Coffee Machine

Service
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Lirika

ServiceManual

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PHILIPS

Saeco

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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, sympton cure and service manual)

1.2 Tools and equipment required

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.
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.

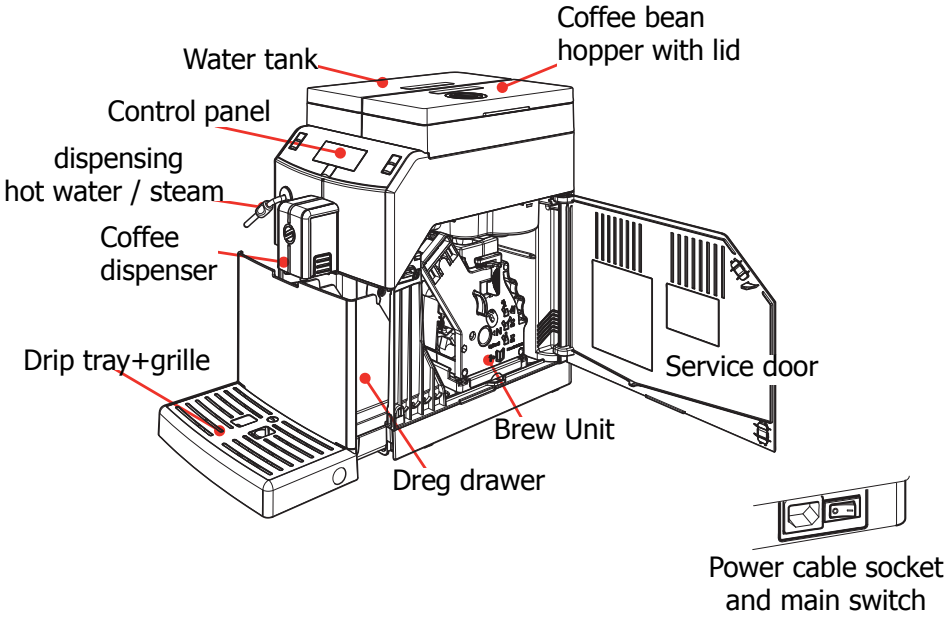
1.5 Service POLICY grid as used for coffee machine

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.

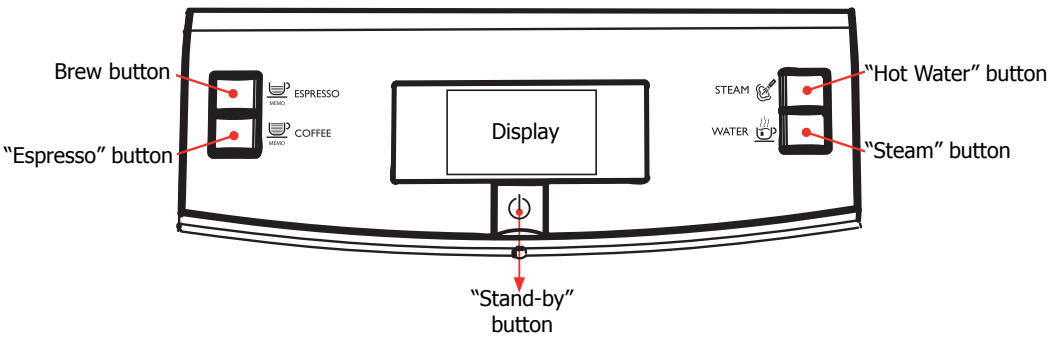
List of principal assembly present in all our coffee machines

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

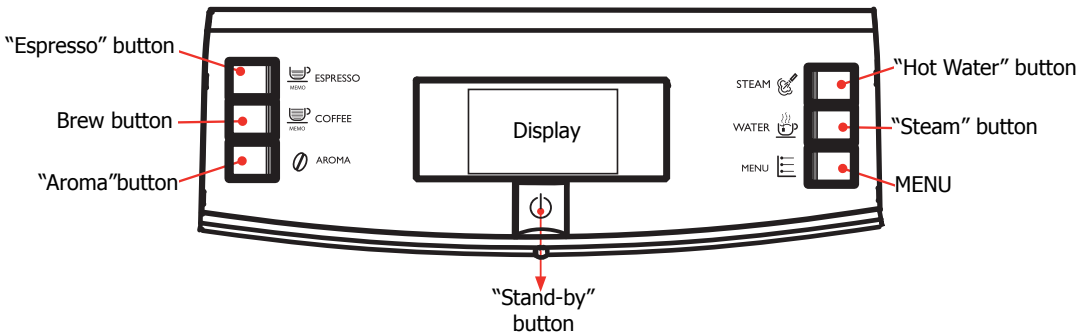
1.6.1 External machine parts



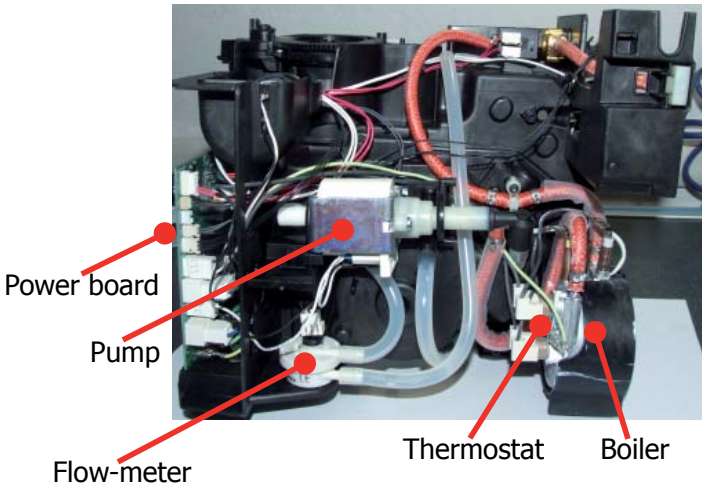
BASIC

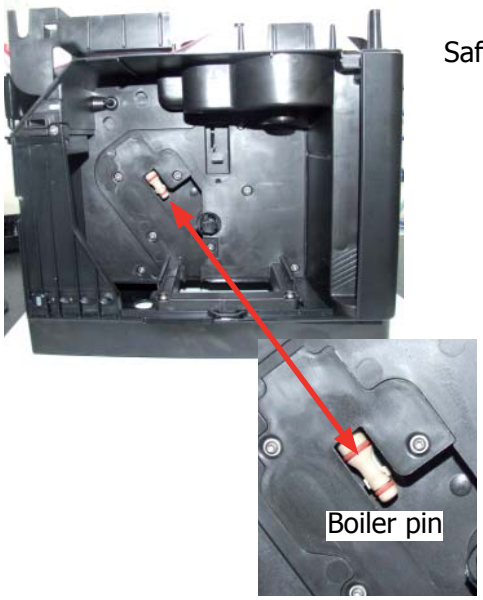


PLUS



1.6.2 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
Pump:	Ulka Type EP5/S GW approx. 13-15 bar with reciprocating piston and thermal switch 100°C 48 W, 230V, 50 Hz, 120V, 60Hz 100V, 50/60 Hz
Overpressure valve:	Opening at approx. 16-18 bar
Water 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 heating phase- approx. 5.6 A
Dimensions: W x H x D in mm:	215 x 370 x 429 mm
Weight:	8 kg
Water tank capacity:	2.5 l
Coffee bean hopper capacity:	550g. of coffee beans
Dreg drawer capacity:	15
Water circuit filling time:	Approx. 15 sec Max. on first filling cycle
Heating time:	Approx. 45 sec.
Grinding time:	Approx. 8-10 sec.

2.2.1. 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.

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.

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.

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

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

Milk evaluation
To carry out the test, a partially skimmed UHT milk with a percentage of grease between 1.5-1.8% at a refrigerator temperature **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 without Pinless Wonder: e.g. Xelsis, Exprelia, Syntia, Intelia.
With milk at Trefr. (about 4-10 °C):→Δ ≥ 36

System with Pinless Wonder: New royal, Energica Pure, Intelia EVO Latte.
With milk at Trefr. (about 4-10 °C):→Δ ≥ 45

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 (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 (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.

2.3. Machine parameters and performance

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

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

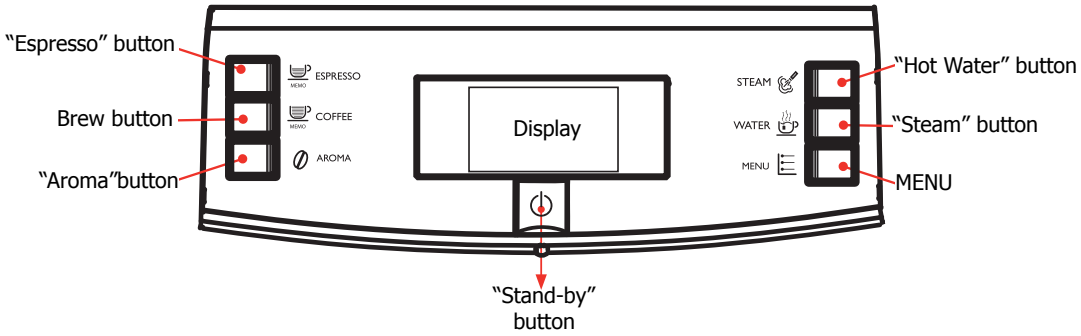
STANDBY	Description and values
Inlet time (default)	30 minutes
Inlet time programmed by Production/Service	Yes
Boiler temperature during Standby	Boiler OFF

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

CHAPTER 3

USER INSTRUCTIONS

3.1. Customer menu in the Lirika Plus



This machine is equipped with a colour-coded system to make your understanding of the display signals easier.
The icons are colour-coded according to the traffic light principle.

Machine ready signals (**GREEN colour**)


When completed, the machine is ready for use.


The machine is brewing one cup of espresso


The machine is brewing one cup of Coffee.


The machine is brewing two cups of espresso.


The machine is brewing two cups of Coffee.

The machine is programming the amount of espresso to be brewed.

The machine is programming the amount of coffee to be brewed.

Steam dispensing.

Hot water dispensing.

The machine is designed to manage coffee brewing by means of a credit system. The number of coffee cups brewed is limited to the number of credits granted by the service provider.
When no credits remain, no more cups of coffee can be brewed.

Machine ready signals (**YELLOW colour**)


The machine is in warm-up phase to brew beverages or dispense hot water.


The machine is performing the rinse phase. Wait until the machine has completed the cycle.

The "Intenza" water fi lter must be replaced with a new one. Contact the service provider.

The brew group is being reset due to machine reset.

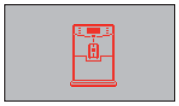
Refi ll the coffee bean hopper with coffee beans and restart the cycle.

The machine is performing circuit priming.

The machine is out of credits. In this case, only hot water and steam may be dispensed. To brew coff ee, contact the service provider to restore the credits.

The machine requires a descaling cycle.
When this message is displayed, it is still possible to use the machine, but its correct operation might be affected.
Damage caused by failure to descale the machine is not covered by warranty.
Contact the service provider.

Machine ready signals (**RED colour**)



Insert the drip tray and the coffee grounds drawer into the machine and close the service door.

The brew group must be inserted into the machine.

