049EU)	4		0,65 Nm ± 0,1
Carafe insert body (SUP049EU)	2		0,7 Nm ± 0,1
Carafe insert body rear cover (SUP049EU)	2		0,7 Nm ± 0,1
Carafe insert body frontal cover (SUP049EU)	1		0,7 Nm ± 0,1
Upper cover carafe (SUP049EU)	3		0,5 Nm ± 0,1
Carafe handle (SUP049EU)	1		0,5 Nm ± 0,1