Coffee Machine

PICO BARISTO AMF-OTC

Service
Service
Service

ServiceManual

Rev. 00 September. 2015

General Information	
Description	**Value**
Housing material	Thermoplastic material
Size (w x h x d)	221 x 335 x 430 mm
Weight	OTC 8.9 kg AMF 8.5 kg (data may vary depending on the model)
Power Cord length	0.8m -1.2m
Control panel	Front
Cup size	Up to 152 mm
Water tank	1.8 litres - Removable type
Coffee bean hopper capacity	250 g
Coffee grounds drawer capacity	15 pucks
Milk carafe capacity	500 ml
Pump pressure	15 bar
Boiler	Stainless steel type
Safety devices	Thermal fuse
Energy saving mode	< 1 Wh
Nominal voltage - Power rating - Power supply	See data on inside of service door

Published by Saeco International Group Subject to modification EN 4219 400 00035
10/09/2015

PHILIPS

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What's new / Important	
Boiler	Boiler increased for greater water passage
Water container	New Water container for housing new filter
AquaClean water filter	New filter (see description point 4.9.)
Display	New display for new beverage New display for new beverage

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, sympton cure and service manual)

1.2 Tools and resources

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

Qty.	Description	Notes
1	Screwdriver	
1	Pliers for Oetiker clamps	
1	CC -A - Vdc tester	
1	Digital thermometer	Scale limit > 150°C
1	SSC (Saeco Service Center)	Programmer (for programming and diagnostics mode)

1.3 Material

Description	Notes
Thermal paste	Heating element > 200°C
Descaler	Saeco descaler
Grease solvent	Personal choice
Silicone grease	Safe to use with food

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

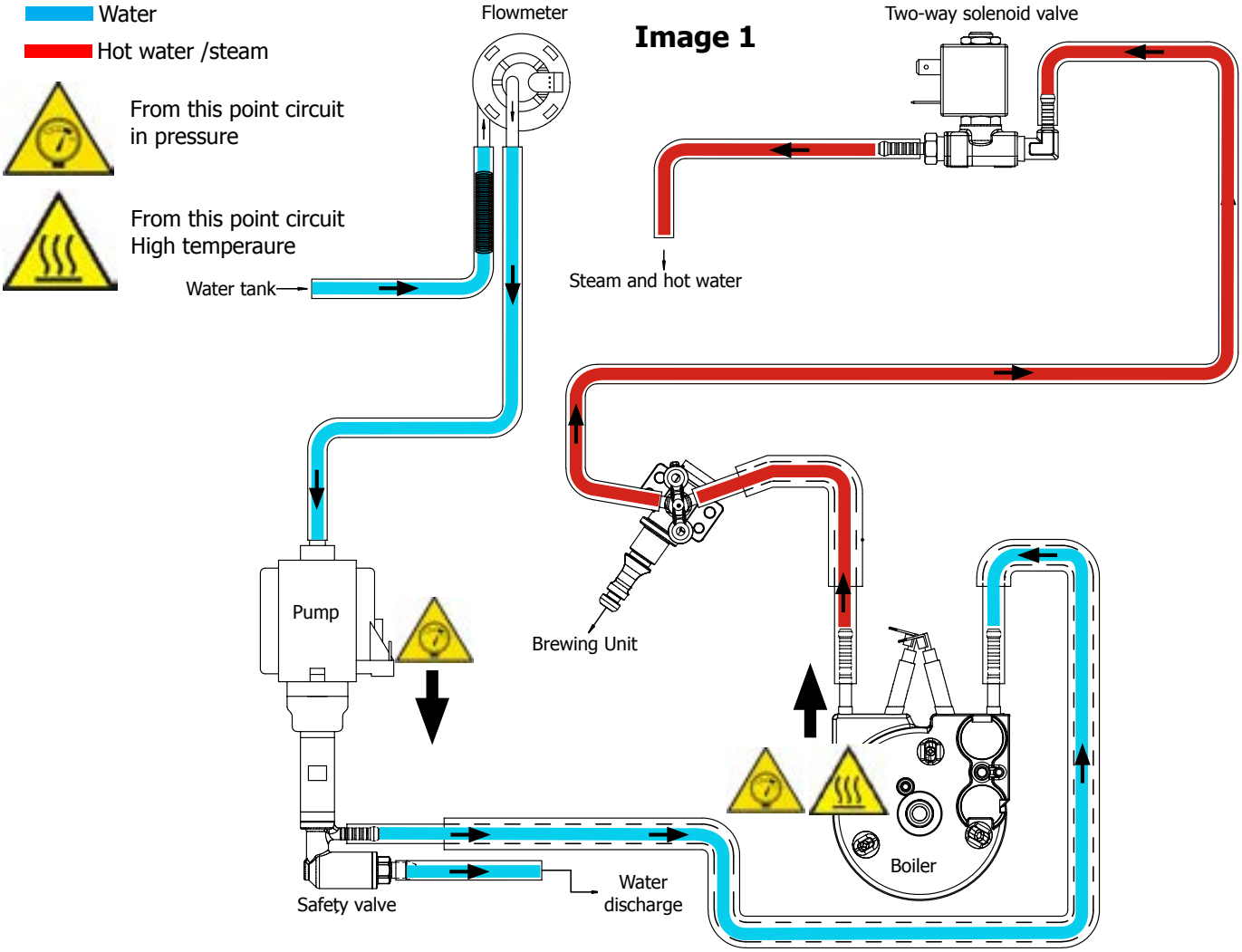


Image 1

1.5 Service POLICY grid as used for coffee machines

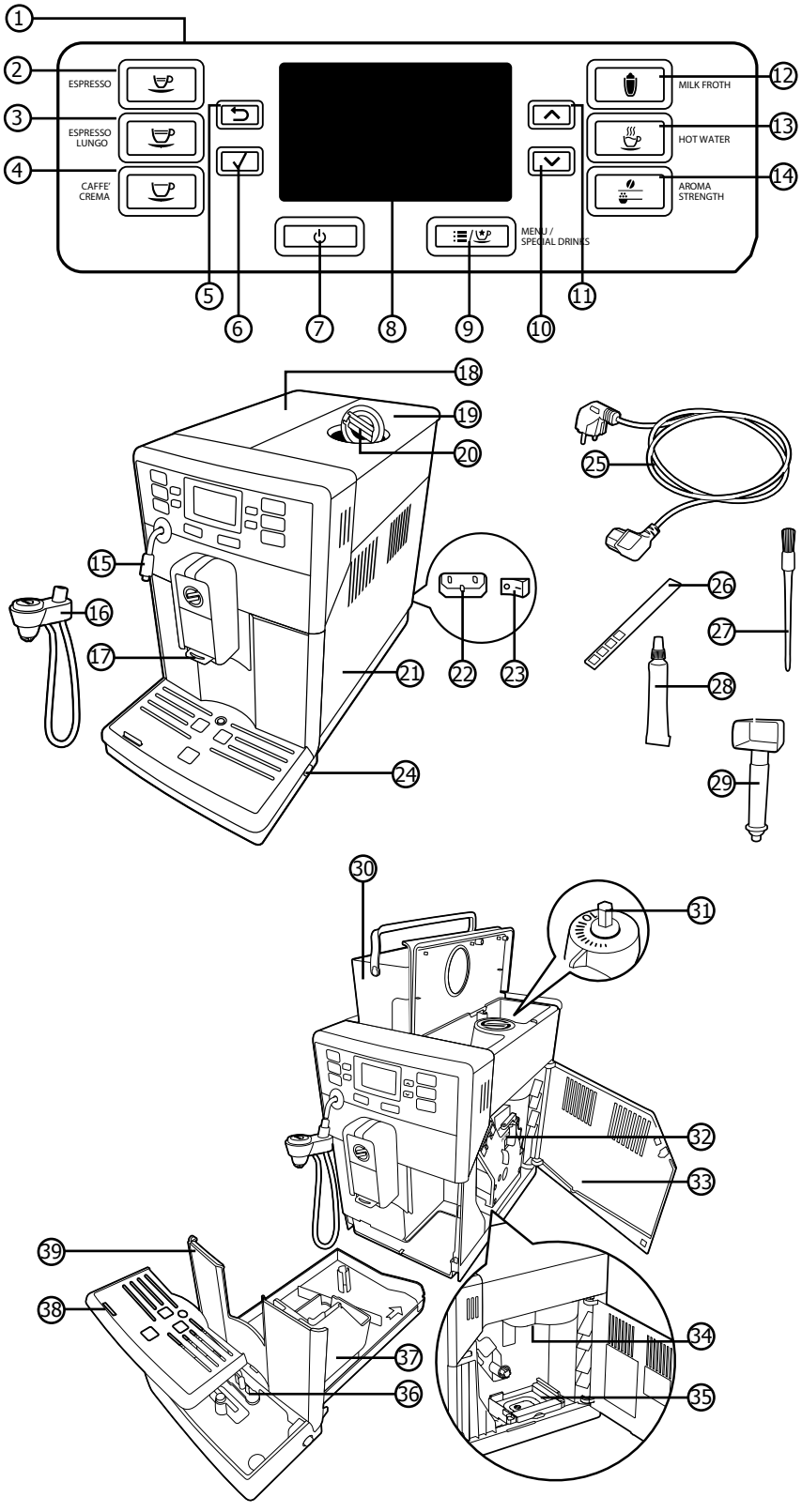
For IN WARRANTY repairs is mandatory to use the single components (not the assembly) available in the exploded views of the coffee machines or of the specific components. If you find the information "SEE THE EXPLODED VIEW E....." in the assembly description field, it means that the single components 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
COFFEE GRINDER	**Only for OOW repairs**	**YES**, to consult the specific exploded-view of the machine or of the Coffee Grinder on website
BREWING UNIT	**Only for OOW repairs**	**YES**, to consult the specific exploded-view of the machine or of the Brewing unit on website
BOILER	**Only for OOW repairs**	**YES**, to consult the specific exploded-view of the machine on website
GEAR MOTOR	**Only for OOW repairs**	**YES**, to consult the specific exploded-view of the machine on website
FILTER HOLDER	**Only for OOW repairs**	**YES**, to consult the specific exploded-view of the machine on website
MILK CARAFE	**Only for OOW repairs**	**YES**, to consult the specific exploded-view of the machine on website
THERMAL CARAFE	**Only for OOW repairs**	**YES**, to consult the specific exploded-view of the Thermal Carafe on website
MILK ISLAND	**Only for OOW repairs**	**YES**, to consult the specific exploded-view of the Milk Island on website

