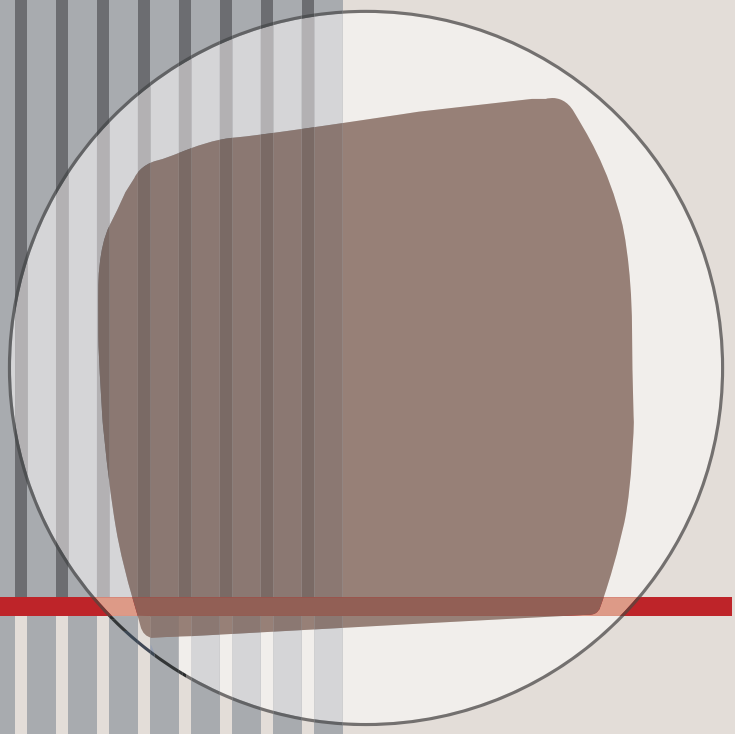
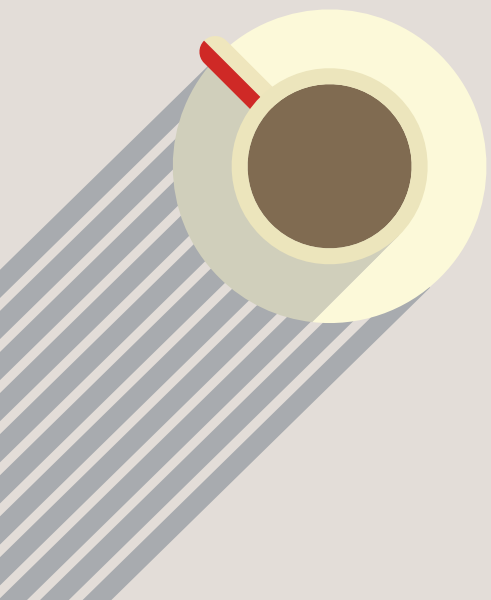
PRIMA MUSA®

Italian Custom Espresso Machines



ESPRESSO COFFEE MACHINE

Thermosiphonic System



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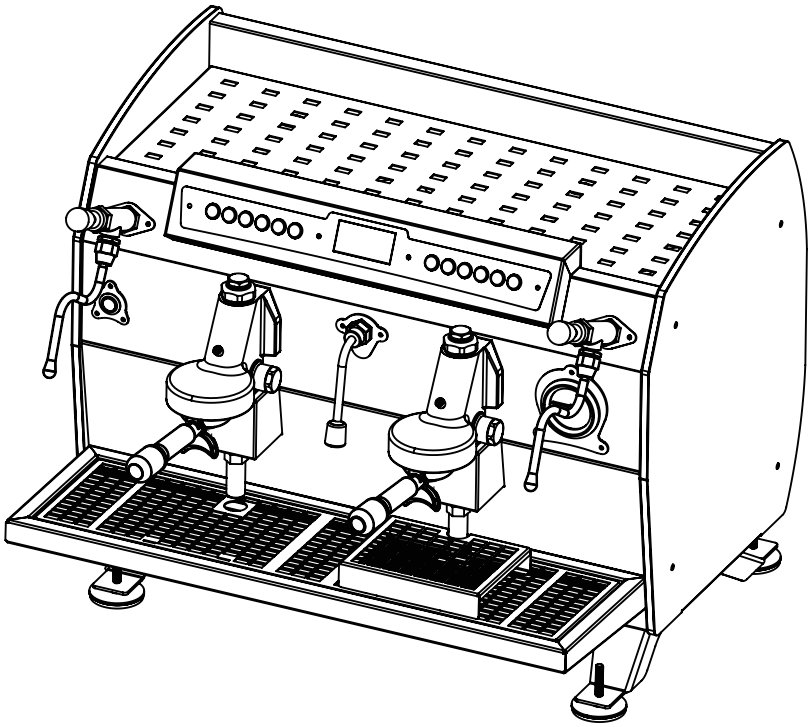


Apollo

Apollo is the machine that Prima Musa created
to express the excellence of craftsmanship.
In Greek mythology, the prophetic symbols of Apollo
are the laurel, the bow and the arrows.

CE

1. WARNINGS

1.1 READ CAREFULLY

Read this manual carefully in its entirety, before using the machine.

The espresso coffee machine you purchased was conceived and built with the latest generation methods and technologies that ensure quality and reliability over time.

This manual is the guide that will allow you to know the advantages of choosing our brand. Inside you will find all the news on how to best use the machine, how to keep it efficient and how to behave in case of problems.

Keep this manual carefully. In case of loss and / or deterioration of the present, a copy of the same can be requested from the manufacturer.

1.2 HOW TO USE THIS MANUAL

The manufacturer ensures the right to make any changes and / or improvements to the product without any communication to the customer. It is guaranteed that this manual reflects the state of the art when the machine was marketed.

We take this opportunity to invite our kind customers to report any proposals for improvement of both the product and the manual, to our contact details.

1.3 GENERAL WARNINGS

- After removing the packaging, check the integrity of the appliance, if in doubt, do not use it and contact the dealer or distributor directly.
- The packaging elements must not be left within the reach of children and must be disposed of according to current regulations. We recommend that you keep the packaging until the warranty expires.
- Before using the machine, make sure that the mains voltage corresponds to the indications on the machine's data plate.
- The installation must be carried out by qualified personnel, in compliance with the current safety standards.
- The safety of this appliance is total only when it is connected to an effective earthing system, carried out as required by current safety standards. The electrical system must be equipped with an adequate differential switch (circuit breaker). It is important to have these requirements checked and in case of doubt, request an accurate check of the system by qualified personnel. The manufacturer cannot be held responsible for any damage caused by an inadequate electrical installation and / or installation.
- When installing the device, a qualified protective switch must be installed by qualified personnel as required by current safety regulations, with a contact opening distance equal to or greater than 3 mm.
- The use of extension cords or electrical adapters with multiple sockets is not recommended. If their use becomes indispensable, use only simple or multiple adapters, and extension cords that comply with current safety standards. Never exceed the power value in kW indicated on the simple adapter and on the extensions, and the maximum power value indicated on the adapter.
- The espresso coffee machine is intended for the preparation of hot drinks such as coffee, tea, hot milk. This appliance is strictly intended for the use for which it was designed. Any other use is to be considered improper and therefore dangerous. The manufacturer cannot be held responsible for any damage caused by incorrect and irrational use.
- The use of an electrical appliance must comply with the behavioral safety rules:
  - Do not touch the appliance when you have wet or damp hands or feet.
  - Do not use the appliance with bare feet.
  - Do not use extension cables in rooms used for showers or bathrooms.
  - Do not pull on the power cable to disconnect the appliance.
  - Do not access inside the machine.
  - Do not use the machine in the absence of external parts.
  - Do not spill liquid on the machine.
  - Do not allow the machine to be used by children or unable.
  - Make sure that the machine is used in a sufficiently ventilated, hygienic and illuminated area.
- The spaces and access to the machine and the main switch must be left free, to allow the user to be able to intervene without any constraint and also to be able to leave the area immediately if necessary.
- Position and install the machine leaving sufficient space for good ventilation of the machine on all sides and in a position to allow good maneuverability for the operator.
- Do not use water jets on the machine for cleaning. Cleaning operations must be carried out as indicated in this manual.
- Before carrying out any maintenance operation, turn off the appliance from the mains using the main switch.
- In case of failure or malfunction, immediately switch off the appliance, contact the specialized technician immediately, do not attempt any type of intervention and / or repair.

• Any repairs must be carried out only by the manufacturer or by a technician or center authorized by the manufacturer. Use only and exclusively original spare parts. Failure to comply with this standard can seriously compromise the safety and functionality of the appliance and may void the warranty validity.
• Inside the machine there is a battery to avoid the loss of programming data in case the power supply is interrupted.
• In the event of damage to the power supply cable, it cannot and must not be replaced by the user, switch off the machine and disconnect the power supply cable, and contact only a center or professionally qualified personnel for replacement.
• In the event that the appliance is not used for a long period, it is recommended to have it disconnected from the power supply and to have it emptied by qualified personnel.
• To guarantee a good efficiency of the machine and for its correct functioning it is essential to follow the manufacturer's instructions, having periodic and scheduled maintenance carried out by qualified personnel with the control of all safety devices.
• Never expose with your hands or other parts of the body in the direction of the steam, hot water, coffee dispensing terminals. Steam and water leaving the machine can cause burns.
• With the machine running and running, handle the steam wands, hot water wands and filter holders carefully and only at the points provided as they are overheated parts.
• Cups and mugs must be placed on the special cup warmer surface only after they have been dried.
• Do not use the cup warmer to place dishes or similar objects.
• The device is not intended for use by people with reduced physical, sensory or mental abilities, by children and by people without experience or knowledge of the device.
• Children must be supervised and not let them play with the appliance.
• Use the machine only with a temperature between 5 ° and 40 ° C.
• Unauthorized tampering with any part of the machine voids any warranty.

1.4 WARRANTY

The machine is covered by a 12-month warranty excluding electrical components as well as wearing parts.

2. PRESENTATION

This product is manufactured in compliance with the requirements for agri-food machines as indicated in paragraph 2.1 of Directive 2006/42/CE.
The espresso coffee machine is intended for purely professional use, it has been designed for the preparation of hot drinks such as coffee, tea, cappuccinos, hot milk, etc. If the model has two or more groups, the use can be carried out by two or more people at the same time, the machine is capable of dispensing drinks seamlessly and guarantees intensive use of the same.

3. WARNINGS FOR THE INSTALLER

3.1 POWER SUPPLY

The indicated power supply of the appliance must be made with water suitable for human consumption in compliance with the provisions in force in the place of installation. The owner and / or operator of the system must confirm to the installer that the water meets the requirements indicated above.

3.2 MATERIALS TO USE

When installing the machine, the components and materials supplied with the machine must be used.
If there is a need to use other components, the installer must verify the suitability of the same and be suitable for contact with water for human consumption.

3.3 HYDRAULIC CONNECTIONS

The installer must make the hydraulic connections respecting the regulations in force in the place of installation.

3.4 ACTIVATION

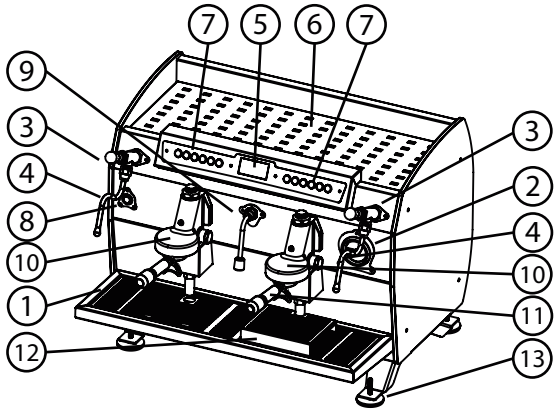
At the end of the installation the appliance must be activated and brought up to the normal working condition and leave it in the standby condition for a minimum of 30 minutes.
Subsequently, the appliance must be turned off and left to cool, then it must be completely emptied of the water inside it in order to eliminate any initial impurities.
Afterwards, the appliance must be filled with water again up to normal operating conditions.
Turn the machine back on and wait for it to reach the state of use, then carry out the following operations:
• For each coffee group, make a continuous delivery to drain a minimum of 0.5 liters of water from the circuit.
• Drain the entire volume of water from the boiler by making a continuous supply from the special lance, drain a minimum of 6 liters for 2 groups and a minimum of 8 liters for 3 groups.
• Drain for at least 1 minute continuously from each individual steam wand.

3.5 MAINTENANCE AND REPAIR

After a maintenance and / or repair, the components used must ensure that the hygiene and safety requirements initially envisaged for the appliance are maintained, this condition occurs using only original components available from the manufacturer.
After a repair or replacement of components involving parts in contact with water and / or food, the procedure described in point 3.4 must be repeated
In case of not using the machine and / or reinstallation, before use repeat the procedure described in point 3.4.

4. DESCRIPTION OF THE MACHINE

4.1 DESCRIPTION



1. Cup rest grid
2. Pressure gauge
3. Steam tap
4. Steam lance
5. Display
6. Cup warmer surface
7. Control push-button panel
8. Main ON / OFF switch
9. Hot water dispenser
10. Dispensing groups
11. Filter and filter holder
12. Raise cups
13. Adjustable feet

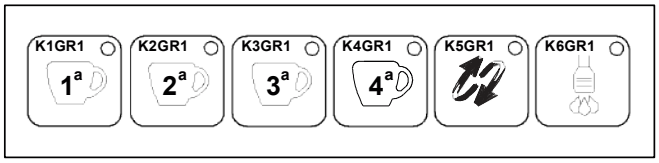
4.2 TECHNICAL DATA

The machine data plate is fixed on the front left side. The machine data are also visible on the machine packaging

		2 GP	3 GP
POWER SUPPLY VOLTAGE	V	230 - 400	230 - 400
ABSORBED POWER	W	4.500	6.000
BOILER CAPACITY	Lt / gal UK	14 / 3,7	21 / 5,55
WIDTH	cm / inc	72 / 28,35	92 / 32,28
DEPTH	cm / inc	58 / 22,83	58 / 22,83
HEIGHT	cm / inc	54 / 21,26	54 / 21,26
SAFETY VALVE CALIBRATION	bar / psi	2,00 / 29,01	2,00 / 29,01
BOILER OPERATION PRESSURE	bar / psi	0,8 ÷ 1,4 / 11,6 ÷ 20,3	0,8 ÷ 1,4 / 11,6 ÷ 20,3
FEEDING WATER PRESSURE	bar / psi	1,5 ÷ 5 (MAX) 21,8 ÷ 72,5 (MAX)	1,5 ÷ 5 (MAX) 21,8 ÷ 72,5 (MAX)
WEIGHT	Kg / lbs	76 / 168	87 / 192

4.3 PUSHBUTTON

In the diagram below you will find a description of the functions of the individual keys. The dual function keys are used when programming the display items, if any.



