

Service  
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# ServiceManual

Rev. 00 MARCH 2017

## General Information

Description	Value
Housing material	Thermoplastic material
Size (w x h x d)	256mm x 340mm x 440 mm (data may vary depending on the model)
Weight	9.0 kg (data may vary depending on the model)
Power Cord length	1.2m
Control panel	Front panel
Water tank	1.5 litres
Coffee bean hopper capacity	300 g
Coffee grounds drawer capacity	10
Pump pressure	15 bar
Boiler	Stainless steel type
Safety devices	Thermal fuse

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**MODIFICATIONS TO SERVICE MANUAL**

From Rev.	To Rev.	Chapter	Inserted	Modified
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# **CHAPTER 1**

## **INTRODUCTION**

## 1.1 Documentation required

The following documentation is needed for repair procedures:

- Instruction booklet for specific model
- Technical documentation for specific model (diagrams, exploded view, symptom cure and service manual)

## 1.2 Tools and resources

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

12NC	Description	Notes
-	Screwdriver	
-	Pliers for Oetiker clamps	
-	CC -A - Vdc tester	
-	Digital thermometer	Scale limit > 150°C
996530009845	Serkit	Tool needed for programming with SSC
-	SSC (Saeco Service Center)	Tool used to flash the SW on the machines (for SW upgrade and diagnostics mode). Refer to SDA_111359.

## 1.3 Material

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

## 1.4 Safety warnings

We recommend you consult the technical manual of the machine before performing any maintenance work.

Observe all applicable standards relating to the repair of electrical appliances.

Always disconnect the power plug from the mains before beginning repair work.

Always disconnect the power plug from the mains before beginning repair work.



Simply turning off the main machine power switch is not an adequate safety precaution. This domestic appliance is rated as insulation class I.

On completion of the repair work, insulation and dielectric rigidity tests must be performed.



Disassembling the machine, the operator must pay attention to hot and under pressure parts: boiler, pin-boiler, valves, dispensing, steam tube, brew unit, connections and pipes to avoid burns.

Please refer to specific hydraulic circuit (Image1) to know the parts in detail.

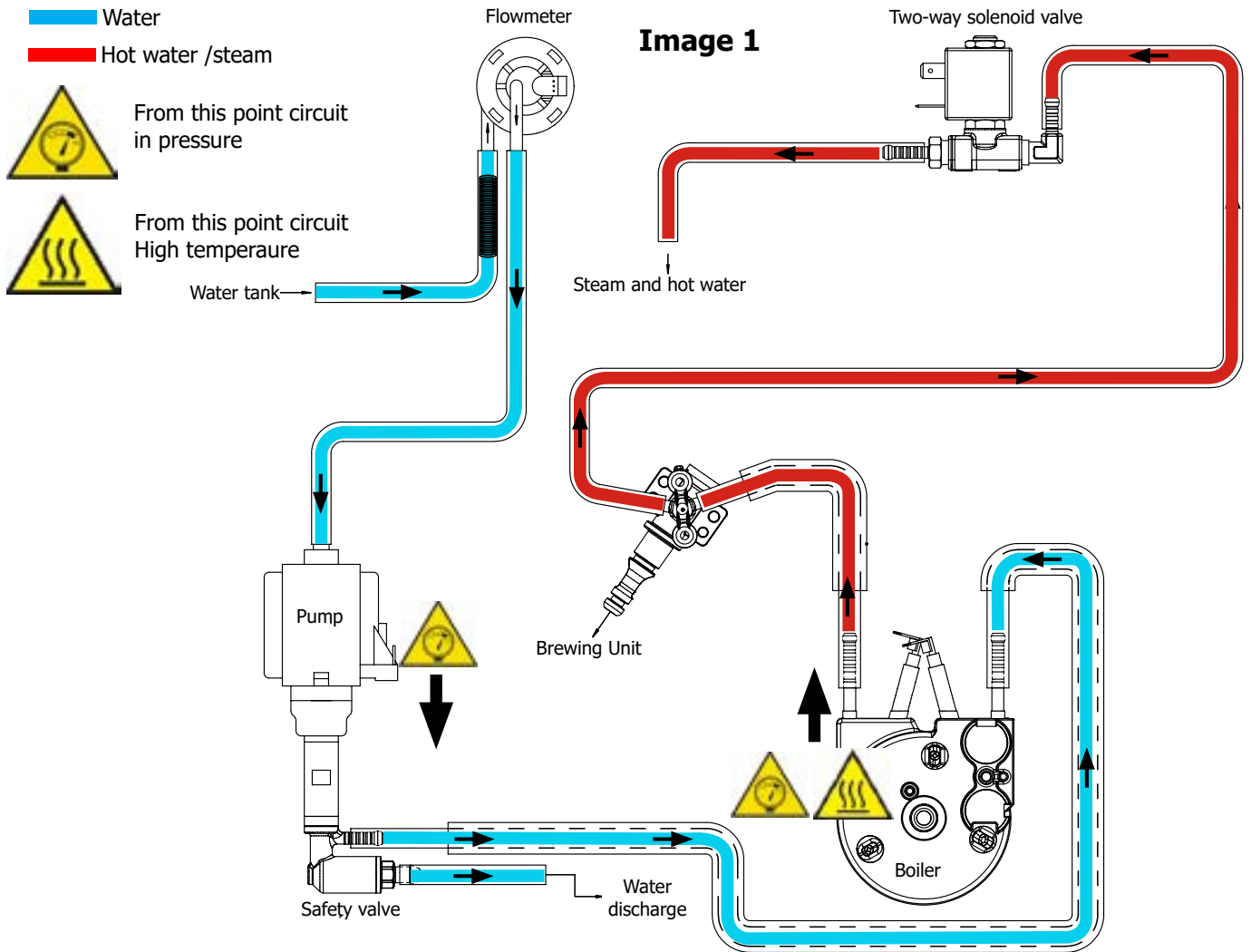


The machine hydraulic circuit can reach maximum pressure of 16/18 bar.

To operate in 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, be very careful not to come into contact 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



### 1.5 Service POLICY grid as used for coffee machines

**For IN WARRANTY** repairs is recommended to use when and where possible the single components, available in the exploded views of the coffee machines or of the specific components. If you find the information "SEE THE EXPLODED VIEW E....." in the assembly description field, it means that the single components of the assembly are available in the other pages of the exploded view. It's possible to use the assembly only if there is a specific Symptom Cure that include this possibility or when the single components are not available for the order.

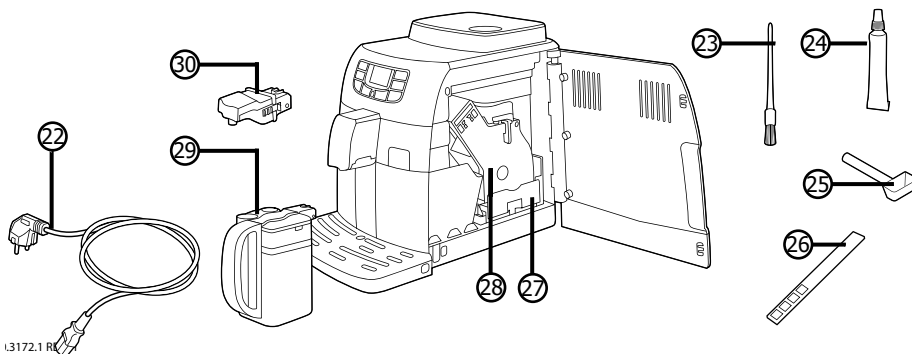
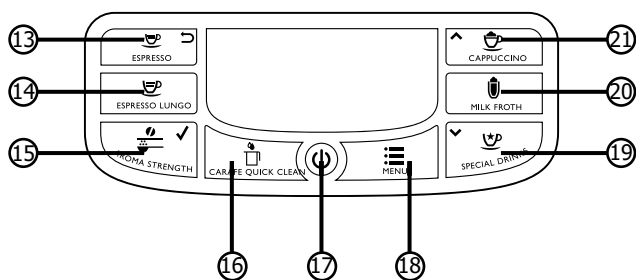
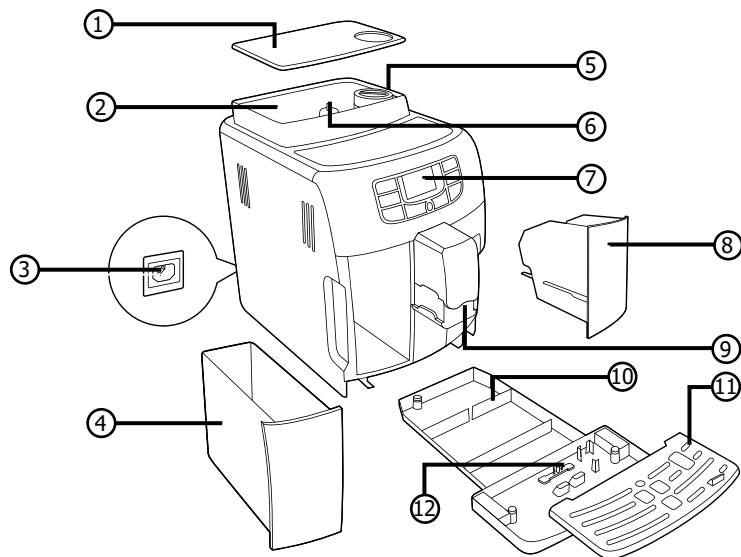
#### List of principal assembly present in all our coffee machines