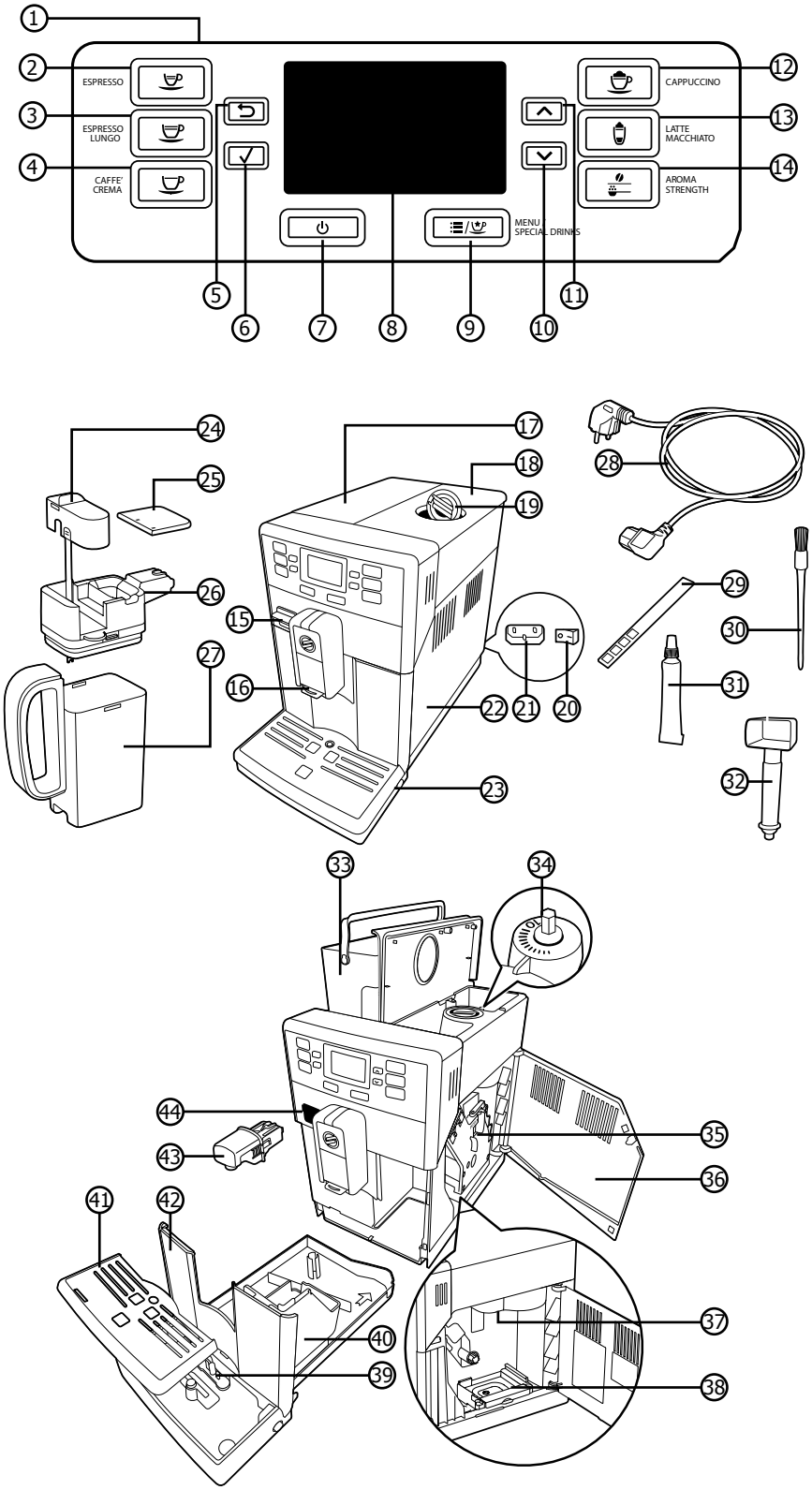
1.6.1 External machine parts (AMF)

1	User interface
2	ESPRESSO button
3	ESPRESSO LUNGO button
4	CAFFÈ CREMA button
5	ESC button
6	OK button
7	Standby button
8	Display
9	MENU/SPECIAL DRINKS button
10	DOWN button
11	UP button
12	MILK FROTH button
13	HOT WATER button
14	AROMA STRENGTH button
15	Steam tube
16	Automatic milk frother
17	Adjustable removable coffee dispensing spout
18	Lid of the water tank
19	Lid of the bean hopper
20	Lid of the pre-ground coffee compartment
21	Service door
22	Socket for cord
23	Main switch
24	Drip tray release button
25	Cord
26	Water hardness tester
27	Cleaning brush
28	Grease
29	Multifunctional tool
30	Water tank
31	Grinder adjustment knob
32	Brew group
33	Service door
34	Coffee exit duct
35	Coffee residues drawer
36	Drip tray full indicator
37	Coffee grounds container
38	Drip tray cover
39	Drip tray



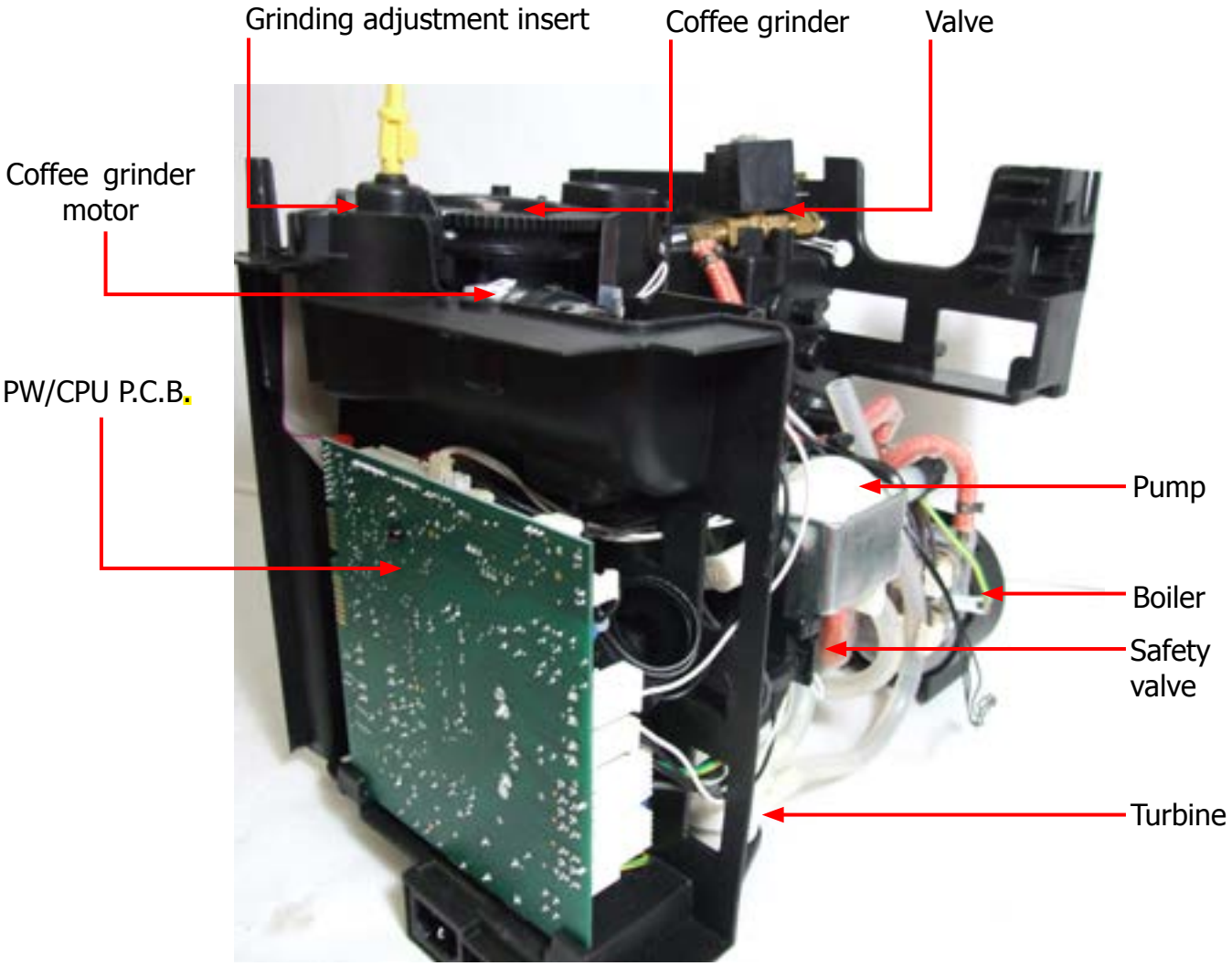
1.6.2 External machine parts (OTC)

1	User interface
2	ESPRESSO button
3	ESPRESSO LUNGO button
4	CAFFÈ CREMA button
5	ESC button
6	OK button
7	Standby button
8	Display
9	MENU/SPECIAL DRINKS button
10	DOWN button
11	UP button
12	CAPPUCCINO button
13	LATTE MACCHIATO button
14	AROMA STRENGTH button
15	Protection cover
16	Adjustable removable coffee dispensing spout
17	Lid of the water tank
18	Lid of the bean hopper
19	Lid of the pre-ground coffee compartment
20	Main switch
21	Socket for cord
22	Service door
23	Drip tray release button
24	Milk froth dispensing spout
25	Lid of the milk carafe
26	Top of the milk carafe
27	Milk carafe
28	Cord
29	Water hardness tester
30	Cleaning brush
31	Grease
32	Multifunctional tool
33	Water tank
34	Grinder adjustment knob
35	Brew group
36	Service door
37	Coffee exit duct
38	Coffee residues drawer
39	Drip tray full indicator



40	Coffee grounds container
41	Drip tray cover
42	Drip tray
43	Hot water dispensing spout
44	Opening for hot water dispensing spout

1.6.3. Internal machine parts



Boiler pin

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:	221 x 335 x 430 mm (data may vary depending on the model)
Weight:	OTC 8.9 kg AMF 8.5 kg (data may vary depending on the model)
Water tank capacity:	1.8 l removable
Coffee container capacity	250 g.
Coffee dreg drawer capacity	15 pucks
Water circuit filling time:	Approx. 15 seconds for first filling cycle
Heating time:	Approx. 45 seconds
Grinding time:	Approx. 8-10 seconds

2.2. Machine parameters and performance

PRODUCT QUANTITY	Default quantity (Grams)	User programmable	Programm. by Production / Service
Espresso	40 +/- 10gr	Yes	No
Espresso lungo	120 +/- 14%	Yes	No
Hot water	Continues until the water supply has been exhausted (capacitive sensor)		
Steam pannarello (frother)	time-out 03 minutes.		

Descaling frequency in AQUACLEAN					
The first activation must make before you've paid up to 5000ml products because mind thinks as if he had the filter					
Hardness	**Filter number**	**Percentual on display 10% the icon flashes slowly.**	**Percentual on display 0% the icon flashes quickly.**	**MAX Quanti-ty water, the icon turns off. (replace filter)**	
Indifferent	From 1/8 to 7/8	8050ml	2000ml	62500ml	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			
Descaling cycle frequency			
Hardness	**WATER HARDNESS**	**Without water filter**	**Not reactivating the filter**
1	Soft (up to 7°dH)	240 litres (480,000 pulses)	210 litres (420,000 pulses)
2	Medium (7° - 14°dH)	120 litres (240,000 pulses)	105 litres (210,000 pulses)
3	Hard (15° - 21°dH)	60 litres (120,000 pulses)	52.5 litres (105,000 pulses)
4	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.			