K1GR1 - 1 Espresso coffee
K2GR1 - 1 Medium coffee
K3GR1 - 2 Espresso coffee
K4GR1 - 2 Medium coffee
K5GR1 - Manual dispensing
K6GR1 - Hot water

5. MACHINE PREPARATION

The preparation of the machine and the installation operations must be carried out exclusively by qualified personnel. The installer must scrupulously observe the indications given in the chapter "warnings for the installer".
Using the machine without carrying out all installation operations by technical personnel will void the warranty.

6. RENEWAL OF WATER

In the event that the machine remains inactive for more than a week, it is necessary to change the water contained within the whole machine, follow the instructions as indicated in point 3. 4 ..

7. TURNING THE MACHINE ON

Before turning on the machine, make sure that the water level inside the boiler is sufficient (visible from the optical level, located inside the machine on the right side, visible by removing the right side or the cup support grid), in the case of an insufficient and / or absent level proceed with manual loading, in order to avoid overheating of the resistance. The machine is equipped with a system that interrupts the power supply of the electric heater in case of insufficient and / or absent water level, and will automatically load the water in the boiler before powering the resistance.

Open the water mains tap and the machine tap.

Turn the switch to position 1 or ON.

Wait for the machine to carry out all the checks and checks (any electrical and electronic problems, filling the boiler). The display (if any) shows the water level inside the boiler and the steam temperature inside the boiler which, when fully operational, must stabilize at around 120 ° C. If present, the temperatures of the individual groups are also displayed.

During the machine heating phase, the anti-depression valve may release steam for a few seconds, until the valve closes.

8. PRELIMINARY OPERATIONS

It is important to have a grinder-doser next to the machine with which to grind the coffee. To obtain a good espresso, it is advisable not to keep large stocks of coffee beans and to respect the expiry date indicated by the manufacturer. Never grind large volumes of coffee, it is recommended to grind only the quantity used daily. Do not buy and / or use already ground coffee, as it quickly deteriorates.

Fill the filter with a dose of ground coffee (about 6-8 gr.) And compress it with the special press, hook the filter holder to the group without closing it too much, to avoid rapid wear of the seal. For the same reason, it is advisable to clean the edge of the filter every time before attaching the filter holder to the group.

Before using the machine, make several empty dispensings with the filter holders attached in order to release any air present in the circuit and allowing the complete heating of the dispensing groups.

Also carry out some coffee dispensing with different grinding tests to check the most suitable grinding and to check the operating pressures of the machine. Never remove the filter holder from the group when brewing coffee, risk of burns.

9. COFFEE PREPARATION

Hook the filter holder with the coffee to the group, place the cup or cups under the spout, press the desired dispensing switch to obtain the coffee dispensing, which will stop automatically when the programmed quantity is reached or can be stopped in advance by pressing the dispensing switch (the dispensing times are set by the manufacturer for a correct quantity of coffee, the dispensing times can be changed by the operator or by technical personnel as reported in the machine programming chapter).

Place the cup or cups under the spout and press the desired dose button and wait for the coffee to be dispensed (during delivery, the LED corresponding to the button pressed will remain lit.

To stop coffee delivery early, press the button with the LED on.

10. PREPARATION OF HOT DRINKS

10.1 HOT WATER DELIVERY

Place the jug under the hot water wand and press the hot water button (function active on all keyboards) and wait for the end of the supply, if the quantity of hot water is insufficient press the hot water button again, the water supply hot water can be stopped early by pressing the hot water button.

Do not touch the hot water spout, contact with the spear can cause burns and damage to people, things and animals.

10.2 STEAM DELIVERY

Insert the steam wand (s) into the liquid to be heated and operate the joystick or the tap knob, return the joystick to the central position or the knob closed after dispensing.

Turning the knob anticlockwise the tap opens and allows the steam to escape, turning the knob clockwise closes the tap.

By moving the joystick (if provided by the model purchased) vertically, there is a continuous opening of steam, manually return the joystick to the central position to stop steam delivery. Moving the joystick horizontally opens the steam and automatically closes the steam when the joystick is released.

To obtain optimal swarming, it is advisable to heat only the quantity of milk to be used, once heated, it must be poured entirely from the jug and not re-heated. The milk to be frothed must be at room temperature and at a temperature not lower than 4 ° C.

Before each use of the steam wand, drain the condensation inside the wand by operating the tap for at least 2 seconds.

Leave the steam wand immersed in the milk only for the time strictly necessary for heating the milk.

Handle the steam wand with care, use the special anti-scald rubber, contact with the nozzle and the steam can cause burns and damage to people, things and animals.

Clean the lance (s) with a soft, damp cloth after each use, the milk residues left on the steam wand favor the proliferation of bacteria and mold, highly harmful to the human organism. Do not use detergents for cleaning the steam wands.

Never open the tap of the steam wand immersed in milk or other liquid with the machine off, the machine is equipped with an anti-vacuum and anti-suction valve, in case of valve malfunction the milk is sucked into the boiler with serious damage to the machine itself (contact the service center).

11. CUP WARMER

Place the cups to be heated on the cup warmer top, the top is heated by induction from the heat generated by the boiler inside the machine. It is not possible to adjust the heating temperature of the cups. Do not place cups or cups that are damp or containing liquids on the cup warmer surface, spilling liquids inside the coffee machine through the openings on the cup warmer surface can cause serious damage to the machine. In the event of liquid spillage inside the machine, immediately turn off and unplug the machine from the power supply and contact the service center.

12. PARAMETERS AND MACHINE FUNCTIONS PROGRAMMING

12.1 USER INTERFACE

12.2 KEYS

K1GR1, K1GR2, K1GR3:	First coffee dose button	Group 1, 2, 3
K2GR1, K2GR2, K2GR3:	Second coffee dose button	Group 1, 2, 3
K3GR1, K3GR2, K3GR3:	Third coffee dose button	Group 1, 2, 3
K4GR1, K4GR2, K4GR3:	Fourth coffee dose button	Group 1, 2, 3
K5GR1, K5GR2, K5GR3:	Continuous key / programming	Group 1, 2, 3

NOTE: as will be better specified in the specific paragraph, some keys belonging to the group 1 push-button panel perform specific functions (different from the delivery ones) when programming is taking place:

KEY	ADDITIONAL FUNCTION	FUNCTION DESCRIPTION
K1GR1	+ (MORE)	"Increase" function of the numerical values or selection of the "preset" options relating to the parameter being programmed
K2GR1	- (LESS)	"Decrease" function of the numerical values or selection of the "preset" options relating to the parameter being programmed
K3GR1	ENTER	Confirmation function of some operations during programming
K5GR1	- (MENU)	Selection / selection function of the parameter to be programmed

12.3 LED

K1GR1, K1GR2, K1GR3:	Led First coffee dose button	Group 1, 2, 3
K2GR1, K2GR2, K2GR3:	Led Second coffee dose button	Group 1, 2, 3
K3GR1, K3GR2, K3GR3:	Led Third coffee dose button	Group 1, 2, 3
K4GR1, K4GR2, K4GR3:	Led Fourth coffee dose button	Group 1, 2, 3
K5GR1, K5GR2, K5GR3:	Led Continuous key / programming	Group 1, 2, 3

13. TURNING THE MACHINE ON

By powering the machine through the external main switch, it returns to the "OFF" or "IDLE-ON" state that it had before disconnecting from the network
(see "Procedures in the event of a mains failure").
When the machine is powered up, the display briefly shows the version of the software installed (x.yy).

13.1 OFF STATUS (MACHINE OFF BUT POWERED)

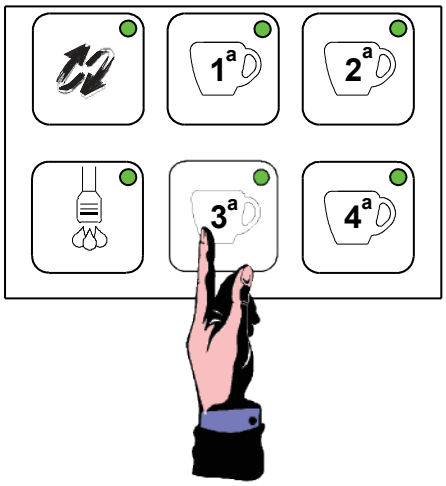
With the dosage off, the display shows the word OFF, time and date:

- all outputs are disabled
- all the functions are disabled, except for the TECHNICAL Programming ones

IDLE ON STATUS

13.2 POWER ON

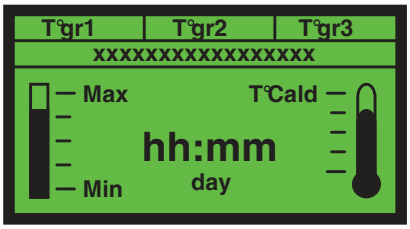
To switch on the dosage, press the K3GR1 button.



In idle-on status, the dosage detects the status relative to the level and minimum level probes; if the probe detects the lack of water in the boiler, filling of the same is arranged by activating the EVLIV filling solenoid valve and the PUMP until the correct water level is restored
(Filling time-out - see ALARMS paragraph).
When filling is complete, heating is activated (see paragraph "boiler heating")
In the event that the correct levels are detected, or after the phase of restoration of the same, the dosage is predisposed to the enabling of the coffee dose selections or to a possible programming of the same (see following paragraphs).

The authorization to dispense is not subject to reaching the set-point temperature in the boiler.

The display shows the following messages:



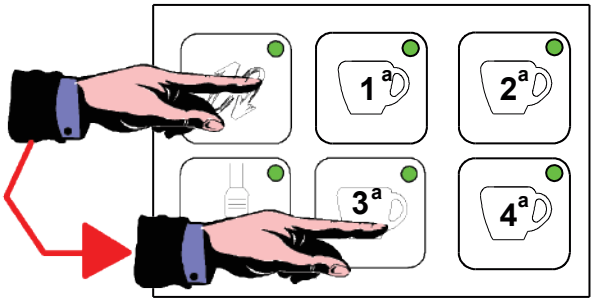
where is it

hh = current time (0 ÷ 23)
mm = current minute
day = day of the week
xxxxxxxxxxxxx = customer name of your choice, functional states, alarms
……. that flow from right to left
T°grx = group temperature
T°cald = boiler temperature
Max = boiler level
Min = minimum boiler level

IN IDLE-ON STATUS ALL LEDS ARE ON

13.3 SHUTDOWN

To switch off the dosage, first hold down the K5GR1 key and immediately after the K3GR1 key.

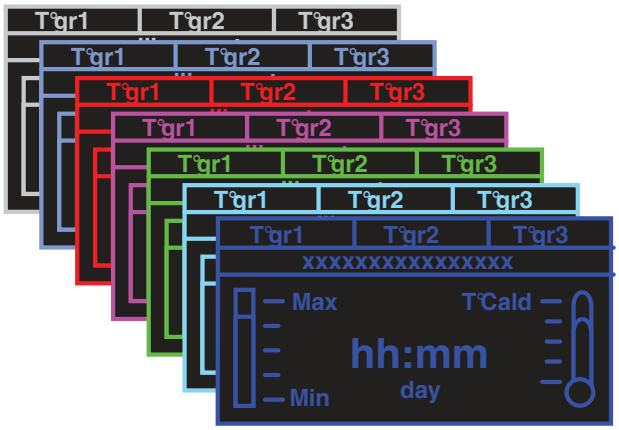


14. COLOR GRAPHIC RGB DISPLAY

The RGB graphic display allows the choice of the desired background color with the colors that can be set in the TECHNICAL PROGRAMMING.

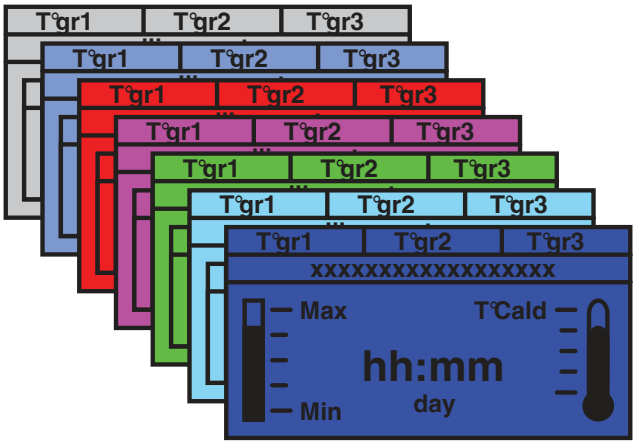
14.1 NORMAL MODE

In normal mode, the display has a black background and colored writing.



14.2 REVERSE MODE

In normal mode, the display has a colored background and black lettering.



