

WEGA MACCHINE PER CAFFÈ S.r.l.

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2006/42/CE Direttiva macchine

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EVD

ESPRESSO COFFEE MACHINE

Use and maintenance manual. TECHNICIANS' instructions.

EN

ORIGINAL INSTRUCTIONS



IMPORTANT: Read carefully before use - Store for future reference

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ESPRESSO COFFEE MACHINE

Use and maintenance manual. Technicians' instructions.

I. SAFETY PRECAUTIONS

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

Qualified Technicians must be properly trained and informed in order to connect and assemble the machine; use special equipment (hoists, forklifts, etc.); perform routine or unscheduled maintenance, as well as work on residual risks resulting from these operations and while the machine is in use.

A Qualified Technician must be able to apply all good practices in compliance with food hygiene principles.

I.II SAFETY PRECAUTIONS

Even though the machine is provided with all safety devices required to eliminate possible risks for the User, 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.

It is necessary to pay attention to residual risks present during the operations described below, and that cannot be neutralised:

I.III TRANSPORT AND HANDLING



Hand crushing hazard

Handling operations must always and exclusively be performed by qualified personnel 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
	Equipotential hazard
	High temperature hazard
	Do not perform maintenance on moving components

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

This appliance is to be considered completely safe only when it is connected to an efficient earthing system which complies with safety standards.

The electric system must be equipped with a suitable GFCI (circuit breaker). It is important to have these requirements checked. If in doubt, have the system carefully checked by qualified personnel. The manufacturer cannot be considered responsible for any damage caused by an inadequate electric system.

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

Perform the installation with the machine disconnected from the power supply via the main switch.

I.V COMMISSIONING

	Electrical hazard
	High temperature hazard

When using the electrical appliance, several safety standards must be observed:

- Do not touch the appliance with wet or damp hands or feet;
- Do not use the appliance barefooted;
- Do not pull the power cord to disconnect the appliance.

Some parts of the machine can reach high temperatures:

- 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.

I.VI MAINTENANCE AND CLEANING



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

	Electrical hazard
	High temperature hazard

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

- Do not carry out maintenance with 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.



Any unauthorised tampering with any parts of the machine renders any guarantee null and void.

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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 operating 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 Qualified 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 a 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 CE 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).

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;
- Injury, including serious injury (in some cases even death);
- Loss of the guarantee;
- The Manufacturer waiving liability.



DANGER 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.

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 Qualified 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.

Moreover, when substantial changes have been made to the already installed machine involving the modification of one or more chapters of the Instruction Manual, the manufacturer will send the Qualified Technicians the chapters affected by the changes or a revision of the entire Manual.

It is the Qualified Technicians' responsibility, to replace the old document with the new revision.

The Manufacturer is responsible for the Italian content. Translations cannot be fully verified; therefore, in the event of inconsistency, users can refer to the Italian version or if necessary, contact the Manufacturer who will make the appropriate changes.



If the Manual should become illegible or otherwise hard to consult, Qualified Technicians are obliged to request a new copy from the Manufacturer before carrying out any work 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 Qualified Technicians are responsible for complying with the instructions contained in this Manual.

Should any incident occur as a result of incorrect use of these recommendations, the Manufacturer declines any liability.

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

1.4 Recipients

This Manual is intended for the Manufacturer's Qualified Technicians, to whom the following operations pertaining to the machine are assigned:

- Transport and handling;
- Storage;
- Installation;
- Commissioning;
- Maintenance;
- Cleaning;
- Spare part replacement;
- Emergency operations and faults;
- Decommissioning;
- Disassembly;
- Disposal.

RECIPIENT QUALIFICATIONS

The machine is intended for a professional non-generalised use, therefore the Qualified Technicians 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 from 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 or persons in charge of operating and periodically maintaining and cleaning the machine as indicated in the user manual.

Manufacturer's Qualified Technician

A specialist, specially trained and qualified to connect, install and assemble the machine; use special equipment (hoists, forklifts, etc.); perform routine or unscheduled maintenance which would be particularly complicated or potentially dangerous if performed by the User.

User or Qualified Technician Qualifications

Minimum level of skills an operator must have to carry out the operation described.

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

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

1.5.2 PICTOGRAMS

PICTOGRAM	DESCRIPTION
	Electrical hazard
	Equipotential hazard
	High temperature hazard
	Hand crushing hazard
	Do not perform maintenance on moving components
	The use of protective gloves is mandatory
	The use of eye protection is mandatory
	The use of safety shoes is mandatory
	It is mandatory to read the documentation

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.

Any work carried out on the machine electronics when the machine is still live will automatically invalidate any guarantee.

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 EC 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 EC DECLARATION OF CONFORMITY provided with the machine.

This machine is designed and constructed to operate only after being properly connected to a hydraulic and electrical network and placed so as to be sheltered from atmospheric agents.

2.3 Customer service

WEGA MACCHINE PER CAFFÈ S.r.l.
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2.4 Intended use

The espresso coffee machine has been designed to professionally prepare hot drinks 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 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 listed in para. 2.4, 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. Only operations discussed in this document are allowed; 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 user 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 line is installed.

The user must know how all the machine's devices work.

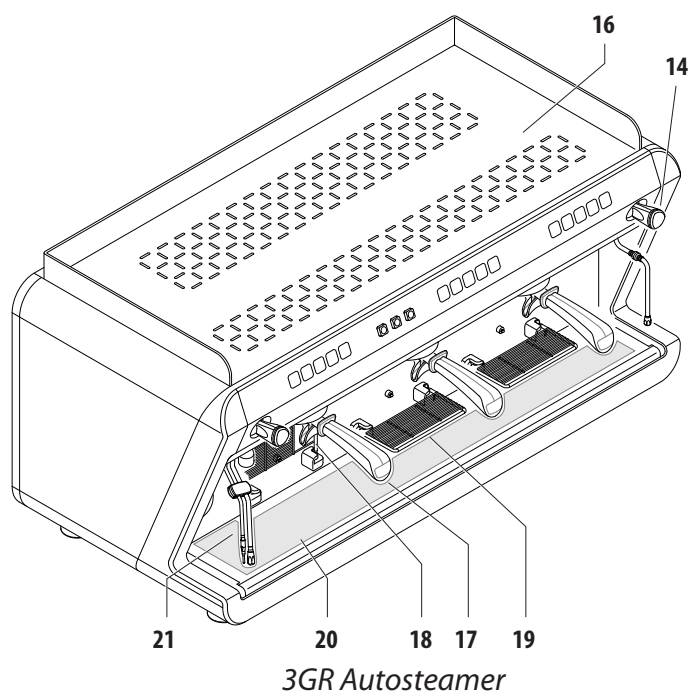
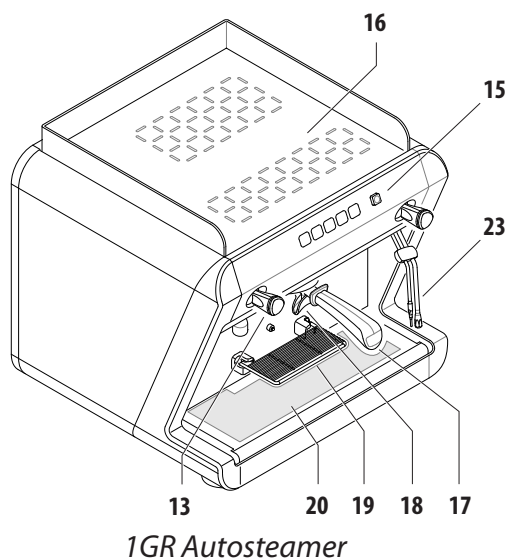
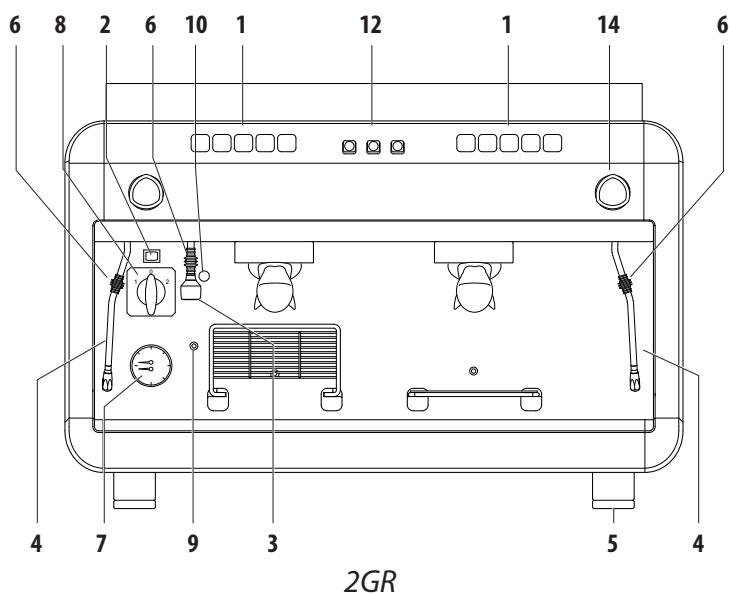
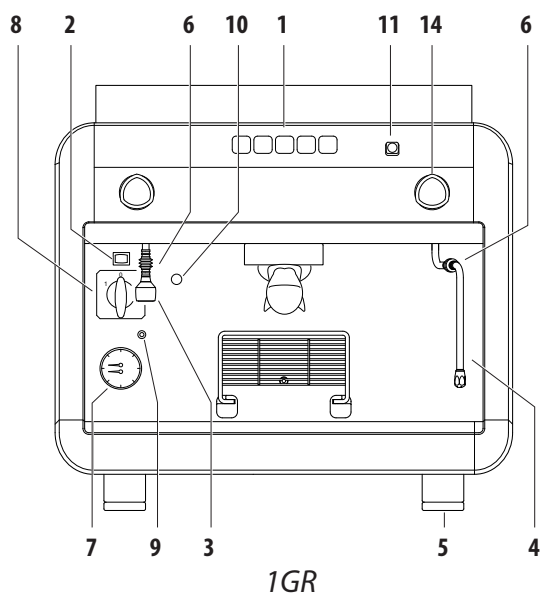
They must also have fully read this Manual.

Maintenance work must be performed by qualified technicians after the machine has been properly assembled.

