Coffee Machine

Service
Service
Service

Exprelia Series

Service Manual

Rev.02 December 2012

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PHILIPS

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CHAPTER 1

INTRODUCTION

1.1 Documentation required

The following documentation is needed for repair procedures:

- Service manual 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	Torx T 8 - T 10 - T 20
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 this Service 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 repairs on the machine.
Simply turning off the main switch is not sufficiently safe to prevent electrical discharges.

This household appliance is rated as insulation class I.
On completion of the repairs, insulation and dielectric rigidity tests must be performed.

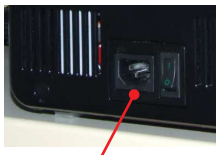
1.5 Service POLICY grid as used for coffee machine

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.

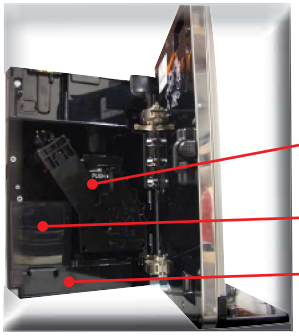
List of principal assembly present in all our coffee machines

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



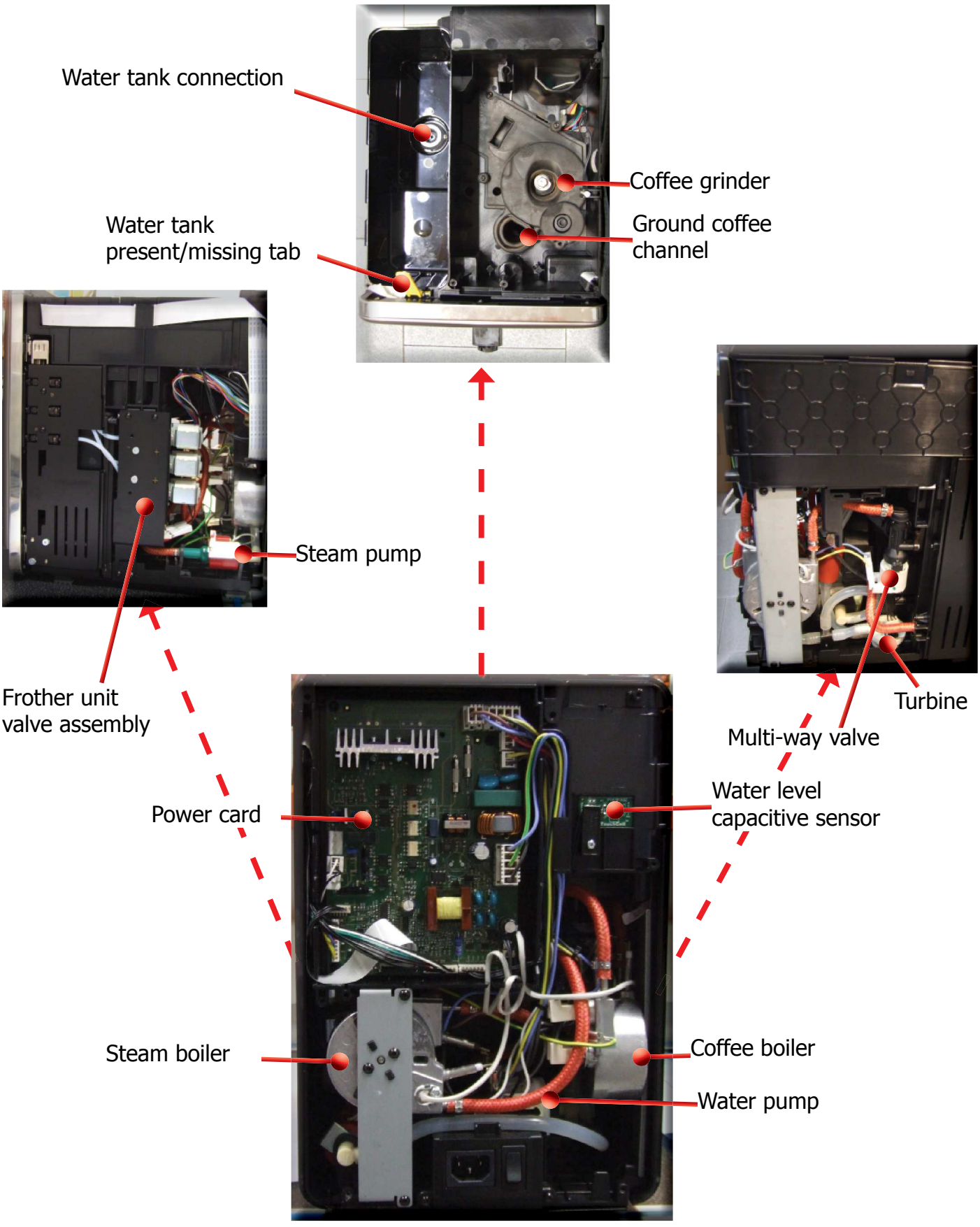
Power cable connector and main switch



Energica

WATER DISPENSING (remuvable)

1.6.2 Internal machine parts



CHAPTER 2

TECHNICAL SPECIFICATIONS

2.1. Technical specifications

Power supply and output:	240 V~ 50 Hz 1400 W - 230 V~ 50/60 Hz 1400 W - 120 V~ 60 Hz 1500 W - 100 V~ 50/60 Hz 1300 W
Temperature monitoring:	Variable resistance sensors (NTC) transmits the value to the electronic card
Safety system:	2 manual reset or one-shot thermostats (175°C)
Coffee heat exchanger output: Stainless steel	(230/120 V~) 1300 W – (100 V~) 1100W for coffee, hot water and steam dispensing
Steam heat exchanger output: Stainless steel	As above
Gearmotor:	2 rotation directions; power supply 24VC
Coffee pump	Ulka Type EP5/S GW approx. 13-15 bar with reciprocating piston and thermal switch 120°C 48 W, 230V, 50 Hz, 120V, 60Hz 100V, 50/60 Hz
Steam pump	Ulka MF with reciprocating piston 230V, 50 Hz, 120V, 60Hz 100V, 50/60 Hz
Overpressure valve: (multi-way valve)	Opening at approx. 17-23 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
Consumption in Standby	< 1 W
Dimensions: W x H x D in mm:	245x360x420
Weight:	14 kg
Water tank capacity:	1.5 l.
Coffee bean hopper capacity	300 g. of coffee beans
Dreg drawer capacity	11
Heat exchanger capacity:	Approx. 10 cc
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. 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

2.3. Machine parameters and performance

AMOUNT OF PRODUCT	Minimum amount (Puls.)	Default amount (Puls.)	Maximum amount (Puls.)	User programmable	Programm. by Production / Service
Espresso	50	130 - 170 *	600	Yes	No
Long coffee	70	200 - 230 *	600	Yes	No
Pre-ground	Yes				
Hot water	Continues for 400 pulses				
Steam for frother	Continues until the water supply has been exhausted (capacitive sensor)				

*** Depends on the language selected by the user**

RINSE	Initial rinse	Final rinse
When performed	When the machine is switched on and the boiler temperature is ≤ 50°C	When the machine is switched off electronically, manually or automatically after 60', if at least one coffee has been dispensed, before switching off
No. of pulses	130	100
Stopping option	Yes, by pressing any key	Yes, by pressing any key
User disable option	Yes	No
Disabling by Production/ Service department	No	No
No. of pulses user adjustment option	No	No
No. of pulses adjustable by Production/Service department	No	No
Pulse range (Min. – Max.)	No	No

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			

DREG DRAWER	Description and values
Time-out for dreg drawer	5 sec.
Warning to empty dreg drawer after	Yes, after 12 lots of dregs
Shutdown alarm to empty dreg drawer after (double coffee as last product dispensed)	15 lots of dregs (16 lots of dregs)
Reset dreg counter	The dreg drawer must be emptied only when prompted by the machine ensuring the machine is switched on and removing the drawer for more than 5 seconds.

STANDBY	Description and values
Inlet time (min. – max.)	15 minutes - 180 minutes
Inlet time (default)	60 minutes
Inlet time programmed by user	Yes
Inlet time programmed by Production/ Service	Yes
Boiler temperature during Standby	Boiler OFF
Cup heater during Standby	Cup heater OFF
Timer and Standby	Yes **

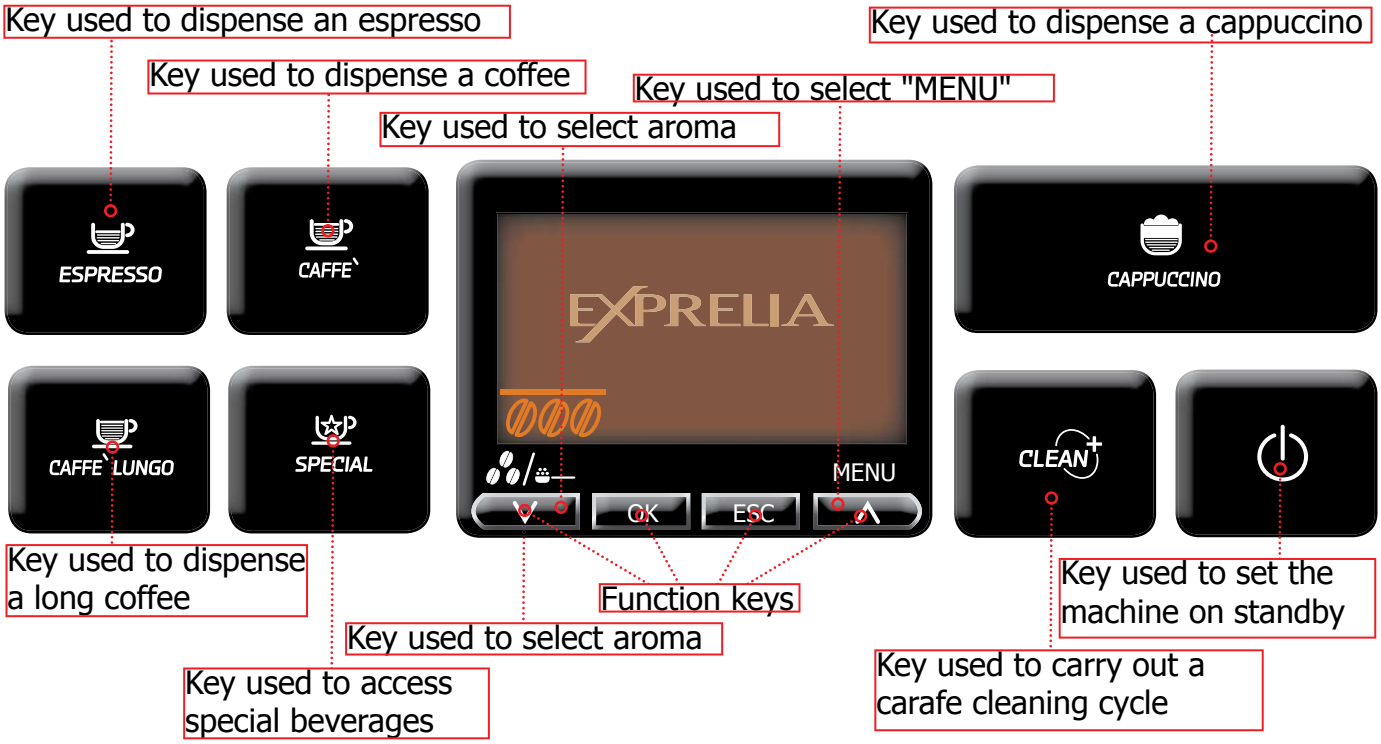
**** The machine switches on at the TimerOn (Timer) value and switches off when the "Standby time" (Delay – Time) has elapsed**

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	No
Water mains	No

CHAPTER 3

USER INSTRUCTIONS

3.1.1. Customer and programming menu



BEVERAGE MENU The machine allows custom settings for dispensing each beverage

Press the "MENU" button to go to the machine's main menu

Press the "OK" button to go to the BEVERAGE MENU

1. Scroll/select key
2. Select/confirm key
3. Exit key
4. Scroll/select key

- **Quantity of Coffee:** this section enables programming the quantity of coffee to be ground for making the beverage; this setting will affect the aroma of the coffee. GROUND - LIGHT - MEDIUM - STRONG
- **Pre-brewing:** the coffee is slightly moistened before brewing to enhance the aroma of the coffee. OFF - LOW - HIGH
- **Coffee temperature:** LOW - NORMAL - HIGH
- **Coffee size:** Used to program the quantity of coffee to dispense.
- **Amount of milk:** (only for cappuccino, latte macchiato and hot milk) Used to program the quantity of milk to dispense.
- **Amount of water:** (only for HOT WATER) Used to program the quantity of water to dispense.
- **Default:** The standard values set as default by the manufacturer are reprogrammed.
- **SPECIAL BEVERAGES:** This function includes LATTE MACCHIATO, HOT MILK and HOT WATER

MACHINE MENU Used to customize the machine's operational settings

Press the "OK" button to go to the MACHINE MENU

Press the "OK" button to go to the submenus

GENERAL MENU

- GENERAL MENU — To change the appliance operating settings
  - SOUND — This function permits activating/deactivating audible warnings
    - OFF — To enable buzzers
    - ON — To disable buzzers
  - ECOMODE — This function governs activation of the boilers in the appliance for energy saving
    - OFF — When the appliance is switched on all the boilers (coffee/steam) are activated.
    - ON — When the appliance is switched on, only the coffee boiler is activated. The appliance consumes less power but takes longer to dispense milk beverages because the steam boiler is needed
  - GENERAL STANDBY — This function is used to set the time since the last beverage dispensing when the machine will go onto standby. The default time setting is 60min
    - 15 MINUTES
    - 30 MINUTES
    - 60 MINUTES
    - 180 MINUTES

    After the set time the machine will go onto standby.
    To reactivate the machine, press any button.
    After running function diagnosis and the heating phase, the machine is again ready for use

DISPLAY MENU

- DISPLAY MENU — This function is used to set the menu language and the display brightness
  - LANGUAGE — This setting is vital for correctly setting the parameters of the appliance for the user's country
    - ENGLISH — The currently selected language is shown
  - BRIGHTNESS — To set the correct brightness

WATER MENU

- WATER MENU — This menu is used to set the parameters for correct water management
  - HARDNESS — To change the setting of the hardness of the water in the appliance, adjusting it to the one used, so it will request descaling at the right time
  - ACTIV. FILTER — To activate/deactivate the water filter replacement warning. When this function is active the appliance warns the user when the water filter needs to be changed.
    OFF: Warning disabled **ON: Warning enabled**
    (this value is set automatically when the filter is activated)
  - ENABL. FILTER — To activate the filter after it has been installed or replaced.

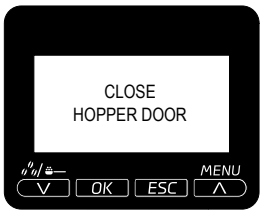
MAINTENANCE

- MAINTENANCE — This function lets you set all the functions so that machine maintenance is managed better
  - METERS FOR — This function is used to view how many products have been prepared for each single type of beverage since the last reset
  - UNIT CLEANING — This function is used to run the washing cycle for the brewing unit
  - CARAFE CLEANING — This function lets you run the washing cycle for the carafe used for making beverages containing milk
  - DESCALING — This function is used to run the descaling cycle
  - CLEAN CARAFE — This function is used to set the time since the last beverage dispensing when the machine will go onto standby. The default time setting is 60min
    - OFF — The self-cleaning function is disabled
    - ON — The self-cleaning function is enabled

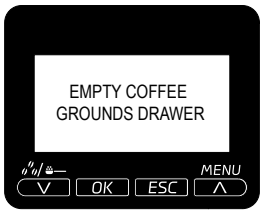
FACTORY SETTINGS

- FACTORY SETTINGS — This function allows the factory values to be reset. Restoring the factory parameters deletes all the personal parameters set beforehand.

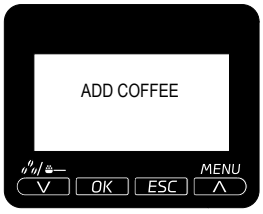
3.1.2. Machine indications



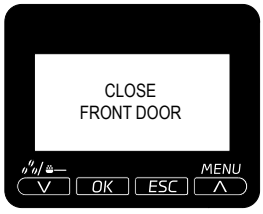
Close the coffee bean hopper lid to enable delivery of any beverage



Remove the dregs drawer.
Note: The dregs drawer must only be emptied when requested by the machine and with the machine on.



Fill the coffee container



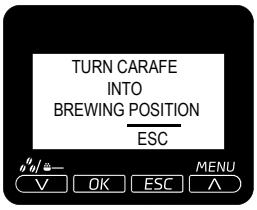
For the machine to become operative, the service hatch must be closed

Insert the brewing unit in its correct location

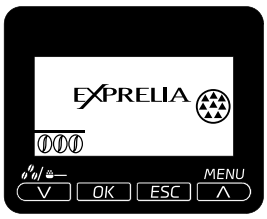
Take out the tank and fill it with fresh drinking water

Insert the dregs drawer

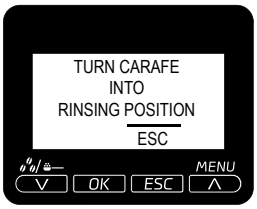
Open the front hatch and empty the drip tray underneath the brewing unit. You should also empty the dreg drawer, as the dregs counter will also be reset when the machine is switched on.