Components	Assembly use	Single components available
<b>COFFEE GRINDER</b>	<b><u>Only for OOW repairs</u></b>	<b>YES</b> , to consult the specific exploded-view of the machine or of the Coffee Grinder on website
<b>BREWING UNIT</b>	<b><u>Only for OOW repairs</u></b>	<b>YES</b> , to consult the specific exploded-view of the machine or of the Brewing unit on website
<b>BOILER</b>	<b><u>Only for OOW repairs</u></b>	<b>YES</b> , to consult the specific exploded-view of the machine on website
<b>GEAR MOTOR</b>	<b><u>Only for OOW repairs</u></b>	<b>YES</b> , to consult the specific exploded-view of the machine on website
<b>FILTER HOLDER</b>	<b><u>Only for OOW repairs</u></b>	<b>YES</b> , to consult the specific exploded-view of the machine on website
<b>MILK CARAFE</b>	<b><u>Only for OOW repairs</u></b>	<b>YES</b> , to consult the specific exploded-view of the machine on website
<b>THERMAL CARAFE</b>	<b><u>Only for OOW repairs</u></b>	<b>YES</b> , to consult the specific exploded-view of the Thermal Carafe on website
<b>MILK ISLAND</b>	<b><u>Only for OOW repairs</u></b>	<b>YES</b> , to consult the specific exploded-view of the Milk Island on website

**1.6.1 External machine parts (CMF)**

1	Coffee bean hopper lid
2	Coffee bean hopper
3	Power cord socket
4	Water tank
5	Pre-ground coffee compartment
6	Grinder adjustment knob
7	Control panel
8	Coffee grounds container
9	Dispensing spout
10	Drip tray
11	Drip tray cover
12	Drip tray full indicator
13	Espresso button
14	Espresso lungo button
15	Aroma strength button
16	Standby button
17	Menu button
18	Hot water button
19	Steam button
20	Power cord
21	Cleaning brush (for specific types only)
22	Grease for the brew group (for specific types only)
23	Pre-ground coffee measuring spoon
24	Water hardness test strip
25	Coffee residues drawer
26	Brew group
27	Steam wand
28	Classic milk frother

**1.6.2 External machine parts (OTC)**

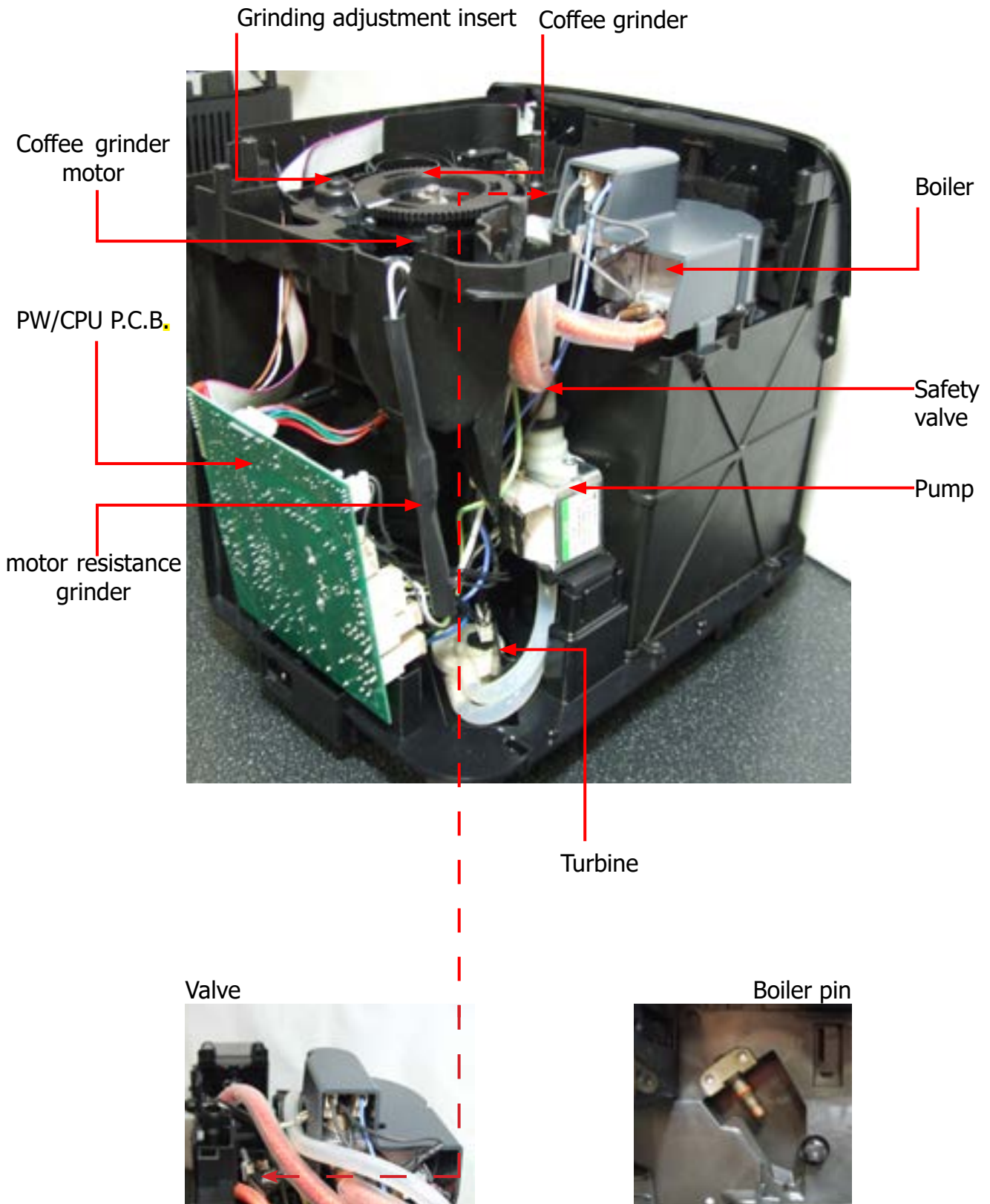


1	Coffee bean hopper lid
2	Coffee bean hopper
3	Power cord socket
4	Water tank
5	Pre-ground coffee compartment
6	Grinder adjustment knob
7	Control panel
8	Coffee grounds container
9	Dispensing spout
10	Drip tray
11	Drip tray cover
12	Drip tray full indicator
13	Espresso button
14	Espresso lungo button
15	Aroma strength button
16	Carafe quick clean button
17	Standby button
18	Menu button
19	Special drinks button
20	Milk froth button
21	Cappuccino button
22	Power cord
23	Cleaning brush (for specific types only)
24	Grease for the brew group (for specific types only)
25	Pre-ground coffee measuring spoon
26	Water hardness test strip
27	Coffee residues drawer
28	Brew group
29	Milk carafe
30	Hot water dispensing spout

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### 1.6.3 Internal machine parts



# **CHAPTER 2**

## **TECHNICAL SPECIFICATIONS**

## 2.1. Technical specifications

Power supply and output:	240 V~ 50 Hz 1850 W - 230 V~ 50/60 Hz 1850 W 120 V~ 60 Hz 1500 W
Temperature monitoring:	(NTC) variable resistor sensor - transmits the value to the electronic card
Safety system:	2 thermostats at 190°C one shot
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
Gear motor:	2 rotation directions; power supply 24VC
Steam heat exchanger output: Stainless steel	As above
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:	Opens at approx. 16-18 bar
Water filter:	In tank
Coffee grinder:	Direct current motor with flat ceramic grinder blades
Automatic dosage	Dose adjustment controlled by the electronic system
Power consumption:	During the heating phase - approx. 5.6 A
Dimensions: W x H x D in mm:	256x340x440 (data may vary depending on the model)
Weight:	9.0 Kg (data may vary depending on the model)
Water tank capacity:	1.5 litres
Coffee container capacity	300 g.
Coffee dreg drawer capacity	10
Water circuit filling time:	Approx. 15 seconds for first filling cycle
Heating time:	Approx. 30 seconds
Grinding time:	Approx. 8-10 seconds

## 2.2. Machine parameters and performance

PRODUCT QUANTITY	Minimum quantity (Puls.)	Default quantity (Puls.)	Maximum quantity (Puls.)	User programmable	Programm. by Production / Service
<b>Espresso</b>	50	165	600	Yes	No
<b>Long coffee</b>	70	440	600	Yes	No
<b>Pre-ground</b>	No				
<b>Hot water</b>	Continues until the water supply has been exhausted (capacitive sensor)				
<b>Steam pannarello (frother)</b>	Continues until the water supply has been exhausted (capacitive sensor)				

<b>RINSE</b>	<b>Initial rinse</b>	<b>Final rinse</b>
When performed	When the machine is switched on and the boiler temperature is $\leq 50^{\circ}\text{C}$	When the machine is switched off electronically, manually or automatically after 30', if at least one coffee has been dispensed, before switching off
No. of pulses	180	80
Stopping option	Yes, by pressing any key	Yes, by pressing any key
User disable option	No	No
Production/Service department disable option	No	No
No. of pulses user adjustment option	No	No
No. of pulses Production/Service department adjustment option	No	No
Pulse range (Min. – Max.)	No	No

Descaling cycle frequency with AQUACLEAN filter					
The first activation must make before you've paid up to 5,00 l products because mind thinks as if he had the filter					
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	2,0 l	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 below.					

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 below (NO AQUACLEAN)			
Descaling cycle frequency			
Hardness	WATER HARDNESS	Without water filter	Not reactivating the filter
<b>1</b>	Soft (up to 7°dH)	240 litres (480,000 pulses)	210 litres (420,000 pulses)
<b>2</b>	Medium (7° - 14°dH)	120 litres (240,000 pulses)	105 litres (210,000 pulses)
<b>3</b>	Hard (15° - 21°dH)	60 litres (120,000 pulses)	52.5 litres (105,000 pulses)
<b>4</b>	Very hard (over 21°dH)	30 litres (60,000 pulses)	26.25 litres (52,500 pulses)
The default water hardness level is 4. Each litre of water corresponds to approximately 2,000 pulses.			