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

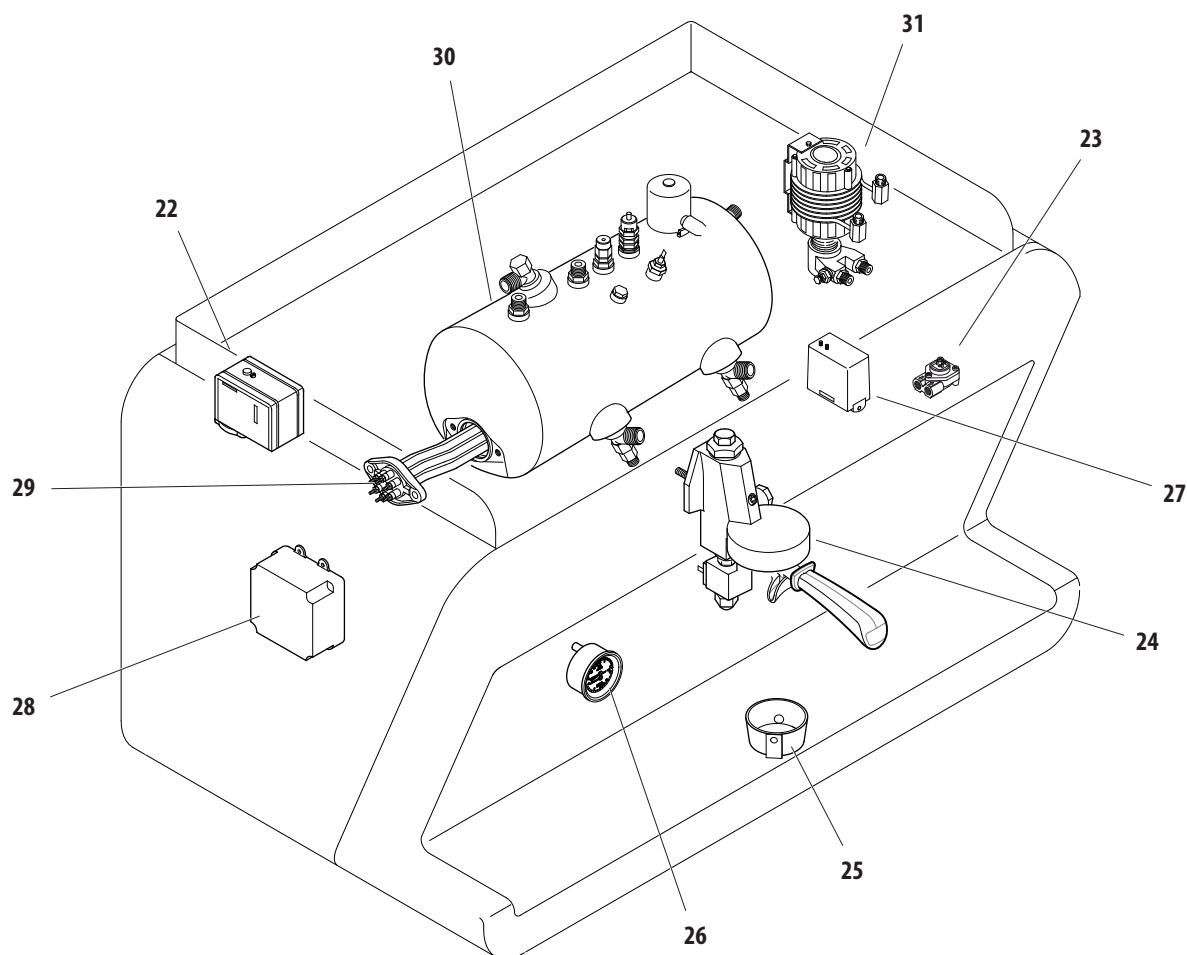
2.5 Machine diagram

1. Push-button panel.
2. Work surface LED switch.
3. Hot water dispensing spout.
4. Steam nozzle.
5. Adjustable foot.
6. Scald protection.
7. Pressure gauge.
8. Power switch.
9. Boiler level warning light.
10. Power indicator light.
11. Manual dispensing button (1 GR).
12. Service push-button panel (2/3 GR).
13. Hot water knob.
14. Steam knob.
15. Autosteamer button (1 GR).
16. Cup warmer shelf.
17. Filter holder.
18. Coffee dispensing spout.
19. Raised cup grille.
20. Cup holder grille.
21. Steam wand nozzle (optional)..



2.6 Internal components

- | | |
|-------------------------------|----------------------------------|
| 22. Pressure switch. | 27. Air pump control unit (18V). |
| 23. Volumetric dosing device. | 28. Electronic control unit. |
| 24. Dispensing group. | 29. Electric heating element. |
| 25. Drain tray. | 30. Heating unit. |
| 26. Pressure gauge. | 31. Motor pump. |



2.7 Push button

1 Espresso	2 Espressos	1 Long coffee	2 Long coffees	Steam wand (2-3GR)	Stop / Programming	Manual dispensing	Hot Water (2-3GR)	Steam wand (1GR)

2.8 Data and CE marking

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

N° groups		1	2	3
Power	120 V UL	1.900 W	-	-
	230 V UL	-	3.750 W	5.350 W
	220/240 V	2.750 W	3.650 W	5.150 W
	380/415 V	2.750 W	3.650 W	-
Dimen- sions	L	565 mm	745 mm	985 mm
	P	475 mm	475 mm	475 mm
	H	511 mm	511 mm	511 mm
Max gross weight		47 kg	77 kg	90 kg
Safety valve calibration		0.19 MPa (1.9 bar)		
Heating unit operating pressure		0.09 - 0.11 MPa (0.9 - 1.1 bar)		
Mains water pressure		0.15 - 0.6 MPa max (1.5 - 6 bar max)		
Coffee dispensing pressure		0.9 MPa (9 bar)		
Working environment temperature		5 - 30 °C		
Sound pressure level		< 70 dB		

According to Directive 2006/42/EC, the machine bears a CE marking, meaning that the Manufacturer declares, under his own responsibility, that the unit is safe for people and property.

The CE nameplate which provides the identification data is affixed to the base of the frame, under the drain tray. Below is an example of a nameplate:

MARCHIO COMMERCIALE			CE
WEGA MACCHINE PER CAFFÈ S.r.l. Via C. Bardini, 1 SUSEGANA (TV) - ITALY Tel. +39.0438.1799700 Fax +39.0438.1884890			
S/N:	Mod.	Y	
V	W	Hz	
MADE IN ITALY			

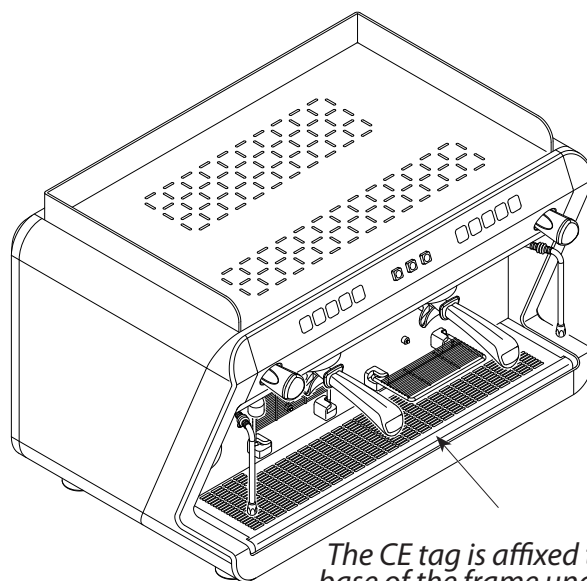
When contacting the Manufacturer, always provide the following information:

- 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 damage the nameplate. If this occurs, replace it as a matter of urgency, dealing exclusively through the Manufacturer.

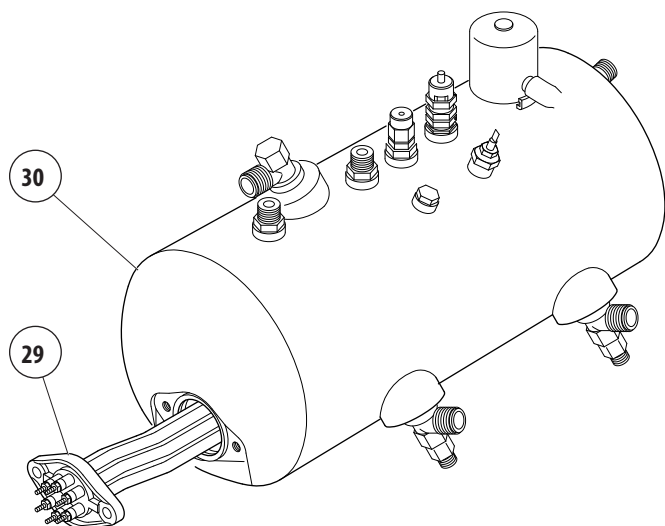


The CE tag is affixed to the base of the frame under the drain pan

2.8.1 Heating unit

The heating unit (30) is fitted with an internal heat exchanger which is 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.

The heating unit is electrically heated by an electric heating element immersed in the water (29).



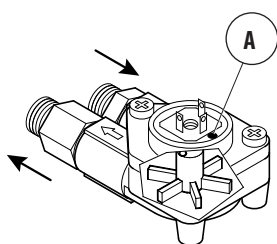
2.8.2 Volumetric dosing

The volumetric dosing device 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 (A) indicates that the electrical impulse has been sent from the dosing device to the control unit.



2.8.3 Pressure relief safety valve

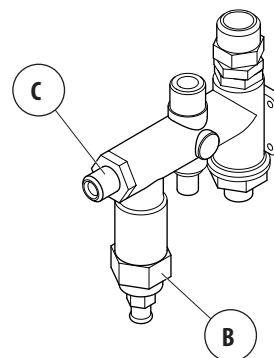
The pressure relief safety valve has a calibration of 0.19 MPa (1.9 bar) in order to ensure that the pressure in the steam heating unit does not exceed 0.21 MPa (2.1 bar). Should a fault occur, the capacity of the valve is such as to be able to eliminate all the excess pressure in the heating unit.



2.8.4 Multifunctional dispenser

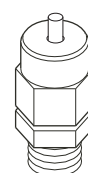
It consists of an expansion valve and an internal check valve.

- **Expansion valve (B):** 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).
- **Internal check valve (C):** Its function is to prevent water from backflowing into the machine's internal hydraulic circuit from the heat exchangers.



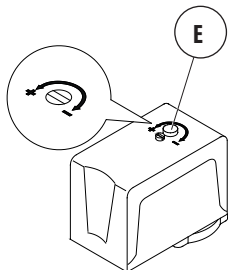
2.8.5 Negative pressure valve

The purpose of the negative pressure valve 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.



