ASTORIA

With you. With coffee.

CMA MACCHINE PER CAFFÈ S.R.L.

AB200

SAE

ESPRESSO COFFEE MACHINE

Use and Maintenance Manual. TECHNICIANS' instructions.

EN

IMPORTANT: Read carefully before use. Store for future reference

I. SAFETY PRECAUTIONS

I.I. LEVEL OF TRAINING AND KNOWLEDGE REQUIRED OF THE TECHNICIAN

The Technician is a specialised person that has been specially trained and authorised to carry out the following operations in accordance with current regulations: transport and handling, storage, installation, commissioning, maintenance, decommissioning, dismantling and disposal of the machine.
The Technician must be properly trained and informed regarding any residual risks present during these operations and while the machine is operating.
The Technician must be able to apply all the good practices in compliance with food hygiene principles.

Any unauthorised tampering with any parts of the machine renders the guarantee null and void and relieves the manufacturer of any liability should the machine malfunction or any user accidents occur.

I.II. SAFETY PRECAUTIONS

Even though the machine is provided with all safety devices required to eliminate possible risks for the Technician, there are still certain residual risks.
These so-called residual risks are related to machine parts that may pose a risk to the Technician, if used improperly, evaluated or deactivated incorrectly, because the prescriptions contained in this Manual were circumvented.
The machine is also equipped with appropriate warnings placed on residual risk areas, which must be scrupulously observed.
Attention must be paid to the residual risks that are present during the operations described in the following paragraphs as they cannot be eliminated:
Compliance with the installation and machine's safety standards is dependent on the use, installation, maintenance and correct operation of the machine. These factors are the responsibility of the purchaser, Technician and Technician's employer.
The Technician's employer is responsible for hiring and training personnel to correctly install, run and perform maintenance work on the machine and its protection systems.

I.III. TRANSPORT AND HANDLING

Hand crushing hazard

Handling operations must always and exclusively be performed by the Technician and in compliance with the current health and safety regulations.
Before starting the transport and/or handling manoeuvres, check the route, dimensions needed, safety distances, places suitable for placing the load down, and the appropriate equipment for the operation.
Handling operations must be carried out by at least 2 people, or with the help of special lifting equipment.
In view of the substantial weight of the equipment, exercise great caution during the handling operations.
The Manufacturer is not responsible for any injury or damage caused by clothing, lifting equipment and personal equipment which was not suitable for the type of intervention that the operator had to carry out.
The packaging material must not be left within the reach of children, since it is a potential source of danger.

I.IV. INSTALLATION

Electrical hazard

High temperature hazard

Risk of explosion

It is prohibited to perform maintenance on moving components

Installation operations must always and exclusively be performed by the Technician and in compliance with the current health and safety regulations.

The appliance's water supply must provide water which is suitable for human consumption, and must conform with the regulations in force in the place of installation.

The Technician must carry out the hydraulic connections in accordance with the hygiene and hydraulic safety standards regarding environmental protection which are in force in the place of installation.

To ensure electrical safety, the appliance must be connected to an effective earthing system, and the system in which it is installed must be equipped with a suitable differential circuit breaker, in compliance with the safety laws and standards.

The effectiveness of the earthing system and functionality of the differential circuit breaker - both of which are fundamental for guaranteeing the appliance's electrical safety - are the responsibility of the person in charge of the electrical system on which the equipment is installed.

The manufacturer cannot be considered responsible for any damage caused by an inadequate electric system.

Make sure that the electric mains power is enough to supply the energy needed for the machine to correctly operate.

The appliance installation operations must be carried out with the electrical mains switched off. To make the electrical system safe and be able to carry out operations when the machine is not powered, the Technician must apply the rules prescribed by current technical standards (disconnect the power supply, avoid reclosures, check that there is no voltage, etc.).

I.V. MAINTENANCE AND CLEANING

Electrical hazard

High temperature hazard

Risk of explosion

The only personnel authorised to access the service area are those who are knowledgeable about and have practical experience using the appliance, particularly in regards to safety and hygiene.

Maintenance and cleaning operations must always and exclusively be performed by the Technician and in compliance with the current health and safety regulations.

The maintenance and cleaning operations must comply with the safety regulations:

- Do not carry out maintenance work when the machine in operation.
- Do not immerse the machine in water.
- Do not spill liquids on the machine or use water jets when cleaning.

- Do not allow maintenance and cleaning operations to be carried out by children or incompetent people.
- Do not perform maintenance and cleaning operations other than those described in this manual.

When cleaning, pay attention to the parts of the machine that can become hot:

- Avoid contact with the dispensing group, water spouts and steam nozzles.
- Do not place your hands or other body parts near the steam, hot water or milk dispensing nozzle tips.

Only perform the maintenance and cleaning operations indicated in this manual.

If the problem cannot be resolved, switch off the machine and contact the Manufacturer.

All maintenance operations must be carried out when the power supply has been turned off, the water mains has been closed off, and the machine has completely cooled down.

After maintenance and/or repair work, the components that are used must ensure that the hygiene and safety requirements initially provided for the appliance are still met. These are met by only using original spare parts. When components which come into contact with water or food are repaired or replaced, a washing procedure has to be carried out, as if it were the first installation.

The Technician must inform the User about the methods of periodic testing of pressure equipment and safety devices in accordance with the legislation in force in the country of installation.

I.VI. EMERGENCY SITUATIONS

Should an emergency situation occur as a result of a machine malfunction, adopt the measures provided for in the emergency plan posted in the premises and in any case, proceed to immediately carry out the actions based on the type of problem.

SHORT CIRCUIT FIRE

In the event of a fire caused by the machine's electrical system malfunctioning, adopt the following behaviours:

- Disconnect the machine from the power mains via the main switch.
- Call the fire and rescue service.
- Get everyone a safe distance away from the premises.
- Extinguish the flames using a CO_2 fire extinguisher.

General contents

1. INTRODUCTION

Read this manual carefully. It provides important safety information to the Technician regarding the operations indicated in this document.

Keep this Manual in a safe place. If you lose it, you can ask the Manufacturer for another copy.

The Manufacturer of the appliance cannot be held responsible for any damage caused due to the non-observance of the requirements listed in this manual.

Before carrying out operations on the machine, read the instructions contained in this publication and follow the guidelines carefully. Keep this manual and all attached publications in an accessible and secure place.

This document assumes that the machine is installed in a location where the current work safety and hygiene standards are observed.

The instructions, drawings and documentation contained in this Manual are technical and confidential. They are the sole property of the Manufacturer, and may not be fully or partially reproduced in any way.

The Manufacturer reserves the right to make any improvements and/or modifications to the product. We guarantee that this Manual reflects the technical state of the appliance at the time it was released to the market.

We encourage the Technicians to make any proposals in regards to improving the product or its Manual.

1.1 Guidelines for reading the Manual

This Manual is divided into separate chapters. The chapter order is linked to the temporal logic of the life of the machine.

Terms, abbreviations and pictograms are used to facilitate the immediate understanding of the text.

This Manual consists of cover, index and series of chapters. Each chapter is sequentially numbered. The page number is shown in the footer.

The machine identification data is displayed on the machine's nameplate and the EU declaration of Conformity, whilst the date and revision of the Instruction Manual is provided on the last page.

Abbreviations

Sec. = Section
Chap. = Chapter
Para. = Paragraph
P. = Page
Fig. = Figure
Tab. = Table

Units of measurement

The units of measurement are those provided by the International System (SI).

1.2 Storing the Manual

The Instruction Manual must be stored carefully. The manual should be stored, handled with care with clean hands and not placed on dirty surfaces. The Manual must be stored in an environment protected from moisture and heat.

Do not remove, tear or arbitrarily modify any of its parts.

On the Technician's request, the manufacturer can provide additional copies of the machine's Instruction Manual.

1.3 Method for updating the Instruction Manual

The Manufacturer reserves the right to modify and make improvements to the machine without providing notice or updating the Manual that has already been received.

Should the Manual become illegible or otherwise hard to read, the Technicians must request a new copy from the Manufacturer before carrying out any operations on the machine.

It is absolutely forbidden to remove or rewrite parts of the Manual.

The instructions, drawings and documentation contained in this manual are confidential and the sole property of the Manufacturer. They may not be reproduced in any way, either in full, or in part without prior authorisation.

The Technician is responsible for complying with the instructions contained in this Manual.

Should any incident occur as a result of these recommendations being used incorrectly, the Manufacturer declines any liability.

This manual is also available on the manufacturer's website shown on the cover of the manual.

1.4 Recipients

This Manual is intended for the Technician who is responsible for carrying out the following operations on the machine:

- Transport and handling;
- Storage;
- Installation;
- Commissioning;
- Maintenance;
- Cleaning;
- Spare part replacement;
- Emergency operations and faults;
- Decommissioning;
- Disassembly;
- Disposal (refer to the retailer if not directly responsible).

RECIPIENT QUALIFICATIONS

The machine is intended for a professional non-generalised use, therefore the Technician must:

- Have attended the training courses organised by the Manufacturer relating to the type of machine;
- be aged 18 and over;
- be physically and mentally fit to use the machine;

- be able to understand and interpret the Instruction Manual and the safety requirements;
- know the safety procedures and how they are implemented;
- be able to use the machine;
- have understood the procedures of use as defined by the machine's manufacturer.

1.5 Glossary and Pictograms

This paragraph lists uncommon terms or terms whose meanings are different than those most commonly used.

Abbreviations are explained below, as well as the meaning of pictograms describing the operator's qualification and the machine status; they are used to quickly and uniquely provide the information needed to correctly and safely use the machine.

1.5.1 Glossary

User

The person in charge of operating the machine and performing the routine cleaning operations indicated in this manual.

Technician

- A specialised person who has been specially trained and authorised to carry out the following operations in accordance with current regulations: transport and handling, storage, installation, commissioning, maintenance, decommissioning, dismantling and disposal of the machine.

Danger

- A potential source of injury or damage to health.

Dangerous area

- Any area in the vicinity of the machine where the presence of a person constitutes a risk to the safety and health of that person.

Risk

- Combination of the probability and severity of an injury or damage to health that can arise in a hazardous situation.

Guard

- Machine component used specifically to provide protection by means of a physical barrier.

Personal protective equipment (PPE)

- Clothing or equipment worn by someone to protect their health or safety.

Intended use

- The use of the machine in accordance with the information provided in the instructions for use.

Machine status

- The machine status includes the mode of operation and the condition of the machine's safety devices.

Residual risk

- Risks that remain despite adopting the protective measures integrated into the machine's design and despite the guards and complementary protective measures that have been adopted.

Safety component:

- Designed to perform a safety function.
- whose failure and/or malfunction endangers the safety of persons.

1.5.2 Pictograms

Descriptions preceded by these symbols contain very important information/requirements, particularly in regards to safety. Failure to comply with these may result in:

- A safety risk for those operating the machine.
- User injury, including serious injury (in some cases even death).
- The guarantee being rendered null and void.
- The Manufacturer waiving liability.

GENERAL DANGER symbol used when there is a risk of permanent serious injury that would require hospitalisation, or in extreme cases, even cause death.

ELECTRICAL HAZARD symbol used when there is a risk of permanent serious injury that would require hospitalisation, or in extreme cases, even cause death.

HIGH TEMPERATURE HAZARD symbol used when there is a risk of permanent serious injury that would require hospitalisation, or in extreme cases, even cause death.

HAND CRUSHING RISK symbol used when there is a risk of permanent serious injury that would require hospitalisation, or in extreme cases, even cause death.

EXPLOSION RISK symbol used when there is a risk of permanent serious injury that would require hospitalisation, or in extreme cases, even cause death.

CAUTION symbol used when there is a risk of minor injury that could require medical attention.

WARNING symbol used when there is a risk of minor injury that could be treated with first-aid or similar measures.

NOTE symbol used to provide important information about the topic.

It is prohibited to perform maintenance on moving components as there is a risk of permanent serious injury that could require hospitalisation.

Mandatory symbol indicating that safety gloves must be worn; used when there is a risk of permanent serious injury that would require hospitalisation.

Mandatory symbol indicating that eye protection must be used when there is a risk of permanent serious injury that would require hospitalisation.

Mandatory symbol indicating that safety shoes must be used when there is a risk of permanent serious injury that would require hospitalisation.

Mandatory symbol indicating that the documentation must be read; used to make the Technician aware of the importance of this action for their safety.

1.6 Guarantee

All of the machine's components are covered by a 12-month guarantee, except for electrical and electronic components and parts prone to wear and tear.

If any work is carried out on the machine electronics when the machine is still live, any guarantee will automatically be invalidated.

2. MACHINE IDENTIFICATION

2.1 Make and model designation

The machine and model ID information is found on the machine's NAMEPLATE and in the provided EU DECLARATION OF CONFORMITY.

2.2 General description

The machine described in this Manual consists of mechanical, electrical, and electronic components which, when used together, produce milk, coffee and water-based beverages. This product is manufactured in compliance with the EU Directives, Regulations and Standards indicated in the EU DECLARATION OF CONFORMITY provided with the machine.

2.3 The manufacturer's customer service

CMA MACCHINE PER CAFFÈ S.R.L.
Via Condotti Bardini, 1
31058 SUSEGANA (TV) - ITALY
Tel. +39 0438 6615 - Fax +39 0438 60657
E-mail: service@astoria.com
Web-site: www.astoria.com

RCW INTERNATIONAL LIMITED
Flat/Rm 12 07/F, Peninsula Centre, 67 Mody Road
Tsim sha tsui East, KOWLOON - HONG KONG
Web-site: www.astoria.com

RCW USA
1597 Post Rd Fairfield
CONNECTICUT 06824 - USA
Web-site: www.astoria.com

RCW GERMANY GMBH
Schleifwiesenstrasse, 27
71723 GROSSBOTTWAR - GERMANY
Tel. +49 7148 1629-991 - Fax +49 7148 1629-992
E-mail: info@rcwgermany.de
Web-site: www.astoria.com

RCW ROMANIA S.R.L.
Str. Parma nr. 2, O.P. 1, C.P. 446
300518 TIMISOARA TIMIS - ROMANIA
Tel. +40 256 306 492/4 - Fax +40 256 306 496
E-mail: service@rcwromania.ro
Web-site: www.astoria.com

RCW RUS LLC
Business Center PORTPLAZA
Proektiruemy proezd 4062, 6/16
115432 MOSCOW - RUSSIA
Tel. +7(495) 925 75 56
Web-site: www.astoria.com

2.4 Intended use

The espresso coffee machine has been designed to professionally prepare hot beverages such as tea, cappuccinos and weak, strong and espresso coffee, etc. The appliance is not intended for domestic use, it is intended for professional purposes only.

The machine can be used under all the conditions set forth, contained or described in this document; any other conditions must be considered dangerous. The machine must be installed in a place where its access is restricted to qualified personnel only who have received suitable training (coffee shops, restaurants, etc.).

Permitted uses

All uses compatible with the technical features, operations and applications described in this document which do not endanger the safety of users or can cause damage to the machine or its surrounding environment.

All uses not specifically mentioned in this Manual are prohibited and must be expressly authorised by the Manufacturer.

Intended uses

The machine has been designed exclusively for professional use. The use of products/materials other than those specified by the Manufacturer, which can cause damage to the machine and be dangerous for the operator and/or those in close proximity to the Machine, is considered incorrect or improper.

Contraindications of use

The machine must not be used:

- for uses other than those indicated in this paragraph or for uses that differ from or are not mentioned in this Manual.
- with materials other than those listed in this Manual.
- with safety devices that have been disabled or are not working.

Incorrect use of the machine

The type of application and performance that this machine has been designed for, requires a number of operations and procedures that cannot be changed, unless previously agreed with the Manufacturer. All permitted behaviours are indicated in this document; any operation not listed and described herein is to be considered improper and therefore, hazardous.

Improper use

The only permitted uses are described in the Manual; any other use is considered improper and therefore, hazardous.

General safety features

The Technician must be aware of accident risks, safety devices and the general safety rules set forth in EU directives and by the legislation of the country where the machine is installed.

The Technician must know how all the machine's devices work. They must also have fully read and understood this Manual. Maintenance work must be performed by the Technician after the machine has been properly prepared. The tampering or unauthorised replacement of one or more machine components, the use of accessories which modify its use and the use of materials other than those recommended in this Manual, can cause accidents.

2.5 Data and marking

The machine's general technical data is provided in the following table:

TECHNICAL DATA TABLE			1GR	2GR COMP.	2GR	3GR
Max. power	US / CA	120 V	1800 W	1800 W	-	-
		208-240 V	-	2500 - 3300 W	3900-5200 W	5200-6900 W
		220-240 V	2700 - 3200	2800 - 3300 W	2800-3300 W	-
		380-415 V	-	-	4400-5200 W	5800-6900 W
Frequency			50 - 60 Hz			
Heating unit			3,5 L	5 L	8,5 L	13,5 L
Dimensions WxDxH (mm)			470x633x490	615x633x490	770x633x490	990x633x490
Net/Gross Weight			40 / 50 kg	51 / 65 kg	56 / 72 kg	72 / 90 kg
Safety valve calibration			0,19 MPa (1,9 bar) +/- 0,015 MPa			
Heating unit operating pressure			0,08 - 0,14 MPa (0,8 - 1,4 bar)			
Mains water pressure			0,15 - 0,6 MPa MAX (1,5 - 6 bar MAX)			
Coffee dispensing pressure			0,8 - 0,9 MPa (8 - 9 bar)			
Working environment temperature			5 - 35°C 95° U.R.MAX			
Sound pressure level			< 70 dB			

In compliance with directive 2006/42/CE, the machine is marked with the CE code with which the manufacturer declares under his responsibility that the machine is safe for persons and things.

Alternative markings can be affixed according to the target markets, provided they comply with current product regulations.

The nameplate which provides the appropriate markings, identification data and specific technical data, is affixed under the drain tray.

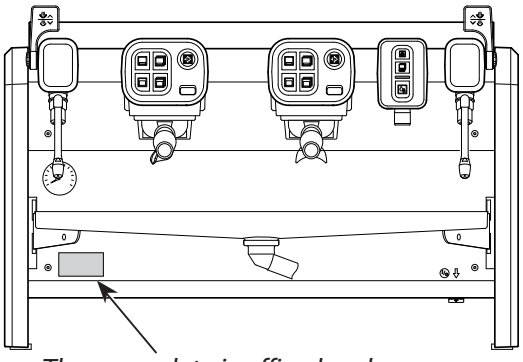
An example of a nameplate is provided below.

When contacting the Manufacturer, always provide the following information:

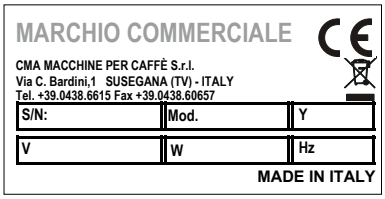
- S/N - machine serial number;
- Mod. - machine model;
- Y - year of manufacture.

The appliance data can also be found on the label located on the machine's packaging.

It is forbidden to remove or modify the nameplate. Should it deteriorate or become illegible, contact the Manufacturer.

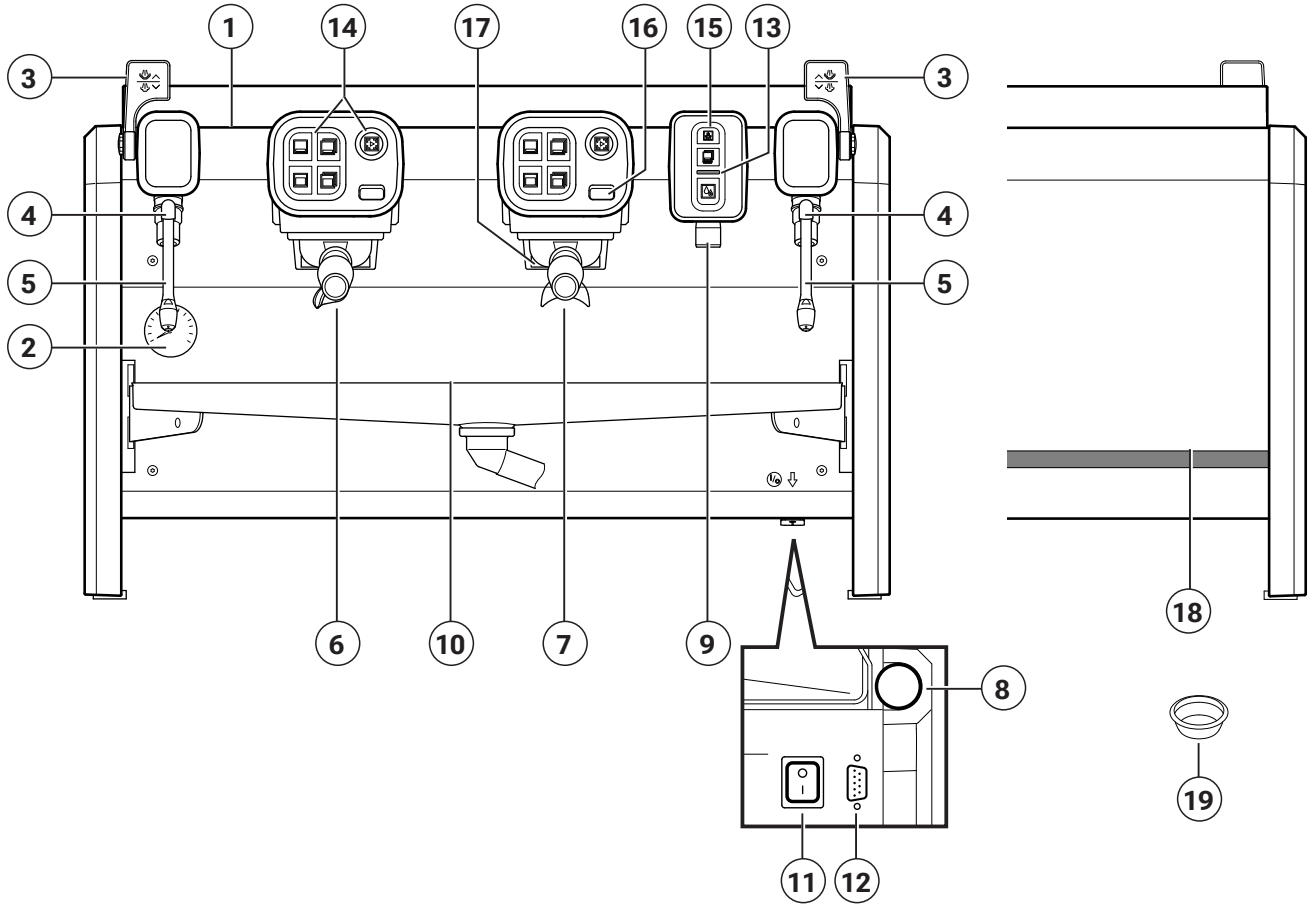


The nameplate is affixed under the drain tray.



To correctly connect the machine to the electric mains, refer to Chap. "13. WIRING DIAGRAMS" on page 62.

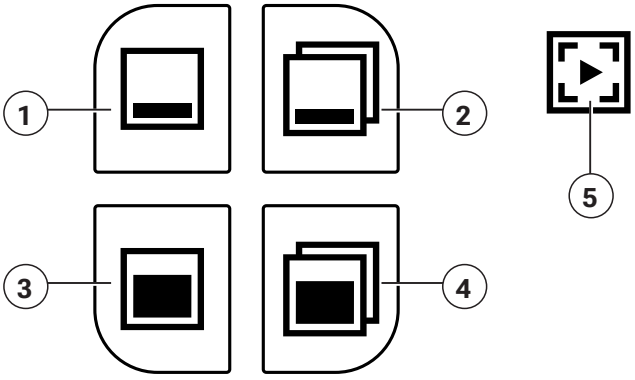
2.6 Machine diagram



1. Cup warmer shelf.
2. Pressure gauge.
3. Steam knob.
4. Scald protection.
5. Steam nozzle.
6. 1-cup filter holder.
7. 2-cup filter holder.
8. Adjustable foot.
9. Hot water nozzle.
10. Adjustable cup holder grid.
11. Power switch.
12. RS232 outlet*.
13. Machine on indicator light / boiler level*.
14. Coffee pushbutton panel.
15. Services pushbutton panel / touchscreen display*.
16. Timer display.
17. Work surface LED power supply.
18. Bodywork LED power supply*.
19. Blind filter.

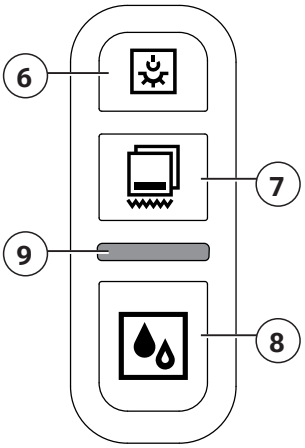
** depending on version.*

2.7 Coffee pushbutton panel



1. 1 espresso;
2. 2 espressos;
3. 1 long coffee;
4. 2 long coffees;
5. Stop / Programming / Continuous dispensing / Rinse.

2.8 Services pushbutton panel



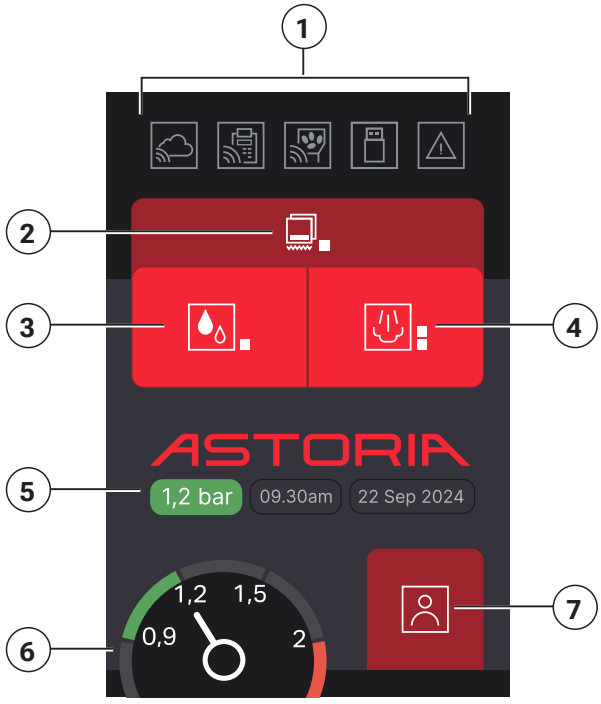
6. Lighting;
7. Cup warmer*;
8. Hot water;
9. Machine on indicator light / boiler level (see para. 7.2.6 on page 46);

** depending on version.*

2.9 Touchscreen display

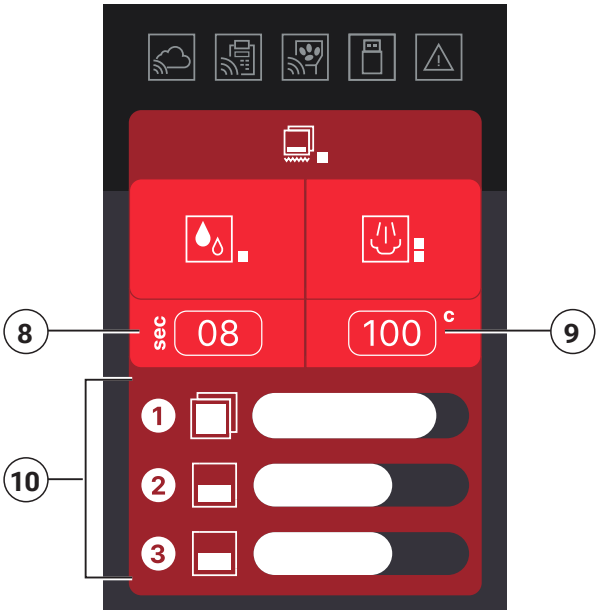
The touchscreen display allows you to control and program various machine functions (see Chap. 7 on page 32).

With the machine ready, this is what the display looks like:



1. Warning icon (see tab.).
2. Cup warmer*.
3. Hot water.
4. Autosteamer*.
5. Heating unit pressure / hour / date.
6. Graphic heating unit pressure.
7. Accessing the menu.

In the process of dispensing coffee:



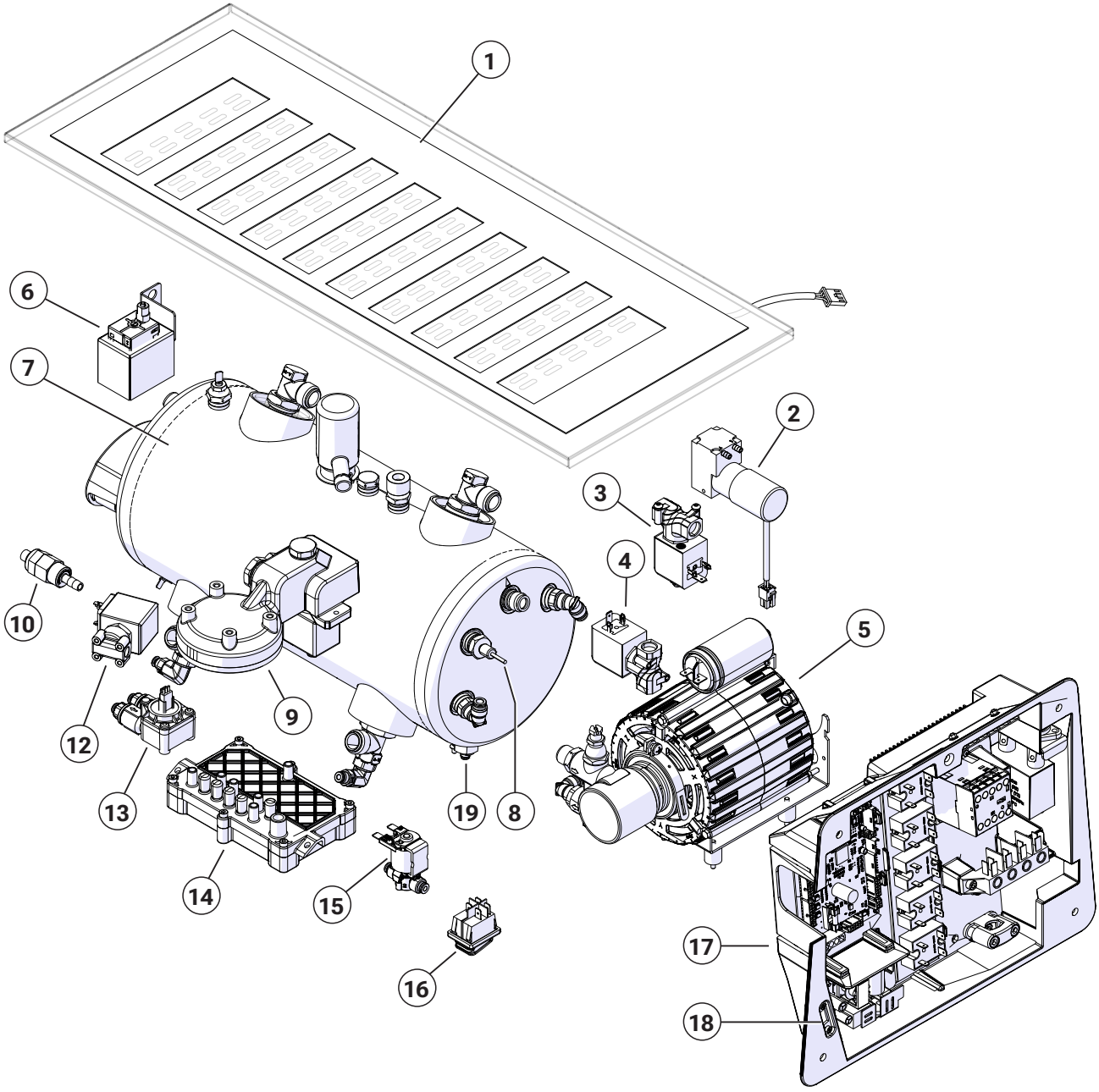
8. Remaining hot water delivery time.
9. Autosteamer operating temperature*.
10. Remaining coffee delivery time.

** depending on version.*

Warning icons table (1)

Icon	Warning
	Boiler electric heating element: WHITE=inactive; GREEN=heating.
	Water level in boiler: WHITE=loading; GREEN=level OK.
	Cup warmer heating element: WHITE=inactive; GREEN=heating.
	Presence of USB pen drive.
	Alarm notice: see para 7.1.25 on page 44.

2.10 Internal components



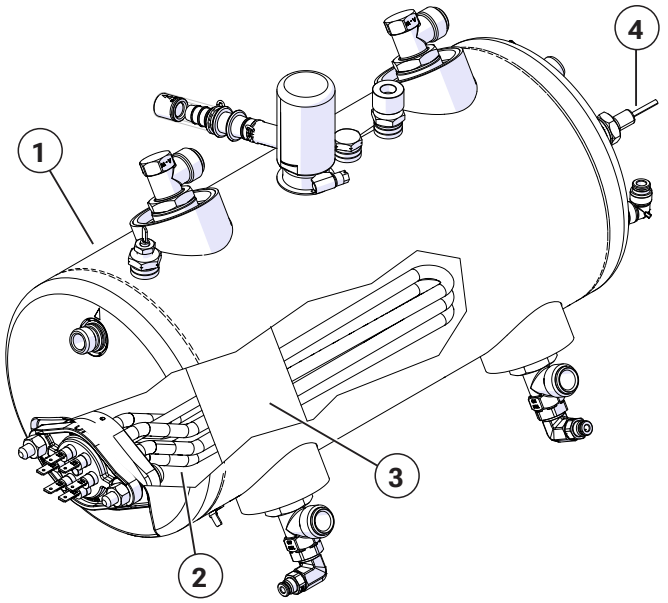
1. Cup warmer heating element*.
2. Autosteamer air pump*.
3. Autosteamer steam solenoid valve*.
4. Hot Water solenoid valve.
5. Motor pump.
6. Safety thermostat.
7. Heating unit.
8. Boiler temperature NTC probe.
9. Dispensing group.
10. 12 bar overload valve.
11. Quick couplings.
12. Water entry solenoid valve.
13. Volumetric dosing device.
14. Drain tray.
15. Water mix solenoid valve.
16. Power switch.
17. Electronic control unit.
18. USB socket.
19. Boiler drain.