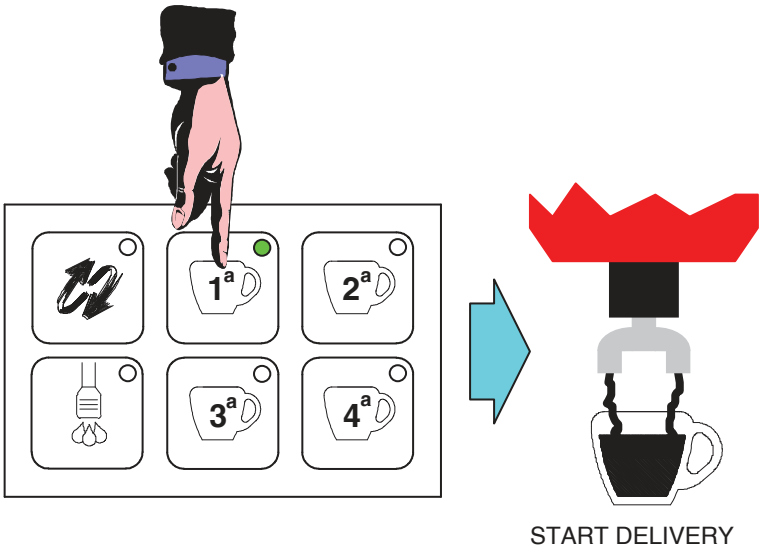
15. DONATIONS

15.1 COFFEE CYCLE

15.2 DELIVERY

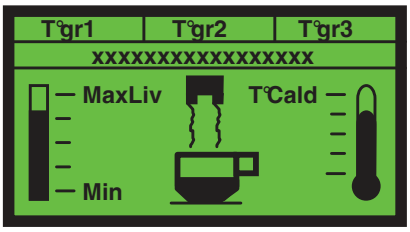
From the idle-on state, pressing one of the four dose keys belonging to the group from which you wish to dispense (for example K1GRx) both the EVx dispensing solenoid valve and the PUMP are energized, starting the dispensing phase.
Pump and solenoid valve will remain active until the quantity of product (volumetric counter pulses) previously programmed is reached.

The LED relating to the button for the selected dose remains lit for the duration of coffee brewing.



START DELIVERY

While dispensing is in progress, the display shows the ICON of the dose running with the cup that fills up:



Once the dose is complete, the display keeps the icon displayed for 5 seconds.

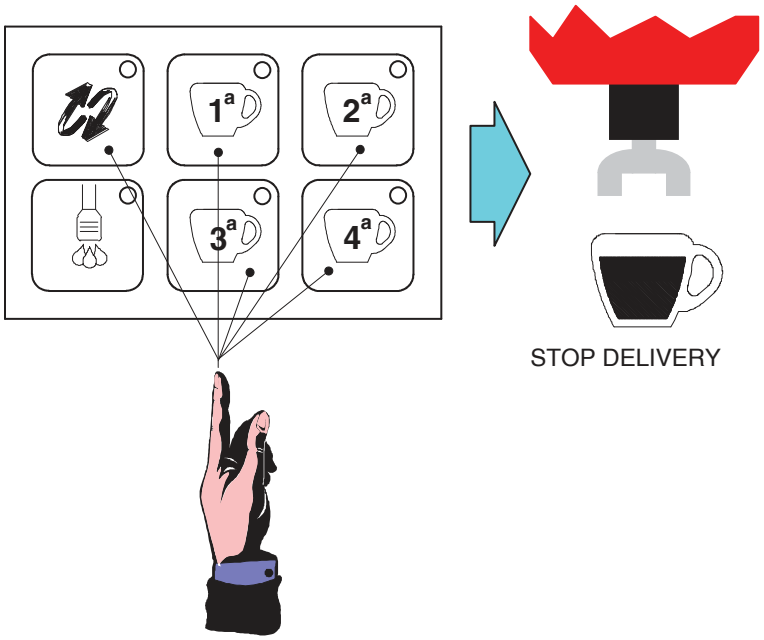
NOTE 1: The dosage allows the simultaneous dispensing of coffee, tea and steam from all the groups required by the dosage. The display shows the icon of the first selected dose.

NOTE 2: If the BUZZER function is enabled from the technical menu (see dedicated chapter), at each delivery start the buzzer on the back of the RGB display board emits an acoustic signal.

15.3 STOP COFFEE BREWING IN EXECUTION PHASE

There is the possibility of interrupting the delivery in progress before reaching the pulses relating to the volumetric counter programmed by pressing any of the dose keys on the keyboard of the group used for dispensing the product.

This operation de-energizes with immediate effect both the EVx delivery solenoid valve and the PUMP, interrupting the product delivery and returning the dosage to the IDLE-ON state



STOP DELIVERY

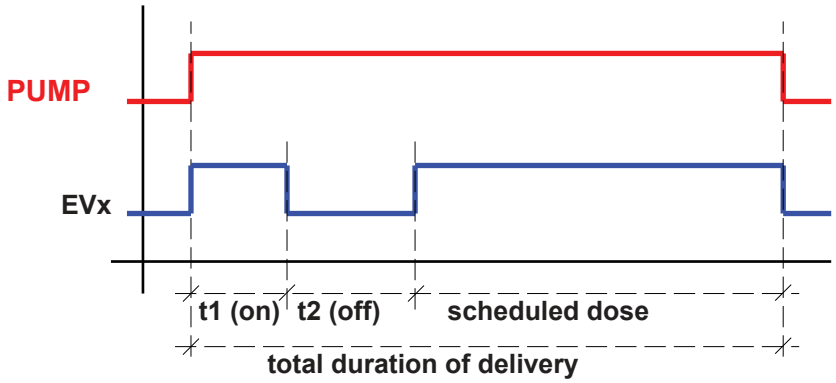
15.4 PRE INFUSION

The dosage can be configured in such a way that the delivery relative to the volumetric control coffee doses is preceded by the pre-infusion.

At the start of the dose, after the time t1 (on) the solenoid valve group EVx turns off and remains off for the time t2 (off), only to then re-energize itself to bring the dose to an end as scheduled. This timed on / off does not apply to the PUMP actuator.

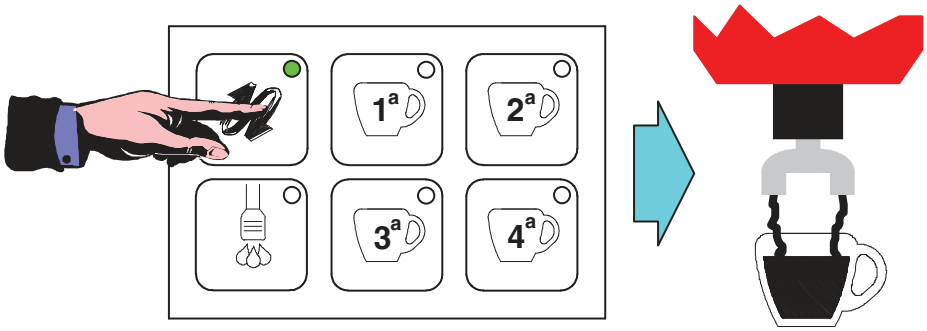
By pressing one of the volumetric control dose keys, the "normal" dispensing cycle is preceded by a short timed jet of water used to moisten the coffee tablet before the actual dispensing step.

CAUTION: the times of t1 (on) and t2 (off) can be set in the TECHNICAL Programming for all coffee doses. If one or more data are set to zero, this function is not performed even if it is active! For enabling see TECHNICAL Programming.



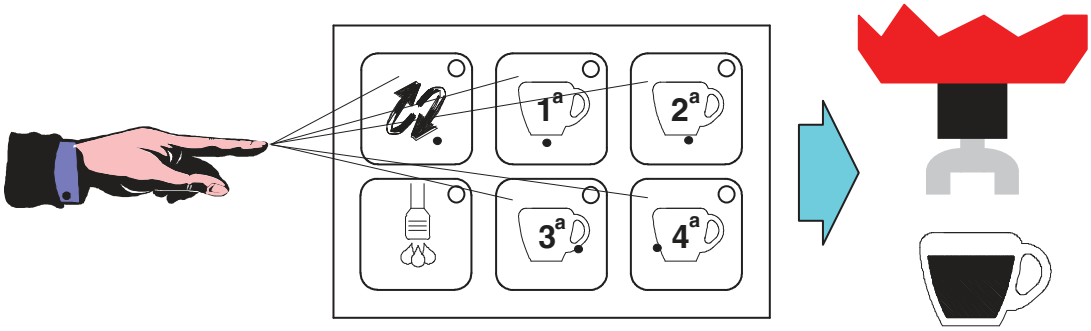
15.5 COFFEE BREWING IN CONTINUOUS MODE

From the IDLE-ON state, by pressing one of the dose keys K5GRx (continuous / programming) both the EVx delivery solenoid valve and the PUMP are energized, starting the delivery phase. The L5GRx LED relating to the button for the selected dose remains lit for the duration of the coffee dispensing.



START DELIVERY

To stop dispensing in continuous mode, perform the STOP dose by pressing any dose button on the keyboard of the group used for dispensing the product. The de-energization of the solenoid valve and pump occurs with the consequent turning off of the signaling LED.



STOP DELIVERY

Continuous delivery is automatically stopped (if no stop is performed) when the maximum quantity of product is reached; this quantity can be controlled both in volumetric mode when 6000 pulses are reached, and through a delivery time-out (see ALARMS paragraph).

IMPORTANT: THE START CONTINUOUS TO THE "CONTINUOUS" CYCLE IS ON THE RELEASE (WITHIN 5 SECONDS PENALTY TO THE PROGRAMMING PHASE) OF THE K5GRx KEY AND NOT ON ITS PRESSURE.
THE POSSIBLE STOP DOSE, ON THE OTHER HAND, OCCURS ON PRESSING THE BUTTON ITSELF.

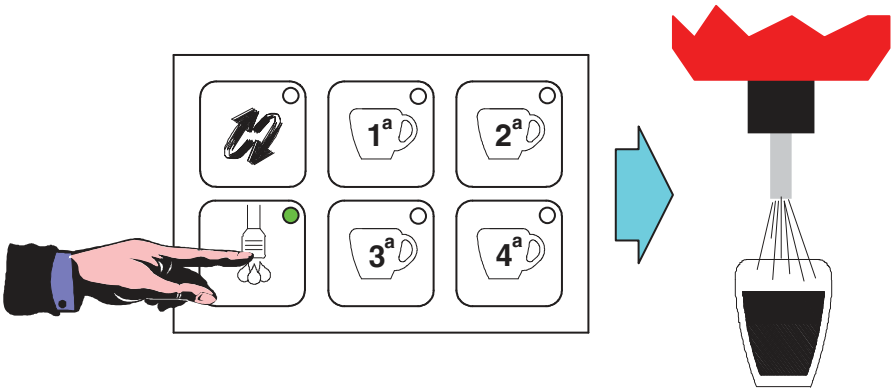
15.6 TEA CYCLE

15.7 DELIVERY

By pressing the button for the Tea dose (K6GRx), the Tea solenoid valve (EVTEA) is activated, initiating the delivery of hot water. The operation is highlighted by the lighting up of the LED (L6GRx) corresponding to the button pressed.

At the time of the cycle start, a timer is activated which, once the value set in the programming phase is reached, interrupts the supply of the product.

While dispensing is in progress, the display shows the icon of the dose running with the cup that fills up.
Once the dose is completed, the display keeps the icon displayed for 5 seconds.



START DELIVERY

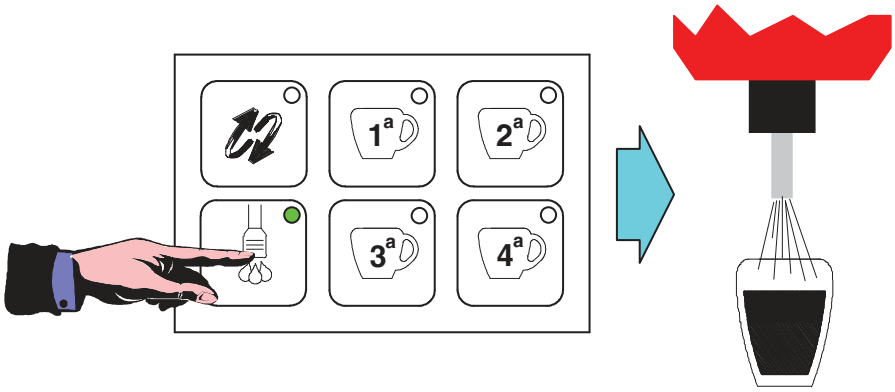
NOTE 1: The dosage allows the simultaneous dispensing of coffee, tea and steam from all the groups required by the dosage. The display shows the icon of the first selected dose.

NOTE 2: If the BUZZER function is enabled from the technical menu (see dedicated chapter), at each start of delivery the buzzer on the back of the RGB display board emits an acoustic signal.

15.8 STOP TEA DELIVERY IN EXECUTION PHASE

There is the possibility of interrupting the delivery in progress before reaching the programmed time by pressing the same button used to start dispensing the tea dose.

This operation de-energizes the EVTEA solenoid valve with immediate effect, interrupting product delivery and returning the dosage to the IDLE-ON state.



STOP DELIVERY

CAUTION:
DOSAGE PROVIDES THREE DIFFERENT TEA DOSES (ONE PER GROUP)

15.9 TEA + PUMP

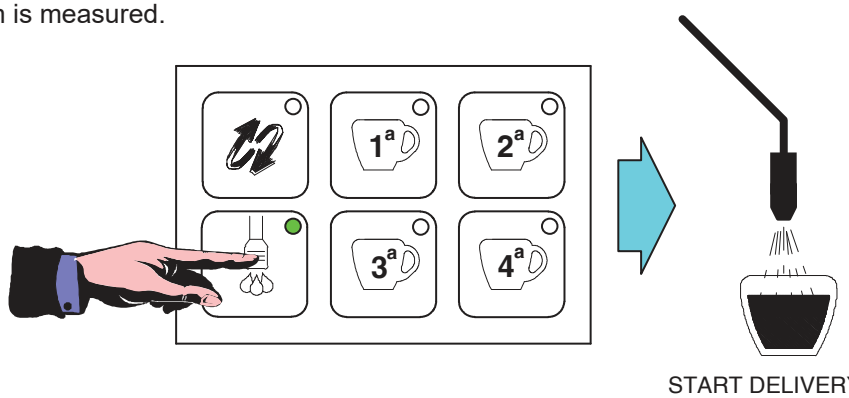
It is possible to combine tea delivery with the pump (See TECHNICAL Programming).

15.10 STEAM PUMP DELIVERY CYCLE

Through a temperature probe positioned appropriately on the steam wand and connected to the STLVAP input, the temperature of the liquid heated by the steam is measured.

Pressing the K6GRx key (of the group selected in the TECHNICAL Programming, see paragraph) activates the EVVAP until the temperature set in the Simulation Programming has been reached (see paragraph below).