### 2.3. Specification for the measurement of the coffee products temperature.

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:

- Water temperature in tank: 23°C (+/-2°C).
- It must be used a plastic cup (see picture N°1).
- It must be used a thermocouple thermometer (e.g. type K - see picture N°2).
- 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:

- 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).
- The temperature in the cup is measured by immersing the probe of the thermometer up to touch the bottom. The probe then must be moved in a circular motion for 5/6 rotations. At the of the rotations, stop in the center of the cup (Picture 2).
- The highest temperature measured during the rotations is the value we are searching for, and that must be reported;
- Test measurement: from end of dispensing to the end of rotations must be completed within 12 seconds.
- the distance of the probe from the bottom of the glass is a function of the quantity of coffee dispensed: 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.

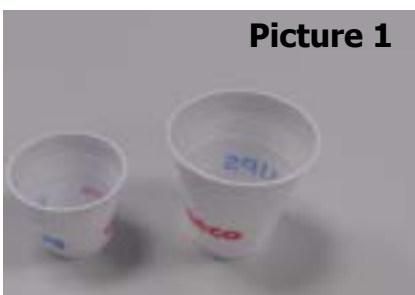
Temperature of 1st product 69°C ≤ 85°C

Temperature of 2nd product 72°C ≤ 85°C

#### Coffee Q.ty 70/120 gr.

Temperature of 1st product 69°C ≤ 85°C

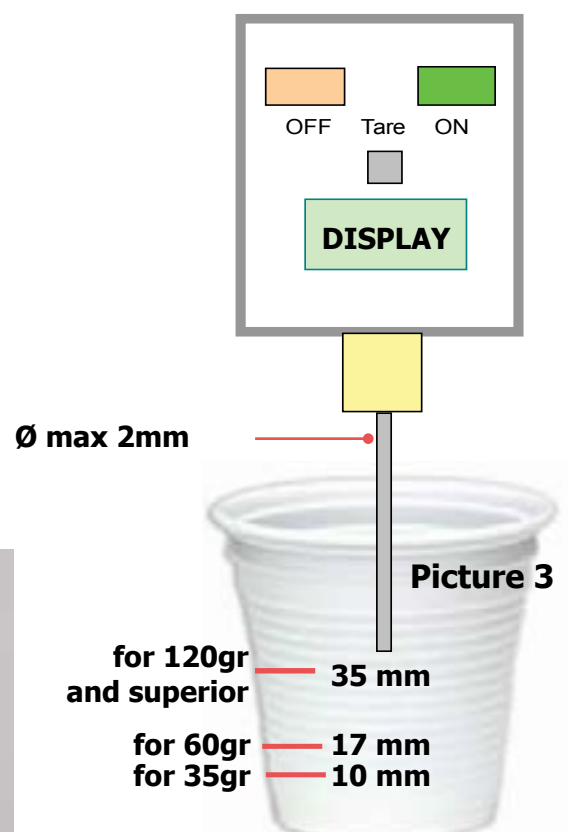
Temperature of 2nd product 72°C ≤ 85°C



Picture 1



Picture 2



Picture 3

### 2.3.1. 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  $T_{refr}$ . (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:

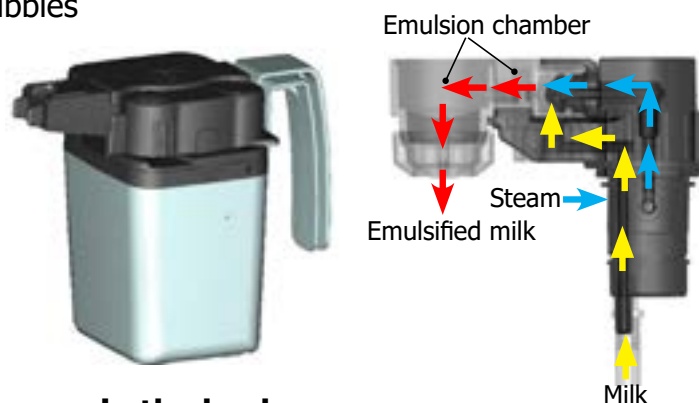
- Manual system (pannarello)
- Semi-Automatic system (cappuccinatore)
- Automatic system (carafe, Pinless wonder system, etc.)

#### Milk temperature in the beaker:

System with Pinless Wonder: With milk at  $T_{refr}$ . (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)  $\geq 15$ mm on 100gr. of brewed product

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

Automatic system: carafe, cappuccinatore, Pinless wonder e.g. (New Royal, Energica Pure, Intelia EVO latte)  $\geq 20$ mm 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 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 (cappuccino)**

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, Cappuccino Pinless wonder e.g.:(New Royal, Energica Pure, Intelia EVO Latte), etc..**

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 Trefr..

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:

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

**NB:** To verify more accurately the height of the cream, a practical expedient dictated by experience is to add to the product just delivered a small amount of coffee. The addition of coffee immediately put in evidence the surface of separation between liquid and cream.

# **CHAPTER 3**

## **BRIEF INSTRUCTIONS**



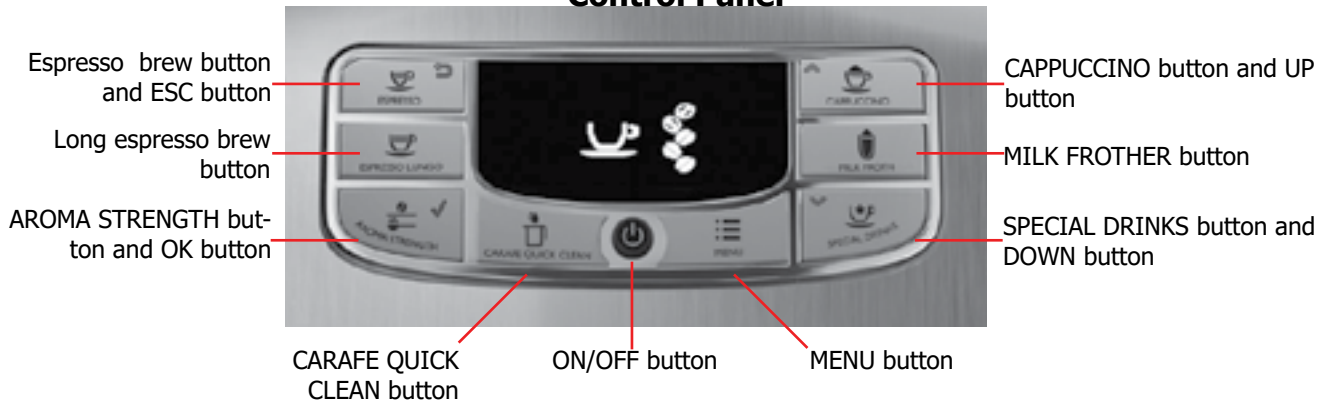
### 3.1. Customer menu Gaggia Velasca CMF

**Control Panel**



### 3.2. Customer menu Gaggia Velasca OTC

**Control Panel**



### 3.3. Warning icons

Warning signals are displayed in red. Below you find a list of the warnings that may appear on the display and their meaning.



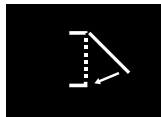
Fill the water tank with fresh water to the MAX level indication.



The bean hopper is empty. Put new coffee beans in the bean hopper.



The brew group is not in the machine. Insert the group.



Close the service door.



Remove the coffee grounds container and empty it.



- There is too much powder in the brew group. Clean the brew group.
- If an error code is triggered, check the section 'Meaning of error codes' to see what the code on the display means and what you can do. The machine cannot be used when this icon is on the display.



You forgot to place the lid on the pre-ground coffee compartment. If you do not place it back within 30 seconds the display will return to the main menu and the brewing cycle will be stopped.

### 3.4. Troubleshooting

Problem	Cause	Solution
The machine does not switch on	The machine is disconnected or the main switch is in the OFF position.	Check if the mains cord is inserted correctly
		Make sure the main switch is set in ON position. (AMF-CMF)
The machine is in DEMO mode.	The standby button has been pressed for more than 8 seconds.	Switch the machine off and then on again using the main switch on the back of the machine.
The drip tray is quickly filled.	This is normal. The machine uses water to rinse the internal circuit and brew group. Some water flows through the internal system directly into the drip tray.	Empty the drip tray when the 'drip tray full' full indicator pops up through the drip tray cover.
		Place a cup under the dispensing spout to collect rinsing water.

The coffee grounds container full icon remains displayed.	The coffee grounds container was emptied while the machine was switched off.	Always empty the coffee grounds container while the machine is ON. If the coffee grounds container is emptied while the machine is switched off, the coffee cycle counter is not reset. In that case, the 'empty coffee grounds container' message will stay on the display even though the container is not full.
	The coffee grounds container was placed back too fast.	Do not place back the coffee grounds container until the screen message prompts you to put it back
The brew group cannot be removed.	The brew group is not positioned correctly.	Close the maintenance door. Switch the machine off and back on again. Wait for the machine ready screen to appear and then remove the brew group.
	The coffee grounds container is not removed.	Remove the coffee grounds container before removing the brew group.
	The machine is still in the descaling process.	You cannot remove the brew group when the descaling process is active. First complete the descaling process and then remove the brew group.
The brew group cannot be inserted.	The brew group is not in the correct position.	The brew group was not put in rest position before it was placed back. Make sure that the lever is in contact with the base of the brew group and that the hook of the brew group is in the correct position.
		Reset the machine by switching it on and off. Place the drip tray and the coffee grounds container back. Leave the brew group out. Close the maintenance door and switch the machine on and off. Then try to reinsert the brew group.
The coffee has too little cream or is watery.	The grinder is set to a coarse setting.	Adjust the grinder to a finer setting.
	The brew group is dirty.	Clean the brew group. For thorough cleaning, follow the monthly cleaning procedure with the degreasing tablet.
	The coffee exit duct is dirty.	Clean the coffee exit duct thoroughly with the handle of the multifunctional tool or a spoon handle.