** depending on version.*

2.10.1 Heating unit

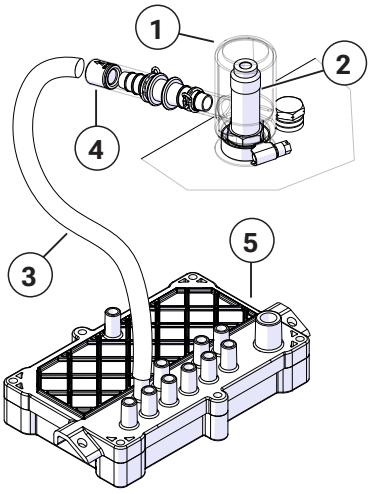
The heating unit is made of copper sheet metal **(1)**. The heat exchangers **(3)** are assembled onto this unit and are in turn connected to the dispensing group. The water used for dispensing coffee is taken directly from the heat exchanger. During the dispensing process, cold water is sent inside the exchanger by means of the motor pump. Cold water and the pre-existing hot water are mixed together inside the heat exchanger, in order to obtain the optimal water temperature for coffee infusion.

Heat is provided by an electric heating element **(2)**. The boiler includes a temperature sensor **(4)**.



2.10.2 Overflow device / Pressure relief safety valve

The cover **(1)** installed on the pressure relief valve **(2)** makes it possible to collect any water and steam which may leak from the heating unit due to a malfunction and channel it to the drain tray **(5)**, via a special hose **(3)**. The discharge pipe is equipped with a non-return valve **(4)** which prevents any backflow of waste water into the boiler.



The pressure relief safety valve has a calibration of 0.19 MPa (1.9 bar) in order to ensure that the pressure in the steam heating unit does not exceed 0.21 MPa (2.1 bar). Should a fault occur, the capacity of the valve is such as to be able to eliminate all the excess pressure in the heating unit.

The safety valve should be checked regularly as indicated in Chap. 8.4.4 on page 52.

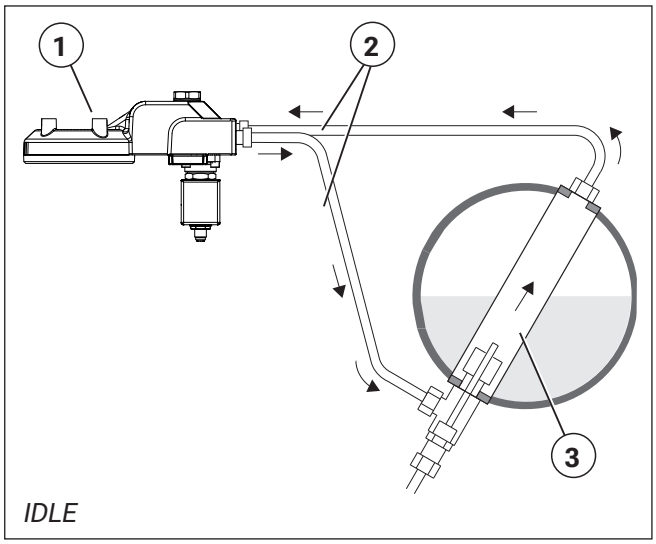
2.10.3 Dispensing group

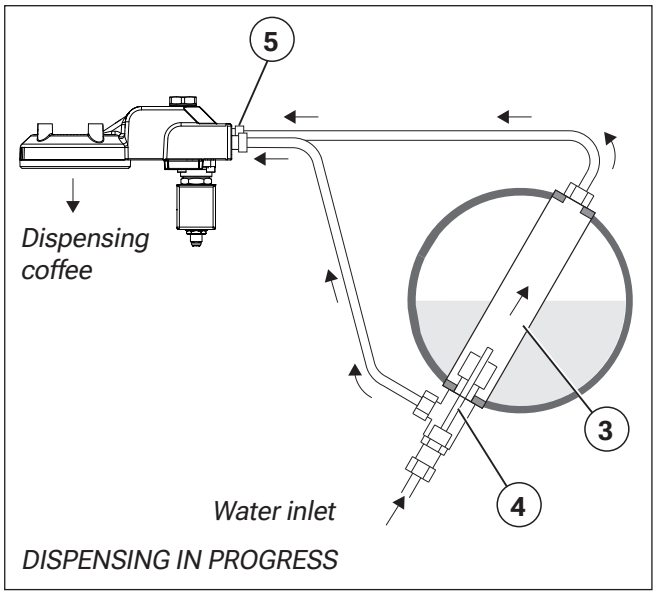
In this system, the dispensing group **(1)** is heated by a thermosiphonic circuit **(2)** connected to the heat exchanger **(3)**. The same water is used for the coffee dispensing, thus ensuring the same temperature for all coffee servings:

- The solenoid valve and the pump are activated in order to send cold water to the exchanger **(3)** through the injector **(4)**.
- The heating unit water is carried from the exchanger **(3)** to the group **(1)** for dispensing.
- The pump allows the increase of the pressure of the water flow up to 8-9 bar for dispensing.

The injector **(4)** and flow reducer **(5)** are important components for the dispensing group's operation.

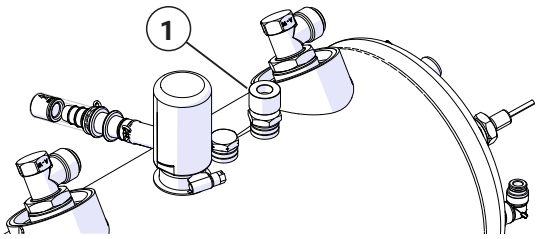
To increase the coffee extraction temperature, remove the flow reducer **(5)** or replace it with one that has a bigger diameter. To decrease the temperature, replace it with one that has a smaller diameter.





2.10.4 Negative pressure valve

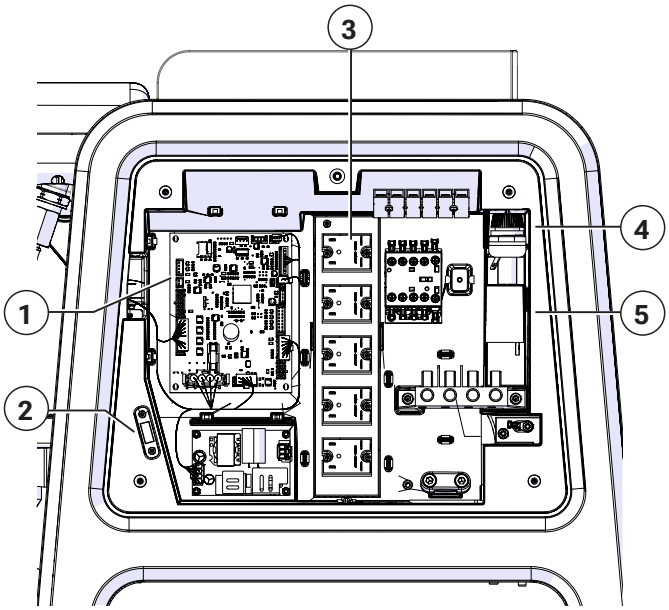
The purpose of the negative pressure valve **(1)** is to prevent liquids from back-flowing through the steam nozzle when they are being heated. Furthermore, the excess air inside the heating unit is removed during the machine's heating phase.



2.10.5 Electronic control unit

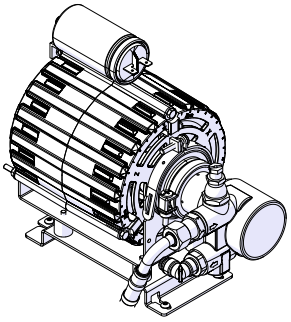
It contains various electronic elements that superintend the operation of the machine::

1. The electronic control unit is the machine's "brain", since it monitors and controls the appliance's full operation. The information relative to the software and the possible Wi-Fi installed can be viewed by proceeding as indicated in para. 7.1.3 on page 33.
2. USB socket.
3. Solid-state relays.
4. Fuses (US/CA version).
5. Noise filter (absent on US/CA version).



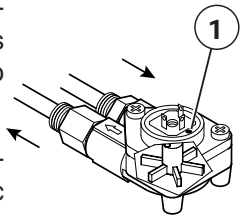
2.10.6 Motor pump

This component feeds the machine by increasing the water pressure to 0.8-0.9 MPa (8-9 bar) in order to dispense coffee and automatically fill the heating unit.



2.10.7 Volumetric dosing

The volumetric dosing device that is installed on the EVD versions, measures the quantity of water sent to the group in order to dispense coffee.



The dispenser generates electrical impulses which are sent to the electronic control unit.

These impulses are read by the control unit and counted while the dose is being programmed.

The flashing LED light **(1)** indicates that the electrical impulse has been sent from the dosing device to the control unit.

2.10.8 Automatic Water Entry

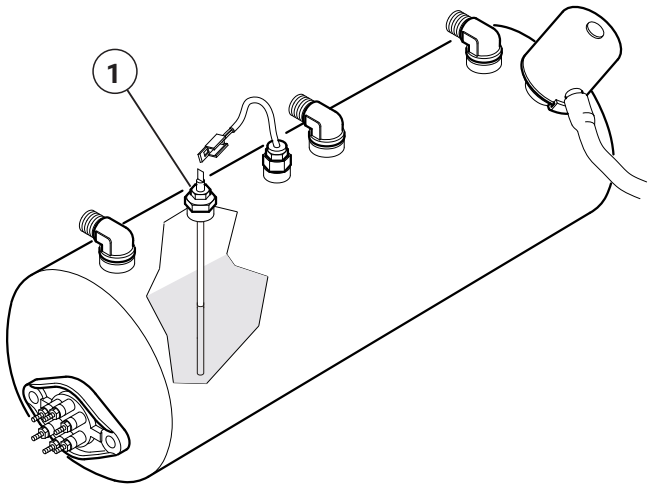
The Automatic Water Entry system is designed to check the water level in the heating unit. It consists of:

- A probe inserted into the heating unit **(1)** consisting of a stainless steel rod.
- The standard control unit.
- A hydraulic circuit with a solenoid valve controlled by the regulator.

The electronic control unit controls the level of water in the heating unit. When the level of water in the heating unit drops, the contact with the probe is interrupted. The control unit sends an impulse to the inlet solenoid valve and the motor pump, which are then activated until the normal level of water in the heating unit has been restored.

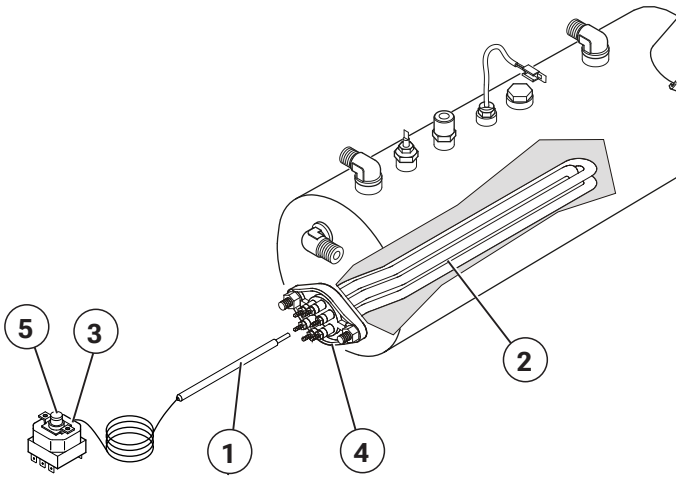
To avoid any flooding caused by machine malfunctions or water leaks in the circuit, the electronic control unit has a "Timeout" feature which cuts off the automatic water filling function after a certain time (2 minutes).

When installing machines with three or four groups, the initial water filling time may exceed the established timeout limit. Should this occur, simply turn the machine off and then back on to restore normal operating conditions.



2.10.9 Safety thermostat

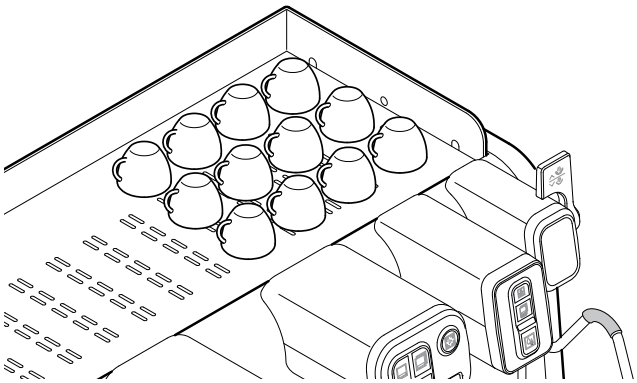
The thermostat prevents any damage occurring to the electrical heating element if there is no water in the heating unit. The thermostat bulb **(1)** is located inside a sheath **(2)** in the middle of the heating elements. The thermostat contacts **(3)** are connected to the electric heating element **(4)**. If the electric heating element is exposed due to a failure to fill the heating unit with water, the temperature of the heating element increases dramatically. At this point, the thermostat cuts the power supply to the heating element in order to prevent damage occurring.



To reset the thermostat, press the centre button (5). However, before starting the machine up again, identify what prevented the water from being fed into the heating unit.

2.10.10 Cup warmer

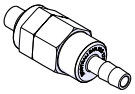
The cup warmer device warms the cups before they are used.



To use the cup warmer, proceed as indicated in para. 6.2.6

2.10.11 Expansion valve

The cold water sent from the pump to the heat exchangers is heated. This heating causes an increase in the volume of water. To limit pressure increases in the hydraulic circuit, the valve limits the maximum internal pressure of the circuit to 1.2 MPa (12 bar).



2.10.12 Energy Saving system

The machine is provided with a software that manages the automatic standby system during breaks, the night energy saving feature and the intelligent adjustment of the temperature.

This allows a considerable amount of energy to be saved during night breaks, whilst maintaining the machine in a condition that can quickly return to operate mode.

Moreover, the software only distributes the power where and when needed, thus allowing energy to also be saved during normal operation.

When programmed, it automatically puts one or more groups into standby mode when the workload decreases and prepares them for full capacity when needed.

To manage the Energy Saving System see para. 7.1.13 on page 39.

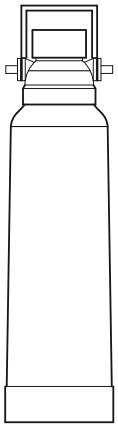
2.10.13 Water filter

In the mains water, non-soluble salts are present which cause limestone to form in the heating unit and other parts of the machine.

Drinking water can also contain heavy metals and substances, such as chlorine which are harmful to health.

The filter makes it possible to eliminate or substantially reduce the presence of these mineral salts.

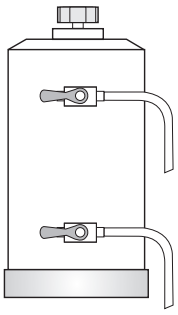
The cartridge contained in the water filter must be replaced at the frequency specified by the manufacturer.



To use and maintain the water filter, follow the instructions provided in para. 8.5.

2.10.14 Water softener

The resin softener can be used as an alternative to the water filter.

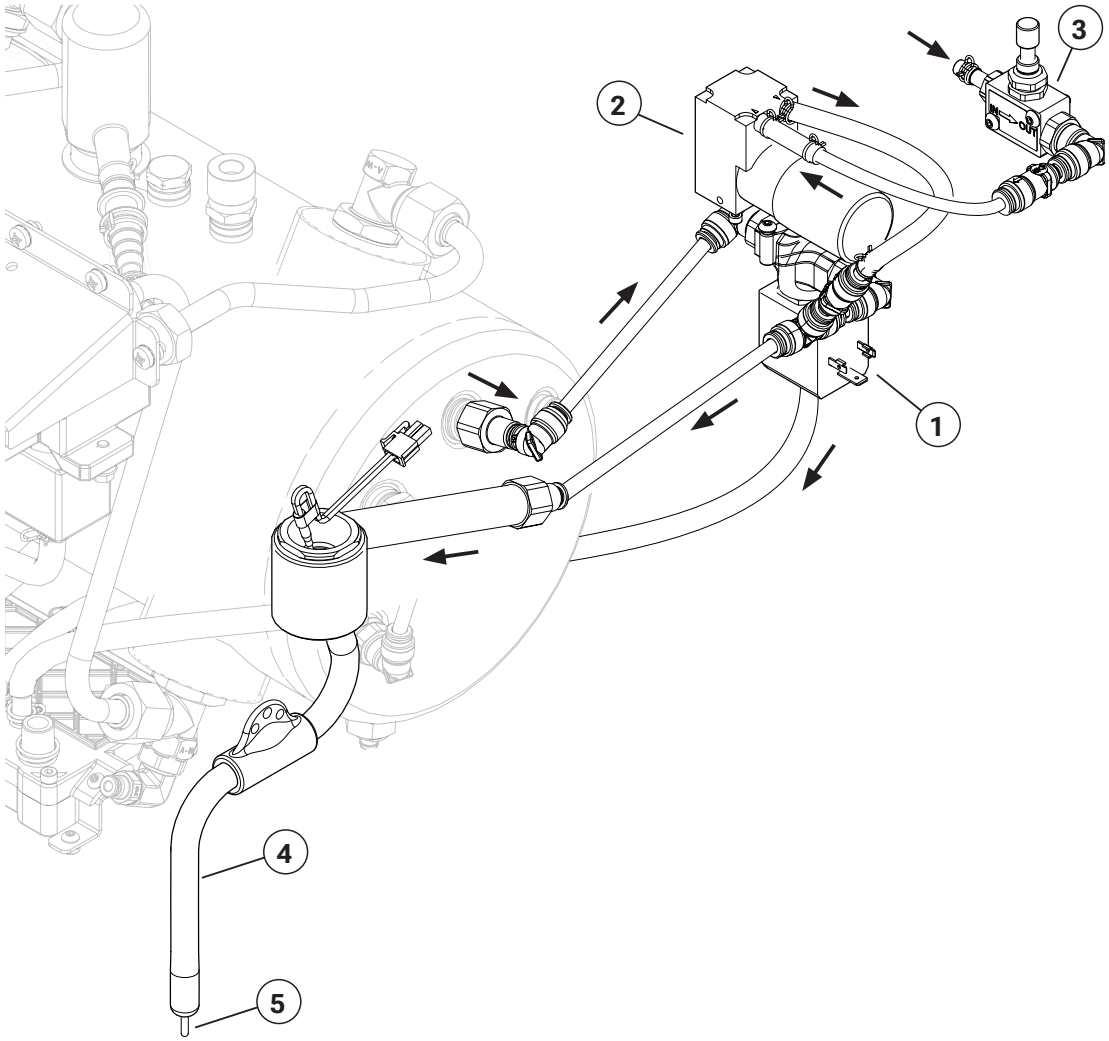


This component has the property of retaining the calcium contained in the water. For this reason, the resins become saturated after a certain period and must be regenerated with coarse kitchen salt (NaCl, sodium chloride) or special water softening salt. It is very important to regenerate the softener within the established times. However, in locations where the water is very hard, it will be need to be regenerated more frequently. The same rule can be applied to locations where there is a large consumption of hot water (for tea, etc.).

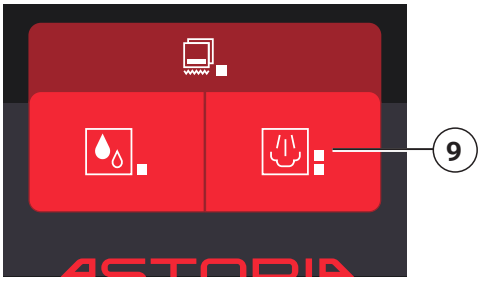
To use and regenerate the water softener, follow the instructions provided in para. 8.6.

2.10.15 Autosteamer

The "Autosteamer" system (optional), enables milk to be automatically frothed at the programmed temperature. The operating principle of the automatic steam wand is listed below:



- Select on the display the key desired **(9)**.



- The solenoid valve opens **(1)** which consequently allows the steam to flow from the boiler to the automatic steam wand nozzle.
- At the same time, the system activates the air suction pump **(2)**. The milk froth can be adjusted by changing the amount of air intake when opening the valve **(3)**.
- The air, is mixed with the steam and the resulting output from the automatic steam wand nozzle **(4)**.
- The probe incorporated into the nozzle **(5)** is connected to the electronic control unit of the machine and reads the temperature of the milk during heating.
- Once the set milk temperature has been reached, the electronic system stops the air and steam from being dispensed.

To adjust the milk temperature, see para. 7.1.5 on page 34.

3. TRANSPORT AND HANDLING

3.1 Safety precautions

Carefully read the instructions provided in chap. "I. SAFETY PRECAUTIONS" on page 3.

3.2 PPE features

When transporting the machine, the following PPE is required:

The use of protective gloves is mandatory against cuts and abrasions.

The use of safety shoes is mandatory.

3.3 Dimensioni e peso

MODEL	1GR	2GR COMP.	2GR	3GR
Width (mm)	470	615	770	990
Depth (mm)	633	633	633	633
Height (mm)	490	490	490	490
Max. gross weight (kg)	50	65	72	90

3.4 Handling the packed machine

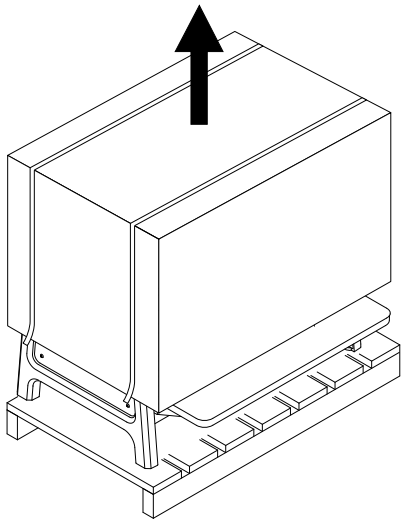
Upon arrival, the machine must be unloaded and handled with care, carefully following the instructions on the packaging, or those contained in this Manual.

It is very important to check that the maximum load capacity of each piece of lifting equipment, is at least equal to the weight of the loads to be lifted plus the safety margins which are required by current standards.

3.5 Unpacking the machine

Only remove the machine from its packaging when it is ready to be installed, in order to prevent accidental collisions which could damage it:

- Open the packaging, taking care not to damage the machine.
- Remove and take out the machine guards and equipment inside the packaging.
- Remove the machine.
- Dispose of the packaging in compliance with the current waste regulations.



After unpacking the machine, check that there are no damaged parts due to transport or missing parts. Should there be any, immediately inform (no later than 7 days after delivery) both the CARRIER and the MANUFACTURER, by indicating the machine data and providing photographic evidence.

We recommend that you keep the packaging until the guarantee has expired.

Wood, nails, staples, cardboard: non-polluting material which must be recycled properly.

Plastic: polluting material that must not be burned (danger of toxic fumes), nor disposed of as normal waste; to be disposed of according to current regulations.

4. STORAGE

4.1 Overview

In the waiting period prior to installation, the machine must be stored by the Manufacturer or an Authorised Distributor.

4.2 Storing the machine after operation

If the machine is not used after a certain period of time, store it in the following conditions:

- Disconnect the machine from the water and power mains.
- Empty all the internal circuits of water.

Store the machine taking the following precautions:

- Store in a closed environment.
- Protect it from shocks and stresses.
- Avoid contact with corrosive substances.

The machine was designed and built to operate in environments with the following characteristics:

- Room temperature: +5 + 35 °C
- Max. relative humidity: 50% (a 40°C)

Any variation in these characteristics may decrease the average life of some of the machine's components. Typical examples:

- Room temperature: premature degrading of the motors.
- Relative humidity: premature degrading of seals and electronics.

If the environmental features are significantly different than those listed, contact the MANUFACTURER before they become a potential problem.

Before starting the machine up after it has been placed in storage, the equipment must be fully inspected.

5. INSTALLATION

5.1 Safety precautions

Carefully read the instructions provided in Chap. "I. SAFETY PRECAUTIONS" on page 3.

If the technician has not performed all the installation operations and the machine is then used, this may result in serious damage to the appliance and people.

If any work is carried out on the machine electronics when the machine is still live, any guarantee will automatically be invalidated.

5.2 PPE features

When installing the machine, the following PPE is required:

The use of protective gloves is mandatory.

The use of eye protection is mandatory.

The use of safety shoes is mandatory.

5.3 Environmental conditions

5.3.1 Room temperature

The electrical and electronic equipment that has been installed on the machine, has been designed and made to function properly in environments where the temperature is between +5 and +35°C °C.

5.3.2 Relative humidity

The electrical and electronic equipment that has been installed on the machine, has been designed and made to function properly in environments where the relative humidity does not exceed 50% at a temperature of 40°C, or 90% at a temperature of 20°C.

5.3.3 Altitude

The altitude of the installation site must not exceed 2000 m.

5.4 Installation and operation spaces

Before the machine arrives, a suitable environment must be prepared:

- The appliance is not suitable for installation in an area where a water jet may be used.
- The machine is not suitable for outdoor use.
- The machine must not be used inside kitchens.
- The room must be suited for the intended use with adequate space to comfortably use the machine.
- The lighting must be adequate and conform with current standards.
- The earthing system must comply with current standards.
- The electrical system must comply with current regulations.

5.5 Support base

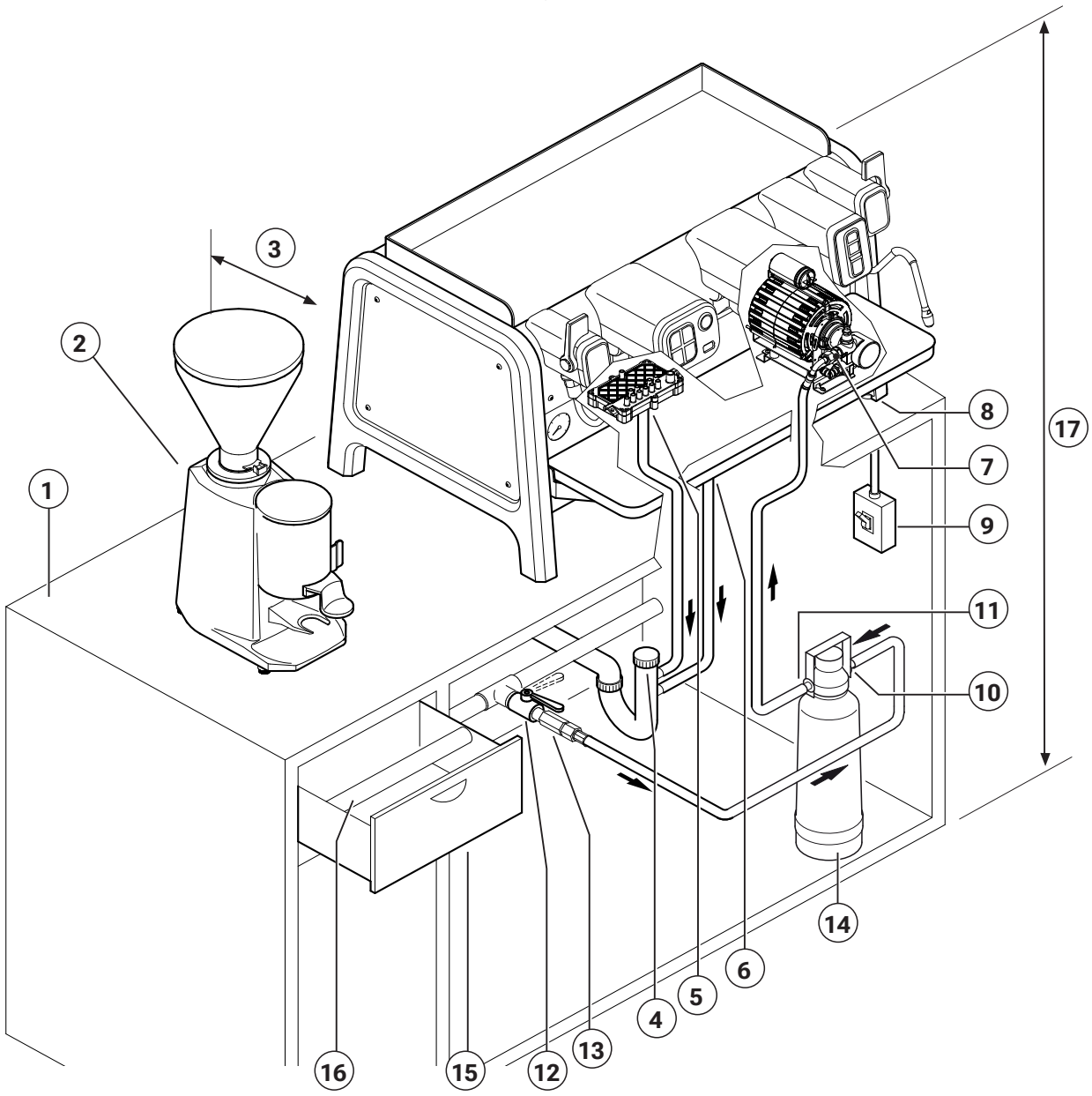
To ensure a sufficient degree of ergonomics and machine safety, a support base with the following features must be made available (reference drawings on the next page):

- Ensure that there is sufficient space for the machine to be positioned and used correctly.
- The worktop **(1)** must be comfortable and able to withstand the machine's weight. The height of the upper section of the machine **(17)** must be at least 150 cm from the floor.
- The base must be perfectly level and have no irregularities.

- The terminals for connecting to the water mains **(12)** and electrical mains **(9)** must be in the immediate vicinity of the support base.
- The machine can also be positioned against a wall, but please leave enough space - at least 50 cm **(3)** - on the right and left for easy access during cleaning operations.
- Fit a drawer under the worktop **(15)** which will be used to deposit used coffee grounds and if possible, also fit a rubber support **(16)** to knock the filter holder against.

In order to work properly and ensure safety, the machine must rest on a perfectly horizontal surface.

Any machine alignment adjustments must be carried out by adjusting the feet (8).

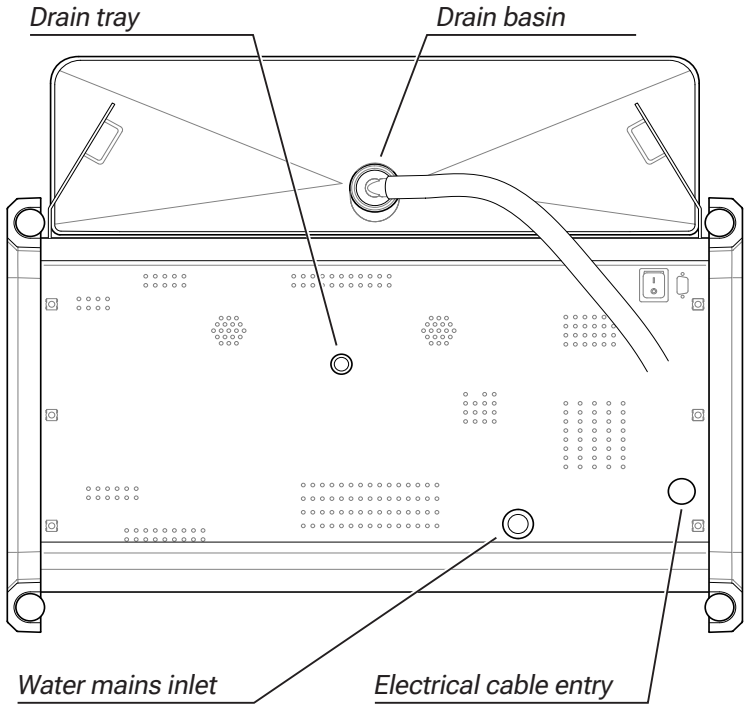


1. Support base.
2. Grinder-dispenser.
3. 50 cm minimum distance between the machine and the wall.
4. Sewer drain.
5. Drain tray.
6. Drain basin.
7. Water mains inlet.
8. Adjustable feet of the machine.
9. Electrical mains switch.
10. Water filter inlet.
11. Water filter outlet.
12. Water mains valve.
13. Water mains check valve.
14. Water filter.
15. Used coffee grounds drawer.
16. Support for knocking out the grounds in the filter holder.
17. The minimum height of the machine top from the floor must be 150 cm.

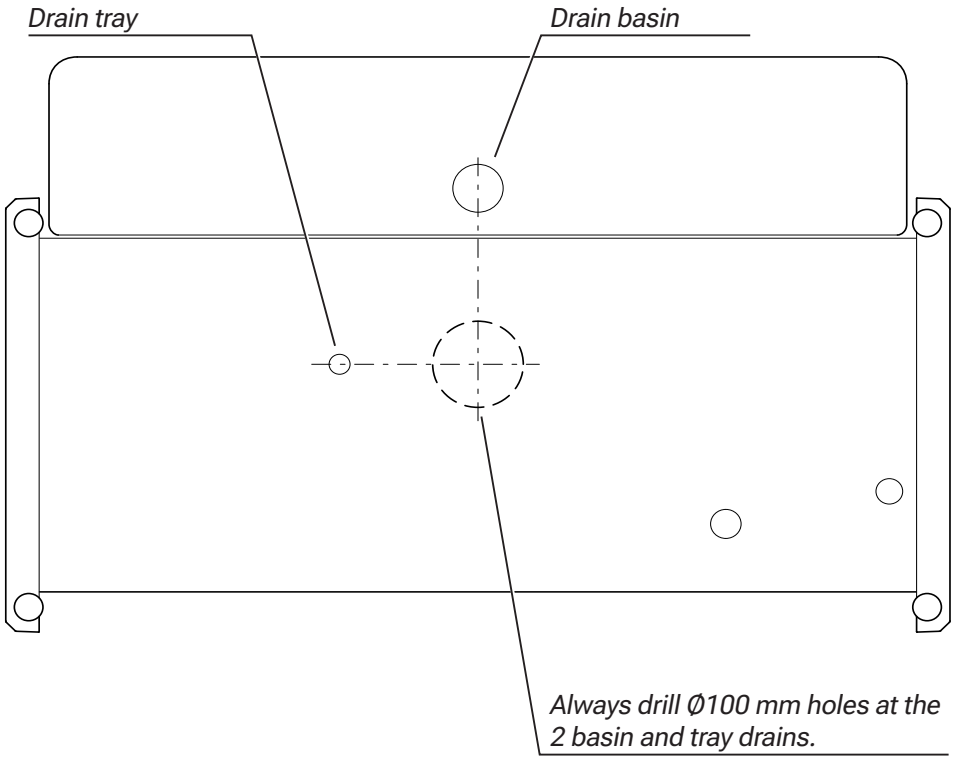
5.6 Drilling the support base

If holes need to be drilled into the support base to let the water inlet hoses, outlet hoses and power cables pass through, follow the directions given in the drawings below.

