RANCILIO
macchine per caffè

classe 10

TECHNICAL MANUAL

CONTENTS

1. 1. CHECKING THE BOILER

1.1. Water Level

Check the water level contained in the boiler by viewing the sight glass.

1.2. Temperature

1.2.1 Checking and Regulating the Temperature

Check with the PTC sensor.

1.2.2 Temperature Control when Filling the Boiler with Water during Operation

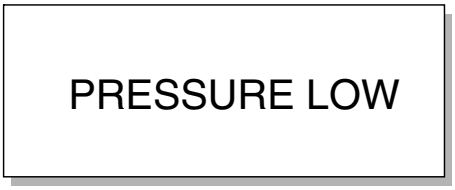
When filling the boiler with cold fresh water, the boiler heating elements are activated to prevent an excessive drop in pressure. If the pressure in the boiler drops below approximately .06 bars, topping off is discontinued until the set pressure level is re-established. Then, filling is continued and interrupted again if necessary.

The pressure range does not rise above 0.1 bars from the set pressure level and is set to 1.4 bars at most.

1.3 Safety Devices

When the coffee maker is switched ON, the machine checks that there is enough water in the boiler.
If the water level is inadequate, the machine tops off the level automatically. If this does not take place within a set period, the boiler filling operation is discontinued and a warning message is displayed:
"Water missing".

When the boiler is filled, the boiler heating element is activated.
If the set pressure is not reached within a specific time set by the factory, the power supply to the heating element is cut off and a warning message is shown on the display: **"Pressure low".**



When the machine is switched ON, it is not possible to obtain hot water or steam (with the TS system) until the boiler heating element cuts out for the first time.

2. MAKING COFFEE

2.1. Number of Dispensers

This machine has 2 to 4 coffee dispensers (groups) with programmable doses and pre-brewing cycle times.

2.2. Operating Cycle

When one of the coffee buttons is pressed for one of the 4 dispensers, the following occurs:

- The dispensing solenoid valves are activated and the pump motor starts for a time that can be programmed between 0 and 5 seconds.
- The dispensing solenoid valves are de-activated and the pump motor stops for a time that can be programmed between 0 and 5 seconds.
- The dispensing solenoid valves are activated and the pump motor starts until the programmed impulses are reached, which start decreasing during the first phase.

Safety Devices
If dose counting occurs with a frequency less than 1 impulse per second, dose counting occurs on a time basis and does not consider the volumetric counter.

3. 1. DISPENSING HOT WATER

3.1. Number of Dispensers

The machine is equipped with 2 hot water dispensers with timed independent programmable dispensing.

Safety Devices
No hot water can be dispensed if the machine has not reached the operating pressure or temperature at least once.

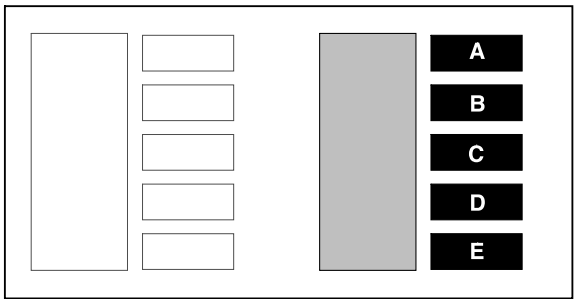
4. DISPENSING STEAM WITH THE TS SYSTEM

To use this function, press the specific button on the button panel; it is automatically stopped when the set temperature is reached.

Safety Devices
No steam can be dispensed if the machine has not reached the operating pressure or temperature at least once.
Steam dispensing is discontinued automatically after 3 minutes if the set temperature has not yet been reached.

5. BUTTON PANELS

5.1 Coffee Button Panel

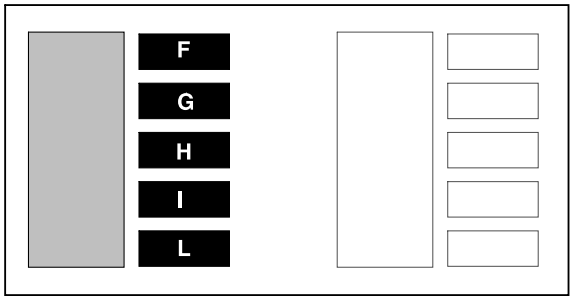


Each dispenser (group) has a 5-button panel with 5 LEDs as follows:

- 4 buttons for start/stop dispensing the programmed coffee dose (A-B-C-D)
- 1 button (E) to:
- Stop dispensing any dose
- Start in continuous mode
- Initialize dose programming if pressed for about 8 seconds.