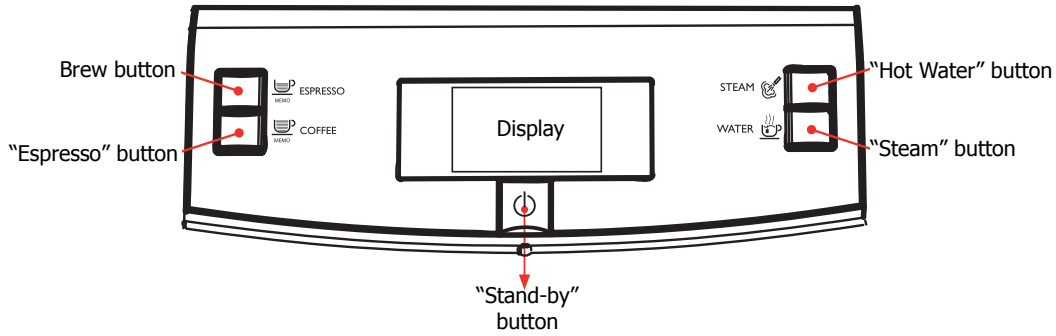
Empty the coffee grounds drawer.

Fill the coff ee bean hopper.
This icon appears for 5 seconds, from when the machine detects that it has fi nished the coffee to be ground.
After this time the message "Refill the coffee bean hopper with coffee beans and restart the cycle" appears. (**See Warning Signals (Yellow Colour**).

Fill the water tank.

Turn off the machine. Turn it back on after 30 seconds. Try this 2 or 3 times. If this signal appears again, contact the service provider and quote the code shown on the display.

3.2. Customer menu in the Lirika Basic



This machine is equipped with a colour-coded system to make your understanding of the display signals easier.
The icons are colour-coded according to the traffic light principle.

Machine ready signals (**GREEN colour**)


The machine is ready for use.

The machine is programming the amount of espresso to be brewed.

The machine is brewing one cup of espresso

The machine is programming the amount of coffee to be brewed.

The machine is brewing one cup of Coffee.

Steam dispensing.


The machine is brewing two cups of espresso.

Hot water dispensing.

The machine is brewing two cups of Coffee.

The machine is designed to manage coffee brewing by means of a credit system. The number of coffee cups brewed is limited to the number of credits granted by the service provider.
When no credits remain, no more cups of coffee can be brewed.

Each service provider decides independently how to manage the granting and recharging of credits to allow the machine to be used.

Machine ready signals (**YELLOW colour**)

The machine is in warm-up phase to brew beverages or dispense hot water.

The "Intenza" water fi lter must be replaced with a new one. Contact the service provider.

The machine is performing the rinse phase. Wait until the machine has completed the cycle.

The brew group is being reset due to machine reset.

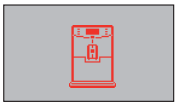
Refi ll the coffee bean hopper with coffee beans and restart the cycle.

Prime the circuit. Press the "MEMO" button and wait for the machine to complete the cycle. If this icon appears again, repeat the procedure.

When fewer than 31 credits are left in the machine, the icon "$" is displayed. In this case, contact the service provider to restore the credits.
When no credits remain, the following icon is displayed and the machine stops brewing coffee. The machine is out of credits. In this case, only hot water and steam may be dispensed.
To brew coffee, contact the service provider to restore the credits.

The machine requires a descaling cycle. When this message is displayed, it is still possible to use the machine, but its correct operation might be aff ected. Damage caused by failure to descale the machine is not covered by warranty. Contact the service provider

Machine ready signals (**RED colour**)



Insert the drip tray and the coff ee grounds drawer into the machine and close the service door.

The brew group must be inserted into the machine.

Empty the coffee grounds drawer.

Fill the coffee bean hopper.

Fill the water tank.

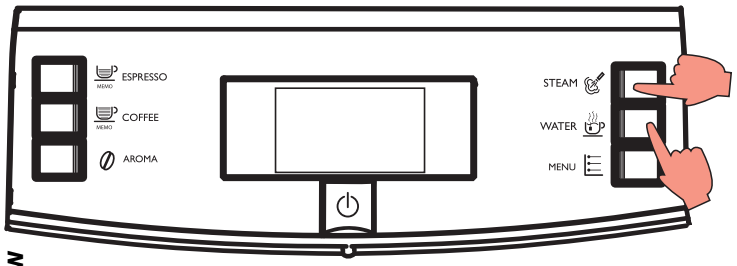
Turn off the machine. Turn it back on after 30 seconds. Try this 2 or 3 times. If this signal appears again, contact the service provider and quote the code shown on the display.

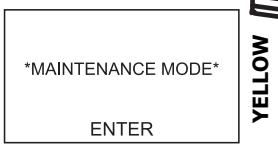
3.3. Service Provider Manual Lirika Plus

All the operations described must be performed exclusively by the service provider or a specialised technician, who shall organise all the operating steps and use only suitable means to ensure strict compliance with the safety regulations in force.
The specialised technician or the service provider can change some of the machine operating parameters to suit the needs of the users.

Accessing Programming Mode

Proceed as follows to access programming mode.
1) With the machine turned on, press and hold the " " button and the " " button at the same time for 5 seconds.



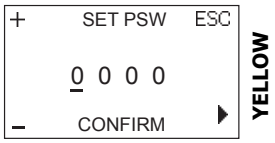


The following screen is displayed:

Press the " " button to access programming mode.

The above mentioned procedure can only be used to access the programming menu when the machine has reached operating temperature. To execute certain programmes (e.g. DESCALING), the machine will manage the procedure automatically and warm up according to the manufacturer's settings.
After 3 minutes of inactivity, the machine will exit programming mode and return to standard operating mode.

The menus should be PASSWORD-protected.
The PASSWORD will not be requested if set on the default value (0000). It should be changed upon 1st use to prevent unauthorised access. After this change ,it should be entered again at each access, every time the display shows:



To enter the password:

1 Press the " " or " " button to set the desired number.

2 Press the " " button to move on to the next number (when it gets to the end it will start again from the beginning).

3 Repeat steps 1 and 2 until the set password has been entered.

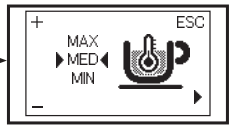
4 Press the " " button to confirm and to access programming mode.

Programming Controls

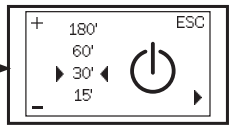
When the machine menus are accessed, the buttons on the keypad take on new functions.

" MEMO " "change" button	This button allows the parameters to be changed when they are displayed.
" " "change" button	This button allows the parameters to be changed when they are displayed.
" " button (Scroll parameters / OK)	This button allows the user to: 1 scroll through the menu pages; 2 confi rm the parameter/value after changing it.
" " "ESC" button	This button allows the user to exit without changing the edited or selected parameter. **Note:** Press it repeatedly to exit programming mode.

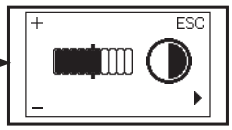
Programming Menu



Coffee temperature
This function adjusts the coffee brewing temperature.

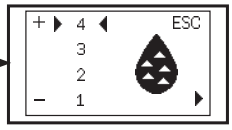


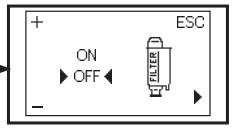
Timer (stand-by)
This function adjusts the time taken for the machine to go into stand-by mode after the last brewing.



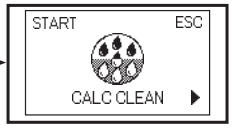
Contrast
This function allows you to adjust the contrast of the display to better view the messages.

Water hardness
This function adjusts the water hardness setting according to the area where you live.
1 = very soft water
2 = soft water
3 = hard water
4 = very hard water
For more details, please see the "Measuring and Adjusting Water Hardness" chapter.

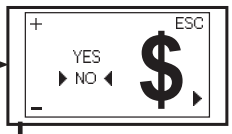




"INTENZA+" Water Filter
This function manages the "INTENZA+" water fi lter.
For more details, see the chapter about fi lter handling.

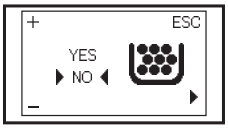


Descaling cycle
This function activates the descaling cycle.

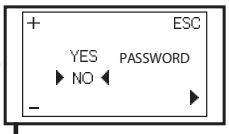


Credit management
This function activates credit management.

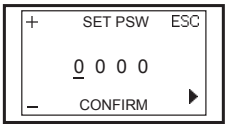
Credit Charging
This function activates credit charging.
Note: This function is visible only if the "Credit management" function is set to "YES".



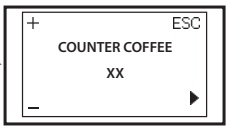
Coffee grounds drawer full alarm
This function enables/disables the alarm which warns the user that the coffee grounds drawer needs to be emptied.
Note: disabling this alarm may cause machine malfunctions, since the coffee grounds may block the Brew Group.



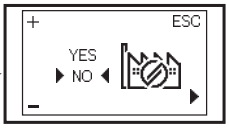
Password
This function activates the password used to access machine programming mode.



Setting the password
This function changes the password used to access machine programming mode.
Note: This function is only displayed if the "Password" function is set to "YES".



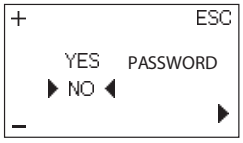
Coffee counters
This function allows you to check how many coffee cups have been brewed; the number is shown above the letters (XX). The number cannot be reset



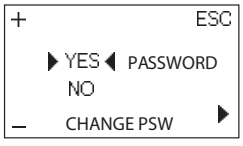
Factory settings
This function resets the factory parameters, where a malfunction occurs.

Setting the PASSWORD

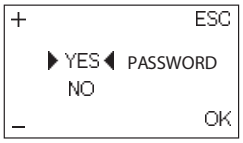
The PASSWORD must be set by the service provider in order to prevent access by unauthorised personnel who could change the machine settings and cause malfunctions.
To set the PASSWORD, proceed as follows:



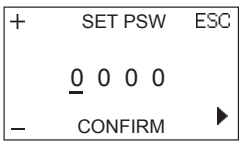
Press the "☰" button until the following menu is displayed



Press the "☰" button to confirm.



Press the "MEMO" button or the "⊘" button to select "YES".



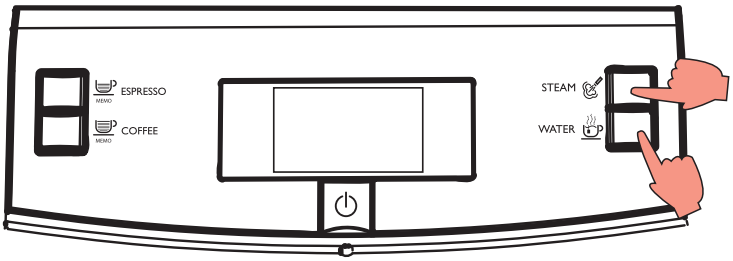
The option "CHANGE PSW" will be displayed, which will allow the password to be set.
Press the "⏻" button to confirm and to set the password.

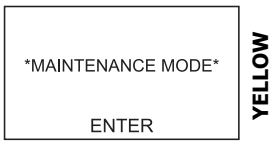
3.4. Service Provider Manual Lirika Basic

All the operations described must be performed exclusively by the service provider or a specialised technician, who shall organise all the operating steps and use only suitable means to ensure strict compliance with the safety regulations in force.
The specialised technician or the service provider can change some of the machine operating parameters to suit the needs of the users.

Accessing Programming Mode

Proceed as follows to access programming mode.
1) With the machine turned on, press and hold the " " button and the " " button at the same time for 5 seconds.



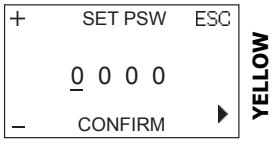


The following screen is displayed:

Press the " " button to access programming mode.