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
Inlet time (default)	15 minutes
Inlet time programmed by Production/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
"No tray" alarm	Yes (Fill tank)
Water mains	No

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:

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

Procedure:

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

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

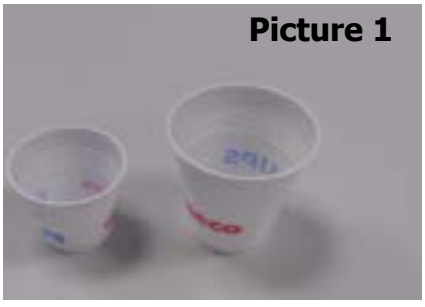
5. the distance of the probe from the bottom of the glass is a function of the quantity of coffee dispensed: 10mm for 35gr - 17mm for 60gr - 35mm for 120gr and superior (Picture 3).

Limits of acceptability

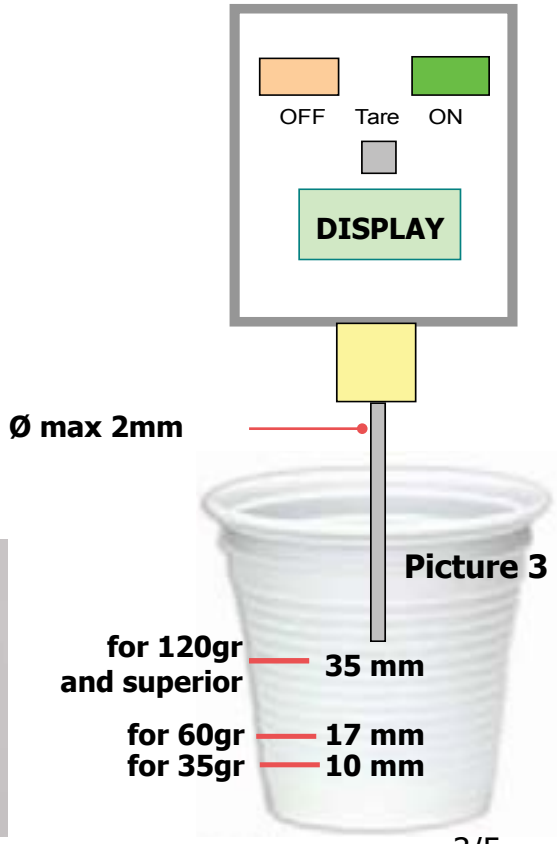
The acceptance limits are divided by features and products and are the following:

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 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:

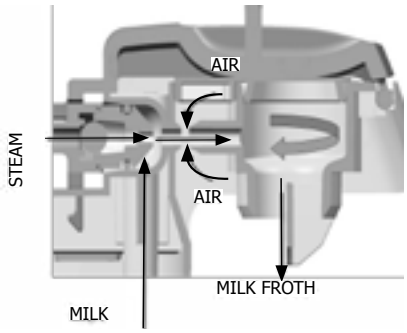
The parameters to be respected are: milk temperature and height of the cream. Each of these parameters, however, must be evaluated depending on the type of system used for the production of hot milk. Actually three types of devices are present on the appliances:

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

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

How to measure the temperature of the milk.

1. The measurement is carried out in the beaker, immediately after the end of milk brew, positioned on a non-metallic surface, using a thermocouple thermometer (eg. Type K). Stop the preparation of mixed product: at the end of milk brewing, where "One Touch product" function is present.

2. The temperature is measured by immersing the probe of the thermometer, positioning the probe inside the beaker at about 10mm from the bottom of the container, then the probe moves in a circular motion for 3-5 turns, stopping at the end, at the center of the beaker. It detects the maximum temperature reached in a time of relief between 3 to 5 seconds. It is important the mixing of milk before the measurement at 10mm from the bottom of the beaker. If the mixing is correct, temperature, for a few fractions of a second, during the measurement should not oscillate.

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

Manual systems (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 **T**refr..

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

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

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

NB: To verify 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

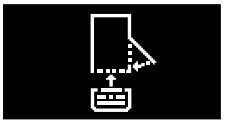
3.1. Warning icons and error codes PICO BARISTO AMF-OTC

Meaning of the 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 brew group is not in the machine. Insert the group.



Insert the drip tray and close the service door.

Remove the coffee grounds container and empty it.

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.

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

The hot water dispensing spout is not installed. Insert the hot water dispensing spout. (Only OTC)

The milk carafe is not installed. Insert the milk carafe into the machine. (Only OTC)

There is too much powder in the brew group. Clean the brew group.

3.2. Meaning of error codes

Error code	Problem	Cause	Possible solution
1	Coffee grinder blocked	Coffee exit duct clogged	Clean the coffee exit duct thoroughly with the handle of the multifunctional tool or a spoon handle.
3 - 4	The brew group cannot be removed.	The brew group is blocked by dirt or is not positioned correctly.	Close the service door. Switch the machine off and back on again. Wait for the 'machine ready' icon on the display and then remove the brew group.Clean the brew group and make sure it is well greased.
5	Water circuit problem	There is air in the water circuit.	Remove the AquaClean filter and switch the machine off and on again. If the machine works, replace the filter.
			Perform a manual rinsing cycle.

			Remove the water tank from the machine. Check the water tank compartment to check if there are any coffee beans on the bottom. Remove them. Switch the machine on and off.
Other error codes			Switch the machine off and switch it back on again after 30 seconds. Try this 2 or 3 times.

3.3. Troubleshooting

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 that the main switch is set in ON position.
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 service 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 service 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 selfadjustment. (Only AMF)	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.	Adjust 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 milk carafe is dirty or not inserted correctly.	Clean the carafe and make sure that you position and insert it correctly.
	The milk froth dispensing spout has not been opened fully.	Check that the milk froth dispensing spout has been set in the correct position.
	The milk carafe is incompletely assembled.	Check that all the components have been assembled correctly.
	The type of milk used is not suitable for frothing.	Different types of milk result in different amounts of froth and different froth qualities. We have tested the following milk types which proved to deliver a good milk froth result: semi-skimmed or full-fac cow's milk, soy milk and lactose-free milk. Other types of milk have not been tested and may result in a small amount of milk froth.
	The automatic milk frother is dirty or not assembled or installed correctly. (Only AMF)	Clean the automatic milk frother and make sure it is correctly assembled or installed.

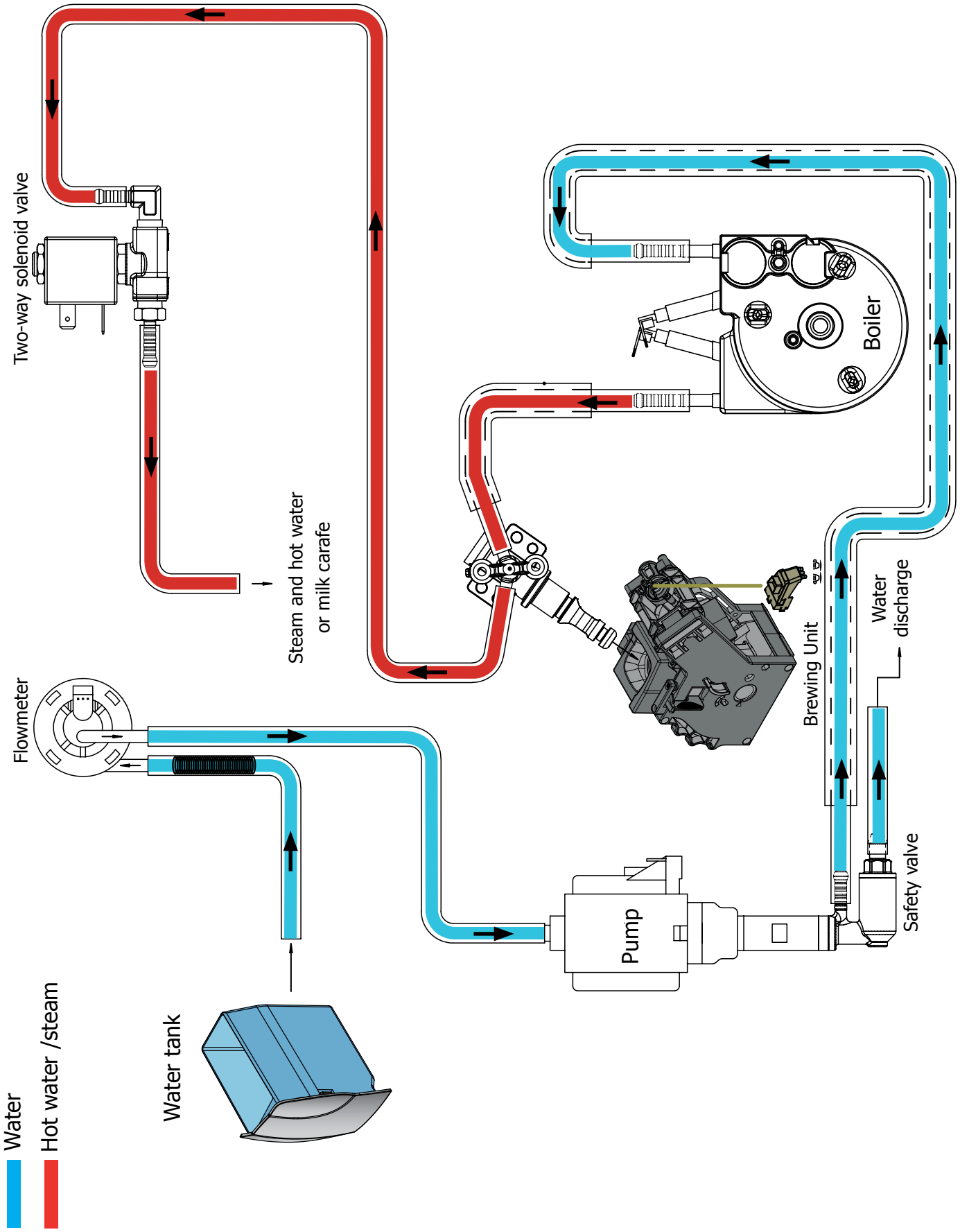
	The type of milk used is not suitable for frothing. (Only AMF)	Different types of milk result in different amounts of froth and different froth qualities. Semi-skimmed or full-fat cow's milk give good results.
The AquaClean filter cannot be activated as the tick does not appear on the display.	A filter 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.	Descale your machine first and install the filter.
	The filter has not been replaced in time after the AquaClean water filter signal started flashing.	Descale 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 activated in the menu at first installation.	Descale your machine first and install a new filter.
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.