Each time a coffee is dispensed, the LED of the relative button lights up.
During dose programming, the LED of the stop button flashes.

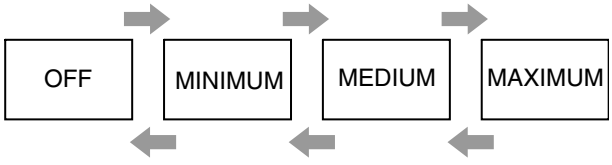
5.2 Function and Hot Water Panel



This panel features 5 buttons and 5 LEDs consisting of the following:
- 1 cup-warmer button (F)
- 2 buttons for dispensing hot water (G-H)
- 1 timer button (I)
- 1 steam-dispensing button with temperature control (L)

5.2.0 The Cup-Warmer Button

When the button (F) is pressed, the display shows the selected setting of the heating element, which is one of four: off – minimum – medium – maximum.
If the button is pressed again within 2 seconds, the setting of the heating element moves to the next level.
When the cup-warmer element is active (min, med, or max status), the relative LED lights up.



5.2.1 The Hot Water Buttons

When the **G** button is pressed, water is dispensed with the economizer for the duration of the pre-set time or until the button is pressed again.
During dispensing, the pump is switched on.
When the **H** button is pressed, water is obtained directly from the boiler for the pre-set time or until the button is pressed again.
If either **G** or **H** are pressed for 2 seconds, dispensing is continuous and only stops when the button is pressed again.
Dispensing is discontinued automatically after 60 seconds for button **G** and 30 seconds for button **H**.
If the dispensing time is set to 0 seconds, the button functions only to start or stop. If the time is set from 0.1 to 2 seconds, dispensing occurs for 2 seconds.

5.2.2 The Timer Button (I)

The timer button is used to bypass the automatic switching ON/OFF of the machine.
If the machine is switched OFF due to the set time, pressing the timer button switches ON the machine and it remains ON until it is switched OFF automatically or the button is pressed again.

Likewise, if the machine is switched ON due to the set time, pressing the timer button switches OFF the machine and it remains OFF until it is switched ON automatically or the button is pressed again.
When the LED is ON, this means that the timer function is ON and, thus, the programming status has been bypassed.

5.2.3 Steam (TS)

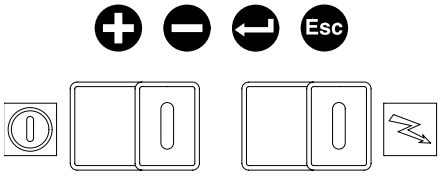
When the **L** button is pressed, the steam dispensing solenoid valve is activated until the set temperature is reached or until the button is pressed again.

5.2.4 Safety Devices

If the pressure drops below approximately 0.6 bar, the hot water function is inhibited and the steaming functions of the TS system is inhibited.

5.3 Programming Panel

This panel features 4 buttons with the following functions:



Button with "**+**" sign	To move to a higher level in the programming menus Or to increase the value
Button with "**-**" sign	To move to a lower level in the programming menus Or to decrease the value
Button with "**enter**" sign	To enter the programming menu Or to confirm entries
Button with "**esc**" sign	To quit the menu Or to quit programming mode

5.4 Automatic Cleaning Cycle

Press and hold the **"enter"** button until the display shows:

"Cleaning needed"

"Press enter"

If you press **"enter"** within 5 seconds, the following cycle starts (if you do not leave this menu automatically):

- The display shows:

"Insert the blind filter cup disk and, press enter"

- When you press **"enter"**, the cleaning cycle starts and the display shows:

"Cleaning running"

The machine carries out 10 cycles as follows:

- Starts dispensing from the groups for 10 seconds.
- Pauses for 10 seconds.

At the end of the 10 cycles, the display reads:

"Remove the filter-holders and, press enter"

If you press **"enter"** the display shows:

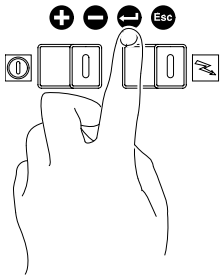
"Rinsing"

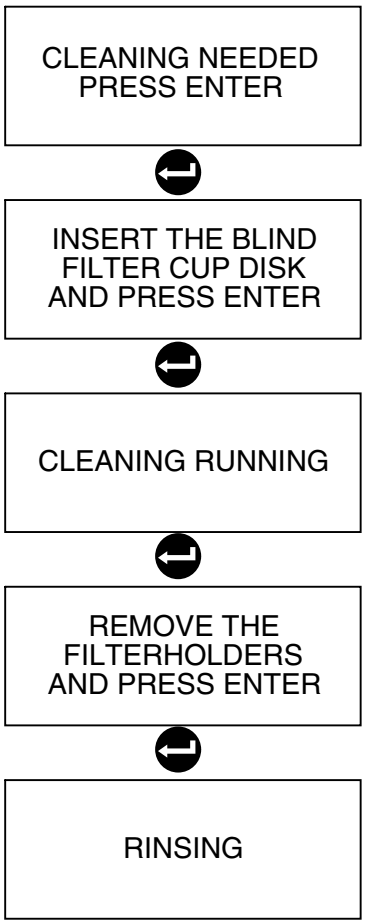
The machine carries out 2 cycles as follows:

- Starts dispensing from the groups for 30 seconds.
- Pauses for 30 seconds.