The above mentioned procedure can only be used to access the programming menu when the machine has reached operating temperature. To execute certain programmes (e.g. DESCALING), the machine will manage the procedure automatically and warm up according to the manufacturer's settings.
After 3 minutes of inactivity, the machine will exit programming mode and return to standard operating mode.

The menus should be PASSWORD-protected.
The PASSWORD will not be requested if set on the default value (0000). It should be changed upon 1st use to prevent unauthorised access. After this change ,it should be entered again at each access, every time the display shows:



To enter the password:

1 Press the " MEMO " or " MEMO " button to set the desired number.

2 Press the " " button to move on to the next number (when it gets to the end it will start again from the beginning).

3 Repeat steps 1 and 2 until the set password has been entered.

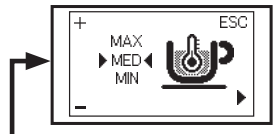
4 Press the " " button to confirm and to access programming mode.

Programming Controls

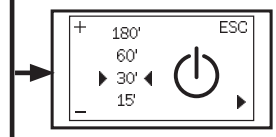
When the machine menus are accessed, the buttons on the keypad take on new functions.

" MEMO " "change" button	This button allows the parameters to be changed when they are displayed.
" MEMO " "change" button	This button allows the parameters to be changed when they are displayed.
" " button (Scroll parameters / OK)	This button allows the user to: 1 scroll through the menu pages; 2 confi rm the parameter/value after changing it.
" " "ESC" button	This button allows the user to exit without changing the edited or selected parameter. **Note:** Press it repeatedly to exit programming mode.

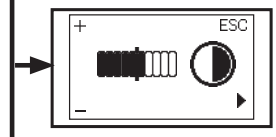
Programming Menu



Coffee temperature
This function adjusts the coff ee brewing temperature.

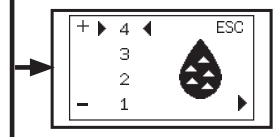


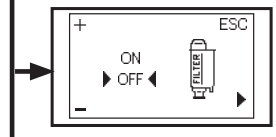
Timer (stand-by)
This function adjusts the time taken for the machine to go into stand-by mode after the last brewing.



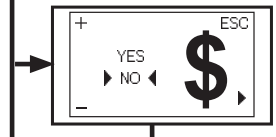
Contrast
This function adjusts the contrast of the display to better view the messages.

Water hardness
This function adjusts the water hardness setting according to the area where you live.
1 = very soft water
2 = soft water
3 = hard water
4 = very hard water
For more details, please see the "Measuring and Adjusting Water Hardness" chapter.

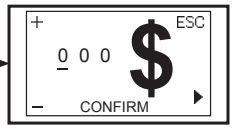




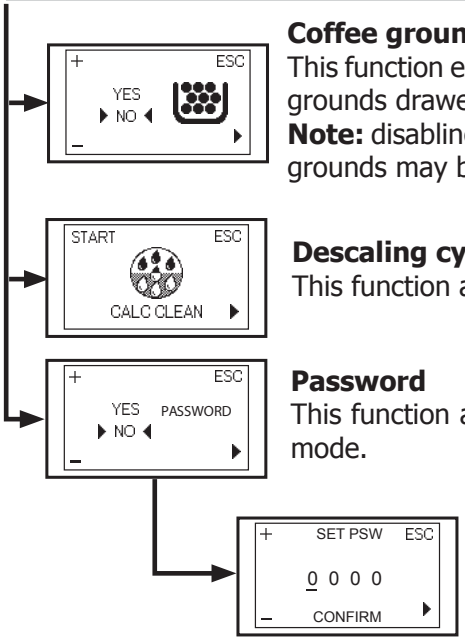
"INTENZA+" Water Filter
This function manages the "INTENZA+" water fi lter.
For more details, see the chapter about fi lter handling.



Credit management
This function activates credit management.



Credit Charging
This function activates credit charging.
Note: This function is visible only if the "Credit management" function is set to "YES".



Coffee grounds drawer full alarm
This function enables/disables the alarm which warns the user that the coffee grounds drawer needs to be emptied.
Note: disabling this alarm may cause machine malfunctions, since the coffee grounds may block the Brew Group.

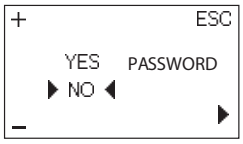
Descaling cycle
This function activates the descaling cycle.

Password
This function activates the password used to access machine programming mode.

Setting the password
This function changes the password used to access machine programming mode.
Note: This function is only displayed if the "Password" function is set to "YES".

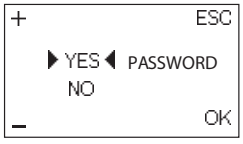
Setting the PASSWORD

The PASSWORD must be set by the service provider in order to prevent access by unauthorised personnel who could change the machine settings and cause malfunctions.
To set the PASSWORD, proceed as follows:



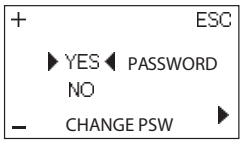
YELLOW

Press the " ☕ " button until the following menu is displayed



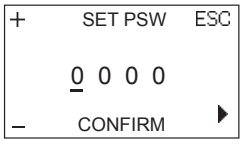
YELLOW

Press the "MEMO" button or the "MEMO" button to select "YES".



YELLOW

Press the " ☕ " button to confirm.



YELLOW

The option "CHANGE PSW" will be displayed, which will allow the password to be set.
Press the " ⏻ " button to confirm and to set the password.

3.5. Operation, cleaning and maintenance

Operating the machine		
1	Fill water tank	
2	Fill the coffee bean hopper	
3	Switch on the appliance	
4	Press the button to start the appliance	
5	Heating	When the heating phase begins, wait for it to finish
6	Rinse	Carry out a rinse cycle for the internal circuits
7	Machine ready	The machine is ready to dispense beverages

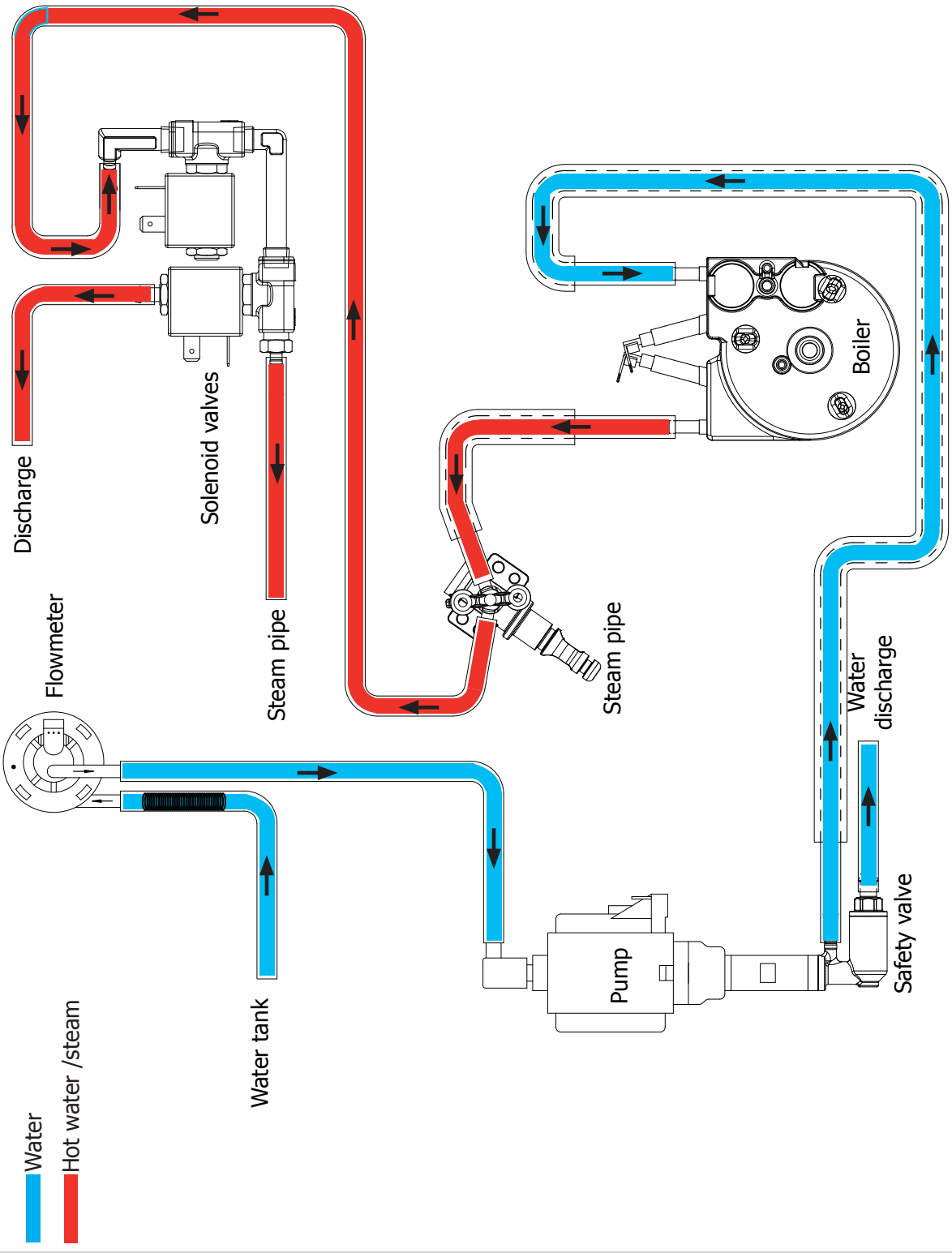
CLEANING AND TECHNICAL SERVICING		
A	Empty the dregs drawer	When indicated
B	Empty the drip tray	As necessary
C	Clean the water tank	Weekly
D	Clean the coffee bean hopper	As necessary
E	Clean the casing	As necessary
F	Clean the brewing unit	Every time the coffee bean hopper is filled or weekly
	Lubricate the brewing unit	After 500 dispensing cycles or when the grease is no longer present on the brewing unit
	Clean the unit housing	Weekly
H	Descaling	When indicated