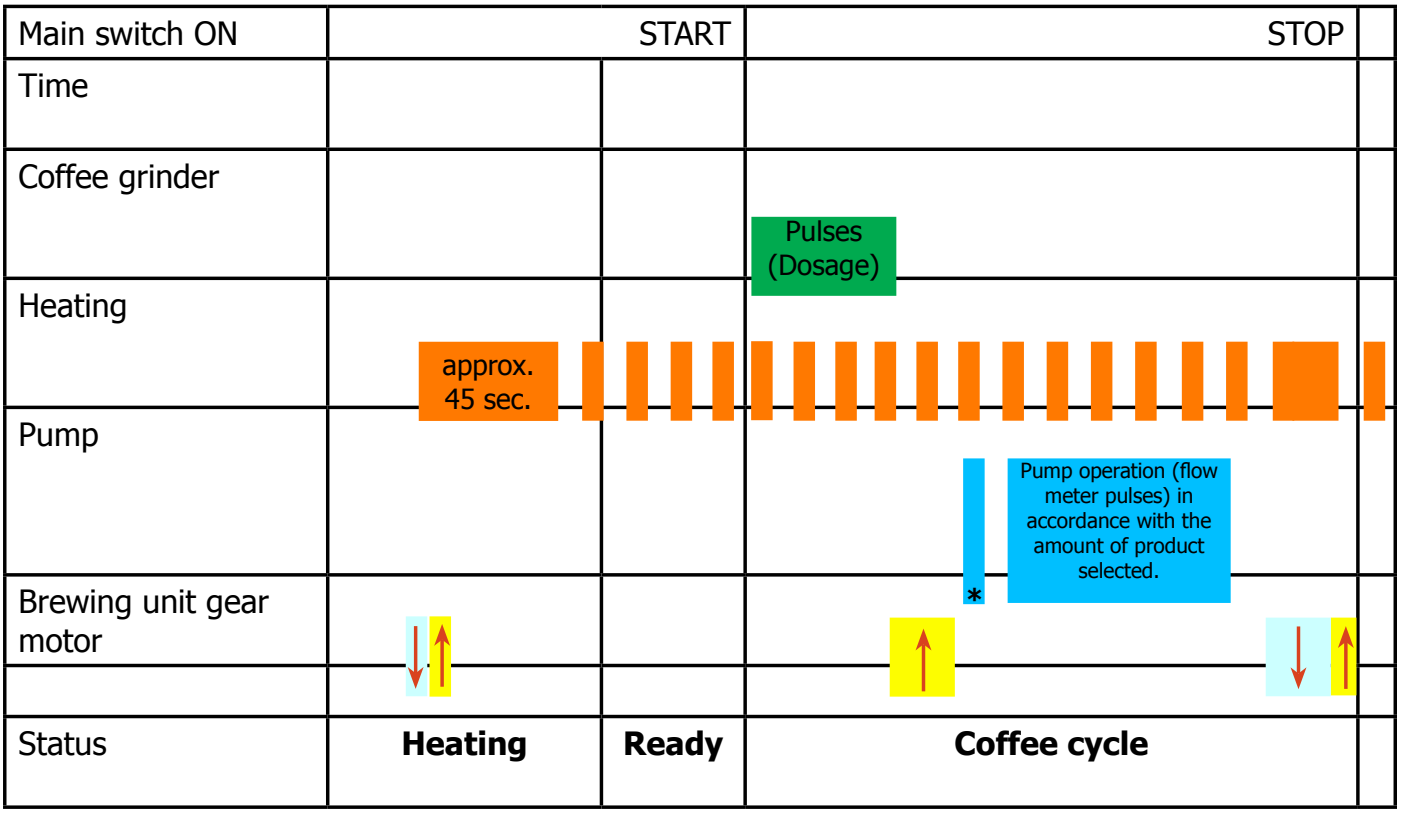
CHAPTER 4

OPERATING LOGIC

4.1 PICOBARISTO AMF-OTC



4.2. 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.

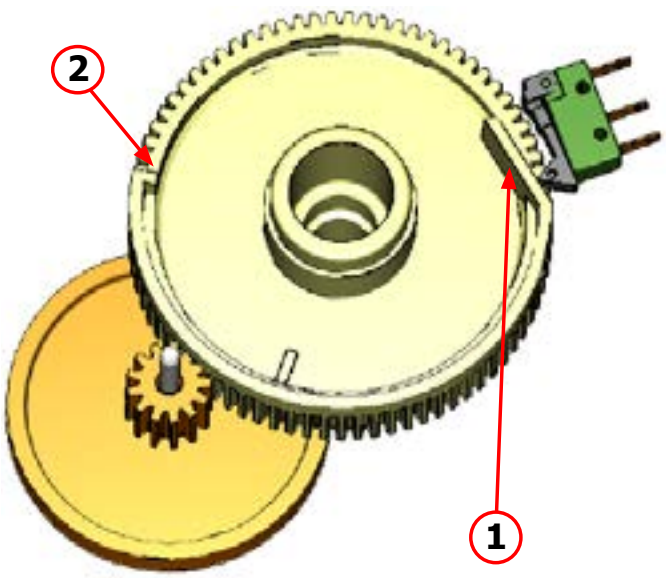
Coffee cycle

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

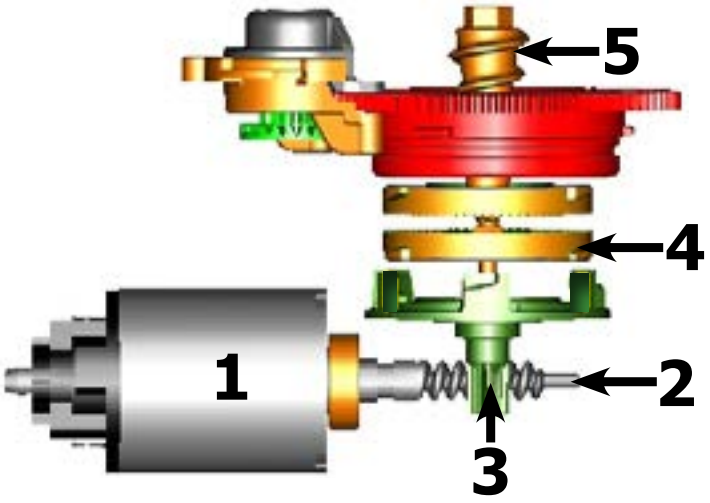
- Dispensing position: 2

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

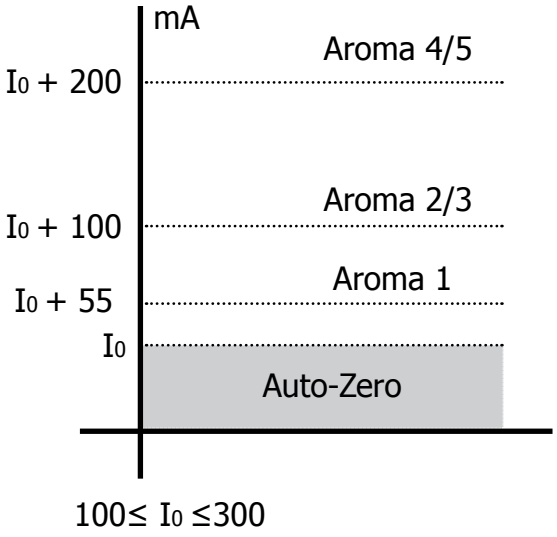
An NTC is used as a temperature sensor; in the event of overheating this reduces boiler element power consumption.
The electronic system detects the current boiler temperature from the drop in voltage of the sensor and adjusts it accordingly.
Heating element values and corresponding temperatures: see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

4.4. Coffee grinder



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



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

Current targets:

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

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

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

A1	**A2/3**	**A4/5**	
7,5	9,0	10	±1,5 grams

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

2) the 3 grinding times are always:

$$T_1 < T_2 < T_3$$

beside, every grinding time is, respectively:

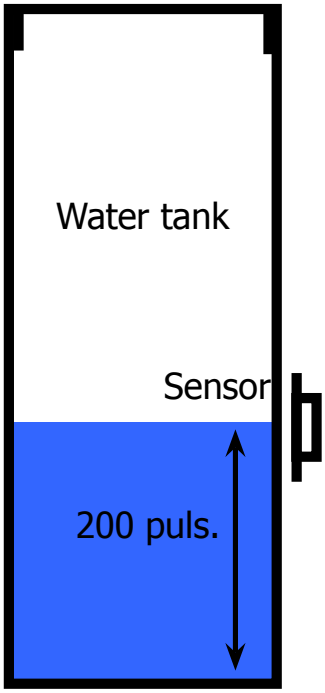
4,0s ≤T_3 ≤10s (10000ms)
3,5s ≤T_2 ≤9s (9000ms)
3,0s ≤T_1 ≤8,1s (8100ms)

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

4.6. Coffee lack detection and coffee grinder blocked

The machine uses an **ALGORITHM** that considers the **current absorbed** by the coffee grinder, beside it considers if the grinder is old or new and if it is warm or cold.

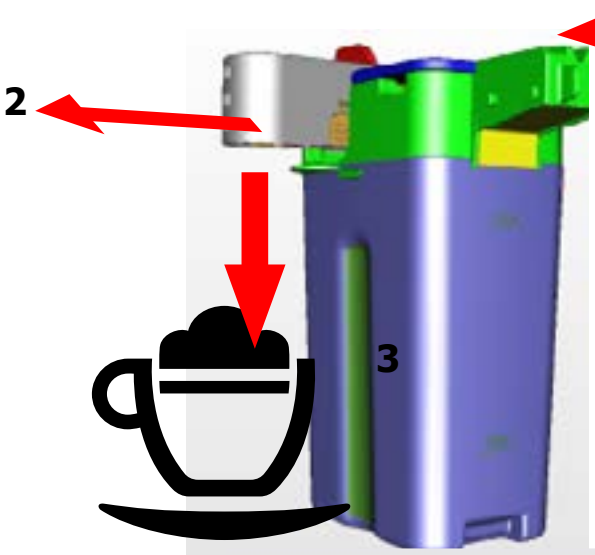
4.7. Water level detection (water tank)



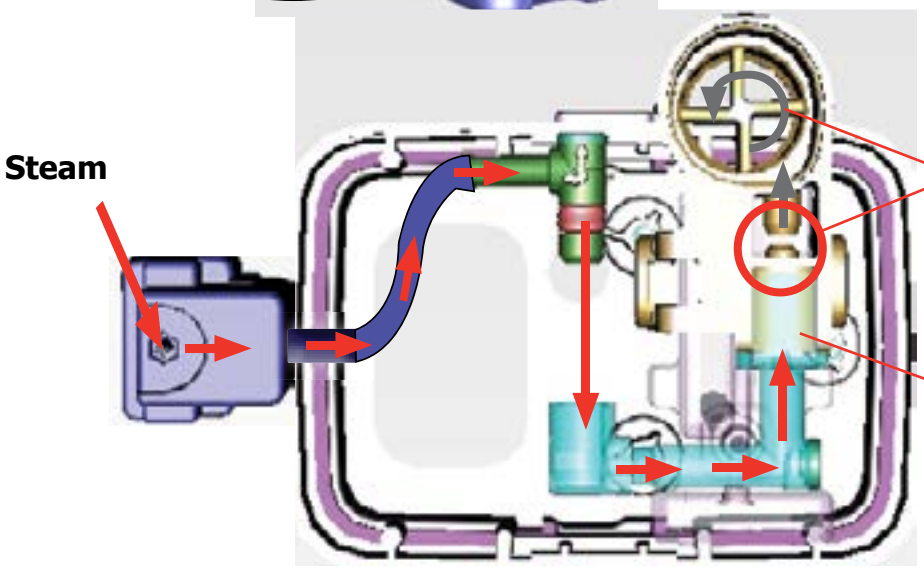
"Water low" message (water reserve)