However, you can stop early by pressing the steam button.



START DELIVERY

It is possible to continue dispensing steam which has arrived at the programmed temperature by keeping the steam button pressed.
If the temperature is not reached within a time-out of 120seconds, the steam supply is automatically terminated.

NOTE 1: The dosage allows the simultaneous dispensing of coffee, tea and steam from all the groups required by the dosage. The display shows the icon of the first selected dose.
NOTE 2: If the BUZZER function is enabled from the technical menu (see dedicated chapter), at each start of delivery the buzzer on the back of the RGB display board emits an acoustic signal.

16. LEVEL MANAGEMENT AND ADJUSTMENT

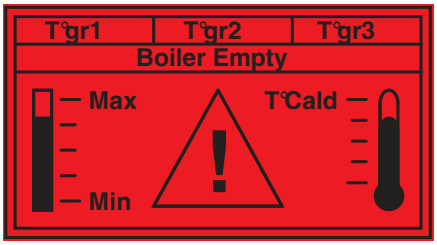
16.1 MINIMUM LEVEL PROBE

At the time of the Power-on, the dosing detects the status relative to the minimum level probe. In case of lack of water, the ON / OFF / HEATING / TEA actuator (which the customer will have connected to the remote control switch and / or power relay at will) is kept de-energized to preserve the heating element from dry running.

NOTE: On power-up, the control of the minimum level probe is enabled after about 6 seconds.

Whenever the minimum level probe placed in the boiler does not detect the presence of liquid for 3 seconds, it is de-energized ON / OFF / HEATING / TEA2 to preserve the heating element and the message " 'BOILER EMPTY' " is shown on the display

When the minimum level probe returns to detect the presence of water for 3 consecutive seconds, the ON / OFF / HEATING / TEA2 actuator is re-enabled and consequently the heating and the alarm disappears on the display.



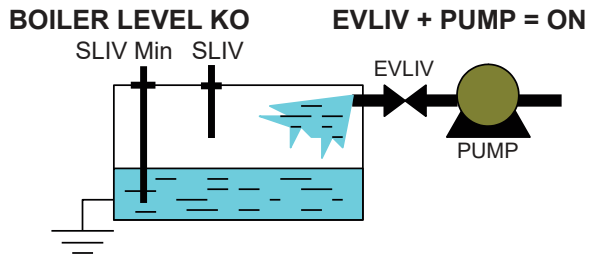
(RED display background)

NOTE 1: The minimum level probe does not perform filling control or management tasks, as this function is performed by the level probe. (next paragraph)
NOTE 2: If the BUZZER function is enabled from the technical menu (see dedicated chapter), every time the minimum level probe is discovered as described above, in addition to the signaling on the display, the buzzer on the back of the RGB display board will also report the acoustic signal. , through 5 consecutive "beeps".

16.2 LEVEL PROBE

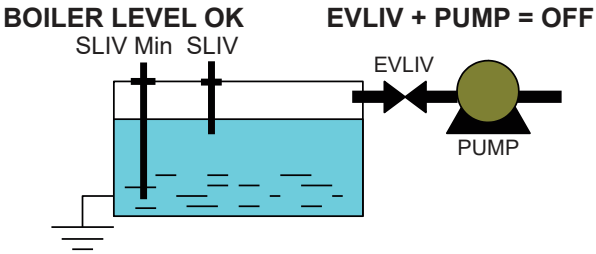
At the time of the Power-on, the dosing detects the status relative to the level probe placed in the boiler and, if necessary (lack of water), arranges the execution of the filling phase by energizing the EVLIV filling solenoid valve and the PUMP until the correct water level in the boiler is restored.
(Time-out foreseen in the programmable filling phase - see TECHNICAL Programming)
NOTE: When the system is turned on, the level control and adjustment is enabled after about 6 seconds.

Whenever the level probe placed in the boiler does not detect the presence of liquid for 3 seconds, the filling phase is arranged by energizing the EVLIV loading solenoid valve and the PUMP. When the probe returns again to recognize the presence of water for 3 consecutive seconds, the filling phase is interrupted by de-energizing the EVLIV loading solenoid valve and the PUMP.



The filling phase does not affect the possibility of making both coffee or tea or steam selections and a new programming of the same. Only the intervention of the Time-out combined with the filling phase inhibits the functionality of the keyboard and actuators.

In the first adjustment of the water level in the boiler, the level probe is waited for before activating the ON / OFF / HEATING / TEA2 relay.



It is possible to vary the sensitivity of the level probes through a parameter in the TECHNICAL Programming in the following possibilities:

-> LOW sensitivity	150 kΩ	for example in the presence of a softener
-> MEDIUM sensitivity	400 kΩ	normal water
-> HIGH sensitivity	1 MΩ	for example in the case of mountain water or level glass

17. HEATING STEAM BOILER AND COFFEE BOILER *

17.1 FEATURES

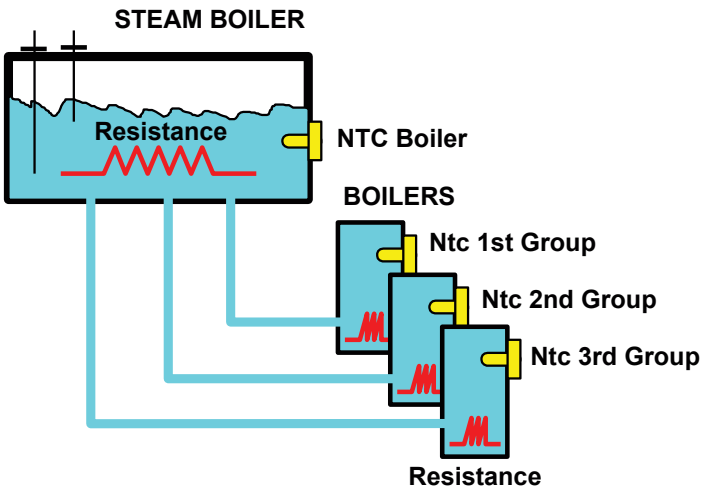
** ONLY ON MACHINE WITH MULTI BOILER SYSTEM*

The dosage controls the heating of the steam boiler and up to 3 coffee boilers.

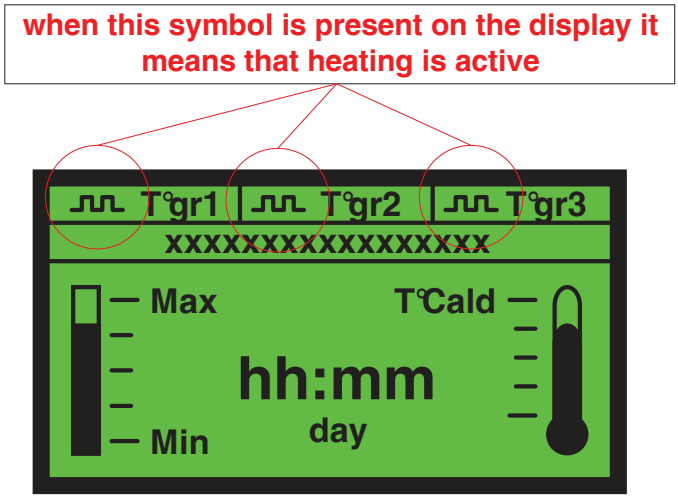
Heating control of all boilers is enabled in IDLE-ON;
each uses an NTC type probe and a 4 ÷ 30Vdc low voltage command which excite solid state relay (SSR) type actuators or specific triac modules which in turn control the heating resistors.

In the first setting, the heating is activated only AFTER the level in the boiler has been reached to safeguard the resistance.

In all other cases, heating is active if necessary except when the minimum level probe is discovered ... condition in which heating is immediately blocked.



During the activation of the group heaters, the resistance symbol appears on the display



SEQUENTIAL HEATING

The system provides the possibility to enable the "Sequential heating" function through a technical menu (see dedicated chapter) which, when only one group heating SSR is activated, these have priority over the SSR output of the coffee boiler which is

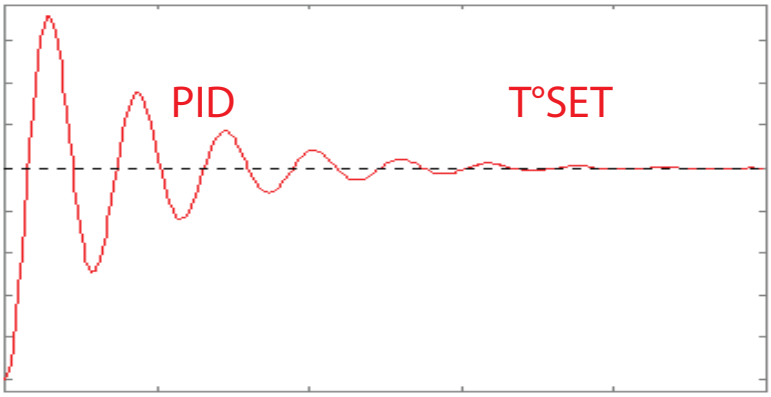
In the condition in which the "Sequential heating" function is deactivated from the technical menu, the management of the SSRs present in the system (Coffee boiler + groups) will be without priority constraints between them.

CAUTION:

- in the first setting (temperatures not at full capacity) the heating priority will be of the boiler.
- any request for steam or tea dispensing without a coffee in progress keeps the boiler temperature active regardless of whether the coffee group heaters are active or not

17.2 PID ADJUSTMENT (DEFAULT SETTING)

The default temperature adjustment is made following an algorithm called PID.
The constants that determine thermoregulation are called



Proportional constant	Kp
Integrative constant	Ki
Derived constant	Kd
Proportional range	is the range within which the PID is managed outside of it the resistance is controlled in ON / OFF mode

The three constants and the proportional range must be adapted to each type of coffee machine based on the power characteristics of the resistance, the size of the boiler, the fluidics, its dispersion, etc., etc ... and it is usually a job that also requires some time to get the best possible result.

"Setpoint value or T ° SET" is defined as the temperature that the boiler must be in normal operation

- If during the heating or maintenance phase the temperature fluctuates excessively around the T ° SET, with peaks of value that does not decrease over time, it is necessary to decrease the proportional constant: Kp
- If during the maintenance phase the temperature fluctuates excessively around the T ° SET, with a very long period of oscillation and with peaks that do not decrease over time, it is necessary to decrease the integrative constant: Ki
- If during the heating or maintenance phase the temperature fluctuates excessively and often greater than the T ° SET, but which decreases over time, it is necessary to decrease the derivative constant: Kd
- If during heating the temperature tends to stay below the T ° SET value, moving further and further away from it, it is necessary to increase the derivative constant: Kd
- If during heating the temperature tends to stay constantly below T ° SET, it is necessary to increase the proportional constant: Kp and also slightly increase the integrative constant: Ki
- If during the maintenance phase the temperature tends to stay below or above the value of T ° SE T it is necessary to increase the integrative constant: Ki and slightly increase the proportional constant: Kp

(see TECHNICIAN programming for parameter setting)

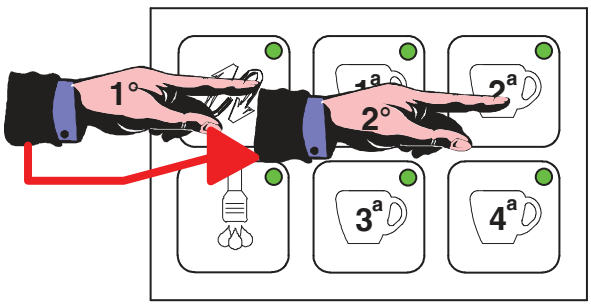
17.3 ON / OFF REGULATION WITH HYSTERESIS OF 2 ° C ONLY FOR STEAM BOILER

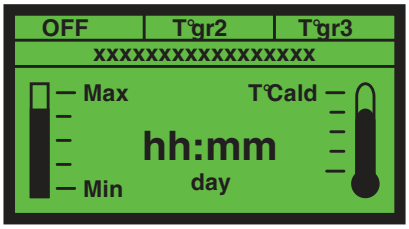
The temperature regulation of the steam boiler can also take place in another mode and more precisely with a hysteresis of 2 ° C. The resistance is controlled by the ON / OFF / RISC / TEA2 actuator (which the customer will have connected to the remote control and / or power relay at will) which de-energises when the programmed temperature T ° SET is reached (see TECHNICAL Programming) and it re-energizes when it has decreased by 2 ° C. To avoid vibrations on the intervention threshold, a time filter is also inserted.

To activate this function, it is necessary to set all pid constants to 0 in TECHNICAL Programming (see dedicated paragraph).

17.4 SWITCHING OFF AND SWITCHING ON OF INDIVIDUAL GROUPS

It is possible to switch off the heating of the individual boilers of the groups by pressing first the K5GRx key and immediately after the K2GRx key. OFF is displayed instead of the temperature.





supposing to turn off group 1 we will have:

To turn on the heating, first press the K5GRx button and immediately after the K1GRx button.

It is possible to switch off the heating of the steam boiler by following a specific procedure described in TECHNICAL Programming.

17.5 ECONOMY MODE

The ECONOMY mode is activated when the inactivity time set in the technical menu under "ECONOMY TIME" is exceeded.

The ECONOMY mode provides for the automatic lowering of the steam boiler tset to the value set by the technical menu (see dedicated paragraph).

With economy mode active, the display shows the wording "ECO" instead of the steam boiler temperature (on the right of the display).