	The coffee blend is not the correct one.	Try another coffee blend.
	The machine is performing its self-adjustment.	Brew a few cups of coffee.
The coffee is not hot enough.	The cups you use are cold.	Preheat the cups by rinsing them with hot water.
	The temperature is set too low. Check the menu settings.	Set the temperature to high in the menu.
	You added milk.	Whether the milk you add is warm or cold, it will always decrease the temperature of the coffee to some extent.
The machine grinds the coffee beans, but coffee does not come out.	The grind is set too fine.	Adjust the grinder to a coarser setting.
	The brew group is dirty.	Clean the brew group.
	The coffee dispensing spout is dirty.	Clean the coffee dispensing spout and its holes with a pipe cleaner.
	The coffee exit duct is blocked.	Clean the coffee exit duct with the handle of the multifunctional tool or a spoon handle.
The coffee comes out slowly.	The grind is ground too finely.	Change the grinder to a coarser setting.
	The brew group is dirty.	Clean the brew group.
	The coffee exit duct is blocked.	Clean the coffee exit duct with the handle of the multifunctional tool or a spoon handle.
	The machine circuit is blocked by limescale.	Descale the machine.
The milk does not froth.	The automatic milk frother is dirty or not assembled or installed correctly.	Clean the automatic milk frother and make sure it is correctly assembled or installed. (AMF-CMF)
	The type of milk used is not suitable for frothing.	Different types of milk result in different amounts of froth and different froth qualities. Semi-skimmed or full-fat cow's milk give good results.
	The milk carafe is dirty or not inserted correctly.	Clean the carafe and make sure that you position and insert it correctly. (OTC)
	The milk froth dispensing spout as not been opened fully.	Check that the milk froth dispensing spout has been set in the correct position. (OTC)

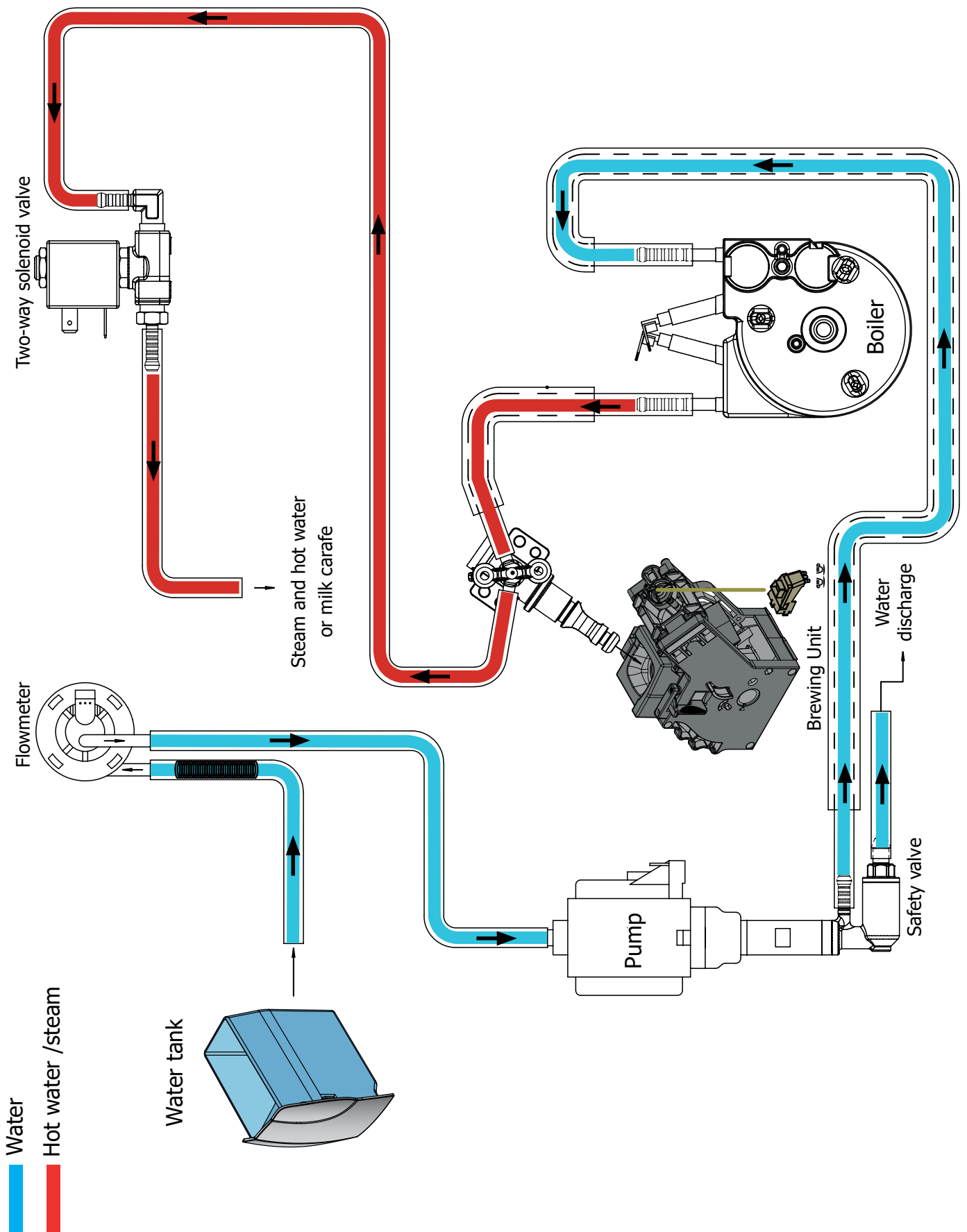
	The milk carafe is incompletely assembled.	Check that all the components have been assembled correctly. (OTC)
The AquaClean filter cannot be activated as the tick does not appear on the display.	A filter has just been activated.	You have to dispense at least 10 cups (of 100ml each) before you can activate a new filter. Be careful as you activate a new filter, the filter counter will increase automatically.
The filter cannot be activated and the machine asks for descaling.	You have already replaced 8 AquaClean filters. After 8 filter replacements you need to descale the machine.	Descal your machine first and install the filter.
	The filter has not been replaced in time after the AquaClean water filter signal started flashing.	Descal your machine first and install the filter.
	The filter has not been installed during first installation but after having brewed approx.50 coffees (based on 100ml cups). The machine has to be completely limescale-free before installing the AquaClean filter.	First descale the machine and then install a new AquaClean filter. After descaling, the filter counter is reset to 0/8. Always confirm filter activation in the machine menu, also after filter replacement
	The AquaClean filter was not correctly activated during first installation.	Follow the instructions on the display until you receive confirmation that the filter has been activated
The AquaClean filter is installed, but the descaling message appears.	After 8 filter replacements, you need to descale the machine	First descale the machine and then install a new AquaClean filter. This will reset the filter counter to 0/8. Always confirm filter activation in the machine menu, also after filter replacement.
The descaling message appears before 8 filters were replaced	You did not activate the AquaClean filter correctly during first installation.	First descale the machine and then install a new AquaClean filter. Always activate the filter in the machine menu.
	You placed the AquaClean filter after having used the machine for a while.	
	You did not activate the replacement filter in the machine menu.	
	You did not replace the filter when the filter symbol started flashing.	
The filter does not fit.	You need to remove air from the filter.	Let air bubbles come out of the filter.
	There is still water in the water tank.	Empty the water tank before you install the filter

	You try to install another filter than the AquaClean filter.	Only the AquaClean filter will fit
There is water under the machine.	The drip tray is too full and overflowed.	Empty the drip tray when the drip tray full indicator pops up through the drip tray. Always empty the drip tray before you start descaling the machine.
	The machine is not placed on a horizontal surface.	Place the machine on a horizontal surface so that the drop iray full indicator works properly.

# **CHAPTER 4**

## **OPERATING LOGIC**

### 4.1 Water circuit





### 4.2. Coffee cycle

Main switch ON	START		STOP
Time			
Coffee grinder			Pulses (Dosage)
Heating	approx. 45 sec.		
Pump			Pump operation (flow meter pulses) in accordance with the amount of product selected.
Brewing unit gear motor			*
Status	Heating	Ready	Coffee cycle

Notes: \* Only with Pre-brewing



#### Single microswitch gear motor

#### Switching on

When the machine is switched on, the gear motor repositions itself as follows:

- It acts on microswitch 1 (see following chapter).
- 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., at full power, in order to reach the optimal temperature. The temperature will then remain at a constant level.

#### Coffee cycle

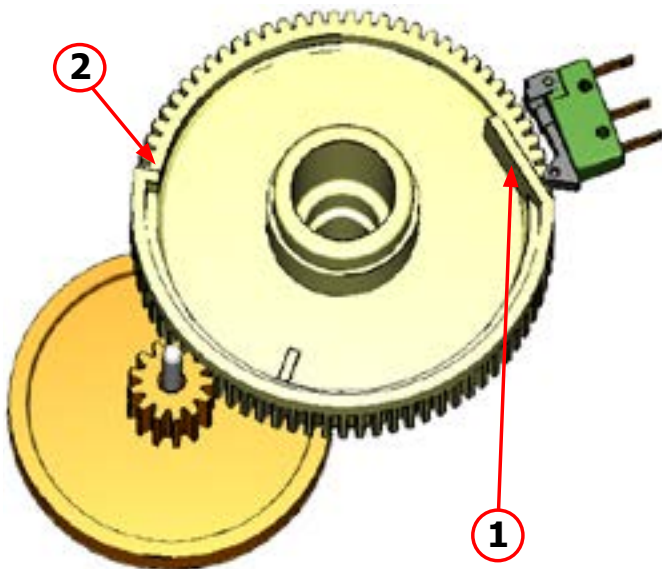
1. The coffee grinder starts the grinding process (controlled by pulses generated by a sensor).
2. The gear motor (brewing unit) moves to the brewing position.
3. Preliminary dispensing phase (short pump activity, short pause).
4. Product dispensing (the pump operation period is defined by the amount of product dispensed).
5. The gear motor moves to its home position (the dregs are expelled automatically).