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

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 SAECO AquaClean water filter purifies the water your machines uses for brewing coffee.
This results in a greater coffee taste. Moreover it prevents mineral deposits in the water to build up, which eliminates the need of descaling your machine for 500000ml of water. We recommend installing the water filter AquaClean the first use of the machine to the maximum before using 5000 ml of water. After a period of uses the machine, the display will indicate when the filter needs to be replaced, the maximum limit equivalent to 62500ml. In this way you can replace the filter 8 times without the need for descaling. This equals approx. 500000ml of water. When Aquaclean filter is activated the display will show an icon indicating the percentage of use (initially 100%) .
The filter should be replaced after a maximum of 62500ml of water or after 3 months of use (maximum time of law)
The filter can not be deactivated manually, as it must end its life cycle.
The filter symbol flashes slowly when the autonomy of the current filter becomes less 8050ml (percentage shown on the display 10%). When the autonomy of the current filter becomes less than 2000ml (percentage shown on display 0%) the icon flashes quickly. After a maximum of 62500ml of water supplied the flashing light turn off. Because you did not activate a new filter, the machine will show that after a while' you need to start descaling.
After the flashing light goes out is calculated:
(for example) After using 1 filter, the TH reduces of 1/8. With Water hardness 4 and brewing just coffee/water products the TH is set to 30 liters. 30 liter minus 1/8 is 26,25 liters. The first filter expires at 62,5liters - > the warning "DESCALE" should appear at 26,25+62,5 = 88,75 liters from start.
If the consumer is using the AquaClean filter, and replaces it when indicated by the machine. The machine needs to be descaled after 8 filter replacements. When the 8th filter needs to be replaced the machine will inform you need to descale before placing a new filter.
Note: the quantities of water, for each cycle of the filters, are not affected by the hardness of the water itself.
The machines : Intelia Evo2 , Granbaristo V2 , V2 Exprelia , New Incanto e Cattiva will mount a water container can only mount the filter Aquaclean and will not be able to mount the old.

Descaling frequency in AQUACLEAN					
The first activation must make before you've paid up to 5000ml products because mind thinks as if he had the filter					
Hardness	**Filter number**	**Percentual on display 10% the icon flashes slowly.**	**Percentual on display 0% the icon flashes quickly.**	**MAX Quantity water, the icon turns off. (replace filter)**	
Indifferent	From 1/8 to 7/8	8050ml	2000ml	62500ml	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			
Descaling cycle frequency			
Hardness	**WATER HARDNESS**	**Without water filter**	**Not reactivating the filter**
1	Soft (up to 7°dH)	240 litres (480,000 pulses)	210 litres (420,000 pulses)
2	Medium (7° - 14°dH)	120 litres (240,000 pulses)	105 litres (210,000 pulses)
3	Hard (15° - 21°dH)	60 litres (120,000 pulses)	52.5 litres (105,000 pulses)
4	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.			

CHAPTER 5

SERVICE MODE

5.1 Test Mode PICOBARISTO AMF-OTC

Introduction
This document describes the Test Mode of the PicoBaristo (AMF & OTC) Coffee Machine. This application is used in order to test the machine in its mechanics and electronic components.

To enter Test Mode
The machine enters in Test mode by holding pressed together A and L buttons while switching on the machine by the main switch on the backside of the CA.
Once entered in Test Mode, the display shows the firmware version (Page 0).

Introduction
This document describes the Test Mode of the PicoBaristo (AMF & OTC) Coffee Machine. This application is used in order to test the machine in its mechanics and electronic components.

To enter Test Mode
The machine enters in Test mode by holding pressed together "Espresso" and "Aroma Strength" buttons while switching on the machine by the main switch on the backside of the CA.
Once entered in Test Mode, the display shows the firmware version (Page 0).
The Test Mode is organized into 6 different pages, each level the coffee machine can execute different commands:

Page 0: The display shows:
a) Machine's model (PicoBar AMF, PicoBar OTC).
b) Firmware's version.
c) Voltage of PCB.
d) Main supply frequency (50 or 60 Hz).

Page 1: Keyboard and display colors testing:
1) A button + backlight Red
2) B button
3) C button
4) D button
5) E button
6) F button
7) G button
8) H button
9) I button
10) L button
11) M button
12) N button

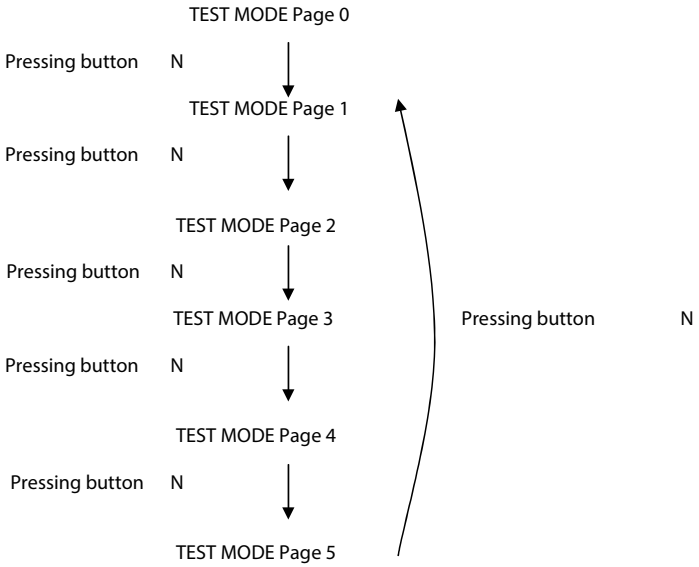
Page 2: Input signals testing:
- a) Water level sensor
- b) Carafe sensor
- c) Water Spout sensor
- d) Bean's lid sensor(only in the 120V version)
- e) Microswitch door/drip tray
- f) Microswitch presence of the Brew Unit

Page 3: Low voltage loads test:
- a) Brew Unit movement upward and downward (24V DC)

Page 4: High/Low voltage loads test (Pump, E.Valve):
- a) Pump 230V AC
- b) DC Solenoid valve 24V (The door must be closed !!)
- c) Flow-meter

Page 5: High voltage loads test (Heater , Grinder):
- a) Heater (230V AC)
- b) Grinder (320V DC)
- c) NTC sensor

The user can change the page by pressing the N button.
Page 0 is accessible only entering Test Mode from power-off mode; at the start up all loads are turned off.

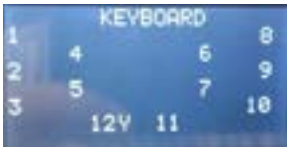
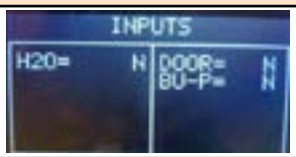


1.1 Entering Page

Verify the firmware version	
Firmware version on the display. The machine's model is shown (AMF or OTC). The voltage of the main supply "230V" The frequency of the main supply is shown (50 or 60 Hz)	
ERROR: If the machine's model shown is different from the batch produced, the board is programmed with a wrong software.	
The firmware version is the same as the label on MicroController	
ERROR: The firmware version is different from the label on MicroController; change the CPU_POWER Boards !	
Press the N button	
The machine passes to the Page 1 (KEYBOARD)	
ERROR: The page does not change; Check the interface board and the flat cable (JP17)	

1.2 Page 1 (KEYBOARD)

Start condition	
Press the button A	
When the button A is pressed a Y appears on the display close to the number 1, a white led switch on under the button A, and the backlight changes from white to red.	
ERROR: If Y desn't appears on display; check the interface board and the flat cable (JP17).	
ERROR: If Y appears on display but close to a different number (not 1); check the interface board.	
ERROR: If more than one Y appears on display; check the interface board.	
ERROR: If the white led doesn't switch on under the button A or the color is not white; check the interface board.	
ERROR: If the led switch on under a different button (not A); check the interface board.	
ERROR: If more than one leds appear under buttons; check the interface board.	
ERROR: If during the pressing the backlight remain WHITE check the wiring (JP3) from the interface board and the display, check the interface board and the flat cable (JP17).	

Press one button at time (from B to M)	
When a button is pressed a Y appears on the display in the relative numbering of button pressed and a white led switchs on under the button pressed. The backlight color remains WHITE.	
ERROR: If Y desn't appears on display; check the interface board and the flat cable (JP17).	
ERROR: If Y appears on display but close to a different number; check the interface board.	
ERROR: If more than one Y appears on display; check the interface board.	
ERROR: If the white led doesn't switch on under the button pressed or the color is not white; check the interface board.	
ERROR: If the led switch on under a different button; check the interface board.	
ERROR: If more than one leds appear under buttons; check the interface board.	
ERROR: If during the pushing the backlight changes from WHITE to RED, check the interface board and the flat cable (JP17).	
Press and maintain pressed the button N	
When the button N is pressed a Y appears on the display close to the number 12, 11 white leds switch on under the buttons form (A to M), and 1 red led switch on under the button N. The backlight color remains WHITE.	
ERROR: If Y desn't appears on display; check the interface board and the flat cable (JP17)	
ERROR: If Y appears on display but close to a different number (not 1); check the interface board.	
ERROR: If more than one Y appears on display; check the interface board.	
ERROR: If all 11 white leds doesn't switch on under the buttons from A to M or the color is not white; check the interface board.	
ERROR: If the red led doesn't switch on under the button N or the color is not red; check the interface board.	
ERROR: If during the pressing the backlight changes from WHITE to RED, check the interface board and the flat cable (JP17).	
Release the N button	
The machine passes to the Page 2 (INPUTS)	

1.3 Page 2 (INPUTS)

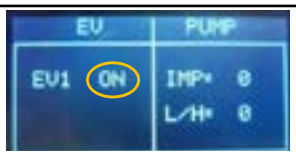
Start condition, no water inside water tank, no carafe or water spout inserted, door open, drip tray removed, BU not inserted.	
Insert a full Water Tank	
The indication TANK-H20 changes from "N" to "Y". NOTE: the switching from "N" to "Y" requires about 1-2 seconds.	
ERROR: The indication TANK-H2O doesn't change; check the capacitive sensor (fixing) and the wiring (JP19)	
Insert the Carafe	
The indication CARAFE changes from "N" to "Y".	
ERROR: The indication CARAFE doesn't change; check the Carafe/WaterSpout Sensor and the wiring (JP7) on the keyboard.	
Remove Carafe and insert the WaterSpout	
The indication WAT-SP changes from "Y" to "N" and WaterSpout changes from "N" to "Y".	
ERROR: The indication CARAFE or WAT-SP doesn't change; check the Carafe/WaterSpout Sensor and the wiring (JP7) on the keyboard.	
Insert the BrewUnit	
The indications BU-P changes from "N" to "Y". NOTE: removing the BrewUnit the indication from "Y" to "N" requires about 2-3 seconds to switch.	
ERROR: The indications BU-P doesn't changes; check the BU presence Microswitch and the wiring (JP21).	
Close the Door and Dreg Drawer	
The indication DR&DOOR change from "N" to "Y"	
ERROR: The indication DR&DOOR does not change; check the Microswitch for the door and the wiring (JP21 or JP16). NOTE: without the Dreg Drawer correctly inserted the DOOR indication cannot change !	