Economy mode is deactivated when:

1. the measured temperature is 2 ° C lower than the set economy tset
2. any delivery is made
3. the level probe does not detect water and the loading phase is activated

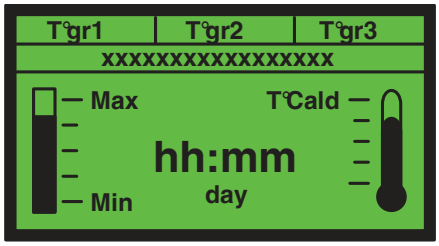
18. PROGRAMS AND READINGS

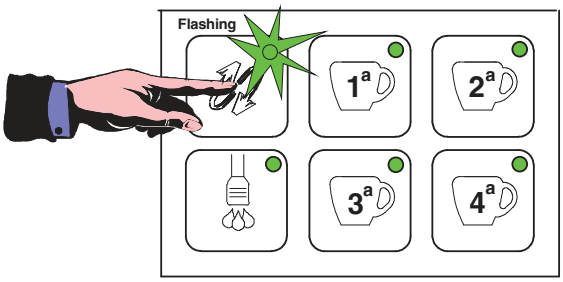
18.1 COFFEE DOSES PROGRAMMING

It is possible to modify and memorize the quantities relating to the volumetric coffee doses by following the procedure below

1. In IDLE-ON state, press the K5GRx key (1..3) and keep it pressed for 5 seconds; check the transition from fixed to flashing of the LEDs L5GRx (1..3)

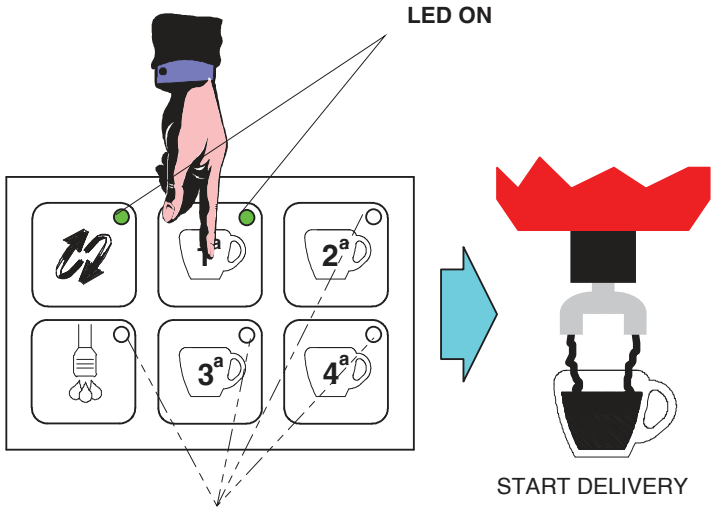
The display shows the writing





KEY PRESSURE > 5 seconds

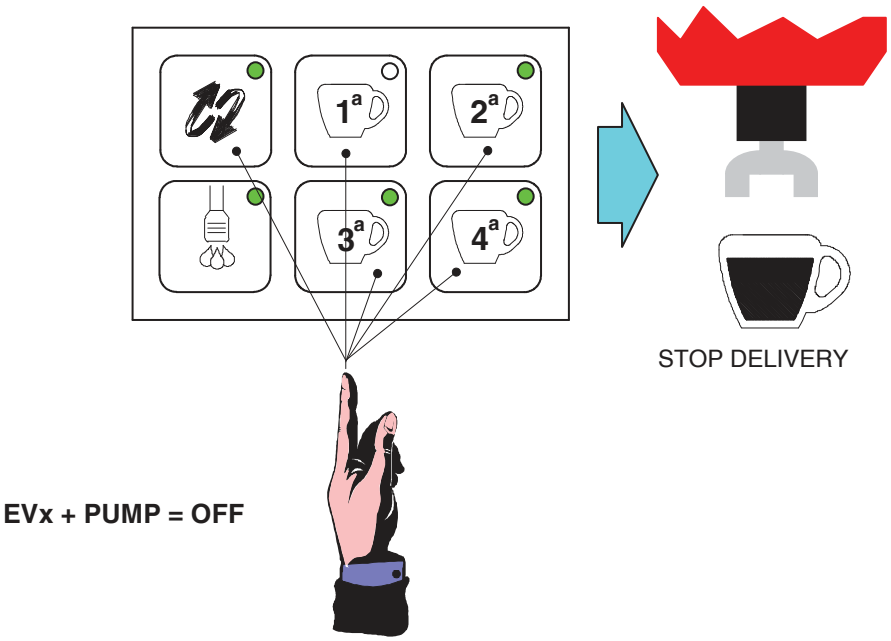
2. Within 30 seconds (exit time-out from the programming phase) press any of the keys associated with the 4 doses that can be programmed (for example K1GRx). The LED relating to the K5GRx key remains lit as is the dose LED during programming (in our example L1GRx). EVx + PUMP actuators are enabled for the entire duration of coffee dose programming.



3. Once the quantity of coffee with which you want to program the dose is reached, press any of the "coffee" buttons on the keyboard relating to the group being programmed to stop dispensing the product with the consequent de-excitation of EVx + PUMP.

The new dose value expressed in pulses of the volumetric meter is stored in EEPROM.

At the same time the LED relative to the programmed dose turns off and the remaining LEDs turn on; it is therefore possible to proceed with the programming of the remaining doses (also tea and steam doses if enabled) without having to repeat the entry operation (see point 1).



· To proceed with the programming of the remaining coffee doses (if the programming time-out of 30 seconds has not been exceeded) repeat steps 2 and 3 in sequence.

· In case of intervention of the time-out (30 seconds) on the programming phase, to proceed with the execution of the same it is necessary to repeat the entire sequence described in points 1, 2 and 3

· ILEDs relating to the "already programmed" doses are off if you decide to return to the programming environment. However, this does not prevent a "new" programming of the already programmed doses (this condition is not verifiable if an ON / OFF operation of the dosage has been carried out after programming).

IMPORTANT:
the programming carried out on the FIRST GROUP is ALWAYS transferred automatically for convenience also to all the other groups. However, this does not affect the possibility of programming the remaining groups independently of the first one by means of the operations described in points 1, 2 and 3 also to remedy any difference in water in the cup caused by possible "fluidic differences" with the various groups.
CAUTION:
IF THE "PRE-INFUSION" FUNCTION IS ACTIVATED (SEE DEDICATED PARAGRAPHS), THE DOSING IN THE PROGRAMMING PHASE ENABLES THIS PARTICULAR FUNCTION IN ANY CASE. WAIT THEREFORE THAT THE SAME IS COMPLETED BEFORE STOPPING THE CURRENT PAYMENT
NOTE: during the programming of a group the other groups remain disabled and the delivery of tea and steam if enabled.

18.2 IF A VOLUMETRIC COFFEE DOSE IS NO LONGER ACTIVATED ...

Solving problems

if after programming a volumetric dose, it is no longer carried out, IT IS NOT TO BE attributable to the inability to store the dose by the dosage but it is really possible that, for some reason, the dosage itself has not received the impulses from the volumetric counter and has therefore programmed a dose equal to 0 pulses.

IMPORTANT AND VERIFY THAT THE LED OF THE DOSE SELECTED DURING PROGRAMMING DOES NOT FLASH

THE POSSIBLE CAUSE IS TO BE SEARCHED IN:

- volumetric meter wrongly connected
- volumetric meter exchanged with that of another group
- water circuit not working
- coffee filter and blocked water passages that need cleaning
- solenoid valve group that does not allow enough water to pass
- ground coffee too fine or too pressed which allows a little water to filter

18.3 TEA DOSING PROGRAMMING

It is possible to modify and memorize the quantities related to the tea doses (through timed control) following the following procedure:

1. In IDLE-ON state, press the K5GRx key (1..3) and keep it pressed for 5 seconds; check the transition from fixed to flashing of the LEDs L5GRx (1..3).

The display shows the wording " Doses Setting Select within 30sec " in the xxxxxxxxxxxxxx zone.

2. Within 30 seconds (exit time-out from the programming phase) press the K6GRx key associated with the tea dose. The LED relating to the K5GRx key remains on

The EVTEA actuator is enabled for the entire duration of the tea dose programming.

3. Upon reaching the amount of tea with which you want to program the dose, press the K6GRx key used previously to stop dispensing the product with the consequent de-excitation of EVTEA.

The new time relating to the duration of the tea dose is memorized.

· To proceed with the programming of the other tea doses (if the programming time-out of 30 seconds has not been exceeded and you have entered the programming environment from group 1 by pressing the K5GR1 key) repeat steps 2 and 3 in sequence.

· In case of intervention of the time-out (30 seconds) on the programming phase, to proceed with the execution of the same it is necessary to repeat the entire sequence described in points 1, 2 and 3.

· The LEDs relating to the "already programmed" doses are off if you decide to return to the programming environment. However, this does not prevent a "new" programming of the already programmed doses (this condition cannot be verified if an ON / OFF operation of the dosage has been carried out after programming).

IMPORTANT:
the programming of the tea dose carried out on the FIRST GROUP is NEVER automatically transferred to all the other groups. To program the tea dose on the remaining groups, simply repeat the operations described in points 1, 2 and 3.

NOTE: during the programming of a Tea, the groups and the delivery of the other teas remain disabled.

18.4 CLOCK PROGRAMMING

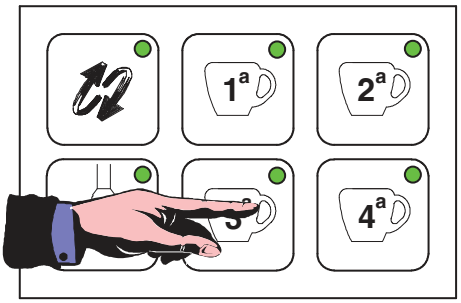
In IDLE-ON state, press the K5GRx key (1..3) and keep it pressed for 5 seconds; check the transition from fixed to flashing of the LEDs L5GRx (1..3)

The display shows the wording 'Clock Adjust'.

NOTE: when the "Doses Setting" screen is displayed, keep the K5GRx button (1..3) pressed to go to the "Clock Adjust" phase.

the display shows in the foreground

Press K3GR1 (ENTER) to confirm



the display shows in the foreground

where is it hh = current time (0...23)
mm = current minute
XXX = day of the week

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys then confirm with K5GR1.

Pressing the K5GR1 key again switches to the automatic ignition setting.

18.5 AUTO ON / OFF - AUTOMATIC SWITCHING ON / OFF

Allows the definition of the automatic switching on and off times of the dosage and the weekly closing day.

the display shows in the foreground

They are programmed in the order:

- ignition time (AAA = On)
- minute of ignition (AAA = On)
- time of shutdown (AAA = Off)
- minute of shutdown (AAA = Off)
- day of rest

To switch from one to the other, press the K5GR1 button.

1 switch on and 1 switch off can be set and are valid for all days of the week.

If you do not wish to have automatic switching on or off, go to the corresponding time programming and press K1GR1 (+) or K2GR1 (-) until the following appears on the display:

the display shows in the foreground

Or

the display shows in the foreground

(pressing K2GR1 (-) when the time 00 is indicated on the display or pressing K1GR1 (+) when the time 23 is indicated).

In this case:

- if the ignition has been disabled, the shutdown and the day off are also automatically disabled, pressing K5GR1 skips the relative settings and goes directly to the next parameter. Switching on and off can thus only be done manually through the procedure described in the previous paragraph.

- if the ignition is enabled, pressing K5GR1 switches to the setting of the shutdown and subsequently of the closing day, if necessary.

18.6 DAY OF REST

It is possible to define a weekly rest day, in which the dosage ignores the automatic ignition and can only be turned on manually.

The automatic switch-off is also active on the day off.

the display shows in the foreground

With K1GR1 (+) or K2GR1 (-) the day (XXX) is selected.

If you do not wish to set a day off, select "----------".

Only one day off can be set.

18.7 CONSUMPTION READING, LITERS, MAINTENANCE

the display shows in the foreground

pressing the K5GR1 key again switches to the reading of the counts:

the display shows in the foreground

Counters

press the K3GR1 (ENTER) button to confirm

the display shows in the foreground

Litres xxxxx

the liters used up to that moment are shown.

press the K5GR1 key to go to the number of cycles performed up to that moment

the display shows in the foreground

Service xxxxx

press the K5GR1 button and the total of coffees dispensed up to that moment is shown.

the display shows in the foreground

Coffees total xxxxx

press the K5GR1 key to scroll through all the counts and the totals of the individual doses of each group are shown

the display shows in the foreground

zzzzzz Gr:y xxxxx

where is it y = is the group
zzzzz = it's the type of coffee
xxxxx = the number of coffees

At the end of the review, pressing the K5GR1 button allows you to exit this phase.

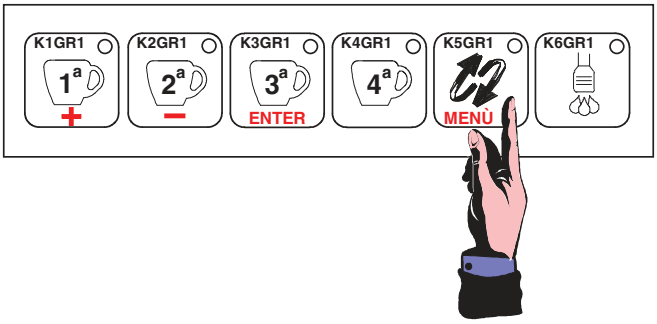
19. TECHNICAL PROGRAMMING

The entry into the environment relating to the TECHNICAL Programming allows the setting of particular parameters or functions.

To access the TECHNICAL Programming go to the OFF condition and press the K5GR1 key for 10 consecutive seconds.

PRESS IN THE STATE OF OFF FOR 10 SECONDS

6 BUTTON PANEL



NOTE:

access to TECHNICAL Programming and programming operations can only be carried out from the pushbutton panel of group 1.

By accessing the TECHNICAL Programming in the previously described mode, the first TECHNICAL parameter appears on the display, i.e. the DISPLAY MODE:

the display shows in the foreground

where xxx = normal or reverse

If you want to change, you need to use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The possibility to adjust the CONTRAST of the graphic display is displayed:

the display shows in the foreground

where xxx = is from 0 to 60

If you want to change, you need to use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The choice of the COLOR of the background of the graphic display in ON status is displayed

the display shows in the foreground

If you want to change, you need to use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The COLOR selection of the background of the graphic display is shown in the OFF state

the display shows in the foreground

If you want to change, you need to use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The choice of LANGUAGE is displayed:

the display shows in the foreground

where xxx = English, Italian, French, German, Spanish

If you want to change, you need to use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The word NAME is displayed and shown on the display:

the display shows in the foreground

If you want to change, use the K1GR1 (+) or K2GR1 (-) keys to select the letters of the alphabet; when the letter / symbol / number under the flashing cursor is the desired one, press the K3GR1 (ENTER) key to confirm the letter / symbol / number and move on to the selection of the next letter / symbol / number.