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

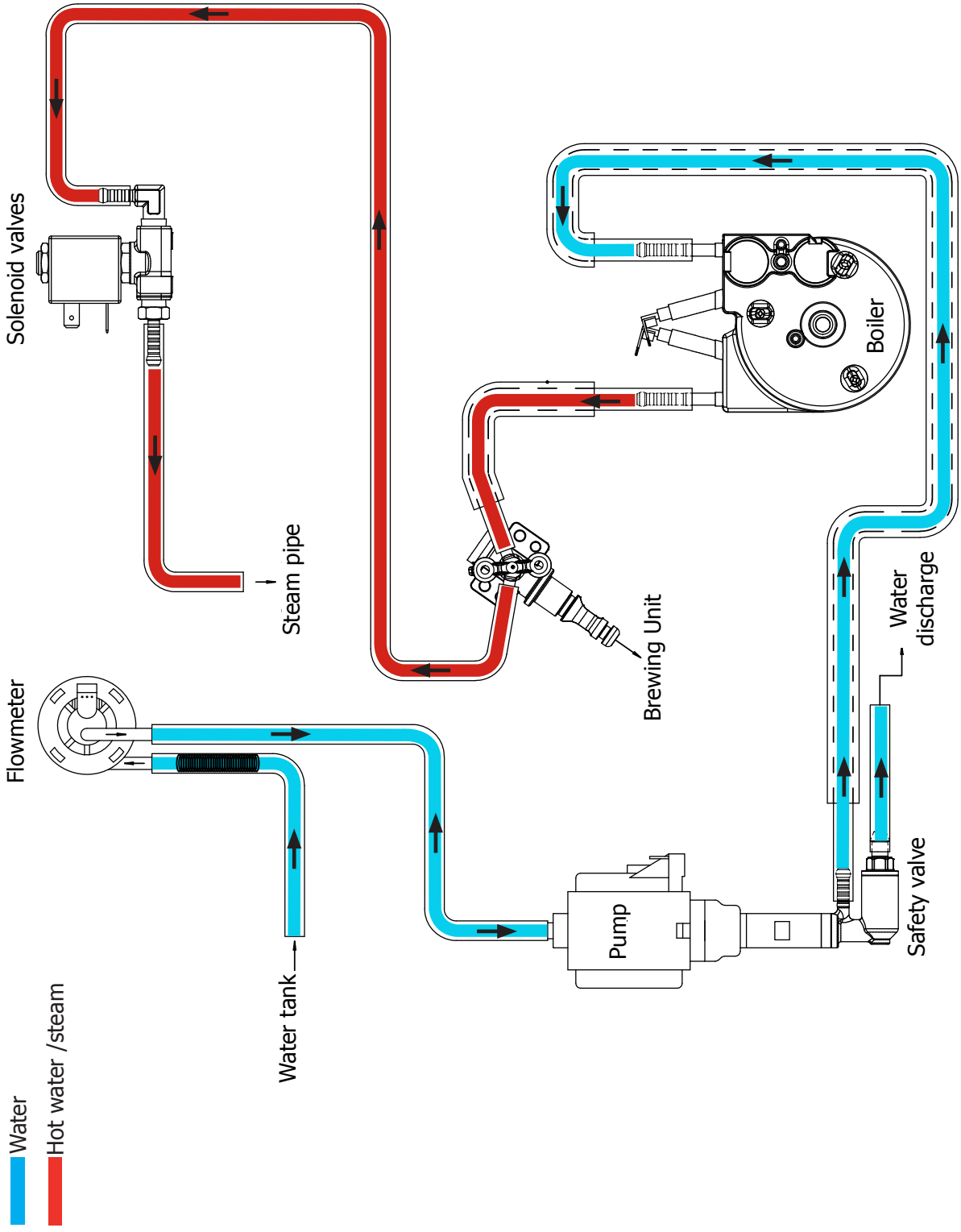
CHAPTER 4

OPERATING LOGIC

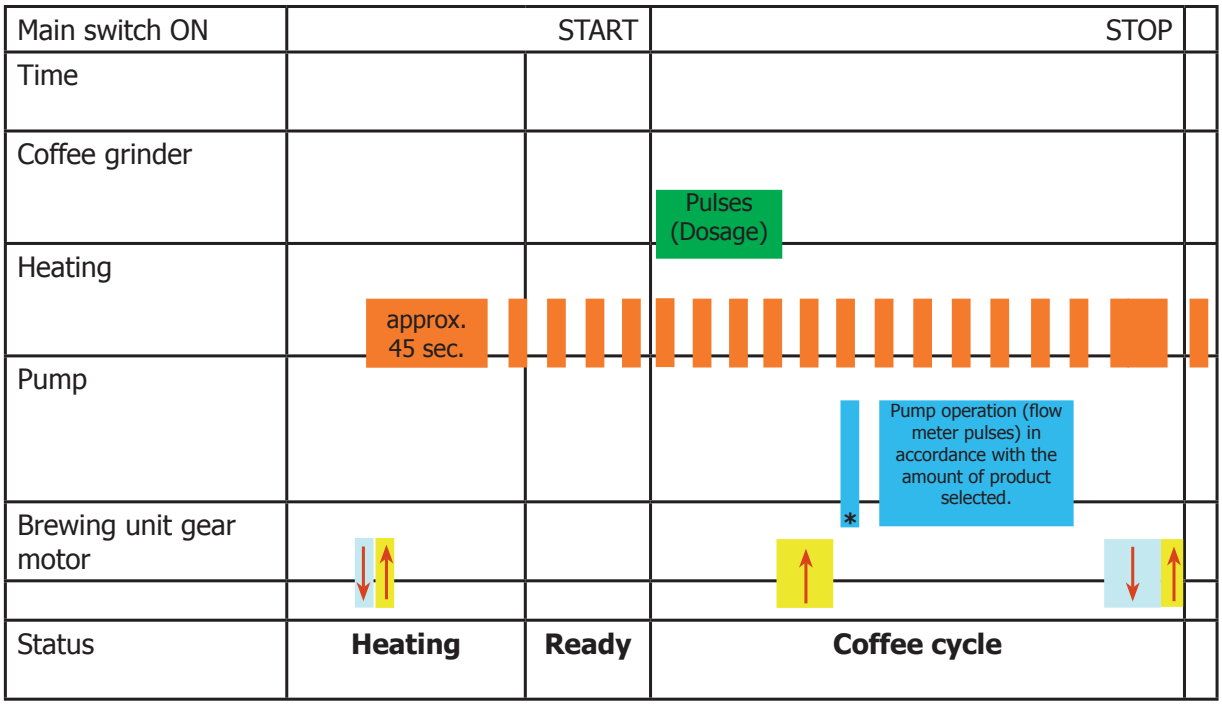
4.1.1. Water circuit Lirika Plus



4.1.2. Water circuit Lirika Basic



4.2. Coffee cycle



Notes: * Only with Pre-brewing

Single microswitch gear motor

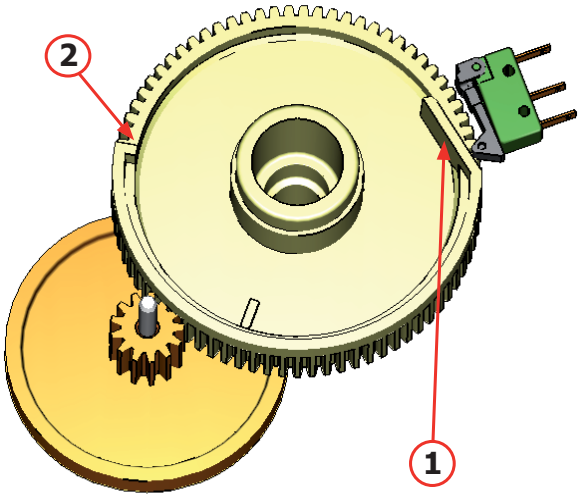
Switching on

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



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

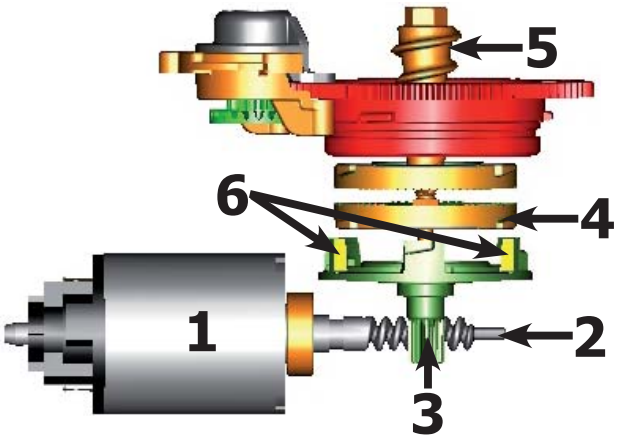
- Dispensing position: 2

4.4. 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

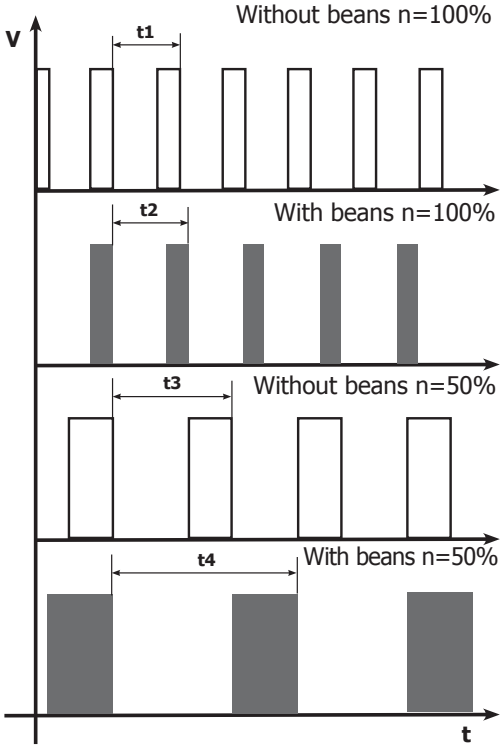
An NTC is used as a temperature sensor; in the event of overheating this reduces boiler element power consumption.
The electronic system detects the current boiler temperature from the drop in voltage of the sensor and adjusts it accordingly.
Heating element values and corresponding temperatures: see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

4.5. 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)
There are two magnets (6) in the gear wheel; at every rotation these induce two pulses to a Hall sensor, which in turn transmits them to the electronic system.

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



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

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

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

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

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

4.7. Dose self-learning (SAS)

The aim of this function is to automatically regulate the average dose of ground coffee (SELF-LEARNING); this takes place with an algorithm based on the following values and setting by the user:

1. Number of coffee grinder pulses during the grinding cycle.
2. Max. average value of the power consumed by the gear motor during the coffee brewing cycle.
3. Aroma selected by the user.

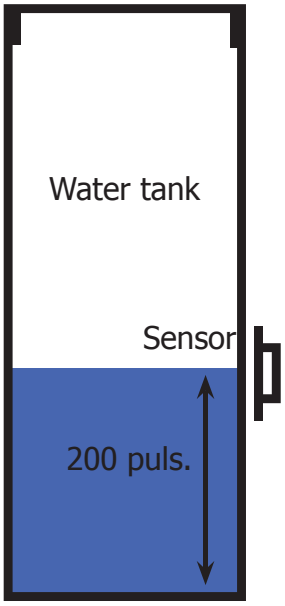
The algorithm compares the maximum average value of the power consumed by the gear motor with the value listed in the table for the selected aroma, in order to calculate the new grinding pulse value for the next coffee produced.
If the power consumption value is less than the minimum current value, the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

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

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

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

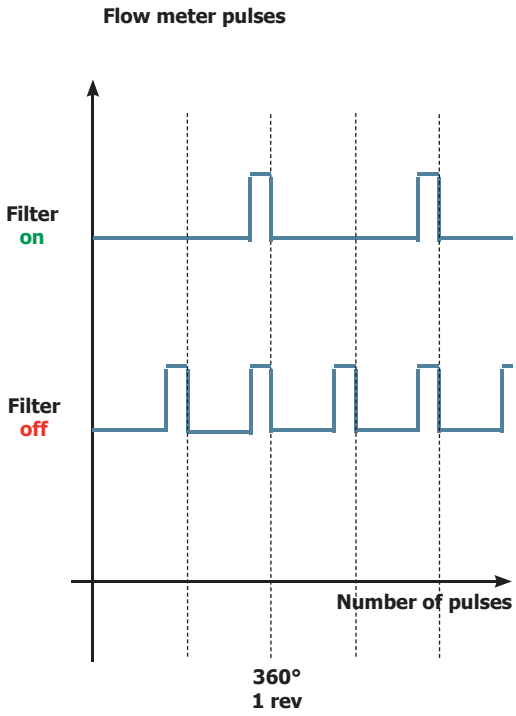
4.8. Water level detection (water tank)



"Water low" message (water reserve)

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

4.9. Descaling request



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

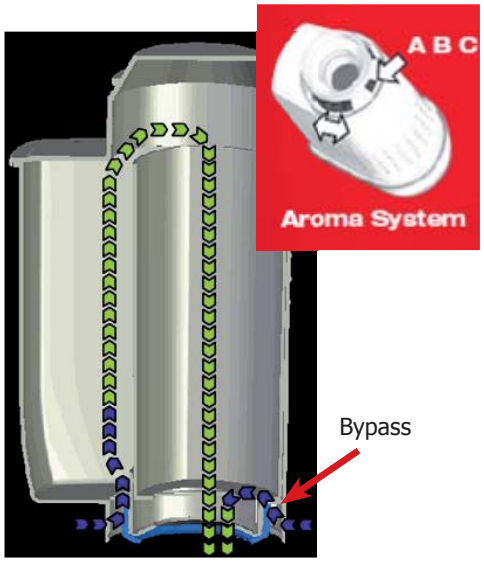
The water hardness is set on the basis of the regional water hardness analysis
(1, 2, 3, 4).