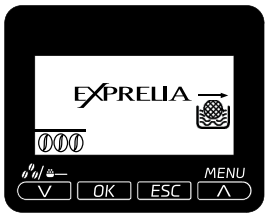
A beverage containing milk has been selected. The machine asks you to place the carafe handle spout in its dispensing position. Press "ESC" to cancel the procedure



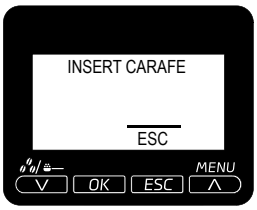
The appliance requires a descaling cycle.
With this message you can keep on using the machine but there is the risk it will not work properly.



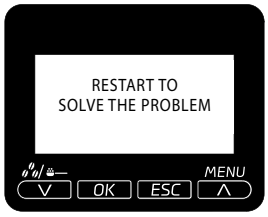
The carafe rinse function has been selected.
Press "ESC" to cancel the procedure



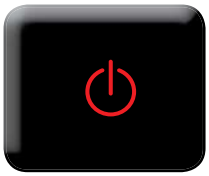
The machine requires replacement of the "Intenza" filter with a new one.
The alarm is displayed only if the "enable filter" function is ON.



An operation has been selected that requires dispensing from the milk container.
Insert the milk container. Press "ESC" to cancel the procedure

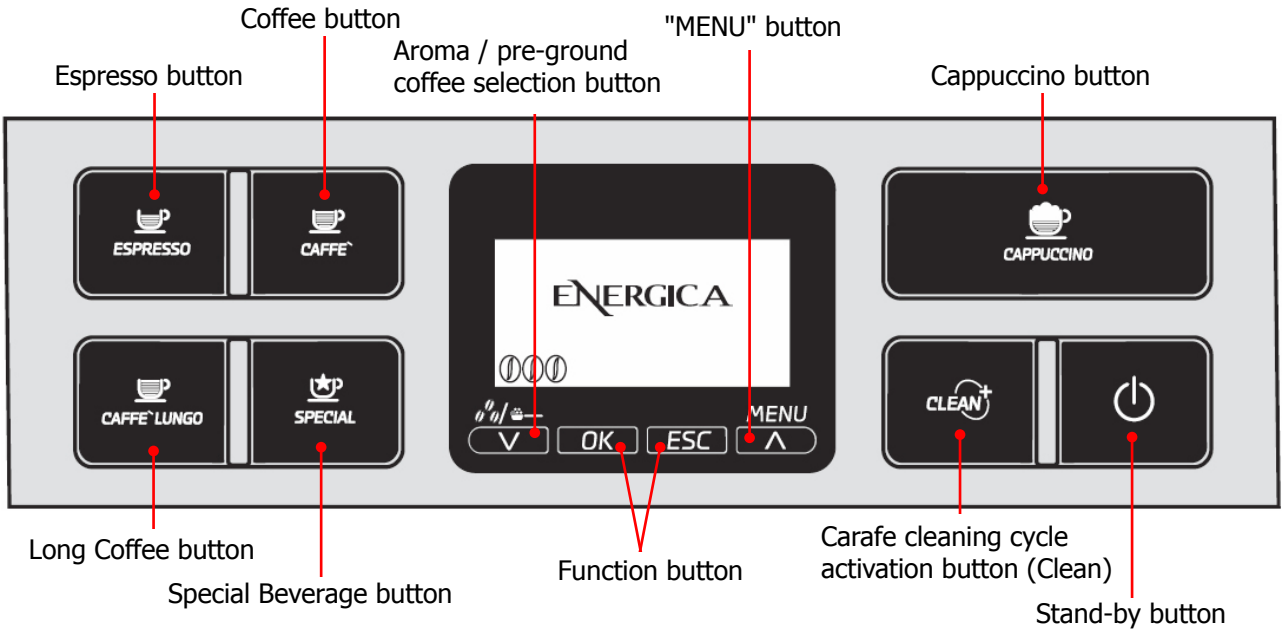


An even has occurred that requires restarting the appliance.
Take note of the code (E xx) shown at the bottom



Red LED blinking Machine on Standby.
It is possible to change the Standby settings
Press the button to exit Standby

3.2. Customer and programming menu Energica



GENERAL MENU

- GENERAL MENU — To change the machine operation settings.
  - TONE — This function activates/deactivates the acoustic alarms.
    - OFF — To deactivate the acoustic alarms
    - ON — To activate the acoustic alarms
  - ECOMODE — This function enables allows you to choose how the boilers on the machine are activated, to promote energy saving. **The function is set by default to «ON».**
    - OFF — This function activates all the boilers each time the machine starts up to be immediately able to dispense all kinds of beverages. This function entails greater energy consumption.
    - ON — This function activates only the coff ee boiler each time the machine starts up. The machine saves energy but takes longer to dispense milk-based beverages.
  - STAND-BY SETTING — To set the time interval for the machine to go into stand-by mode after the last brewing. The default time value is «after 30 minutes».
    - 15 MINUTES
    - 30 MINUTES
    - 60 MINUTES
    - 180 MINUTES

Press any button to turn the machine on again. After performing the function diagnostics and the warm-up phase, the machine is again ready for use.

DISPLAY MENU

- **DISPLAY MENU** — This menu allows you to set the menu language and the display brightness.
  - **LANGUAGE** — This setting is of fundamental importance for correctly adjusting the parameters of the machine according to the country where the machine is used.
    - **ENGLISH** — The currently selected language is displayed.
  - **BRIGHTNESS** — To set the correct display brightness according to the room illumination.

WATER MENU

- **WATER MENU** — This menu allows setting correct water parameters for coffee brewing.
  - **HARDNESS** — To change the machine water hardness setting. The "Hardness" function allows adjusting the machine to the level of hardness of the water used. The machine will then request descaling at the right moment.
  - **ENABL. FILTER** — To activate/deactivate the warning signal to replace the water filter. By activating this function, the machine notifies the user when the water filter needs to be replaced.
    OFF: Warning disabled.
    ON: Warning enabled (this value is automatically set when the filter is activated).
  - **ACTIV. FILTER** — To activate the filter after its installation or replacement.

MAINTENANCE

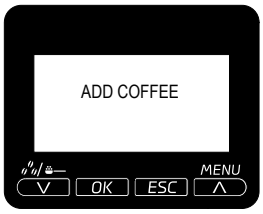
- **MAINTENANCE** — This menu allows setting all the functions for correct machine maintenance
  - **COUNTERS** — This function shows how many products have been brewed for every single type of coffee since the last reset.
  - **BREW GROUP CLEAN** — This function enables the wash cycle for the brew group .
  - **CARAFE CLEANING** — This function enables the wash cycle for the carafe used for preparing milk beverages .
    Note: This wash cycle is fundamental for a correct maintenance of the carafe.
  - **DESCALING** — This function allows the descaling cycle to be performed
  - **CARAFE CLEAN** — This function enables automatic cleaning of the carafe after each brewing of milk-based products.
    The function is set by default to «ON».
    It is recommended to keep this function active, as the thorough sanitation and cleaning of the carafe ensure correct operation and prevent the proliferation of bacterial loads which may be harmful to human health.
    - **OFF** — The self-cleaning function is disabled.
    - **ON** — The self-cleaning function is enabled.

FACTORY SETTINGS

- **FACTORY SETTINGS** — This function allows you to restore all factory settings.
  Note: By restoring the factory settings, all the personal parameters are lost.

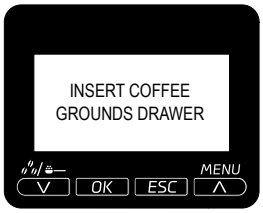
Machine indications

Close or correctly place the coffee bean hopper inner cover to be able to prepare a beverage.

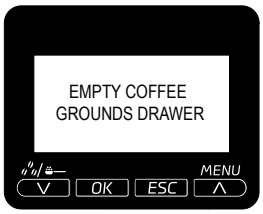


Fill the coff ee bean hopper with coffee beans.

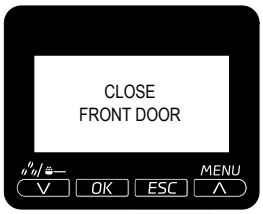
Insert the brew group back in place.



Insert the coff ee grounds drawer and the drip tray.



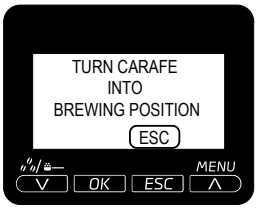
Remove the used grounds drawer and empty the coffee grounds into a suitable container.
Note: The used grounds drawer must be emptied only when the machine requires it and with the machine on. If you empty the drawer with the machine turned off it will not record the emptying operation.



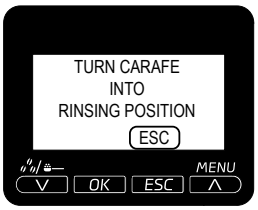
Close the service door to make the machine functional.

Take out the tank and fi ll it with fresh drinkable water or top it up by means of the special port.

Open the service door and empty the drip tray located under the brew group.
Warning: If this operation is performed when the machine is on, it will record the used grounds drawer emptying and will reset the counter; therefore, it is necessary to empty the coff ee grounds as well.

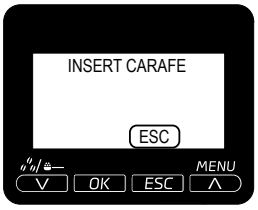


A beverage with milk has been selected. The machine requires the carafe handle spout to be placed into dispensing position.
Press the button "ESC" to cancel the selection

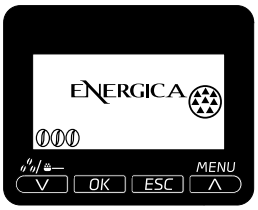


The carafe rinse function has been selected.

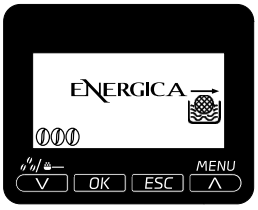
Press the button "ESC" to cancel the selection.



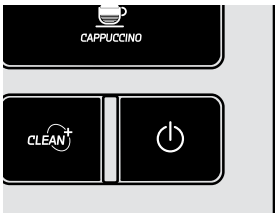
The selected operation requires the milk container for brewing. Insert the container in the machine as specifi ed in the manual.
Press the button "ESC" to cancel the selection.



Perform a descaling cycle on the machine.
When this message is displayed, it is still possible to use the machine, but its correct operation might be compromised.
Damages caused by failure to descale the machine are not covered by warranty.

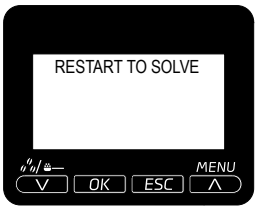


The machine requests the "Intenza" water fi lter to be replaced with a new one.
Replace the fi lter as described on page 7.
The alarm is displayed only if the "Enable Filter" function is set to "ON".

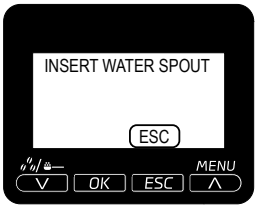


Flashing red light. Machine in Stand-by.
The Stand-by settings can be changed.

Press the "⏻" button.



An event has occurred which requires the machine restart.
Take note of the code (E xx) shown at the bottom.
Switch off the machine, wait 30 seconds and then switch it on again. If the problem persists, contact the service centre.



An event has occurred which requires the machine restart.
Take note of the code (E xx) shown at the bottom.
Switch off the machine, wait 30 seconds and then switch it on again. If the problem persists, contact the service centre.

3.3. 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	Select the desired language	Store
6	Heating	When the heating phase begins, wait for it to finish
7	Rinse	Carry out a rinse cycle for the internal circuits
8	Machine ready	The machine is ready to dispense beverages

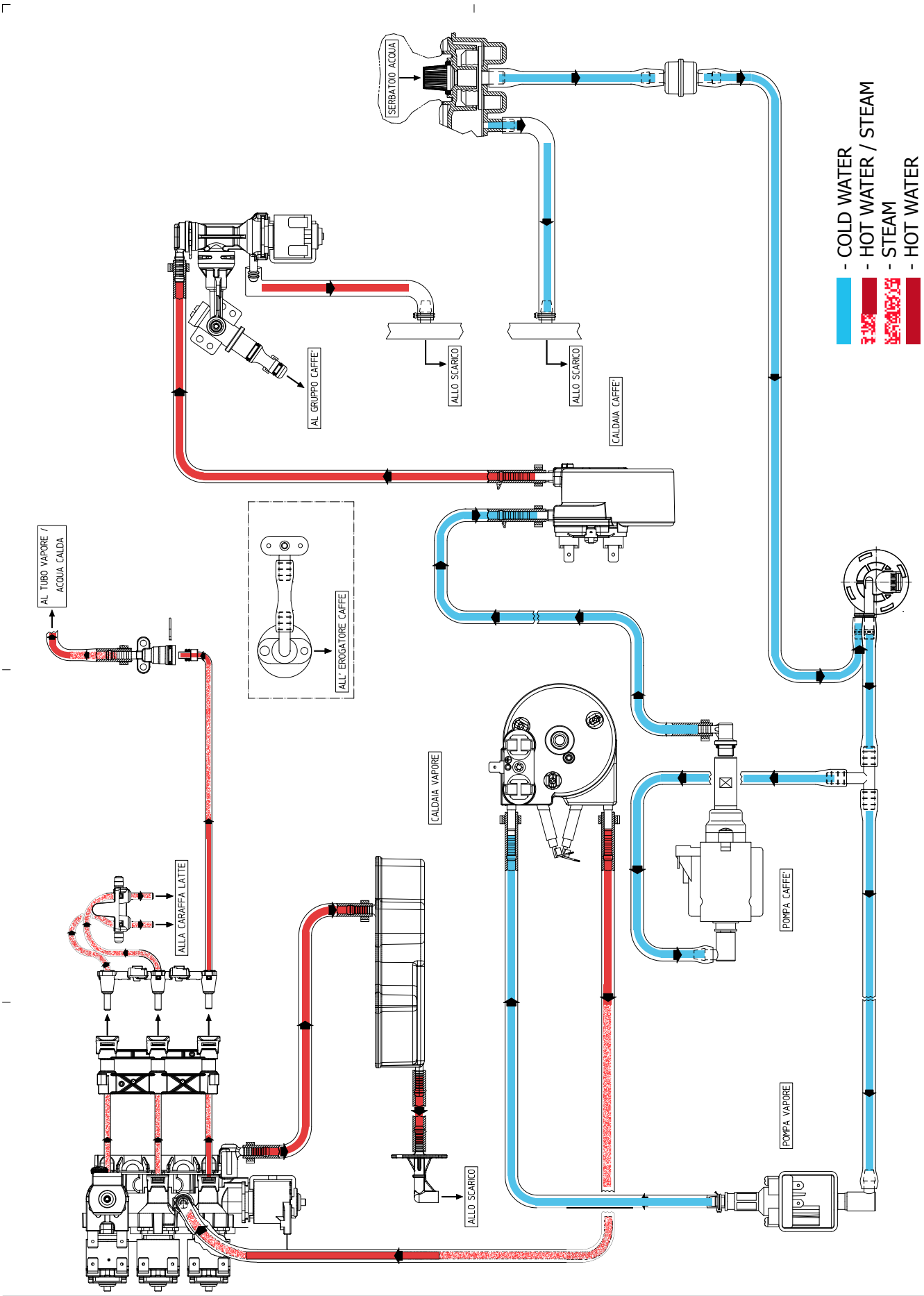
CLEANING AND TECHNICAL SERVICING		
A	Empty the dregs drawer	When indicated
B	Empty the drip tray	As necessary (float indicator)
C	Clean the water tank	Weekly
D	Clean the coffee bean hopper	As necessary
E	Clean the casing	As necessary
F	Clean the brewing unit	Every time the coffee bean hopper is filled 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			