If the **''esc"** button is pressed during the cycle, the phase is interrupted and the machine moves onto the next phase.

Note: *In the cleaning and rinsing phases, the groups are activated one after the other.*





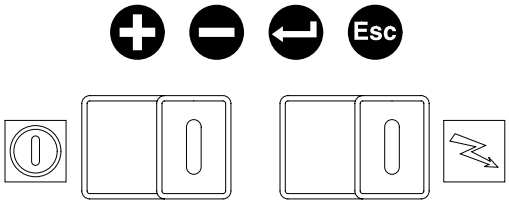
6 PROGRAMMING

Programming is carried out on two levels, namely:

"Bartender" programming
"Technician" programming

6.1. The "Bartender" Menu

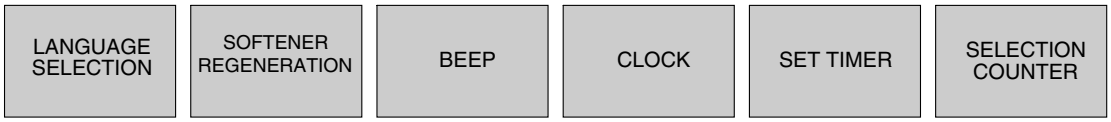
When the "**+**" and " **–** "buttons are pressed for approximately 2 seconds, the **"bartender"** programming menu is activated. The menu contains the submenus shown in the column to the right:



- Language selection
- Softener regeneration
- Beep
- Clock
  - Set clock
  - Date-time format
- Set timer
- Selection counts
  - Coffee group 1
  - Coffee group 2
  - Coffee group 3
  - Coffee group 4
  - Water group
  - TS group
  - Counter total
  - Reset counters

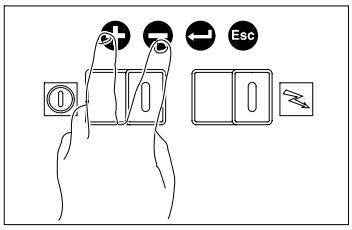
To move from one submenu to another, press **"+"** or **"-"**. To enter a submenu, press **"enter".**
To quit, press **"esc".**
When you enter a submenu, the display flashes the editable value. To make changes, use the **"+"** or **"-"** buttons.

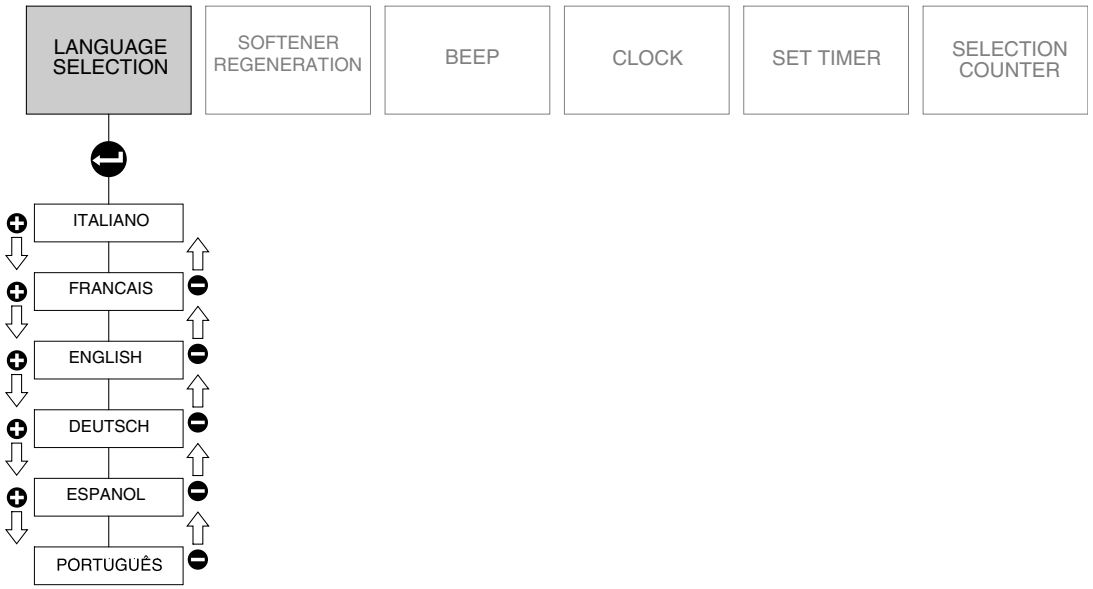
If you make changes, these must be confirmed by pressing **"enter"** until you quit the submenu. If you do not wish to save your changes, press **"esc"**.