Arrangement of available characters

blank	!	"	#	$	%	&	'	(	)	*	+	,	-	.
/	0	1	2	3	4	5	6	7	8	9	:	;	<	=
>	?	@	A	B	C	D	E	F	G	H	I	J	K	L
M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	[
¥	]	^	_	`	a	b	c	d	e	f	g	h	i	j
k	l	m	n	o	p	q	r	s	t	u	v	w	x	y
z														

To go to the next menu, press the K5GR1 (MENU) key.
The setting of the TELEPHONE NUMBER is displayed and must be displayed in case of some alarms

the display shows in the foreground

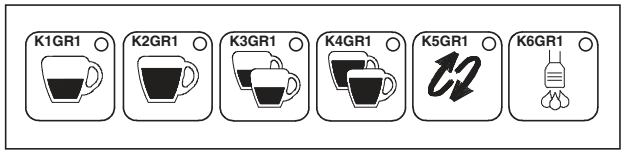
Service Phone
xxxxxxxxxx

where xxx are the numbers that make up the phone number.
If you want to change use the K1GR1 (+) or K2GR1 (-) keys, to select the desired value when the number under the flashing cursor is the desired one, you must press the K3GR1 (ENTER) key to confirm the number and move on to the next.
To go to the display of the next parameter, press K5GR1 (MENU);
The setting of the KEYPAD TYPE used on the dosage is displayed and applies to all the pushbutton panels used for the 3 groups.

the display shows in the foreground

Keyboard type
Esp Caf 2Es 2Caf

Select "Esp - Caf - 2Es - 2Caf" when the push-button panels used are of the type:



6 BUTTON PANEL

the display shows in the foreground

Keyboard type
Esp 2Es Caf 2Caf

Once you have finished setting the type of push-button panel, pressing the K5GR1 (MENU) key allows you to switch to the display that allows you to enable or disable the PROGRAMMING OF THE DOSES

the display shows in the foreground

Doses setting
xxxxxxxx

where xxx can be "DISABLE" or "ENABLE"

If you want to change, you need to use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

the display shows in the foreground

Continuos Key
xxxxxxxx

where xxx can be "DISABLE" or "ENABLE"

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys.

The choice to ENABLE OR DISABLE THE DELIVERY OF THE TEA ON THE CONTINUOUS K5GRx button is displayed.

the display shows in the foreground

Fifth tea key
xxxxxxxx

where xxx can be "DISABLE" or "ENABLE"

If you want to change, you need to use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The choice to enable TEA DISPENSING WITH PUMP is displayed

the display shows in the foreground

where xxx can be "YES" or "NO"

If you want to change, you need to use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The choice of management of the Buzzer mounted on the back of the RGB display is displayed, which acoustically displays (if enabled) the enabling of all the supplies provided by the system.

the display shows in the foreground

where xxxxxxx can be DISABLED or ENABLED

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys. to go to the display of the next parameter, press K5GR1 (MENU).

The choice to SET ON WHICH GROUP THE K6GRx BUTTON WILL ACTIVATE STEAM DELIVERY instead of tea is displayed

the display shows in the foreground

where x can be "0" or "1" or "2" or "3"
0 = disabled

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys. to go to the display of the next parameter, press K5GR1 (MENU).

The choice of the PRE-INFUSION function is displayed

the display shows in the foreground

where xxx can be "DISABLE" or "ENABLE"

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys.

Enabling the pre-brewing function by pressing the K5GR1 (MENU) key, you can set the on and off parameters.

The first programmable ON time is that relating to the keys K1GR1, K1GR2, K1GR3 (in the graphic display example we refer to keyboards type Esp - Caf - 2Es - 2Caf).

the display shows in the foreground

where is it:
xx = on or off
zz = total pre-infusion on time
yyyyy = espresso, 2 espresso, coffee or 2 coffees
Values from 0.1 ÷ 5 in steps of 0.1 seconds.

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The choice of the LEVEL SENSITIVITY setting is displayed:

the display shows in the foreground

where xxx can be:

sensitivity low 150kΩ (low)
sensitivity mid 400KΩ (average)
sensitivity high 1MΩ (high)

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter press K5GR1 (MENU).

The choice of the possibility of having the LEDS ON OR OFF IN IDLE-ON is displayed

the display shows in the foreground

where xxx can be "DISABLE" or "ENABLE"

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The choice of the possibility to enable the CHRONO DISPLAY FUNCTION of the groups is displayed

the display shows in the foreground

where x can be "0" or "1" or "2" or "3"

0 = disabled

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The choice of how to MANAGE THE STEAM BOILER is displayed

the display shows in the foreground

where xxxxxxxxx = Temperature Control (control via pid / hysteresis)
Visual temperature only (degree display only)
DISABLED (off)
byPressureSwitch (heating with pressure switch, not managed at the moment)

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The choice of whether to enable the "sequential heating" function is displayed, which allows, if enabled, when the SSR steam boiler output is activated, to have priority over the SSR outputs of the groups that will be deactivated.

the display shows in the foreground

where xxxxx can be DISABLED or ENABLED.

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The choice of setting the NUMBER OF EFFECTIVE CYCLES (permitted deliveries) beyond which the alarm is generated is displayed

the display shows in the foreground

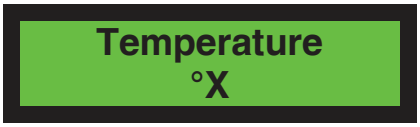
where xxx can be a number from 0000 to 99000 in steps of 1000

when xxx is equal to 0000 the function is disabled.

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The choice of displaying the TEMPERATURE IN DEGREES CENTIGRADE OR FAHRENHEIT is displayed

the display shows in the foreground



where ° X can be "° C" or "° F"

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The BOILER SETPOINT TEMPERATURE setting T ° SET is displayed.

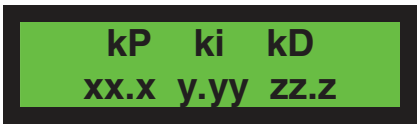
the display shows in the foreground

where xxx is a selectable value from 80 ÷ 125 ° C to st and p 1 ° C.
where yyy is a selectable value from 176 ÷ 257 ° F to s tep 1 ° F.

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The setting of the PARAMETERS FOR PID TEMPERATURE is displayed:

the display shows in the foreground



where xx.x is the proportional correction constant
where y.yy is the integrative correction constant
where zz.z is the derivative correction constant
each value can be selected from 0.1 ÷ 99.9 ° C in 0.1 step.

By default, the regulation is PID with the following parameters:

the display shows in the foreground

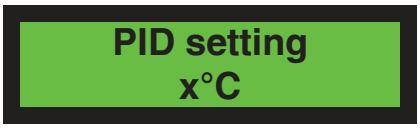
To enable the regulation with hysteresis of 2 ° C it is necessary to bring all the k to the value 0 for example:

the display shows in the foreground

to go to the display of the next parameter, press K5GR1 (MENU).

The setting of the PID REGULATION RANGE COMPARED TO THE SETPOINT TEMPERATURE is displayed.

the display shows in the foreground



where x is the value in degrees of the range and is a selectable value from 2 ÷ 20 ° C in steps of 1 ° C
Outside this range, the regulation is always on / off.

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).
The ECONOMY FUNCTION SETPOINT TEMPERATURE setting is displayed.

the display shows in the foreground

where xxx is a selectable value from 80 ÷ 128 ° C to st and p 1 ° C. (if set to ° C)
where yyy is a selectable value from 176 ÷ 262 ° F to s tep 1 ° F. (if set to ° F)

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).
The setting of the ECONOMY FUNCTION ACTIVATION TIME is displayed.

the display shows in the foreground

where xxx is a selectable value from 1 ÷ 999 minutes in 1 minute step.

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).
The setting of how many HEATING GROUPS ARE PRESENT on the coffee machine is displayed:

the display shows in the foreground

where Z can be "0" or "1" or "2" or "3"'
0 = disabled

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).
The SETPOINT TEMPERATURE setting FOR EACH GROUP is displayed

the display shows in the foreground

where z is group 1 or 2 or 3
where xxx is a selectable value from 80 ÷ 125 ° C to st and p 1 ° C.
where yyy is a selectable value from 176 ÷ 257 ° F to s tep 1 ° F.

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The OFF-SET temperature setting is displayed on the coffee boiler.

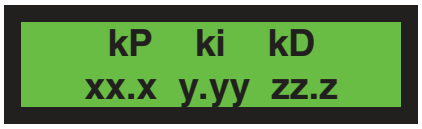
the display shows in the foreground

where x.x is the selected off-set value, expressed in ° C
where zz. it is the corresponding off-set value selected, expressed in ° F

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The setting of the PARAMETERS FOR THE PID TEMPERATURE CONTROL FOR THE GROUPS is displayed:

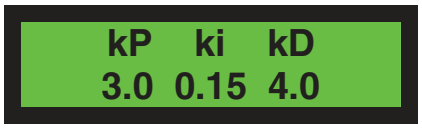
the display shows in the foreground



where xx.x is the proportional correction constant
where y.yy is the integrative correction constant
where zz.z is the derivative correction constant
each value can be selected from 0.1 ÷ 99.9 ° C in 0.1 step.
NOTE: the values are valid for all 3 groups

By default, the regulation is PID with the following parameters:

the display shows in the foreground



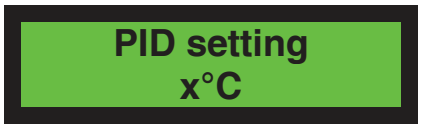
while to enable the regulation with hysteresis of 2 ° C it is necessary to bring all k to the value 0 example:

the display shows in the foreground

To pass to the display of the next parameter, press K5GR1 (MENU).

It displays the setting of the PID REGULATION RANGE COMPARED TO THE SET-POINT TEMPERATURE FOR THE GROUPS:

the display shows in the foreground



where x is the value in degrees of the range and is a selectable value from 2 ÷ 20 ° C in steps of 1 ° C

Outside this range, the regulation is always on / off.

NOTE: the value applies to all 3 groups

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys; to go to the display of the next parameter, press K5GR1 (MENU).

The TIME-OUT setting of the BOILER WATER LEVEL FILL is displayed, beyond which the alarm is generated:

the display shows in the foreground

Selectable value: from 10 ÷ 250 'in 1 minute steps

If you want to change the parameter, use the K1GR1 (+) or K2GR1 (-) keys.

To go to the next menu press K5GR1 (MENU); go to the LITERS OF THE SOFTENER FILTER setting.

the display shows in the foreground

where xxxxx is a selectable value from 0 ÷ 5000 in 1 liter steps

If you want to change the parameter, use keys K1GR1 (+) or K2GR1 (-)

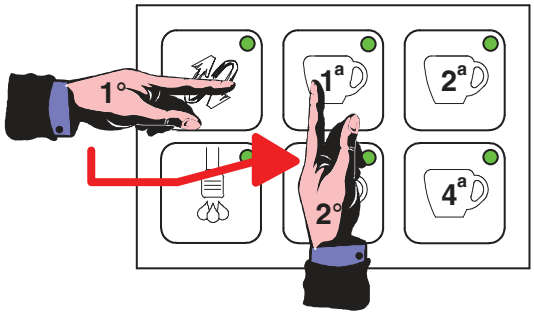
Pressing the K5GR1 (MENU) key again exits the TECHNICIAN programming phase.

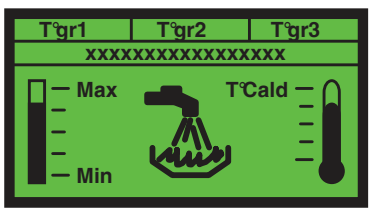
NOTE: once you have entered the TECHNICAL Programming environment, to exit it you must scroll through all the menus by pressing the K5GR1 (MENU) key until you return to the OFF state.

20. SPECIAL FUNCTIONS

20.1 WASH

The washing function can be activated for each group by first pressing the K5GRx button and immediately after the K1GRx button.





The solenoid valve of the selected group and the pump interspersed with 3 seconds of pause are activated for 5 consecutive deliveries, of about 10 seconds each.

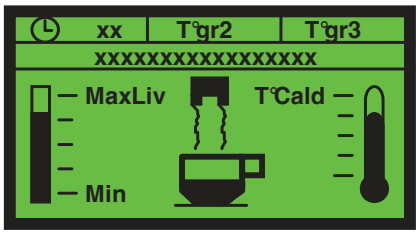
NOTE: If the BUZZER function is enabled from the technical menu (see dedicated chapter), at each start of washing, in addition to the indication on the display, an acoustic signal will be issued simultaneously by the buzzer on the back of the RGB display card.

20.2 CHRONO

The CHRONO function can be activated in TECHNICAL Programming (see paragraph).

It allows you to view the time in seconds of volumetric coffee brewing of the respective groups on the display. As soon as a dose is activated, the display shows the part dedicated to the group temperature.

Assuming to make a delivery on group 1 we will have:



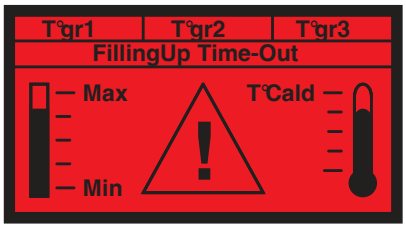
where xx are the seconds that increase even if the volumetric counter pulses do not arrive.

This display remains for 5 seconds from the end of the last dispensing, after which the display returns to showing the writing IDLE-ON

21. ALARM SIGNALING

21.1 TIME OUT LEVEL (FILLING) IN THE BOILER

When the display shows ...



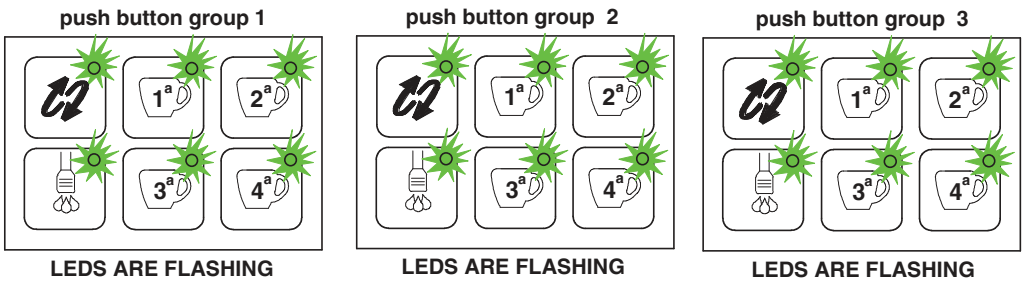
(RED display background)

means that the boiler water level filling time has been exceeded.