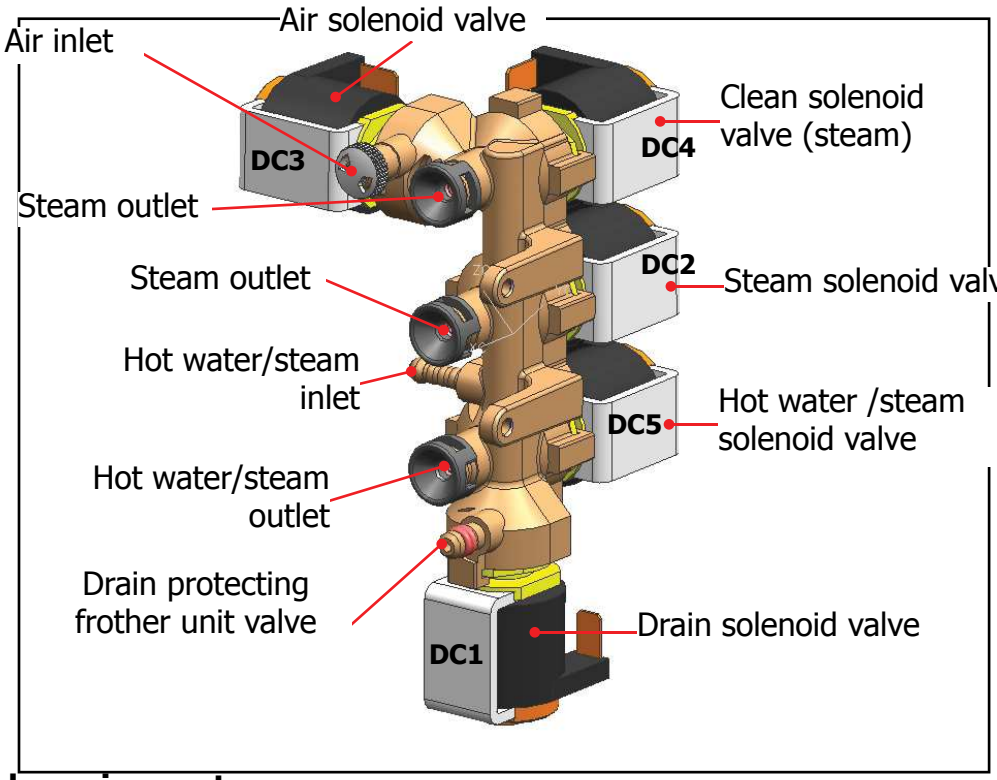
CHAPTER 4

OPERATING LOGIC

4.1. Water circuit



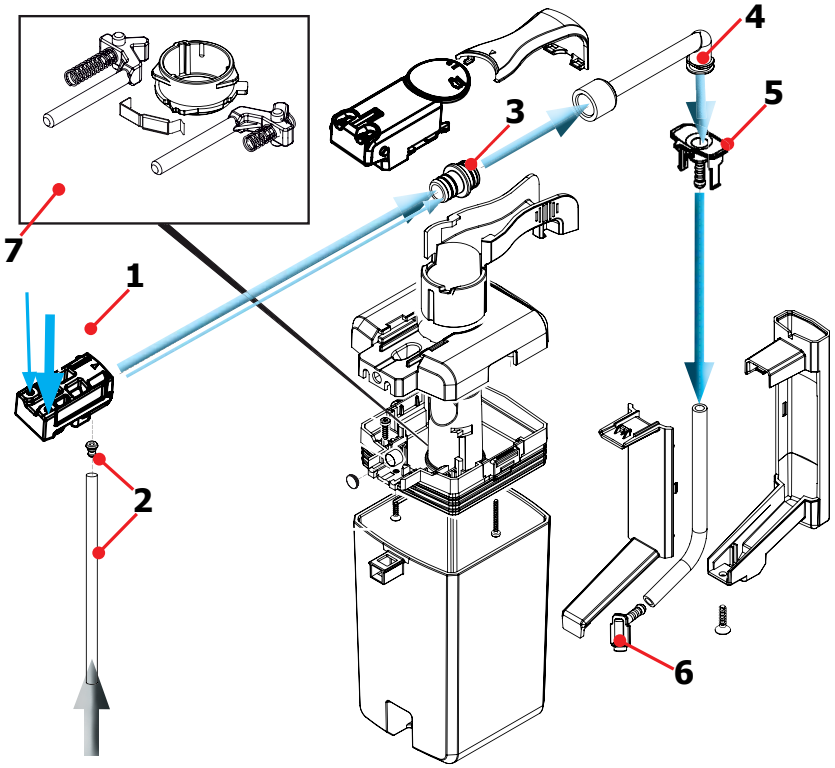
4.2.1. Frother unit valve assembly



Features and requirements

Maximum operating pressure 3 bar
Maximum pressure in the water/steam circuit does not exceed 4.5 bar 0/+1
Hot water temperature 90°
Steam temperature 125°

4.2.2. General carafe assembly

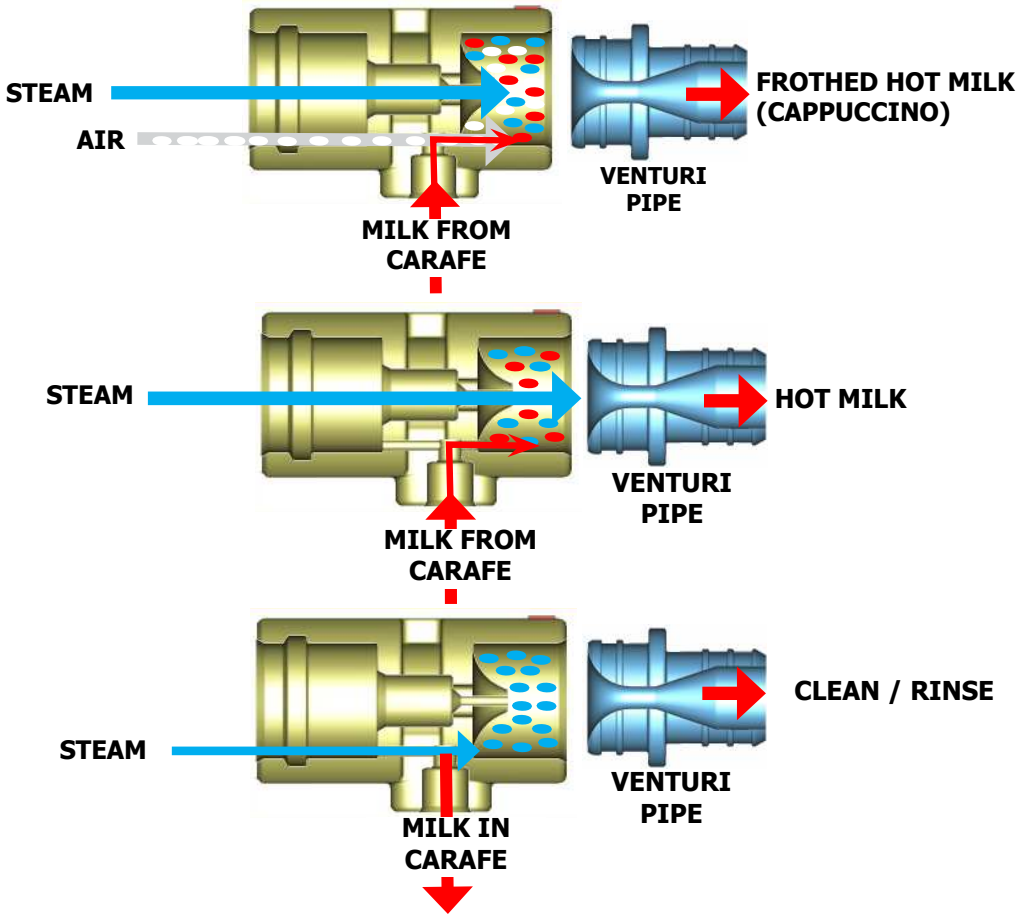


1	Cappuccino valve body
2	Milk suction pipe and attachment
3	Venturi pipe
4	Milk dispenser pipe
5	Upper attachment of drain pipe for carafe
6	Lower attachment of carafe drain pipe
7	Levers, springs and pin for carafe present/missing indication and dispenser positioning

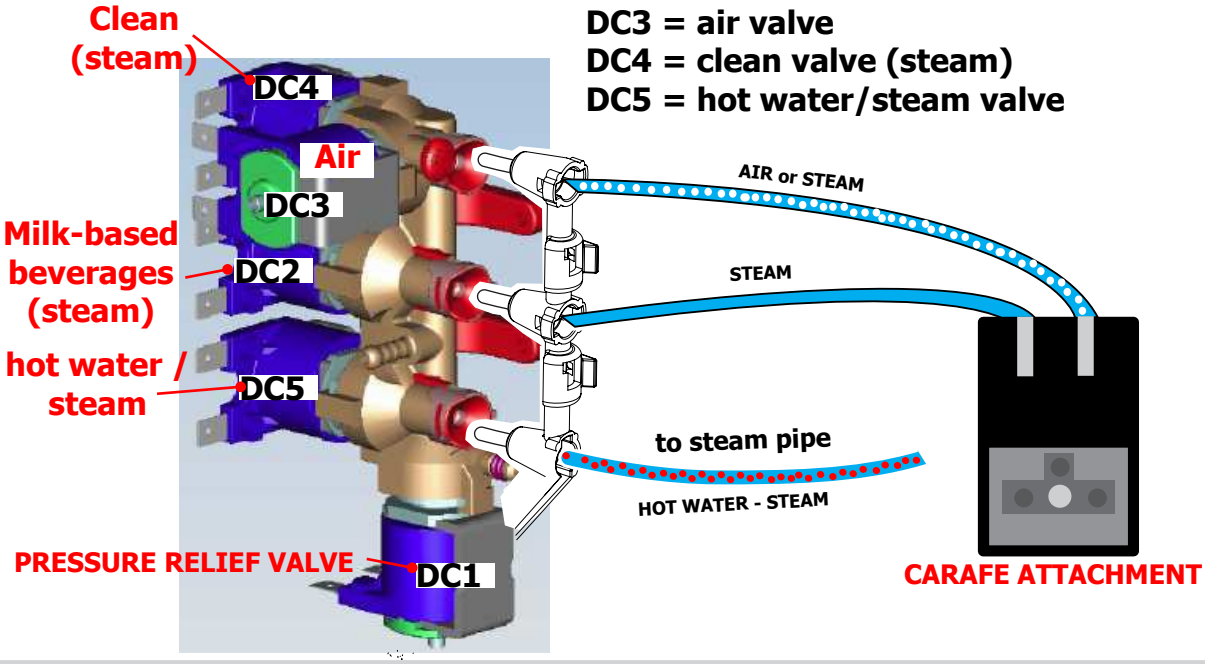
Functional method for the production of milk-based beverages and circuit cleaning

When the solenoid valves open and let air or hot water/steam through, the following situations occur:

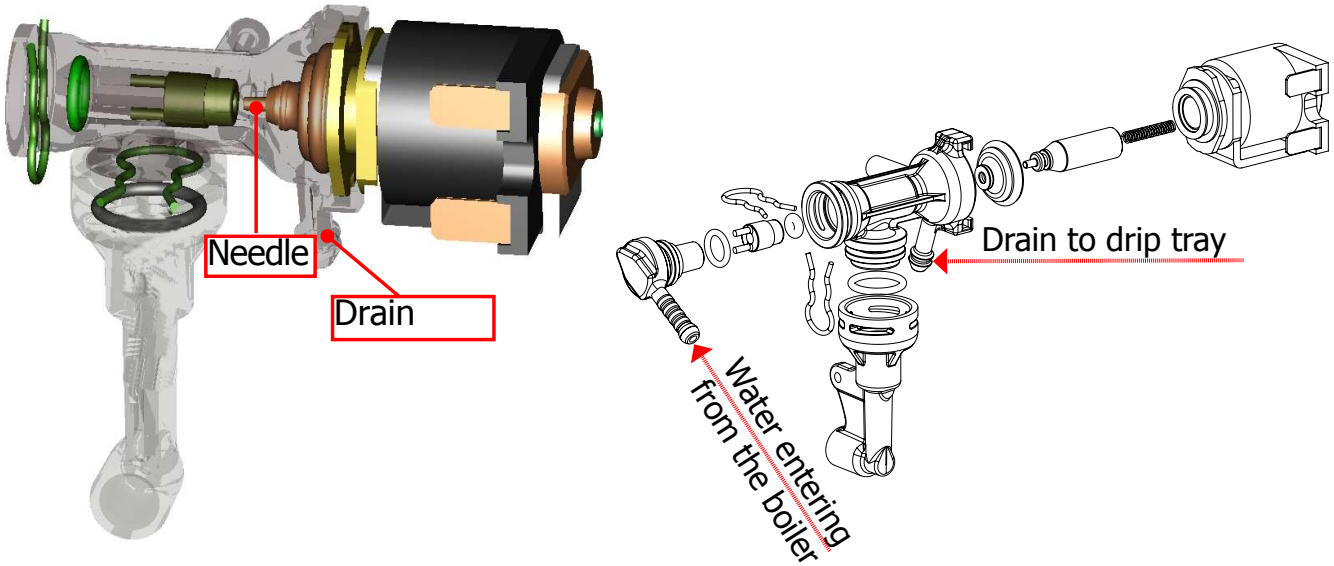
- **DC3+DC2** STEAM + AIR = Frothing and heating of frothed milk
- **DC2** STEAM FROM CENTRAL HOLE = Heating of non-frothed milk
- **DC4** STEAM FROM LOWER HOLE = Cleaning of milk circuits



DC1 = pressure relief valve assembly
DC2 = steam valve
DC3 = air valve
DC4 = clean valve (steam)
DC5 = hot water/steam valve



4.3. Multi-way valve



Functions:

Safety valve: functions as a safety valve by opening towards the drain in the event that the pressure rises above 16-19 bar

Filling the circuit: the solenoid valve opens (drain position) and the pump is activated, automatically refilling the circuit by expelling the air in the pipe

Unit discharge: before the unit descends it opens briefly, discharging the pressure created to prevent spraying and making the pad drier

Coffee beverage: when a coffee beverage is selected, the pump is charged briefly during the grinding process and the valve assumes the drain position in order to fill the pipes with hot water.

4.4. Coffee cycle

Main switch ON	START		STOP
Time			
Coffee grinder			Pulses (Dosage)
Heating	approx. 45 sec.		
Pump			* Pump activity (turbine pulses) depending on the product quantity selected
Gearmotor: Brewing unit			
Status	**Heating**	**Ready**	**Coffee cycle**

Notes: * Only with Pre-brewing

Single microswitch gearmotor

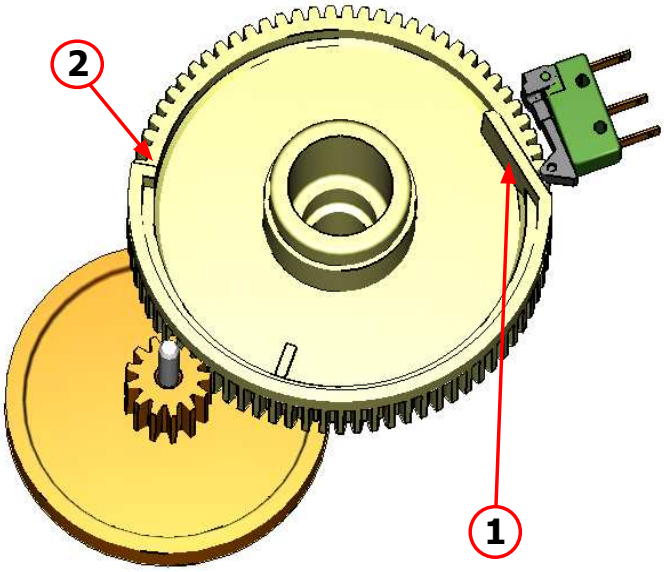
Switching on

When the machine is switched on, the gearmotor repositions itself as follows:
- It acts on microswitch 1 (see following chapter)
- The gearmotor 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 gearmotor (brewing unit) moves to the dispensing 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 gearmotor moves to its home position (the dregs are expelled automatically)

4.5. Single microswitch



The gearmotor 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

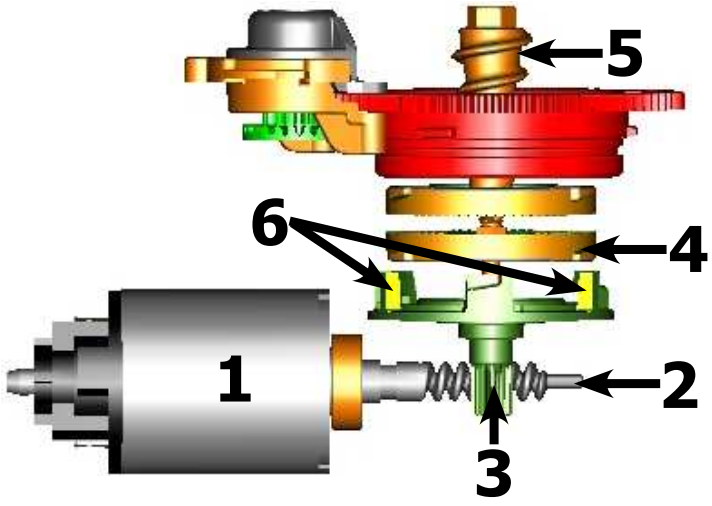
- Dispensing position: 2

4.6. 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

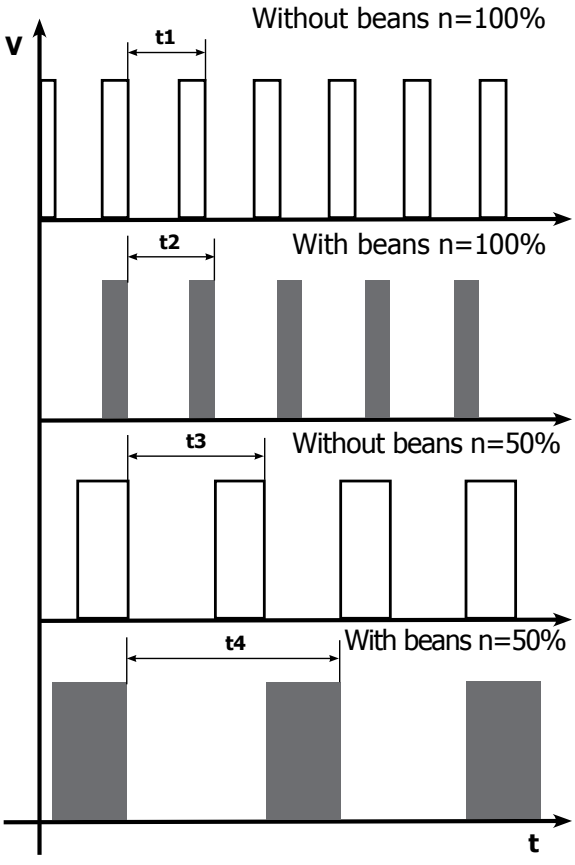
An NTC is used as a temperature sensor; in the event of overheating this reduces boiler element power consumption.
The electronic system detects the current boiler temperature from the drop in voltage of the sensor and adjusts it accordingly.
Heating element values and corresponding temperatures: see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

4.7. 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.