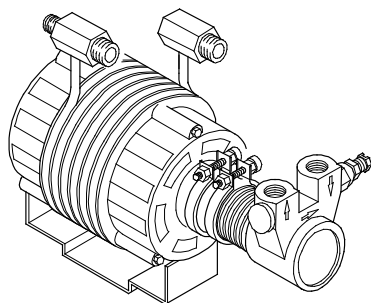
2.8.6 Pressure switch

The pressure switch makes it possible to control the heating unit pressure by activating or bypassing the heating element in the heating unit. Any pressure switch calibration procedures can be carried out with the machine in operation by turning the screw **(E)** located on the component.



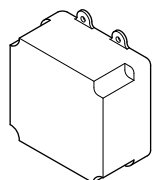
2.8.7 Pump

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



2.8.8 Electronic control unit

The electronic control unit electronically controls the coffee dose by feeding the water through the dosing device and checking the water inflow in the heating unit.

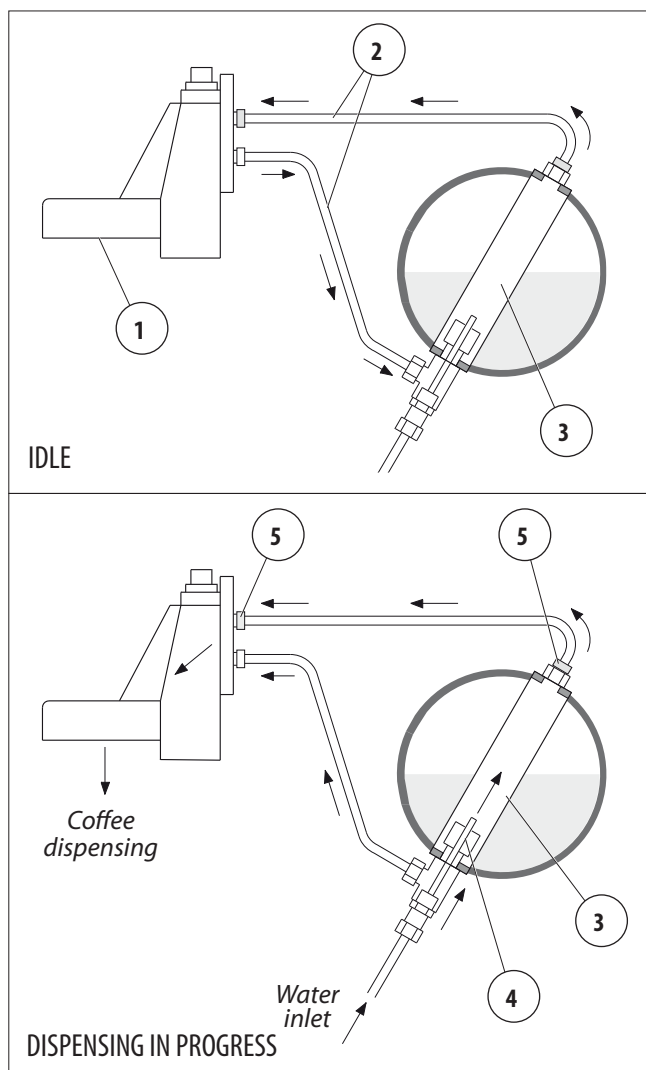


2.8.9 Dispensing group

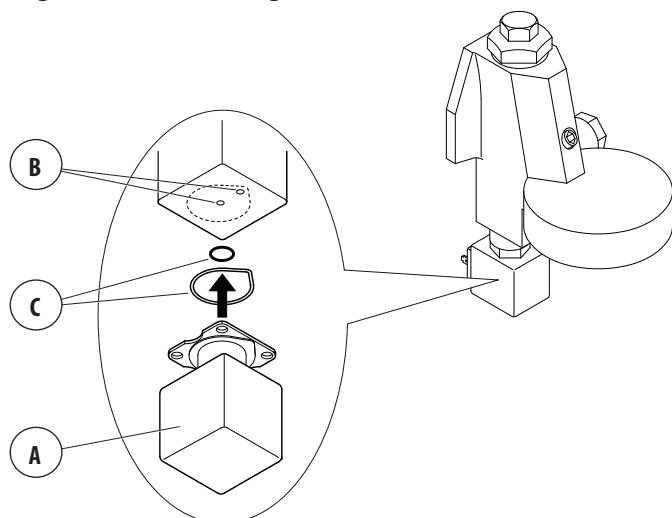
The dispensing group **(1)** is heated by a thermosiphonic circuit **(2)** connected to the heat exchanger **(3)**. The same water is used when dispensing coffee, thus ensuring that all coffees are the same temperature:

- The solenoid valve and the pump are activated in order to send cold water into the exchanger **(3)** through the injector **(4)**;
- The heating unit water is carried from the exchanger **(3)** to the group **(4)** for dispensing;
- The pump allows the water flow pressure to increase to 0.8 - 0.9 MPa (8 - 9 bar) for dispensing.

The injector **(4)** and flow reducers **(5)** are important components for the dispensing group's operation. To increase the coffee extraction temperature, remove the flow reducers **(5)** or replace them with ones that have a bigger diameter. To decrease the temperature, replace them with ones that have a smaller diameter. These operations should be carried out when the machine has been switched off and has cooled down: always replace the seals.



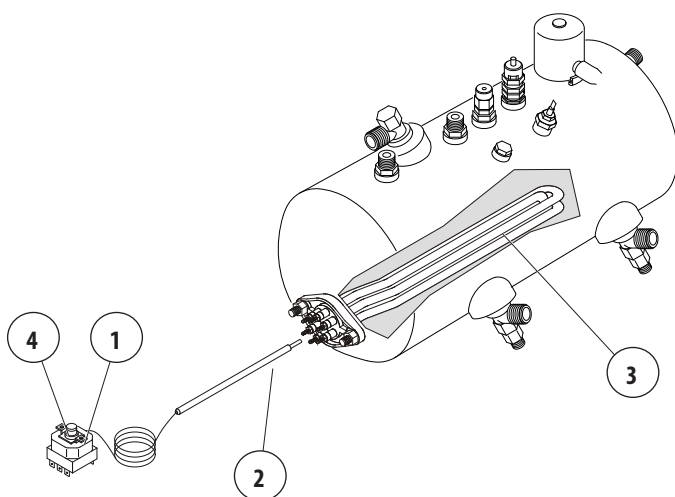
When replacing the solenoid valve **(A)**, make sure that it is positioned correctly. The assembly must be as such that the two holes **(B)** on the body of the group are aligned with the two gaskets **(C)** on the solenoid valve.



2.8.10 Safety thermostat

The thermostat prevents any damage occurring to the electrical heating element if there is no water in the heating unit.

The thermostat **(1)** is located by the bulb **(2)** in the middle of the heating elements **(3)**. 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 **(4)**. However, before starting the machine up again, identify what prevented the water from being fed into the heating unit.

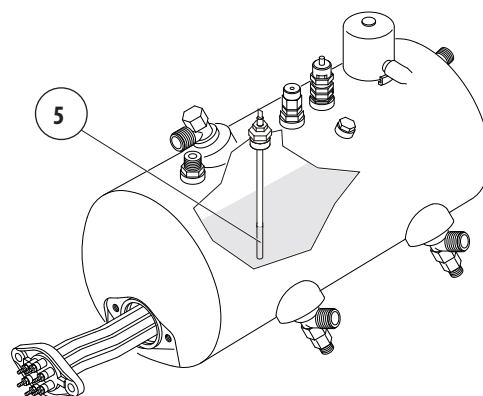
2.8.11 Automatic Water Entry

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 **(5)**, composed of a stainless steel rod;
- An electronic control unit;
- A hydraulic circuit with a solenoid valve controlled by the regulator.

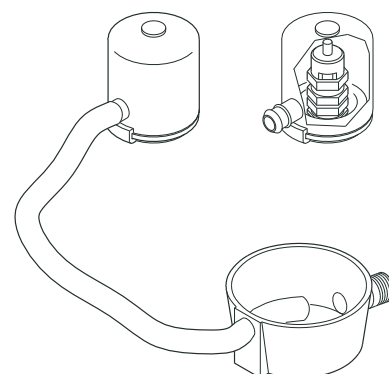
The electronic control unit controls the level of water in the heating unit. When the level of water in the heating unit drops, the contact with the probe is interrupted. The control unit sends an impulse to the inlet solenoid valve and the motor pump, which are then activated until the normal level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



2.8.12 Overflow device

The cover installed on the pressure relief valve 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, via a special hose.



2.8.13 Steam wand

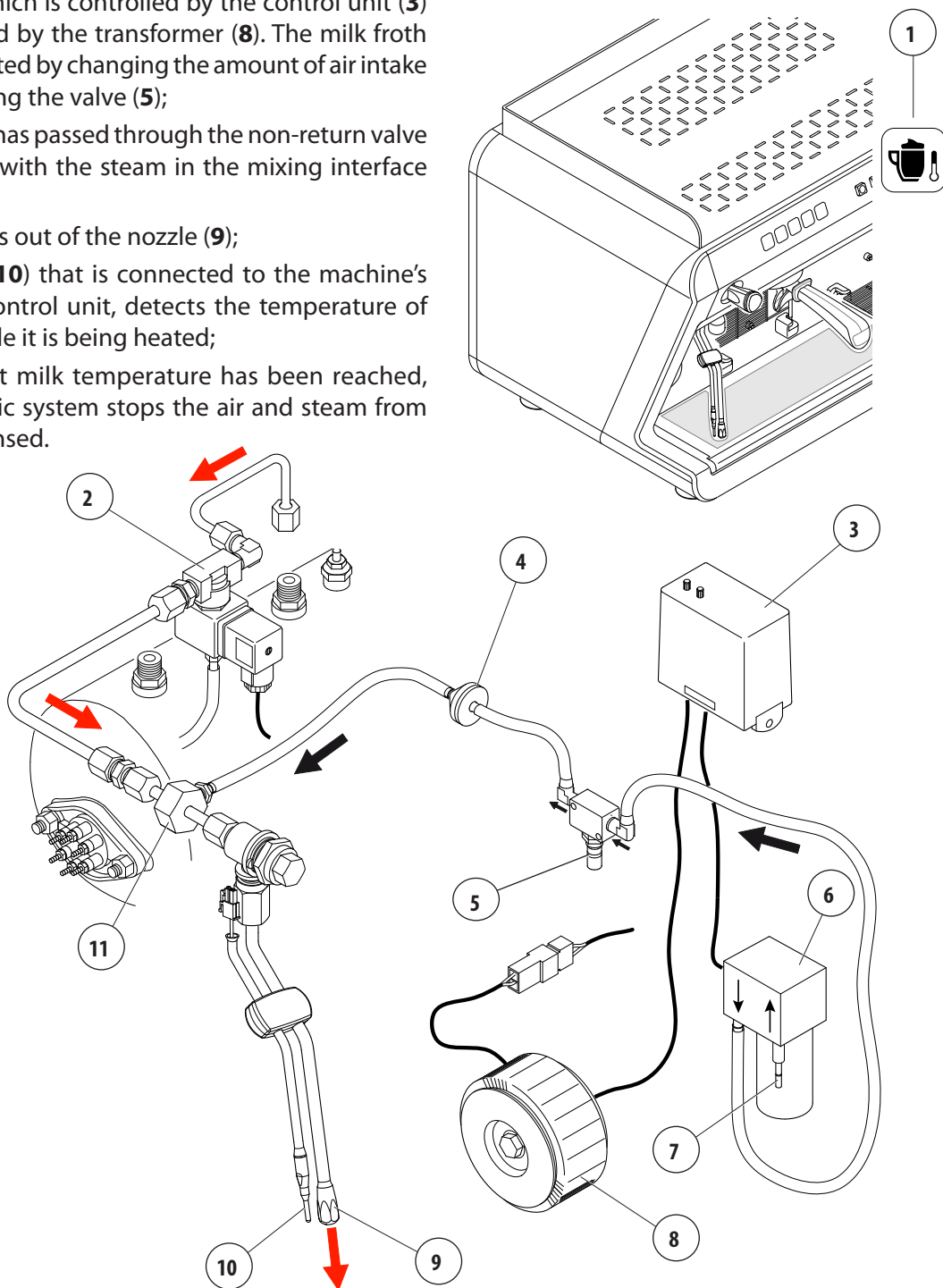
The steam wand nozzles automatically heat or froth milk in a programmed manner.