Machine connections



Hole position on bench



5.7 Hydraulic connection

Before connecting the hydraulic system, make sure the appliance has been disconnected from the electrical mains.

5.7.1 Water supply

The appliance's water supply must provide water which is suitable for human consumption, and must conform with the regulations in force in the place of installation. The owner/manager of the system must provide the Technician with confirmation that the water meets the above requirements.

5.7.2 Materials to be used

When installing the appliance, only the components and materials supplied with the appliance are to be used. Should the use of other components be necessary, the Technician must verify that these are suitable for coming into contact with water used for human consumption.

5.7.3 Hydraulic connections

The Technician must carry out the hydraulic connections in accordance with the hygiene and hydraulic safety standards regarding environmental protection which are in force in the place of installation

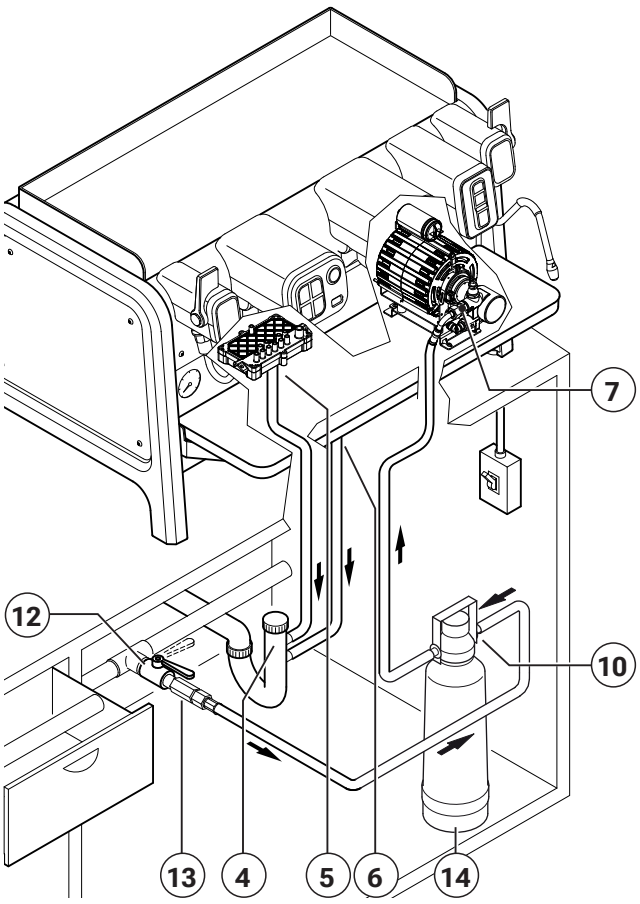
- Add a valve to the water supply in order to stop water flowing to the machine.
- In order to prevent damage, it is advisable to install the water purification filter where it will be protected from accidental blows.
- If there is no water purification filter **(14)**, connect the water mains **(12)** directly to the machine's water inlet **(7)**;
- When connecting the machine's tray **(5)**,**(6)** to the sewer drain **(4)**, avoid overly tight curves or kinks, and make sure that there is a sufficient slope for water to flow to the drain.
- The drain must be connected to a siphon that can be inspected and periodically cleaned, in order to prevent unpleasant odours returning.
- To avoid oxidisation building up and damage to the machine over time, do not use iron connections for the hydraulic system, even if they are galvanised.

After installation and before using the machine, the water in the hydraulic circuits must be replaced, as indicated in para. 6.4.

New connecting pipes must be used every time that the machine is newly installed. Do not use old connecting pipes.

The water mains must supply cold water fit for human consumption (potable water) at a pressure between 0.15-0.6 Mpa (1.5 and 6 bar). If the pressure is higher than 0.6 MPa (6 bar), connect a pressure reducer before the pump.

All the filling couplings are 3/8 male gas types. The drain



tray is connected to a pipe with an internal diameter of 20 mm.

If an external tank is used, the connection pipe between the machine and the tank must not exceed 150 cm.

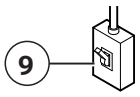
The machines are fitted with a "Timeout" device which allows the heating unit to be filled up with water within a maximum time. This function prevents water from flowing out of the heating unit's valve (flooding) and keeps the motor pump from overheating.

FOR THE EUROPEAN COMMUNITY: when connecting to a water mains or an external tank, a non-return valve (13) must be positioned upstream from the machine, as set forth by the EN 1717 standard.

FOR THE USA - The water connections and drains must be made in accordance with the 2003 International Plumbing Code of the International Code Council (ICC), or the 2003 Uniformed Hydraulic Code of the IAPMO. The machine must be installed with a suitable non-return valve as set forth by the national standards.

5.7.4 Electrical connection

- The conformity of the electrical system, effectiveness of the earthing system and functionality of the differential circuit breaker - all of which are fundamental for guaranteeing the appliance's electrical safety - are the responsibility of the person in charge of the electrical system on which the equipment is installed.
- Before installation, make sure that the electrical system is equipped with the protection device **(9)**, as indicated in the safety notes.



- To connect the machine to the electric mains, refer to Chap. 13.
- Do not use extension leads or electrical adapters for multiple outlets.
- The access spaces to the machine and main switch must be left clear, in order to allow the user to intervene without any constrictions and leave the area immediately when needed.

Every electrical connection operation must be carried out with the mains off and the power supply disconnected. The Technician must also check that there is no voltage present, by using a multimeter, for example.

The electrical system must be equipped with a protection device (9) that ensures an omnipolar disconnection from the mains with a contact opening distance in overvoltage category III conditions and which guarantees a suitable residual-current device, equal to 30 mA, in compliance with current laws and safety regulations.

To make any power supply change, see the para. 13.12 on page 73.

We recommend that you promptly report any problems encountered during the appliance's installation to the Manufacturer.

6. COMMISSIONING

6.1 Safety precautions

Carefully read the instructions provided in chap. "I. SAFETY PRECAUTIONS" on page 3.

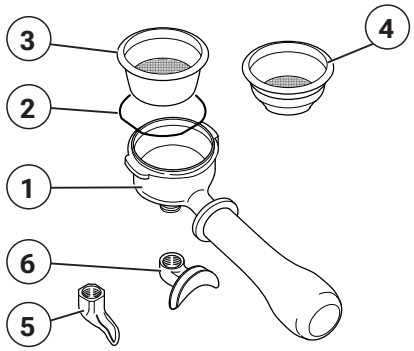
6.2 Preparing the filter holders

6.2.1 Filter holders

- Place the filter-holding spring **(2)** in the housing of the filter holder **(1)**.
- Take the **(3)** or **(4)** one-cup filter and press it firmly into the filter holder.

6.2.2 Spouts

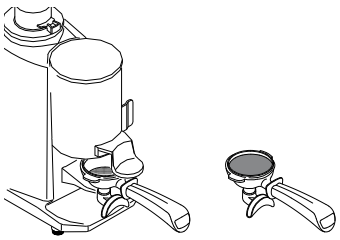
Finish preparing the filter holder by fitting the spout for one cup **(5)** or two cups **(6)**.



Properly connect the single filter with the single spout and the double filter with the double spout.

6.2.3 Grinding and dosing coffee

It is important to have a grinder-dispenser next to the machine so that the coffee can be ground on a daily basis.



To adjust the coarseness of the ground coffee, use the appropriate regulator located on the grinder-dispenser hopper.

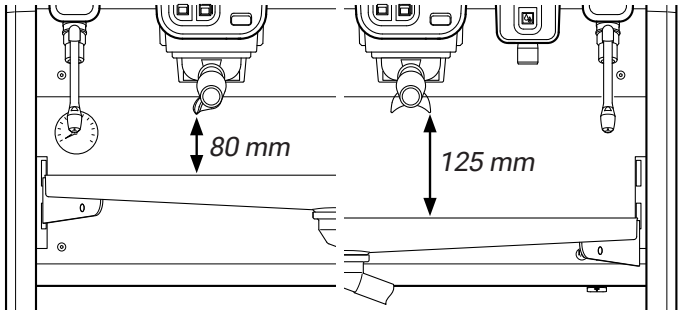
The coffee must be ground and dispensed according to instructions provided by the manufacturer of the grinder-dispenser. The following points should also be kept in mind.

- To obtain a good espresso it is not recommended that you store large amounts of coffee beans. Comply with the expiry date indicated by the producer.
- Never grind large volumes of coffee, it is advisable to prepare the amount that can be held in the dosing device and if possible, use it by the end of the day.
- Do not buy pre-ground coffee, as it perishes quickly. If necessary, buy coffee in small vacuum-sealed packs.

6.2.4 Adjustable cup holder grid

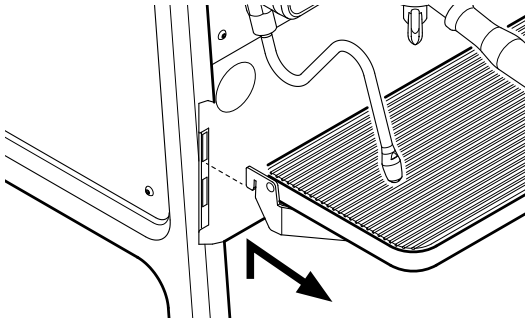
If you need to use cups of different heights, you can use the two adjustments of the cup holder grid.

The dimensions of use are shown in the diagram below.



To change the position of the grid, remove it by lifting it slightly and unhook it by pulling it towards the operator.

Then clip it into the new position.

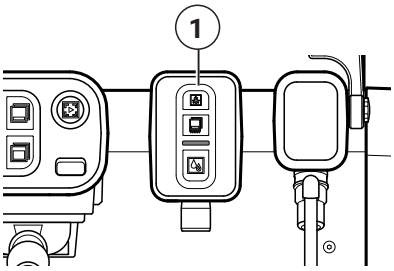


When moving the appliance, always pay attention to the drain pipe screwed under the basin.

6.2.5 Lighting

The lighting button allows you to turn the machine lights on/off. Follow the instructions according to the model you are using.

Version without touchscreen display



To activate the various lights, press the button on the service keypad **(1)**.

- When pressed for the first time, it flashes, then remains permanently lit and the group lights are activated, illuminating the work surface.
- The second press makes two flashes (then remains on) and also activates the bodywork lights*.
- At the third press it similarly flashes three times and only the bodywork lights* remain active.
- Pressing it a fourth time turns off all the lights.

** present depending on the version.*

Light intensity variation

You can adjust the intensity of the lights in this way:

- Press and hold the button **(1)**, for at least 5 seconds.
- Press the button **(1)** again: with each press the intensity of the lights currently on will be set as follows:

1. Low;
2. Mid;
3. High;
4. Max (default).

Version with touchscreen display

To turn on and adjust the lighting in this model, follow the instructions in the para. 7.1.8 on page 36

6.2.6 Cup warmer

For safety reasons, we do not recommend placing cloths or other objects on the cup warmer surface in order to prevent the machine from overheating.

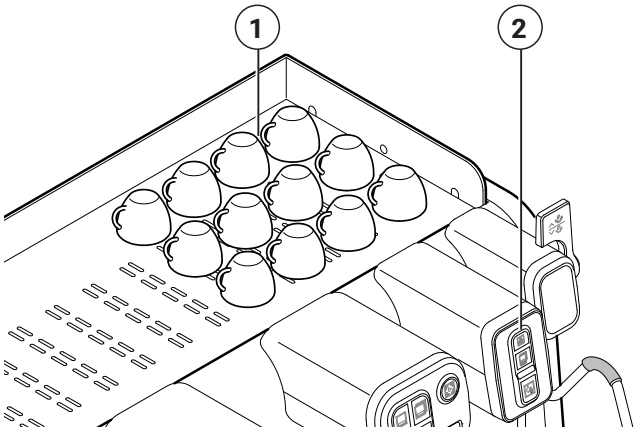
HIGH TEMPERATURE HAZARD: the cup warmer can reach temperatures that may cause burns. Be very careful.

The cup warmer temperature can be set according to personal requirements. The procedure for activating and adjusting the cup warmer according to the model in your possession, is described below.

Version without touchscreen display

To use the cup warmer on this version of the machine, proceed as follows:

- Place the cups on the cup warmer shelf **(1)** of the coffee machine.
- Press the button on the service keypad **(2)**.



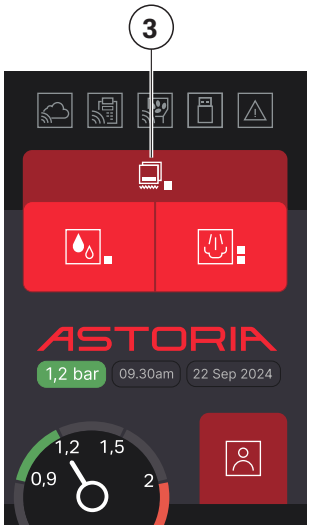
To adjust the heating intensity of the cup warmer, press the button again; each flash of the button indicates the current status:

1. Low heating;
2. Mid heating;
3. High heating;
4. Off.

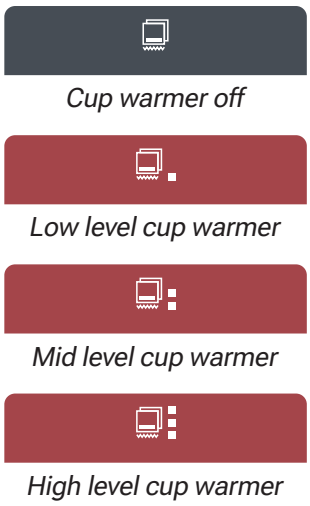
Version with touchscreen display

To use the cup warmer with this version proceed as follows :

- Place the cups on the cup warmer shelf **(1)** of the coffee machine.
- Press the cup warmer button **(3)** on the touchscreen display.



- Press the button **(3)** again to change the heating intensity.
- The touchscreen display indicates which level is in operation.



Cup warmer off

Low level cup warmer

Mid level cup warmer

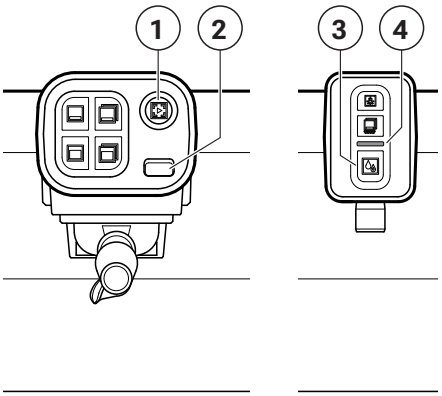
High level cup warmer

The same function is present in the user menu, see para. 7.1.9 on page 36.

6.2.7 Boiler pressure regulation

It is possible to program the boiler pressure for steam delivery. Follow the instructions according to the model you are using.

Version without touchscreen display



Proceed as follows:

- Press and hold down the button **(1)** of the leftmost dispensing < and in quick succession (within 5 seconds), also press and hold down the hot water dispensing button **(3)** for at least 5 seconds.
- The timer display **(2)** of the left group will show the currently set working pressure value.
- Press the button **(3)** repeatedly to change it.
- Once the desired value is displayed on the display, to confirm press and hold down the button **(1)** of the leftmost dispensing group: the timer display **(2)** will show the new set value.

Version with touchscreen display

To adjust the boiler pressure in this model, follow the instructions in the para. 7.1.6 on page 35.

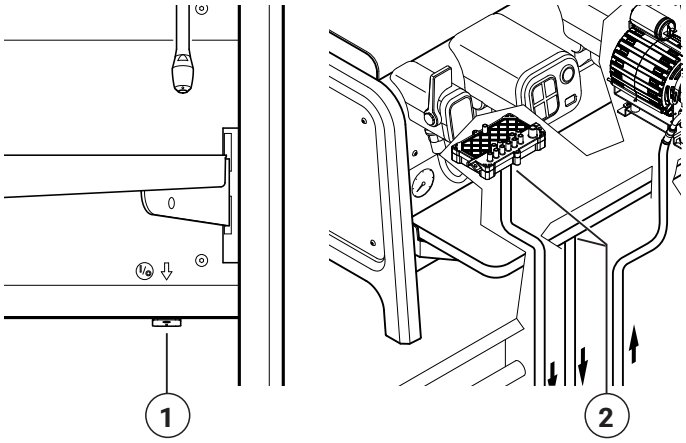
6.3 Turning the machine on and off

During the machine's heating-up phase (which varies depending on the model), the negative pressure valve will release steam for a few seconds until the valve closes.

Every day the water in the machine must be replaced, as indicated in para. 6.4.

6.3.1 First machine start-up

After the hydraulic and electrical mains have been connected, make sure that the drain tray **(2)** located under the cup support grille is correctly connected to the drain.

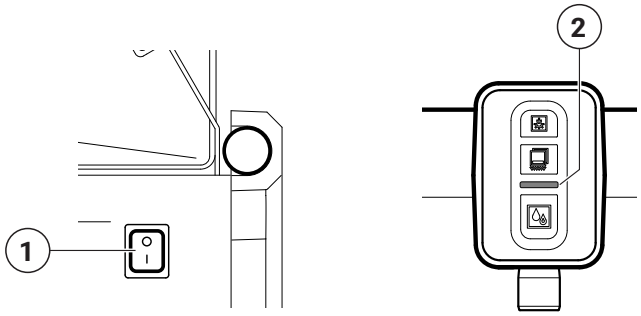


Check that all the steam valves are closed, and follow the indications based on the model.

6.3.2 Electric heating

Version without touchscreen display

- Open the water mains valve.

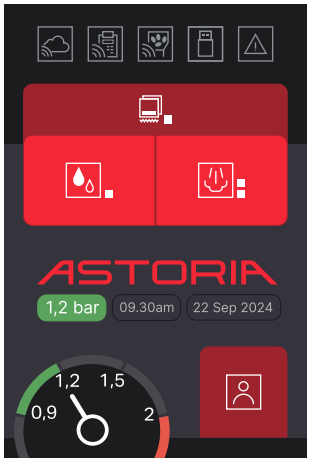


- Turn the power switch to position ON **(1)**.
- The blue water level indicator light in the boiler **(2)** comes on.
- Wait for the automatic loading of water into the boiler and the subsequent heating.
- When the water level indicator in the boiler **(2)** turns white the machine is ready for use.

Version with touchscreen display

- Turn the power switch to position ON **(1)**.
- The blue water level indicator light in the boiler **(2)** comes on.
- Wait and follow the instructions on the display.

- The machine is ready for use when the display appears as below:



6.3.3 Turning off the machine

Turn off the machine using the power switch **(1)**.

6.4 Water renewal

When the machine is being installed, the Technician must replace the water inside the hydraulic circuits by following these steps:

- When the installation is complete, the appliance must be started, brought to the nominal working condition and left in the "ready-to-operate" status for 30 minutes.
- Next, the appliance has to be turned off and fully emptied of the first water introduced into the entire hydraulic circuit, in order to eliminate any initial impurities.
- The appliance must then be filled again with water and brought to nominal working conditions.
- Upon reaching the "ready-to-operate" status, the following dispensing operations must be performed:

GROUPS

- Hook a filter holder without a filter to the dispensing group.
- Place a jug under the spouts of the filter holder.
- Dispense at least **1 litre** of water.
- Repeat the operation for each group.

HOT WATER NOZZLE

- Place a large enough jug under the hot water nozzle.
- Dispense hot water in the amount indicated in the table:

1GR	COMPACT	2GR	3GR
3 litri	**4 litri**	**5 litri**	**8 litri**

If the Time-out system starts, turn the machine off and turn it back on to continue dispensing.

Should the machine experience a drop in pressure during the dispensing operation, wait the time necessary to reset the initial conditions and continue until the quantity of water indicated is completely dispensed.

STEAM NOZZLES

- Insert the steam nozzle into a jug.
- Release steam for at least 1 minute.
- Repeat the operation with the other steam nozzle.

Danger of scalding. Do not direct the steam and hot water towards hands or other parts of the body. Do not touch the steam nozzle and the hot water nozzle with bare hands; use the appropriate PPE.

The water in the internal hydraulic circuits must be replaced every day.

Before using the machine, run a few empty dispensing cycles with the filter holders attached for a few seconds to release any air inside the circuit and in turn, allow the dispensing groups to fully heat up. In addition before using the machine, dispense a few servings of coffee to test the grinding and to check the operating pressure of the machine.

6.5 Dispensing coffee

6.5.1 Preparing the filter holder

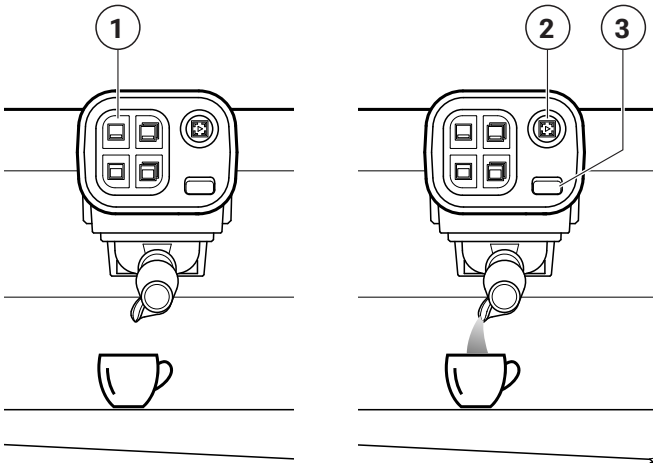
Before filling the filter holder, make sure it is empty and any previous coffee residue has been removed.

- Fill the filter with a dose of ground coffee (approx. 6-7 g); follow the procedures specified by the manufacturer of the grinder-dispenser.
- Tamp the coffee with the special tamper.
- Clean the rim of the ground coffee filter before attaching the filter holder to the dispensing group.
- Hook the filter holder to the group without closing it too tightly in order to prevent the gasket from wearing quickly.

6.5.2 Dispensing

Do not remove the filter holder from the dispensing group when coffee is being dispensed.

- Place a cup/demitasse under the group's dispensing spout.
- Press the desired dose button, e.g. ▬ and wait for the coffee to be dispensed (LED will switch on).



- To stop the coffee dispensing ahead of time, press the ▬ or ⛶ **(2)** button.

The timer display (3) beneath each keypad will count the duration of the dispensing cycle in seconds.

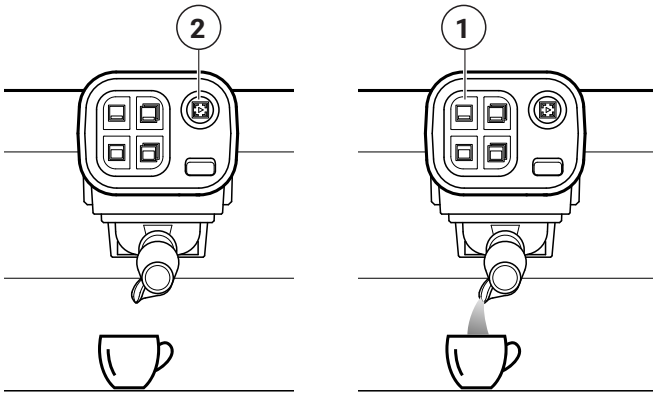
6.5.3 Programming

Each dose must be programmed with freshly ground coffee and not with previously-used coffee grounds.

The machine is programmed by default. Should the coffee doses need to be modified, proceed as follows:

- Always programme the pushbutton panel of the leftmost group first. This way, all the pushbutton panels will be automatically programmed. If necessary, subsequently programme the others.
- Place a cup/demitasse under the group's dispensing spout.

- Press the ⧉ **(2)** button for at least 5 seconds, until all the dose button LEDs turn off.
- Press the dose button that you would like to programme, e.g. ▬ (the button will flash whilst it is being programmed).



- To confirm the dose, press the ▬ **(1)** button again or the ⧉ **(2)** button.
- If desired, repeat this operation for the other dose buttons.
- at the end of the programming press and hold the button ⧉ **(2)** for 5 seconds.

All the groups will now be programmed this way. Should you wish to programme them differently, proceed to singularly programme the left-hand groups one by one as illustrated above.

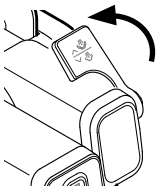
After 60 seconds of inactivity from the last key press, the system automatically exits programming mode.

6.6 Dispensing steam

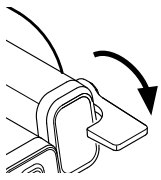
Carefully move the steam nozzle using the specific anti-scald rubber grip (2).

Do not direct the steam towards hands or other parts of the body. Do not touch the steam nozzles with bare hands; use the appropriate PPE.

Before using the steam nozzle, the condensation draining operation must always be carried out for at least 2 seconds.

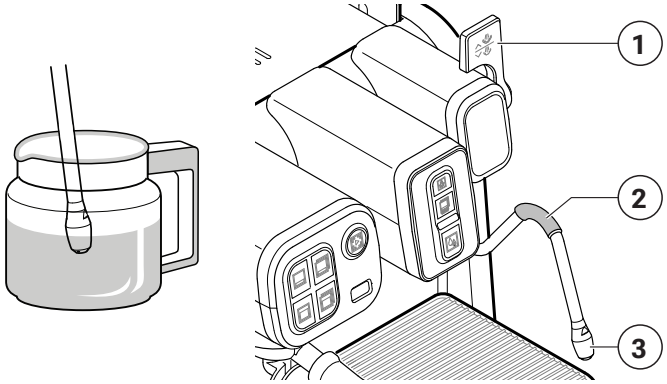


"PURGE" Function

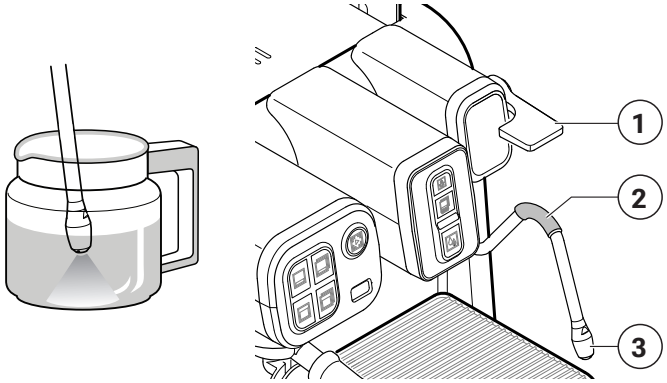


Steam ON/OFF

- Immerse the steam nozzle **(3)** into the liquid to be heated.



- Lower the tap lever **(1)** by pulling it forwards.



- The quantity of steam dispensed will be proportional to how far the lever has been moved.
- To finish dispensing, return the lever **(1)** to the vertical position.

To continuously dispense steam, move the lever in a vertical direction until it reaches the locked position. To stop dispensing, return the lever (1) to the vertical position

To optimally froth the milk, follow these simple rules:

- Only heat the amount of milk that you intend to use; once heated, it will have to be completely poured out of the jug and cannot be reheated.
- Froth the milk which should be at a temperature of around 4°C.

In any case, before proceeding to dispense steam, the following precautions must always be followed.

To keep the steam nozzle tips in perfect working order, it is advisable to perform a brief dry dispensing run after each use. Keep the tips clean at all times using a cloth dampened in lukewarm water. Only leave the steam nozzle immersed in the milk for the time needed to heat it.

Do not open the steam valve with the steam nozzle immersed in milk and the machine switched off, as the latter would suck milk into the pipes.

6.7 Dispensing hot water

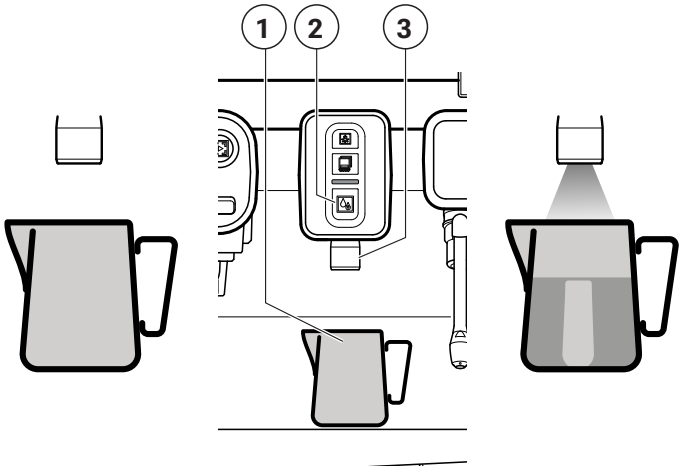
Danger of scalding. Do not direct hot water towards hands or other parts of the body. Do not touch the hot water nozzle with bare hands; use the appropriate PPE.

The hot water dispensing method is different for each machine type; therefore, the instructions specific to the model being used must be followed.

6.7.1 Version without touchscreen display

Dispensing

- Place the jug **(1)** under the hot water nozzle **(3)**.
- Press the water button **(2)** and wait for the hot water to be dispensed.



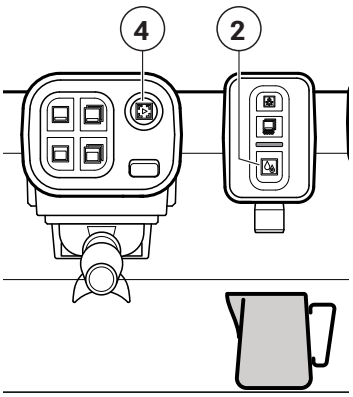
- The machine dispenses a programmed quantity of hot water; to stop it from dispensing ahead of time, press the hot water dispensing button **(2)** again.

To make a continuous delivery, press and hold the button (2). To stop the delivery, release the button.

Programming

The machine is programmed by default. Should the hot water doses need to be modified, proceed as follows:

- Place the jug **(1)** under the hot water nozzle **(3)**.

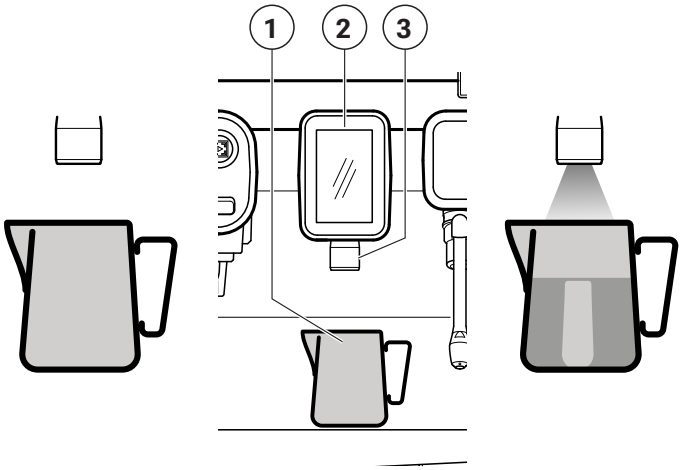


- Press and hold the button **(4)** for at least 5 seconds until all the LEDs on the dose buttons turn off.
- Press the hot water dispensing button **(2)** to start dispensing.
- When the desired amount of water has been reached, press the **(2)** button again to confirm the dose.
- At the end of the programming press and hold the button **(4)** for 5 seconds.

6.7.2 Version with touchscreen display

Dispensing

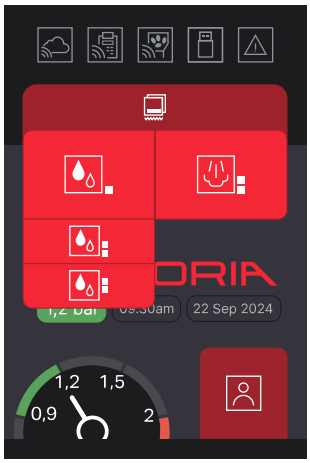
- Place the jug **(1)** under the hot water nozzle **(3)**.
- Press the water dispensing button on the touchscreen display **(2)** and wait for the hot water to be dispensed.



- The machine dispenses a programmed quantity of hot water; to stop it from dispensing ahead of time, press the hot water dispensing button again.

In this model, the water button has 3 different dispensing modes.

To use the various modes proceed as follows:



- Press and hold the hot water button on the display, a drop-down submenu will appear.
- Select one of 3 different settings.
- Press the hot water button again to dispense.

For programming the water buttons, see the para. 7.1.4 on page 34.

6.8 Dispensing with the Autosteamer

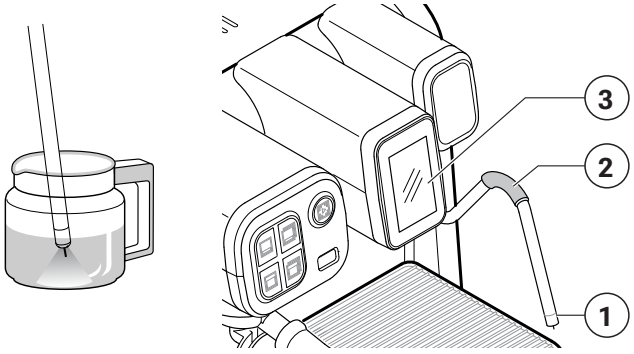
6.8.1 Tips regarding its use

- Only froth the amount of milk that you intend to use; once heated, the milk will have to be completely poured out of the jug and cannot be reheated.
- The autosteamer only guarantees an accuracy of ± 3°C between the set temperature and the actual milk temperature, if the starting milk temperature is 4°C.
- Since the delivery of steam stops on its own when the set temperature of milk is reached, to prevent the milk foam spilling out, it is necessary to introduce a volume of liquid not higher than 1/2 the capacity of the jug.
- Use a suitably-sized jug for the amount of milk that requires frothing (approx. 200 ml is recommended) and make sure that it is circular and not conical (see the image).