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

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

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

4.10. Water filter



Function:

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

Life span / descaling performance:

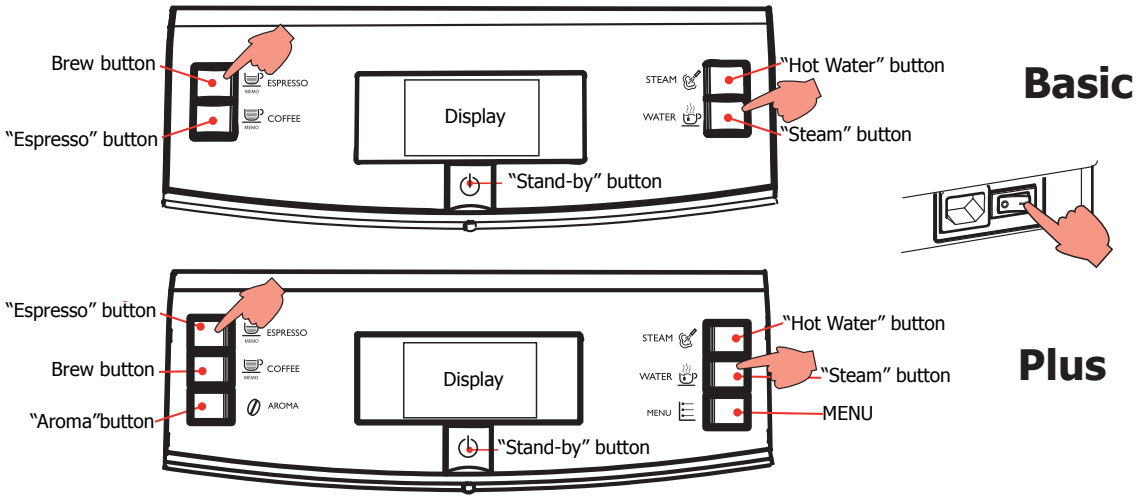
- - 10 ° dH
- 60 litres
- 2 months

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

CHAPTER 5

TROUBLESHOOTING

5.1.1.Test Mode Lirika Basic and Plus



To enter Test Mode

The machine enters Test Mode by holding pressed together Espresso and Water while witching on the machine by mean of the main switch on the backside of the CA. Once entered in Test Mode, the display shows the firmware version.

The Test Mode is organized into **5 different pages :**

Page 0: The display shows:

a) Firmware version.
b) Basic or Plus type.
c) "120" if the machine is a 120V model.
d) Main supply frequency (50 or 60 Hz).

Page 1: Keyboard and display's colour test:

a) Espresso button
b) Coffee button
c) Steam button
d) Water button
e) Menu button (if Plus Version)
f) Aroma button (if Plus Version)
g) Stand-by button
h) Backlight colors

Page 2: Input signals test:

a) Water level sensor
b) Microswitch door closed/opened
c) Microswitch presence of the Brew Unit

Page 3: Low voltage loads test:

a) Brew Unit movement upward and downward (24V DC)

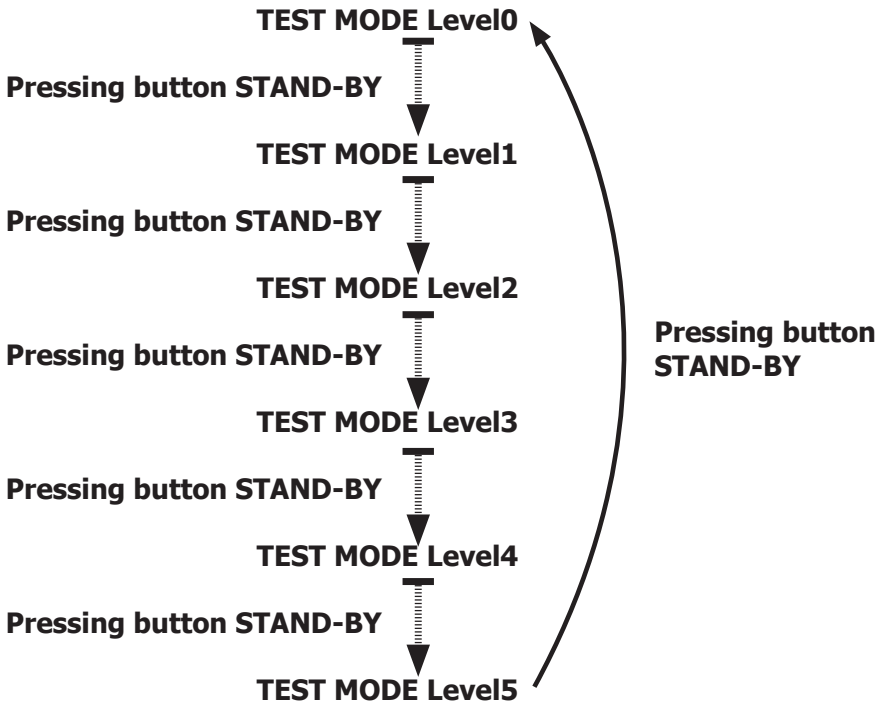
Page 4: High/Low voltage loads test (Pump, E.Valve) :

a) Pump (120-230V AC)
b) Electro Valve (24Vdc) (The door must be closed !!)

Page 5: High voltage loads test (Heater , Grinder):

a) Heater (120-230V AC)
b) Grinder (170-320V DC)

The user can change the page by pressing the STAND-BY button.
Page 0 is accessible only entering Test Mode from power – OFF.
At the start up all loads are turned off.



Firmware Software version

Firmware version on the display.
The machine model is shown (BASIC or PLUS).
The voltage of the main supply "230V/120V"
The frequency of the main supply is shown (50 or 60 Hz)

ERROR: If machine model is different from BASIC or PLUS, change the interface.

Press STAND_BY " ⏻ " to move to the next screen

Operational check – keys

Start condition

Press buttons from 1 to 7

Only when a button is pressed a O appears on the relative position of button pressed.

In the middle of display appears the name of the button pressed.
Pressing buttons on the left the backlight color changes from GREEN to YELLOW.
Pressing button on the right the backlight color changes from GREEN to RED.
When a button is pressed, also the Stand-By led (RED) turn ON.
Note: Press button STANDBY as the last once, since it makes change the test page.
Note: If 2 or more buttons are pressed the name that appears on display could be wrong.

ERROR:
If nothing appears on display; check the interface board and the flat cable (JP21).
If during the movement the backlight remain green check the wiring (JP1) from the interface board and the display.
The name displayed is wrong; check the position of jumper in interface. It must be the same of machine model:
· Jumper on JP5 for Focus machine model
· Jumper on JP6 for Class machine model

Press STAND_BY " ⏻ " to move to the next screen

Operational check microswitches and sensors

Start condition

Insert a full Water Tank
The indication H20 changes from "N" to "Y".
NOTE: the switching from "N" to "Y" requires about 1-2 seconds.

ERROR: The indication TANK-H2O doesn't change; check the capacitive sensor (fixing) and the wiring (JP23)

Insert the BrewUnit
The indications BU-P changes from "N" to "Y".
NOTE: removing the BrewUnit the indication from "Y" to "N" requires about 2-3 seconds to switch.

ERROR: Check the BU presence Microswitch and the wiring (JP16).

Close the Door and Dreg Drawer
The indication DOOR change from "N" to "Y"

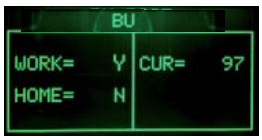
ERROR: The indication DOOR does not change; check the Microswitch for the door and the wiring (JP14). NOTE: without the Dreg Drawer correctly inserted the DOOR indication cannot change !

Press STAND_BY " ⏻ " to move to the next screen

Operational check – brewing unit

Start condition

Press the ESPRESSO button to move the BU to Work
IMPORTANT NOTE: If the DREGDRAWER is not inserted or the DOOR is not closed the BU test cannot be performed. If these 2 inputs are not in the right position, a warning message will be shown and the display turns to yellow..

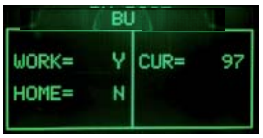


When the BU reaches the work position the indication **WORK** changes from "N" to "Y", the number of the current is minus than 200mA (without BU) or 300mA (with BU).

ERROR: The indication **WORK** doesn't change and remain "N", the display backlight changes from green to red; Check the work microswitch (broken?), the BU motor (blocked?) and the wiring (JP16)

ERROR: **(Without BU)** The absorbed current is more than 200mA, the display backlight changes from green to red; check the BU and the motor.

ERROR: **(With BU)** The absorbed current is more than 300mA, the display backlight changes from green to red; check the BU and the motor



Press the COFFEE 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 minus than 200mA (without BU) or 300mA (with BU).

ERROR: The indication **HOME** doesn't change and remain "N", the display backlight changes from green to red; Check the work microswitch (is broken), the BU motor (is blocked) and the wiring (JP16).

ERROR: **(Without BU)** The absorbed current is higher than 200mA, the display backlight changes from green to red; check the BU and the motor.

ERROR: **(With BU)** The absorbed current is higher than 300mA, the display backlight changes from green to red; check the BU and the motor

Press STAND_BY " ⏻ " to move to the next screen

Operational check - solenoid valves and pump

Start condition

Press the ESPRESSO button to open the Electro Valve
IMPORTANT NOTE: If the DREGDRAWER is not inserted or the DOOR is not closed the EV test cannot be performed. If these 2 inputs are not in the right position, a warning message will be shown and the display turns to yellow.

It is possible to hear the "click" from Electro Valve. The indication beside the **EV1** changes from "OFF" to "ON".

Press the COFFEE button to open the Electro Valve 2 (only in Lirika Plus)
It is possible to hear the "click" from Electro Valve. The indication beside the EV2 changes from "OFF" to "ON".

Press the STEAM button to switch on the pump
The water goes out from the pipe and the indication **IMP** shows increasing numbers. The indication L/H must be within the range 10-18.

ERROR: The display backlight changes from green 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 (JP24).

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 STAND_BY " ⏻ " to move to the next screen

Operational check - coffee grinder and boiler

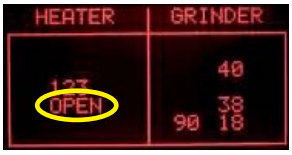
Initial status

Press the STEAM button to switch on the grinder
The grinder rotates and in the indication GRINDER the number increasing up to 40. The other numbers inside the GRINDER box are not important for this test.