The operating principle is listed below:

- Press the frothed milk or heated milk button (1);
- The solenoid valve opens (2) which consequently allows the steam to flow from the heating unit to the nozzle (9);
- The system simultaneously activates the air suction pump (6) which is controlled by the control unit (3) and powered by the transformer (8). The milk froth can be adjusted by changing the amount of air intake when opening the valve (5);
- After the air has passed through the non-return valve (4), it mixes with the steam in the mixing interface (11);
- Steam comes out of the nozzle (9);
- The probe (10) that is connected to the machine's electronic control unit, detects the temperature of the milk while it is being heated;
- Once the set milk temperature has been reached, the electronic system stops the air and steam from being dispensed.



The control unit (3) is set to 18 V by default.



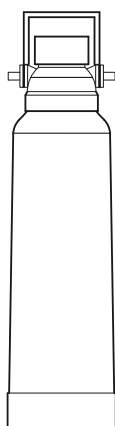
2.8.14 Water filter for the water mains

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 traces of 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.

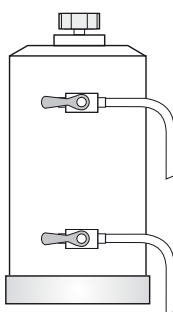


To use and maintain the water filter, follow the instructions provided in para. "8.5 Water filter" on page 34.

2.8.15 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 Water softener regeneration" on page 36.

3. TRANSPORT AND HANDLING

3.1 Safety precautions



Carefully read the instructions provided in chapter "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
	The use of safety shoes is mandatory

3.3 Weight

MODEL	1 GR	2 GR	3 GR
Maximum gross weight	47 kg	77 kg	90 kg

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.

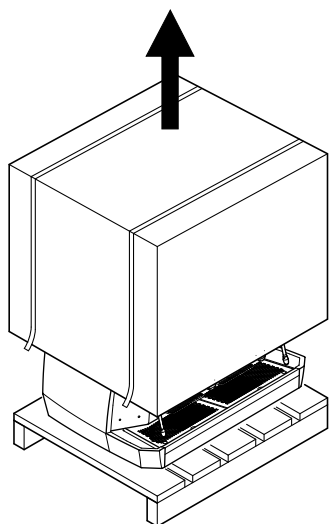


It is very important to check that the maximum load capacity of each piece of lifting equipment is at least equal to the weight of the loads to be lifted, to which must be added the safety margins which are required by current standards.

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) the CARRIER and MANUFACTURER, communicating 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

When storing the machine or if the machine has not been used for a certain period of time, store it in the following conditions:

- Unplug 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°C - +40°C
- Max. relative humidity: 50% (at 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 from those listed, contact the MANUFACTURER before they become a source of problems.



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 chapter "I. SAFETY PRECAUTIONS" on page 3.



When all of the installation operations have not been carried out by a Qualified Technician, use of the machine 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 + 30°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 operating spaces

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

- The machine is not suitable for outdoor use;
- The machine cannot be used inside kitchens;
- The location 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 be compliant with current standards;
- The electrical system must conform with current standards.

5.5 Replacing the feet

Only use original Manufacturer-supplied components (supplied with the machine in the USA) when replacing the feet.

Install the new feet in the original position at the base of the machine, by tightening the locking nuts with adequate force to ensure that they are permanently secured.



This operation must preserve the machine's original safety conditions.

5.6 Support base

To ensure a sufficient degree of ergonomics and machine safety, a support base with the following features must be used:

- 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 must be at least 150 cm from the floor (2);
- The base (1) must be perfectly level and have no irregularities;
- The support base must be in the immediate vicinity of the terminals for connecting to the electrical mains (7) in addition to the water mains (11) if using the version without an internal water tank;
- If the machine is positioned next to a wall, ensure that there is a gap of at least 20 cm between the machine and the wall (3);
- Fit the worktop with a drawer (13) that will be used to deposit used coffee grounds.

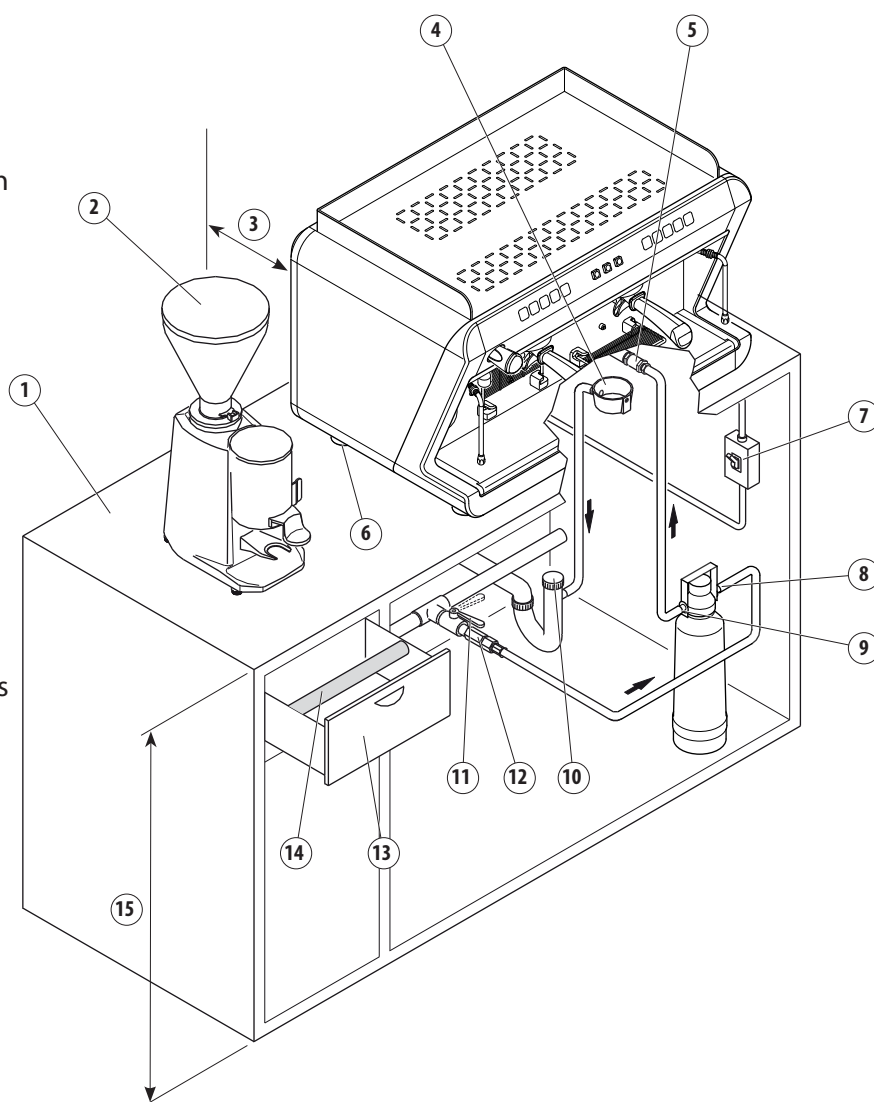


In order to work properly and ensure safety, the machine must rest on a perfectly horizontal surface.

Any machine alignment adjustments must be done by adjusting the feet (6).

If the machine is installed in moving environments (trains, ships, etc.), special anchor pins must be used on the support base, which are available from the manufacturer.

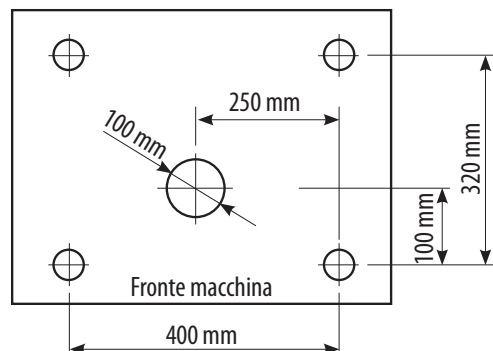
1. Support base
2. Grinder-dispenser
3. 20 cm minimum distance between the machine and the wall
4. Drain tray
5. Water mains inlet
6. Adjustable feet of the machine
7. Electrical mains switch
8. Water filter inlet
9. Water filter outlet
10. Sewer drain
11. Water mains tap
12. Water mains check valve
13. Used coffee grounds drawer
14. Support for knocking out the grounds in the filter holder
15. Height of support base 90 cm



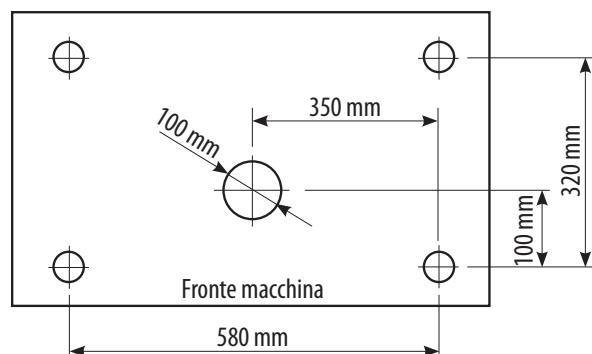
5.7 Drilling the support base

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.