6.1.1 Selecting the Display Language

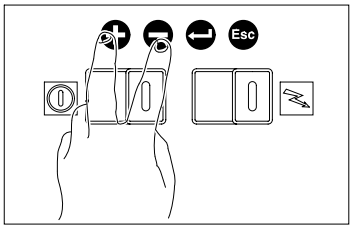
This menu allows you to select the language to be used to show and messages on the display. You can select among the following languages: Italian, French, English, German, Spanish and Portuguese.

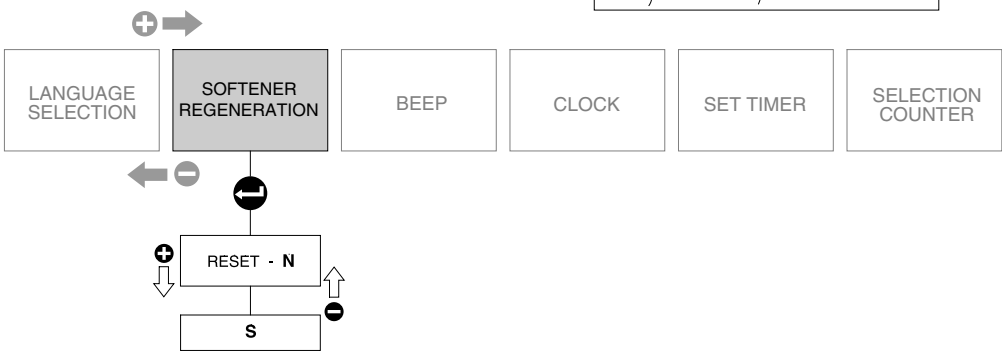




6.1.2 Softener regeneration

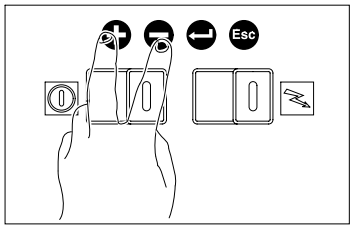
If the function is ON, the display shows **"Reset - N"**.
Press **"+"** to type **"Y"** followed by **"enter"** to confirm

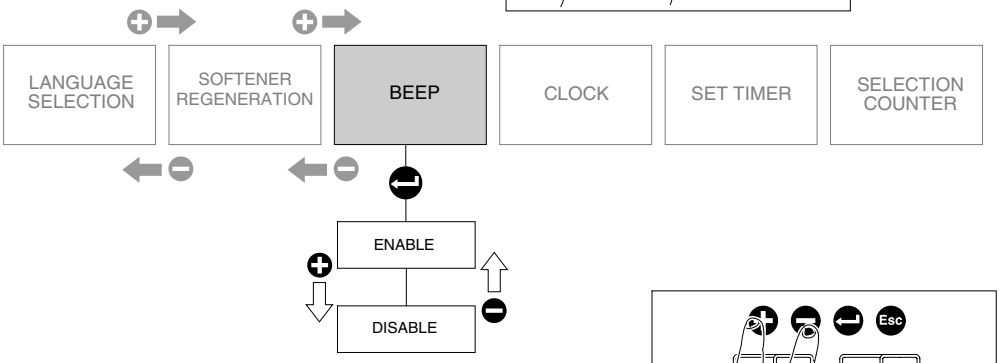




6.1.3 Enabling/disabling button beeping

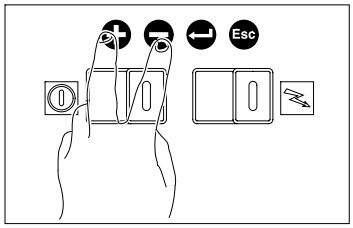
If you enable this function, whenever you press a button you will hear a beep.