### 4.3. Single microswitch

#### 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., at full power, in order to reach the optimal temperature. The temperature will then remain at a constant level.



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.

- **Standby position: 1**

- **Dispensing position: 2**

#### 4.3.1. Temperature sensor (adjustment)

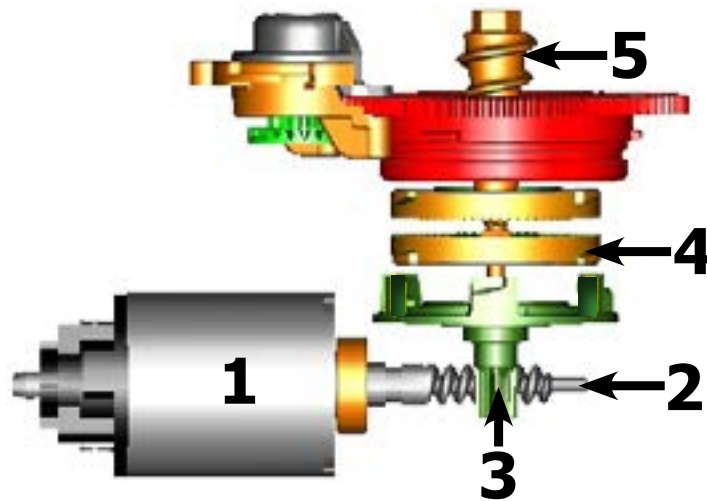
Temp. (°C)	R nom (kΩ)	ΔR (+/- %)
20	61.465	8.6
50	17.599	5.9
75	7.214	4.1
80	6.121	3.7
85	5.213	3.4
90	4.459	3.1
100	3.3	2.5
125	1.653	3.9
150	0.893	5.1

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.

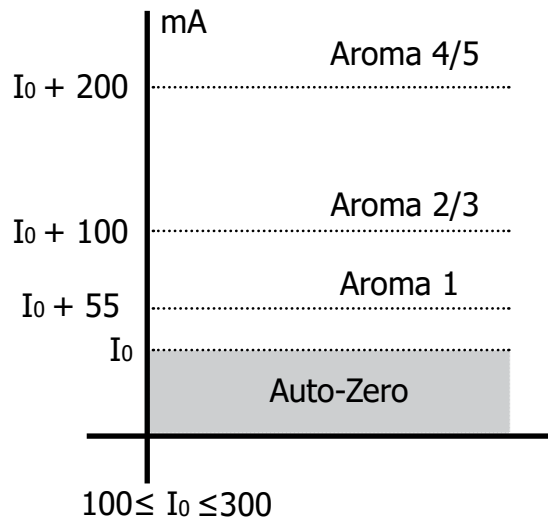
#### 4.4. Coffee grinder 230V



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)

#### 4.5. Autodose system description 230V



$I_0$  = 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  
 $100 \text{ mA} \leq I_0 \leq 300 \text{ mA}$

If the BU current is  $\leq$  the current target → the grinding time ↑  
 If the BU current is  $\geq$  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:

<b>A1</b>	<b>A2/3</b>	<b>A4/5</b>	
7,5	9,0	10	±1,5 grams

with medium grinding ( $500\pm 60\mu\text{m}$ ) and using coffee of test.

2) the 3 grinding times are always:






$$T_1 < T_2 < T_3$$

beside, every grinding time is, respectively:

$$4,0\text{s} \leq T_3 \leq 10\text{s} \quad (10000\text{ms})$$

$$3,5\text{s} \leq T_2 \leq 9\text{s} \quad (9000\text{ms})$$

$$3,0\text{s} \leq T_1 \leq 8,1\text{s} \quad (8100\text{ms})$$

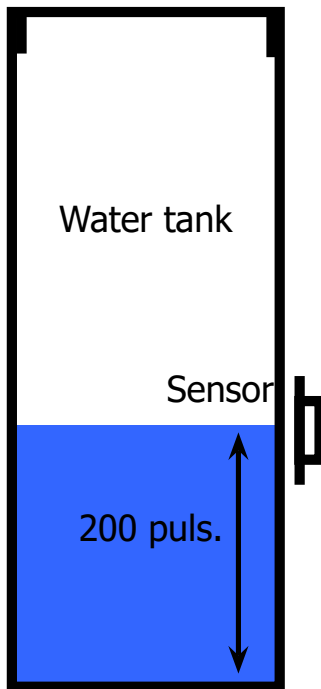
5 levels		DOSE ADJUSTMENT			
		Grinder Time	Min Grinder Time	Max Grinder Time	Curret target
Aroma of the grinded product	<b>Aroma1</b>  Very Light	T <sub>1</sub>	3s	8,1s	I <sub>0</sub> + 55mA
	<b>Aroma2</b>  Light	T <sub>2</sub>	3,5s	9s	I <sub>0</sub> + 100mA
	<b>Aroma3</b>  Med				
	<b>Aroma4</b>  Strong	T <sub>3</sub>	4s	10s	I <sub>0</sub> + 200mA
	<b>Aroma5</b>  Very Strong				

#### 4.6. Coffee lack detection and coffee grinder blocked 230V

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.

### 4.7. Water level detection (water tank)



#### “Water low” message (water reserve)

**Function:**

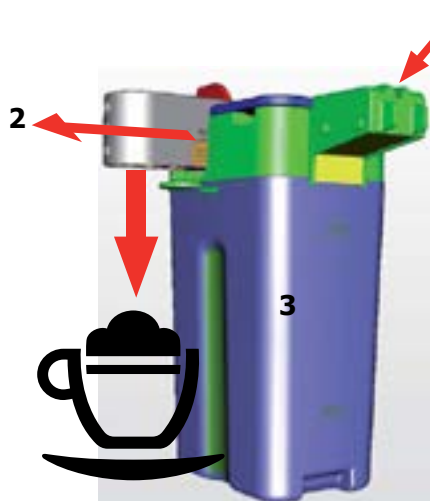
The water level is monitored by a capacitive sensor, located one third of the way up the water tank wall.

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).

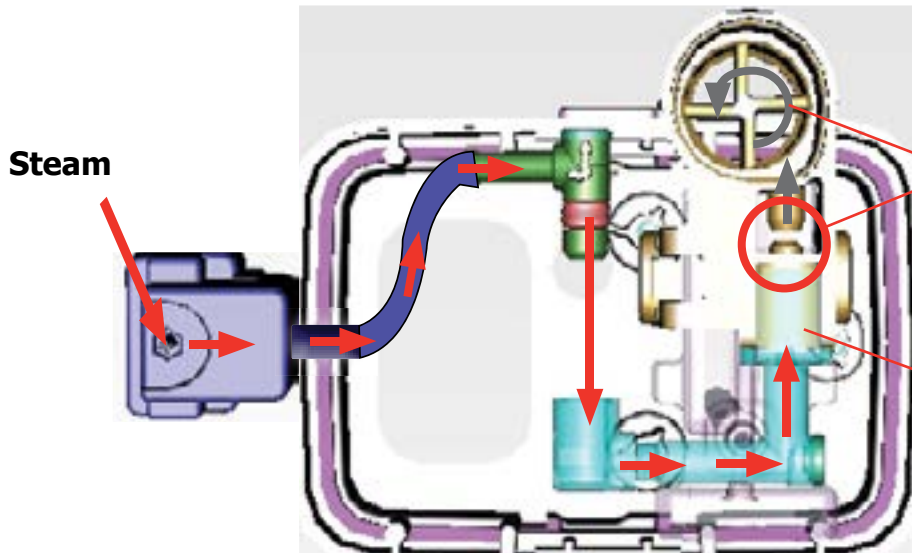
The product dispensing process will then come to an end.

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.

### 4.8. 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

#### 4.9. AquaClean water filter



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.

# **CHAPTER 5**

## **SERVICE MODE**

## 5.1 Test Mode

### Introduction

This document describes the manual Test Mode of the GAGGIA VELASCA coffee appliance.

### To enter Test Mode

To activate the manual Test Mode the user must press at the same time the "Espresso" and "Menu" ("Special Drinks" for OTC version) buttons while connecting the CA to the power supply.