6.8.2 Dispensing

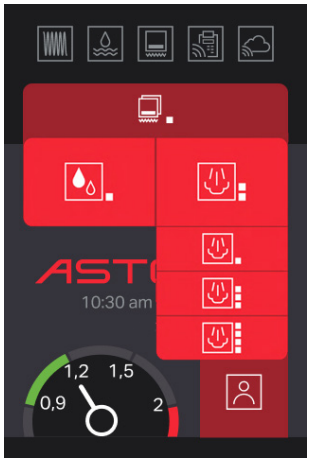
Do not direct the steam towards hands or other parts of the body. Do not touch the steam nozzles with bare hands; use the appropriate PPE.

- Immerse the automatic steam wand nozzle tips **(1)** into the milk.



- Press the autosteamer button on the touchscreen display **(3)**.
- Wait until the dispensing process has been completed.
- To stop dispensing ahead of time, press the same button again.

It is possible to use 4 different delivery modes, autosteamer (recipes); proceed as follows:



- Press and hold the autosteamer button on the display. A drop-down submenu will appear. Select one of the 4 recipes e.g.: .
- Press the autosteamer button again to dispense.

Keep the tips clean at all times using a cloth dampened in lukewarm water. Milk can be kept in the fridge for a maximum of 3-4 days.

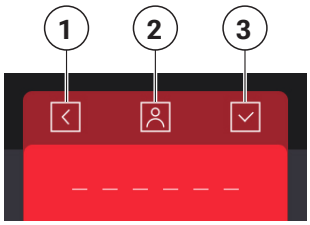
To adjust the operating temperature and the degree of foaming of the autosteamer, follow the instructions in the para. 7.1.5 on page 34.

7. PROGRAMMING MACHINE PARAMETERS

7.1 Version with touchscreen display

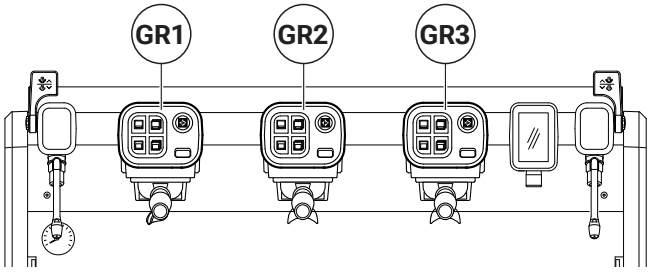
7.1.1 Operating logic

In the various screens, use the following keys to navigate between the menus:



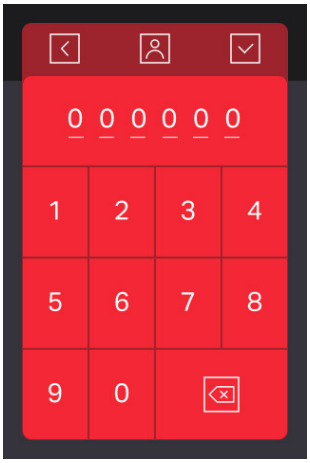
1. Press to return to the previous menu.
2. Icon indicating the current menu.
3. Press to confirm a change or password entry.

In the "Dosages", "Counters" and "Wash" menus, the group numbering goes from left to right (see diagram below).



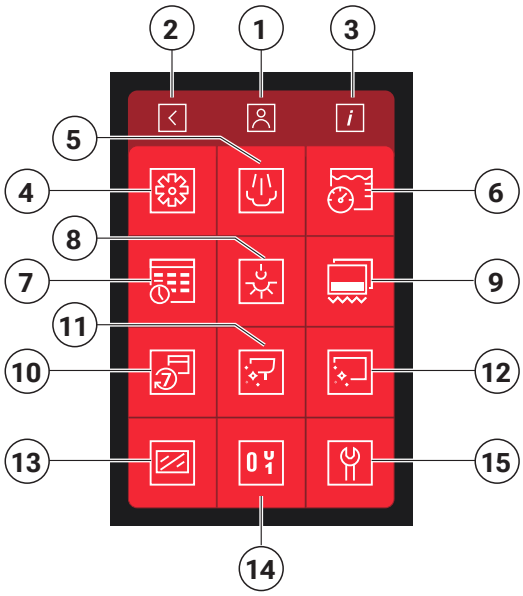
7.1.2 Accessing the menu

- To access the programming menu, press the button **(1)** on the touchscreen display.



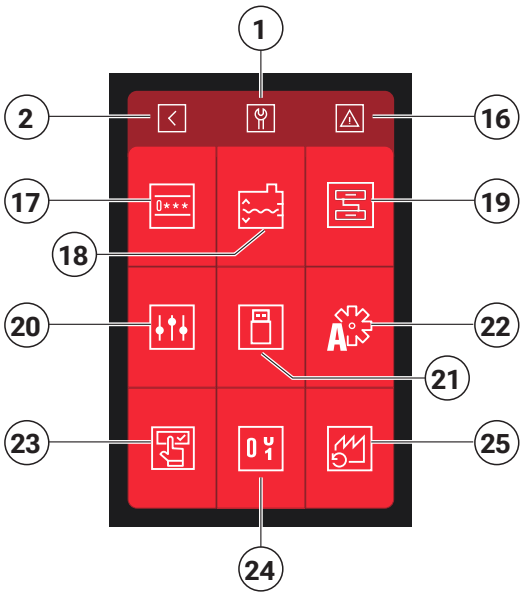
- If necessary enter the numeric password and confirm with the key.

To set or change the password, see the para. 7.1.15.



User Menu

(*) Depending on the accessories installed, the layout of the buttons in the display menu may vary.



Technical menu

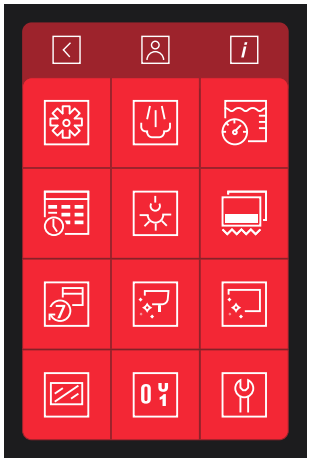
1 *Menu indicator displayed.*
2 *Return to previous menu.*

This manual describes the menu available at the time of publication, and may present slight differences compared to the one actually installed. It may also happen that the software is updated during maintenance to improve its performance.

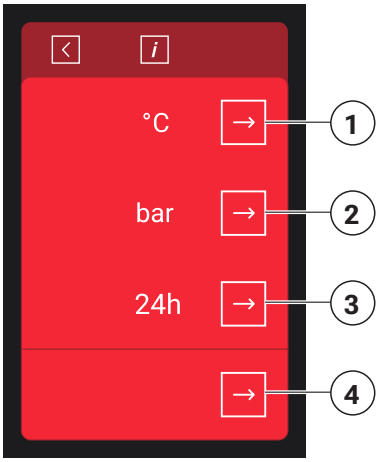
7.1.3 Unit of measure / informations

This menu allows you to set the units of measurement used by the machine.

It also provides information such as machine serial number, software version, etc... useful if requested by the technician for a possible intervention.

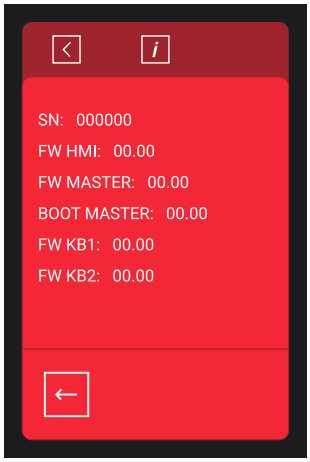


- Inside the user menu, press the *i* button.



- The menu allows you to change respectively:

1 *Temperature measurement unit (°C / °F).*
2 *Pressure measurement unit (bar / PSI).*
3 *Time type display (12 / 24 h).*
4 *Move to the information screen:*

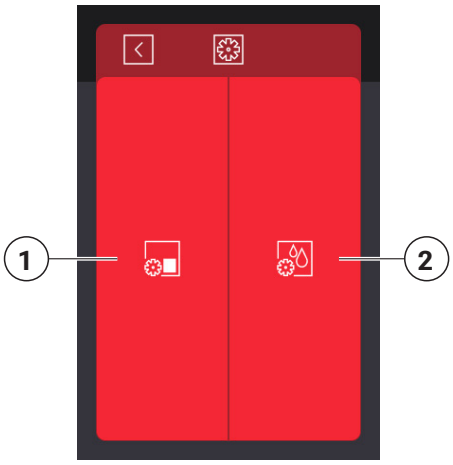


- Confirm the changes with the ✓ key.
- To exit without saving, press the < key.

7.1.4 Dosage setting

Use this menu to adjust the dosages of the coffee and hot water buttons. Proceed as follows:

- Inside the user menu, press the button.

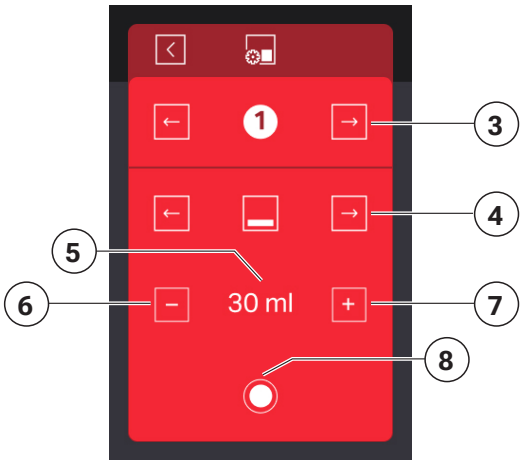


- The menu allows you to change respectively:

1 *Coffee doses.*
2 *Hot water doses.*

Coffee dose adjustment

- Press the **(1)** button, the screen below will appear:

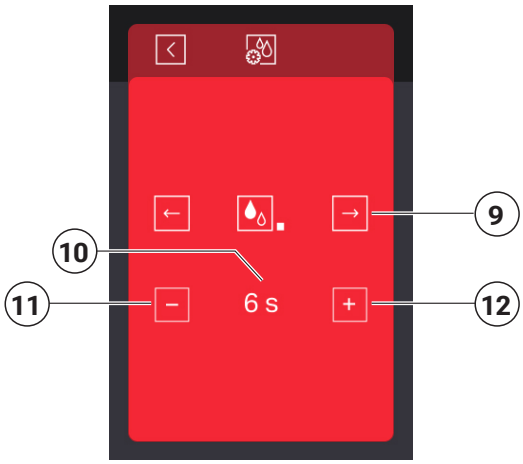


3 *Selection of the dispensing group.*
4 *Selection of the relative dose button.*
5 *Amount of coffee dispensed.*
6 *Decrease dose quantity (steps of 5 ml).*
7 *Increase dose quantity (steps of 5 ml).*
8 *Switch to self-learning programming (see para. 6.5 on page 28).*

- Adjust the desired dose, then press the button to confirm.
- Once confirmed, the button appears in place of the button; if pressed, the latter stores the parameters of the dose currently displayed (copy button).
- Move to the dose of the group into which you want to copy the quantity and press the button (paste).
- Confirm with the button.

Hot water dose adjustment

- Press the **(2)** button, the screen below will appear:



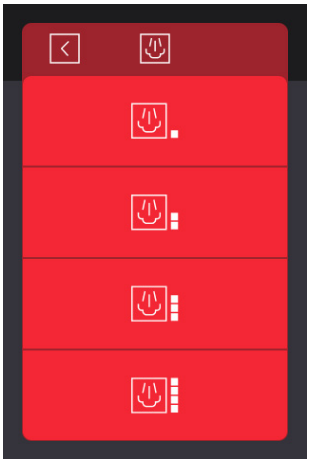
9 *Selection of the dose to be adjusted.*
10 *Dispensing time.*
11 *Decrease time in seconds.*
12 *Increase time in seconds;*

- Adjust the desired dose, then press the button to confirm.
- Confirm with the button.

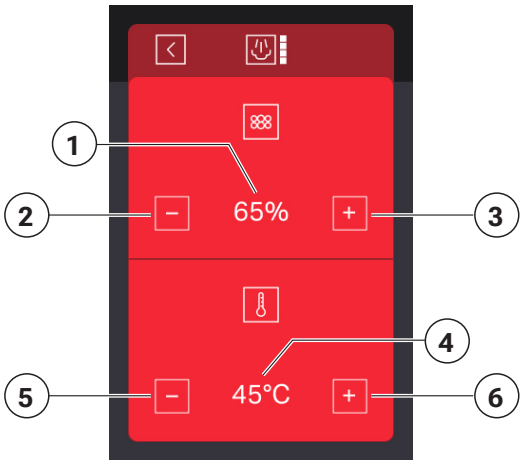
7.1.5 Autosteamer setting

Use this menu to adjust the milk frothing and heating temperature for various autosteamer recipes.

- Inside the user menu, press the button.



- Select the recipe you want to adjust;



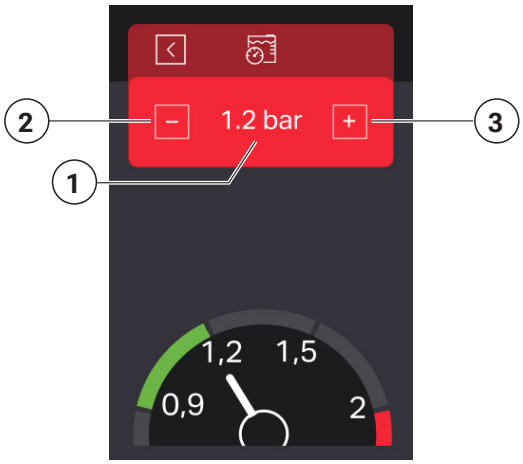
1 *Milk foam percentage.*
2 *Decrease milk foam.*
3 *Increase milk foam.*
4 *Heating temperature.*
5 *Decrease temperature.*
6 *Increase temperature.*

- Adjust the foaming level and heating temperature, then press the ✓ button to confirm.
- Select another recipe to adjust or press the ‹ button to exit.

7.1.6 Boiler pressure regulation

This menu allows you to change the operating pressure of the boiler.

- Inside the user menu, press the button.

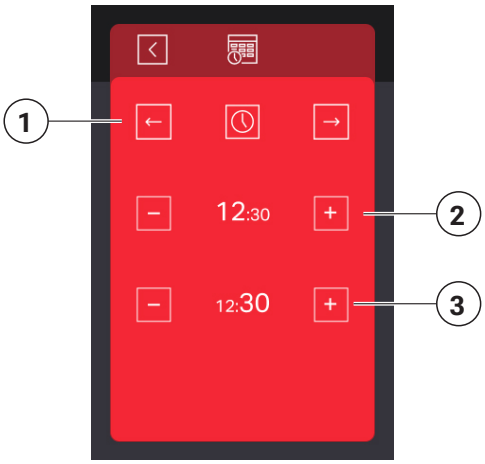


1 *Current pressure in boiler;*
2 *Decrease pressure;*
3 *Increase pressure;*

- Press the − / + buttons to adjust the pressure, then press the ✓, button to confirm and exit the menu.
- To exit without saving, press the ‹ button.

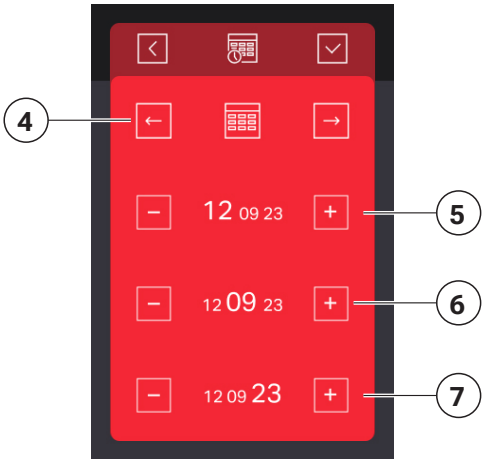
7.1.7 Setting time/date

- Use this menu to adjust the current date and time.
- Inside the user menu, press the button.



1 *Switch to date adjustment.*
2 *Hours.*
3 *Minutes.*

- Press the respective − / + buttons to adjust the time.
- At the end press the ← or → button, to move to the next screen:



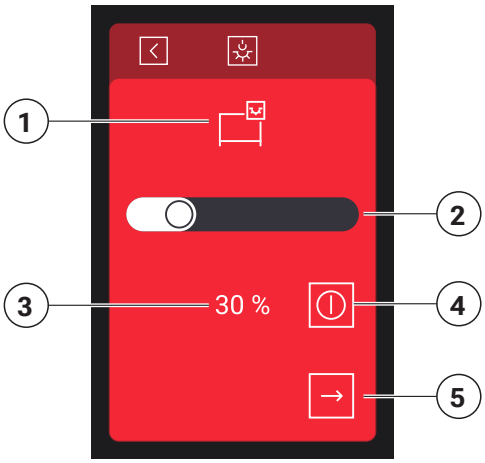
4 *Switch to time setting.*
5 *Day.*
6 *Month.*
7 *Year.*

- Press the respective − / + buttons to adjust the date.
- At the end press the ← or → button, to move to the previous screen.
- Or confirm with the ✓ button and exit the menu.
- To exit without saving, press the ‹ button.

7.1.8 Lighting

To activate the lighting of the various zones, proceed as follows:

- Inside the user menu, press the button.



1 *Bodywork lighting.*
2 *Work surface lighting.*

- Activate/deactivate the desired lighting with the / button **(4)**.
- Adjust the light intensity of the respective zones, with the appropriate horizontal bar **(2)**, then confirm with the button.
- To adjust the illumination of the other machine parts, press button **(5)**:

Bodywork lighting.

Worktop illumination.

Keyboard illumination.

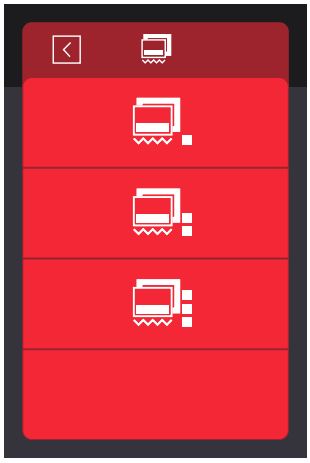
Display backlighting.

- To exit the menu press the button.

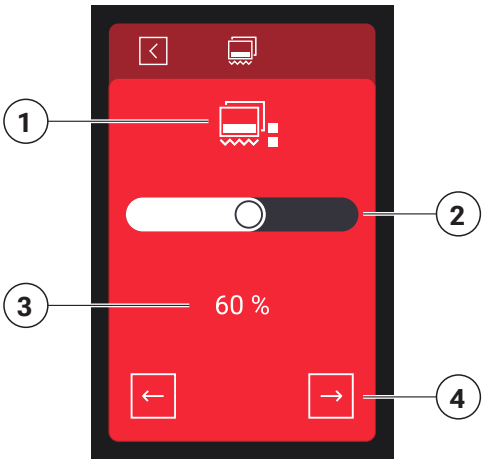
7.1.9 Cup warmer

This menu allows you to activate and adjust the cup warmer device, proceed as follows:

- Inside the user menu, press the button.



- Then select the cup warmer button to be adjusted.



1 *Heating level indication.*
2 *Heating level adjustment.*
3 *Heating level percentage.*

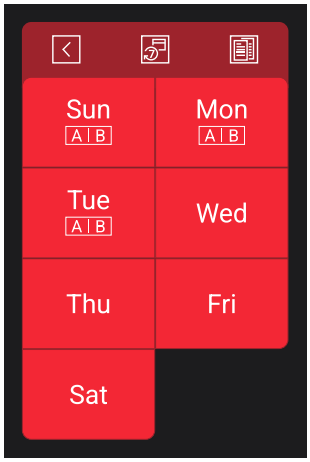
- To activate and adjust the desired heating level, slide the cursor **(2)**.
- The icon **(1)** shows the currently set level, while the heating percentage is indicated below **(3)**.
- To adjust the other keys, press key **(4)**.
- To exit the menu press the button.

7.1.10 Programming the machine's Switch-On and Switch-Off function

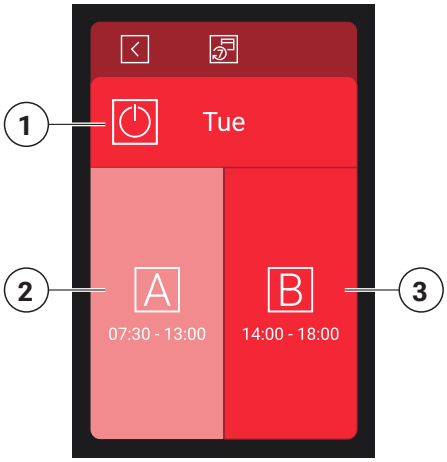
This menu is used to programme the machine's automatic switch-on and switch-off procedures. Proceed as follows.

Two different programmable time slots are available for each day. Proceed as follows:

- Inside the user menu, press the button.



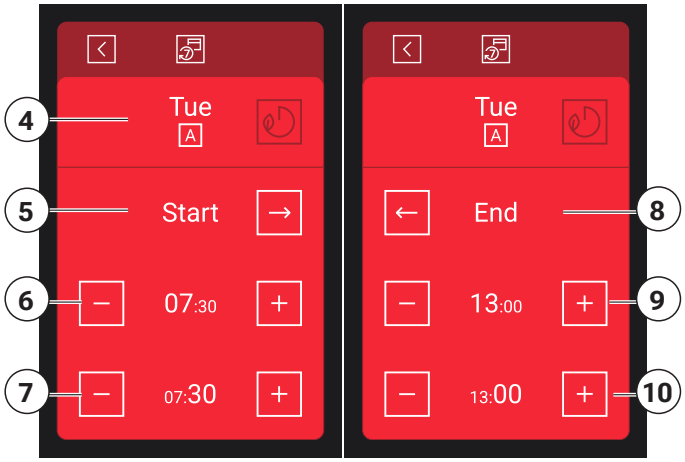
- Select the day to be scheduled:



- The screen above will appear, where::

1 *ON/OFF button: activates, deactivates both time slots.*
2 *Band [A] in pink (activated).*
3 *Band [B] in red (deactivated).*

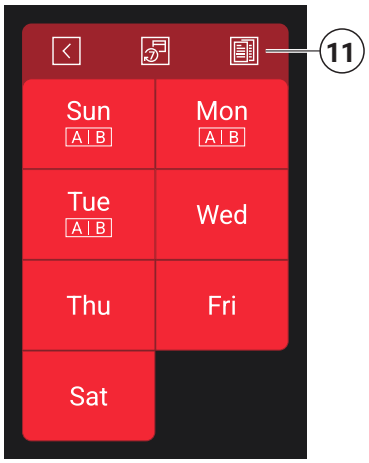
- To change the automatic switching on and off, press and hold on the band you wish to programme and follow the instructions below:



4 *Day of the week being scheduled.*
5 *Switch-on setting.*
6 *Switch-on hour.*
7 *Switch-off minute.*
8 *Switch-off setting.*
9 *Switch-off hour.*
10 *Switch-off minute.*

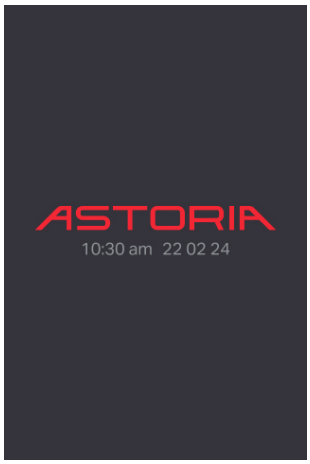
- Press the respective − / + buttons to adjust the time.
- To switch between the on and off screens, press the ← or → button.
- Confirm with the ✓ button.

It is possible to copy the settings of one day to another.



- In the first screen, press the copy button **(11)** and select the day to be copied.
- Then select the day to which the programming is to be applied. Both time slots will be applied to the selection.

When the machine is in the programmed shut-down phase, the screen below appears on the touchscreen display.



7.1.11 Washing the dispensing groups

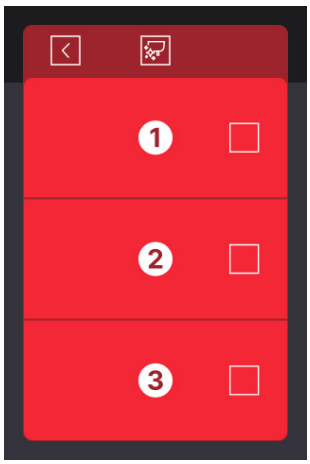
Before carrying out the operations described below, prepare the filter holder for washing as indicated in the para. 8.9.3 on page 58.

During the washing phase, only the coffee selections of the relevant groups are disabled.

In the event that the wash cycle is interrupted by switching off the machine, it will be automatically reactivated when the machine is switched back on.

Through this menu, it is possible to wash the dispensing groups. Follow the procedure indicated below:

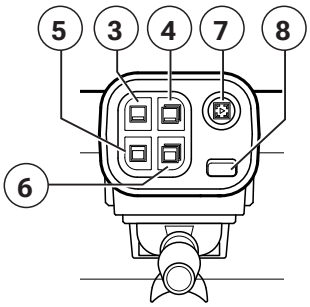
- Inside the user menu, press the button.



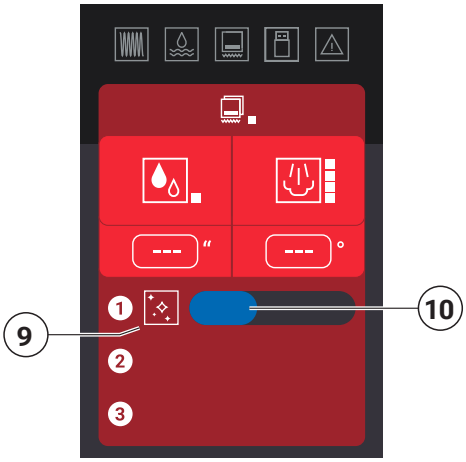
- In the screen that appears, select the group**(s)** you wish to wash by pressing on the tick to the right of the group number indicator: .
- Press the button to confirm, the screen below appears:

1 *Delivery group being washed: attach blind filter holder.*
2 *Flashing bar: waiting for washing start confirmation.*

- The buttons **(3)**, **(4)** and **(7)** on the keyboard of the relevant dispenser group and the bar **(2)** on the display flash
- Attach the previously prepared filter holder**(s)** with the blind filter.

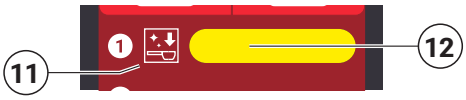


- Press the button **(7)**, the rinsing sequence starts.



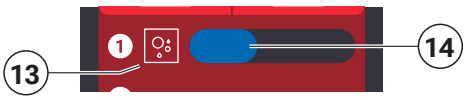
9 *Icon indicating washing phase.*
10 *Time bar remaining.*

- During the washing phase, the group buttons **(1)** and **(2)** continue to flash, and on the chrono display **(6)**, a countdown of the duration of the phase is shown. The same information is provided by the touchscreen display.
- Wait for the washing to be carried out. Once this phase is completed, the button **(7)**, and the buttons **(5)** and **(6)** flash.



11 *Delivery group rinsing: remove filter holder.*
12 *Flashing bar: waiting for rinse start confirmation.*

- Remove the filter holder and press the button **(7)**, the rinsing sequence starts.



13 *Icon indicating rinsing phase;*
14 *Time bar remaining.*

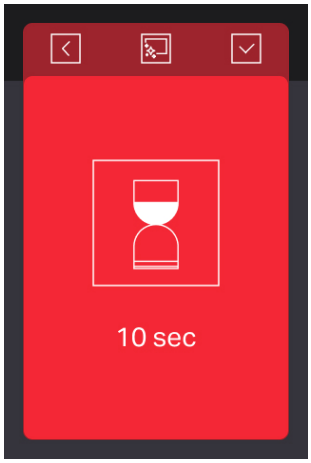
- During the rinsing phase, buttons **(3)** and **(4)** continue to flash, and the chrono display **(6)** shows a countdown of the duration of the phase. The same information is provided by the touchscreen display.
- Once the rinsing process is complete, the group is ready to dispense coffee: replace the filter holder with the coffee filter and reattach it to the dispensing group.

7.1.12 Touchscreen display cleaning

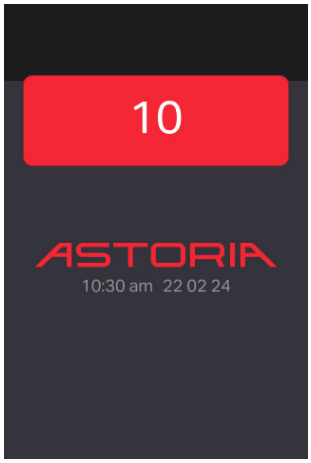
Follow the warnings in para. 8.1 on page 47, before cleaning the display.

This menu allows you to clean the touchscreen display. Follow the procedure below:

- Inside the user menu, press the button.



- The screen enters a programmed stand-by mode, with a countdown, during which all functions are inhibited.
- If you want to exit the menu, press the button.
- Press the button to start the timer:

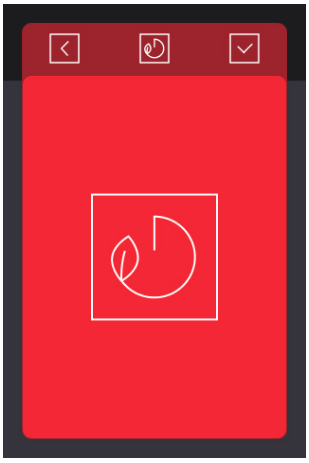


- Perform screen cleaning.
- At the end of the counting the display returns to touchscreen mode.

7.1.13 Energy saving mode

The machine is provided with a software that manages the stand-by during breaks. This allows a significant energy saving during them, keeping the machine always in conditions of a rapid return to service. Follow the procedure indicated below:

- Inside the user menu, press the button.



- If you want to exit the menu, press the button.
- Confirm with the button, to activate the stand by:

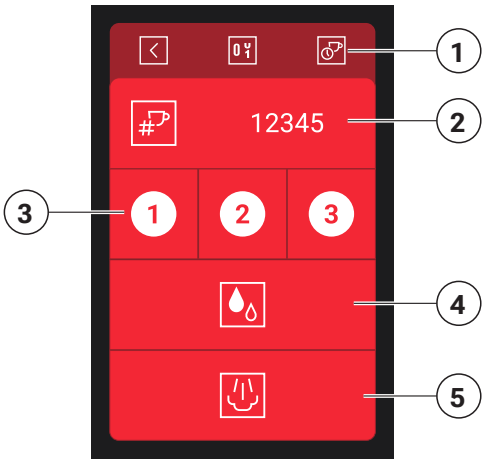
- To reactivate the machine, touch the screen.

7.1.14 Counters

The machine records every coffee, water or autosteamer selection made.

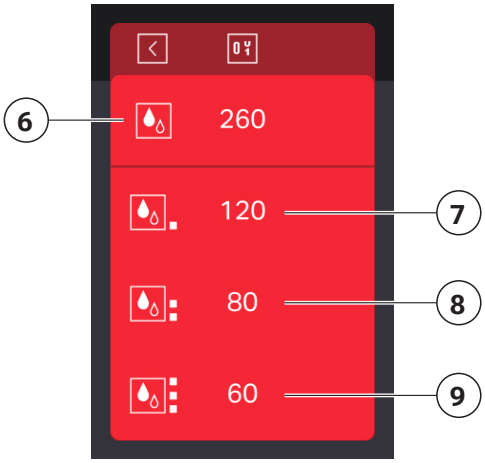
To view the selection counters, proceed as follows:

- Inside the user menu, press the button.



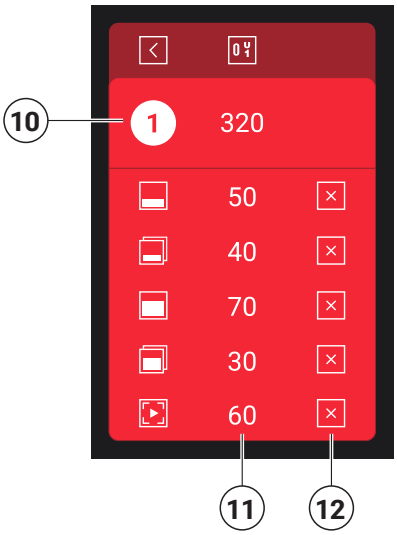
1 *Machine time.*
2 *Total selection count.*
3 *Coffee brewing group selection.*
4 *Hot water selection count.*
5 *Autosteamer selection count.*

- Press the **(3)** or **(4)** button, to display the respective counters. Ex. screen below:



6 *Total water selection count.*
7 *Water selection counting button 1.*
8 *Water selection counting button 2.*
9 *Water selection counting button 3.*

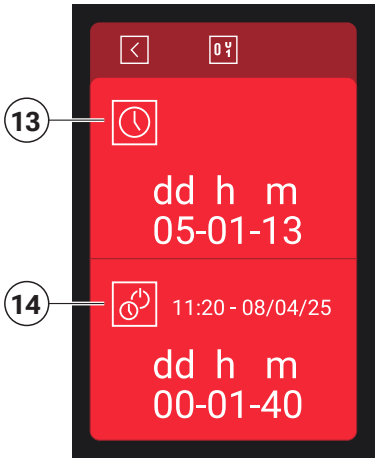
- To view the coffee counts, press the button corresponding to the brewing group you wish to consult: 1, 2 or 3 .E.g. group 1:



10 *Total selection count group 1.*
11 *Selections count.*
12 *Reset selection count.*

- To reset a dose count to zero, press button **(12)**, then confirm with the button.