Press the N button	
The machine passes to the Page 3 (BU PAGE)	

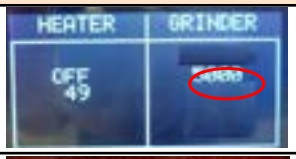
1.4 Page 3 (BU)

Start condition	
Press the F button to move the BU to Work	
IMPORTANT NOTE: If the DREGDRAWER is not inserted or the DOOR is not closed the BU test cannot be performed. If these 2 inputs are not in the right position, a warning message will be shown and the display turns to red.	
When the BU reaches the work position the indication WORK changes from "N" to "Y", the number of the current had to beless than 200mA (without BU) or 300mA (with BU).	
ERROR: (Without BU) The absorbed current is more than 200mA, the display backlight changes from white to red; check the BU and the motor.	
ERROR: (With BU)The absorbed current is more than 300mA, the display backlight changes from white to red; check the BU and the motor	
Press the G button to move the BU to Home	
When the BU reaches the home position the indication HOME changes from "N" to "Y", the number of the current is less than 200mA (without BU) or 300mA (with BU).	
ERROR: (Without BU) The absorbed current is higher than 200mA, the display backlight changes from white to red; check the BU and the motor.	
ERROR: (With BU)The absorbed current is higher than 300mA, the display backlight changes from white to red; check the BU and the motor	
Press the N button	
The machine passes to the Page 4 (EV - PUMP)	

1.5 Page 4 (EV - PUMP)

Start condition	
Press the A button to open the Electro Valve	
IMPORTANT NOTE: If the DREGDRAWER is not inserted or the DOOR is not closed the EV test cannot be performed. If these 2 inputs are not in the right position, a warning message will be shown and the display turns to red.	
It is possible to hear the "click" from Electro Valve. The indication beside the EV1 changes from "OFF" to "ON".	
Press and Release the H button to switch on the pump (100 impulses)	
The water goes out from the pipe and the indication IMP shows increasing numbers from 0 to 100(around). The indication L/H must be within the range 10-18.	
ERROR: The display backlight changes from white to red and the impulse remains 0; If water comes out the pipe: check the wiring from the flowmeter to the CPU/POWER board (JP5). If no water comes out the pipe: check the pump and the wiring from the pump to the CPU/POWER board (JP9).	
ERROR : The L/H is zero or very low; the Electro Valve does not open. Check the wiring from the Electro Valve to the CPU/POWER board (JP3) and the Electro Valve.	
Press the N button	
The machine passes to the Page 5 (Heater-Grinder)	

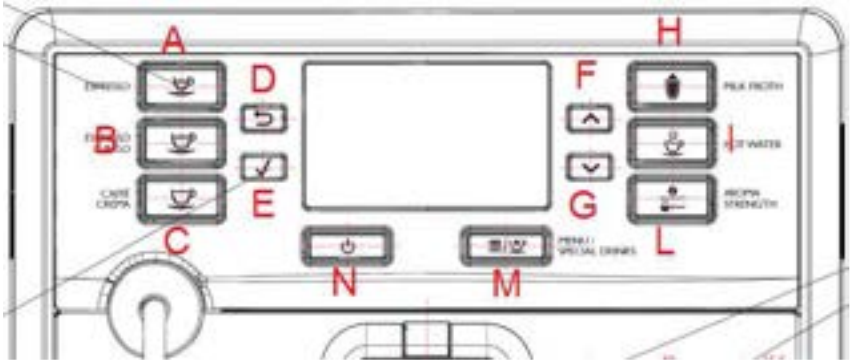
1.6 Page 5 (Heater-Grinder)

Start condition	
Press the H button to switch on the grinder	
The grinder rotates and in the indication GRINDER the number increasing up to 5000 (5seconds test).	
ERROR: The number remains 0 or the grinder does not run, the display backlight changes from white to red; check the Grinder and the wiring from the Grinder to the CPU/POWER board (JP4)	

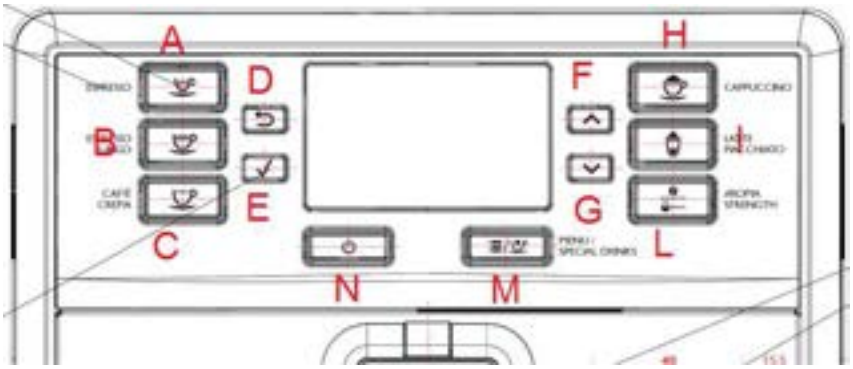
Check the temperature	
The number shows the heater temperature .	
ERROR: In the indication HEATER appears "SHORT", the NTC temperature-sensor is shorted, the display backlight changes from white to red; check the wiring from the NTC temperature-sensor to the CPU/POWER board (JP3).	
ERROR: In the indication HEATER appears "OPEN", the NTC temperature-sensor is detached or broken, the display backlight changes from white to red; check the wiring from the NTC temperature-sensor to the CPU/POWER board (JP3).	
Press the A button to switch on the Heater	
The absorbed current (Amperometer on the main supply) is OK, the indication HEATER changes from "OFF" to "ON" and the temperature starts increasing.	
If temperature is over 100°C, the backlight change from WHITE to RED. This is a ALERT message to avoid heating the HEATER element over dangerous temperature.	
ERROR: the absorbed current is KO or the temperature does not increase; check the wiring from the heater to the CPU/POWER board (JP15) and the wiring of the NTC temperature-sensor (JP3).	

The PicoBaristo coffee machine

Class AMF



Top OTC



5.2 Steam Out

Before executing the steam out procedure, descale the machine taking care to remouve the Aqua-clean 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 procedure; the application is used in order to empty the heater.

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

- the B button and the L button;

while switching on the machine by main switch behind it.

Once entered the Steam Out mode the display shows the "STEAM OUT" indication. Buttons can be released	
IMPORTANT NOTE: to execute the Steam-out procedure the Ntc sensor must work correctly; if some errors occurs on Ntc during the steam-out, the procedure can't continue and an error message is shown on the display.	
IMPORTANT NOTE: to execute the Steam-Out procedure the DREGDRAWER must be in place and the DOOR must be closed. If these 2 conditions are not respected a warning message is shown on the display and the Steam-Out is interrupted.	
The machine starts the Steam Out and in the display appears the indication "ON". While the Steam Out runs the Electro valve is opened and water comes out the Water/Steam pipe.	
When the Steam Out is complete the message "COMPLETE" is shown on the Display.The Electro valves automatically closes and the machine can be switched off.	

When the Steam-Out is complete the following parameters are reset to their default values:

Parameters	Default value	Description
espresso_qty	150	Dose (in impulse) of the "Espresso"
espresso_lungo_qty	255	Dose (in impulse) of the "Espresso Lungo"
caffe_crema_qty	350	Dose (in impulse) of the "Caffe Crema"
ristretto_qty	130	Dose (in impulse) of the "Ristretto"
espresso_double_qty	250	Dose (in impulse) of the "EspressoDouble"
cappuccino_qty	185	Dose (in impulse) of the coffee cycle in the "Cappuccino"
cappuccino_seconds	340	Dose (in 1/10 seconds) of the milk cycle in the "Cappuccino"

latte_macchiato_qty	135	Dose (in impulse) of the coffee cycle in the "Latte Macchiato"
latte_macchiato_seconds	400	Dose (in 1/10 seconds) of the milk cycle in the "Latte Macchiato"
baby_cappuccino_qty	120	Dose (in impulse) of the coffee cycle in the "Baby Cappuccino"
baby_cappuccino_seconds	170	Dose (in 1/10 seconds) of the milk cycle in the "Baby Cappuccino"
flat_white_qty	225	Dose (in impulse) of the coffee cycle in the "Flat White"
flat_white_seconds	200	Dose (in 1/10 seconds) of the milk cycle in the "Flat White"
milk_froth_seconds	340	Dose (in 1/10 seconds) of the milk cycle in the "Milk Froth" (OTC Version)
steam_seconds	340	Dose (in 1/10 seconds) of the milk cycle in the "Steam" (AMF Version)
water_qty	740	Dose (in impulse) of the "Hot Water"
coffee_grounds_cntr	0	Number of grounds in dregs drawer
alarm_refill	TRUE	Request priming circuit next power-on of the machine
Bu_Loaded	FALSE	Set Brew-unit clean and not fill with coffee
language_selected	FALSE	Set the remind to select the language at the next start up.
menu_user_language	ENGLISH	Set the default language to English
aroma	3 Beans	Aroma for coffee
time_sleep	15 minutes	Timer for enter in stand-by from normal mode
last_error_logged	0	Last error saved in machine
gr.bu_uc_arr[jj]	150	Array of last 4 brew unit effort during rinsing cycle (in milliamperes). -> Autozero for new autodose system
gr.bu_uc_arr_ptr	0	Pointer in the previuous array resetted
gr.time_aroma[0]	5500	Grinding time for aroma very mild (ms)
gr.time_aroma[1]	7000	Grinding time for aroma mild and regular (ms)
gr.time_aroma[2]	7500	Grinding time for aroma strong and very strong (ms)
gr.num_skip_adjust_dose	0	Flag to skip the autodose adjustment in the next brewing.
gr.current_aroma_light	55	Offset (unit mAmpere) to add at the unloaded torque of the BU and define the target for aroma light
gr.current_aroma_medium	100	Offset (unit mAmpere) to add at the unloaded torque of the BU and define the target for aroma medium
gr.current_aroma_strong	200	Offset (unit mAmpere) to add at the unloaded torque of the BU and define the target for aroma strong
gr.max_grinder_time	10000	Max grinder time (ms)
coffe_duct_empty	TRUE	Set grinder conduct clean – used to increase grinding time for first grinding product next power-on.
filter_autonomy	0	Autonomy of last Aqua clean filter actived

filter_counter	0= filter_first_request	Request Aqua clean filter activation next poweron
filter_startup_qty	5000	Counter of water for enable first Aqua Clean filter; if expire, the machine need a descaling action to activate a new filter.