Once entered the Test Mode the first page of seven is shown:

**Entering page:** the display shows:

- a) The name of the machine and the installed firmware version
- b) The supply voltage
- c) The AC supply net frequency detected by the CA

**Page 1:** Keyboard and display colors testing:

- 1) Espresso button
- 2) Coffee button
- 3) Steam button (Aroma button for OTC version)
- 4) Hot Water button (Cappuccino button for OTC version)
- 5) Aroma button (Milk Froth button for OTC version)
- 6) Menu button (Special Drinks button for OTC version)
- 7) Stand-by button
- 8) Clean button (only OTC version)
- 9) Menu button (only OTC version)

**Page 2:** Input signals testing:

- a) Water tank sensor
- b) Door closed/opened microswitch
- c) Coffee Brewing Unit insertion microswitch
- d) Dreg Drawer insertion microswitch

**Page 3:** Coffee Brewing Unit testing:

- a) Up/Down BU movement (24V DC)
- b) BU effort current

**Page 4:** Hydraulic circuit loads testing (Pump, Electrovalve):

- a) pump (120-230V AC)
- b) 2 ways Electrovalve (24Vdc)

**Page 5:** Heater and Grinder testing:

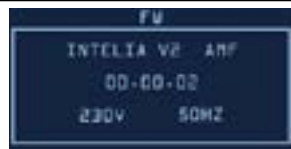


- a) Heater (120-230V AC)
- b) Grinder (320V DC)

**Page 6:** Autodose quantities:





- a) Light
- b) Med
- c) Strong



## 1.1 Entering Page

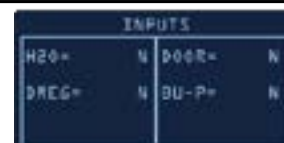
Verify the firmware version	
This page shows the firmware version installed, the supply voltage (230V or 120V) and the AC net frequency (50Hz or 60 Hz)	
It's always required to check if the firmware version shown on the display is the same printed on the microcontroller label	
<b>Warning!</b> If the two version do not match the PCB must be dismissed	
Press STEAM (Press CAPPUCCINO for OTC version)	
The CA goes to page 1 (KEYB)	

## 1.2 Page 1 (KEYB)

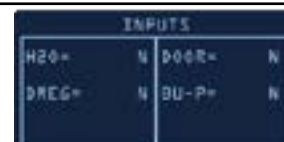
Initial condition: no button pressed.	
Press all the buttons from N°1 till N°9	
Whenever a button is pressed the "ON" word appears near the related button number. Pressing button N°1 the backlight color switches from WHITE to RED Pressing button N°2 the backlight color switches from WHITE to PINK Pressing button N°7 turns the STANDBY LED on. To test button N°4 it must be pressed just one time because it causes the CA to navigate to the next page	 
In case two or more buttons are pressed at the same time the display shows the expression "TWO BTN!" This could be a useful warning if the keyboard is not working properly	
<b>ERRORS occur if:</b> "ON" word does not appear or stays fixed on screen. In this case it's necessary to check the communication flat cable connected between the keyboard and the CPU-Power board. Should not, on the other hand, change the display color, check the JP5 cable.	

## Pressing STEAM button (Press CAPPUCCINO for OTC version)

The CA switches to page 2 (INPUTS)

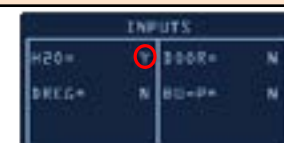
**1.3 Page 2 (INPUTS)**

Initial condition (having removed all the components)



## Insert the tank full of water

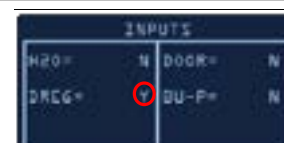
The H2O value must turn from "N" to "Y"



**ERRORS occur if:**  
 If the H2O value doesn't change check the capacitive sensor and the related wiring (JP23).

## Insert the Dreg Drawer

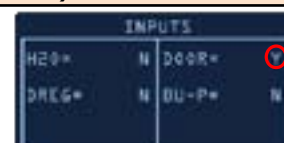
The DREG value must turn from "N" to "Y"



**ERRORS occur if:**  
 If the DREG value doesn't change check the dreg drawer microswitch and the related wiring (JP16).

## Close the Side Door (having the dreg drawer already inserted)

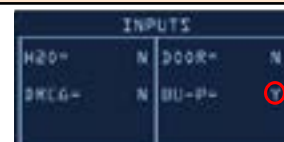
The DOOR value must turn from "N" to "Y"



**ERRORS occur if:**  
 If the DOOR value doesn't change check the side door microswitch and the related wiring (JP14) and verify that the dreg drawer is correctly inserted.

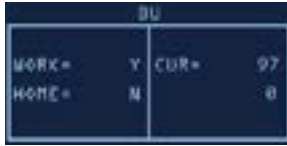
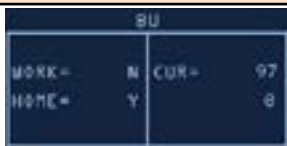


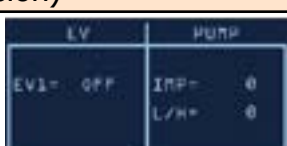
## Insert the Brewing Unit

The BU-P value must turn from "N" to "Y"



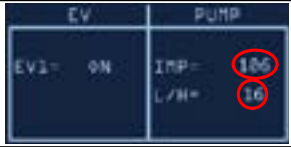

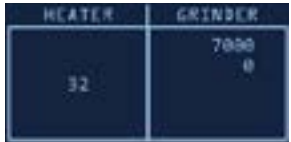


**ERRORS occur if:**  
 If the BU-P value doesn't change check the BU presence microswitch and the related wiring (JP16).

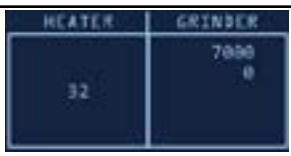
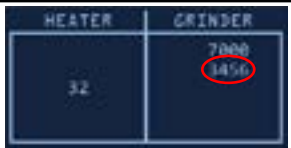
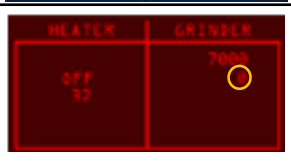

## 1.4 Page 3 (BU)

Initial condition	
Press the ESPRESSO button to conduct the BU to the Work position	
When the BU reaches the work position the value WORK turns from "N" to "Y". The absorbed BU current must be less than 200mA if the BU is not inserted, and less than 300mA if the BU is inserted	
<b>ERRORS occur if:</b> The WORK value stays fixed on "N" while the backlight turns RED from WHITE; in this case check the microswitch, the BU engine (could be blocked) and, finally, the JP16 and JP14 wirings.	
<b>ERROR (BU not inserted):</b> If the absorbed current is more than 200 mA the display backlight turns red. In this case check the gears of the engine and its standing in the housing.	
<b>ERROR (BU inserted):</b> If the absorbed current is more than 300 mA the display backlight turns red. In this case check the gears of the engine and its standing in the housing.	
Press the COFFEE button to move the BU towards the HOME position	
When the BU reaches the HOME position the HOME value changes from "N" to "Y". The maximum absorbed current must be less than 200 mA (BU not inserted) / 300 mA (BU inserted)	
<b>ERRORS occur if:</b> The HOME value stays fixed on "N" while the backlight turns RED from WHITE; in this case check the microswitch, the BU engine (could be blocked) and, finally, the JP16 and JP14 wirings.	
<b>ERROR (BU not inserted):</b> If the absorbed current is more than 200 mA the display backlight turns red. In this case check the gears of the engine and its standing in the housing.	
<b>ERROR (BU inserted):</b> If the absorbed current is more than 300 mA the display backlight turns red. In this case check the gears of the engine and its standing in the housing	
Press the STEAM button (Press CAPPUCCINO for OTC version)	
The CA goes to the EV/PUMP page (EV - PUMP)	

### 1.5 Page 4 (EV - PUMP)

<p>Should this page been shown it means either the dreg drawer is not correctly inserted or the side door not closed. Only solving both these issues it would be possible to come out from this screen.</p>	
<p>Press the ESPRESSO button to activate the 2-ways Electrovalve (closed by default)</p>	
<p>The Electrovalve is activated so the EV1 value turns from "OFF" to "ON".</p>	
<p>Press the HOT WATER (Press MILK for OTC version) button to activate the Pump</p>	
<p>The water now flows out from the spout, causing the update of the IMP value with the number of flowmeter impulses. The L/H value must stay within 10l/h and 18 l/h.</p>	
<p><b>ERROR:</b> If the number of impulses remains 0 and the display backlight turns red, it means that there's an error in the hydraulic circuit. If water comes out from the spout it means that there's an error in the flowmeter or in its wiring to the CPU/POWER (JP5); if, on the other hand, no water comes out it's necessary to check the pump or the hydraulic circuit, or the pump wiring (JP24).</p>	
<p>Press the STEAM WATER button (Press CAPPUCCINO for OTC version)</p>	
<p>The CA shows the Heater/Grinder page (Heater-Grinder)</p>	

### 1.6 Page 5 (Heater-Grinder)

<p>Initial condition</p>	
<p>Press the HOT WATER (Press MILK for OTC version) button to activate the Grinder</p>	
<p>The coffee grinder starts milling for 5000 ms. In this case the activation time is shown in the red-circled field of the picture</p>	
<p><b>ERROR:</b> If this number keeps fixed at 0, or the grinder does not run, the display turns red: this means there must be a fault in the grinder wiring (JP8), or in the grinder itself, or in the electronic board.</p>	
<p>Keep pressed STANDBY for 5 secs to reset grinder parameters</p>	
<p>Pressing button STANDBY for 5 secs resets grinder parameters: This action is needed if the grinder has been replaced.</p>	

Heater Temperature monitoring

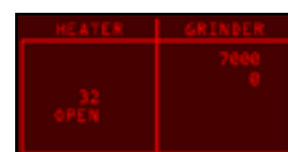
The red-circled number shows the heater temperature in Celsius degrees.



**ERROR:**  
If inside the HEATER column appears the word "SHORT", then the NTC sensor is in a short-circuit state. The display backlight turns RED from WHITE; in this case the NTC wiring or the input CPU/POWER (JP13) must be checked.

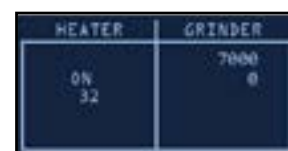


**ERROR:**  
If inside the HEATER column appears the word "OPEN", then the NTC sensor is disconnected. The display backlight turns RED from WHITE. In this case the connectivity of the NTC wiring to the CPU/POWER (JP13) must be checked.