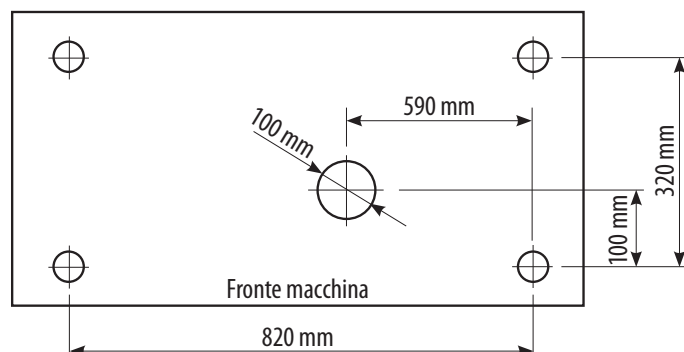
1 GROUP



2 GROUPS



3 GROUPS



5.8 Hydraulic connection to the water mains

5.8.1 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 give confirmation to the installer that the water meets the above requirements:

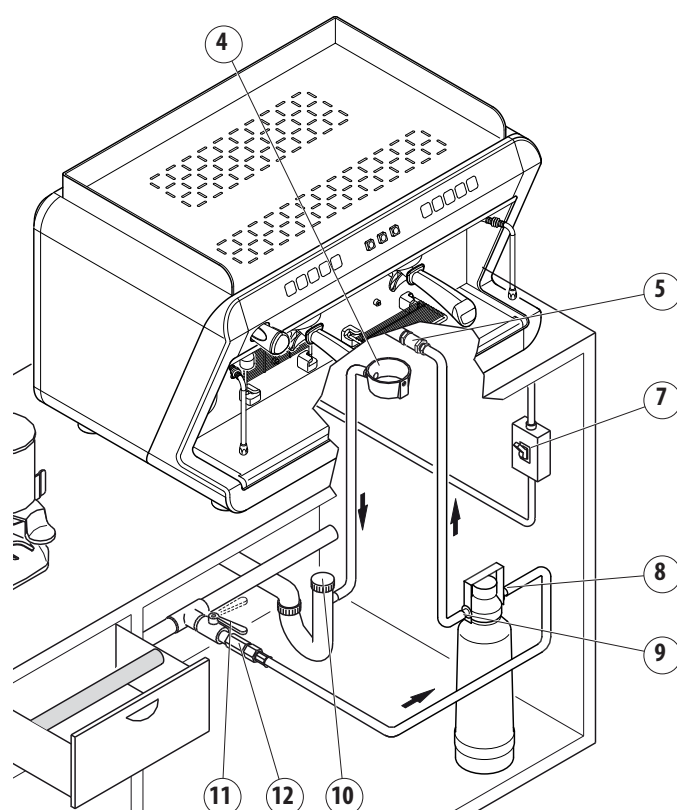
5.8.2 Materials to be used

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 installer must verify if they are suitable for coming into contact with water used for human consumption.

5.8.3 Setting up the hydraulic connection

The installer must carry out the hydraulic connections in accordance with the hygiene, hydraulic safety and environmental protection standards in force in the place of installation

1. Add a tap to the water supply (11) in order to stop water from flowing to the machine;
2. In order to prevent damage, it is advisable to install the water purification filter (8) where it will be protected from accidental knocks;
3. If there is no water purification filter, connect the water mains (11) directly to the machine's water inlet (5);



4. When connecting the machine's tray (4) to the sewer drain (10), avoid overly tight curves or kinks, and make sure that there is sufficient inclination for water to flow to the drain;
5. The drain must be connected to a siphon that can be inspected and periodically cleaned, in order to prevent unpleasant odours returning;
6. To avoid oxidation 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 par. "6.9 Water renewal" on page 26.



The water mains must provide cold water fit for human consumption (potable water) at a pressure between 0.15 and 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 16 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.



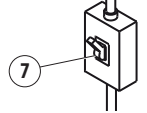
FOR THE EUROPEAN COMMUNITY - When connecting to a water mains or an external tank, a non-return valve (12) must be positioned upstream from the machine, as set forth by the EN 1717 standard.



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.

5.9 Electrical connection

- The installation must be carried out in accordance with the safety standards in force in the country of installation. The owner/manager of the system must give confirmation to the installer that the electrical system meets the above requirements.
- Install a main safety switch (7) as set forth by the current safety regulations regarding rated power.
- To connect the machine to the electricity distribution system, refer to Chap. "14. WIRING DIAGRAM" on page 40.
- Do not use power extensions or electrical adapters for multiple outlets. If their use is absolutely necessary, only use simple adapters and extensions which comply with current safety standards. Never exceed the capacity indicated on the simple adapter or extensions, and the maximum power indicated on the adapter.
- 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.



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



FOR SINGLE-PHASE CONNECTION - In accordance with EN 61000-3-11, the equipment must be connected only to a mains supply having an impedance equal to or less than - Z_{max} single-phase: 0.239 Ohm.



For Australia - When connecting the appliance to the mains, a device must be provided for which ensures an omnipolar disconnection from the mains with a contact opening distance in the conditions of overvoltage category III and in accordance with the AS/NZS 3000 regulations

6. COMMISSIONING

6.1 Safety precautions



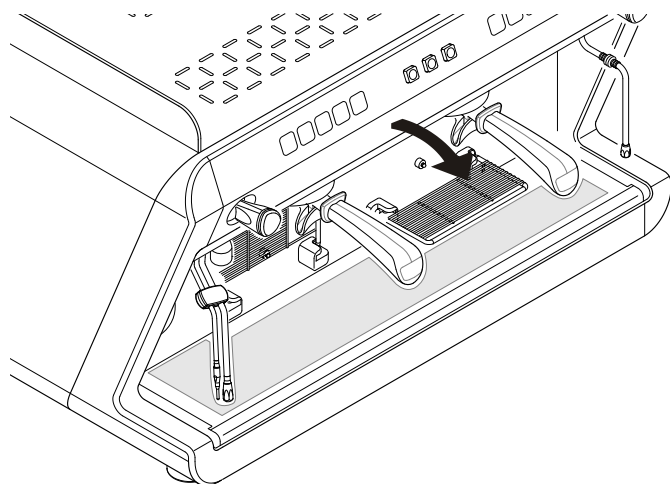
Carefully read the instructions provided in chapter "I. SAFETY PRECAUTIONS" on page 3.

6.2 Raised cup grilles

When using cups with different heights, the special flippable grilles that are supplied with the machine can be used.

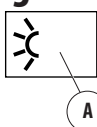
To use the grille, unhook it from the latch and rotate it downwards into a horizontal position.

When it is no longer needed, push it upwards, until it latches into place.



6.3 Dispensing compartment lighting

To turn the machine's compartment light on and off, press the switch (A).



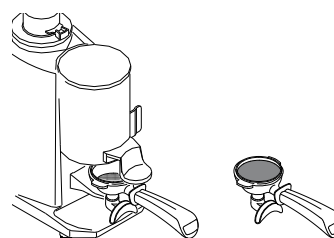
6.4 Grinding and dosing

It is important to have a dosing-grinding device next to the machine with which to grind the coffee to use daily.

The grinding and the dosing of the coffee must be done according to that indicated by the manufacturer of the dosing-grinding device. The following points are also to be kept in mind:

- to obtain a good espresso it is recommended not to keep large stocks of coffee grains. Observe the expiry date indicated by the producer.
- never grind large volumes of coffee, it is advisable would be to have the quantity contained in the dosing device and use it if possible by the end of the day.

- if possible, never buy coffee that is already ground as it expires quickly. if necessary, to buy it in small vacuum-sealed packages.

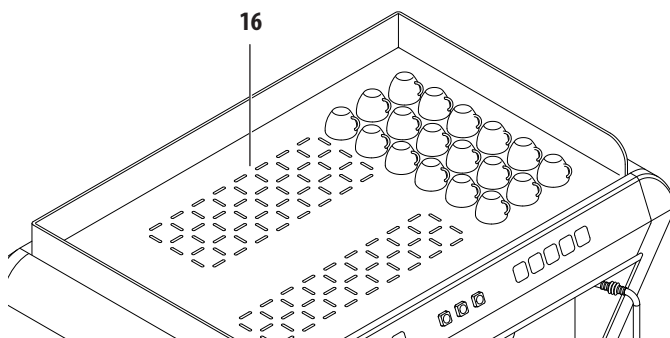


6.5 Preparing the filter holder

- Fill the filter with a dose of ground coffee (circa 6-7 gr.) and press it with the press;
- hook the filter-holder to the unit without closing it too tightly in order to avoid excessive wear of the gasket;
- for the same reason it is recommended to clean the edge of the filter before attaching the filter holder to the dispensing unit;
- follow the procedures specified by the manufacturer of the grinder.

6.6 Cup warmer

Place the cups to be heated on the cup heater (16).



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

6.7 Machine initial start-up

Open the water mains tap.

Turn the power switch **(A)** to position "1" (electricity is supplied to the pump to automatically fill up the machine's heating unit and steam heating unit) and wait for the heating unit to be automatically filled with water.

Turn the main switch **(A)** to position "2" (full electricity is supplied, including to the heating element in the heating unit) and wait for the machine to fully warm up.

Wait for the operating pressure shown on the pressure gauge to reach the working value (of 1-1.2 bar).

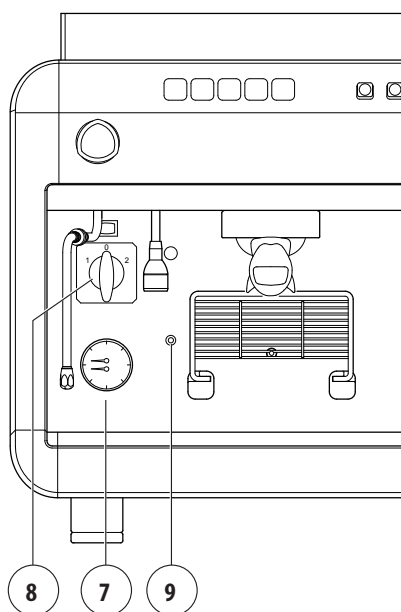
LED level (9) warnings	
Slow flashing	The heating unit is being filled with water
Fast flashing	Timeout: the heating unit water filling phase has stopped
Steady light	Water filling OK



During the machine's heating-up phase (roughly 20 minutes), the negative pressure valve will release steam for a few seconds until the valve closes.