5.3 Error Codes for Out of Order alarm

CODE	Description	NOTES
01	The grinder is blocked	
02	The grinder is disconnected	
03	The BrewUnit is blocked in work position	
04	The BrewUnit 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°	
15	The machine doesn’t heat up	
19	The power supply network is not stable	

CHAPTER 6

SERVICING AND MAINTENANCE

6.1. Repair flow

Proces stap	Saeco no.	Action
Intake	1	Visual inspection (transport damage) take care for pictures
	2	Check Type/serialnumber
		Log all available accessory
Diagnosis	3	Check product for consumer complaint (NFF contact consumer)
	4	Opening machine
	5	Visual inspection check for loosen parts, leaking etc..
	6	Operational tests
Repair		Run Diagnostic to get error codes and relevant set statistics (Saeco Service Center SSC)
	7	Repairing the faults encountered
	8	"Checking any modifications (view Symptom Cure, new software, etc.) Refer Annex tabs per family"
	9	Service activities in accordance with the operating schedule
		Check/Replace Waterfilter (the small filter, not the Britta filter)
		Check/Replace Water tank lip seal
		Check/Replace Boiler pin O-ring
		Clean/align Coffee grinder (Vacuum cleaner / brush)
		Descale the water Circuit
		Check/Replace Hot water/steam valve
	10	Internal check / cleaning
		Check/Clean/Grease Brewing unit
	11	Operational test while the appliance is open
		Check Hoses, attachments and Oetiker clamps
		Check Pump for operation & noise
		Check Gear motor for operation & noise
		Check for leakage
	12	Assembly
	13	Final inspection test
	14	Steam out before shipping out, if temperature is below 0° to prevent any demaged due to frozen water
Inspection		
visual		Do cabinet parts fit well together
		Check for damages
Power check		Will the set switch on
Accesoires		Do the accessories match with the intake
Consumer complaint		Check the product for the consumer complaint
Coffee		
Dispense		Make 2 * coffee. Are both amounts equal
		Make e 2 cups at the same time. Are the volumes equal

Noise		Is the sound normal
Crema		Blow on the coffee. Does the crema come back together
		Is the crema colour correct (Hazelnut)
Temperature		Is the coffee temperature within spec
Grinder		Is the grinder noise normal
Steam		
Steam		Does the steam work
Hot Water		Does the hot water work
Milk		(if applicable)
Cappuchino		Does the cappuccinatore produce good froth
Leakage		
Leakage	14	Did the product leak during the testing
	15	Draining the circuit (in winter)
Cleaning		Clean water reservoir, bean reservoir, brew chamber and conveyor
	16	Clean and dry brew unit, coffee bin and drip tray.
		Lubricating the brewing unit with suitable grease
		External cleaning
Safety check		
		Earth leakage, Isolation test, resistor of earth wire grounding, as requested in certain country's (VDE, ISO)
visueel		Check the mains cord for damages
Packing		
	18	Packing
		Check completeness (accessories) according income log
	19	Neatly pack the product
Documentation		NFF letter
		Descaling instruction with changed procedure (S/C)
		Other instructions according S/C
Repair report		Is there an answer to ALL consumer questions/complaints (see complaint)
		add set statistic and give, if needed clear instruction towards consumer
		Is it indicated which documents are added
		Are there tips how to prevent issues

CHAPTER 7

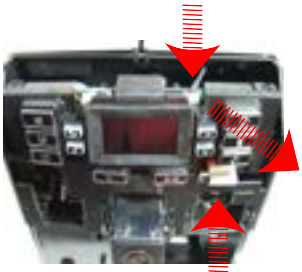
DISASSEMBLY

7.1. Outer shell

PICOBARISTO OTC

Unscrew the screws highlighted

Cover a screwdriver with adhesive paper to prevent scratching the chromed shell.



Disconnect the electrical connection remove the display end the block support KYB.

PICOBARISTO AMF

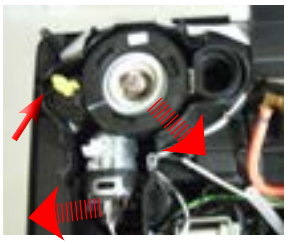
Remove the water tank, coffee dispenser, drip tray, dump box, brewing unit, carafe or hot water dispenser.

Remove the frame top cover and the front panel controls

Unscrew the screws highlighted and remove the top cover

Remove the top cover casing and disconnect the silicone tube

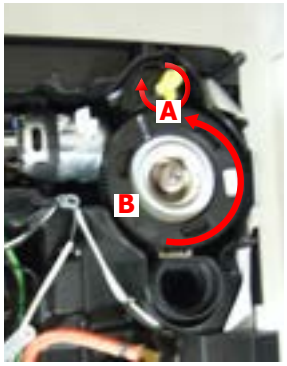
7.2. Coffee grinder



Unscrew the screws highlighted, lift the grinder and remove the electrical connections

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

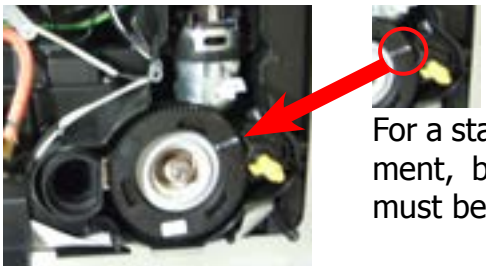
7.3. Grinder blades



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

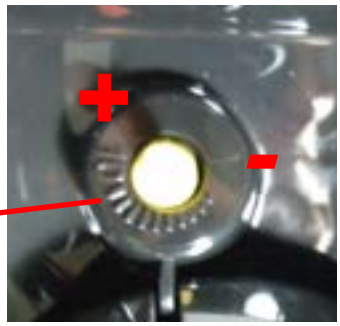
Turn the grinder blades anticlockwise out of the support.

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

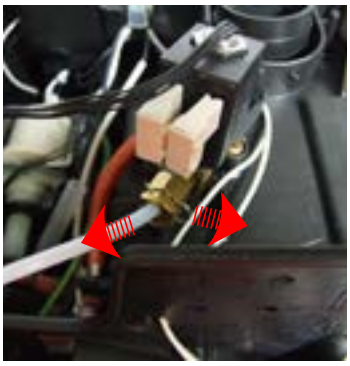


The grinding adjustment can be set by the user (only with the coffee grinder in operation) by pressing and turning (only by one click at a time) the insert inside the coffee bean hopper with the aid of the wrench supplied.

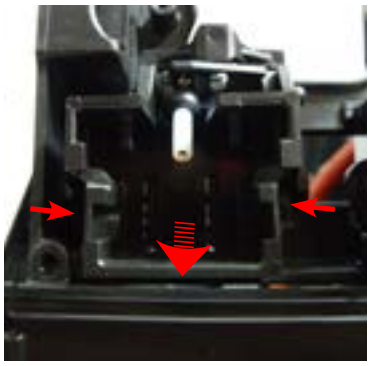
Adjustment by a service center

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



Slide out the fork and remove the silicon tube



Unscrew the screws highghlighted and remove the carafe connection

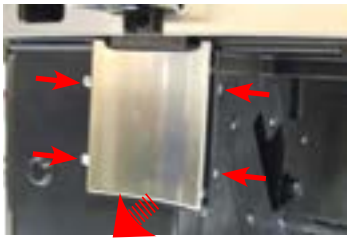
Unscrew the screws highlighted. When reassembling the assembly to be careful to correctly position the spring.

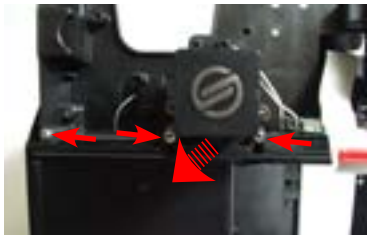
hot water dispenser

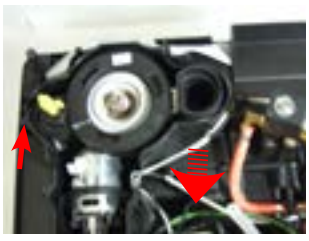
Removes the covers shown

Unscrew the screws highlighted and remove the steam tube.

7.6. Central plate

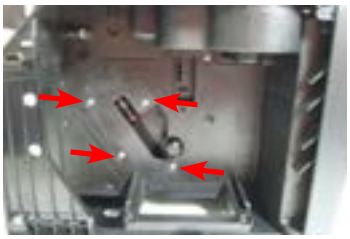






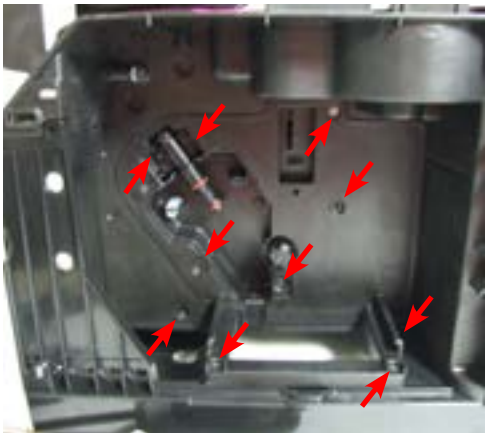
Unscrew the screws highlighted and remove the insert panel, coffee dispenser, right door and the central plate.

7.7. Pin boiler

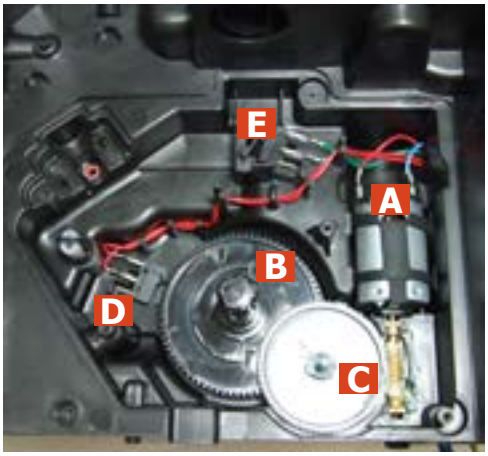


Unscrew the screws highlighted and remove the boiler pin (A).

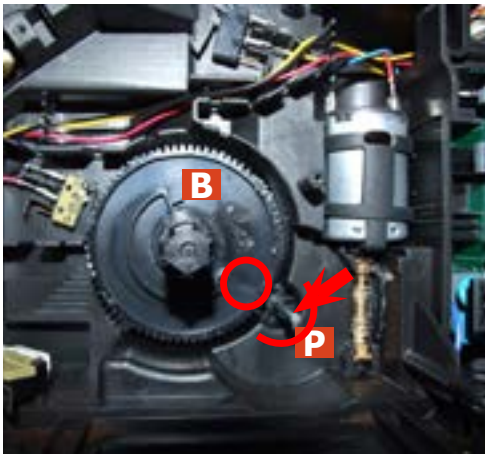
7.8. Gear motor



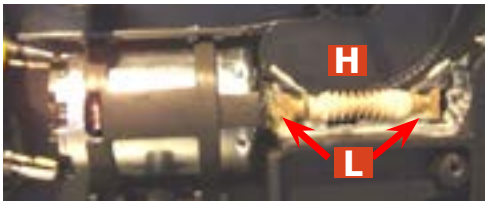
Loosen the screws as illustrated, remove the pin boiler and the gear motor cover.



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.