In fact, whenever the level probe detects the lack of water (uncovered probe), the filling phase is enabled (EVLIV + PUMP).

If EVLIV + PUMP remain energized continuously for a time longer than the time-out set in the TECHNICAL Programming, the dosage is inhibited of all its main functions. The keypads are disabled, and all the actuators are inhibited from any operation.

All the LEDs on the push-button panels start flashing (½ ON, ½ OFF) and the display turns red to visually signal the user entering the alarm phase.



To exit the alarm signal it is necessary to switch off and on the dosage.

NOTE: If the BUZZER function is enabled from the technical menu (see dedicated chapter), every time the loading time-out alarm occurs as described above, in addition to the flashing signal from the pushbutton panel LEDs, the intermittent acoustic signal will sound simultaneously. by the buzzer on the back of the RGB display board.

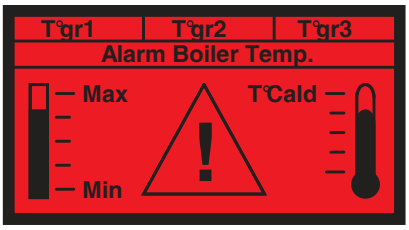
The alarm is reset by removing and restoring voltage to the dosage.

21.2 SHORT CIRCUIT STEAM BOILER TEMPERATURE PROBE

In the event of a STEAM BOILER TEMPERATURE PROBE in short circuit or in the case of temperature for 5 consecutive seconds higher than a certain value, an alarm indication is given and the heating is deactivated.

The alarm threshold is 140 ° C.

the flashing display shows:



where x is the group

(RED display background)

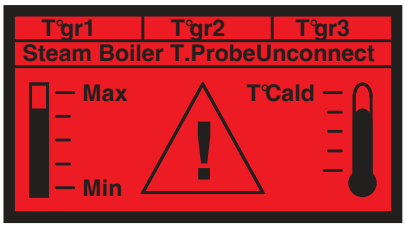
The alarm disappears when the temperature returns to acceptable values.

NOTE: If the BUZZER function is enabled from the technical menu (see dedicated chapter), every time the above-described display intervenes, the buzzer on the back of the RGB display board will sound simultaneously with 5 " consecutive beeps.

21.3 STEAM BOILER TEMPERATURE PROBE DISCONNECTED OR INTERRUPTED

In the event of a STEAM BOILER TEMPERATURE PROBE disconnected or interrupted or determining a temperature around 0 ° C, an alarm is given within 5 seconds and the heating is deactivated.

the flashing display shows:



where x is the group

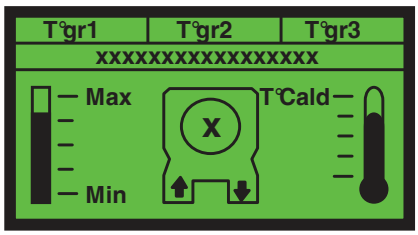
(RED display background)

The alarm disappears when the temperature returns to acceptable values.

NOTE: If the BUZZER function is enabled from the technical menu (see dedicated chapter), every time the above-described display intervenes, the buzzer on the back of the RGB display board will sound simultaneously with 5 consecutive beeps.

21.4 NO VOLUMETRIC METER IMPULSES

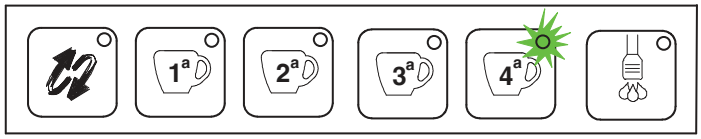
When the display shows ...



means that the volumetric counter pulses corresponding to the activated group (x) are not received.

In fact, the dosage, after starting each volumetric dose (EVx + PUMP both in the supply and programming phase), verifies the correct operation of the volumetric counter by detecting the impulses sent by the same to the microcontroller.

If no pulses are detected for more than 5 consecutive seconds, the LED for the selected dose starts to flash (½ ON ½ OFF).



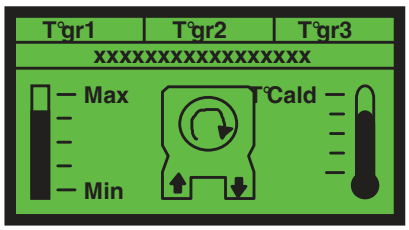
THE LED IS FLASHING

After 1 minute (Volumetric counter time-out) of the absence of impulses by the volumetric counter, the current dose is automatically stopped.

NOTE: If the BUZZER function is enabled from the technical menu (see dedicated chapter), each time the above-described display occurs, the buzzer on the back of the RGB display board will sound simultaneously with 5 beeps consecutive.

21.5 VOLUMETRIC METERS WITH SHORT CIRCUIT POWER SUPPLY

When the display shows ...



When the indication appears on the display ... it means that for some reason the power supply of the volumetric meters is short-circuited with the reference mass.

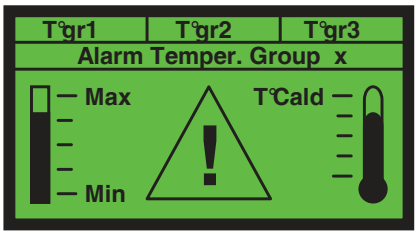
In this condition, the volumetric meter pulses are not received and if a dose is selected, the ABSENCE OF VOLUMETRIC METER PULSE alarm takes priority over that of VOLUMETRIC METERS WITH SHORT CIRCUIT POWER SUPPLY

21.6 BOILER GROUP TEMPERATURE PROBE IN SHORT CIRCUIT

In the event of a GROUP TEMPERATURE PROBE in short circuit or in the case of temperature for 5 consecutive seconds higher than a certain value, an alarm is indicated and the heating is deactivated.

The alarm threshold is 140 ° C.

The flashing display shows:



where x is the group

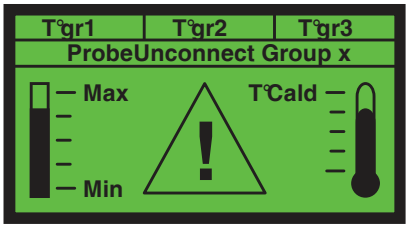
The alarm disappears when the temperature returns to acceptable values.

NOTE: If the BUZZER function is enabled from the technical menu (see dedicated chapter), each time the above-described display occurs, the buzzer on the back of the RGB display board will sound simultaneously with 5 beeps consecutive.

21.7 BOILER TEMPERATURE PROBES GROUP DISCONNECTED OR INTERRUPTED

In the event of a GROUP TEMPERATURE PROBE disconnected or interrupted or determining a temperature around 0 ° C, an alarm is given within 5 seconds and the heating is deactivated.

The flashing display shows:



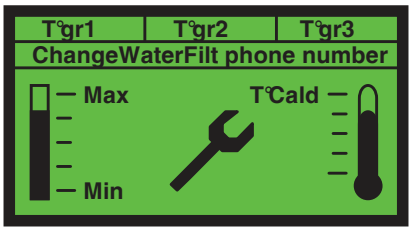
where x is the group

The alarm disappears when the temperature returns to acceptable values.

NOTE: If the BUZZER function is enabled from the technical menu (see dedicated chapter), each time the above-described display occurs, the buzzer on the back of the RGB display board will sound simultaneously with 5 beeps consecutive.

21.8 FILTER ALARM AND RESET

When the display shows ...

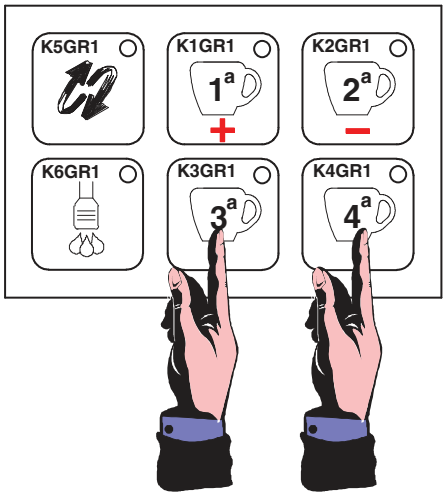


where Phone Number is the phone number set as a suggestion

…means that the value of the filterable liters set in the TECHNICAL Programming has been exceeded

NOTE: If the BUZZER function is enabled from the technical menu (see dedicated chapter), every time this signal intervenes, the buzzer on the back of the RGB display card will sound acoustically, through 5 consecutive beeps.

To reset this signal, simply feed the dosage by holding down the K3GR1 and K4GR1 keys simultaneously.

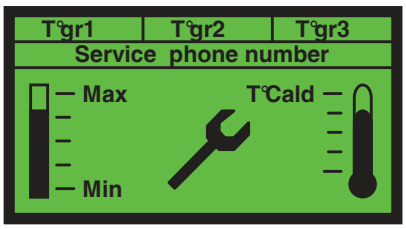


Pressing keys in system start-up

the display shows in the foreground

21.9 SERVICE / MAINTENANCE AND RESET ALARM

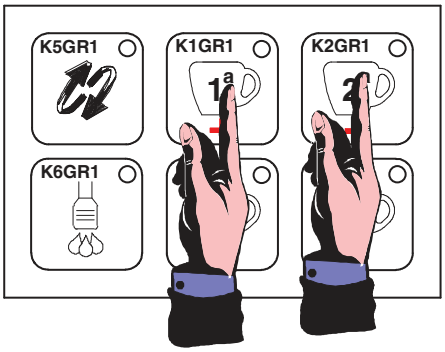
When the display shows ...



where Phone Number is the telephone number set as a suggestion, it means that the value set in the TECHNICAL Programming of the cycles that can be carried out (coffee dispensed) has been exceeded.

NOTE: If the BUZZER function is enabled from the technical menu (see dedicated chapter), every time this signal intervenes, the buzzer on the back of the RGB display card will sound acoustically, through 5 consecutive beeps.

To reset this signal, simply feed the dosage by holding down the K1GR1 and K2GR1 keys simultaneously.



Pressing keys in system start-up

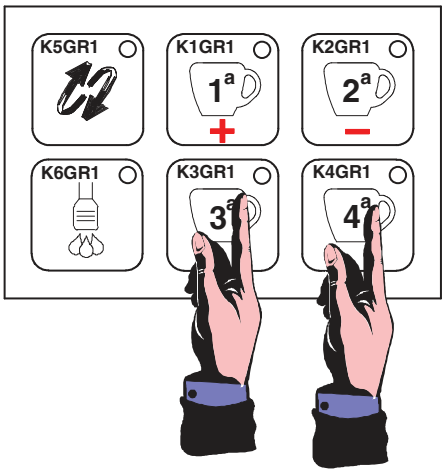
the display shows in the foreground

21.10 SINGLE DOSES TOTAL RESET

It is possible to reset the consumption count of the single doses

To clear this signal, it is necessary to go to TECHNICAL Programming in the Totals Reading menu and simultaneously press the K1GR1 and K2GR1 keys for 3 seconds.

the display shows in the foreground



Press keys for 3 seconds

the display shows in the foreground

ATTENTION: the total deriving from the sum of all the deliveries made for each single key of each group cannot be reset

NOTE: the consumption reset operation DOES NOT RESET the reading of the liters consumed; for this reset, refer to the appropriate paragraph.

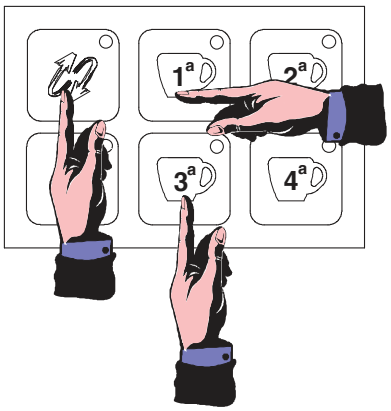
22. DEFAULT DATA PRESET

The factory preset allows you to completely delete the data memory and to insert standard values for all the stored data. It must necessarily be performed, for example, after programming the microprocessor (OBP program on board).

To carry out the default data preset, simply act as follows:

1) switch off the coffee machine
2) wait 3 seconds
3) press and hold the **K1GR1 + K3GR1 + K5GR1 keys of group1**
4) restore power to the machine
5) release the keys after the relative LEDs light up
6) disconnect power from the machine
7) wait 3 seconds
8) restore power to the coffee machine

1st group push button only



press simultaneously when the machine is turned on

When the preset is complete, the display shows:

the display shows in the foreground

To return to normal operation it is necessary to disconnect and restore power.

The factory preset also clears all the counters, including the total doses performed.

22.1 DEFAULT PARAMETERS

PARAMETER	***DEFAULT VALUE***
Display mode	*Normal*
Contrast	*31*
Color ON state	*"Light blue"*
Color OFF state	*"Blue color"*
Language	*Italiano*
Name	*3D5 Orchestra*
Telephone Assistance	*- - - - -*
Keyboard type	*Esp Caf 2Esp 2Caf*
Doses programs	*Enabled*
Continuous key	*Enabled*
Fifth key tea	*Disabled*
Mixed water	*No*
Buzzer	*Disabled*
Steam wand GROUP	*0 (Disabled)*
Pre infusion	*Disabled*
Sensitivity	*Average*
LED idle	*Enabled*
Chrono groups	*3*
Heating Steam boiler	*Check temperature*
Sequential heating	*Disabled*
Maintenance cycles	*0000*
Temperature	*°C*
Boiler temperature	*117°C*
KP KI KD	*8.0 0.15 10.0*
PID regulation	*5°C*
Economy temperature	*110°C*
Economy time	*60 min*
Heated groups	*3*
Group 1 temperature	*117°C*
Group 2 temperature	*117°C*
Group 3 temperature	*117°C*
Offs TSet coffee	*0.0°C*
KP KI KD	*3.0 0.15 4.0*
PID regulation	*10°C*
Filling time-out	*120*
Water filter	*0*

23. PROCEDURES IN THE EVENT OF A POWER SUPPLY FALL

In the event of a power failure, when the voltage returns, the dosing resumes the state (IDLE-ON or OFF) that it had at the time of the power failure.