4.8. 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 taken at the end of each grinding cycle

Dose quantity adjustment
The dose quantity is adjusted in accordance with the pulses detected (number of rotations proportional to the weak/medium/strong aroma setting)

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

4.9 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 three pieces of data that the machine receives via the card:

1. Number of coffee grinder pulses during the grinding cycle
2. Max. average value of the power consumed by the group 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 group 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 value of the power consumed is lower than the value of the min. current, 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 pad will be expelled and the grinding pulses will be decreased by 10.

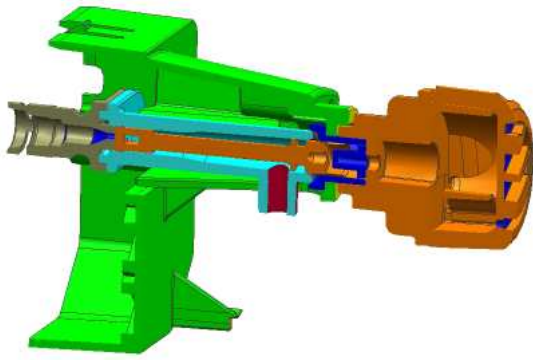
If the "pre-ground" flavour is selected by the user, no modification will be made.

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

Setting/Status		Power consumption in mA	Pulses corrected in the next grinding process	
			Exceeded by	Deficient by
A	Mild aroma	200 - 300 mA	- 4	+2
B	Medium Aroma	301 - 450 mA	- 4	+2
C	Strong Aroma	451 - 600 mA	- 4	+2
D	Over-limit	601 - 800 mA	- 4	
E	Overwork	801 - 1000 mA	- 10	
F	Pad expulsion	> 1000 mA	- 10	

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.

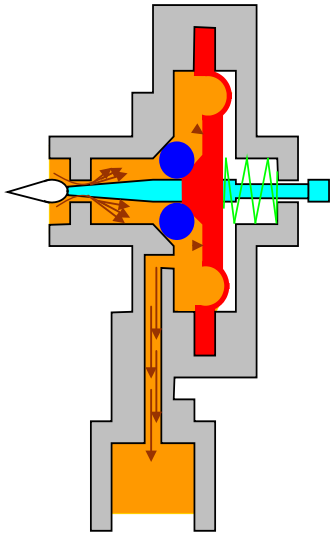
4.10. SBS



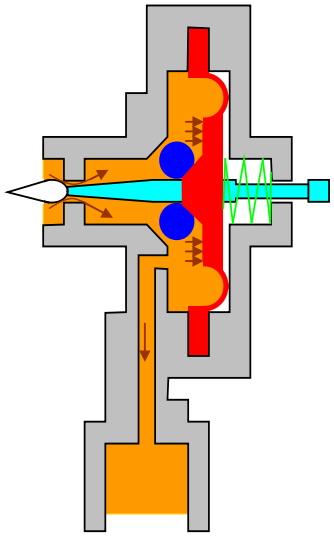
SBS - Saeco Brewing System - Principle
Controlling the flow speed, which influences the contact time between the coffee and water, changes the extraction and therefore the taste intensity and strength of the coffee.

- Slower flow: strong extraction
- Fast flow: lighter extraction

SBS / dispensing valve
Turning the SBS control knob leads to brewing taking place inside the brewing unit, where the flow speed is adjusted using a cream valve.

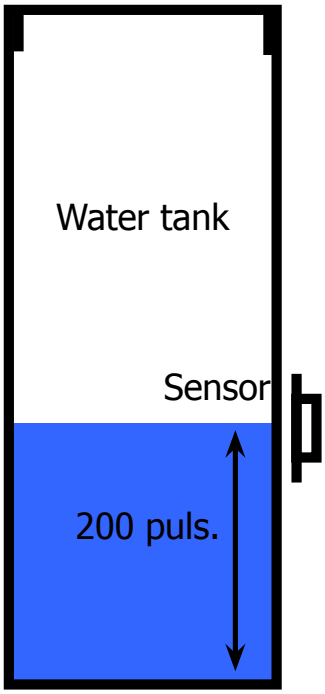


Cream valve control
Fast flow (slight extraction)
If the SBS valve is open, the coffee flows more easily because the pressure is lower and the membrane, with the support of the spring, remains almost in its original position.
The control needle does not close off the opening and the flow is not diminished.



Cream valve control
Slow flow (strong extraction)
The coffee can only be dispensed slowly with a closed SBS valve – a pressure is created which forces the membrane to the side, pushing it against the spring force.
In the next stage, the valve needle closes off the opening, thus reducing the flow.

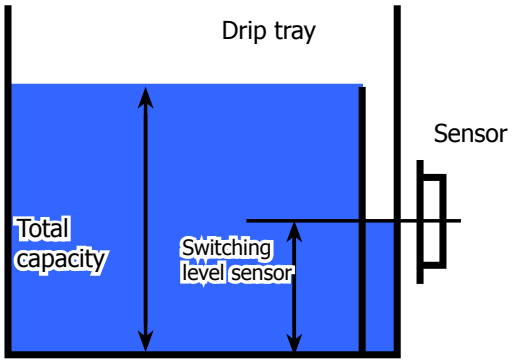
4.11. Water level detection (water tank)



"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 turbine 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.

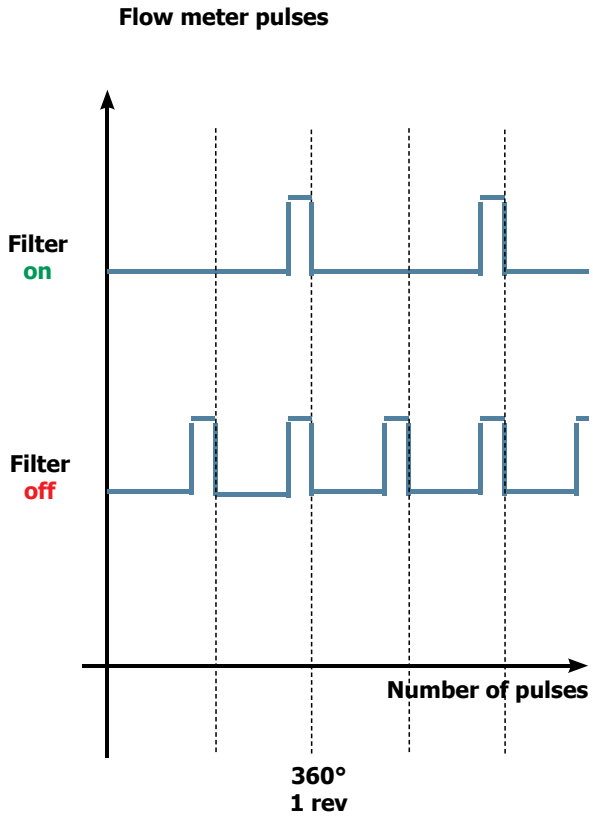
4.12. Water level detection (drip tray)



"Empty drip tray" - message

Function:
The residual water level is monitored using a capacitive sensor. The sensor is located approximately halfway up the upper edge of the drip tray. To ensure the best possible use of the drip tray capacity, the sensor is located near to a dam. Therefore, the drip tray fills up to the upper edge of the dam and overflows inside, triggering the sensor and thus the "Empty drip tray" message.

4.13. Descaling request



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

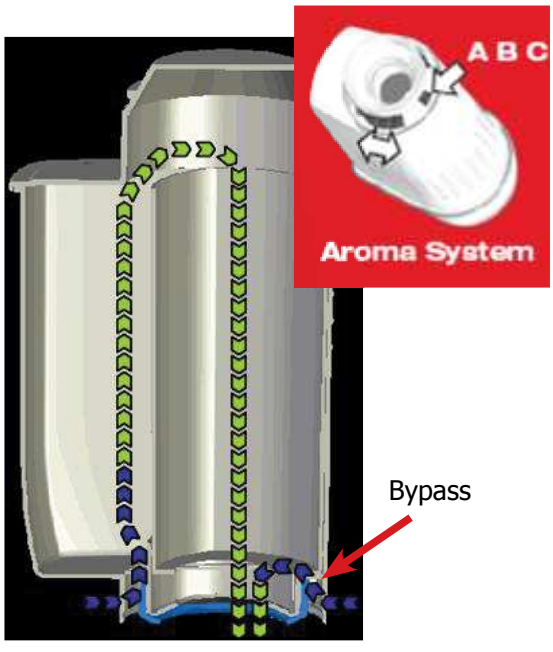
The water hardness is set on the basis of the regional water hardness analysis
(1, 2, 3, 4).

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

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

"Change water filter" message
The electronics assembly uses the turbine 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.

4.14. Water filter



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.

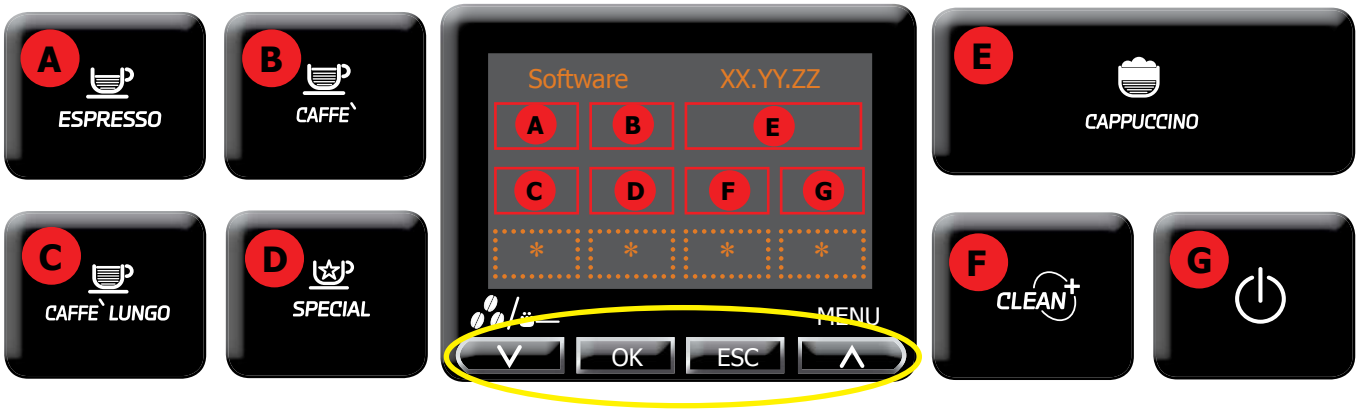
CHAPTER 5

TROUBLESHOOTING

5.1. Test mode

To enter Test Mode:
- Switch on the machine
- Press the four function keys in the sequence indicated below (1,2,3,4) before the heating bar is completed

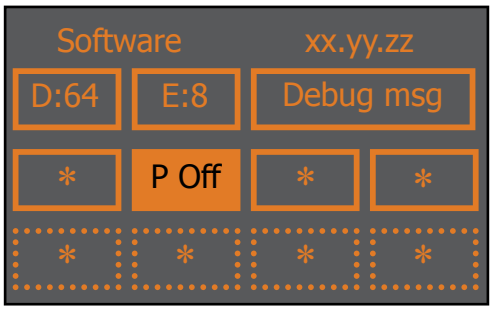
Entry into Test Mode results in a screen divided into sections, as illustrated in the diagram below



The sectors highlighted in red on the following screens represent the various loads that can be activated by pressing the corresponding keys on the keypads.
This load is deactivated by pressing the same key once more.
Other conditions in which a load can be automatically deactivated are:
- If a work cycle is defined and ends (e.g., coffee grinder or brewing unit)
- A time-out is reached (e.g.: 5 sec for the boiler test)

The 4 buttons highlighted in yellow under the display can be used for navigating within Test Mode.
The remaining four dashed sectors are used to indicate the status of the sensors, microswitches or control variables.
If present, the asterisk symbol (*) in a sector indicates that no function is associated with that sector on that particular screen.

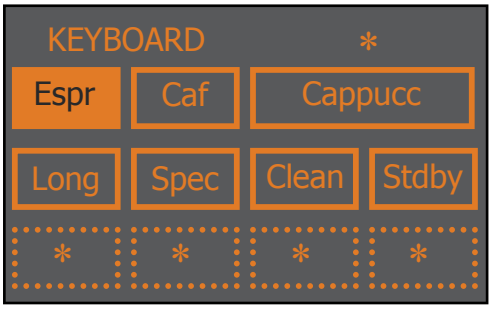
Software version



- **(xx.yy.zz)** software version loaded onto the machine
- **(D and E)** are values providing information on the memory settings and must be 64 and 8.
- **P OFF**: if active it enables immediately going onto Standby when the machine is switched on
- **Debug msg:** if active it enables the automatic dosing debug messages for the next restart only

Press **to move on to the next screen**

Keyboard

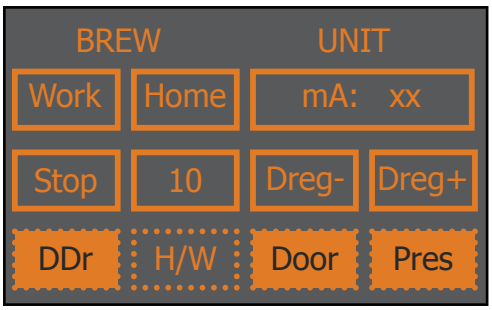


This is the button test page: each beverage corresponds to a box on the display that changes colour when the corresponding button is pressed (e.g.: ESPRESSO)

Press **to move on to the next screen**

Brew Unit

This screen corresponds to the management of the area inside the front hatch.



Operation:

- **WORK**: if pressed, switches the unit into its work position
- **STOP**: if pressed, stops the unit instantly
- **HOME**: if pressed, switches the unit into its Home position
- **DREG UP**: increases the coffee dregs counter
- **DREG DOWN**: decreases the coffee dregs counter

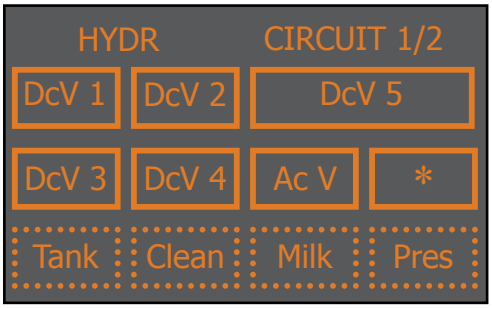
Indicators:

- **mA**: indicates moment by moment the maximum current (in mA) consumed by the unit when moving. Its value must not exceed 300 mA
- **H/W**: becomes active (illuminated) when the unit reaches a "Work" position
- **Pres**: if active, this indicates that the unit is inserted
- **DDr**: if active, this indicates that the dregs counter is inserted
- **Door**: if active, this indicates that the front hatch is closed

Press **to move on to the next screen**

HydraulicCircuit

This screen corresponds to water circuit management.