Pressing the button **(1)** displays respectively:



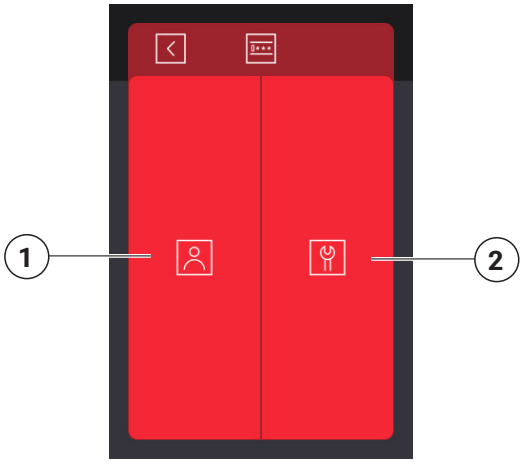
13 *Total machine utilisation time.;*
14 *Time of use since last switch-off.*

- To exit the menu press the button.

7.1.15 Change Password

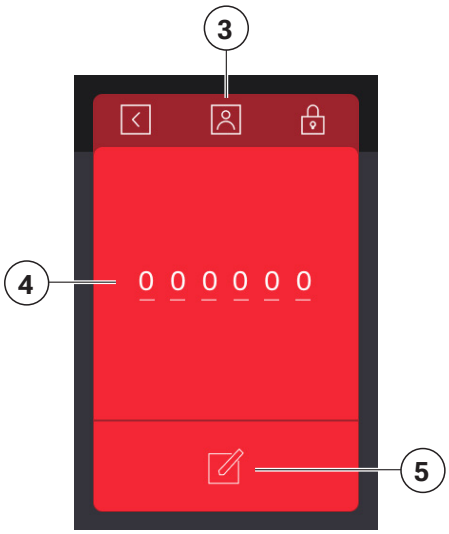
To change/set user and technician passwords, proceed as follows:

- Within the relevant menu, press the button for the password you wish to change: 1) User; 2) Technician.



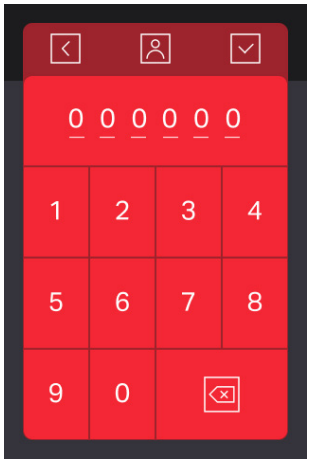
1 *Set USER password;*
2 *Set TECHNICIAN password.*

- Select the field you wish to change. The screen below will appear with the current password:



3 *User / Technician indicator;*
4 *Current password.*
5 *Change Password.*

- To change the password, press the button **(5)**:
- On the next screen, compose a new numeric password, using the on-screen keypad, and confirm it with the key.

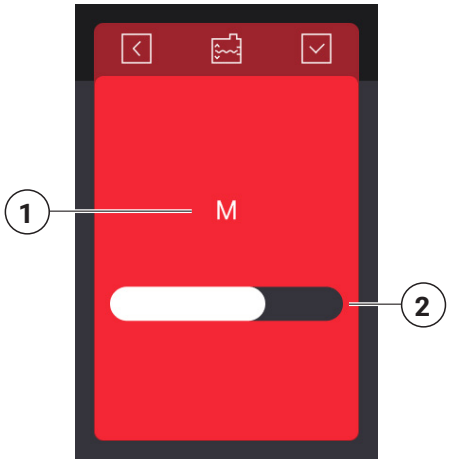


- If you wish to exit without changing the password, press the key.

7.1.16 Boiler water level sensitivity

It is possible to set a sensitivity level for the loading threshold based on the hardness of the mains water.

To change this parameter, once in the menu, use the slide bar **(2)**.



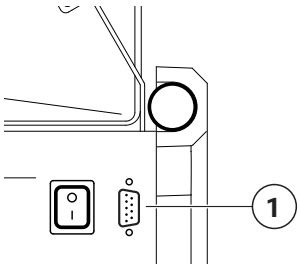
Three setting positions are provided:

S: Small.
M: Medium.
L: Large.

- Confirm with the button and exit the menu.
- To exit without saving, press the button

7.1.17 Connectivity

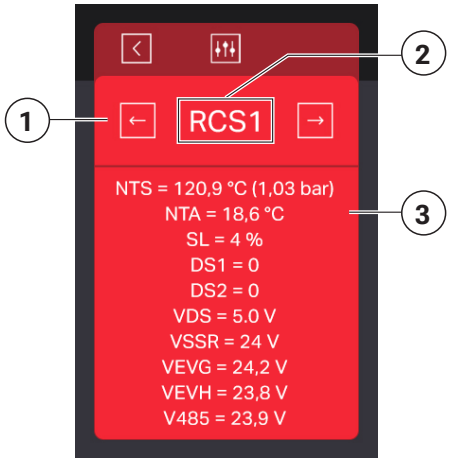
This menu manages the connection settings with external devices, which are connected to the machine's RS232 socket **(1)**.



For connection to the cash system, see Chap. 15 on page 77.

7.1.18 Service

Using this button, you enter the Test area, through which the technician checks the main devices of the machine.



1 *Scroll keys for device selection.*
2 *Selected device (see table below).*
3 *Device parameters.*

To test the device, press on its description **(2)**.

To exit the menu press the button.

Device list

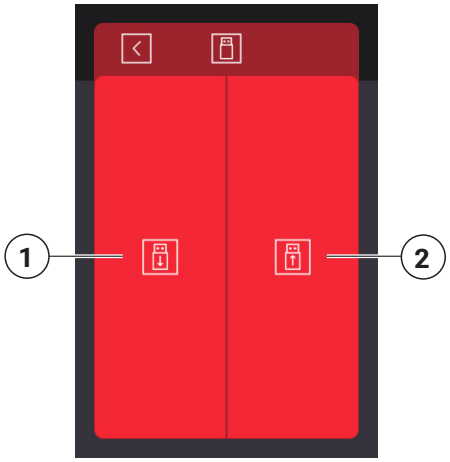
RCS1	Service boiler heating element 1.
RCS2	Service boiler heating element 2.
MP	Motorpump.
EVC	Water filling solenoid valve.
EIA	Water inlet solenoid valve.
EVG1	Coffee group 1 solenoid valve.
EVG2	Coffee group 2 solenoid valve.
EVV	Steam solenoid valve.
CMP	Autosteamer air pump.

7.1.19 USB

Via this menu, you can either download all the settings you have made (boiler pressure, dosages, energy saving, etc.) to a USB stick, or download them from it.

It is also possible to update the firmware of the machine's control unit.

From the main screen, select one of the 2 available items..



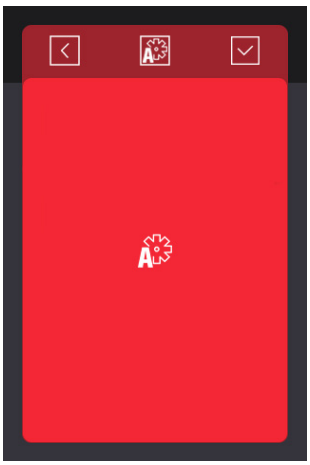
1 *Data storage.*
2 *Data upload / firmware update.*

To exit the menu press the button

7.1.20 Self-learning

The machine is able to self-configure itself by determining its own configuration based on the installed devices.

To activate the 'teach-in' function, open the relevant menu and press the button to confirm.



Wait for the machine to perform the self-configuration cycle.

At the end of the cycle it will return to operation.

7.1.21 End-of-line testing

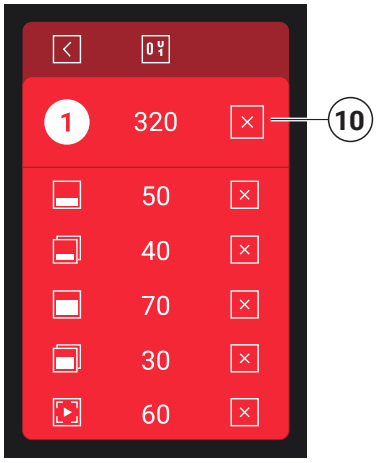
With the machine switched on, insert the manufacturer's key and access the technical menu.

Activate the 'end-of-line test' function and switch off the machine.

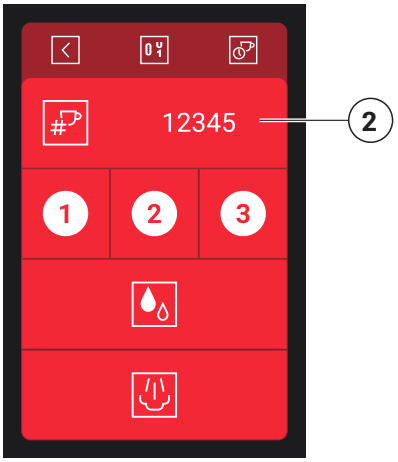
Remove the key and switch the machine on again: the test will start (approx. 6/8 seconds after pressing the power switch).

7.1.22 Counters

This menu functions in the same way as the analogue for the user (see para. 7.1.14 on page 40). The technician, however, has the option of resetting the total selections for each dispensing group.



Once in the menu, display the selections you wish to reset, and press button **(1)**, then confirm with the button.



It is not possible to reset the machine selection total (2).

7.1.23 Factory data restoration

This menu allows you to restore all the machine data to the factory values.

The operation preserves the settings relating to the identified machine model, number of groups, presence of cup warmers, presence of autosteamer, presence of cash system; therefore at the next restart the machine will perform the self-configuration procedure again.

7.1.24 Software update

To perform a firmware update of the circuit board, proceed as follows:

- In a USB stick, create a folder called ***upgrade***.
- Copy the update *.bin files into the newly created folder.
- With the machine switched on, insert the USB stick.
- If a valid update is detected, the update icon appears on the display.
- Confirm the update by pressing .
- Follow display indications.
- Remove the USB stick and wait for the machine to restart.

7.1.25 Machine alarms

From the Technician's menu screen, or from Home, by pressing on icon you can access the list of machine alerts.
Below is the table with the description of the report, and possible remedies.

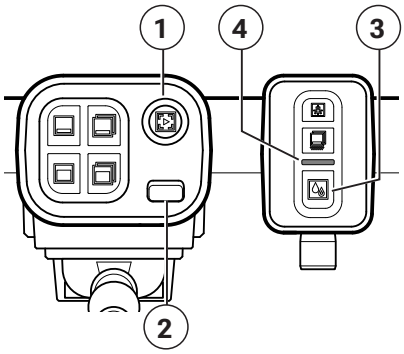
Code	Description	Remedy
0-0-0-1	Corrupted parameters or EEPROM access problems	Restart the machine. If the error persists, replace the electronic control unit.
0-0-0-3	Lack of communication with peripherals	Restart the machine. If the error persists, check the wiring connections.
0-0-0-4	Failure to fill the boiler within the maximum time	Check that the tap on the water supply is open.
0-0-0-5	Boiler failed to heat within the maximum time	Check in order: boiler NTC probe; static relay; wiring connections.
0-0-0-8	Boiler overheating	
0-0-0-19	NTC cup warmer open	Check in order: wiring connections; static relay; electronic control unit.
0-0-0-20	NTC cup warmer short circuit	
0-0-0-21	Cup warmer overheating	
0-0-0-22	Failure to heat cup warmer within maximum time	
0-0-0-18	Update failed	Repeat the firmware update.
0-0-0-25	Exhausted filter	Perform filter replacement/regeneration.
0-0-0-26	Failed to verify the machine model recognized at first start-up	Check keyboard connections.
0-1-0-4	No signal from the volumetric sensor during GR1 delivery	Check in order: volumetric doser; wiring connections; electronic control unit.
0-2-0-4	No signal from the volumetric sensor during GR2 delivery	
0-3-0-4	No signal from the volumetric sensor during GR3 delivery	
0-0-0-6	NTC boiler open	Check in order: NTC sensor; wiring connections; electronic control unit.
0-0-0-7	Boiler NTC short circuit	
0-0-0-24	Micro temperature too high (default 70°C)	Check the room temperature.
0-0-0-11	SSR Power Voltage Alarm	Check wiring of CN8 connector.
0-0-0-12	RS485 BUS power supply voltage alarm	Check wiring of CN18 connector.
0-0-0-13	RS232 Power Voltage Alarm	Check wiring of CN16 connector.
0-0-0-14	EV power supply voltage alarm	Check wiring of CN10 connector.
0-0-0-15	Lighting Power Voltage Alarm	Check wiring of CN9 connector.
0-0-0-16	EV Power Voltage Alarm Water	Check wiring of CN10 connector.
0-0-0-17	Volumetric power supply voltage alarm	Check wiring of CN7 connector.
0-0-0-23	USB Power Voltage Alarm	Check wiring of CN17 connector.
0-1-0-11	Low battery	Replace battery on display board.
0-1-0-12	Display temperature too high (default 70°C)	Check the room temperature.

7.2 Version without touchscreen display

7.2.1 Safety valve test (Inspection boiler)

To test the boiler safety valve, proceed as follows:

- With the machine switched on, insert manufacturer USB stick.
- Simultaneously press and hold the buttons **(1)** leftmost spout group and the hot water draw-off button **(3)** for at least 5 seconds.
- The numeric display of group 1 **(2)** shows the instantaneous pressure (in tenths of a bar).
- Press and hold the tea button **(3)** until the RGB indicator **(4)** turns magenta.
- Check the pressure increase in the boiler until the safety valve opens.



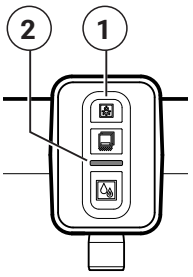
7.2.2 Self-learning

To activate the 'teach-in' function, proceed as follows:

- With the machine switched on, insert the manufacturer USB stick.
- Switch off the machine.
- Remove the USB stick.
- Switch on the machine and wait for it to perform the self-configuration cycle.

7.2.3 Software update

Per eseguire l'aggiornamento del firmware della scheda elettronica, procedere nel seguente modo:

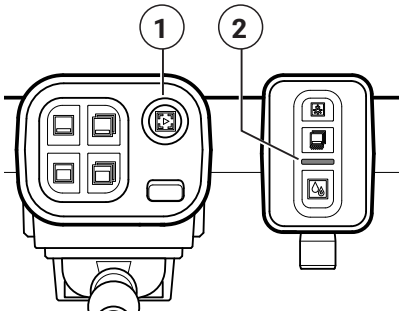


- In a USB stick, create a folder called ***upgrade***;
- Copy the update *.bin files into the newly created folder.
- With the machine switched on, insert the USB stick.
- Wait for the RGB LED **(2)** to flash yellow, then press button **(1)**;
- Wait for the RGB LED **(2)** to turn green.
- Remove the USB stick and wait for the machine to restart.

7.2.4 Export parameters

To carry out the export of machine parameters, proceed as follows:

- With the machine turned on, insert a blank USB stick.
- Activate the dosi programming mode by holding down the button **(1)**, of the leftmost dispenser group, for 5 seconds.
- Exit the programming mode by holding down the button **(1)**, of the leftmost dispenser group, for 5 seconds.
- Wait for the RGB LED **(2)** to flash yellow.
- Wait for the RGB LED **(2)** to turn green (successful export) or red (parameter export error).
- Remove the USB stick.

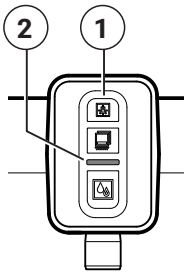


For the export to be successful, the USB stick to be used must be empty.

7.2.5 Import parameters

To carry out the import of machine parameters, proceed as follows:

- Create a folder named ***RGData*** inside a USB stick.
- Insert the ***Parameters.csv*** file containing the data to be uploaded, either inside the ***RGData*** folder, or in the subfolder ***SN_xxxxxx*** where xxxxxx is the machine serial number (folder present if a parameter export has already been done).



- With the machine turned on, insert the USB stick.
- Wait for the RGB LED **(2)** to flash yellow.
- Press the key **(1)**.
- Wait for the RGB light to turn green (successful import) or red (parameter import error).
- Remove the USB stick.

7.2.6 RGB Led Table

Color	Blink type	Indication
GREEN	Fixed.	Import / Export completed successfully.
	Flash (single + pause).	Standby / Eco mode.
YELLOW	Flash (1 per second).	Import / Export parameters. USB stick with valid update present.
	Flashing (2 per second).	Waiting for import to start.
ORANGE	Flash (1 per second).	End of line test booked.
RED	Fixed.	Error importing/exporting parameters.
	Flash (single + pause).	Boiler failure (sensor, loading time-out, heating time-out, over-pressure).
	Flash (double + pause).	Cup warmer failure (sensor, heating time-out, over-temperature).
	Flash (triple + pause).	Card power failure.
	Flash (quadruple + pause).	Generic failure.
MAGENTA	Fixed.	Boiler inspection mode.
	Flash (1 per second).	Self-learning dose mode.
CYAN	Fixed.	Boiler pressure modification mode.
BLU	Fixed.	Warming up.
	Flash (1 per second).	Loading water.
	Flash (single + pause).	OFF mode.
WHITE	Fixed.	In temperature.
	Flash (1 per second).	Loading water.
MULTICOLOR	Continuous color change.	Correct saving of serial number.

8. MAINTENANCE AND CLEANING

8.1 Safety precautions

Carefully read the instructions provided in the Chap. "I. SAFETY PRECAUTIONS" on page 3.

8.2 PPE features

The following PPE must be used for maintenance and cleaning of the machine:

It is mandatory that gloves be used to protect the user against cuts and abrasions and from all machine parts that become hot or come in contact with food (filter holders, filters, etc.).

8.3 Bodywork removal

If it is necessary to carry out maintenance operations inside the machine, remove the panels correctly to avoid damaging them.

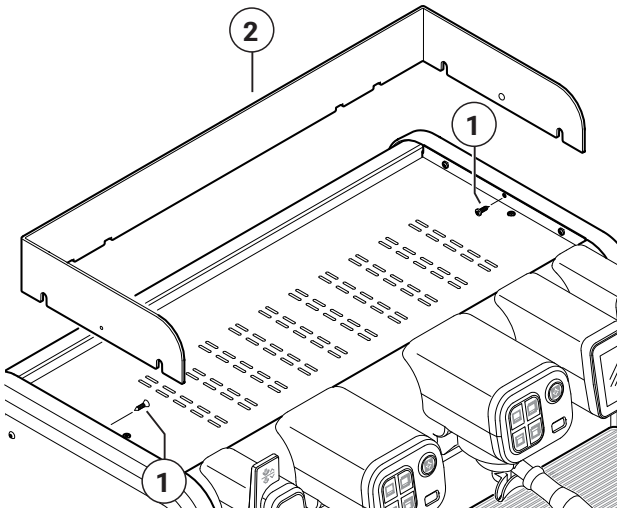
Before removing any body parts, always switch off the machine, disconnect it from the mains and wait for it to cool down completely.

Once the maintenance operations have been completed, put everything back in its original position by performing the operations in reverse.

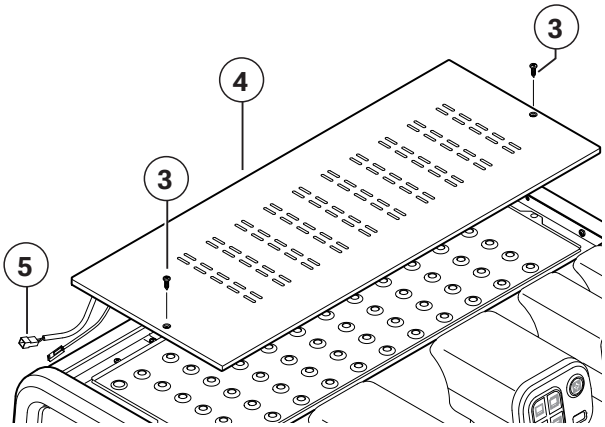
8.3.1 Upper grille

To remove the upper grille correctly, proceed as follows:

- Remove any cups on the cup warming shelf.

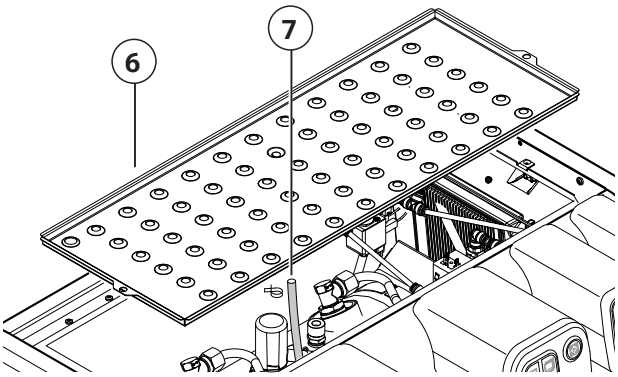


- Using a screwdriver, unscrew the 2 screws **(1)** on either side of the stop profile **(2)**, and remove it from its housing.



- Unscrew the 2 screws **(3)** securing the upper grille **(4)** and remove it.

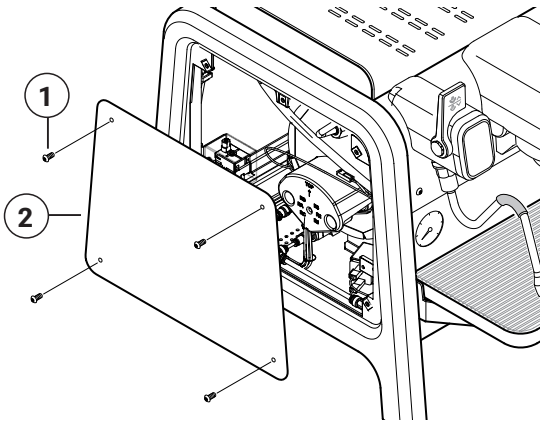
If the cup warmer is present, take care to disconnect its connectors (5).



- If present, remove the drip grid **(6)**, taking care to properly detach the relevant water drainage tube **(7)**.

8.3.2 Side panel

To remove the body sides correctly, proceed as follows:

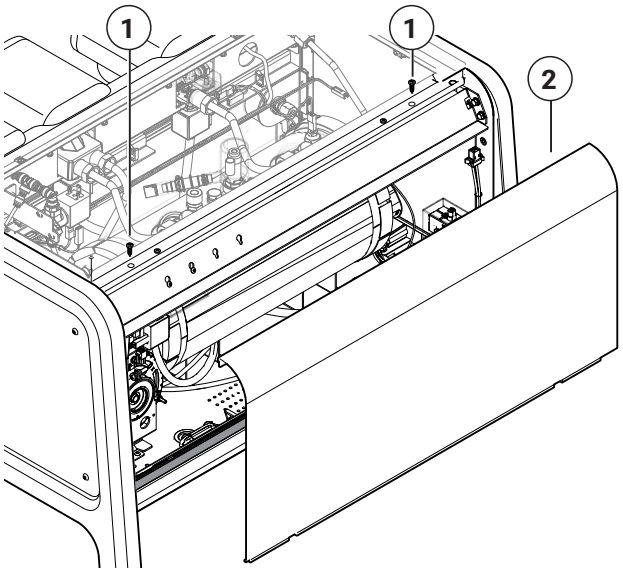


- Using a screwdriver, unscrew the 4 screws **(1)** of the sidewall **(2)** you wish to remove, then remove it.

8.3.3 Rear panel

To remove the rear body panel correctly, proceed as follows:

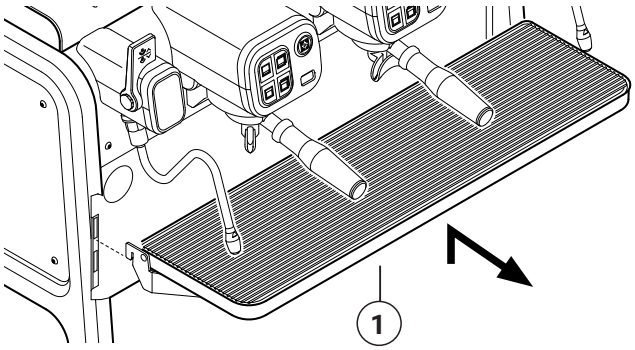
- Remove the upper part of the machine, as described in para.: 8.3.1.



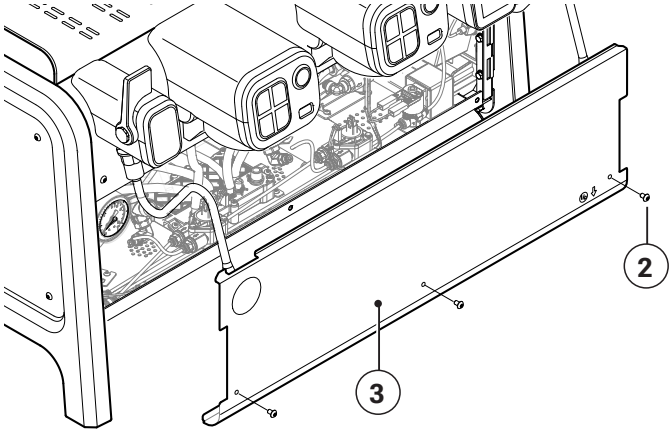
- Unscrew the 2 external screws **(1)** that secure the rear panel **(2)** to the frame, then remove it.

8.3.4 Front panel

To remove the front panel correctly, proceed as follows:



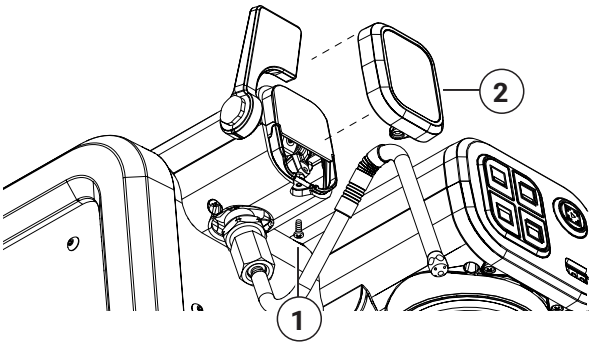
- Remove the drain pan **(1)** by lifting it slightly and pulling it towards the operator.



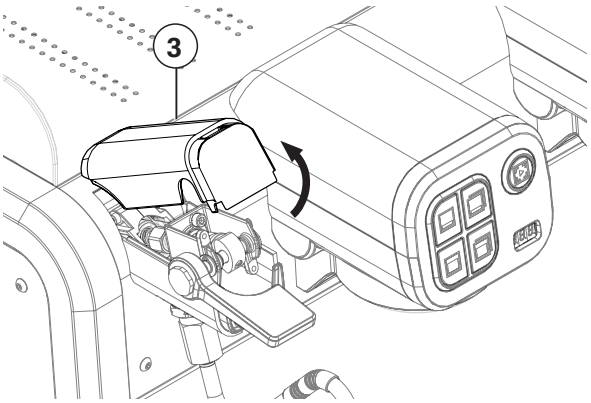
- Unscrew the 3 screws **(2)** of the front panel **(3)** and remove it.

8.3.5 Tap cover

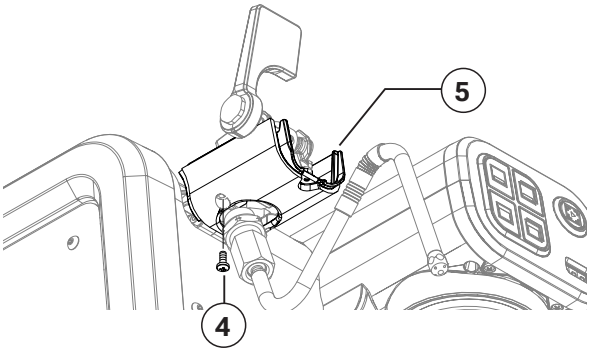
To remove the steam lance cover, proceed as follows:



- Unscrew the screw **(1)** underneath the front cover **(2)** and pull it towards the front.



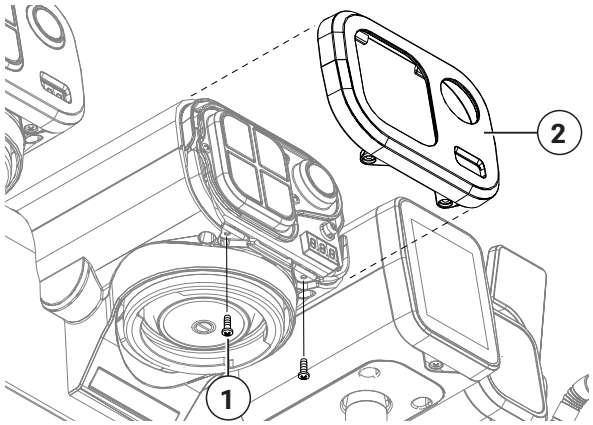
- Rotate the upper part **(3)** upwards, then slide it out of its housing.



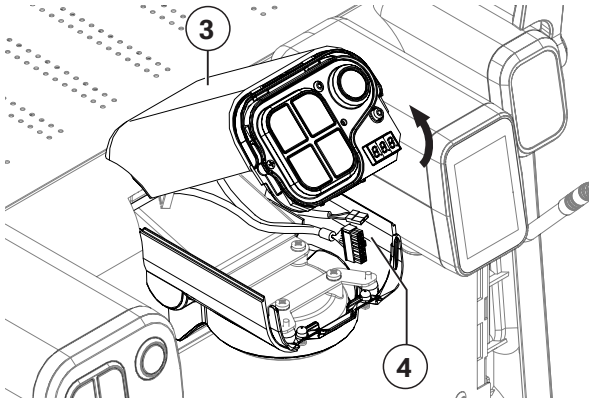
- Unscrew the 2 screws **(4)** to release the lower part **(5)**, which can be removed by sliding it along the tap rod.

8.3.6 Pushbutton cover with LED

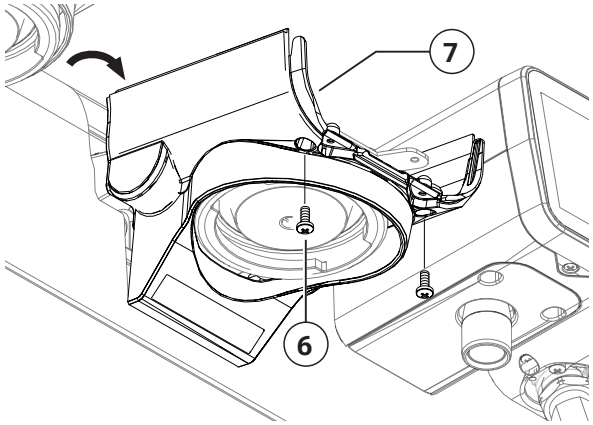
To remove the pushbutton cover, proceed as follows:



- Unscrew the 2 screws **(1)** located under the front cover **(2)** and slide it towards the front.



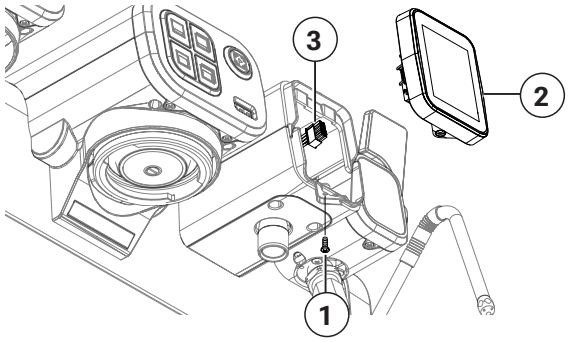
- Rotate the upper part **(3)** upwards, then slide it out of its housing, taking care to disconnect the connectors **(4)** of the hand control and LED.



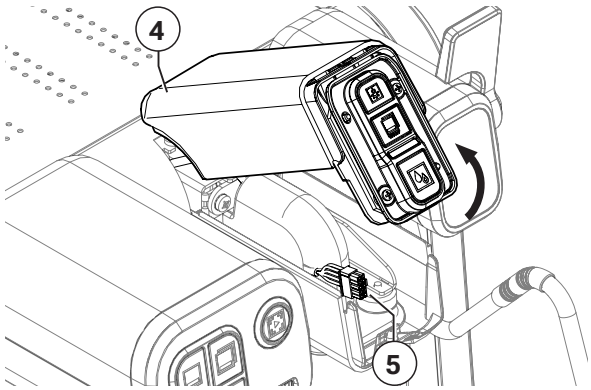
- Unscrew the 2 screws **(6)** under the lower cover **(7)**, then rotate the latter downwards and remove it from its housing.

8.3.7 Display / service keypad cover

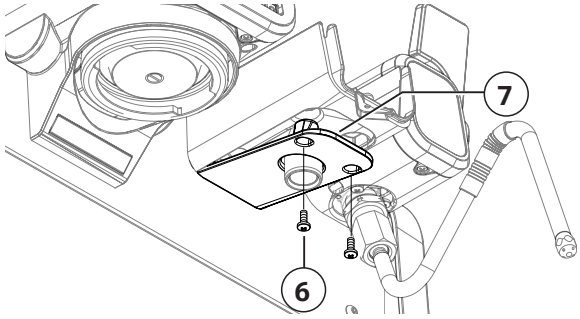
To remove the hot water lance cover, proceed as follows:



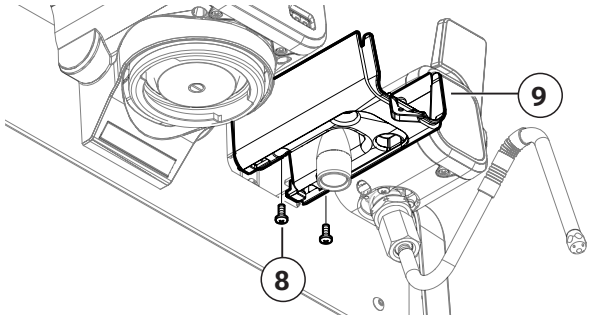
- Unscrew the screw **(1)** located under the front cover **(2)** and remove the latter towards the front. In the version with touchscreen display, disconnect the display connector **(3)**.