6.8 Turning off the machine

Turn off the machine via the machine's main switch **(8)**.



6.9 Water renewal

When the machine is being installed, the Qualified 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 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 be filled again with water and brought to nominal working conditions;
- Upon reaching the "ready-to-operate" status, the following operations must be performed:
 - Continually dispense from each coffee group, in order to empty at least 0.5 litres from the coffee circuit.
 - Empty the heating unit of all its hot water by continuously dispensing through the specific spout;
 - Continuously release steam for at least 1 minute from each steam dispensing point.



If the machine remains inactive for longer than a week, the Qualified Technician must renew 100% of the water inside the hydraulic circuits, as indicated above.



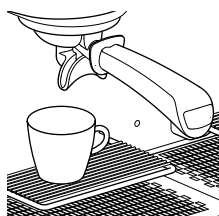
- Before using the machine, carry out some empty dispensing cycles with the capsule holders attached for several seconds in order to release any air inside the circuit and in turn, allow the dispensing groups to fully heat up;
- Before using the machine, dispense a few coffees to test the grind fineness and to check the operating pressure of the machine;
- Do not remove the capsule holder from the dispensing group when coffee is being dispensed.

7. PROGRAMMING

The machine is programmed by default. Should the settings need to be modified, proceed as described in the following paragraphs.

7.1 Coffee doses

- Always programme the right push-button panel first. This way, both push-button panels are automatically programmed. If necessary, program the others later;
- place the cup under the dispensing spout;
- press the **STOP/PROG.** button for at least 5 seconds until the **STOP/PROG.** button flashes;
- press the desired dose button, for example  ;
- to confirm the dose, press the  button again;
- repeat this operation for the other dose buttons;
- when the programming is complete, press the **STOP/PROG.** button until all of the LEDs on the push-button panel are lit.



The programming of every dose must be carried out with ground coffee and not with previously used coffee dregs. The system automatically exits the programming mode 30 seconds after the last operation was carried out..



Durante l'erogazione di caffè, non togliere il portafiltro dal gruppo erogatore.
Non inserire nel portafiltro le dita o qualsiasi altro oggetto.

7.2 Hot water (2-3 GR)

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

- Place the pot under the hot water spout;
- Press the **STOP/PROG.** button for at least 5 seconds until the **STOP/PROG.** button flashes;
- Press the water button  ;
- To confirm the dose, press the water button again  ;
- When the programming is complete, press the **STOP/PROG.** button until all of the LEDs on the push-button panel are lit.

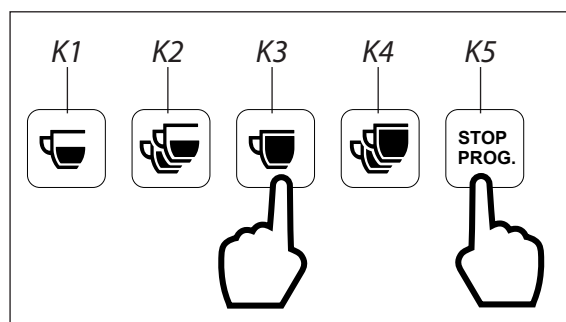


7.3 Pre-set values

Use this procedure to reset the factory values both for the coffee beverage doses.

Proceed as follows:

- Turn the machine OFF;
- without touching the push-button panel, switch the machine back on and after about 1 second, press and hold down the K3 and K5 buttons of the right push-button panel.
- Release the buttons only after having checked that only the K5 LED of both push-buttons panels (**STOP/PROG** keys) is flashing.
- turn the machine OFF and ON.



8. MAINTENANCE AND CLEANING

8.1 Safety precautions



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

8.2 PPE features

When maintaining and cleaning the machine, the following PPE is required:

The use of protective gloves is mandatory	
Maintenance working temperature	5 - 30°C

8.3 Maintenance

8.3.1 Scheduled maintenance

Perform the following maintenance according to the specified frequency.

In case of intensive use of the machine the checks need to be performed in smaller intervals.

Component	Type of operation	Quarterly	Yearly
GAUGE	Check the boiler pressure, which must be between 0.8 and 1.4 bar. Periodically check water pressure during coffee dispensing: check the pressure indicated on the gauge, which must be between 8 and 9 bar inclusive.	X	
FILTERS AND FILTER CARRIERS	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 filters and/or filter holders, as required.	X	
DELIVERY GROUP	Replace the perforated disk and under cup seal, as indicated in par. "8.3.4 Dispensing group maintenance" on page 31.	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	
ADDOLCITORE ACQUA	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	
MACINADOSATORE	Verificare la dose di caffè macinato (circa 7 gr. per battuta) e eseguire il controllo del grado di macinatura. Le macine debbono avere i taglienti sempre ben affilati, il loro deterioramento è indicato dalla presenza di troppa polvere nel macinato. Si consiglia di richiedere l'intervento del Tecnico Qualificato per far sostituire le macine piane ogni 400/500 kg di caffè oppure ogni 800/900 kg di caffè nel caso di macine coniche.	X	
HEATING UNIT	Replace the water in the heating unit as indicated in par. "6.9 Water renewal" on page 26.	X	
DRIP TRAY	Perform cleaning operations daily as indicated in paragraph "8.7.7 Drip tray cleaning" on page 38.	X	

Component	Type of operation	Quarterly	Yearly
HEATING UNIT	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. Remove and clean the heating unit level probe. Check whether there is any limescale build-up on the heating element or exchanger. 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.		X
SAFETY VALVE NEGATIVE PRESSURE VALVE MULTIFUNCTIONAL DISPENSER	Check that the safety valves, negative pressure valves and multifunctional dispenser are operating properly, as indicated in par. 8.3.5 - 8.3.5 - 8.3.7 . If these need to be replaced due to malfunction, repeat the check with the newly-installed component.		X
HYDRAULIC CIRCUIT	Check whether there is any limescale build-up or leaks 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
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 UNIT	Check state of efficiency of the dispensing unit solenoid valve.		X
WATER AND STEAM NOZZLES	Check the condition of the nozzles and clean the sprayer.		X
DOSING DEVICE	Check and clean the volumetric dosing device by removing any oxidation from the tips.		X
PRESSURE GAUGE AND PRESSURE SWITCH	Check that the dosing device and pressure switch are working properly.		X
ELECTRIC SYSTEM	Check the general condition of the electrical system and remove any oxidation if found.		X
MOTOR PUMP	Check that it is working correctly by reading the pressure on the pressure gauge or using the capsule holder with a pressure gauge.		X



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



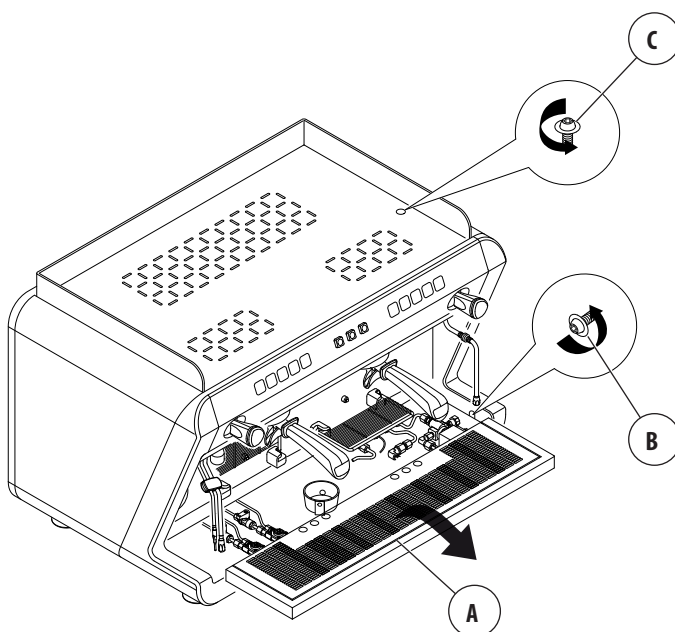
All original spare parts are available from the Manufacturer's website. The Manufacturer can provide a list of spare parts recommended for maintaining the various versions of the machine on request.

8.3.2 Removing the machine's side panels

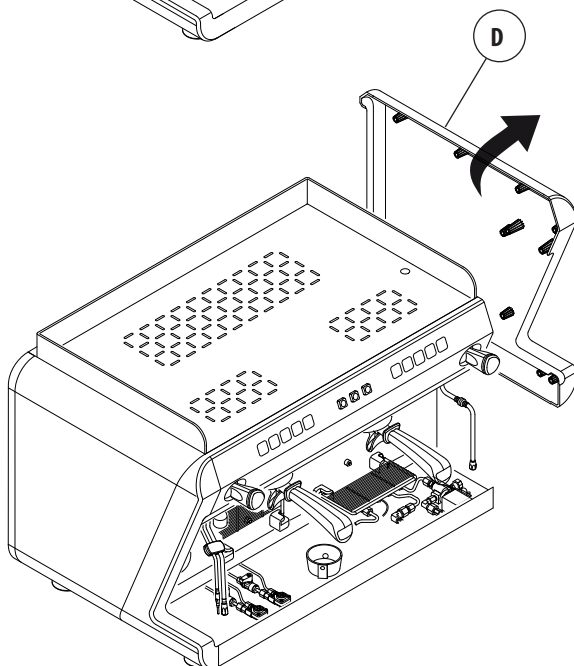
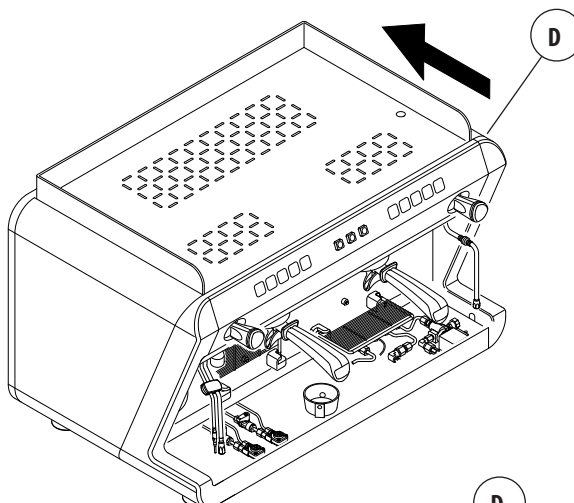
If maintenance work needs to be carried out inside the machine, correctly remove the side panels to avoid damaging them.