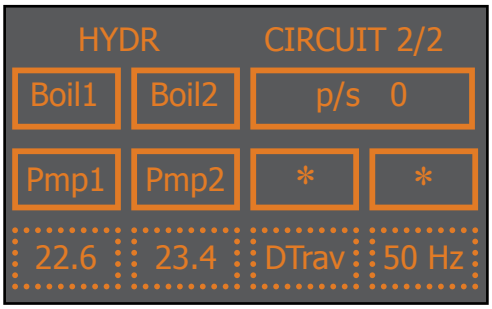
Operation:

- **Ac V**: if pressed, activates the 230V solenoid valve
- **Dc V1**: activates the 24V solenoid valve for draining
- **Dc V2**: activates the 24V steam dispensing solenoid valve
- **Dc V3**: activates the 24V milk frothing solenoid valve
- **Dc V4**: activates the 24V solenoid valve for milk circuit cleaning
- **Dc V5**: activates the 24V hot water dispensing solenoid valve

Indicators

- **Tank**: indicates the status of the water tank level sensor. If activated, the sensor signals that the level has been reached
- **Clean**: if activated, it indicates that the milk carafe is in the CLEAN position.
- **Milk**: if activated, it indicates that the milk carafe is in the MILK dispensing position
- **Pres**: if activated, it indicates that the milk carafe is inserted

Press v to move on to the next screen



Operation:

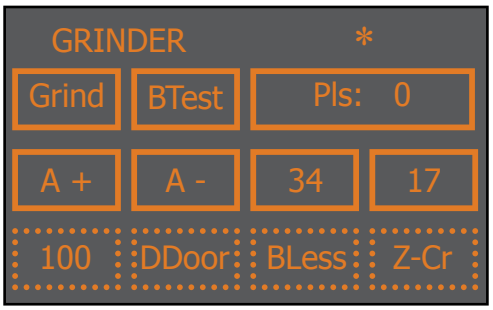
- **Boil1**: if pressed, this activates the coffee boiler. The boiler is deactivated either by pressing the button again or automatically after 5 seconds. The temperature is indicated in the corresponding window at the bottom
- **Boil2**: if pressed, activates the steam/hot water boiler. The boiler is deactivated either by pressing the button again or automatically after 5 seconds. The temperature is indicated in the corresponding window at the bottom
- **Pmp1**: activates the hot water dispensing pump. The pump is switched off by pressing the button once more
- **Pmp2**: activates the hot water/steam dispensing pump. The pump is switched off by pressing the button once more

Indicators

- **p/s**: indicates moment by moment the water flow rate in the turbine, expressed in pulses per second. When coffee pump 1 is switched on and the coffee solenoid valve is on (AcV on the previous screen) the value must be no lower than 10 p/sec. When hot water/steam pump 2 is switched on and the drain solenoid valve is on (DcV5 on the previous screen) the value must be no lower than 5 p/sec.
- **50 Hz**: indicates the mains electricity voltage frequency.
- **DTray**: indicates the status of the tray level sensor. If activated, the sensor signals that the level has been reached

Press v to move on to the next screen

Grinder



Operation:

- **Grind**: if pressed, activates the coffee grinder. To stop it, press the button again. If the coffee grinder is not stopped, it will grind for 200 pulses; the corresponding countdown appears in the window.
- **BTEST**: if pressed, activates the coffee grinder. To stop it, press the button again. If stopped, the no-coffee test is run. At the end of the test, 2 values will appear in the "instantaneous threshold" and "reference threshold" windows: if "instantaneous threshold" is less than the "reference threshold" the system considers that the coffee grinder is empty

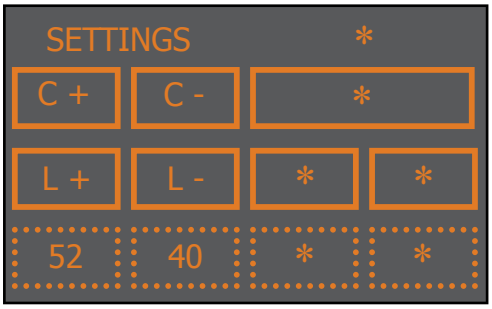
Indicators:

- **Pls**: indicates, during grinding, the real-time grinding pulse countdown
- **BLess**: This is activated when the system detects there is no coffee. To cancel the alarm you need to raise and lower the bean cover to simulate coffee loading
- **BDOOR**: indicates the status of the bean hopper door sensor (if active, it indicates that the door is closed)
- **A+**: increases the number of pulses for a medium aroma
- **A-**: decreases the number of pulses for a medium aroma
- **Z-cr**:... not used

The value at bottom left is the number of pulses for a medium aroma: it is modified manually with the "A+" and "A-" keys or automatically by the automatic dosing algorithm

Press v to move on to the next screen

Display



Operation:

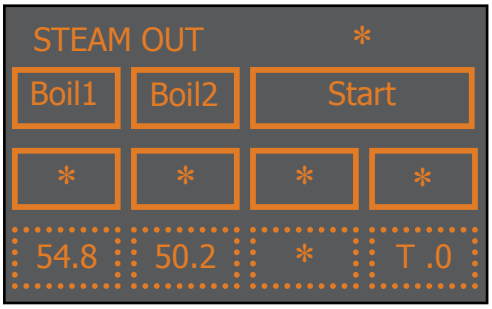
- **C+**: increases the contrast of the display
- **C-**: decreases the contrast of the display
- **L+**: increases the brightness of the display
- **L-**: decreases the brightness of the display

Indicators

- **The values at the bottom are indices representing the brightness and contrast: in this case these values are not saved to eeprom as they have solely a test function**

Press v to move on to the next screen

Steam Out



Operation:

- **Boil1**: illuminates when the coffee boiler is powered
- **Boil2**: illuminates when the steam boiler is powered
- **Start**: starts the draining process

Indicators

- **The values at the bottom are the temperatures of the two boilers and the countdown (T.O) before the machine requests switching off.**

This is the last screen of the Test Mode. Press ^ to go back to the previous screens.

On each screen, pressing ESC exits the TEST mode and restarts the appliance in normal mode.

5.2. Diagnostics mode

To enter Diagnostics mode:
- Switch on the machine
- Press the four function keys in the sequence indicated below (1,2,3,4) before the heating bar is completed

Entering Diagnosis Mode shows a screen like the one in the following diagram and pressing scrolls through all the menus present

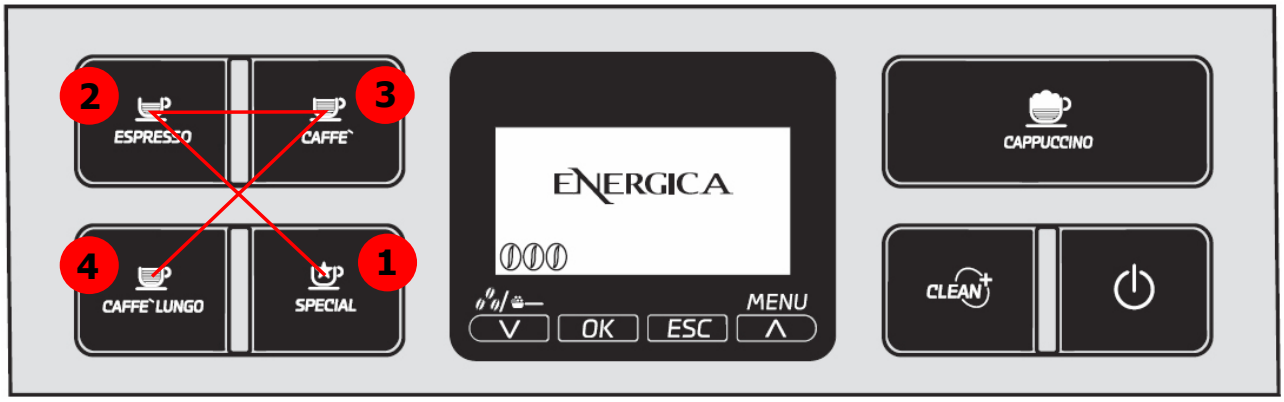
MENU	DESCRIPTION
PRODUCT COUNTERS	This represents the number of times the C:A: has dispensed each beverage
ERROR COUNTERS	This displays the total number of "out of order" (fail) errors occurring in the system and enables resetting. The max number of counted "fails" is 20
WATER COUNTERS	This shows the water consumption (in pulses) after dispensing beverages, for the descaling cycle, the unit cleaning cycle and filter activation
BREWING UNIT CLEANING	This shows the water consumption after the last unit cleaning cycle and the number of times cleaning has been performed
MAX GRINDER DOSE	This is used to select the highest dose threshold the coffee grinder can accommodate
MAX GROUND	This is used to select the maximum number of coffee grounds batches. The range of the number of coffee grounds batches can vary from 10 to 20
HOTWATER FLOWRATE	This is used to select the maximum delay between two water pulses in the flow meter
CUP TEMPERATURE	This is used to select the average or normal temperature of the coffee in a cup

Press the ^ or v buttons to move the cursor onto the desired beverage and press OK to enter the submenu

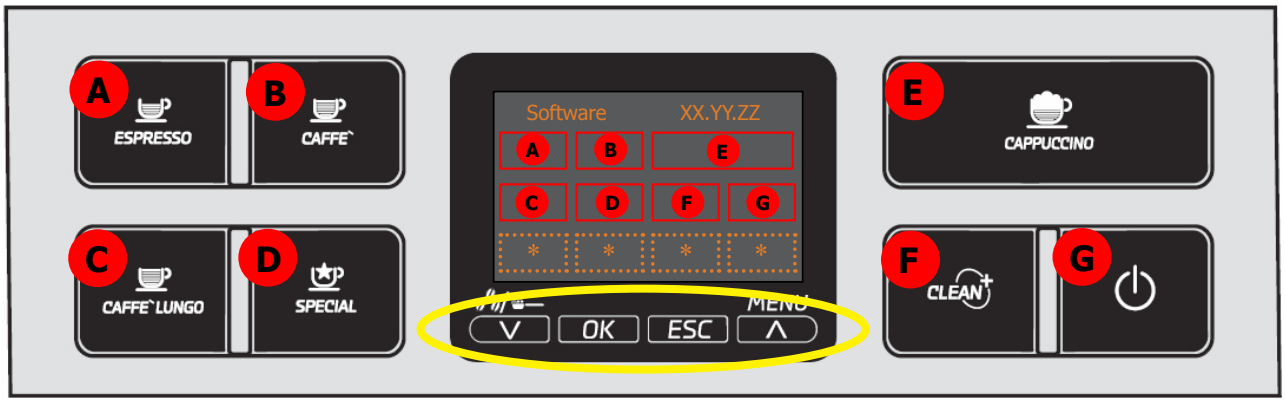
1. PRODUCT COUNTERS		
• ESPRESSO (default 0)	• dispensing no.	
• COFFEE (default 0)	• dispensing no.	
• LONG COFFEE (default 0)	• dispensing no.	
• HOT WATER (default 0)	• dispensing no.	
• CAPPUCCINO (default 0)	• dispensing no.	
• LATTE MACCHIATO (default 0)	• dispensing no.	
• HOT MILK (default 0)	• dispensing no.	
2. ERROR COUNTERS		
• ERRORS LOG	• ERROR CODE (default 0)	ERROR CODE - the code representing the type of error that has occurred (see Tab. 5.3 Error messages)
	• ERROR INDEX (default 0)	NUMERICAL POSITION - represents the numerical position of the error in the internal list for a max no. of 20
	• ERROR TEXT (default 0)	ERROR DESCRIPTION - a text description of the type of error that has occurred
• ERRORS RESET		All the errors are reset
3. WATER COUNTERS		
• DESCALING CYCLES	• WATER SINCE LAST CYCLES	Represents the consumption of water since the last descaling cycle
	• WATER SINCE SECOND	As above but for the penultimate descaling cycle
	• WATER SINCE THIRD	As above but for the third last descaling cycle
	• WATER SINCE LAST CYCLE	total no. of descaling cycles performed
• BREWING UNIT CLEANING	• SINCE LAST (default 0)	Represents the consumption of water since the last unit cleaning cycle. When performed it goes back to 0.
	• NUMBER OF EXECUTION (default 0)	Represents the number of unit cleaning cycles carried out on the C.A.
• WATER FILTER		
	• SINCE LAST RESET (default 0)	Represents the consumption of water since the last filter activation cycle. When performed it goes back to 0
	• NUMBER OF RESET (default 0)	total no. of filter activation cycles performed.
• WATER SINCE PRODUCT		Total consumption of water in litres (default 0).
4. MAX GRINDER DOSE		100 to 170 (default 170)
5. MAX GROUND		10 to 20 (default 10)
6. HOTWATER FLOWRATE		100 to 150 (default 120)
7. CUP TEMPERATURE		75 to 85 (default 78)

5.3. Test mode Energica Focus

To enter Test Mode:
- Switch on the machine
- Press the four function keys in the sequence indicated below (1,2,3,4) before the heating bar is completed

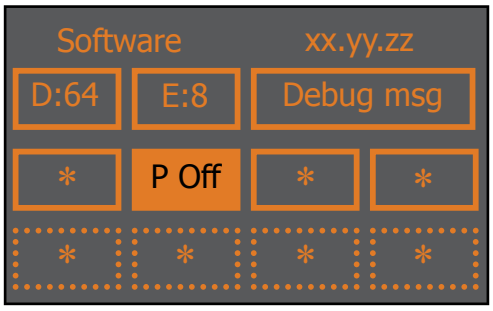


Entry into Test Mode results in a screen divided into sections, as illustrated in the diagram below



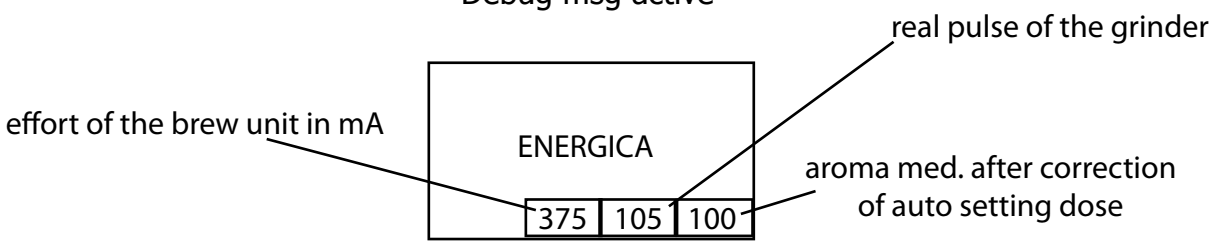
The sectors highlighted in red on the following screens represent the various loads that can be activated by pressing the corresponding keys on the keypads.
This load is deactivated by pressing the same key once more.
Other conditions in which a load can be automatically deactivated are:
- If a work cycle is defined and ends (e.g., coffee grinder or brewing unit)
- A time-out is reached (e.g.: 5 sec for the boiler test)

The 4 buttons highlighted in yellow under the display can be used for navigating within Test Mode.
The remaining four dashed sectors are used to indicate the status of the sensors, microswitches or control variables.
If present, the asterisk symbol (*) in a sector indicates that no function is associated with that sector on that particular screen.



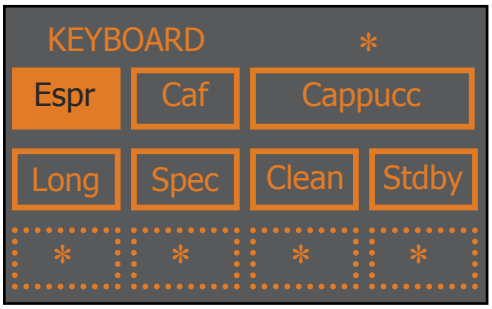
- **(xx.yy.zz)** software version loaded onto the machine
- **(D and E)** are values providing information on the memory settings and must be 64 and 8.
- **P OFF**: if active it enables immediately going onto Standby when the machine is switched on
- **Debug msg:** if active it enables the automatic dosing debug messages for the next restart only

Debug msg active



Press **to move on to the next screen**

Keyboard

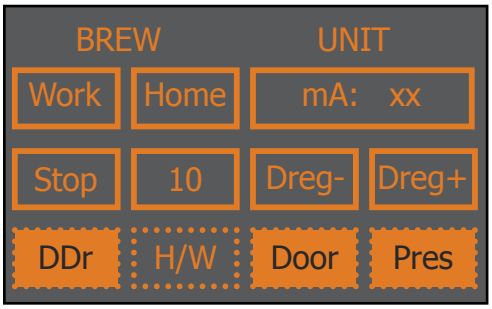


This is the button test page: each beverage corresponds to a box on the display that changes colour when the corresponding button is pressed (e.g.: ESPRESSO)

Press **to move on to the next screen**

Brew Unit

This screen corresponds to the management of the area inside the front hatch.



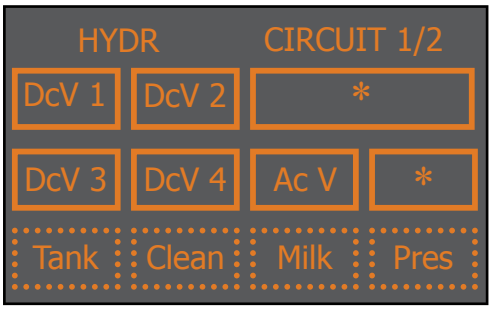
Operation:
- **WORK**: if pressed, switches the unit into its work position
- **STOP**: if pressed, stops the unit instantly
- **HOME**: if pressed, switches the unit into its Home position
- **DREG UP**: increases the coffee dregs counter
- **DREG DOWN**: decreases the coffee dregs counter

Indicators:
- **mA**: indicates moment by moment the maximum current (in mA) consumed by the unit when moving. Its value must not exceed 300 mA
- **H/W**: becomes active (illuminated) when the unit reaches a "Work" position
- **Pres**: if active, this indicates that the unit is inserted
- **DDr**: if active, this indicates that the dregs counter is inserted
- **Door**: if active, this indicates that the front hatch is closed

Press **to move on to the next screen**

HydraulicCircuit

This screen corresponds to water circuit management.