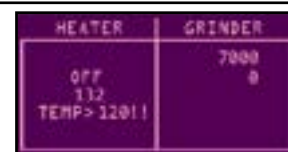


Press the COFFEE button to activate the heater

The label switches from "OFF" to "ON" and the number indicating the temperature starts to increase (and so the current absorbed by the CA on the power supply – c.a. 8 A / 230V).  
For safety reasons it is possible to activate the heater keeping pressed the button for a maximum time of 5 seconds.



There's a further check on the temperature level: should it rise over 120°C the display backlight turns pink and an alarm message appears. In this scenario the heater is forced to stay turned off to avoid dangerous over-temperatures.



**ERROR:**  
If there's no temperature increasing the user must check the heater resistance, its wiring to the CPU/POWER (JP19) and also the NTC wiring (JP13).

Press both the AROMA and the MENU(CMF-AMF version)/SPECIALS(OTC version) buttons

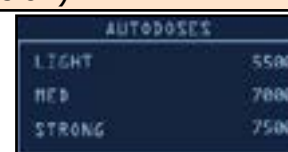
This page shows extended info. Check of these number is not requested.  
Following values appear on the display:

- Grinding time applied during last mill;
- Average of the low state duration of the current sensor signal;
- Threshold for the presence/absence coffee detection.



Press the STEAM button (Press CAPPUCCINO for OTC version)

The CA shows the Autodoses page



**1.7 Page 6 (Autodoses)**

The CA shows the AUTODOSES page with the time of milling for the different coffee aroma:

- Light
- Med
- Strong



## 5.2 Steam Out

Not mandatory, but if necessary, before executing the steam out procedure, descale the machine taking care to remove the Aquaclean filter from the appliance.


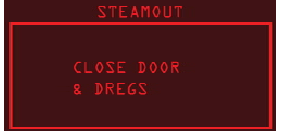

In case the filter on the machine is active (or it's in the machine) provide the consumer with a new one.

### Introduction

This document describes the Steam-Out process that is executed at the end of the production line for the CA. GAGGIA VELASCA. It totally empties the heater from any residual water and resets some parameters to the factory default values.

### Steam Out

To access Steam Out the user must press both LONG COFFEE and SPECIAL DRINKS (MENU for AMF) buttons while connecting the CA to the power supply.

When lit the CA will start the procedure, turning PINK the display back-light and showing "ON" on the screen-During the process, the 2-ways Electrovalve will stay open, causing steam to be discharged from the spout (hot water wand for AMF version).	
Warning! If the dreg drawer is not correctly inserted or the side door open, the CA shows a RED screen with the advice "CLOSE DOOR & DREGS"	
At the end of the process, the display will turn WHITE and show the "COMPLETE" word on the screen. The Electrovalve, also, will be closed and the CA will be ready to be manually turned off.	

The Steam-Out resets these parameters to their factory values:

#### OTC version product quantities:

Short Coffee (Espresso)	impulses = 137
Long Coffee	impulses = 330
Coffee Intense	impulses = 265 (brewed within two mill-brew cycles)
Coffee in cappuccino	impulses = 165
Milk in cappuccino	seconds = 34
Froth Milk brewing time	seconds = 34

#### AMF version product quantities:

Short Coffee (Espresso)	impulses = 137
Long Coffee	impulses = 330

#### Longevity Filter setup:

Filter Startup Quantity	5000 impulses
Filter Counter	0/8
Filter Remaining Autonomy	0
Filter Installation proposal at start	ON

#### CA Settings:

Pre-infusion	Seconds = 2,5
--------------	---------------

Aroma	Medium (3 beans selected)
Standby Time	15 minutes
Alarm Refill	ON
Grounds counter	Reset to zero
Alarm Dreg Drawer	OFF
Brewing Group Loaded	OFF
Coffee Duct empty	YES (*)
GrinderAroma 1 Time	5500
GrinderAroma 2 Time	7000
GrinderAroma 3 Time	7500

(\*): ATTENTION! As a consequence of this reset the machine will grind for a longer time at first coffee product after Steam Out. For this reason, after Steam out, the machine should be completely cleaned from all beans and all coffee powder residuals in the grinder.

### 5.3 Error Codes for Out of Order alarm

CODE	Description	NOTES
01	Grinder fail	
02	The grinder is disconnected (Only coffee grinder without electronic sensor)	
03	Bu movement toward WORK fail	
04	Bu movement toward HOME fail	
05	Water circuit fail	
10	NTC short circuit fail	
11	NTC open circuit fail	
14	Heater over-temperature fail	
15	Heater time-out fail	
19	Zero-Crossing fail	

### 5.4 Saeco Service Center - Quick Start Guide

Saeco Service Center (SSC) is a tool with which you can re-program the machine and check the diagnostic of the same.

You can download the software from the following link: <http://logsave.logtronics.com/SSC2/publish.htm>

In support of this tool it is essential to order the Saeco Programming Device:

Cod. 20000490 "KIT PROGRAMMER SERKIT SSC2".

This kit includes the programmer and cables helpful.

All details related to the registration and operation are explained in the enclosed Quick start guide (QSG).

#### [Saeco 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.

# **CHAPTER 6**

## **SERVICING AND MAINTENANCE**



## 6.1. Repair flow

Proces stap	Saeco no.	Action	
Intake	1	Visual inspection (transport damage) <a href="#">take care for pictures</a>	
	2	Check Type/serialnumber Log all available accessory	
	3	<b>Check product for consumer complaint</b> (NFF contact consumer)	
Diagnosis	4	Opening machine <a href="#">Run Diagnostic to get error codes and relevant set statistics (Saeco Service Center SSC)</a>	
	5	Visual inspection <a href="#">check for loosen parts, leaking etc..</a>	
	6	Operational tests	
	7	Repairing the faults encountered Checking any modifications (view Symptom Cure, new software, etc.)	
Repair	8	<b>Refer Annex tabs per family</b>	
	9	<i>Service activities in accordance with the operating schedule</i> <i>Check/Replace Waterfilter (the small filter, not the Britta filter)</i> <i>Check/Replace Water tank lip seal</i> <i>Check/Replace Boiler pin O-ring</i> <i>Clean/align Coffee grinder (Vacuum cleaner / brush)</i> <i>Descal the water Circuit</i> <i>Check/Replace Hot water/steam valve</i>	
	10	<i>Internal check / cleaning</i> <i>Check/Clean/Grease Brewing unit</i>	
	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 <b>Steam out</b> before shipping out, if temperature is below 0° to prevent any damaged due to frozen water.	
	14	<b>No need for those families</b> 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	<b>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 !</b>	
	Inspection visual		<a href="#">Do cabinet parts fit well together</a> <a href="#">Check for damages</a>
		Power check	<a href="#">Will the set switch on</a>
		Accessoires	<a href="#">Do the accessories match with the intake</a>
		Consumer complaint	<a href="#">Check the product for the consumer complaint</a>
	Coffee		<b>Basic Functional test</b>
	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		
	16	Clean water reservoir, bean reservoir, brew chamber and conveyor
		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**

**GAGGIA VELASCA OTC**

**GAGGIA VELASCA CMF**



Unscrew the screws highlighted and remove the finger protection

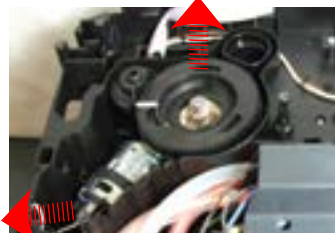
Lift the top cover



Remove the door

Unscrew the screws highlighted, remove the rear housing and coverage for the soundproofing of the grinder

**7.2. Coffee grinder**



Unscrew the screws highlighted and Lift the grinder and remove the electrical connections



Remove the water tank, bean hopper cover, drip tray, dump box, brewing unit, carafe or hot water dispenser, pannarello or cappuccinatore.

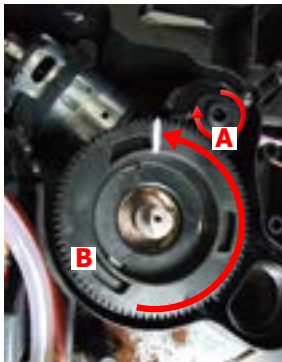


Unscrew the screws highlighted and remove the carcass left side



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

### 7.3. Grinder blades



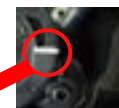
To extract the top support of the appliance, press on the grinding adjustment spindle (A) and turn the support anticlockwise until it unhooks.



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.



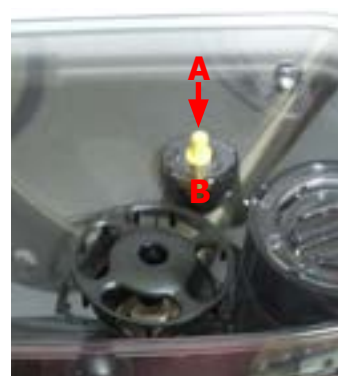
For a standard adjustment, both markings must be aligned.

### 7.4. Coffee grinder adjustment



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.

#### Adjustment by a service center

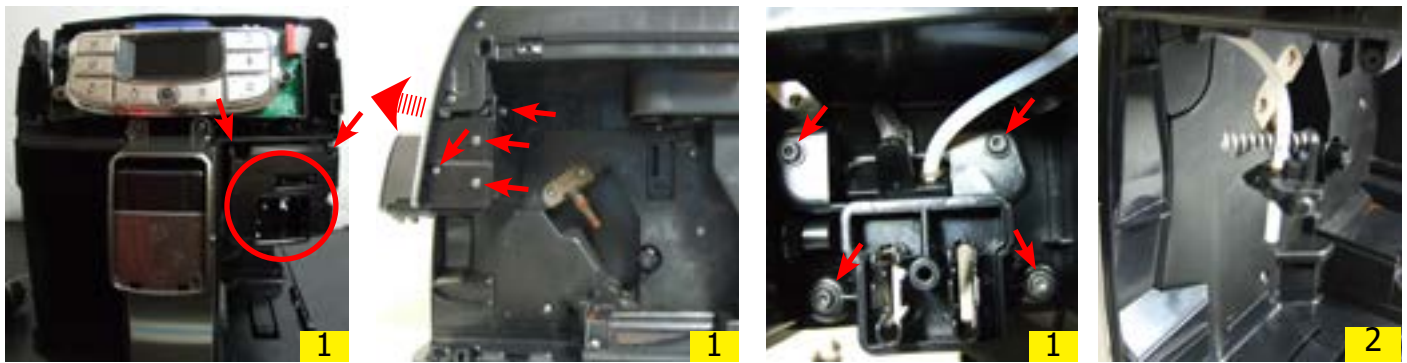


To adjust grinding further, the engineer can work directly on the coffee grinder by pressing and turning the ring nut (C) shown. (clockwise + to increase the particle size of the coffee and anticlockwise - to decrease it). If there are any remains of coffee powder between the two grinding blades it is 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).