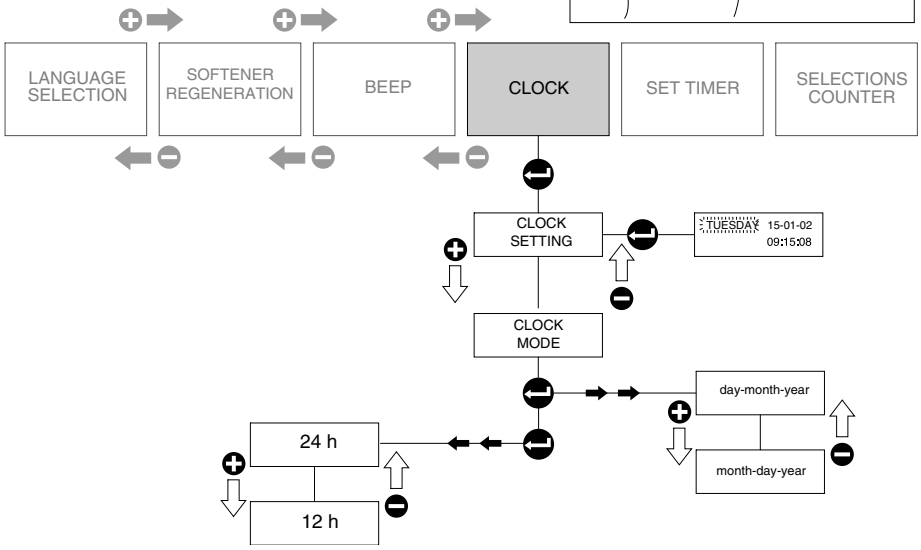




6.1.4 Clock

This submenu allows you to set the date, time and format (24 hour or AM/PM and dd/mm/yy or mm/dd/yy).

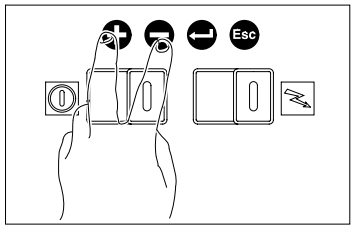


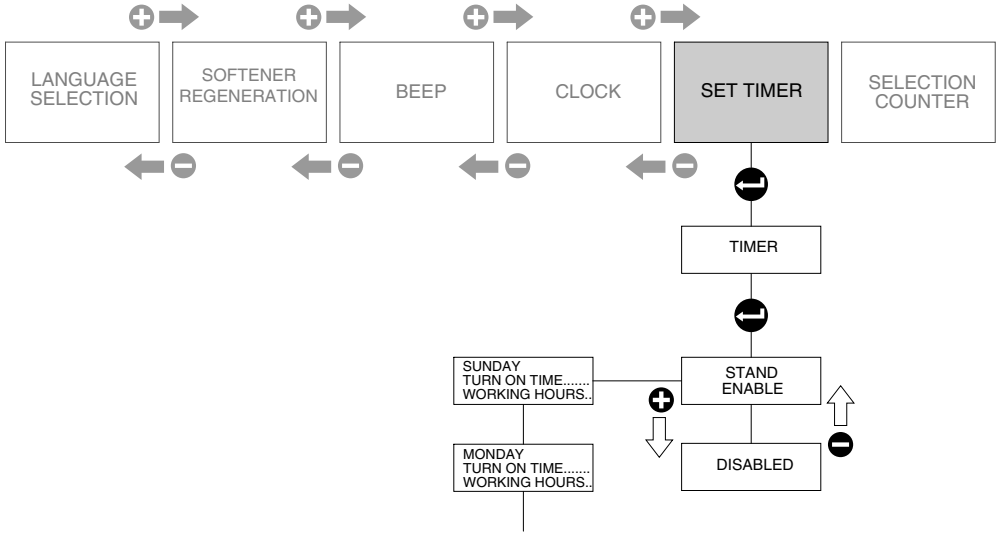


6.1.5 Set timer

This menu allows you to set the automatic switching ON and OFF times of the machine. It has the following submenus:

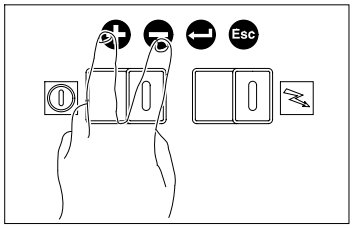
- Enable/disable function
- Set the time the machine switches ON and the number of working hours for every day of the week.