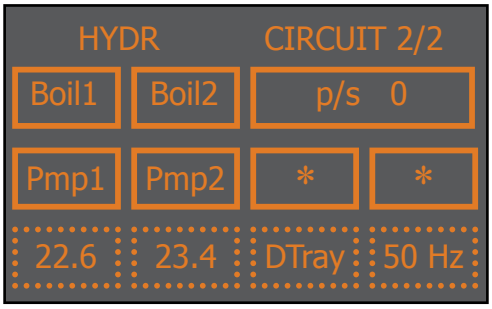
Operation:

- **Ac V**: if pressed, activates the 230V solenoid valve
- **Dc V1**: activates the 24V solenoid valve for draining
- **Dc V2**: activates the 24V steam dispensing solenoid valve
- **Dc V3**: activates the 24V milk frothing solenoid valve
- **Dc V4**: activates the 24V solenoid valve for milk /hot water circuit cleaning

Indicators

- **Tank**: indicates the status of the water tank level sensor. If activated, the sensor signals that the level has been reached
- **Clean**: if activated, it indicates that the milk carafe is in the CLEAN position.
- **Milk**: if activated, it indicates that the milk carafe is in the MILK dispensing position
- **Pres**: if activated, it indicates that the milk carafe is inserted

Press ⌄ to move on to the next screen



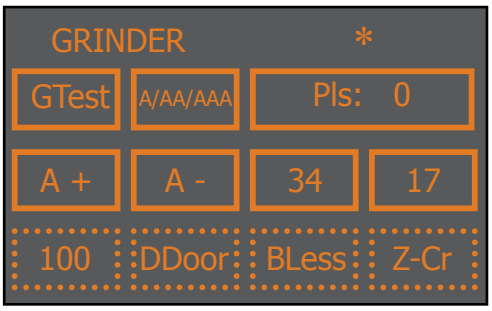
Operation:

- **Boil1**: if pressed, this activates the coffee boiler. The boiler is deactivated either by pressing the button again or automatically after 5 seconds. The temperature is indicated in the corresponding window at the bottom
- **Boil2**: if pressed, activates the steam/hot water boiler. The boiler is deactivated either by pressing the button again or automatically after 5 seconds. The temperature is indicated in the corresponding window at the bottom
- **Pmp1**: activates the hot water dispensing pump. The pump is switched off by pressing the button once more
- **Pmp2**: activates the hot water/steam dispensing pump. The pump is switched off by pressing the button once more

Indicators

- **p/s**: indicates moment by moment the water flow rate in the turbine, expressed in pulses per second. When coffee pump 1 is switched on and the coffee solenoid valve is on (AcV on the previous screen) the value must be no lower than 10 p/sec. When hot water/steam pump 2 is switched on and the drain solenoid valve is on (DcV5 on the previous screen) the value must be no lower than 5 p/sec.
- **50 Hz**: indicates the mains electricity voltage frequency.
- **DTray**: indicates the status of the tray level sensor. If activated, the sensor signals that the level has been reached

Press ⌄ to move on to the next screen



Grinder

Operation:

- **A/AA/AAA Aroma A=mild AA=medium AAA=strong**
- **GTEST**: if pressed, activates the coffee grinder. To stop it, press the button again. If stopped, the no-coffee test is run. At the end of the test, 2 values will appear in the "instantaneous threshold" and "reference threshold" windows: if "instantaneous threshold" is less than the "reference threshold" the system considers that the coffee grinder is empty

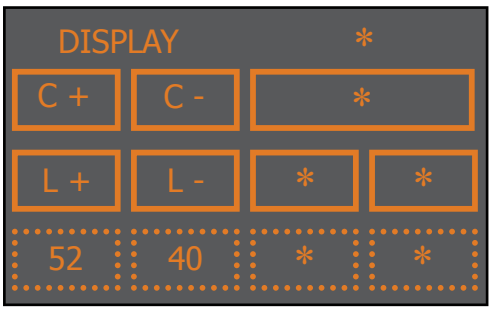
Indicators:

- **Pls**: indicates, during grinding, the real-time grinding pulse countdown
- **BLess**: This is activated when the system detects there is no coffee. To cancel the alarm you need to raise and lower the bean cover to simulate coffee loading
- **BDOOR**: indicates the status of the bean hopper door sensor (if active, it indicates that the door is closed)
- **A+**: increases the number of pulses for a medium aroma
- **A-**: decreases the number of pulses for a medium aroma
- **Z-cr**:... not used

The value at bottom left is the number of pulses for a medium aroma: it is modified manually with the "A+" and "A-" keys or automatically by the automatic dosing algorithm

Press ⌄ to move on to the next screen

Display



Operation:

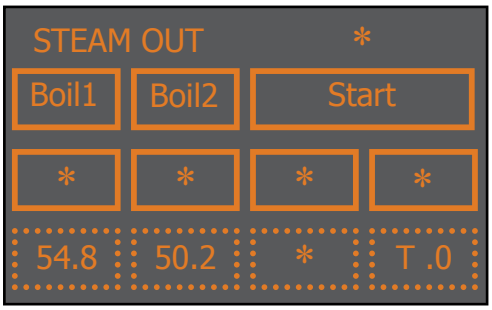
- **C+**: increases the contrast of the display
- **C-**: decreases the contrast of the display
- **L+**: increases the brightness of the display
- **L-**: decreases the brightness of the display

Indicators

- **The values at the bottom are indices representing the brightness and contrast: in this case these values are not saved to eeprom as they have solely a test function**

Press to move on to the next screen

Steam Out



Operation:

- **Boil1**: illuminates when the coffee boiler is powered
- **Boil2**: illuminates when the steam boiler is powered
- **Start**: starts the draining process

Indicators

- **The values at the bottom are the temperatures of the two boilers and the countdown (T.O) before the machine requests switching off.**

This is the last screen of the Test Mode. Press to go back to the previous screens.

On each screen, pressing ESC exits the TEST mode and restarts the appliance in normal mode.

5.4. Error messages

Code	Brief description	Description
01	coffee grinder blocked	The coffee grinder is blocked (grinder blades jammed or sensor not reading properly)
03	Brewing unit blocked in 'work' position	Descent time-out exceeded
04	Brewing unit blocked in 'home' position	Ascent time-out exceeded
05	Water circuit blocked	No water in flow meter or flow meter not turning (jammed)
06	Frother unit solenoid valve	Frother unit solenoid valve short-circuit
10	Coffee boiler short-circuit	Coffee boiler temperature sensor short-circuit
11	Coffee boiler in open circuit	Coffee boiler temperature sensor in open circuit
12	Steam boiler short-circuit	Steam boiler temperature sensor short-circuit
13	Steam boiler in open circuit	Steam boiler temperature sensor in open circuit
14	Various temperature errors (in the coffee boiler)	Coffee boiler temperatures out of control
15	Various temperature errors (in the steam boiler)	Steam boiler temperatures out of control
16	Group motor short-circuit	Brewing unit microswitch short-circuit
17	Not used	
18	Clock error	Memory fault or impossible to set
19	No zero crossing	No zero crossing on card, could be caused by power card
20	Not used	

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 info, new sw, 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
CF	Operative check

P	Cleaning
TR	Noise test
R	Adjustment

Component	Action	Support/tool
Water filter:	**P/S/CF**	
Water tank lip seal	**S/CF**	
Boiler pin O-ring	**S/CF**	
Brewing unit	**ES/P/CF**	Grease solvent / Grease
Hoses, attachments and Oetiker clamps	**ES/CF**	
Coffee circuit pump	**ES/TR/CF**	
Hot water/steam circuit pump	**ES/TR/CF**	
Gearmotor:	**ES/TR/CF**	
Coffee grinder	**P/R/CF**	Vacuum cleaner / brush
Water circuit	**D/CF**	Saeco descaler
Frothing valve assembly	**ES/S/CF**	
Multi-way valve (solenoid pilot)	**ES/S/CF**	

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	
Missing indication coffee beans	Start brewing a coffee while the coffee bean hopper is empty		Missing indication coffee beans	

CHAPTER 7

DISASSEMBLY

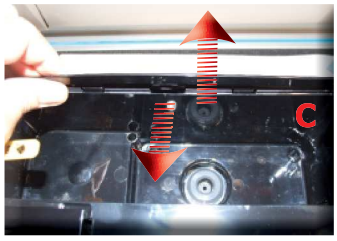
7.1. Outer elements

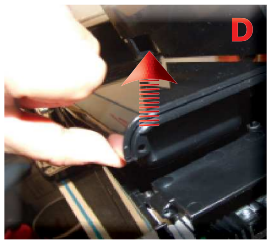
Remove the water tank, coffee container cover and water drip tray

Take off the caps covering the screws and unscrew them. Raise the rear cover and take it off

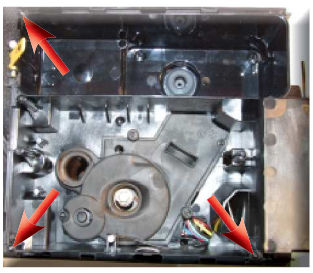
Extract the PWR cover

Loosen the screws as indicated and remove the rear frame



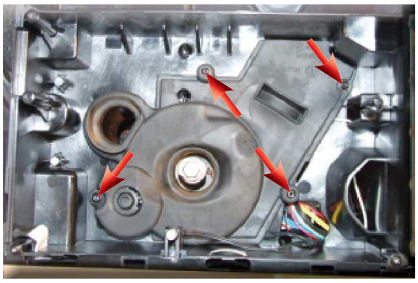


Unscrew the screws as indicated under the water container cover (A) and the coffee bean hopper (B). Unhook and gently raise the casing cover (C) by a few cm. Go onto the opposite side and raise the cover as shown in the photo (D)

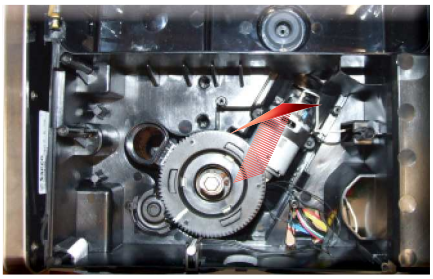


Unscrew the screws shown and pull out the RH and LH panel assembly

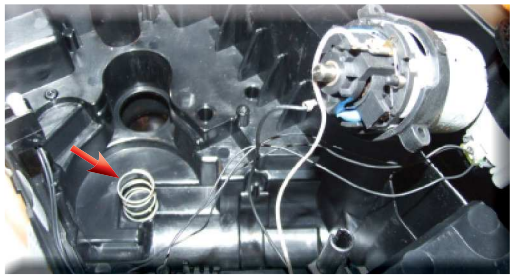
7.2. Coffee grinder



Loosen the screws as illustrated and remove the sound insulating cover of the coffee grinder

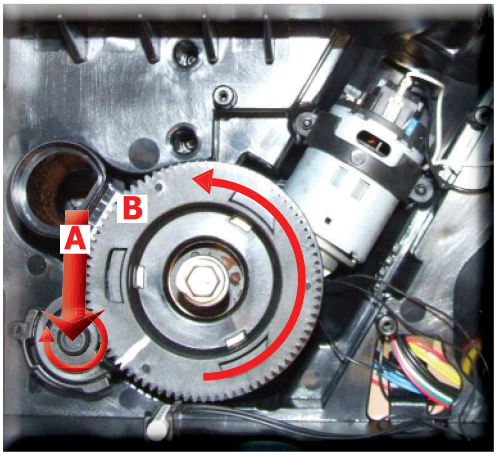


Raise the coffee grinder and remove the connections

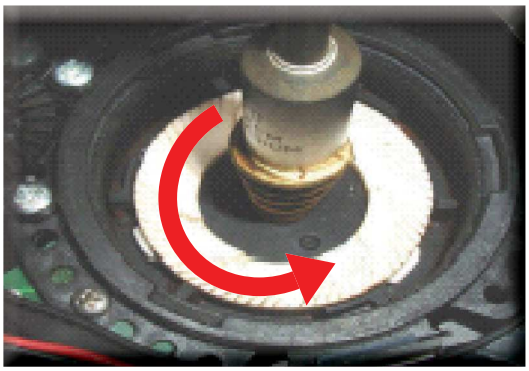


When reassembling the coffee grinder, make sure the spring is repositioned correctly (see photo)

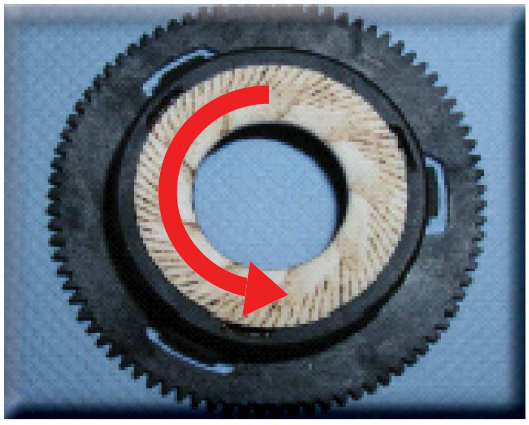
7.3. Grinder blades



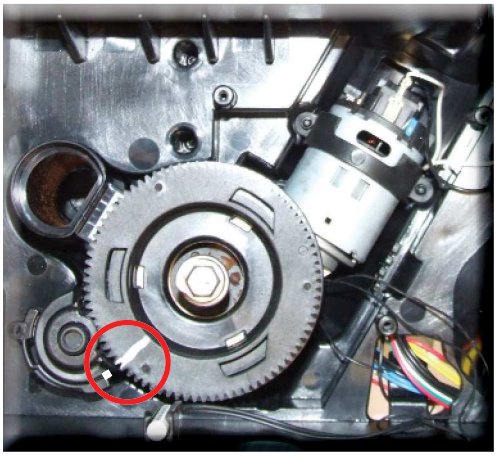
To extract the top support of the appliance, press on the grinding adjustment spindle (A) and turn the support anticlockwise until it unhooks.



Turn the grinder blades anticlockwise out of the support.



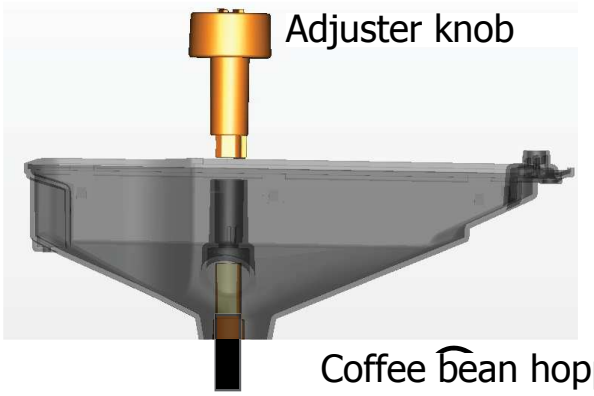
Turn the grinder blades clockwise out of the support. The bayonet connections can be accessed from the rear.

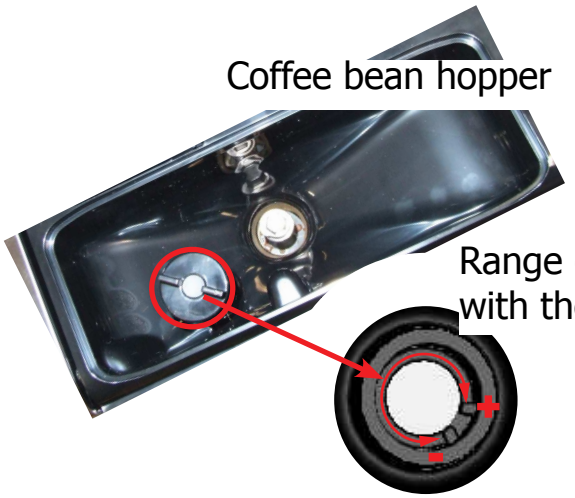


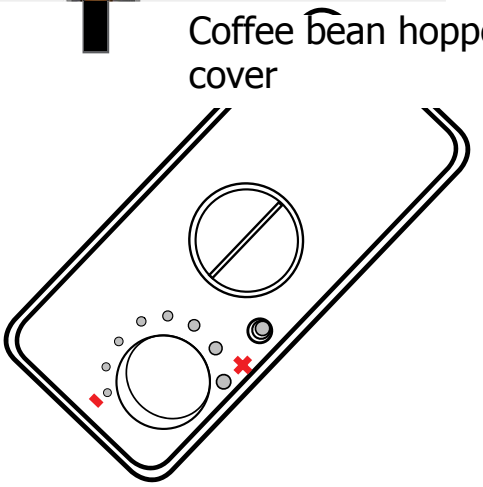
For a standard adjustment, both markings must be aligned.