Proceed as follows:

- Turn the machine off;
- Remove the train tray and the cup holder grille (A);
- Loosen screws (B) and (C) without removing them;
- Push the side panel (D) in the direction of the arrow;
- Remove the side panel (D);
- Once the maintenance work has been carried out, reposition the side panel (D) in its original location by carrying out the steps in reverse order.



Do not carry out maintenance work when the machine is running.



8.3.3 Maintenance after a short period of machine inactivity

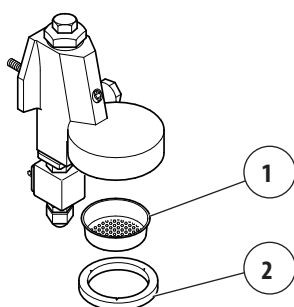
"Short period of machine inactivity" refers to a period of time exceeding one working week.

If the machine is switched back on after this period, a Qualified Technician must replace all the water inside the hydraulic circuits as indicated in par. "6.9 Water renewal" on page 26.

Inoltre è necessario effettuare tutte le operazioni previste per la manutenzione programmata vedi paragrafo precedente.

8.3.4 Dispensing group maintenance

- Every 3 months, replace strainer (1) and saucer gasket (2) of dispensing unit 1GR and 2GR. On dispensing unit 2GR COMPACT remove strainer carrier (3) and replace strainer (1) and saucer gasket (2). The use of original spares only is recommended.



8.3.5 SAFETY VALVE check

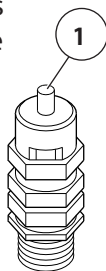
The pressure relief valve is one of the main components for machine safety. Therefore, it is important to carry out the following checks:

First check :

- Remove the machine's upper grille;
- Use pliers to pull the valve pin (1) upwards;
- If the pin will not budge, it probably means that the valve is encrusted with limestone and must be replaced.

Second check:

- Turn the machine off;
- Close off the pressure switch contacts;
- Turn the machine back on and wait for the pressure in the heating unit to rise. Check that the valve is working correctly at the maximum pressure of 0.19 MPa (1.9 bar).



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

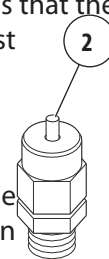
8.3.6 NEGATIVE PRESSURE VALVE check

First check:

- Remove the machine's upper grille;
- Use pliers to push the valve pin (2) downwards;
- If the pin will not budge, it probably means that the valve is encrusted with limestone and must 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.

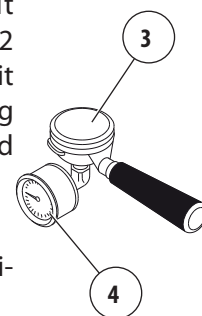
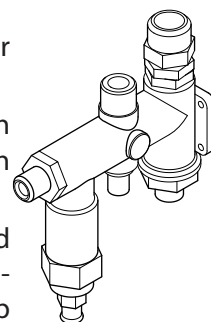


If any malfunctions are detected, the valve must be replaced.

8.3.7 MULTIFUNCTIONAL DISPENSER check

The multifunctional dispenser 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 capsule holder (3) with a pressure gauge (available on request) to the dispensing group;
- Activate the dispensing group, and use the pressure gauge (4) 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 multifunctional dispenser must be replaced.

8.4 Malfunctions and solutions

Problem	Cause	Action
NO MACHINE POWER	- The machine switch or power switch is in the "OFF" position. - The machine switch or power switch is faulty. - The mains switch is in the OFF position. - The wiring is defective.	- Position the machine switch or power switch in the "ON" position. - Replace the machine switch or power switch. - Position the mains switch in the ON position. - Check for any faulty connections.
NO WATER IN THE HEATING UNIT	- The water mains tap is shut off. - 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 tap. - 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 heat exchanger is punctured. - The level probe is out of order (clogged by limescale).	- Replace the solenoid valve of the automatic level device. - Replace the heating unit. - Replace the level probe.
WATER LEAKS 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 LEAKS FROM THE DISPENSING GROUP	The group gasket is worn.	Replace the group gasket.
THE GAUGE INDICATES A NON-CONFORMING PRESSURE	- The pressure gauge is faulty. - The pressure switch has been calibrated incorrectly. - The motor pump has been calibrated incorrectly.	- Replace the pressure gauge. - Adjust the pressure switch calibration. - Adjust the motor pump calibration.
THE SAFETY VALVE HAS CUT-IN	- The pressure switch is faulty. - The electronic control unit is faulty.	- Check that the pressure switch is working properly. Replace the safety valve with an original spare part only. - Check that the electronic system is working properly.
STEAM DOES NOT COME OUT OF THE NOZZLES	- 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 the thermostat or replace it.
WATER OR STEAM MIXED WITH WATER COMES OUT OF THE STEAM NOZZLES	- The level of the heating unit is too high due to the level probe being incorrectly positioned inside the heating unit or the presence of limestone. - The heating unit filling solenoid valve is leaking.	- Check the condition of the level probe: check if it is positioned correctly and check for any surface limescale. - Clean and replace the filling solenoid valve.
NO COFFEE IS DISPENSING	- There is no water in the mains. - The group solenoid valve is faulty. - The motor 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 taps 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 taps.
WET COFFEE GROUNDS	- The group solenoid valve drain is clogged. - The dispensing unit is too cold. - Coffee is ground too finely. - There's not enough ground coffee.	- Clean the group drain. - Wait for unit to heat up completely. - Adjust the grinding of the coffee. - Increase the amount of ground coffee.

Problem	Cause	Action
GROUNDS IN CUP	- The filter holder is dirty. - The filter holes are worn. - The coffee is not ground evenly. - The seal under the pad is worn. - The pressure in the pump is too high.	- Clean the filter holder. - Replace the filter. - Replace the grinders. - Replace the seal. - Adjust the pressure of the pump.
THE CUP IS DIRTY WITH SPLASHED COFFEE	- Presence of steam bubbles in the dispensing. - Air pockets in the hydraulic circuit. - Coffee is ground too coarsely.	- Reduce the water temperature. - Check the cause and eliminate the problem. - Adjust the grinding suitably.
COFFEE IS TOO COLD	- The heating element of the coffee heating unit is faulty. - The wiring is faulty. - There is limescale on the exchangers and/or heating element. - The pressure switch contacts are oxidised. - The heating element protection thermostat has cut-in. - The machine switch is in the OFF position. - Limestone has reduced the water circulation in the hydraulic circuit. - The dispensing group is cold.	- Replace the electrical heating element. - Check for any faulty connections. - Clean the machine. - Clean the contacts or replace the pressure switch. - Reset the safety heating element. - Turn the machine switch to the ON position. - 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 water tap; - Perform a dry dispensing run for a few minutes; - Reconnect the pump to the power supply; - Open the softener's water outlet tap; - Dispense until water comes out; - Wait a few minutes for it to heat up.
THE COFFEE IS TOO HOT	- The heating unit temperature is too high. - The group's flow reducer is not suitable.	- Reduce the pressure in the heating unit using the appropriate screw on the pressure switch. - Replace the reducer with one of a smaller diameter.
COFFEE IS BEING DISPENSED TOO QUICKLY	- Coffee is ground too coarsely. - The diameter of the injector is too large. - The dose of ground coffee is too small.	- Adjust the grinding of the coffee. - Replace the injector with one of a smaller diameter. - Check the amount (grams) of the ground coffee you are using.
COFFEE IS BEING DISPENSED TOO SLOWLY	- Coffee is ground too finely. - The injector is clogged. - The dispensing group is clogged. - The filter holder is dirty.	- Adjust the grinding of the coffee. - Replace the injector. - Check and clean the dispensing group. - Clean and replace the filters, if necessary.
THE ELECTRONIC SYSTEM HAS SHUTDOWN	- 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 IS BEING DISPENSED UNEVENLY THE COFFEE DOSE IS NOT BEING MET THE DOSE BUTTON LED IS FLASHING	- 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 non-return valve or the expansion valve is losing pressure on the multifunctional dispenser (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 that the connector (8/10 poles) has been connected correctly to 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. - Check and replace the multifunctional dispenser, if necessary. - Clean and replace the solenoid valve, if necessary. - Clean or replace the volumetric dosing device.

Problem	Cause	Action
THE LEDS OF ALL THE PUSH-BUTTON PANELS ARE FLASHING	The water stops being automatically filled after a few minutes. • The timeout device has cut in. • There is no water in the mains. • The automatic level device tap is closed. • Some of the hoses in the circuit are clogged. • The probe and/or the mass are disconnected.	• Turn the machine off and then back on. • Open the water mains tap. • Open the automatic level device tap. • Check and replace the faulty hoses. • Check and restore the connections.



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

8.5 Water filter

8.5.1 Determining the water hardness

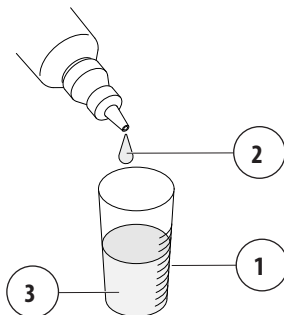
As part of the filter maintenance, it is advisable to test the water beforehand.

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

1. Put 10 ml of water to be tested **(1)** in the test tube;
2. Add a drop of reagent **(2)** and mix;
3. 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 water filter bypass 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



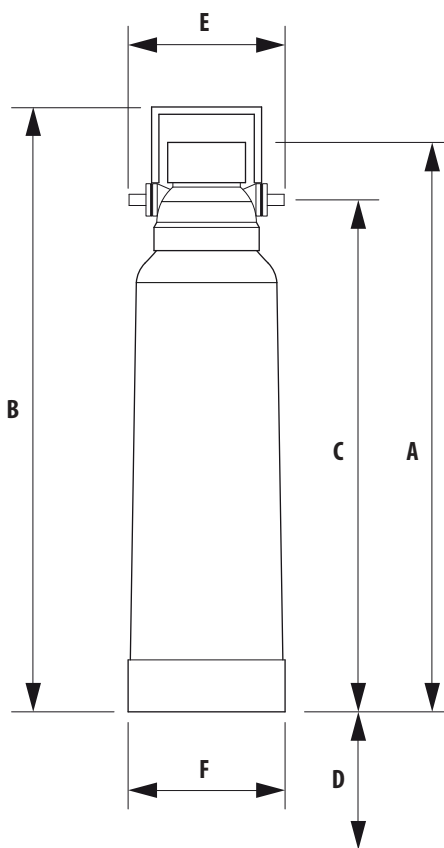
The values indicated in the table may vary, depending on the type of filter cartridge used.

To adjust the bypass, push the **(5)** button and turn.