ERROR: The number remains 0 or the grinder does not run, the display backlight changes from green to red; check the Hall sensor board of the Grinder, the Grinder, the wiring from the Hall sensor board to the CPU/POWER board (JP2) and the wiring from the Grinder to the CPU/POWER board (JP8)

Check the temperature
The number shows the heater temperature .

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



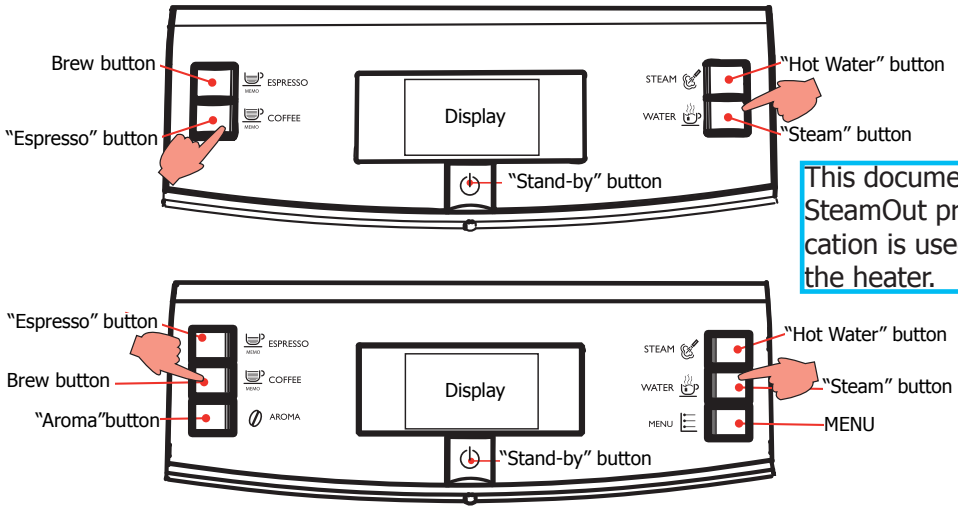
ERROR: In the indication HEATER appears "OPEN", the NTC temperature-sensor is detached or broken, the display backlight changes from green to red; check the wiring from the NTC temperature-sensor to the CPU/POWER board (JP13).

Press the ESPRESSO 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 135°C, the backlight change from GREEN to YELLOW. This is a ALERT message to avoid heating the HEATER element over dangerous temperature.

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

5.1.2. SteamOut



This document describes the SteamOut procedure. This application is used in order to empty the heater.

To enter in SteamOut

The machine enters SteamOut mode by holding pressed together the COFFEE button and the WATER button while switching on the machine.

Once entered the Steam Out mode the display shows the "STEAM OUT" indication. Buttons can be released

IMPORTANT NOTE: to execute the Steam-Out procedure the DREGDRAWER must be in place and the DOOR must be closed. If these 2 conditions are not respected a warning message is shown on the display and the Steam-Out is interrupted.

The machine starts the Steam Out and the display change the backlight (yellow) and appears the indication "ON". While the Steam Out runs the Electrovalve 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 Electrovalve automatically closes and the machine can be switched off.

When the Steam-Out is complete the following parameters are reset to their default values:
Count Coffee
Aroma
Length Espresso product
Length Coffee product
Filter Presence
Filter Pulses
Aroma Impulses
Dynamic threshold
History of grindings for Beans Presence detection
StandBy Time
The request for Priming the Circuit at the first switch on is set.

5.2. Error codes

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

CHAPTER 6

STANDARD CHECKS

6.1. Repair schedule

	Action
1	Visual inspection (transport damage)
2	Machine data check (rating plate)
3	Operational check / problem analysis
4	Opening machine
5	Visual inspection
6	Operational tests
7	Repairing the faults encountered
8	Checking any modifications (view Symptom Cure, new software, etc.)
9	Service activities in accordance with the operating schedule
10	Internal cleaning
11	Operational test while the appliance is open
12	Assembly
13	Final inspection test
14	Draining the circuit (in winter)
15	External cleaning
16	Lubricating the brewing unit with suitable grease
17	Insulation test HG 701 (dielectric)
18	Documentation

6.2. Service schedule

S	Replacement
ES	Visual inspection
D	Descaling

P	Cleaning
TR	Noise test
R	Adjustment

Component	Action	Support/tool
Water filter	**P/S**	
Water tank lip seal	**S**	
Boiler pin O-ring	**S**	
Brewing unit	**ES/P**	Grease solvent / Grease
Hoses, attachments and Oetiker clamps	**ES**	
Pump	**ES/TR**	
Gear motor	**ES/TR**	
Coffee grinder	**P/R**	Vacuum cleaner / brush
Water circuit	**D**	Saeco descaler
Hot water/steam valve	**ES/S**	

6.3. Final test

Test	Procedure	Support/ tool	Standard	Tolerance
Espresso	2-3 Espressos for adjustment purposes	Measuring scoop	Same amount	15%
Coffee	2-3 Coffees for adjustment purposes	Measuring scoop	Same amount	15%
Noise			Standard	
Amount of cream	Blow into the cup until the cream separates		The cream should come together again to form a complete layer	
Cream colour			Hazel brown	
Temperature	Reading taken while dispensing	Thermometer	84 °C	± 4 °C
Grinding level	Check the grain size of the ground coffee			
Hot water	Dispense water			
Steam	Dispense steam			
Dreg drawer missing indication	Remove the dreg drawer		Dreg drawer missing indication	
Low bean level indication	Start brewing a coffee while the coffee bean hopper is empty		Low bean level indication	

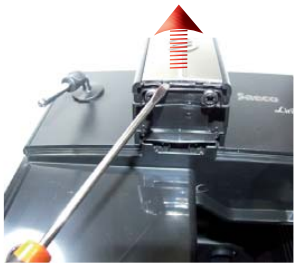
CHAPTER 7

DISASSEMBLY

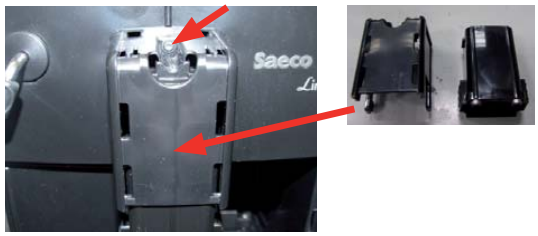
7.1. Outer Shell

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

Coffee dispenser

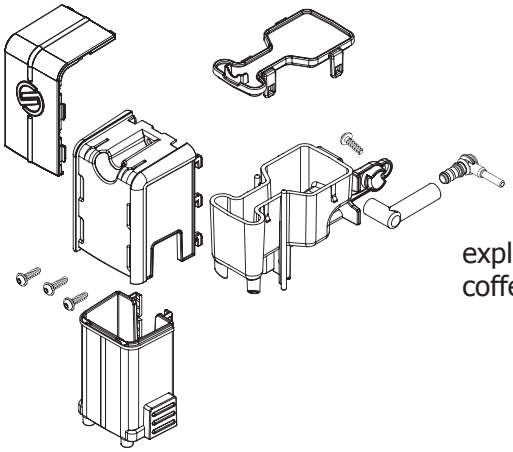


Remove the dispenser cover



Unscrew the screws shown and remove the dispenser

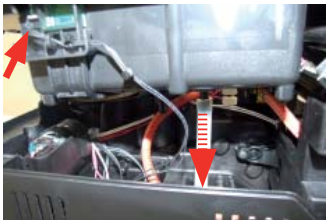
Unscrew the screws and proceed as illustrated in the following pages.



exploded view of the coffee dispenser

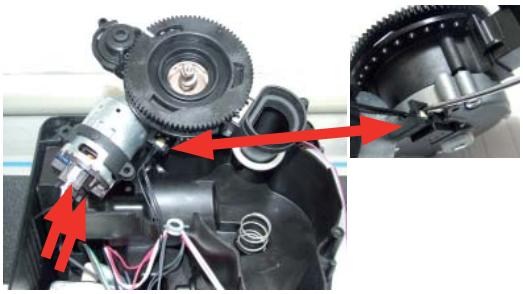
Top cover

Remove the steam pipe cover as picture and unscrew the screw shown.



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

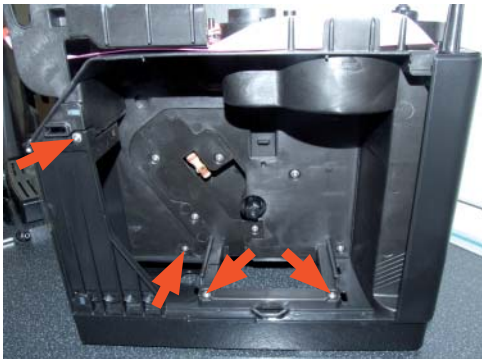
7.2. Coffee grinder

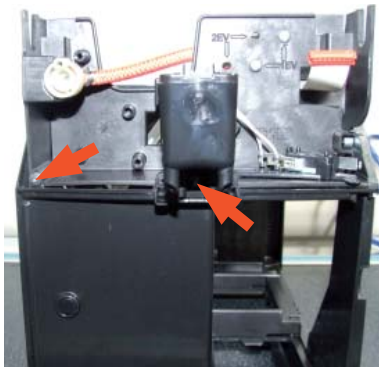


Raise the coffee grinder and remove the connections.

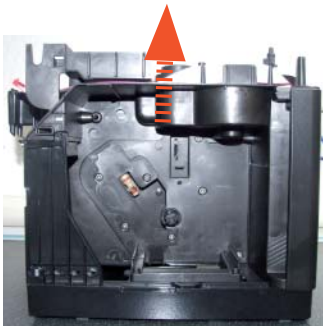
When reassembling the coffee grinder, make sure the spring is repositioned correctly (see photo).

7.3. Central plate



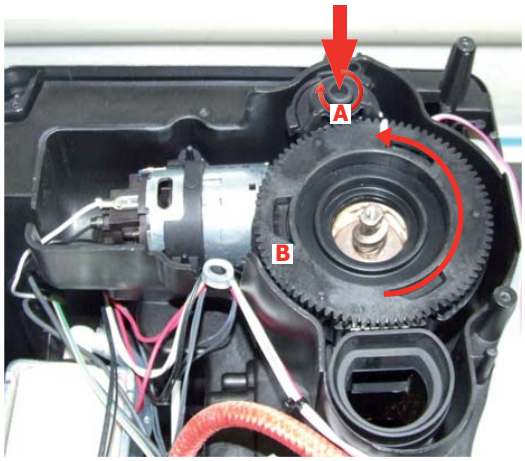


unscrew the screws shown

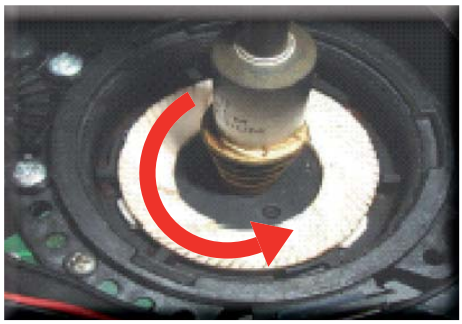


Lift up the center plate

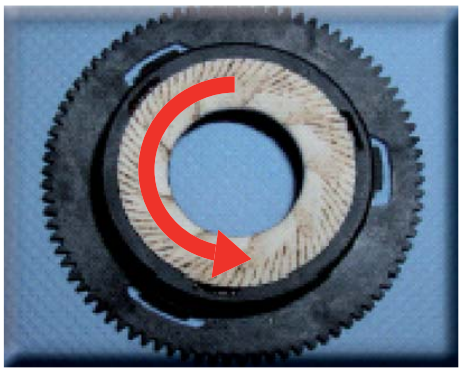
7.4. Grinder blades



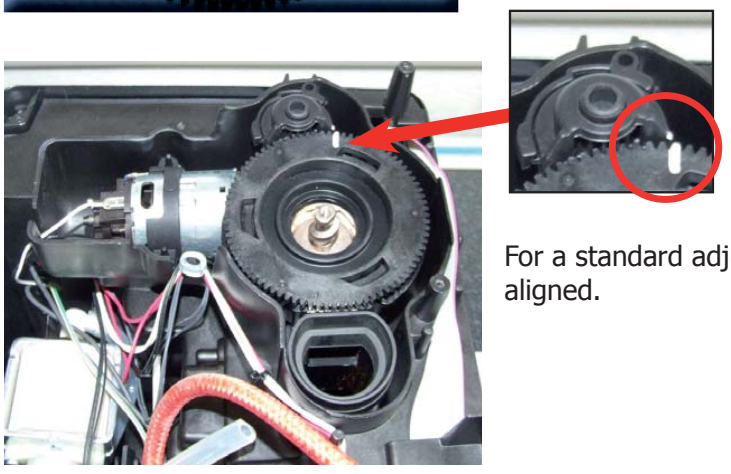
To extract the top support of the appliance, press on the grinding adjustment spindle (A) and turn the support anticlockwise until it unhooks.