7.4. Coffee grinder adjustment

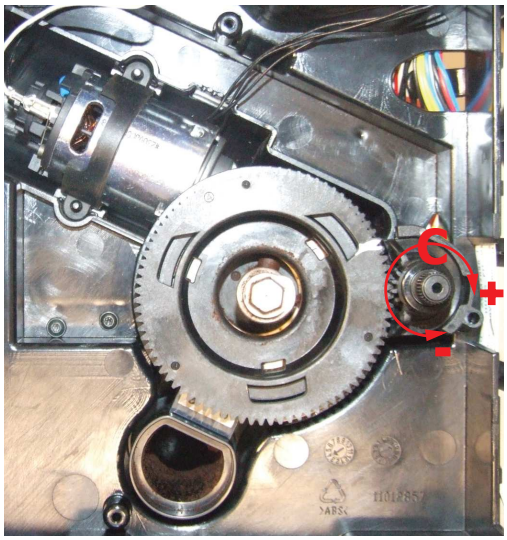
The grinding adjustment can be set by the user (only with the coffee grinder in operation) by pressing and turning (only by one click at a time) the knob inside the coffee bean hopper







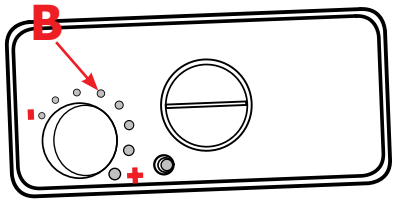
Adjustment by a service centre



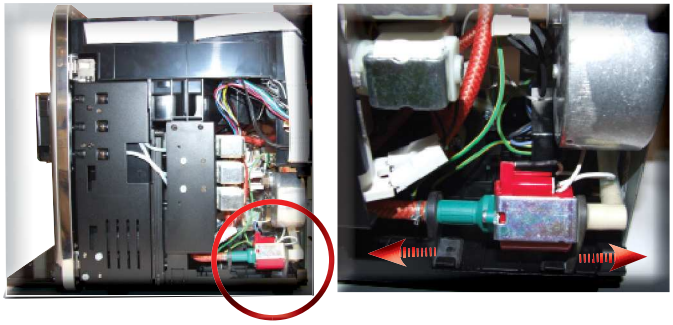
To adjust grinding further, the engineer can work directly on the coffee grinder by pressing and turning the ring nut (C) shown. (clockwise + to increase the particle size of the coffee and anticlockwise - to decrease it).

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 centre of the adjustment dots on the cover (B).

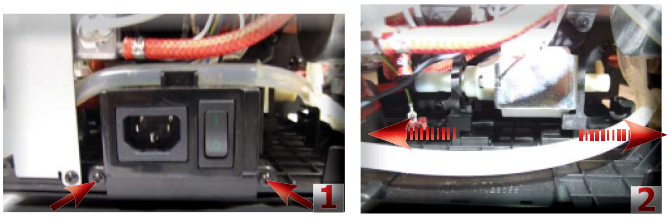


7.5. Steam pump



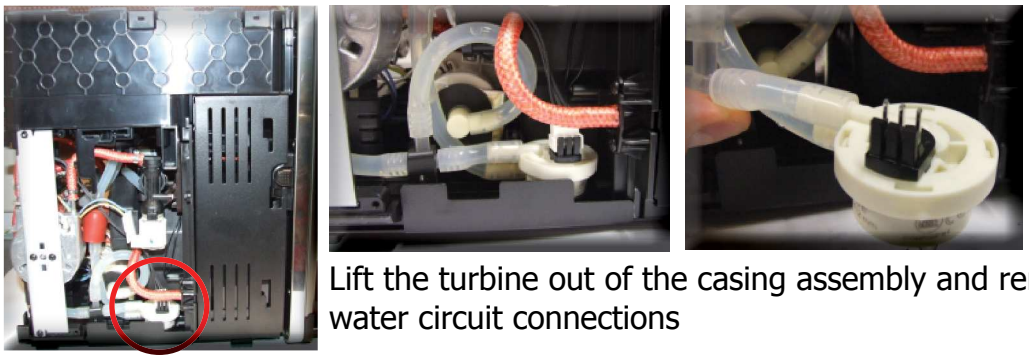
Slide out the two pump supports (highlighted) fixed to the housing and disconnect the electrical and water circuit connections

7.6. Coffee pump



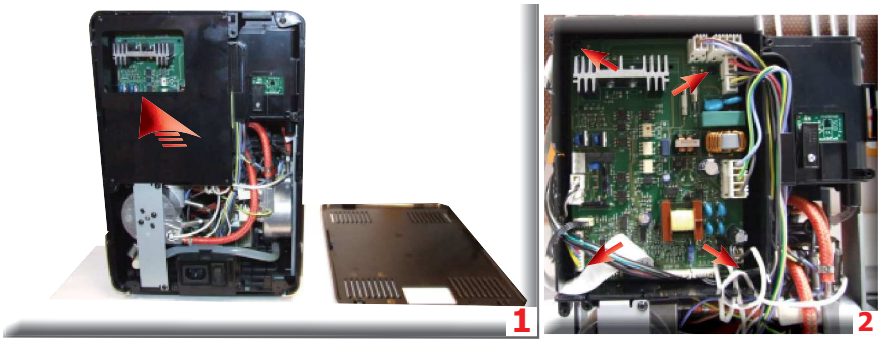
1) Loosen the screws as illustrated and remove all electrical connections from the component support
2) Extract the pump from the supports and disconnect it from the electrical and water circuit connections

7.7. Turbine



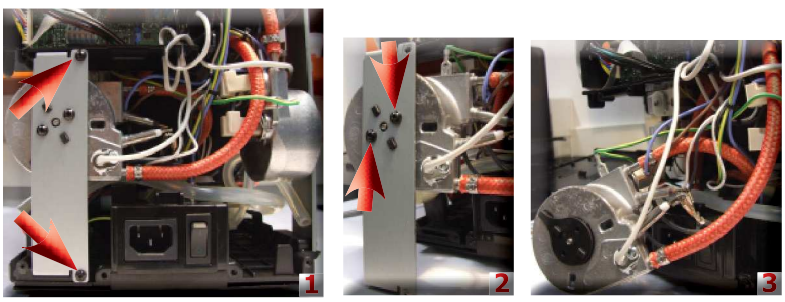
Lift the turbine out of the casing assembly and remove the electrical and water circuit connections

7.8. Power card



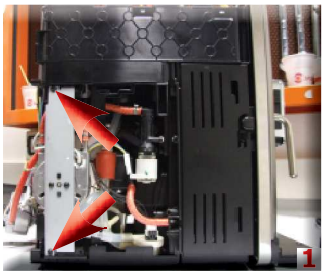
1)Remove the card cover by raising it
2)Loosen the screws as illustrated and remove the PWR card extracting the electrical connections

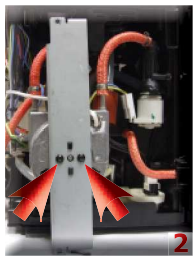
7.9. Steam boiler

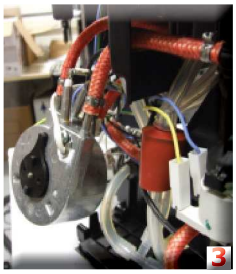


1-2)Unscrew the screws shown
3)Unhook the boiler, disconnect the electrical and water circuit connections

7.10. Coffee boiler

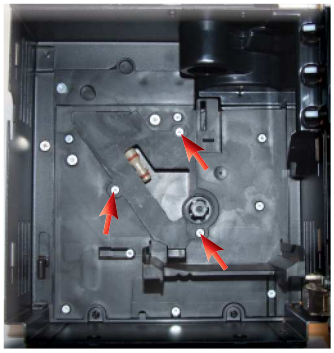




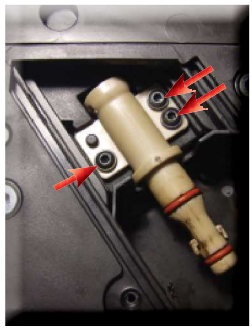


1-2)Unscrew the screws shown
3)Unhook the boiler, disconnect the electrical and water circuit connections

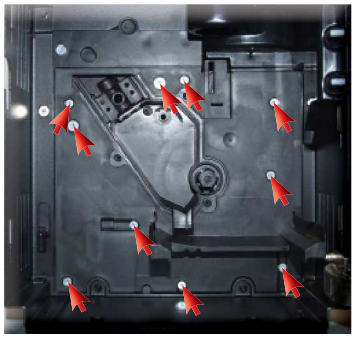
7.11. Gearmotor:



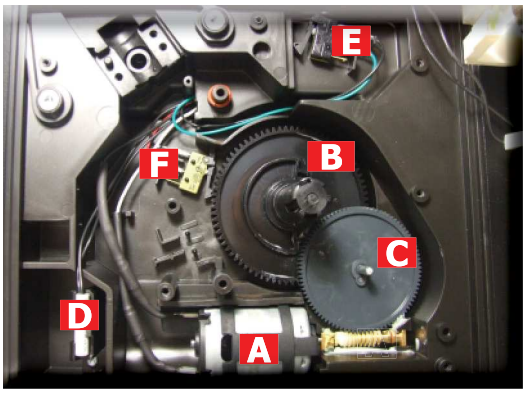
Loosen the screws as illustrated and remove the boiler pin



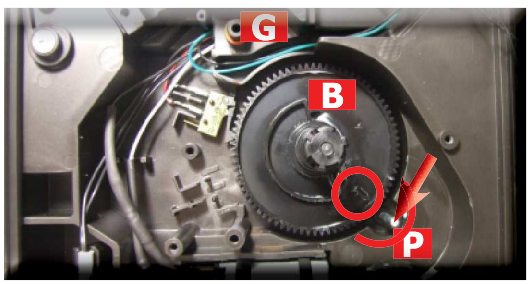
Loosen the screws as illustrated and remove the boiler pin



Loosen the screws as illustrated and remove the gearmotor cover

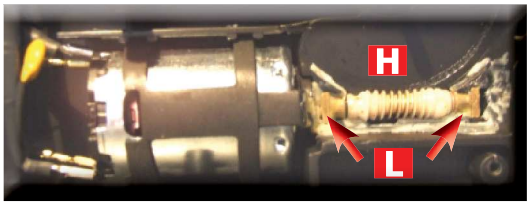


The following are located inside the compartment protected by the casing:
- Electric motor (A) with gears (B) and (C) for transmission and timing of the dispensing unit
- Dreg drawer presence sensor (D)
- Dispensing head present microswitch (E)
- Microswitch (F) detecting brewing unit home and work positions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



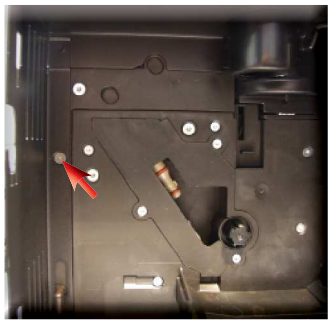
- (G) Multi-way valve drain

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

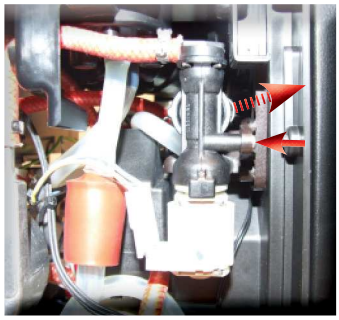


When replacing the motor and the transmission shaft, make sure the guide runners (L) are in the right position.
Grease the shaft thoroughly and evenly.

7.1. Multi-way valve



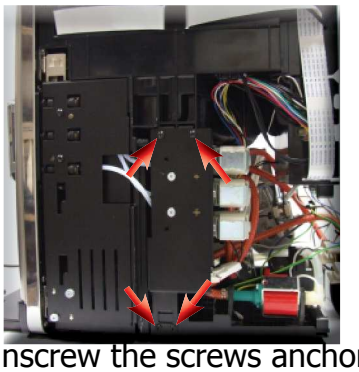
Unscrew the screws as indicated to reach the screw anchoring the multi-way valve to the support



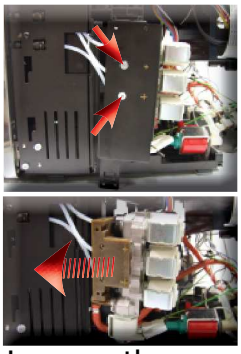
Loosen the screw as illustrated and remove the clip

Disconnect the electrical and water circuit connections

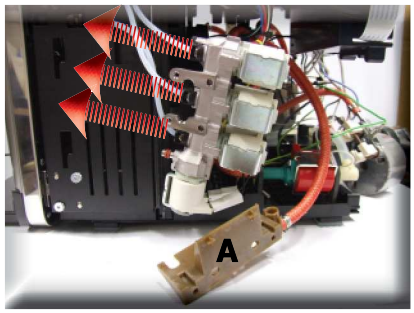
7.13. Frother unit valve assembly



Unscrew the screws anchoring the valve support to the housing and to the horizontal plate as shown



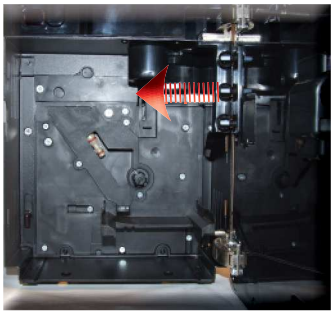
Unscrew the screws shown and pull out the valve assembly



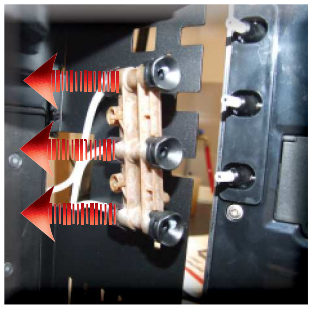
Unhook the support for coupling the drain (A) and extract the three Teflon tubes as shown

7.14. Door tube coupling

Loosen the screws as illustrated



Extract the coupling guard

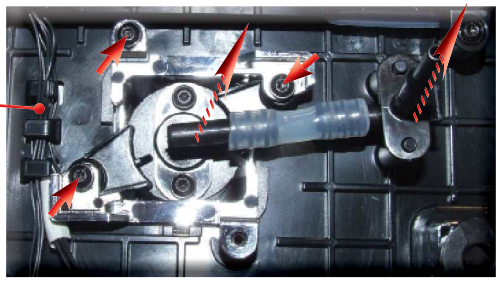


Unhook the coupling (A) and extract the three Teflon tubes as shown

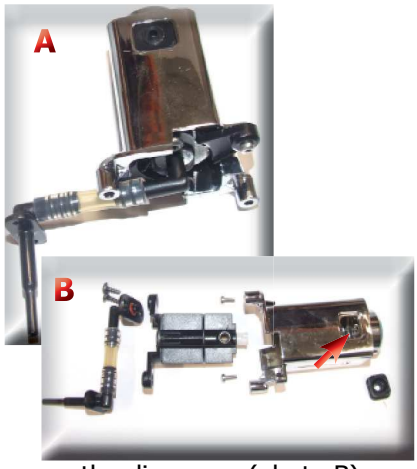
7.15. Dispenser assembly

Extract the dispenser assembly

Loosen the screws as illustrated to remove the inner front panel cover



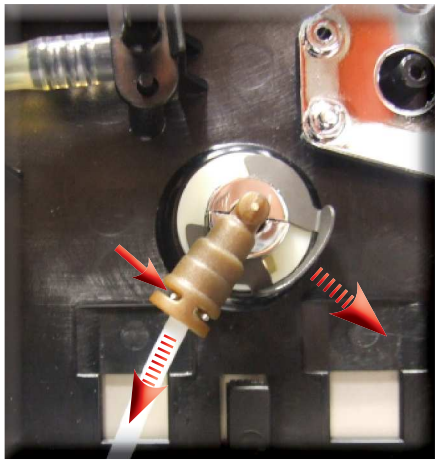
Loosen the screws located inside the door and slide out the coffee dispenser as shown



Remove the dispenser (photo B); when replacing it, make sure the spring highlighted is positioned correctly