- Rotate the upper part **(4)** upwards, then remove it from its seat. In the version without touchscreen display, disconnect the service keyboard connector **(5)**.



- Unscrew the 2 screws **(6)** and unhook the lower cover **(7)**.



- Unscrew the 2 screws **(8)** and remove the lower cover **(9)** towards the front.

8.4 Maintenance

8.4.1 Scheduled maintenance

Perform the following maintenance according to the specified frequency.

If the machine is used intensively, the checks need to be performed more frequently.

Periodic Maintenance Table

Component	Type of operation	Quarterly	Yearly
BOILER NTC PROBE	Check the heating unit pressure which must be between 0.08 and 0.14 MPa (0.8 and 1.4 bar). Periodically check the water pressure when coffee is being dispensed: check the pressure indicated on the gauge, which must be in the range of 0.8 to 0.9 MPa (8 and 9 bar).	**X**	
FILTERS AND FILTER HOLDERS	Check the condition of the filters. Check for any damage on the edge of the filters and check whether any coffee grounds settle in the coffee cup, and replace the filters and/or filter holders, as required.	**X**	
BOILER	Replace the electric heating element if it becomes faulty or malfunctions. Do not replace the heating element with a more powerful one. Before making any changes, please contact the Manufacturer. If the thermostat of the heating element is triggered, reset it by pressing the central button of the thermostat. However, before starting the machine up again, check what caused the problem. If the heating unit insulation needs to be removed, restore the insulation after the maintenance work has been completed. Remove and clean the heating unit level probes. Check for lime scale deposits on the heating element, on the exchanger (inside and out). If there is a lot of limestone build-up, this indicates that the water filter has not been replaced, or that the softener has not been regenerated. When replacing any components, always replace the relative gasket as well. Replace the water in the heating unit as indicated in para. 6.4 .		**X**
SAFETY VALVE, SCNR VALVE, NEGATIVE PRESSURE VALVE	Check that the safety valves, non-return drain valves and negative pressure valves are operating properly, as indicated in para. 8.4.4 - 8.4.5 - 8.4.6 . If these need to be replaced due to malfunction, repeat the check with the newly-installed valve.		**X**
HYDRAULIC CIRCUIT	Check whether there is any lime-scale build-up in the hydraulic circuit. When replacing any components, always replace the relative gasket as well. If there is a lot of limestone build-up in the machine's hydraulic circuit, this indicates that the water filter has not been replaced, or that the softener has not been regenerated. Take care in areas where the water is very hard. The water filter will need to be replaced more frequently and the water softener will need to be regenerated more often, especially if the machine is used intensively.		**X**
WATER FILTER	Replace the water filter cartridge at the frequency indicated by the manufacturer. If limescale has formed in the hydraulic circuit, the filter will need to be replaced.	**X**	
WATER SOFTENER	Carry out the regeneration procedure as instructed by the manufacturer. Take care in areas where the water is very hard. The water will need to be regenerated more frequently, especially if the machine is used intensively.	**X**	

Component	Type of operation	Quarterly	Yearly
GRINDER-DISPENSER	Check the ground coffee dose (around 7 grams each time) and check the degree of grinding. The burrs must always have sharp cutting edges. Too much powder in the grounds is an indication that the coffee is deteriorating. We recommend contacting the Technician to replace the flat burrs after every 400/500 kg of coffee, or after every 800/900 kg for conical burrs.	**X**	
DRAIN	Check for any leaks on the water mains and sewer connections. Check the condition of the drain tray and the drain connection tube.		**X**
DISPENSING GROUP	Check the efficiency of the dispensing group's solenoid valve. Replace the shower screen and group gasket as indicated in para. 8.4.3 on page 51		**X**
WATER and STEAM NOZZLES	Check the condition of the nozzles and clean the sprayer.		**X**
VOLUMETRIC DOSING DEVICE	Check and clean the volumetric dosing device by removing any oxidation from the tips.		**X**
TOUCH SCREEN	Check the correct operation of the touch screen and adjust parameters if necessary. Display the machine counts by checking the work cycles performed.		**X**
MOTOR PUMP	Visually inspect the condition of the machine's wires.		**X**

If any work is carried out on the machine electronics when the machine is still live, any guarantee will automatically be invalidated.

All original spare parts are available from the Manufacturer's website. The Manufacturer may provide the list of spare parts recommended for the maintaining the various versions of the machine.

8.4.2 Maintenance after a short period of machine inactivity

"Short period of machine inactivity" refers to a period of time exceeding one working week.

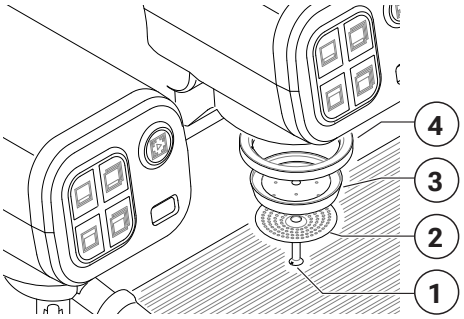
If the machine is switched back on after this period, all the water inside the hydraulic circuits must be replaced as indicated in para. 6.4.

Furthermore, all periodic maintenance operations must be carried out, see the previous paragraph.

8.4.3 Dispensing group maintenance

Replace the dispensing group's shower screen **(2)** and group gasket **(4)** on a quarterly basis (we recommend only using original spare parts), by proceeding as follows.

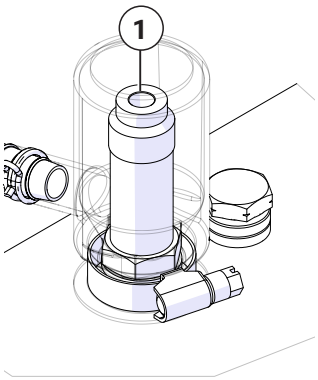
- Unscrew the screw **(1)**.
- Remove the shower screen containment ring **(3)**.
- Replace the group shower screen **(2)** and the rubber group gasket **(4)**.
- Reassemble the components.



8.4.4 Safety valve check

The pressure relief valve is one of the main components for machine safety. Therefore, it is important to carry out the following checks:

- Remove the machine's upper grille.
- Simulate a pressure increase in the boiler via the appropriate controls (see para. 7.1.18 or 7.2.1);
- Check that the valve is working correctly at the maximum pressure of 0.19 bar (1.9 bar).

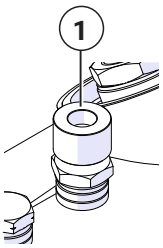


If any malfunctions are detected, the valve must be replaced. Only use the Manufacturer's original Safety Valves.

8.4.5 Negative pressure valve check

First check:

- Remove the machine's upper grille;
- Use pliers to push the valve pin **(5)** downwards;
- If the pin does not move, it means that the valve is probably blocked by limescale and therefore needs to be replaced.



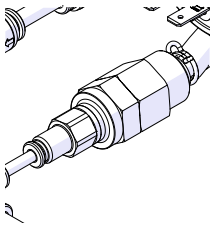
Second check:

- Turn the machine off.
- Open the steam valves and release all the pressure from inside the heating unit.
- Turn the machine back on and check that the valve is closing normally.

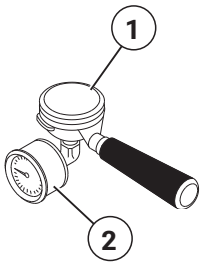
If any malfunctions are detected, the valve must be replaced.

8.4.6 Non-return drain valve check

The non-return drain valve is an important component for the correct operation of the machine. Perform the check as follows:



- Activate the dispensing groups for about 30 seconds.
- Attach a filter holder **(1)** with a pressure gauge (available on request) to the dispensing group.
- Activate the dispensing group, and use the pressure gauge **(2)** to monitor the pressure as it increases up to 0.8-0.9 MPa (8-9 bar).
- Check that the pressure is increasing due to the heated water expanding until it reaches approximately 1.2 MPa (12 bar): when this value is reached, it confirms that the valve is working correctly and the seals and solenoid valves are tight.
- Stop dispensing.
- Repeat the check on the other dispensing groups.



If any malfunctions are detected, the valve must be replaced.

8.5 Water filter maintenance

8.5.1 Determining the water hardness

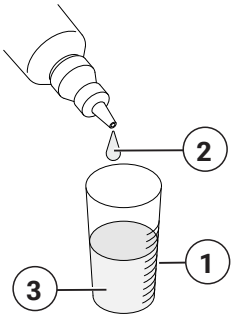
As part of the filter maintenance, it is advisable to test the water beforehand.

To identify the carbonate hardness of the water use the special kit as follows:

- Put 10 ml of water to be tested **(1)** in the test tube.
- Add a drop of reagent **(2)** and mix.
- Proceed in the same way by counting the number of drops until the solution **(3)** turns from blue to red.

1 DROP = 1°dKH

Example: 9 Drops ----> 9°dKH carbonate hardness



8.5.2 Bypass configuration

Depending on the hardness of the water, adjust the bypass of the water filter as shown in the table below. Example:

9°dKH water hardness

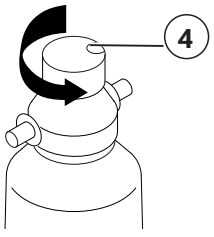
↓

Bypass adjustment 2

Water hardness (°dKH)	Bypass Adjust.	Filter capacity (litres)			
		V	M	L	XL
4	3	6.250	9.500	13.000	17.000
5	3	5.000	7.600	10.400	13.600
6	3	4.165	6.330	8.665	11.330
7	3	3.570	5.425	7.425	9.710
8	2	3.125	4.750	6.500	8.500
9	2	2.775	4.220	5.775	7.555
10	2	2.500	3.800	5.200	6.800
12	1	1.865	2.835	3.885	5.080
14	1	1.600	2.430	3.330	4.355
16	0	1.185	1.800	2.465	3.220
20	0	945	1.440	1.970	2.575
24	0	790	1.200	1.640	2.145
≥ 25	0	≤ 755	≤ 1.150	≤ 1.575	≤ 2.060

The values indicated in the table may vary, depending on the type of filter cartridge used.

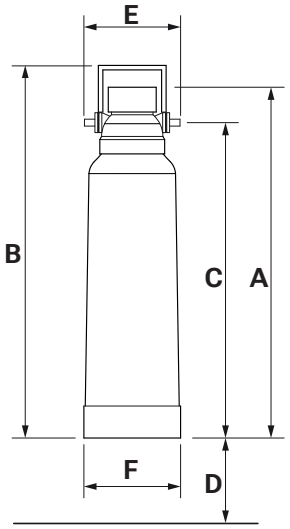
To adjust the bypass, push the **(4)** button and turn.



8.5.3 Technical data

Model	V	M	L	XL
Connection coupling type	3/8"	3/8"	3/8"	3/8"
Min.-max. water supply pressure (bar)	2-8	2-8	2-8	2-8
Water temperature min. - max. (°C)	4-30	4-30	4-30	4-30
Room temperature min-max (°C)	4-40	4-40	4-40	4-40
Total height (A) without bracket (mm)	420	475	500	500
Total height (B) with bracket (mm)	445	500	530	530
Connection (C) height (mm)	370	425	450	450
Distance from the floor (D) (mm)	65	65	65	65
Filter head width (E) (mm)	125	125	125	125
Filter cartridge diameter (F) (mm)	115	130	145	145
Weight (kg) (empty/with water)	2.1/3.2	2.4/4.2	3.4/5.9	3.8/6.0

Replace the water filter cartridge at the frequency indicated by the manufacturer.



To use and maintain the water filter, follow the indications by the manufacturer.

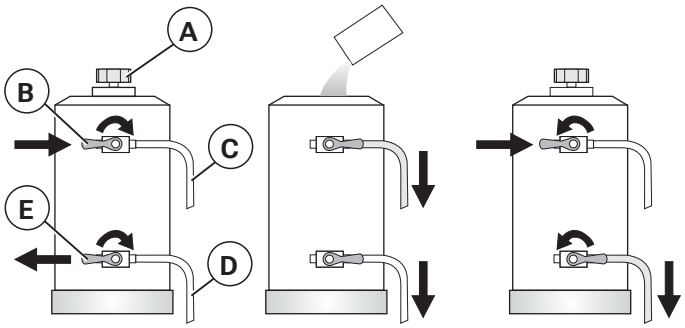
8.6 Water softener regeneration

It is very important to regenerate the softener within the established times. The regeneration is to be carried out regularly: every 15 days. However, in locations where the water is very hard, it will be need to be regenerated more frequently. The same rule can be applied to locations where there is a large consumption of hot water (for tea, etc.).

Proceed as follows:

- Move the lever **(B)** and **(E)** from left to right.
- Remove the lid by unscrewing the knob **(A)**.
- Release enough water through the pipe **(C)** to make room for the amount of salt required depending on the model (see table).
- Clean any salt or resin residues from the gasket located on the lid.
- Put the cover back on by securely screwing the knob **(A)** and move the lever **(B)** back from right to left.
- Let the salt water drain from the little hose **(D)** until the water is no longer salty (about 30-60 minutes). The salt allows the accumulated mineral salts to be released.
- Switch the lever **(E)** from right to left, back to its initial position.

The build-up of limescale in the hydraulic circuit and heating unit inhibits thermal exchange, which prevents the machine from working properly. Heavy incrustations in the heating unit may cause long machine shutdowns and in any case invalidate any guarantee, because this symptom indicates that the regeneration procedure has not been carried out.



In order to keep the water softener, and hence the machine, in perfect operating condition, it is necessary to regularly regenerate it, depending on the softener and hardness of the water used. The table below shows the quantity of softened water based on the hardness of the water in the various units of measurement:

- °f: French degree
- °d: German degree = 1,8 °f
- mg CaCO3

For further information on softener installation, start-up and regeneration, refer to the instruction manual.

Amount of softened water based on hardness

°f	30	40	60	80	salt
°d	16,5	22	33	44	
mg $CaCO_3$	30	40	60	80	
8 litres	1000 lt	900 lt	700 lt	500 lt	1,0 kg
12 litres	1500 lt	1350 lt	1050 lt	750 lt	1,5 kg
16 litres	2100 lt	1800 lt	1400 lt	1000 lt	2,0 kg

Softener model	Amount of salt
8 litres	1,0 kg
12 litres	1,5 kg
16 litres	2,0 kg

To use and regenerate the water softener, follow the instructions provided by the manufacturer.

8.7 Descaling

For all descaling operations on machine components, use only the RUVECO® CLEAN product supplied by the manufacturer.

In cases where an excessive amount of limescale is present in the boiler and/or in the machine's hydraulic circuit to such an extent that it hinders the correct operation of the equipment, it is necessary to carry out descaling and, if necessary, replace the affected components. The RUVECO ® CLEAN product has been specially developed for descaling coffee machines. The product is non-toxic and non-harmful, removes limescale and does not affect surfaces. For how to use the product, carefully follow the instructions on the packaging or on the manufacturer's website.

8.8 Malfunctions and solutions

Problem	Cause	Action
NO MACHINE POWER	• The general switch is in the "OFF" position. • The machine switch is faulty. • The mains switch is in the OFF position. • The wiring is defective.	• Place the main switch in the "ON" position. • Replace the main switch. • Turn the mains switch to the ON position. • Check for any faulty connections.
NO WATER IN THE HEATING UNIT	• The water mains valve is shut off. • The cut-off valve of the automatic level device is closed. • The pump filter is clogged. • The motor pump is disconnected or jammed. • The water filling solenoid valve is faulty. • The water inlet solenoid valve filter is clogged.	• Open the water mains valve. • Open the automatic level device valve. • Replace the pump filter. • Check the motor pump. • Replace the water filling solenoid valve. • Clean or replace the solenoid valve filter.
TOO MUCH WATER IN THE HEATING UNIT	• The solenoid valve of the automatic level device is faulty. • The level probe is out of order (clogged by lime-scale).	• Replace the solenoid valve of the automatic level device. • Replace the level probe.
WATER IS LEAKING FROM THE BOILER VIA THE SAFETY VALVE	• The solenoid valve of the automatic level device is faulty. • The level probe is out of order (clogged by lime-scale).	• Replace the solenoid valve of the automatic level device. • Replace the level probe. • Replace the safety valve and check its correct functioning
WATER IS LEAKING FROM THE MACHINE	• The tray is not draining. • The drain pipe is broken, has detached, or the water flow is obstructed. • Water is leaking from the hydraulic circuit.	• Check the sewer drain. • Check and restore the drain pipe connection to the tray. • Restore the hydraulic seal by replacing the pipe, the gasket or the fitting as necessary.
WATER IS LEAKING FROM THE DISPENSING GROUP	• The group gasket is worn.	• Replace the group gasket.
THE DISPLAY INDICATES NON-COMPLIANT PRESSURE	• The Display is faulty. • The motor pump has been calibrated incorrectly.	• Replace the Display. • Adjust the motor pump calibration.
THE SAFETY VALVE IS IN OPERATION	• The pressure transducer is broken. • The electronic control unit is faulty.	• Check for correct operation of the pressure transducer. Replace the safety valve with an original spare part only. • Check that the electronic system is working properly.
NO STEAM RELEASED FROM THE NOZZLE	• The machine is switched off. • The electrical heating element is faulty. • The temperature probe is faulty. • The nozzle sprayer is clogged. • The safety thermostat is deactivated or faulty.	• Turn on the machine. • Replace the electrical heating element. • Replace the temperature probe. • Clean the steam nozzle sprayer. • Reactivate or replace the thermostat.
WATER OR STEAM MIXED WITH WATER COMES OUT OF STEAM NOZZLES	• The level of the boiler is too high due to the level probe being incorrectly positioned inside the boiler or the presence of limestone. • The boiler charging solenoid valve is leaking.	• Check the condition of the level probe: check if it is positioned correctly and check for any surface lime-scale. • Clean and replace the charging solenoid valve.

Problem	Cause	Action
NO COFFEE IS DISPENSING	• There is no water in the mains. • The group solenoid valve is faulty. • The pump is jammed. • The group solenoid valve is clogged or dirty. • The group filter is clogged. • The volumetric dosing device is jammed. • The inlet and outlet valves of the dosing device are closed.	• Check that there is water in the mains. • Replace the group solenoid valve. • Replace the pump. • Clean or replace the solenoid valve. • Clean or replace the filter. • Check/replace the dosing device. • Open the valves.
THE COFFEE GROUNDS ARE WET	• The group solenoid valve drain is clogged. • The dispensing group is too cold. • The coffee has been ground too finely. • There's not enough ground coffee.	• Clean the group drain. • Wait until the group has fully heated up. • Adjust the coffee grinding. • Increase the amount of ground coffee.
GROUNDS FOUND IN CUPS	• The filter holder is dirty. • The filter holes are worn. • The coffee has not been ground evenly. • The group gasket is worn. • The pump pressure is too high.	• Clean the filter holder. • Replace the filter. • Replace the burrs. • Replace the seal. • Adjust the pump pressure.
THE CUP IS DIRTY BY COFFEE SPLASHES	• There are steam bubbles in the dispensing system. • There are air pockets in the hydraulic circuit. • The coffee has been ground too coarsely.	• Reduce the water temperature. • Check the cause and resolve the problem. • Adjust the grinder as appropriate.
COFFEE TOO COLD	• The heating element of the coffee boiler is faulty. • The wiring is faulty. • There is limescale on the heating element. • The safety thermostat has cut-in. • Limescale has reduced the water circulation. • The dispensing group is cold.	• Replace the electrical heating element. • Check for any faulty connections. • Clean the machine. • Reset the heating element protection. • Clean the exchanger connections, and clean or replace the two circulation pipes. • Eliminate air pockets in the hydraulic circuit in the following manner: - Disconnect the pump from the power supply. - Close the softener's water valve. - Perform a dry dispensing run for a few minutes. - Reconnect the pump to the power supply. - Open the softener's water outlet valve. - Dispense until water comes out; - Wait a few minutes for it to heat up.
COFFEE TOO HOT	• The boiler temperature is too high. • The group's flow reducer is not suitable.	• Reduce the pressure in the boiler using the appropriate screw on the pressure switch. • Replace the reducer with one of a smaller diameter.
COFFEE DISPENSING TOO FAST	• The coffee has been ground too coarsely. • The diameter of the injector is too big. • The dose of ground coffee is too small.	• Adjust the coffee grinding. • Replace the injector with one that has a smaller diameter. • Check the amount (grams) of ground coffee being used.

Problem	Cause	Action
COFFEE DISPENSING TOO SLOWLY	• The coffee has been ground too finely. • The injector is clogged. • The dispensing group is clogged. • The filter holder is dirty.	• Adjust the coffee grinding. • Replace the injector. • Check and clean the dispensing group. • Clean and replace the filters, if necessary.
SHUTDOWN OF THE ELECTRONIC SYSTEM	• The control unit main fuse has burned out. • One of the volumetric dosing device's contacts is grounded.	• Replace the main fuse. • Check the volumetric dosing device connection.
COFFEE DISPENSING IN INCONSISTENT MANNER THE COFFEE DOSE IS IS NOT CONSISTENT WITH SET VALUES THE LED OF THE DOSE BUTTON FLASHES	• The volumetric dosing device connection is faulty. • The electronic control unit connection is faulty. • The volumetric dosing device connector is wet. • The volumetric dosing device is faulty: the LED does not flash during the dispensing process. • The coffee has been ground too finely: there isn't enough water flow in the dosing device. • The check valve is losing pressure (the dose is too small). • The expansion valves are losing pressure (the dose is too small). • Water is leaking from the group solenoid valve when coffee is being dispensed or when in standby. • The volumetric dosing device is partially obstructed.	• Check that the volumetric dosing device connector has been connected properly. • Check the correct connection from the electronic control unit. • Remove the volumetric dosing device connector and thoroughly dry the contacts. • Replace the heads of the volumetric dosing device or replace the whole dosing device. • Suitably adjust the grind and check the burrs, if necessary. • Check and replace the check valve, if necessary. • Check and replace the expansion valves, if necessary. • Clean and replace the solenoid valve, if necessary. • Clean or replace the volumetric dosing device.

If the problem cannot be resolved, turn the machine off and contact the Manufacturer.

8.9 Cleaning operations

8.9.1 General instructions

A few simple cleaning tasks are required to have a perfectly sanitised and efficient appliance. The instructions provided here apply when the machine is being used on a regular basis. If the machine is used consistently, cleaning should be performed more frequently.

Do not use alkaline cleaners, solvents, alcohol or aggressive substance-based products (e.g. phosphoric, citric or sulfamic acids). The products/cleaners used must be suitable for this purpose and not corrode the water circuit elements.

Do not use abrasive cleaners which may scratch the body's surface.

Always use clean and sanitised cloths when cleaning.

For all the cleaning operations of the machine components, only use the following detergents supplied by the Manufacturer:

- **EVO® ESPRESSO MACHINE**
- **MFC® BLUE MILK**

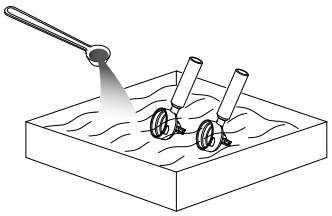
Cleaning	Daily	Weekly
Body and Grilles: Clean the panels of the body with a cloth dampened in lukewarm water. Remove the drip tray and cup holder grille and wash with hot water.	X	
Filters and Filter Holders: Wash the filters and filter holders on a daily and weekly basis, as indicated in para. 8.9.2. Perform the cleaning operations on a daily basis as indicated in para. 8.9.4.	X	X
Steam nozzle: Keep the nozzle clean at all times using a cloth dampened in lukewarm water. Check and clean the nozzle tips, by clearing the steam outlet holes with a small needle. Perform the wash on a weekly basis, as indicated in para. 8.9.5.	X	X
Dispensing group: Wash the dispensing group as described in para. 8.9.3. Perform the cleaning operations on a daily basis as indicated in para. 8.9.4. Internally clean the group on a weekly basis, as indicated in para. 8.9.4 on page 59.	X	X
Grinder-dispenser and Hopper: Clean the hopper and the dispenser inside and out with a cloth dampened with warm water. When finished, dry all parts thoroughly.		X

8.9.2 Cleaning the filters and filter holders

Caution: only immerse the filter holder cup in water and try not to get the handle wet.

Daily:

- Soak the filter and filter holder in hot water overnight so that the fatty coffee deposits can dissolve.
- Rinse everything in cold water.



Weekly:

For the weekly cleaning of the filters and filter holders, use the EVO ® detergent diluted in water according to the procedures indicated on the packaging or on the manufacturer's website.

8.9.3 Washing the dispensing group

Use the EVO ® detergent according to the procedures indicated on the packaging or on the manufacturer's website.

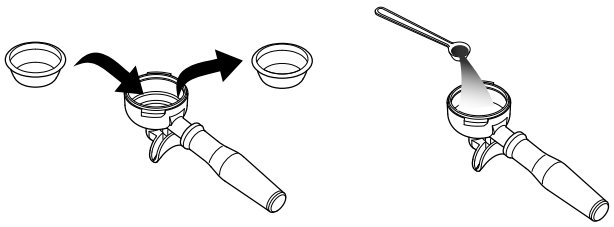
During the washing phase, all the coffee selections of that group are disabled

Wash the dispensing groups on a daily basis.

The coffee dispensing wash method is different for each machine type. The instructions specific to the model being used must be followed.

In any case, before starting the wash operation, the filter holder must be prepared as described below:

- Remove the filter from the filter holder and fit a blind filter (see the standard supplied parts);

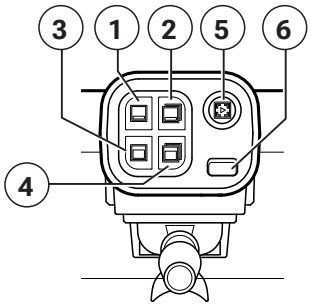


- pour 1 level scoop of EVO ® detergent into the blind filters and hook the filter holders to the dispensing units.

From here on, follow the instructions specific to your machine.

The washing operations can also be carried out simultaneously on multiple dispensing groups. To exit the washing phase, the washing procedure must have been completed on all groups.

In the event of a power failure during the washing phase, when the machine is switched on again, it goes back to the rinse start waiting phase on the groups involved, which therefore remain inhibited from further dispensing. It will be necessary to carry out the operation again to eliminate any detergent present in the group.



- On the keyboard of the group where you want to wash, press and hold down button **(5)**, and in quick succession (within 5 seconds), also press and hold down button **(1)** for at least 5 seconds.
- Buttons **(1)** and **(2)** flash: attach the previously prepared filter holder and press button **(5)**, the washing sequence starts.
- During the washing phase, the group buttons **(1)** and **(2)** continue to flash, and on the chrono display **(6)**, a countdown of the duration of the phase is shown.
- Once this phase is completed, the button **(5)**, and the buttons **(3)** and **(4)** flash, waiting for the filter holder to be removed.
- Remove the filter holder and press the button **(5)**, the rinsing sequence starts.
- During the rinsing phase, buttons **(3)** and **(4)** continue to flash, and the chrono display **(6)** shows a countdown of the duration of the phase.
- Once the rinsing process is complete, the group is ready to dispense coffee: replace the filter holder with the coffee filter and reattach it to the dispensing group.

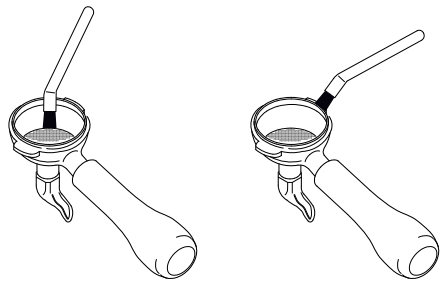
If there is a touch display, the latter will display the various operations: see the para. 7.1.11 on page 38.

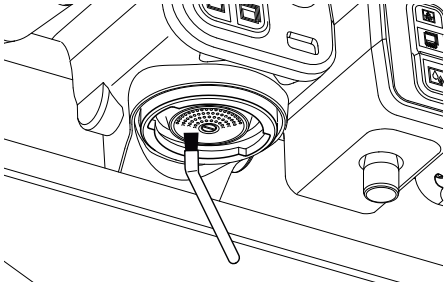
8.9.4 Cleaning the group shower screen, shower screen containment ring and filter holder

Daily

Clean the dispensing group and filter holder shower screens with a brush on a daily basis.

Thoroughly clean the inside of the coupling ring and filter holder, as well as the edge and the wings of the filter holder, so as to eliminate any accumulated coffee residues.



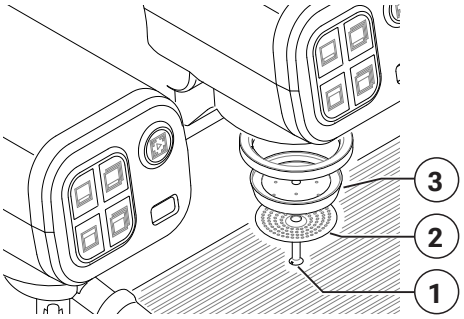


Use a suitable toothbrush, which can be requested from the manufacturer if necessary.

Weekly

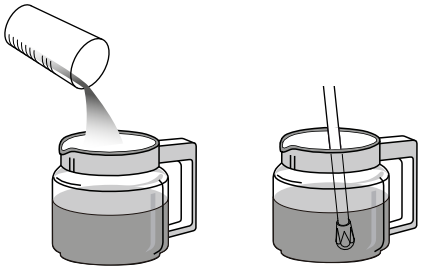
Effettuare la pulizia della doccetta e del porta doccetta nel seguente modo:

- Loosen the screw using a screwdriver **(1)**.
- Remove the shower screen **(2)** and the shower screen containment ring **(3)**.
- Wash the two components with hot water.
- Reposition the shower screen and shower screen containment ring in their original position and lock everything in place with the screw.



8.9.5 Cleaning the steam nozzle

For the weekly cleaning of the steam nozzle, use the MFC ® detergent diluted in water according to the procedures indicated on the packaging or on the manufacturer's website.



8.10 Tips for a good cup of coffee

Wash the filters and filter holders on a daily basis, as indicated in para. 8.9.2 on page 58. The failure to perform this cleaning operation will negatively affect the quality of the dispensed coffee.

To obtain high-quality coffee, it is important that the water hardness does not exceed 6-7°f (French degrees). If the water hardness exceeds these values, it is advisable to use a water filter or softener. Avoid using a water softener if the water hardness is less than 4°f.

If the taste of chlorine in the water is particularly strong, install a special filter.

Do not to keep large amounts of coffee beans on hand. If you change the type of coffee, we recommend calling out the Technician to adjust the water temperature and coffee grinder. If the machine has not been used for a certain period of time (2-3 hours), carry out a few dry runs. Make sure that the machine is constantly cleaned and periodic maintenance is carried out.

9. SPARE PARTS

Machine components and/or parts must only be replaced by the Technician.

All original spare parts are available from the Manufacturer's website. The Manufacturer can provide a list of spare parts recommended for maintaining the various versions of the machine on request.

If non-original parts are used, the safety of the machine cannot be guaranteed. The Manufacturer reserves the right to void the machine guarantee.

10. DECOMMISSIONING

10.1 Short period of machine inactivity

"Short period of machine inactivity" refers to a period of time exceeding one working week.

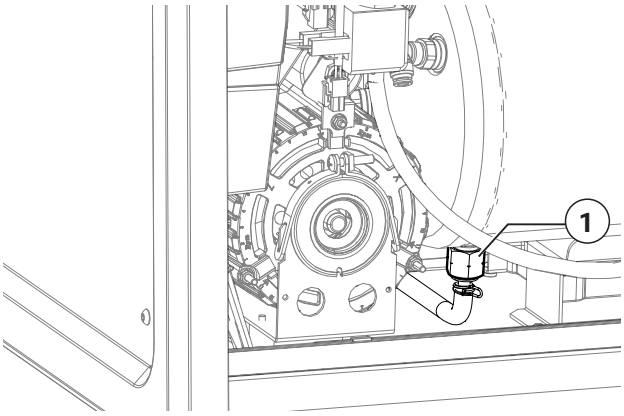
If the machine is reactivated after this period, the Technician must replace all the water contained in the hydraulic circuits as indicated in para. "6.4 Water renewal" on page 28.

All the scheduled maintenance operations must also be performed - see para. "8.4.1 Scheduled maintenance" on page 50.

10.2 Long period of machine inactivity

"Long period of machine inactivity" refers to a period of time exceeding 30 working days.

In this case, the machine must be disconnected from the electric, hydraulic and gas mains if fitted, and all the internal circuits must be drained of water.



To empty the boiler: remove the rear panel (see instructions in para. 8.3.3 on page 48), this gives access to the drain connection under the boiler.

Using a spanner, slightly unscrew the fitting **(1)** without removing it, so that all the water inside the boiler drains out. When finished, screw the fitting back in until it is completely tight.

To connect the machine after this period, follow the initial installation procedure.

11. DISASSEMBLY

To disassemble the machine, follow the installation procedure in reverse order - see chap. "5. INSTALLATION" on page 20.

All dismantled components must be divided by material to make identification easier and then disposed of at the authorised collection centres, as instructed in chap. "12. DISPOSAL" on page 61.

12. DISPOSAL

12.1 Disposal information

For the European Union and the European Economic Area only.

This symbol indicates that the product cannot be disposed of with household waste, pursuant to the WEEE Directive (2012/19/EC), the Battery Directive (2006/66/EC) and/or the national laws implementing those Directives.

The product should be handed over to a designated collection point, for example the dealer when purchasing a new product with similar features, or an authorised collection site that recycles electrical and electronic equipment waste (WEEE), as well as batteries and accumulators. Improper handling of this type of waste can have negative consequences on the environment and human health, due to the potentially hazardous substances which are usually found in this kind of waste.

Your cooperation in correctly disposing of this product will contribute to the effective use of natural resources and you will avoid incurring fines provided by law. For more information about recycling this product, contact either your local authority, the entity responsible for waste collection, an authorised dealer or your household waste disposal service.