Turn the grinder blades anticlockwise out of the support.

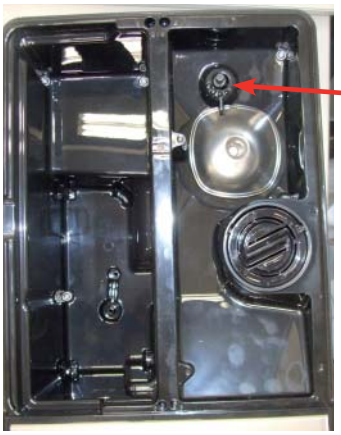


Turn the grinder blades clockwise out of the support. The bayonet connections can be accessed from the rear.



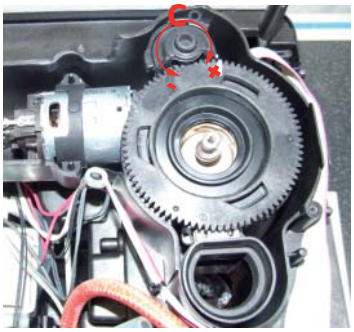
For a standard adjustment, both markings must be aligned.

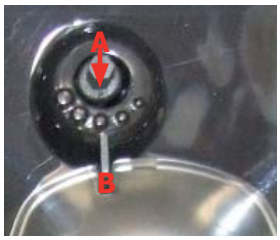
7.5. Coffee grinder adjustment



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



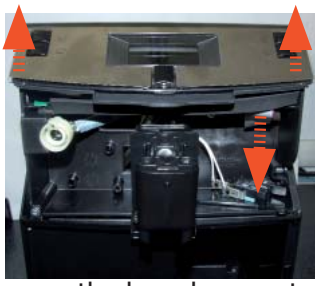


To adjust grinding further, the engineer can work directly on the coffee grinder by pressing and turning the ring nut (C) shown. (clockwise + to increase the particle size of the coffee and anticlockwise - to decrease it).

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.

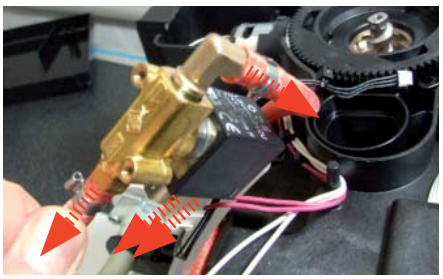
Lastly, move the arrow (A) on the adjustment knob to the center of the adjustment dots on the cover (B).

7.6. Two-way solenoid valve



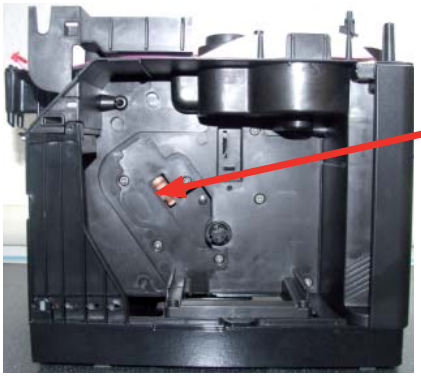
Remove the board support assembly and disconnect the electric connection

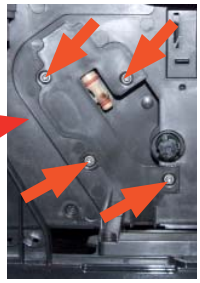
Loosen the screws holding the solenoid valve to the upper plate

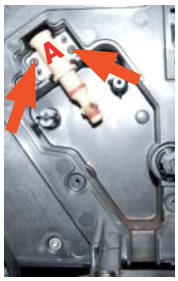


Disconnect all electrical and water circuit connections

7.7. Pin boiler

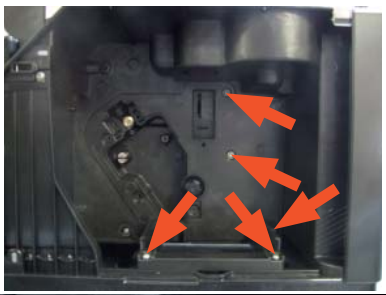




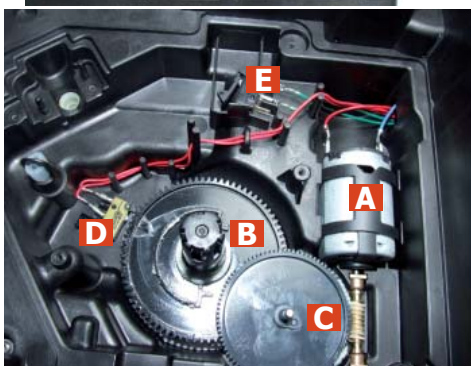


Loosen the screws as illustrated and remove the boiler pin (A).

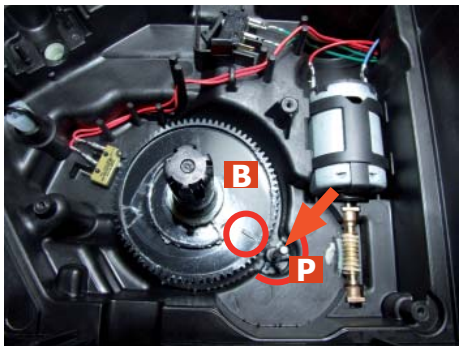
7.8. Gear motor



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



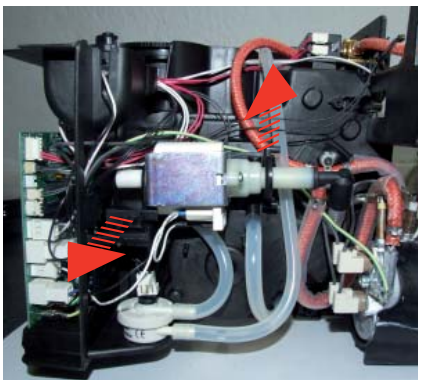
The following are located inside the compartment protected by the casing:
- Electric motor (A) with gears (B) and (C) for transmission and timing of the dispenser.
- Brewing unit present microswitch (E).
- Microswitch (D) detecting brewing unit home and work positions.
- Remove the gear (C) that meshes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



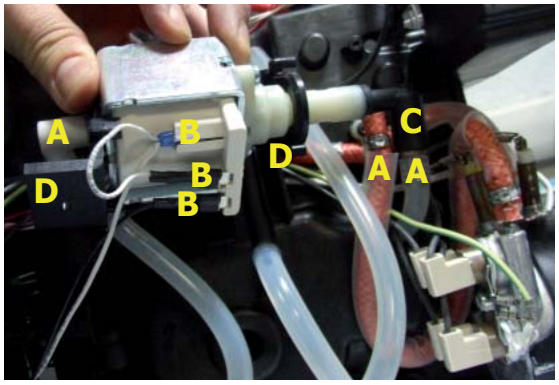
Replace the gear (B), making sure that the imprint of the arrow is aligned with the opening containing the pin (P).

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

7.9. Pump

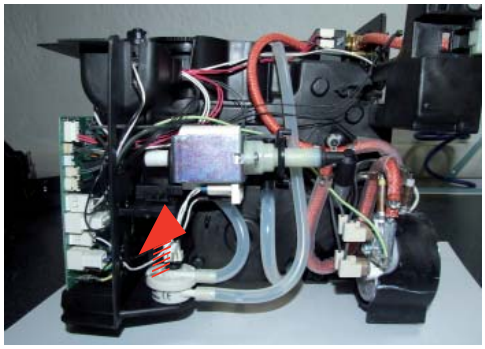


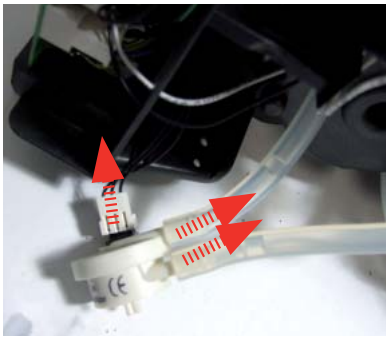
Unhook the pump from the supports.



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

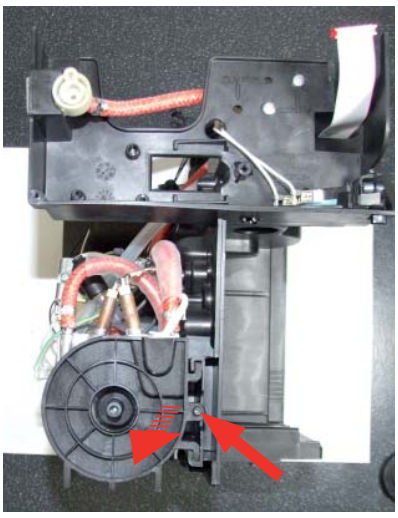
7.10. Flow-meter



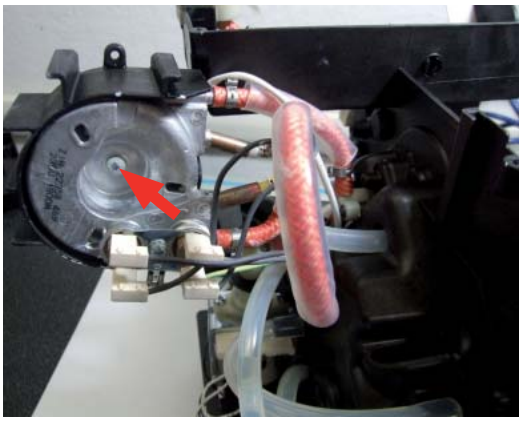


Lift the flow meter out of the casing assembly and remove the electrical and water circuit connections.

7.11. Boiler

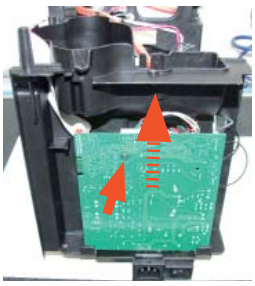


Unscrew the screw shown at unthread the support boiler



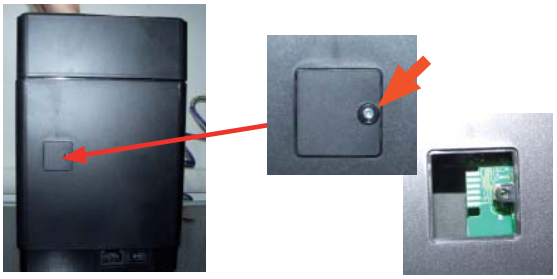
Unscrew the screw shown and remove the electrical and water circuit connections.