Any ongoing payments are aborted.

All the dosage data remain stored.

24. TIPS FOR GETTING A GOOD COFFEE

To obtain a good quality coffee it is important that the degree of hardness of the water used has a value of 4-5 ° f (French degrees). In the event that the hardness exceeds these values, it is recommended to use a softener.
Avoid using the softener in cases of water hardness values lower than 4 ° f.
In the event that the chlorine taste in the water is particularly evident, we recommend installing a specific filter.
We recommend that you do not store large stocks of coffee beans, never grind large volumes of coffee, prepare the quantity contained in the dispenser and use it if possible during the day, do not buy coffee that has already been ground as it deteriorates rapidly.
After a relatively long period of inactivity of the machine (2-3 hours), carry out a few dispensing cycles.
Constantly carry out cleaning and periodic maintenance.
In case of changing the type of coffee, it is advisable to contact Technical Assistance for the regulation of the water temperature.
Adjust the coffee grinding according to the humidity level of the environment.

25. LIST OF RISKS

This section presents some of the risks that the user can face if he does not comply with specific safety standards.

THE APPLIANCE MUST ALWAYS BE CONNECTED TO AN EFFICIENT EARTHING SYSTEM.

If this is not done, the appliance can prove to be a source of dangerous electrical discharges as it is no longer able to discharge any electricity leaks to the ground. ELECTRICITY HAZARD.

DO NOT USE CURRENT WATER FOR WASHING.

The use of running and / or pressurized water directly on the machine can also irreversibly damage the electrical and electronic parts. Never use jets of water to wash any part of the machine.

PAY ATTENTION TO STEAM LANCES AND HOT WATER

With use, the steam and hot water wands overheat and replace a source of potential danger. BURN.

Handle these parts with care and attention. Do not direct but the jets of steam or hot water directly on parts of the body.

DO NOT INTERVENE ON THE LIVE MACHINE

Before carrying out any work on the machine, it must be turned off using the main switch and disconnect the machine from the mains. Never remove any body panel when the machine is powered.
If the appliance is not used, it must be made inoperative by disconnecting the power cable from the mains, closing the machine's water inlet tap and emptying the machine from the water.
For disconnection operations, it is advisable to rely on qualified personnel.

NEVER ACT ON THE HYDRAULIC SYSTEM BEFORE YOU EMPTY IT

All interventions relating to the hydraulic system and the related boiler should be avoided when there is still water and pressure in the system. It must be emptied beforehand by closing the inlet tap and letting all the individual brewing groups work for a short time. Turn off the machine and decrease the pressure inside the boiler by opening the taps on the steam wands, then open the boiler drain tap.

USE OF THE APPLIANCE

This espresso coffee machine is an exclusively professional appliance, any other use is to be considered incorrect and therefore dangerous. It does not allow use by children and / or incapable and / or inexperienced people.

Failure to comply with the rules described above can cause serious damage to people, things and animals.

Never work on the electrical and electronic system with the machine still connected to the electrical network and live.

Deactivate the machine completely by disconnecting it from the network before carrying out any operation.

26. CHECKS AND MAINTENANCE

To ensure perfect efficiency and safety of the appliance over time, maintenance activities are necessary. It is advisable to request a general check of the machine from the Assistance Service at least once a year.

Perform the following checks and maintenance operations as shown in the table below.

INTERVENTION	WEEKLY	MONTHLY
PRESSURE GAUGE Keep the pressure in the boiler checked, which must be between 0.8 and 1.4 bar.	✓	
PRESSURE GAUGE Check the water pressure during coffee brewing, check the pressure indicated by the pressure gauge which must be between 8 and 10 bar.		✓
FILTERS AND FILTERHOLDERS Check the state of wear of the filters, check for any damage to the edge of the filters and check for any residues of coffee grounds in the cup		✓
GRINDER Check the dose of ground coffee (between 6 and 8 gr. Per stroke) and check the degree of grinding. The grinders must always have sharp edges, their deterioration is indicated by the presence of too much dust in the ground. We recommend replacing the flat grinders every 400/500 kg of coffee or every 800/900 kg in the case of conical grinders.		✓
WATER SOFTENER The formation of limestone in the hydraulic circuit of the machine indicates that the regeneration has been neglected. Be careful in places where the water is very hard, it will be necessary to regenerate at shorter intervals, as well as in cases of large consumption of hot water for tea or other.		✓

! IN THE EVENT OF A FAILURE TO RESOLVE THE MALFUNCTION, TURN THE MACHINE OFF AND REQUEST INTERVENTION FOR TECHNICAL ASSISTANCE. DO NOT ATTEMPT ANY REPAIR INTERVENTION

! THE DISINSTATIONS OF THE EQUIPMENT MUST BE MADE BY SPECIALIZED TECHNICIANS SO THAT SUCH OPERATIONS DO NOT RESULT IN THE RELEASE OF MATERIALS HARMFUL FOR FOOD USE.

27. CLEANING

For perfect hygiene and efficiency of the appliance, some simple cleaning of the functional parts and accessories, as well as the body panels, are necessary. The indications given here are to be considered valid for normal use of the coffee machine. In the event of continuous use of the machine, cleaning operations must be carried out more frequently.

Before cleaning the machine it is recommended to turn off the machine and wait for it to cool down.

CLEANING	WEEKLY	MONTHLY
FILTERS AND FILTERHOLDERS Daily clean the filter holders by leaving them immersed in hot water all night so as to allow the fatty deposits of coffee to dissolve and then rinse everything with cold water. Weekly carry out the same washing for 10 min. in hot water and a special detergent. The lack of cleaning of the filter holders leads to a decline in the quality of the brewed coffee and the correct functioning of the filter holders. **ATTENTION: immerse only the filter holder cup. Avoid submerging the handle in water.**	✓	
CAR BODY Clean the body panels with a cloth moistened with warm water. Avoid using abrasive detergents that could scratch the body surface.	✓	
STEAM LAUNCHER Clean the lances by making a short vacuum dispensing after each use and clean the lances with a cloth moistened with warm water.	✓	
DELIVERY GROUP Wash the groups as shown here: - use the blind filter holder - pour the appropriate detergent into the blind filter and hook the filter holder - make a series of sprays until clean water comes out of the drain - remove the filter holder from the group and make at least one delivery in order to eliminate the detergent residues	✓	
SHOWER AND SHOWER HOLDER Clean the shower and the shower holder in hot water. This is possible by loosening the screw and removing the two components from the brew group	✓	
STEAM LAUNCHER Check the terminals and clean them by restoring the exit holes with a small needle. At least once a week carry out internal cleaning of the lances - dip the lance in a jug with water and a specific detergent - heat the solution with the steam from the lance - allow the lance to cool keeping it immersed in the solution for at least 10 min. - repeat the operation 2 or 3 times until the milk residues are discharged		✓

1. **FOR CLEANING OPERATIONS ALWAYS USE PERFECTLY CLEAN AND SANITIZED CLOTHS**
2. **TO ENSURE CORRECT OPERATION AND CORRECT HYGIENE OF THE HOT DRINK DISPENSER, IT IS NECESSARY TO FOLLOW THE CLEANING FEATURES AND PRODUCTS SUITABLE FOR THIS PURPOSE**
3. **DO NOT IMMERSE THE MACHINE IN WATER**
4. **NEVER USE ALKALINE DETERGENTS, SOLVENTS, ALCOHOL OR AGGRESSIVE SUBSTANCES**
5. **THE DESCALING OF THE EQUIPMENT MUST BE MADE BY SPECIALIZED TECHNICIANS**

28. MALFUNCTIONS AND RELATED REMEDIES

PROBLEM	CAUSE	REMEDY
LACK OF POWER TO THE MACHINE	The machine is turned off	Switch ON the machine
THERE IS NO WATER IN THE BOILER	The water supply tap is closed	Open the tap of the hydraulic network
TOO MUCH WATER IN THE BOILER	Failure in the electrical or plumbing system	Request the intervention of Technical Assistance
STEAM DOES NOT COME OUT OF THE STEAM LANCES	The lance sprayer is blocked	Clean the spray nozzle of the steam wand
	The machine is turned off	Switch ON the machine
DELIVERY ABSENT	The water supply tap is closed	Open the tap of the hydraulic network
WATER LEAKS FROM THE MACHINE	The pan does not drain	Check the sewer drain
	The drain hose is broken or detached or blocked	Check and restore the connection of the tray drain pipe
COFFEE TOO HOT OR TOO COLD	Electrical or hydraulic system failure	Request the intervention of Technical Assistance
DISPENSING COFFEE TOO FAST	The coffee is ground too coarse	Adjust the coffee grind
DELIVERY OF COFFEE TOO SLOW	The coffee is ground too finely	Adjust the coffee grind
WET COFFEE GROUNDS	Dirty brew group	Wash the unit with a blind filter
	The brew group is too cold	Wait for the group to warm up completely
	The coffee is ground too finely	Adjust the coffee grind
	The coffee is ground too old	Replace the coffee with another fresh one
THE PRESSURE GAUGE INDICATES A NON-CONFORMING PRESSURE	Hydraulic system failure	Request the intervention of Technical Assistance
PRESENCE OF GROUNDS IN THE CUP	The filter holder is dirty	Clean the filter holder
	The filter holes are worn	Replace the filter holder
	The coffee grinding is not compliant	Adjust the coffee grind
THE CUP IS DIRTY FROM THE COFFEE SKETCHES	The coffee is ground too coarse	Adjust the coffee grind
	The edge of the filter is damaged	Replace the filter
BLOCK OF THE ELECTRONIC SYSTEM	Electronic system failure	Request the intervention of Technical Assistance
THE PUMP LEAKS WATER	Pump failure	Request the intervention of Technical Assistance
THE MOTOR STOPS ABRUPTLY OR THE THERMAL PROTECTOR INTERVENES FOR AN OVERLOAD	Pump failure	Request the intervention of Technical Assistance
THE PUMP WORKS BELOW THE RATED CAPACITY	Pump failure	Request the intervention of Technical Assistance
THE PUMP IS NOISY	Pump failure	Request the intervention of Technical Assistance

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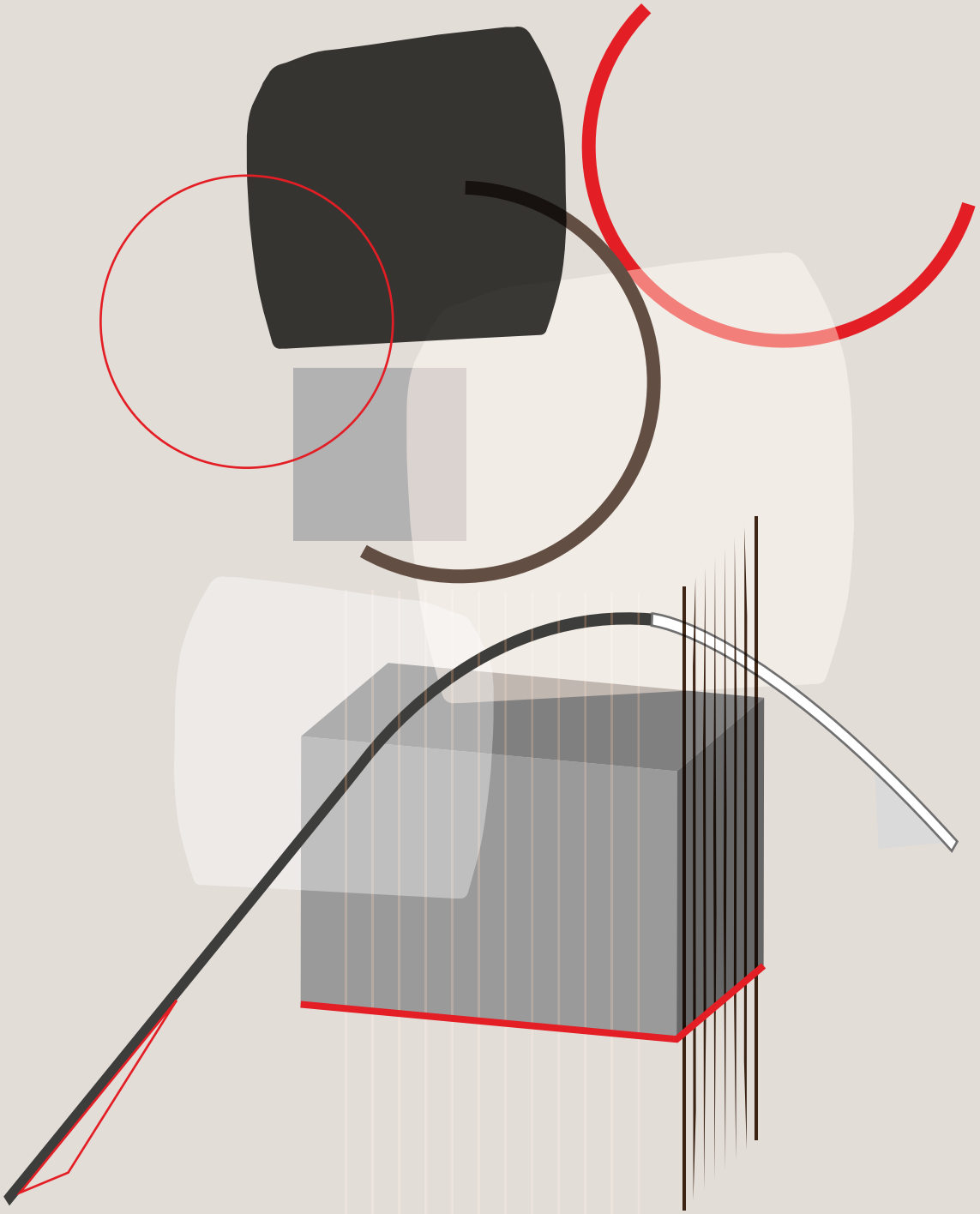

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