Before disposing of the machine, we recommend seeking advice from the Technician and/or the seller.

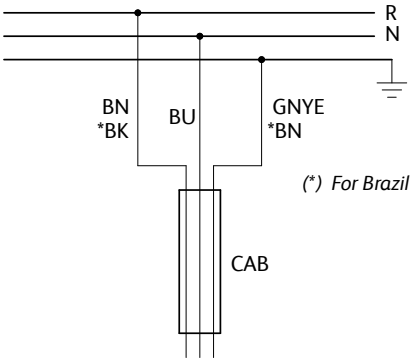
12.2 Environmental information

The machine features an internal lithium button battery, which is located in the circuit board and ensures data storage.

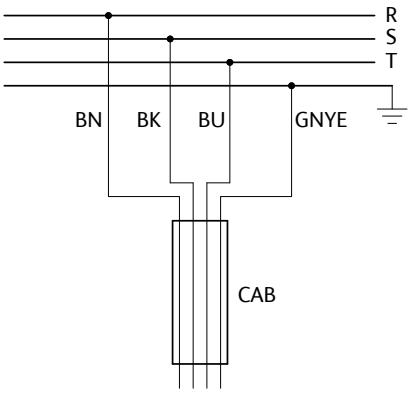
Dispose of the battery in accordance with current national regulations.

13. WIRING DIAGRAMS

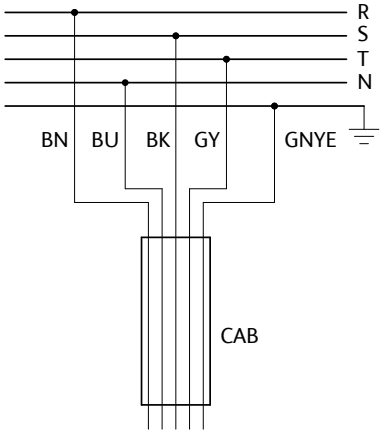
13.1 Electric mains connection



3-CONDUCTOR CABLE (Phase+Neutral+Earth)



4-CONDUCTOR CABLE (3 Phase+Earth)



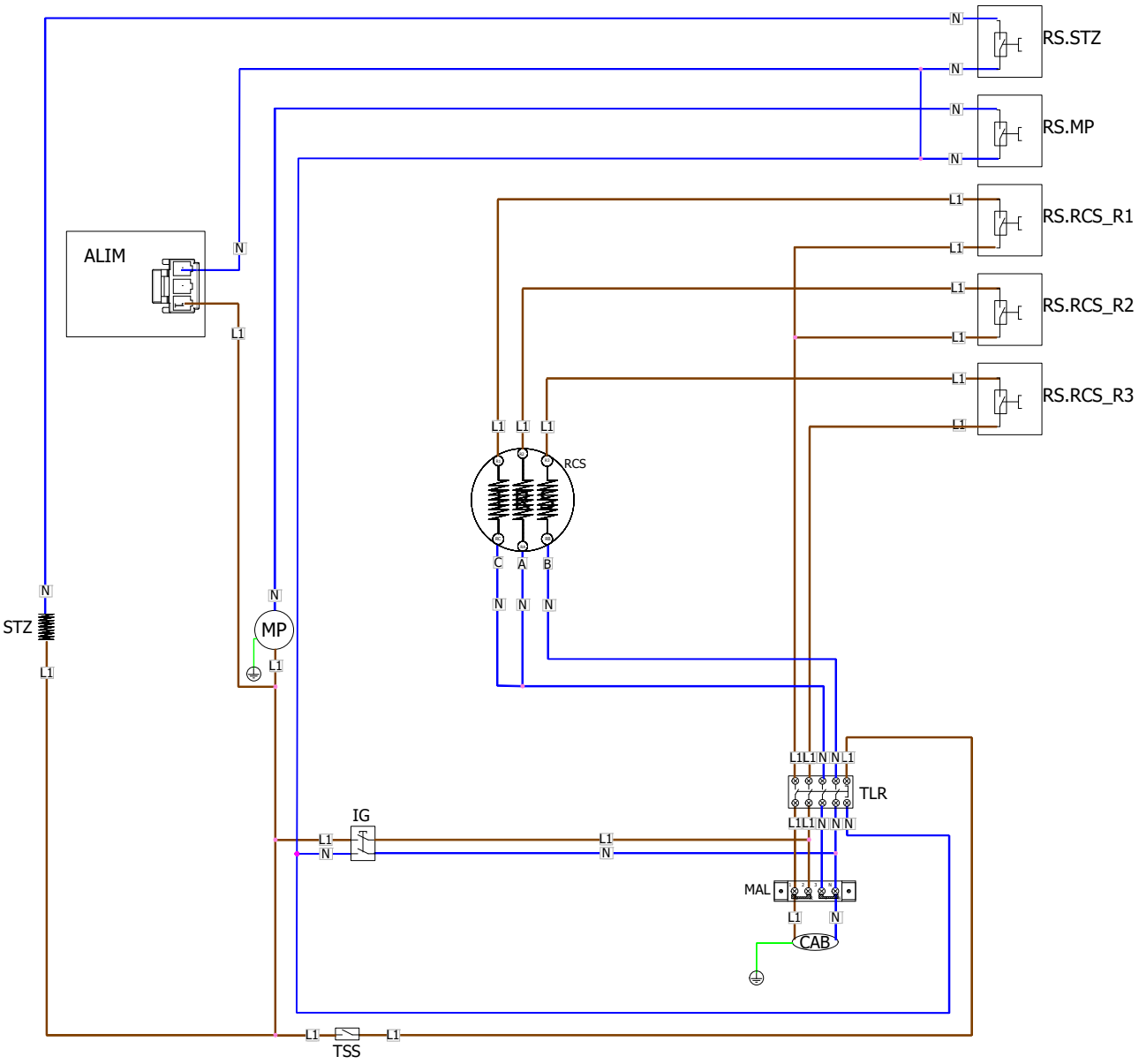
5-CONDUCTOR CABLE (3 Phase+Neutral+Earth)

R	Phase	**CAB**	Power cable
S	Phase	**GY**	Grey
T	Phase	**GNYE**	Yellow-green
N	Neutral	**BN**	Brown
⏚	Earth	**BK**	Black
BU	Blue		

In the case of connection 3 Phase + Earth (without neutral), the voltage between phase and phase must be between 220V and 240V.

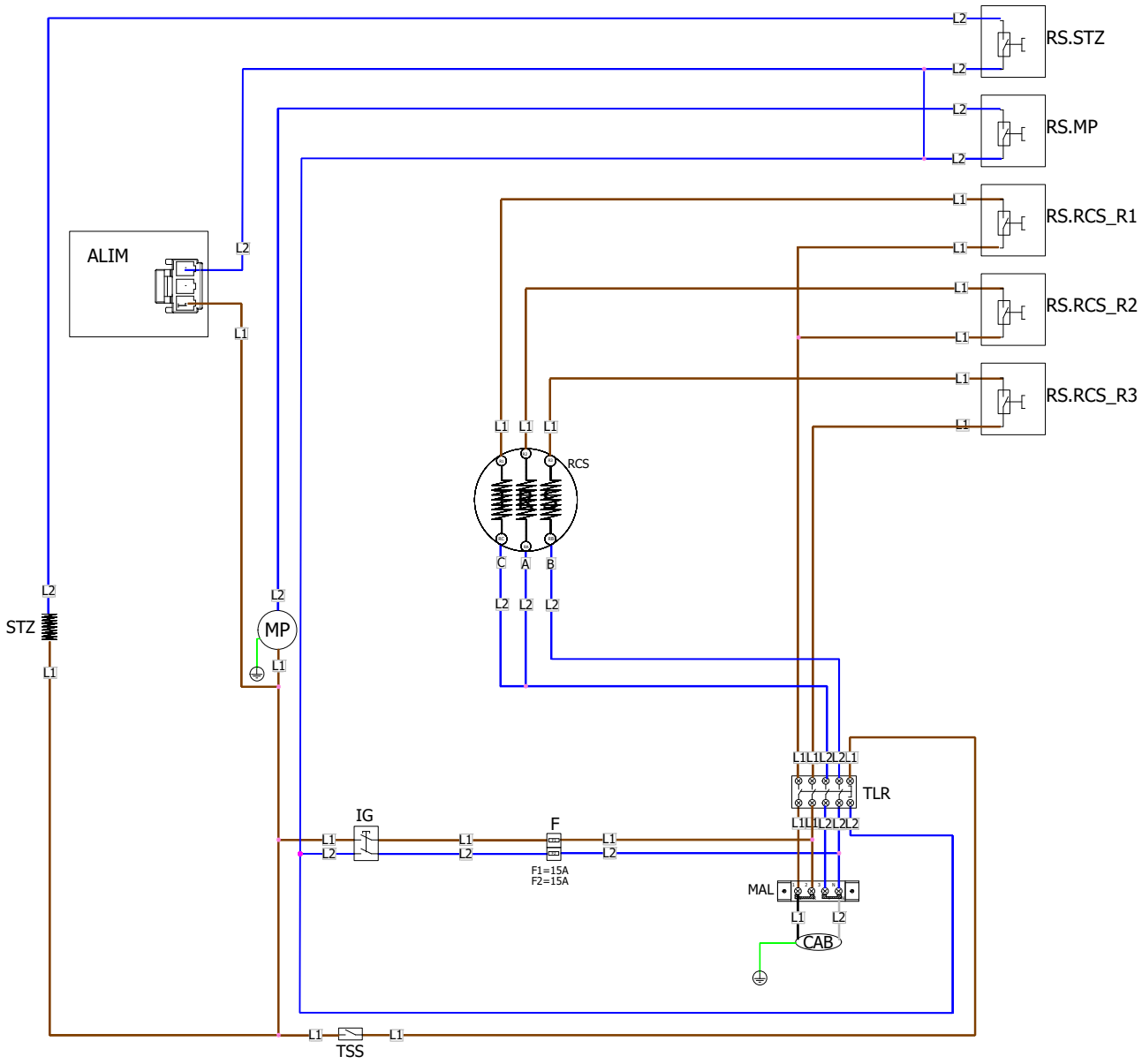
To correctly connect the machine to the electric mains, please refer to the information provided on the nameplate (see the example in para 2.5).

13.2 High voltage wiring diagram - 1GR Single phase



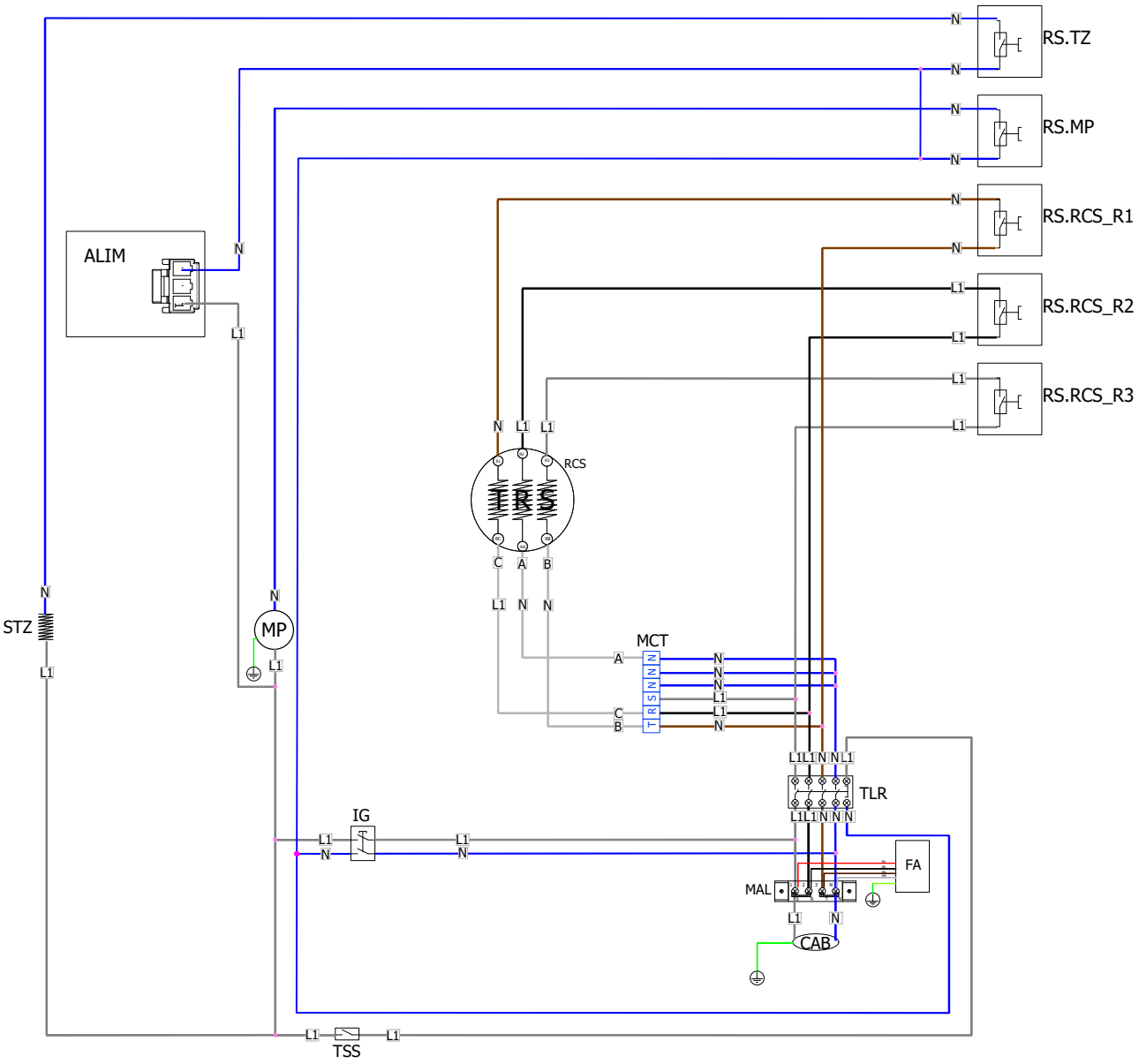
ALIM	Power supply
CAB	Power supply cable
F	Fuse
IG	Main switch
L1	Phase 1
MAL	Power supply terminal block
MP	Motor pump
N	Neutral
RCS	Boiler heating element
RS	Static relay
STZ	Cup warmer heating element
TLR	Power contactor
TSS	Boiler safety thermostat

13.3 High voltage wiring diagram - 1GR Single phase (US/CA)



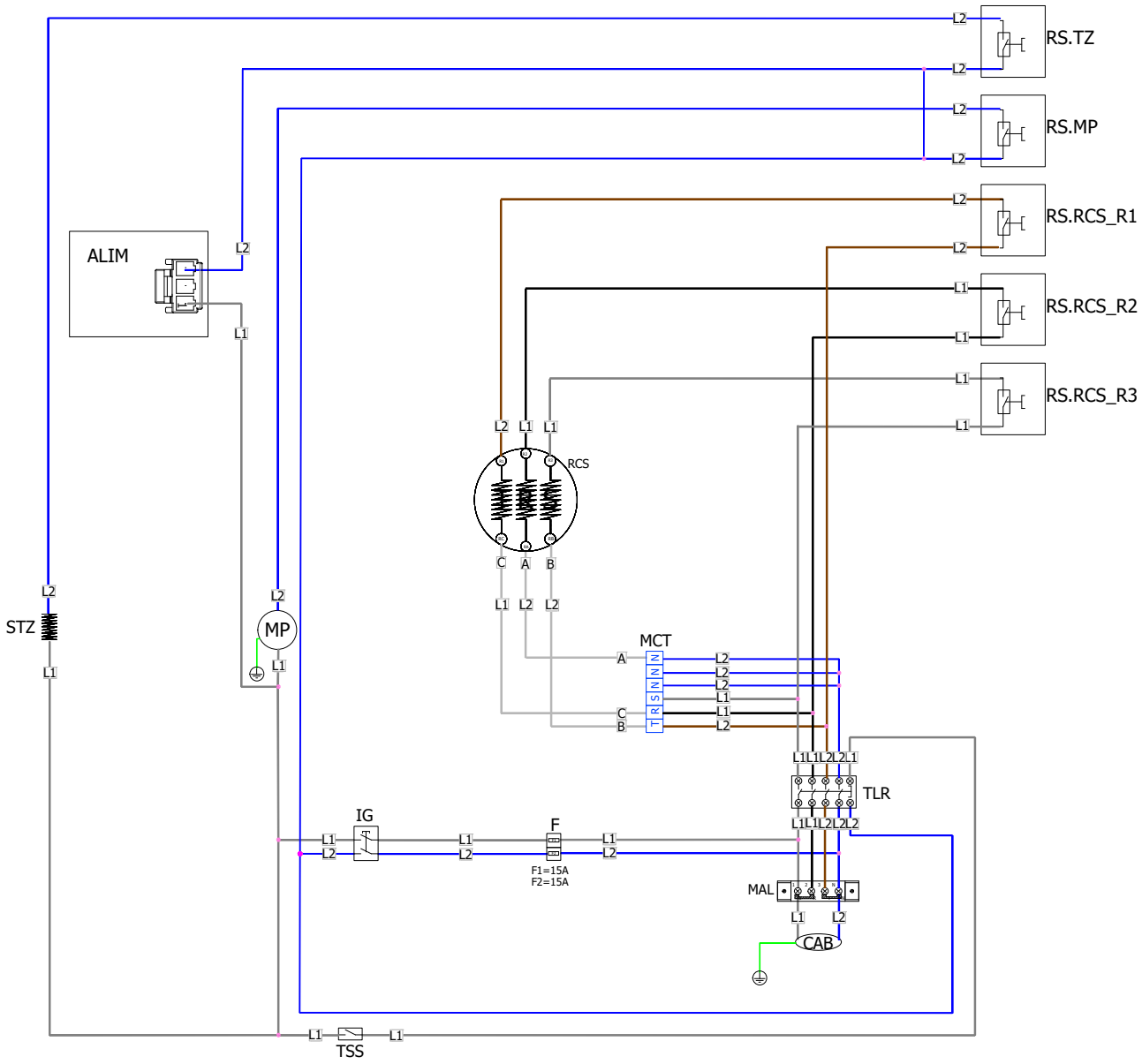
ALIM	Power supply
CAB	Power supply cable
F	Fuse
IG	Main switch
L1	Phase 1
L2	Phase 2
MAL	Power supply terminal block
MP	Motor pump
N	Neutral
RCS	Boiler heating element
RS	Static relay
STZ	Cup warmer heating element
TLR	Power contactor
TSS	Boiler safety thermostat

13.4 High voltage wiring diagram - 2/3GR Single phase



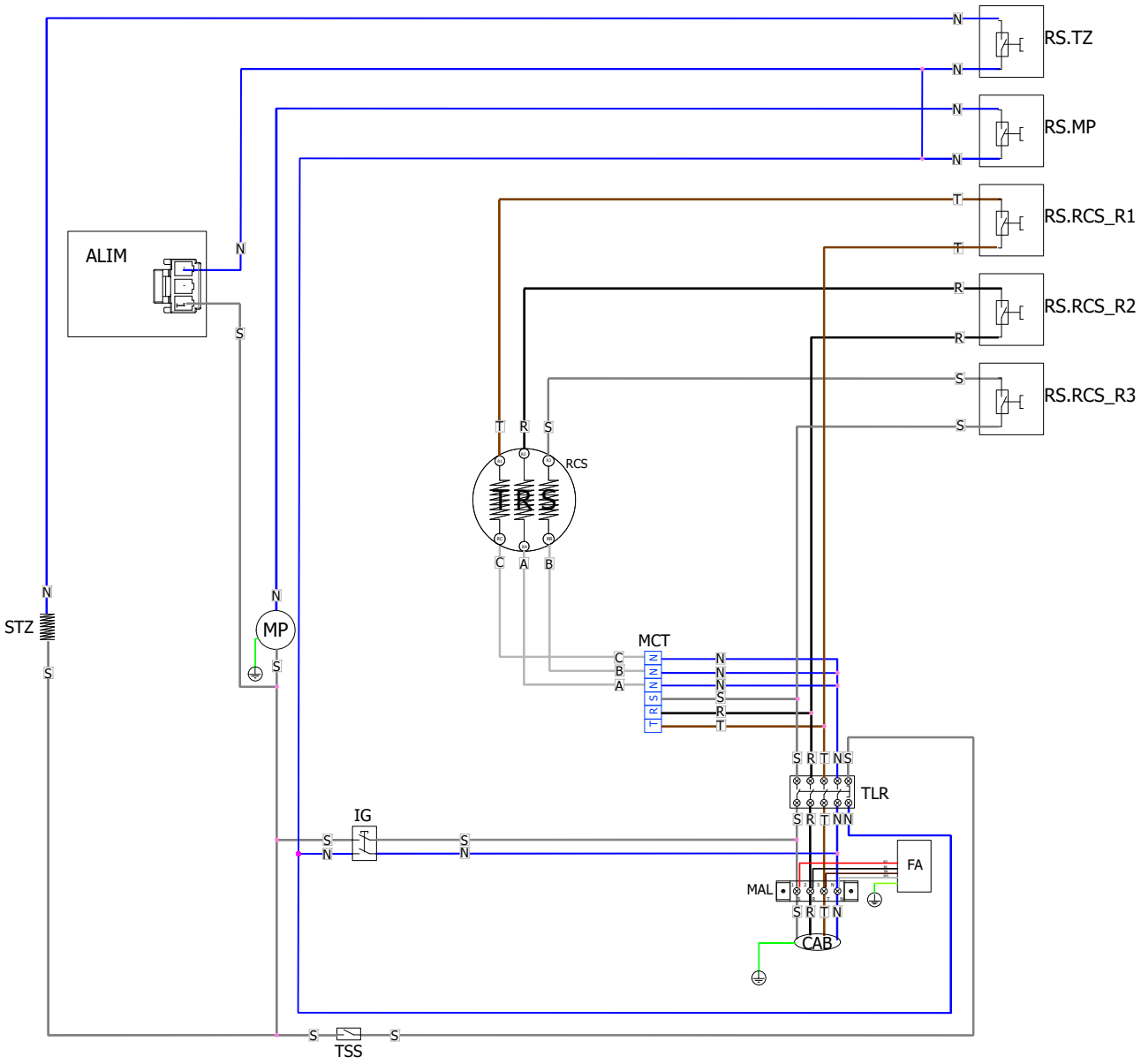
ALIM	Power supply
CAB	Power cable
FA	Power Supply Filter
IG	Mainswitch
L1	Phase
MAL	Power supply terminal block
MCT	Change phase terminal block
MP	Motor pump
N	Neutral
RCS	Boiler heating element
RS	Static relay
STZ	Cup warmer
TLR	Power contactor
TSS	Boiler safety thermostat

13.5 High voltage wiring diagram - 2/3GR Single phase (US/CA)



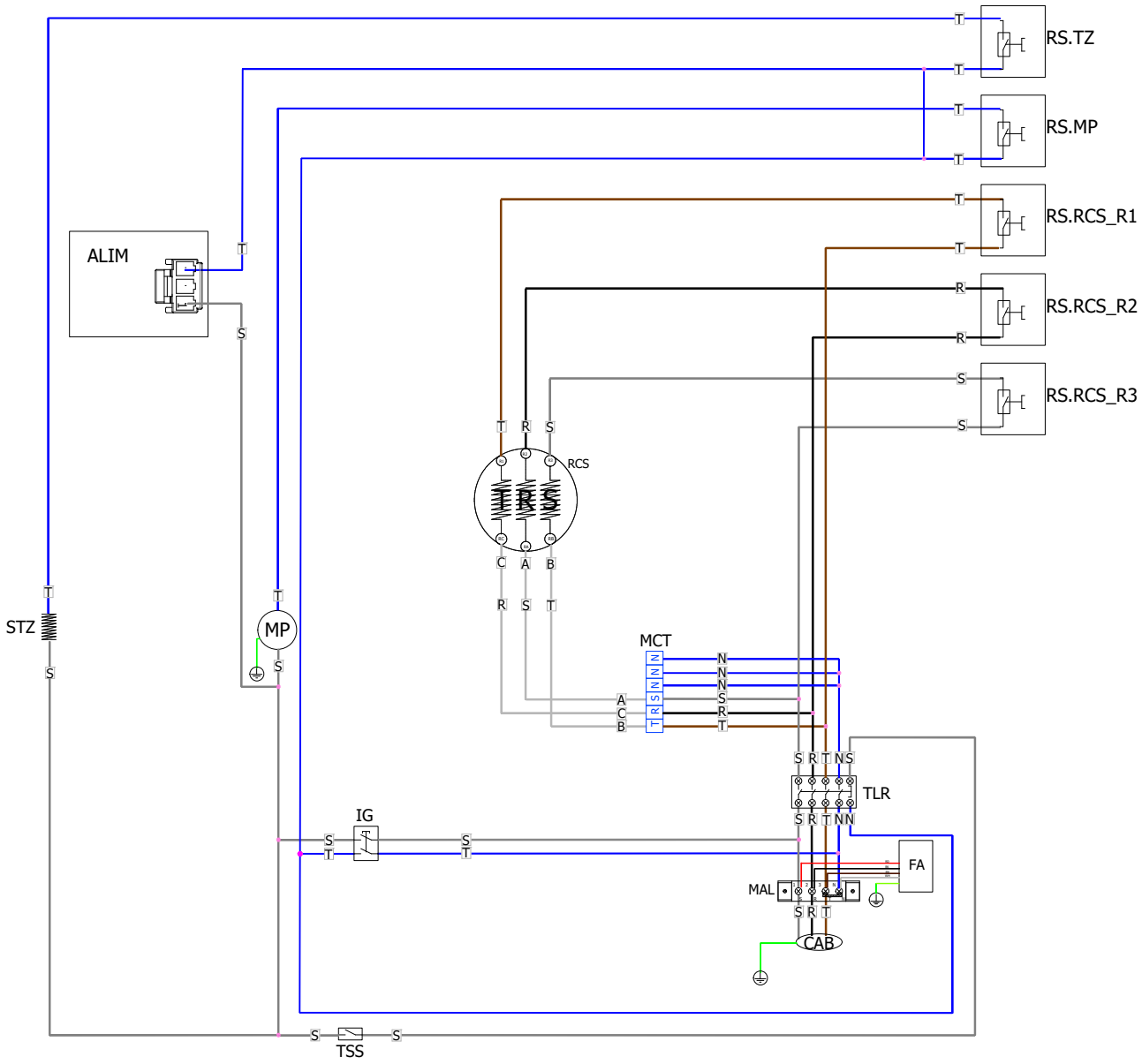
ALIM	Power supply
CAB	Power cable
F	Fuse
IG	Mainswitch
L1	Phase 1
L2	Phase 2
MAL	Power supply terminal block
MCT	Change phase terminal block
MP	Motor pump
N	Neutral
RCS	Boiler heating element
RS	Static relay
STZ	Cup warmer
TLR	Power contactor
TSS	Boiler safety thermostat

13.6 High voltage wiring diagram - Three-phase with Neutral



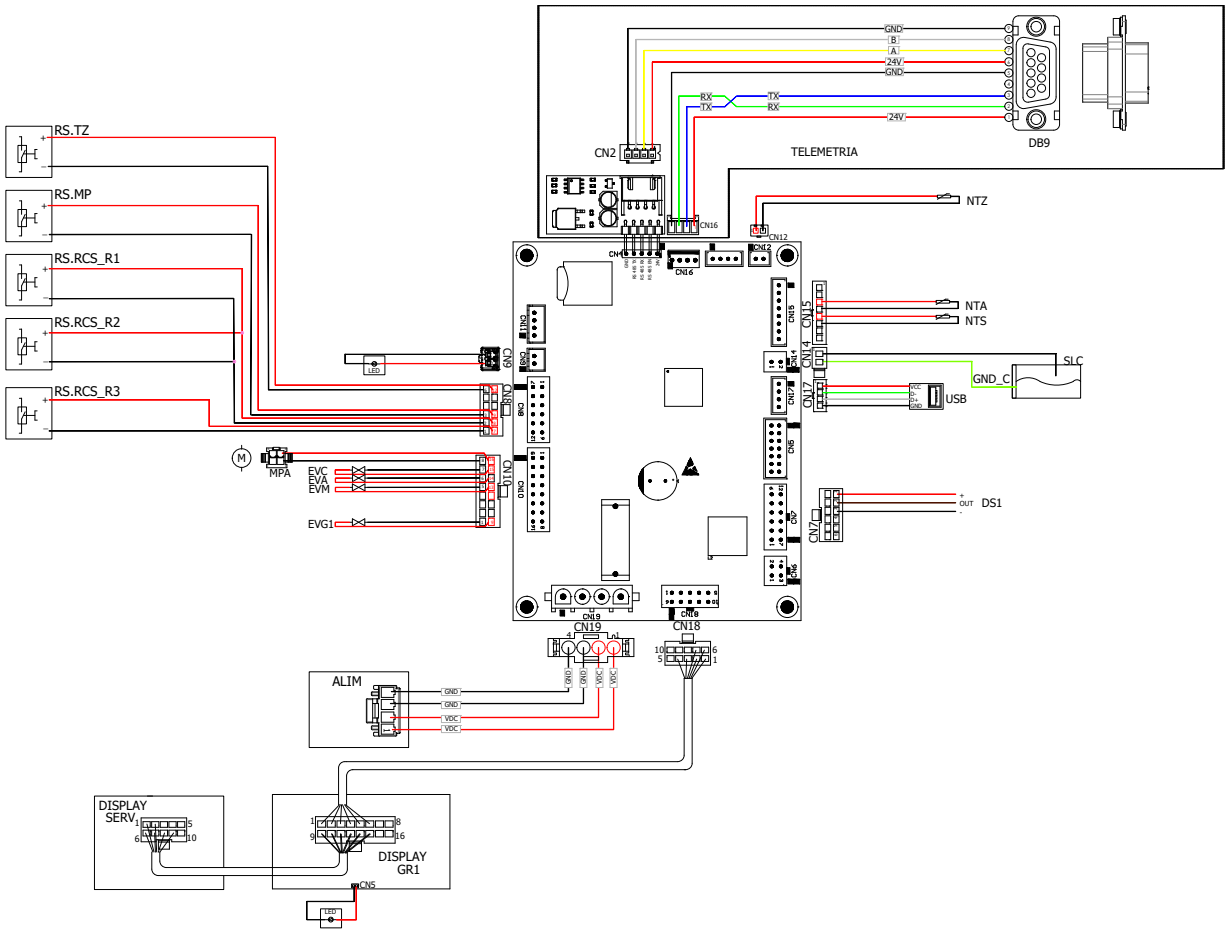
ALIM	Power supply
CAB	Power cable
FA	Power Supply Filter
IG	Mainswitch
MAL	Power supply terminal block
MCT	Change of tension's supply
MP	Motor pump
N	Neutral
R	Phase R
RCS	Boiler heating element
RS	Static relay
S	Phase S
STZ	Cup warmer
T	Phase T
TLR	Power contactor
TSS	Boiler safety thermostat

13.7 High voltage wiring diagram - Three-phase



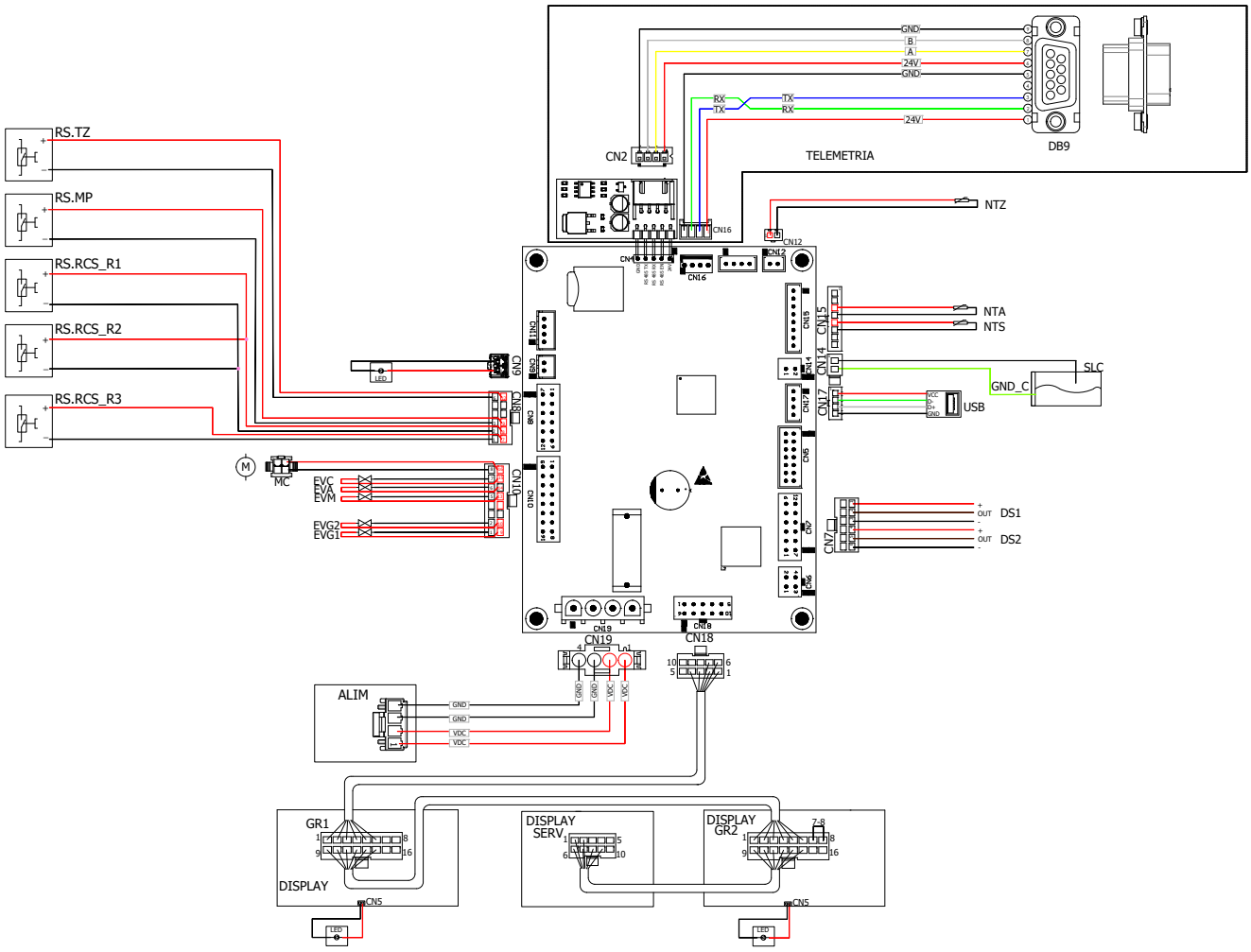
ALIM	Power supply
CAB	Power cable
FA	Power Supply Filter
IG	Mainswitch
MAL	Power supply terminal block
MCT	Change of tension's supply
MP	Motor pump
R	Phase R
RCS	Boiler heating element
RS	Static relay
S	Phase S
STZ	Cup warmer
T	Phase T
TLR	Power contactor
TSS	Boiler safety thermostat