7.12. CPU board



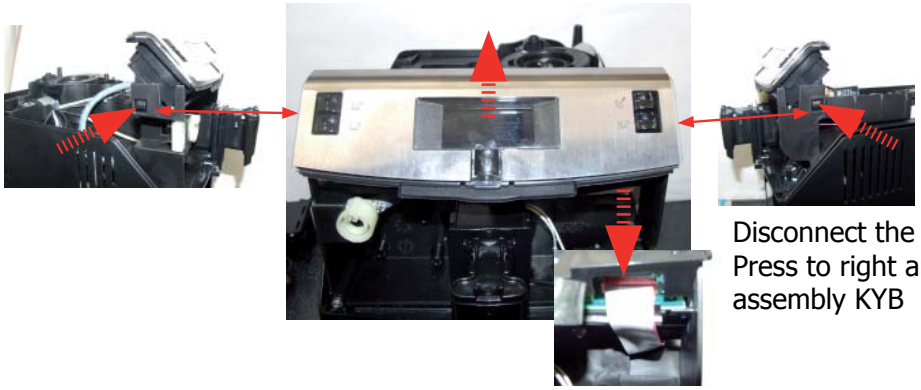
Loosen the screws slide the card off the support and disconnect the electrical connections.

7.13. Programming access for SSC (Saeco Service Center)



Loosen the screw for remove the cover.

7.14. KYB interface and display

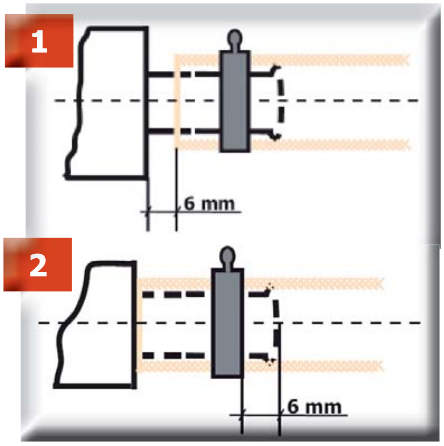


Disconnect the electrical connections. Press to right and left and lift the assembly KYB

Loosen the screws for remove the cover.

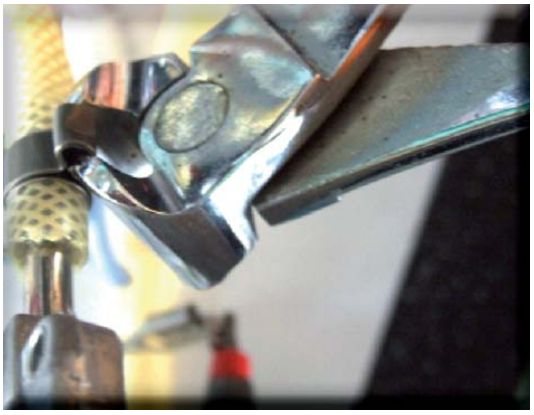
Disconnect the electrical connections.

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.

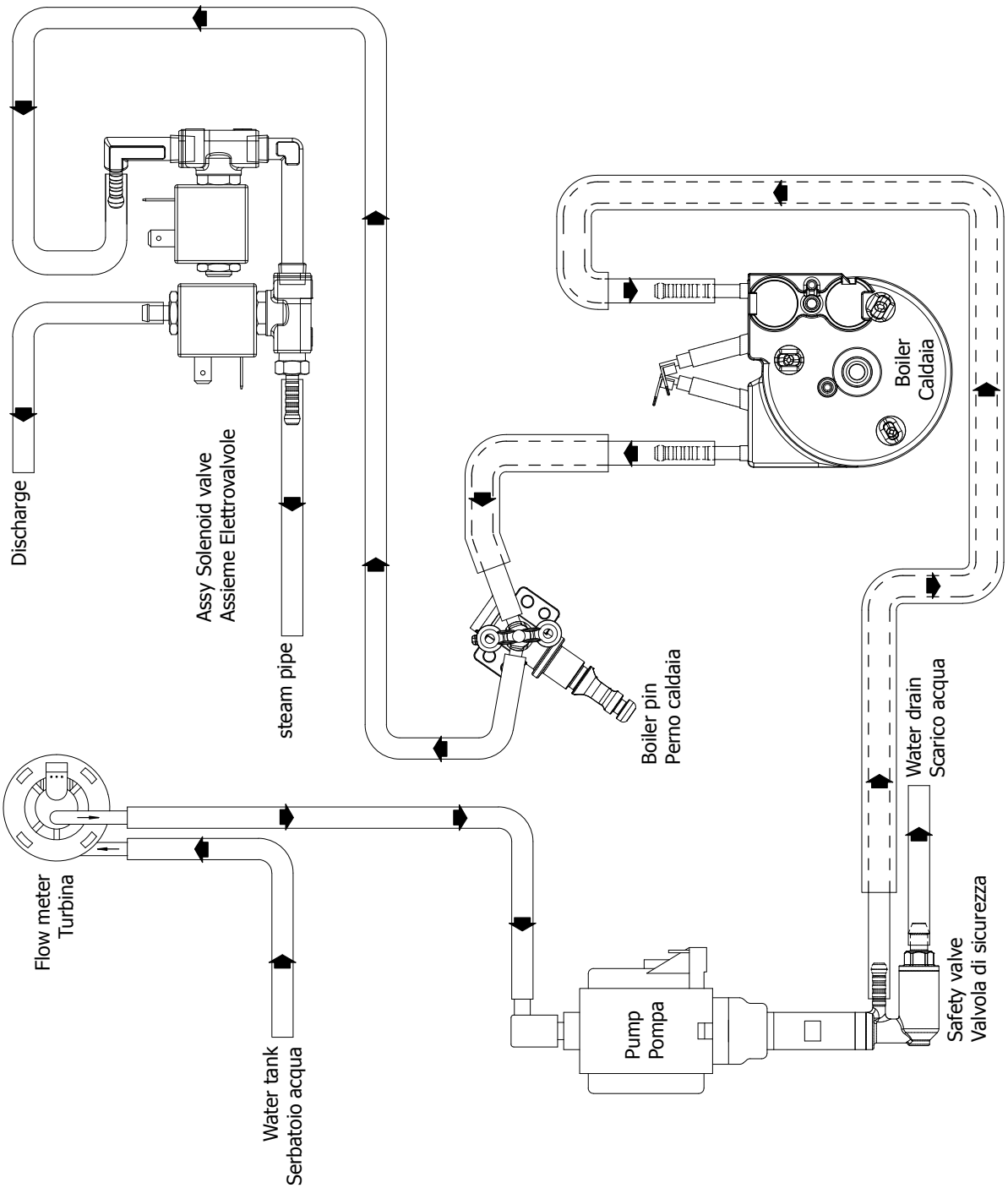
CHAPTER 8

NOTES

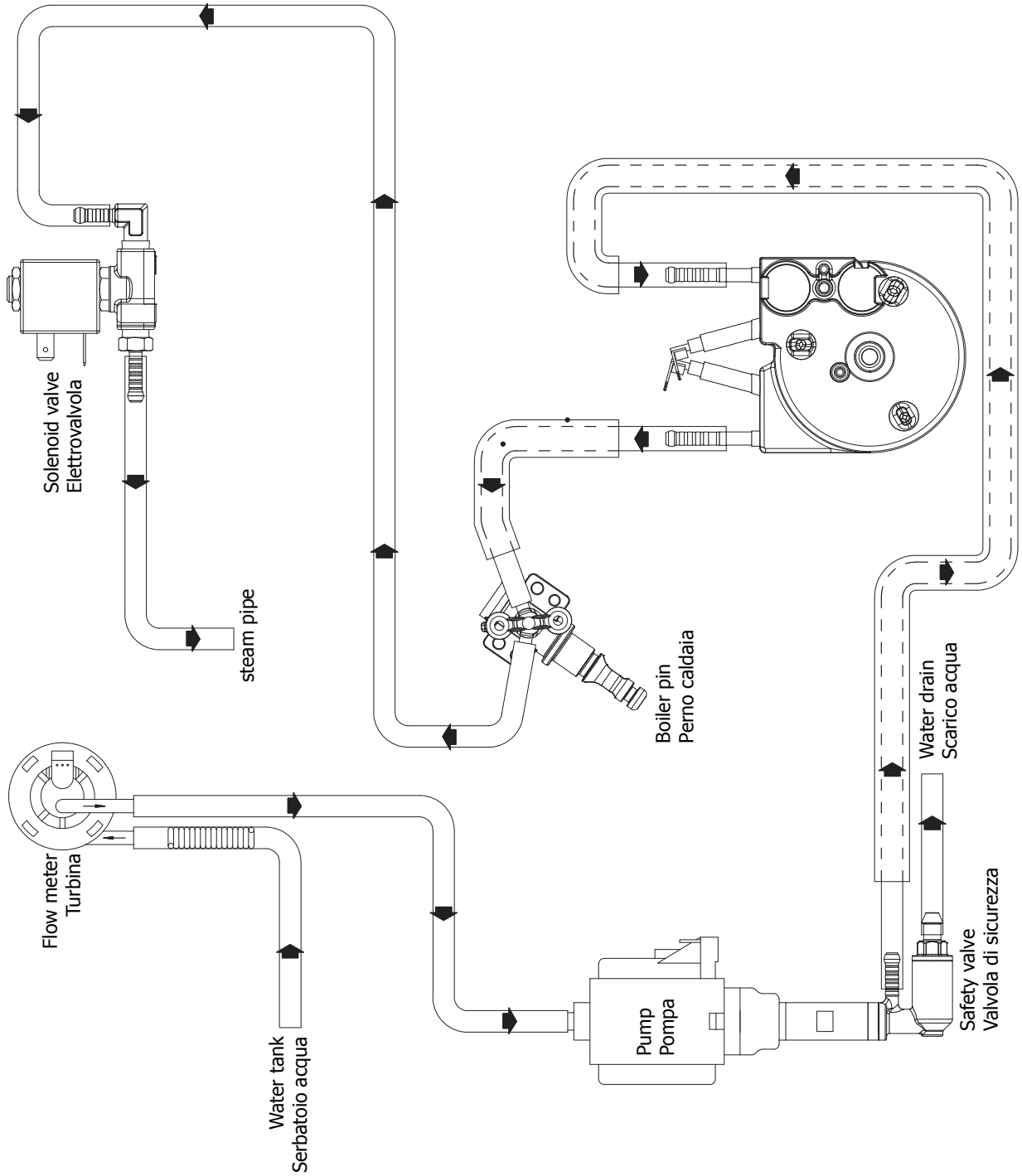
CHAPTER 9

WATER CIRCUIT DIAGRAM

Lirika Plus


Discharge
Assy Solenoid valve
Assieme Elettrovalvole
steam pipe
Boiler
Caldaia
Boiler pin
Perno caldaia
Water drain
Scarico acqua
Flow meter
Turbina
Pump
Pompa
Safety valve
Valvola di sicurezza
Water tank
Serbatoio acqua

Lirika Basic



CHAPTER 10

ELECTRICAL DIAGRAM

Lirika Plus and Basic