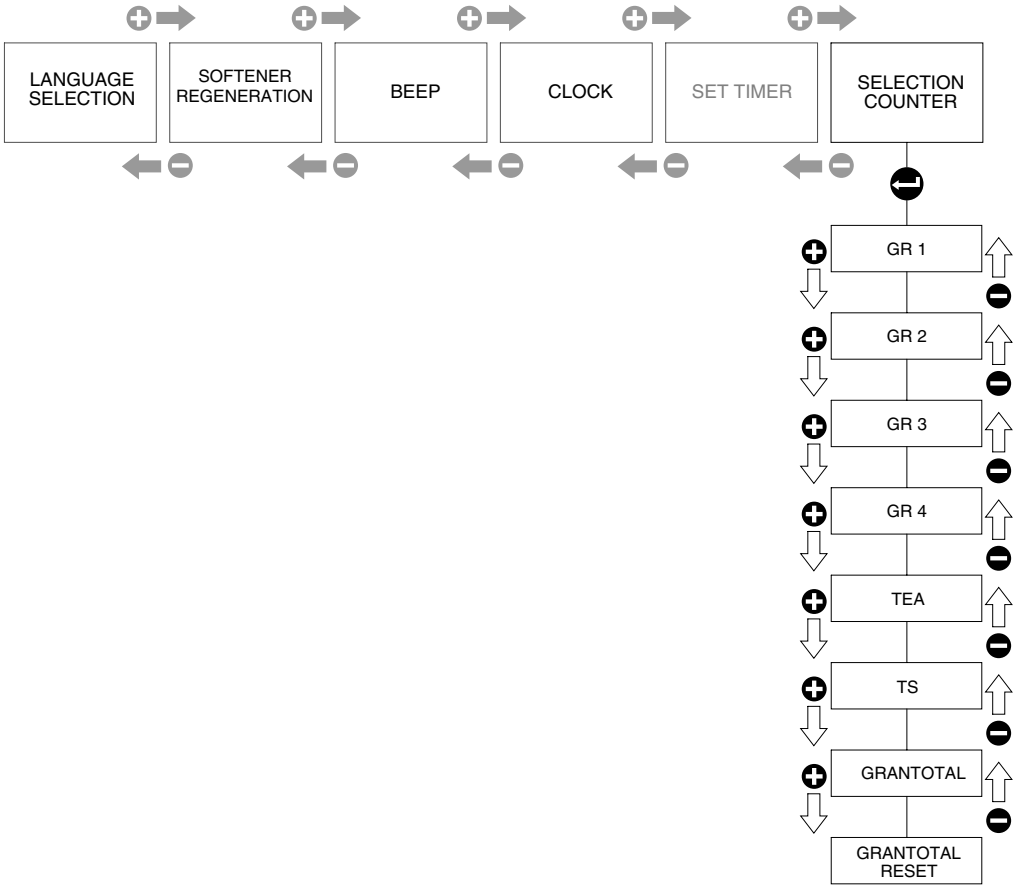




6.1.6 Selection counts

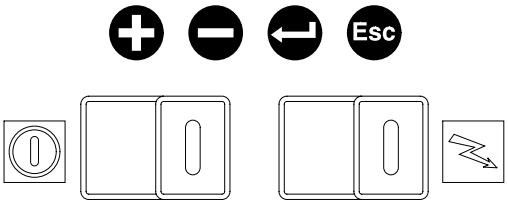
This displays the counts for each coffee group, the water group, the TS group and the total of all counts.
It also asks you whether you wish to reset the counters or not.

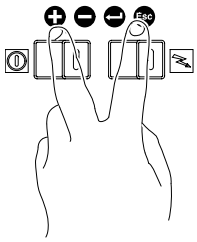


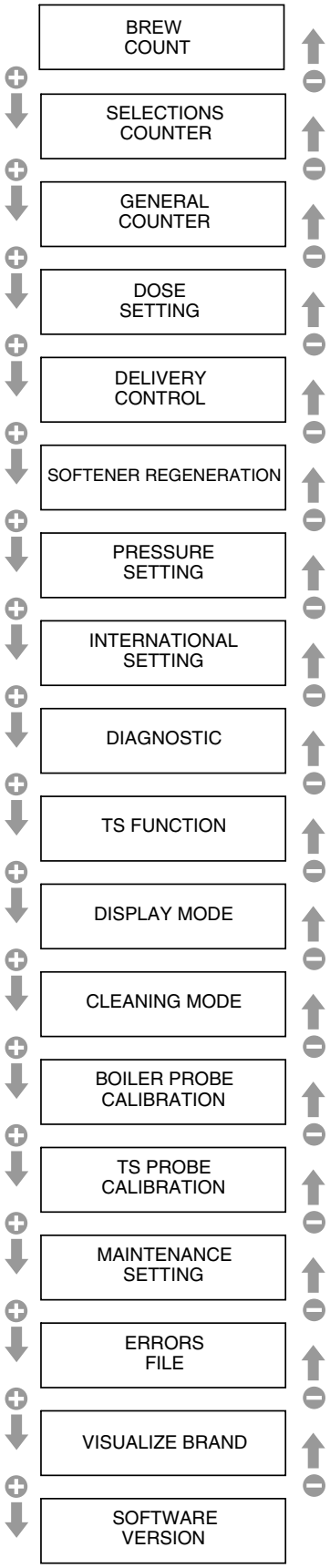


6.2 The “Technician’s” Menu

When the “**+**” and “Esc“ buttons are pressed for approximately 4 seconds, the **“technician’s”** programming menu is activated. This menu contains the following submenus:







- Brew count
- Selections counter
- General counter
- Dose setting
- Delivery control
- Softener regeneration
- Pressure setting
- International setting
- Diagnostic
- TS function
- Display mode
- Cleaning mode
- Boiler probe calibration
- TS probe calibration
- Maintenance setting
- Errors file
- Visualize brand
- Software version

To move from one submenu to another, press **“+”** or **“-”**. To enter a submenu, press **“enter”.** To quit, press **“esc”.** When you enter a submenu, the display flashes the editable value. To make changes, use the **“+”** or **“-”** buttons. **TO SAVE CHANGES, YOU MUST CONFIRM BY PRESSING THE "ENTER" BUTTON** for each change you make. If you do not want to save your changes, press "**esc**."

6.2.0 Brew Count

If you "enable" the brew count, the **continuous** buttons will not work (for accurate drink counting.) If you "disable" the brew count, the continuous buttons will work.

6.2.1 Selections Counter

This displays the counts for each coffee group, the water tap, theTS group and the grand total of all counts. It also asks if you wish to reset the counters. (Even if the counters are reset in the Bartender mode, the totals will continue to increase until reset in the Technician mode.)

6.2.2 General Counter

This displays the counts for each coffee group, the water group, the TS group and the grand total of all counts. It also asks you whether you wish to reset the counters or not.

6.2.3 Dose setting

Displays the impulses and the pre-brewing times for each coffee and the hot water dispensing times for each button of each group.
To change the doses and the pre-brewing times, use the **"+"** and **"-"** buttons.
Dose programming can be carried out by the user as explained in the USER'S INSTRUCTION and MAINTENANCE manual.

6.2.4 Delivery control

To "Enable" the following functions, press the "+" button.

Function "1"

Displays the dispensing time of each coffee at the end of dispensing for a certain amount of time

e.g. **Gr1**
27

Function "2"

During the dose programming, the machine records the length of time to dispense the programmed dose.This time is checked during dispensing This allows the operator to monitor and insure proper extraction time. At the end of the session the following will be displayed:

-**"O.K."** if the dispensing is within a range of +/- 10%
-The deviation in seconds if it exceeds the tolerated amount.

e.g. **Gr1**
+5

If dispensing is selected with the start/stop button, no indication is given

e.g. **Gr 1**
. . .

6.2.5 Softener regeneration

Set the inlet water hardness level in French degrees. Set the capacity of the water softener in liters.
Entering the above values enables the function that alerts you to regenerate the water softener.

To disable this function, set these values to "0".

6.2.6 Pressure setting

Set the pressure values of the boiler with 0.05 bar increments. Optimal setting is 1.0 to 1.1.

6.2.7 International setting

Choose the international units to be used for the pressure and the temperature values, namely: bar or P.S.I. and °C (celsius) or °F (farenheit).

6.2.8 Diagnostic

This program allows you to select the different devices and activate them to check their working order or to check whether the CPU input and output signals are being sent correctly.
To use the diagnostics, proceed as follows:
Press **"enter"** and, then using the **"+"** and **"-"** buttons, choose the type of diagnosis.

The following can be chosen:

- **Test Outputs**

You can activate the panel LEDs and all the devices (solenoid valves, pump, etc.) as follows:
Press **"enter"** and, then using the **"+"** and **"-"** buttons, select the device to be checked. Once you have made your selection, activate it by pressing **"enter"**.

- **Test Digital Inputs**

You can display the exact working order of the different panel buttons as follows:
Press **"enter"** and, then using the **"+"** and **"-"** buttons, select what to check. Once you have selected the button, press it to display the **ON/OFF** status.

- **Test Analogue Inputs**

The display will show the read value of the temperature sensors.

- **Test Water Level**

The display will show the status of the water level in the boiler.

- **Test Buzzer**

This checks the working order of the buzzer of the electronic data sheet.

- **Test Volumetric Counters**

This checks that the volumetric counters of each group work correctly when water passes through them.
Press **"enter"** to display the different volumetric counters of the groups. Press the START/STOP button (E) of each group to display the count increase of each counter.

6.2.9 TS Function

Set the temperature values for the TS function.