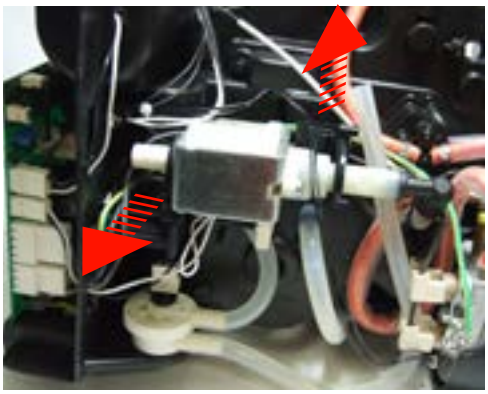


Replace the gear (B), making sure that the imprint of the arrow is aligned with the opening containing the pin (P).

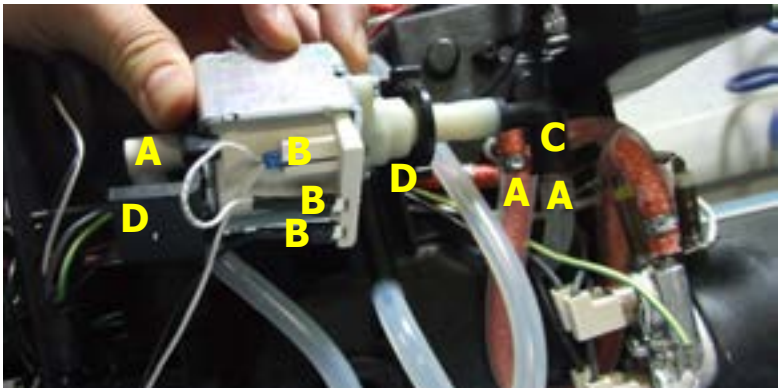


When replacing the motor and the transmission shaft, make sure the guide runners (L) are in the right position.
Grease the shaft thoroughly and evenly.

7.9. Pump

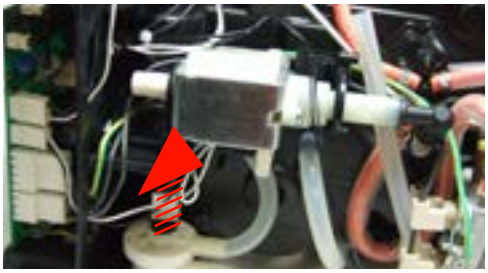


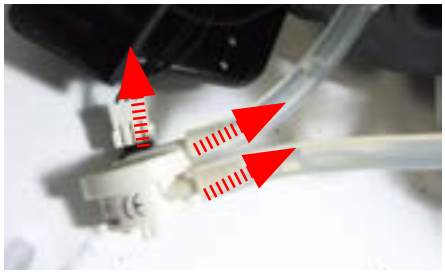
Unhook the pump from the supports.



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

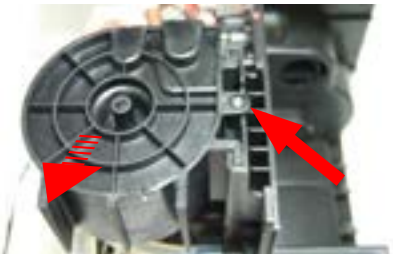
7.10. Flow-meter

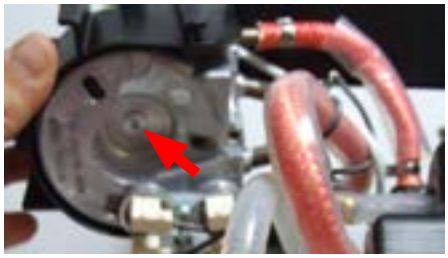




Lift the flow meter out of the casing assembly and remove the electrical and water circuit connections.

7.11. Boiler

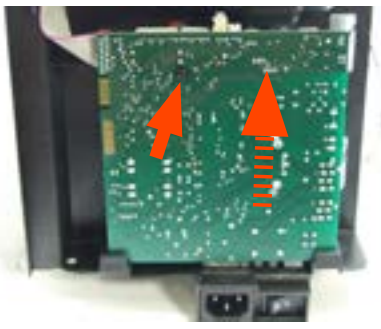




Unscrew the screw shown and remove the electrical and water circuit connections.

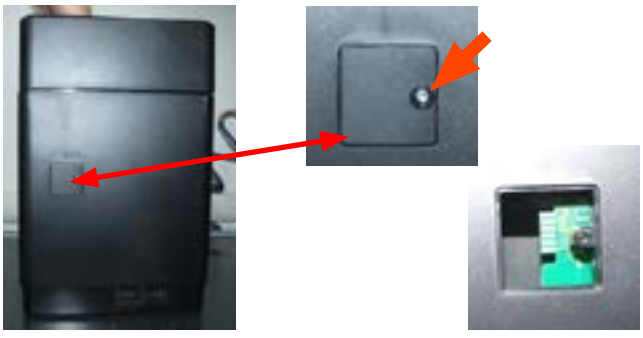
Unscrew the screw shown at un-thread the support boiler

7.12. CPU board



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

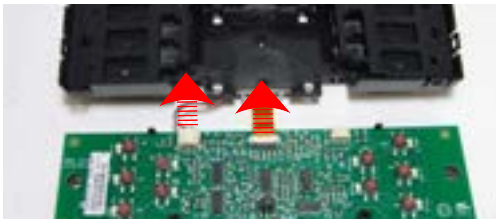
7.13. Programming access for SSC



Loosen the screw for remove the cover.

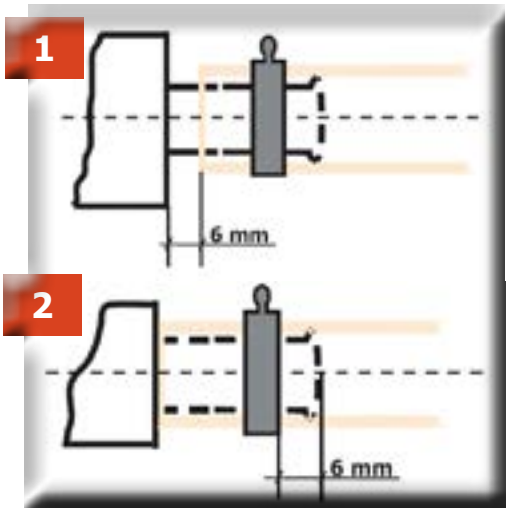
7.14. KYB interface and display

Loosen the screws for remove the cover.



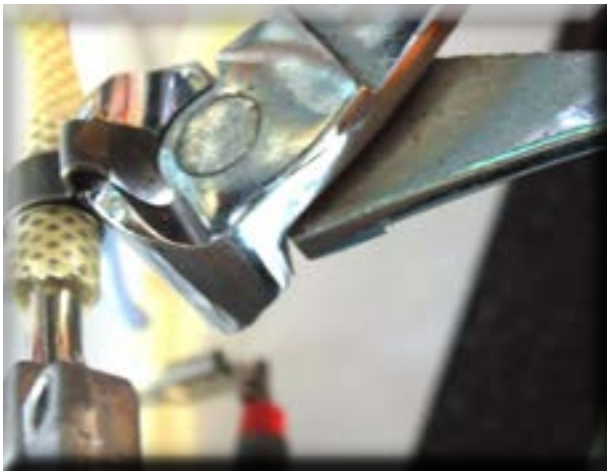
Disconnect the electrical connections.

7.15. 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.

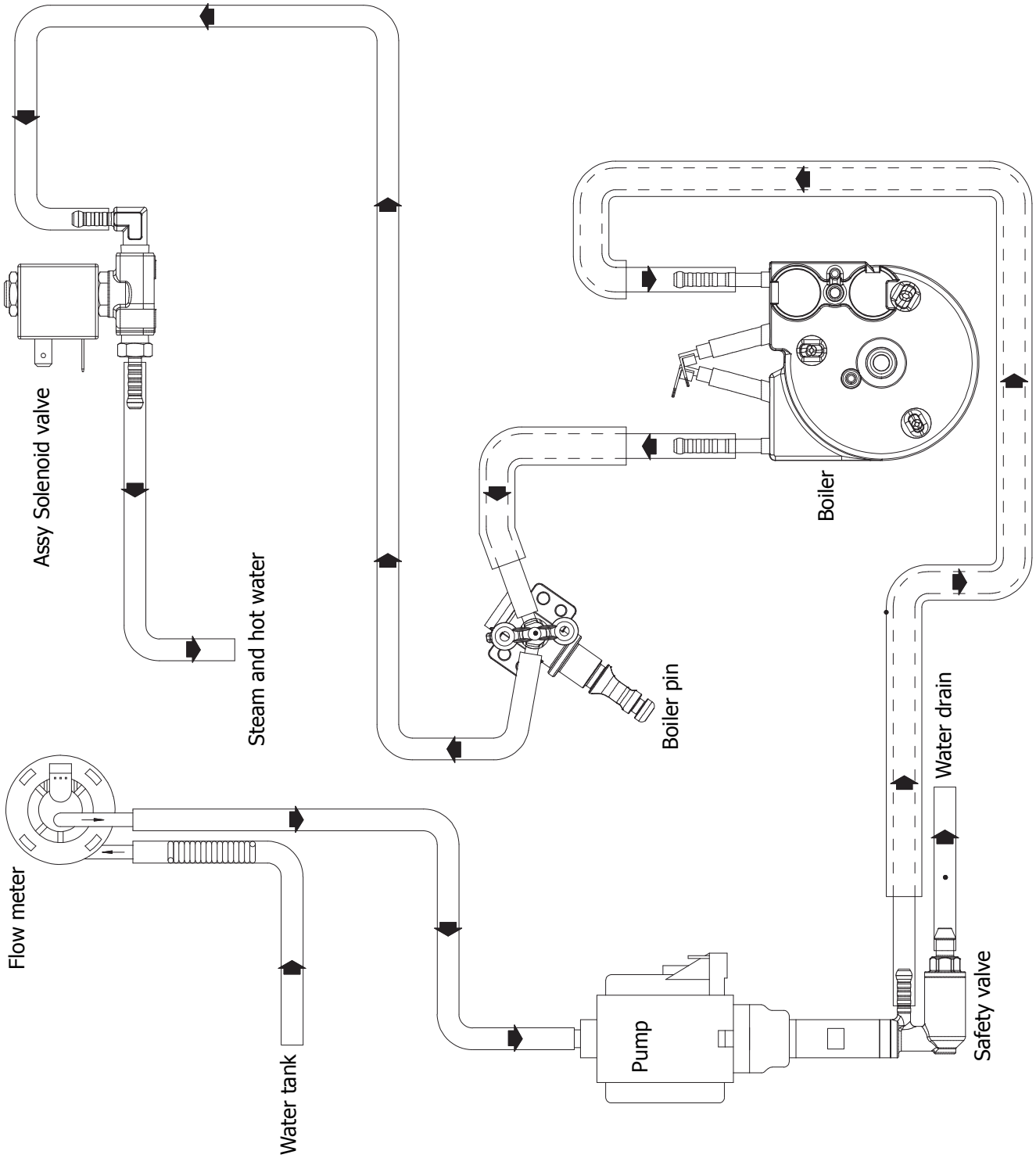
CHAPTER 8

NOTES

CHAPTER 9

WATER CIRCUIT DIAGRAM

9.1. Water circuit diagram



CHAPTER 10

ELECTRICAL DIAGRAM

10.1. Electrical diagram