### 7.5. Carafe connection and hot/steam water dispenser



- 1) Unscrew the screws highlighted and remove the front cover body graft carafe
- 2) Remove teflon tube graft carafe

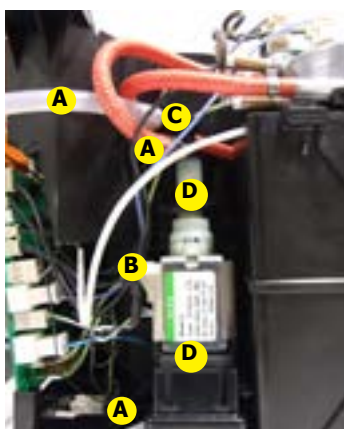
### 7.6. Removing tap



Unscrew the screws highlighted and release the insert bottom casing for convenient access to the dismantling of the tap

Unscrew the screws highlighted, remove the hydraulic connections and remove the tap

### 7.7. Pump



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

### 7.8. Flow-meter



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

**7.9. Boiler**



Unscrew the screws highlighted and release the boiler cover and remove



Unscrew the screws highlighted and disconnect the electrical and water connections



**7.10. CPU board**



Unscrew the screws highlighted, remove the electrical connection highlighted and remove the card protection



Remove the card from its holder and remove the electrical connections

**7.11. KYB interface and display**



Unscrew the screws highlighted and remove the frontal panel



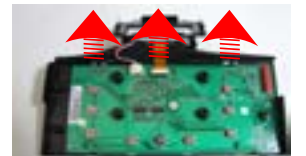
Remove the electrical connection and release the protective sheet



Unscrew the screws highlighted and remove the keyboard trim and display



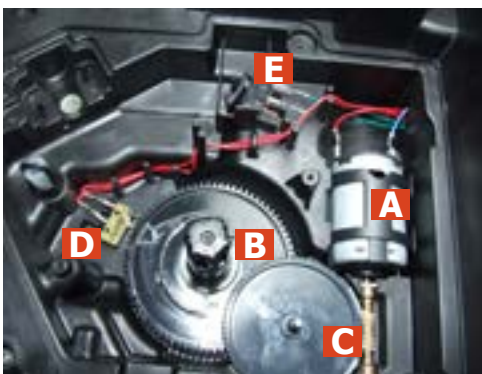
Unscrew the screws highlighted, remove the electrical connections between the board and the display and release the card from the media



## 7.12. Gear motor

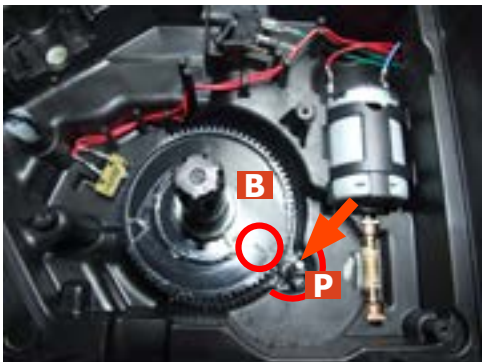


Loosen the screws as illustrated, remove the pin boiler and the gear motor cover.



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.



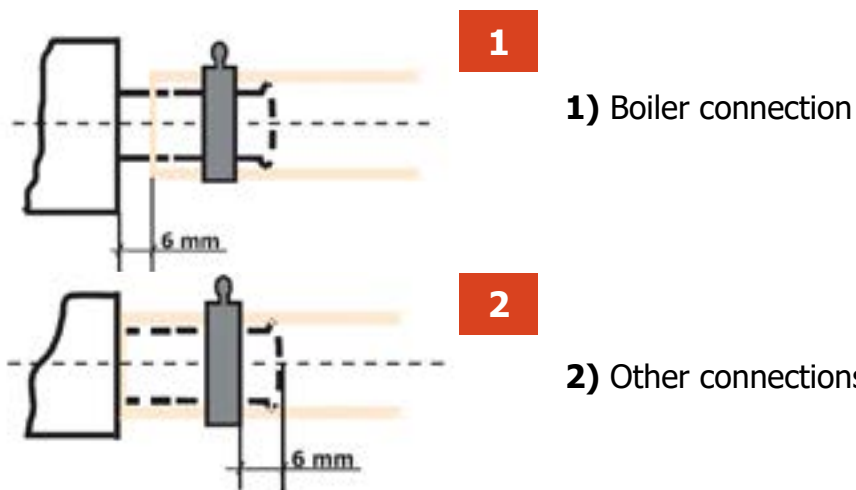
Replace the gear (B), making sure that the imprint of the arrow is aligned with the opening containing the pin (P).



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.



### 7.13. Fitting and removing Oetiker clamps



#### Replacing the hoses

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



**2)** Tighten the clamp as illustrated

# **CHAPTER 8**

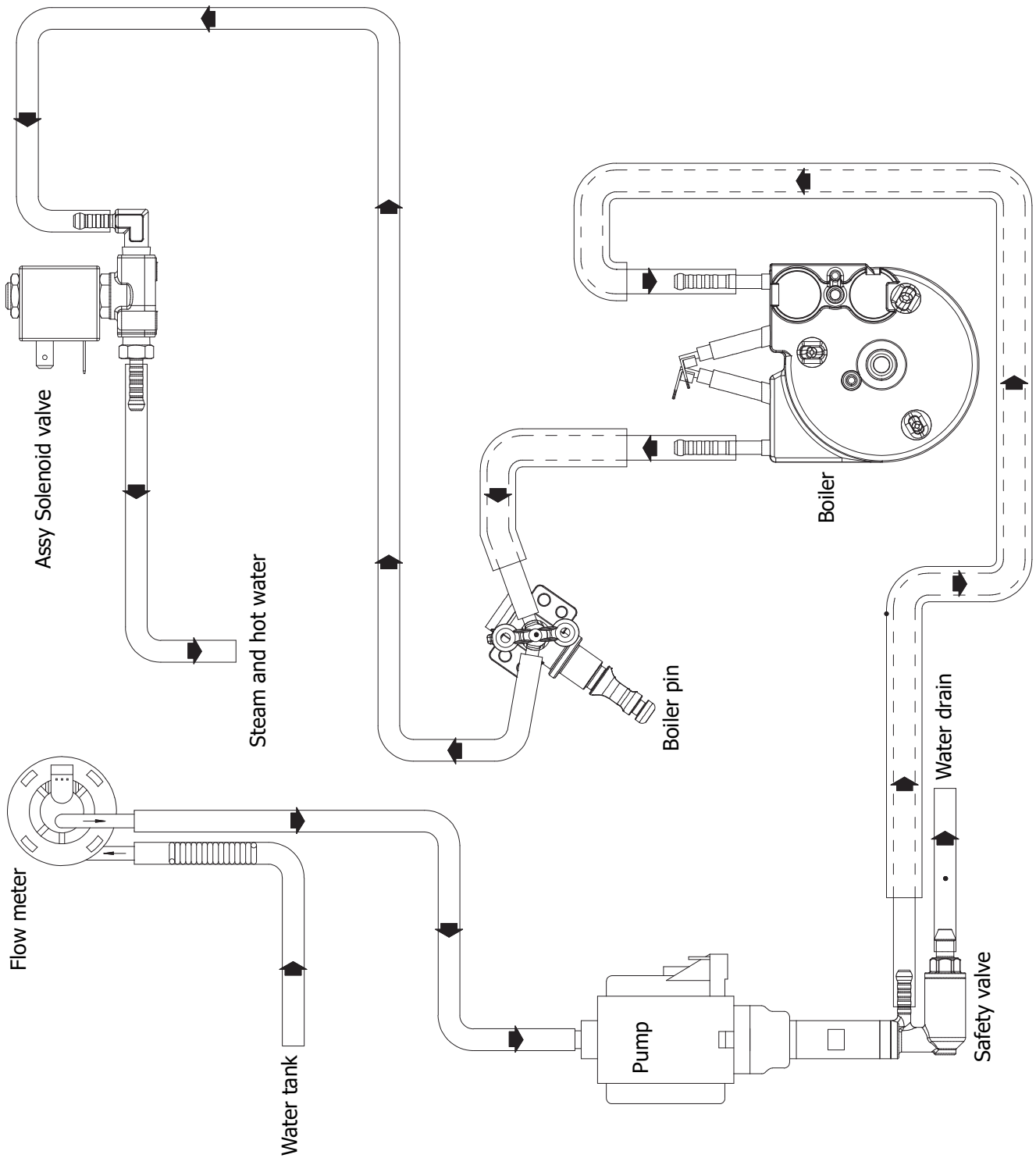
## **NOTES**



## **CHAPTER 9**

# **WATER CIRCUIT DIAGRAM**

### 9.1. Water circuit diagram



# **CHAPTER 10**

## **ELECTRICAL DIAGRAM**

10.1. Electrical diagram