13.8 Low voltage wiring diagram 1GR



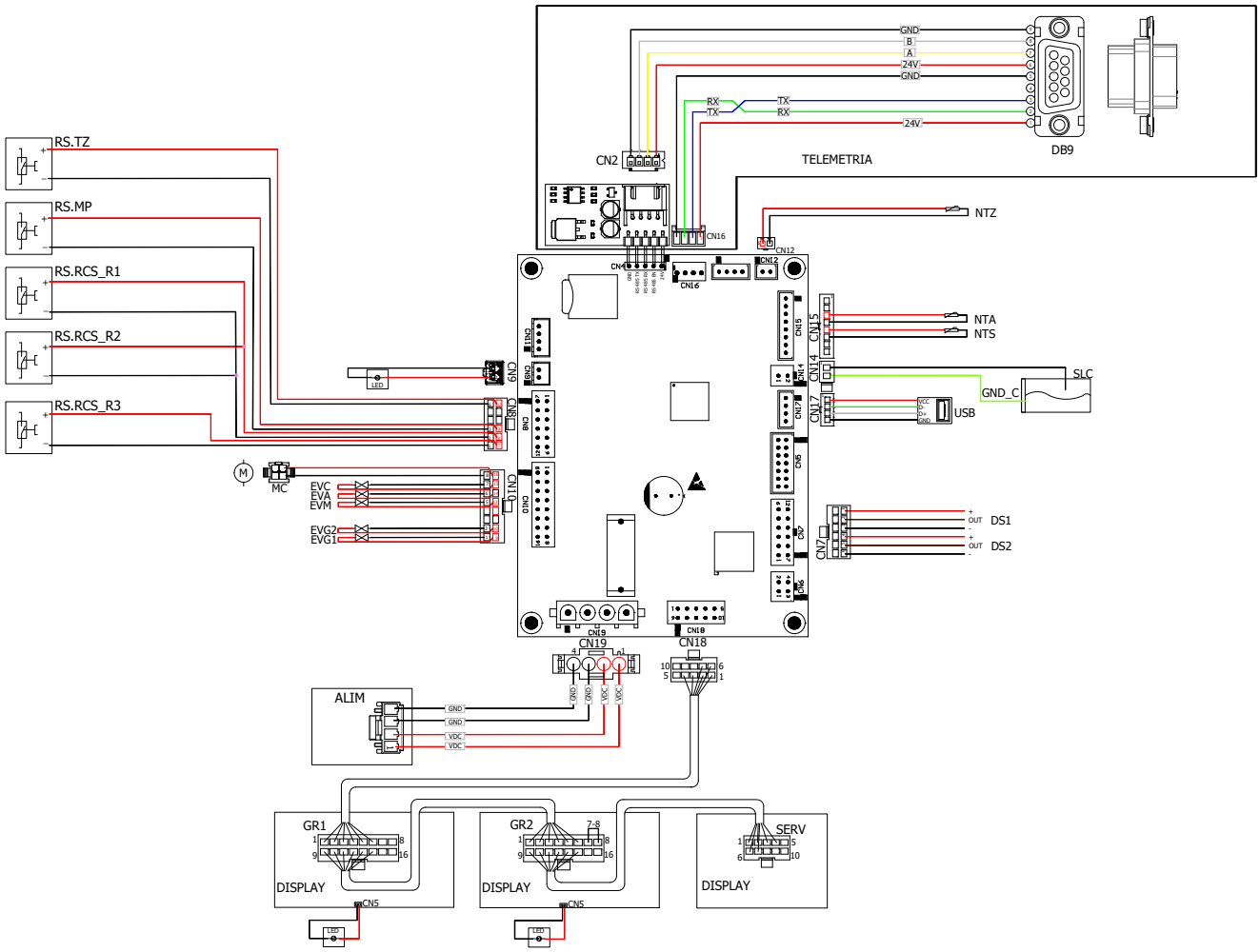
ALIM	Power supply
CN	Connector
DS	Volumetric dosing device
EVA	Autosteamer solenoid valve
EVC	Boiler fill solenoid valve
EVG	Group solenoid valve
EVM	Water mix solenoid valve
NTA	Coffee boiler NTC probe
NTZ	Cup warmer NTC probe
NTS	Boiler NTC probe
RS	Static relay
SLC	Boiler level probe
MC	Air Compressor Motor
LED	Led
USB	USB socket

13.9 Low voltage wiring diagram 2GR COMPACT



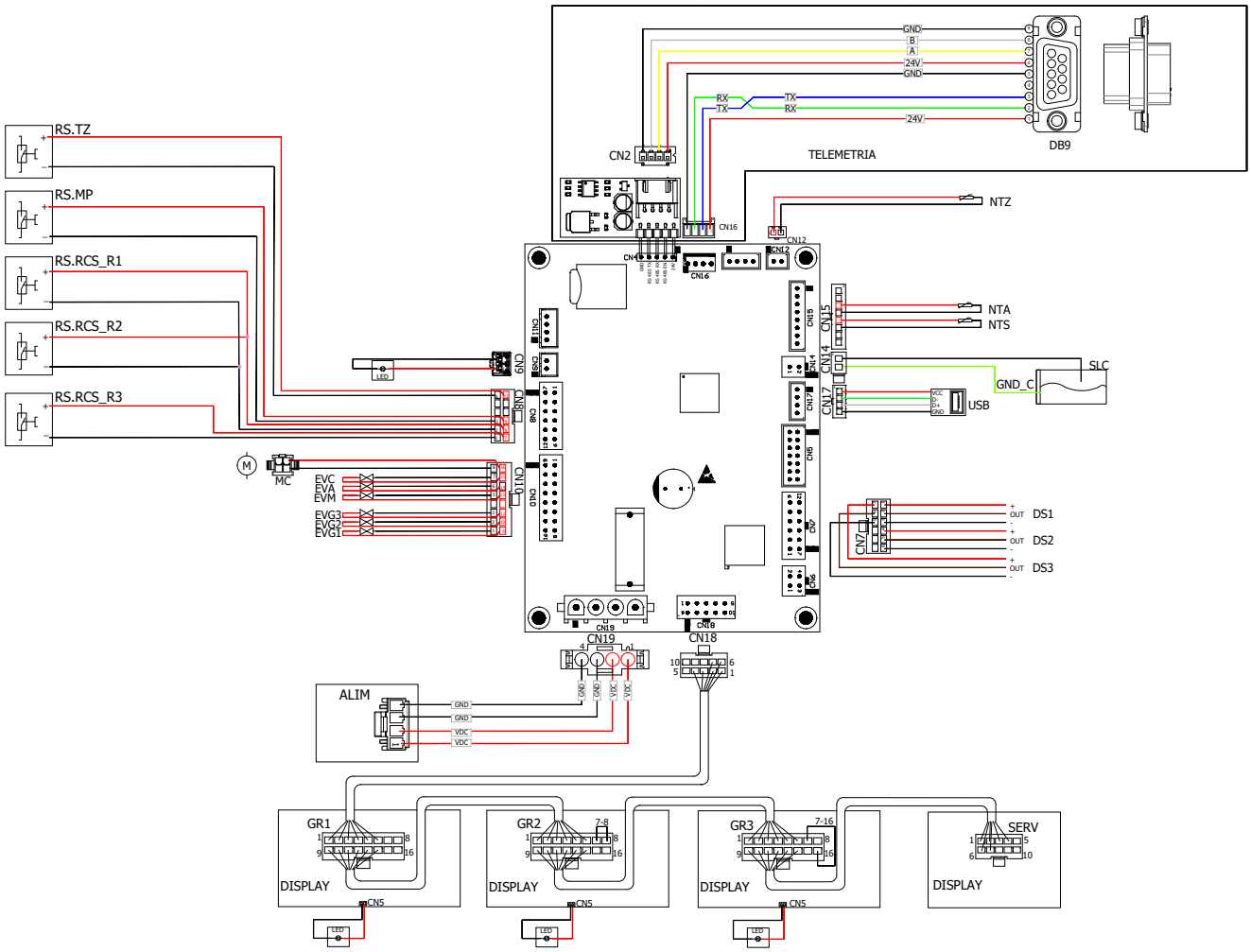
ALIM	Power supply
CN	Connector
DS	Volumetric dosing device
EVA	Autosteamer solenoid valve
EVC	Boiler charging solenoid valve
EVG	Group solenoid valve
EVM	Water mix solenoid valve
NTA	Coffee boiler NTC probe
NTZ	Cup warmer NTC probe
NTS	Boiler NTC probe
RS	Static relay
SLC	Boiler level probe
MC	Air Compressor Motor
LED	Led
USB	USB socket

13.10 Low voltage wiring diagram 2GR



ALIM	Power supply
CN	Connector
DS	Volumetric dosing device
EVA	Autosteamer solenoid valve
EVC	Boiler charging solenoid valve
EVG	Group solenoid valve
EVM	Water mix solenoid valve
NTA	Coffee boiler NTC probe
NTZ	Cup warmer NTC probe
NTS	Boiler NTC probe
RS	Static relay
SLC	Boiler level probe
MC	Air Compressor Motor
LED	Led
USB	USB socket

13.11 Low voltage wiring diagram 3GR



ALIM	Power supply
CN	Connector
DS	Volumetric dosing device
EVA	Autosteamer solenoid valve
EVC	Boiler charging solenoid valve
EVG	Group solenoid valve
EVM	Water mix solenoid valve
NTA	Coffee boiler NTC probe
NTZ	Cup warmer NTC probe
NTS	Boiler NTC probe
RS	Static relay
SLC	Boiler level probe
MC	Air Compressor Motor
LED	Led
USB	USB socket

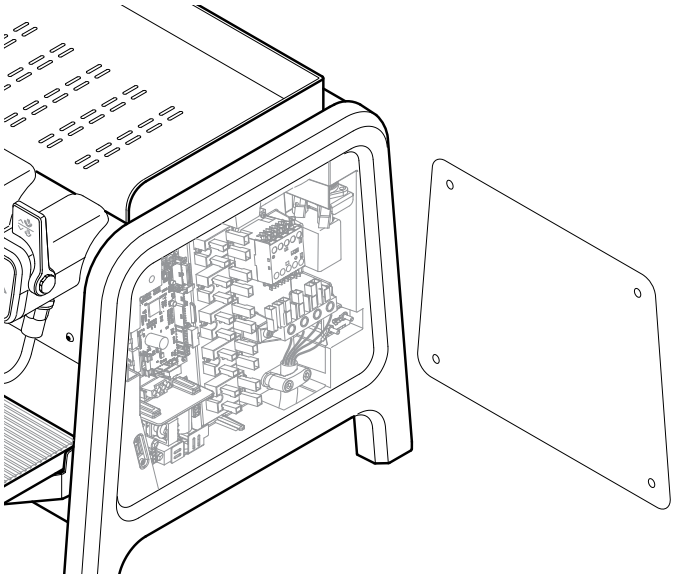
13.12 Change power supply

All the operations to change the power supply voltage of the machine must be carried out exclusively by a Technician specifically qualified and authorised by the Manufacturer.

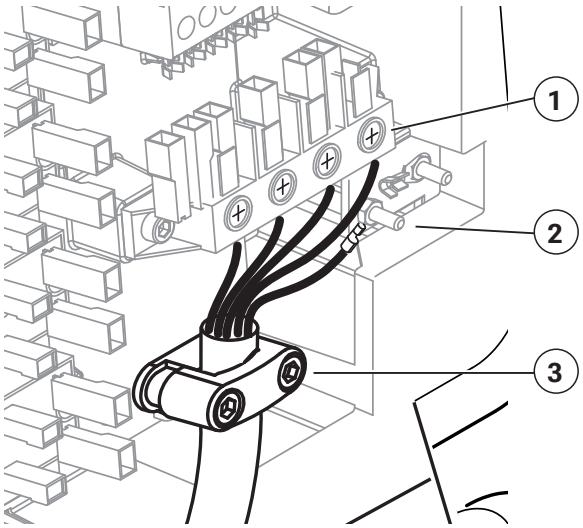
Here are the instructions for changing the connection from three-phase to neutral to single-phase.

For the three-phase gearbox without neutral, follow the same modes, but make the connections according to the Wiring Diagram on page 74.

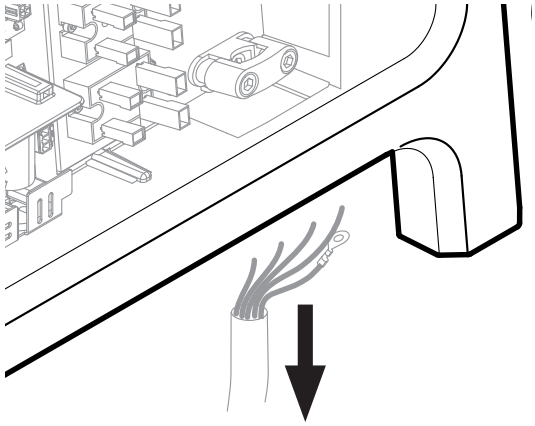
1. Unplug the machine.
2. Remove the panel on the right side, to access the electrical box (see para. 8.3.2 on page 47).



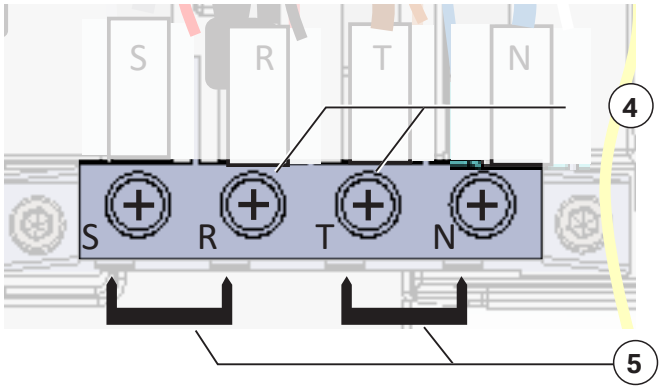
3. Loosen the screws of the terminal block **(1)**.
4. Remove the washer and nut and remove the grounding wire **(2)**.
5. Remove the two screws **(3)** and remove the grommet.



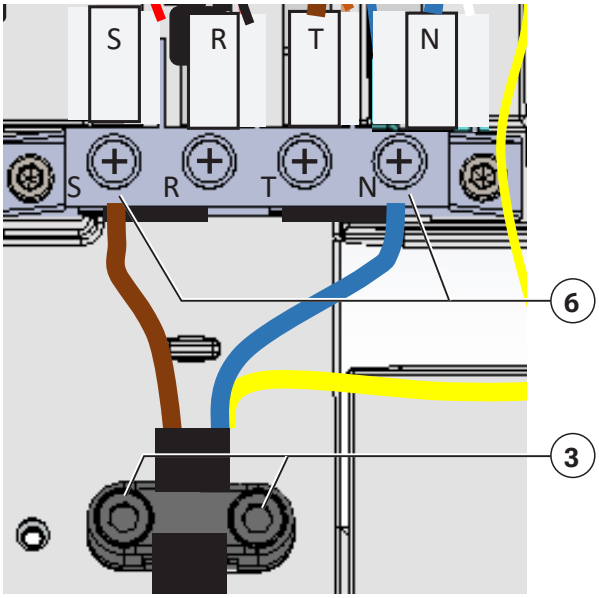
6. Pull the power cable out from underneath the machine.



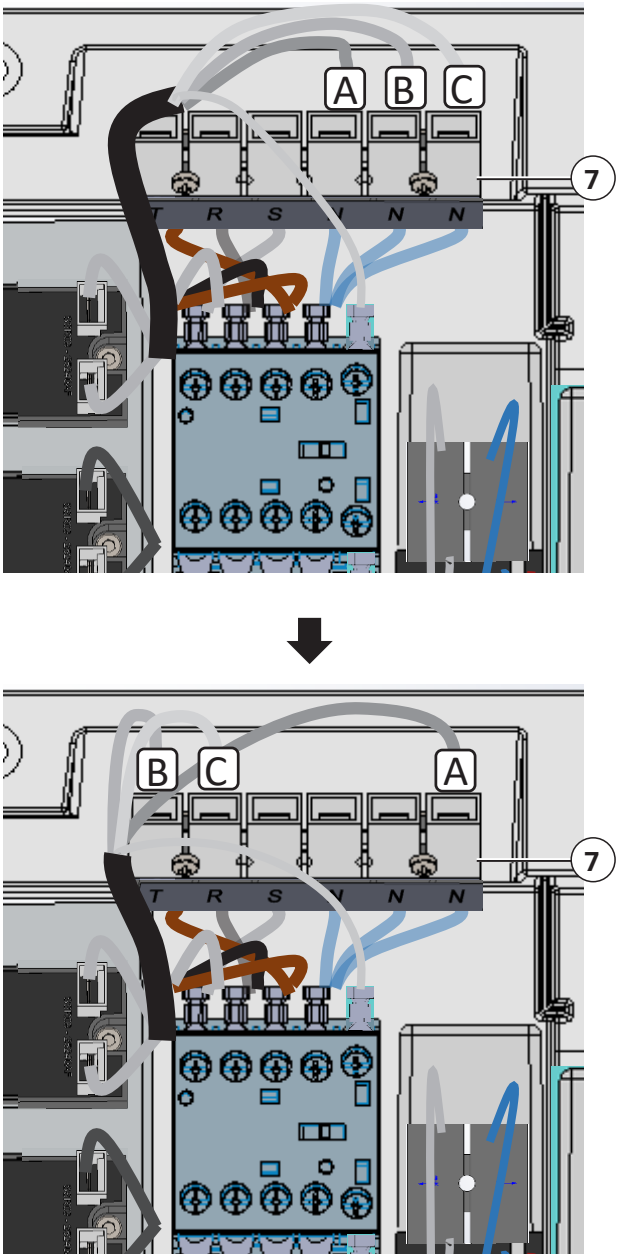
7. Install the 2 supplied metal jumpers **(5)** on the terminal block, securing them using the two center screws **(4)**.



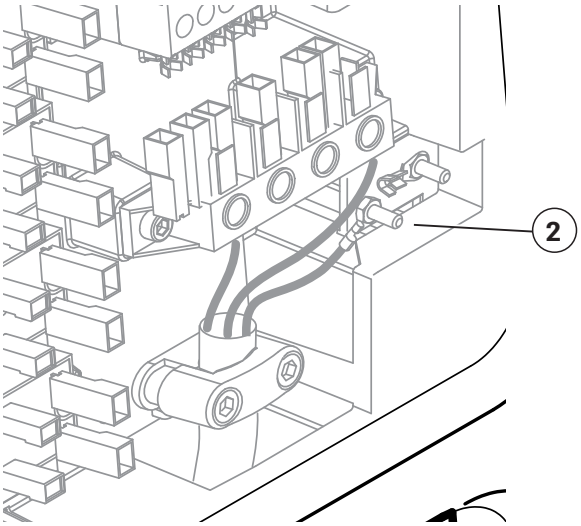
8. Thread in the new cable and connect the wires to the terminal block according to the Electrical Diagram shown on the next page. Connect the two terminals of the power cable to the outer ends of the terminal block **(6)** by securing them under the metal jumpers **(5)**. Ensure proper contact by twisting all the strands before inserting them into the terminal block. Replace the cable grommet and secure it with the screws **(3)**.



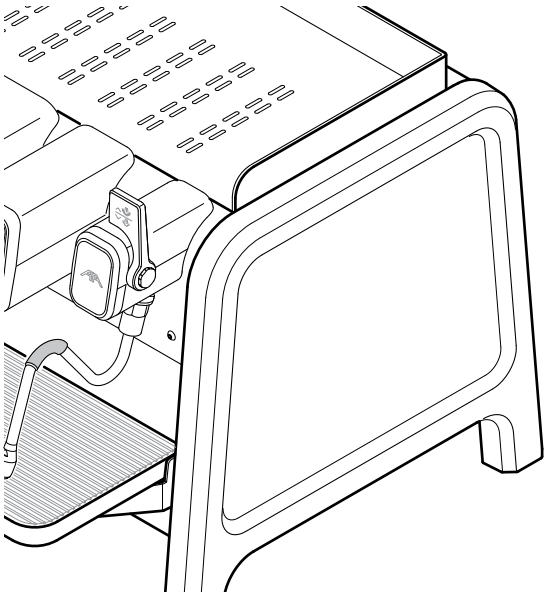
9. Change the position of the connectors on the terminal block **(7)** as shown in the Electrical Diagram below.



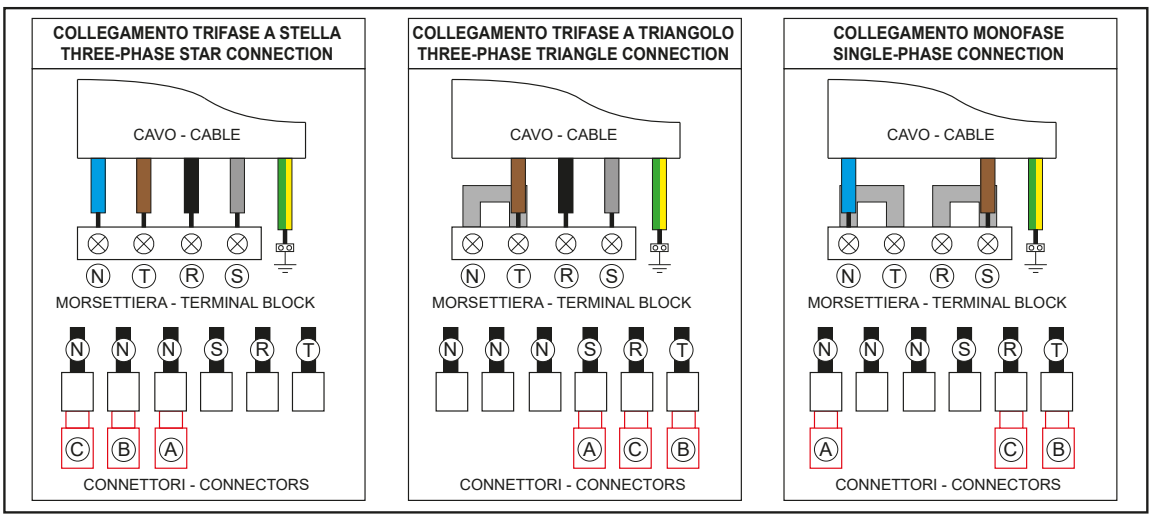
10. Place the new grounding wire by securing it using the washer and nut **(2)**.



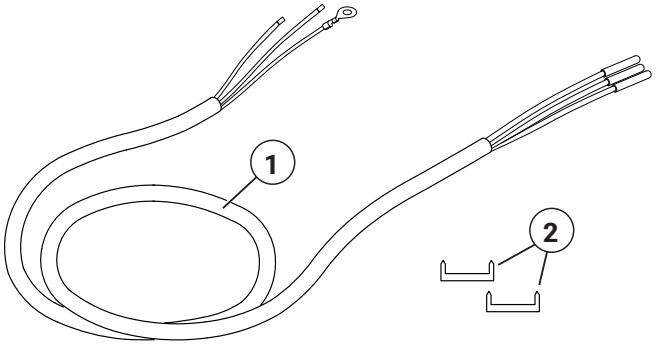
11. Close the machine, repositioning the panel on the right side.



Wiring diagram



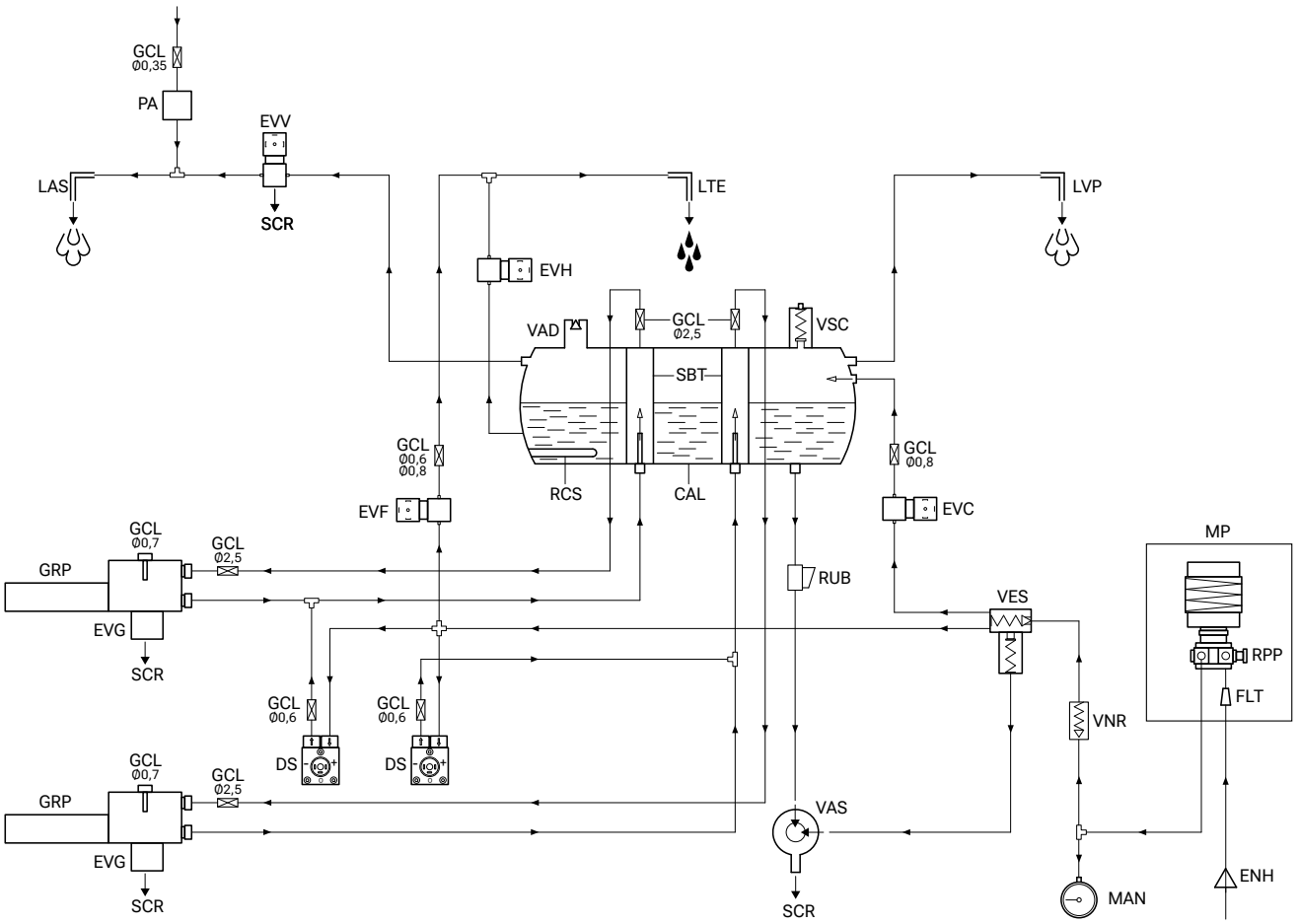
Kit for the coupling of single-phase:



CODE	CONNECTION KIT
83220010R	Single phase 2GR

To perform the power supply change use only the Kit supplied by the manufacturer.

14. HYDRAULIC DIAGRAM



CAL	Boiler
DS	Volumetric dosing device
ENH	Water inlet
EVC	Boiler charging solenoid valve
EVF	Solenoid valve regulate hot water
EVG	Group solenoid valve
EVH	Hot water solenoid valve
EVV	Steam solenoid valve
FLT	Water inlet filter
GCL	Gicleur
GRP	Dispensing group
LAS	Autosteamer nozzle
LTE	Hot water nozzle
LVP	Steam nozzle
MAN	Pressure gauge
MP	Motor pump
PA	Air pump
RCS	Heating unit Boiler

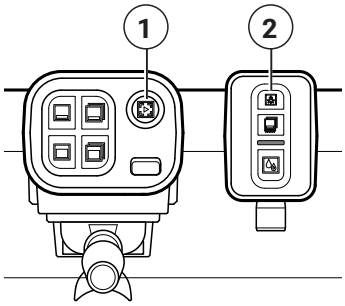
RPP	Pump pressure adjustment
RUB	Tap
SBT	Heat exchanger
SCR	Drain
VAD	Negative pressure valve
VAS	Drain tray
VES	Expansion valve
VNR	Non-return valve
VSC	Safety valve

15. COMMUNICATION WITH TILL SYSTEMS

If this function is activated, the dispensing of dosed coffee is subject to the consent of the cash system connected to the machine via the RS232 port.

The keys **(1)** are inhibited in 'continuous' mode, and only act as STOP.

Or, if programmed to dispense for a time of less than 5 seconds, only one dispense is allowed between one dosed coffee and the next.



The hot water key **(2)** also only has a dosed function and the delivery cannot be prolonged by holding it down.

The numbering associated with the dosed keys to the cash system is defined by the 'product code' parameter associated with each key. This parameter, a numerical value from 1 to 99, represents the code of the product requested from the payment system for sale. The default value starts from 1 for the first button of group 1, increasing by one unit for the other dosed buttons, including hot water.

This parameter can be changed either via the HMI interface or imported parameter file. If null, this means that the button is free to dispense regardless of whether it is enabled by the cashier (standard operation).

The activation of cash system operation takes place in automatic mode during the execution of the automatic machine configuration procedure described above. In this case, the machine makes several attempts to establish communication with the till (e.g. 5 at a distance of 1 second from each other). If the till is detected, the relevant management is activated permanently.

If there is a touchscreen display, the status of the connection to the till system is represented by the icon always present on the main page.

When a dispensing button is pressed and a request is made to the till, the following happens:

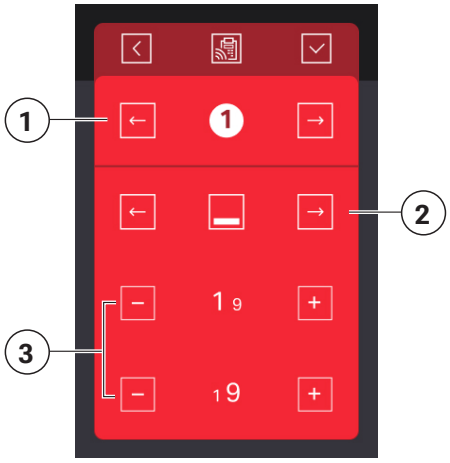
1. When pressed, the current test condition is activated, all LEDs on the relevant keypad go out. In the case of a service keypad, only the water key goes off.
2. When the reply arrives from the till, if there is consent, dispensing will start with the selected key lit as foreseen for this condition; if, on the other hand, there is not enough credit (also applies if there is no reply from the till) the selected key will flash quickly 3 times.

If the relevant parameter is activated, information related to the cash system is displayed in the info panel: system type, version and level. E.g. **CSI V.1.00 L1**.

Should the connection fail, this information disappears, indicating: **--- V-.-- L-.**

In this way it can be seen whether the connection to the loudspeaker is correctly established or not.

Communication parameters with the till can be configured via the display:

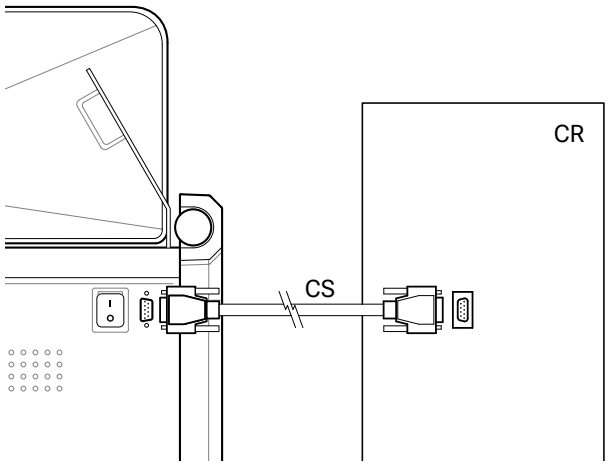


1 *selected group;*
2 *dose button in programming;*
3 *selection code setting keys.*

Once the screen is open, set the codes for all drinks in the various programming groups.

The codes will then be used for communication between the machine and the till system.

- press key , to confirm and exit the menu;
- to exit without saving, press key.



CR	Till
CS	Serial connection cable code 22556004.

Connection diagram

In the presence of technical credentials or higher, disbursements must still be allowed regardless of the state of the till, to allow the technician to repair and verify the correct functioning of the machine.

CMA MACCHINE PER CAFFÈ S.R.L.
Via Condotti Bardini, 1 - 31058 SUSEGANA (TV) - ITALY
Tel. +39.0438.6615 - Fax +39.0438.60657
www.astoria.com - info@astoria.com

Cod. 02010000TE - Rev. 00 - 01/2025