6.2.10 Display mode

Select what to show on the display: the time and date or the pressure value of the boiler and the date.

6.2.11 Cleaning mode

This submenu allows you to enable/disable automatic cleaning.

6.2.12 Boiler probe calibration

This program is used to align the boiler pressure sensor with the reference value using software.
The display shows the pressure measured by the sensor in real time and the corresponding value, which must be aligned.
Check that the pressure measured with a reference manometer equals the sensor reading.
If the manometer shows a higher or lower pressure value, make the changes using the **"+"** or **"-"** buttons to align the pressure control system. Then, press **"enter"** to confirm.

6.2.13 TS probe calibration

This program is used to align the TS system temperature "READING" with a regular, manual thermometer. The display has two temperature lines. The first line: "PROBE" temperature cannot be modified. The second line, "READING" temp. may be adjusted to match the temperature as measured with a manual, frothing thermometer. Both TS Probe and manual thermometer must be adequately immersed in liquid, which is already at 120° F or higher.
If the thermometer shows a higher or lower temperature than the "READING," make the changes using the **"+"** or **"-"** buttons. Then press "**enter**" to confirm.

6.2.14 Maintenance setting

This menu allows you to set the time to schedule maintenance on a time and cycle basis. This means that that the machine will alert you when it is time to perform preventive maintenance.Reset the counters after completing the maintenance.

6.2.15 Visualize brand

This menu allows you to enable or disable the display of customized logos.

6.2.16 Errors file

Displays the malfunctions, the warning messages, and the interventions of the safety devices, stored by date and time.

6.2.17 Software version

Displays the software version information.

7 DISPLAYING

A high performance graphic display is used. It has many features.

7.1. Warming Up Phase

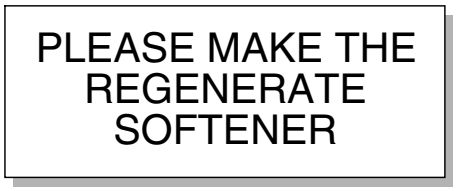
During the warming up phase, the following message is displayed:

"Machine not ready"

Until the set pressure is reached.
In addition, the following messages may be displayed:

"Please make the regenerate softener"

If the function is active and the limit conditions have been reached, the message will be displayed each hour until action is taken.



"Please make the service time"

If the function is active and the limit conditions have been reached. the message will be displayed each hour until action is taken.

7.2 Operating Mode

When the correct temperature/pressure have been reached, the **"date"** and **"time"** or the **pressure** are displayed for 20 seconds followed by two personalized logos for 10 seconds each.
During dispensing, the following is displayed:

If one of the two time control functions is activated, instead of the coffee symbol, the following is shown in sequence:

- The **GrX** (X= n. activated group) flashing throughout the dispensing period
- The dispensing time in the row under **GrX** for 10 seconds at the end of dispensing

WATER	**Gr1 Gr2 Gr3 Gr4** XX XX XX XX	**TS** **156° F**

7.3 Safety Devices

7.3.1 If the safety device for the boiler water level intervenes, the following message is displayed:

"water missing"

7.3.2 If the heating element takes longer than the predetermined factory settings to reach working temperature, the following message is displayed:

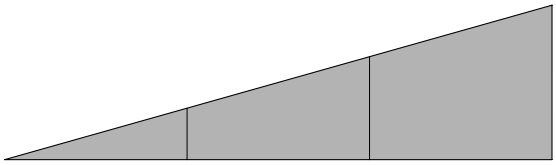
"pressure low"

7.3.3 If the safety device for slow dispensing intervenes, the LED of the dispensing button will flash until the end of dispensing.

The boiler safety devices can be reset by switching the machine OFF and then back ON again

7.4 The Cup-Warmer

By pressing the relative button, the display shows the following:



The darkened segments indicate the selected power status of the cup-warmer heating element. (min – med – max – off).
To move from one level to the next, see instructions in section (5.2.0).

7.1. Dose Programming Phases

During the programming phase, the display flashes the following message:

"**Programming doses…".**

8 LIST OF MALFUNCTIONS

G00 = CPU card diagnosis
G01 = Low water level (intervention of the safety device 7.3.1)
G02 = Low pressure (intervention of the safety device 7.3.2)
G03 = Boiler temperature sensor in short circuit
G04 = Cut off boiler temperature sensor
G05 = HTS temperature sensor in short circuit
G06 = Cut off HTS temperature sensor
G09 = Water softener regeneration not carried out (appears 48 hours after the first message is displayed and every 24 hours after that)
G10 = Scheduled maintenance not carried out (appears 72 hours after the first message is displayed)