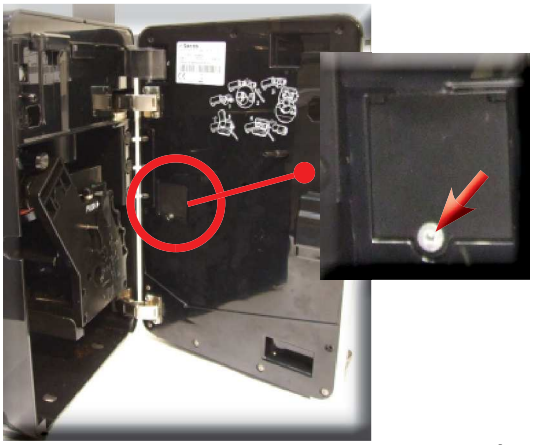
7.16. Steam pipe assembly

Loosen the screws as illustrated to remove the inner front panel cover

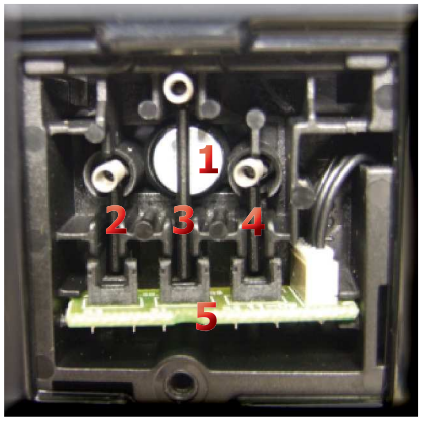


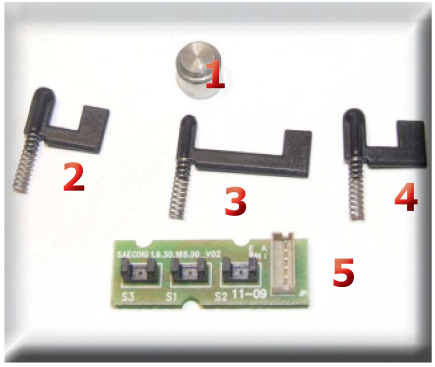
Remove the fork spring and the steam pipe washer, disconnect the pipe from the Teflon by removing the fork

7.17. General carafe card assembly



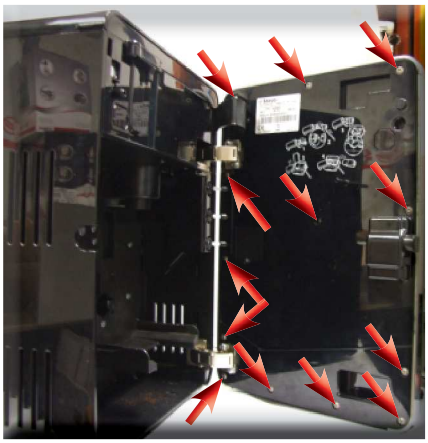
Loosen the screw as shown



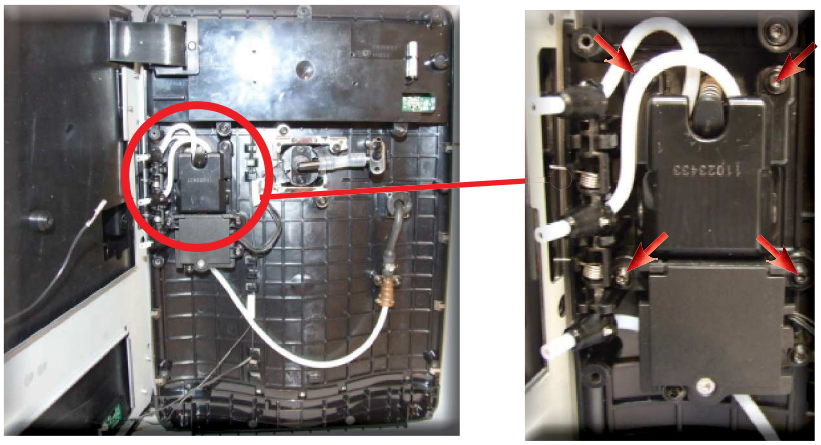


1) Magnet to improve carafe adherence to the door
2,3,4) for the carafe presence and position sensors
5) Carafe card

7.18 Teflon pipe support and carafe attachment assembly



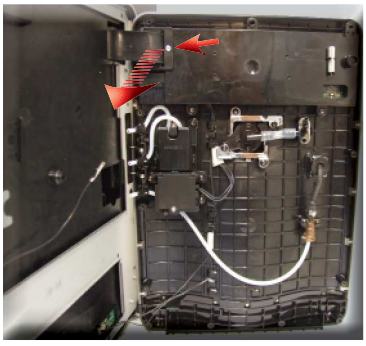
Loosen the screws as illustrated to remove the inner front panel cover



Remove the screws shown and pull the Teflon pipe support cover away from the carafe

Remove the Teflon pipe support assembly

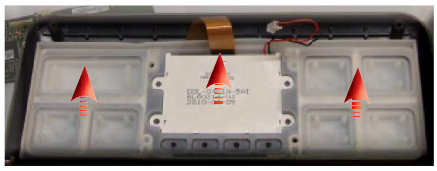
7.19. CPU and display card



Loosen the screws as illustrated and remove the guard and the flat cable

Unscrew the screws of the display support as shown

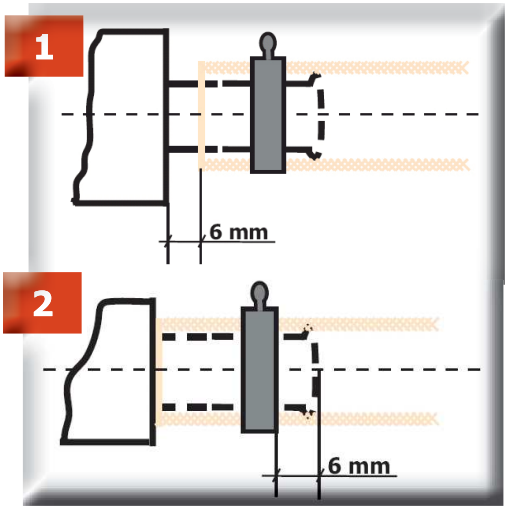
Extract the connections and flat cable.



Extract the display and the keypad

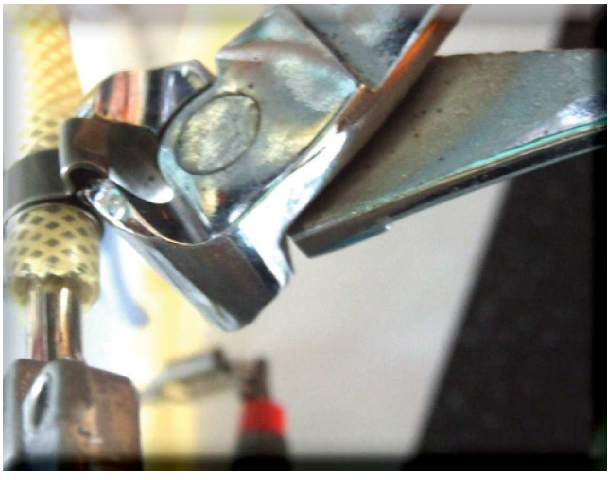
CPU and display card assembly

7.20. Fitting and removing Oetiker clamps



1) Boiler connection

2) Other connections



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

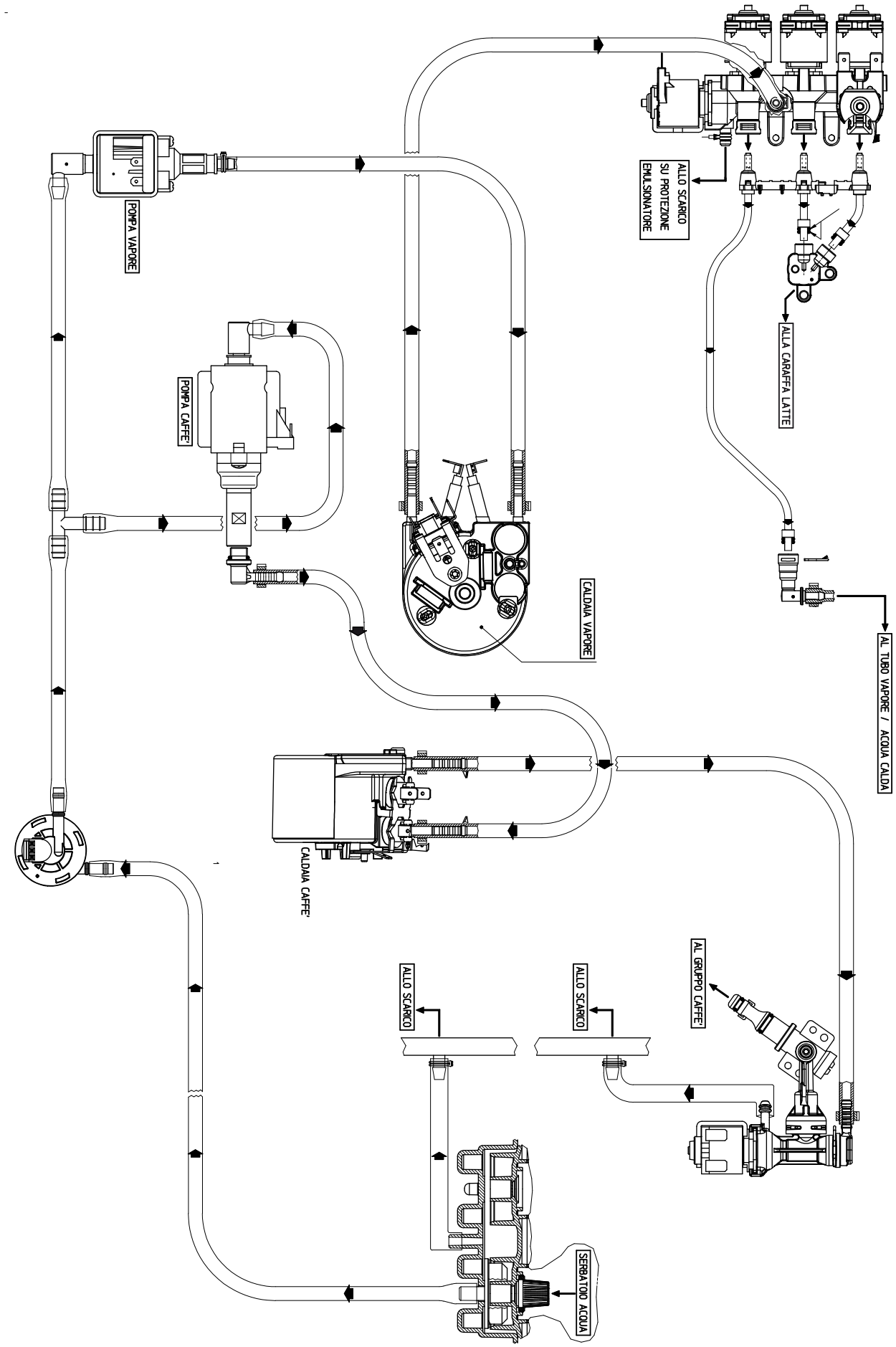
Tighten the clamp as illustrated

CHAPTER 8

NOTES

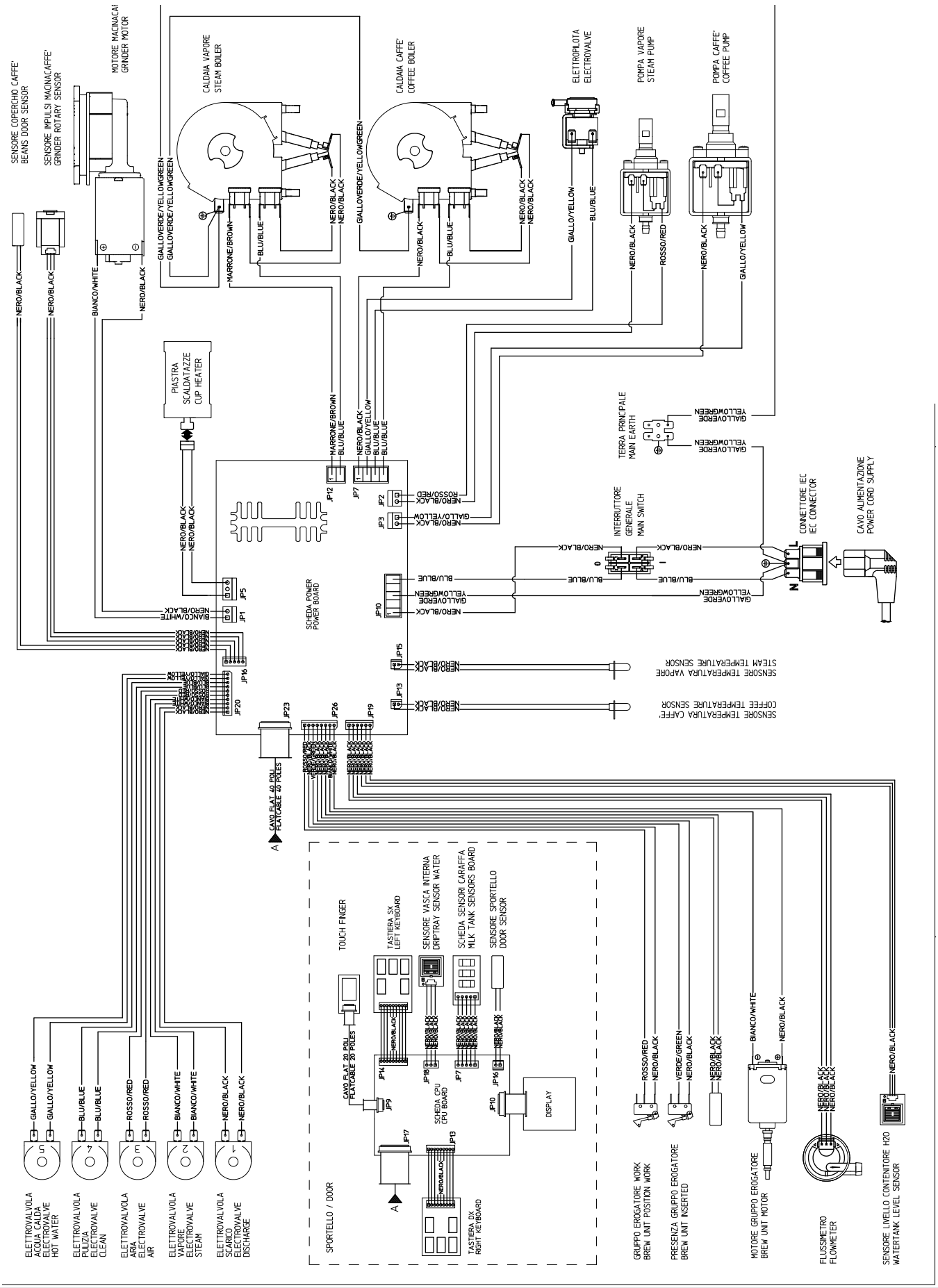
CHAPTER 9

WATER CIRCUIT DIAGRAM


ALLO SCARICO SU PROTEZIONE EMULSIONATORE
POMPA VAPORE
ALLA CARAFFA LATTE
POMPA CAFFE'
CALDAIA VAPORE
AL TUBO VAPORE / ACQUA CALDA
CALDAIA CAFFE'
ALLO SCARICO
ALLO SCARICO
AL GRUPPO CAFFE'
SERBATOIO ACQUA

CHAPTER 10

ELECTRICAL DIAGRAM


SENSORE COPERCHIO CAFFE'
BEANS DOOR SENSOR
SENSORE IMPULSI MACINACAFFE'
GRINDER ROTARY SENSOR
MOTORE MACINACAFFE'
GRINDER MOTOR
CALDAIA VAPORE
STEAM BOILER
CALDAIA CAFFE'
COFFEE BOILER
ELETTROPILOTA
ELECTROVALVE
POMPA VAPORE
STEAM PUMP
POMPA CAFFE'
COFFEE PUMP
PIASTRA
SCALDATAZZE
CUP HEATER
TERRA PRINCIPALE
MAIN EARTH
INTERRUTTORE
GENERALE
MAIN SWITCH
CONNETTORE IEC
IEC CONNECTOR
CAVO ALIMENTAZIONE
POWER CORD SUPPLY
SCHEDA POWER
POWER BOARD
SENSORE TEMPERATURA VAPORE
STEAM TEMPERATURE SENSOR
SENSORE TEMPERATURA CAFFE'
COFFEE TEMPERATURE SENSOR
CAVO FLAT 40 POLI
FLATCABLE 40 POLES
TOUCH FINGER
TASTIERA SX
LEFT KEYBOARD
SENSORE VASCA INTERNA
DRIPTRAY SENSOR WATER
SCHEDA SENSORI CARAFFA
MILK TANK SENSORS BOARD
SENSORE SPORTELLO
DOOR SENSOR
CAVO FLAT 20 POLI
FLATCABLE 20 POLES
SCHEDA CPU
CPU BOARD
DISPLAY
TASTIERA DX
RIGHT KEYBOARD
SPORTELLO / DOOR
ELETTROVALVOLA
ACQUA CALDA
ELECTROVALVE
HOT WATER
ELETTROVALVOLA
PULIZIA
ELECTROVALVE
CLEAN
ELETTROVALVOLA
ARIA
ELECTROVALVE
AIR
ELETTROVALVOLA
VAPORE
ELECTROVALVE
STEAM
ELETTROVALVOLA
SCARICO
ELECTROVALVE
DISCHARGE
GRUPPO EROGATORE WORK
BREW UNIT POSITION WORK
PRESENZA GRUPPO EROGATORE
BREW UNIT INSERTED
MOTORE GRUPPO EROGATORE
BREW UNIT MOTOR
FLUSSMETRO
FLOWMETER
SENSORE LIVELLO CONTENITORE H2O
WATERTANK LEVEL SENSOR