8.5.3 Technical data

Model	V	M	L	XL
Connection type	3/8"	3/8"	3/8"	3/8"
Min.-max. water supply pressure (bar)	2-8	2-8	2-8	2-8
Min.-max. water temperature (°C)	4-30	4-30	4-30	4-30
Min.-max. room temperature (°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



For water filter use and maintenance, follow the indications by the manufacturer.



Replace the water filter cartridge at the frequency indicated 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 regeneration has been neglected.

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.

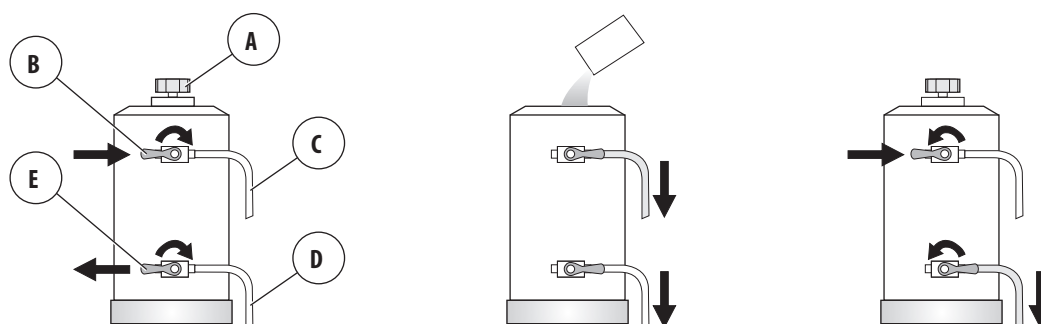
Amount of softened water based on hardness

°f	30	40	60	80	sal
°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 Cleaning operations

8.7.1 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 substances. 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 bodywork's surface.

Always use clean and sanitised cloths when cleaning.

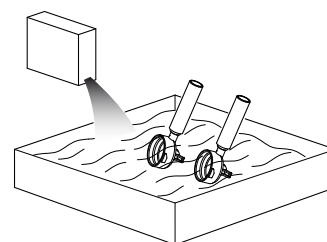
When washing the filters, capsule holders and all machine components, use Manufacturer-supplied cleaners or products specific for cleaning professional coffee machines.

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	
Filter and filter holder: Wash the filters and filter holders daily and weekly, as indicated in par. 8.7.2 a pagina 37. Perform cleaning operations daily as indicated in paragraph. 8.7.5 a pagina 38	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. Wash these on a weekly basis, as indicated in para. 8.7.6 a pagina 38.	X	X
Dispensing unit: Wash the dispensing unit following the instructions of par. 8.7.3 a pagina 37. Wash the components weekly as described in par. 8.7.4 a pagina 38. Perform cleaning operations daily as indicated in paragraph. 8.7.5 a pagina 38	X	X
Grinder-doser 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

8.7.2 Filter and filter-holder cleaning

Daily:

- Soak the filter and filter-holder in hot water so that the fatty coffee deposits can dissolve;
- rinse with lukewarm water.



Weekly:

- Use a screwdriver to detach the filter from the filter holder;
- soak the filter and filter holder in warm water and cleaning agent for 10 minutes.
- rinse with lukewarm water.



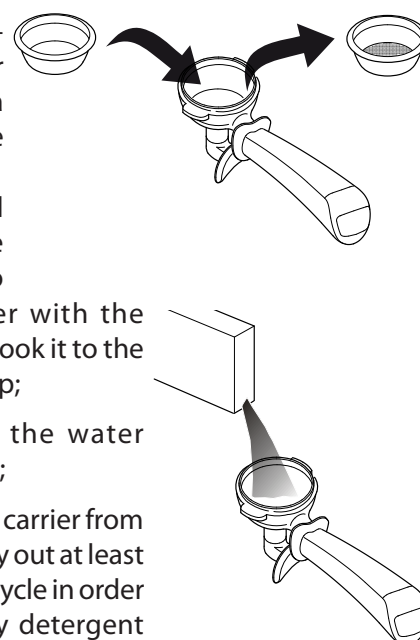
Caution: Only immerse the filter holder cup, avoid soaking the handle in water.

The detergent must be diluted in cold water in the doses indicated on the package (see manufacturer).

8.7.3 Washing the dispensing unit

Wash the dispensing units daily as indicated hereunder:

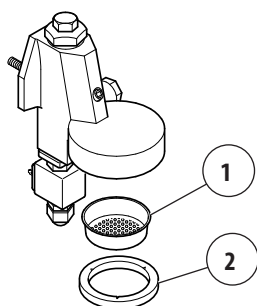
- Remove the filter from the filter holder and fit a blind filter (see spare parts);
- pour the special detergent (see spare parts) into the filter holder with the blind filter and hook it to the dispensing group;
- dispense until the water comes out clean;
- remove the filter carrier from the unit and carry out at least one dispensing cycle in order to eliminate any detergent residues;
- remove the blind filter from the filter carrier replacing it with the original.



8.7.4 Cleaning of strainer and strainer carrier

Carry out the cleaning of the strainer and strainer carrier on a weekly basis, with the following steps:

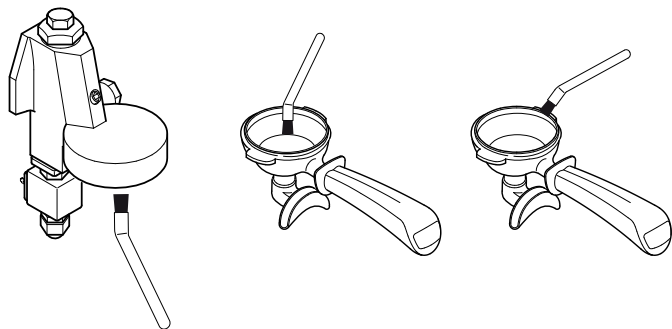
- remove strainer **(1)** and strainer carrier **(2)** (2GR COMPACT version);
- carefully wash the two components with hot water;
- return the strainer and strainer carrier to the original position.



8.7.5 Unit and filter holder spray nozzle cleaning

Clean daily the unit and filter holder spray nozzles with brush provided.

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.;

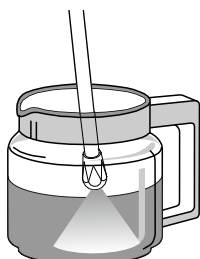


Use the special toothbrush supplied (see Spare Parts Catalogue).

8.7.6 Cleaning of the steam spout

Daily perform the cleaning of the steam nozzle in the following way:

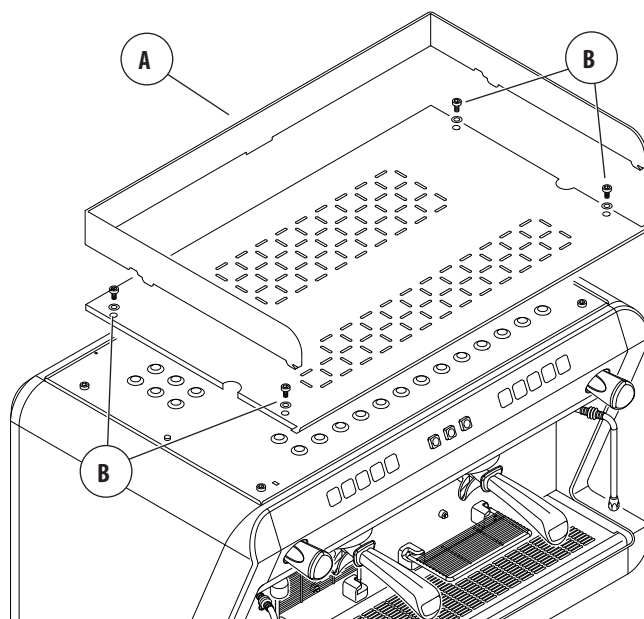
- Immerse the spout in a jug with water and a specific detergent according to manufacturer's instructions;
- heat the solution with the steam of the spout;
- let the spout cool off keeping it immersed in the solution for at least 5 minutes to allow the detergent to rise inside the spout by cooling effect;
- repeat the operation 2 or 3 times until milk is delivered.



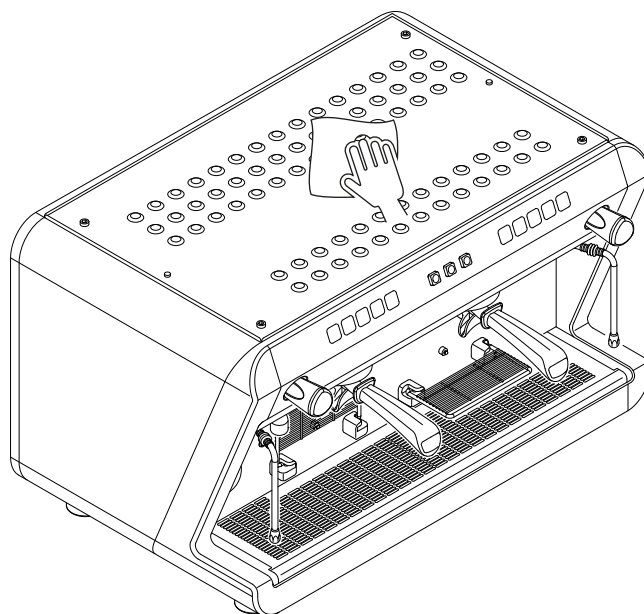
8.7.7 Drip tray cleaning

Periodically, clean the drip tray as follows:

- remove the upper acrylic cup stopper **(A)**;
- unscrew and remove the 4 screws **(B)** that fix the grille and remove it;



- clean the drip tray with a cloth dampened in luke-warm water



- reassemble grille and upper acrylic cup stopper.



This cleaning operation must be performed by a Qualified Technician.

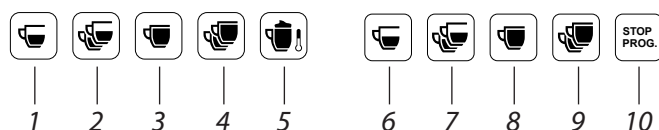
9. WARNINGS

9.1 1GR



Warning	Description
BUTTONS 4, 5 LED Flashes every 5 seconds	Frothed milk nozzle probe is disconnected
Selected dose button is flashing	No flow meter impulses

9.2 2-3GR



Warning	Description
BUTTON 5 LED Lampeggio ogni 5 secondi	Frothed milk nozzle probe is disconnected
Selected dose button is flashing	No flow meter impulses

10. SPARE PARTS

To replace machine components and/or parts, refer to the Lavazza Technical Service official documentation on the relevant website.



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



In caso di utilizzo di parti di ricambio non originali, la sicurezza dell'apparecchio non può essere garantita. Il Costruttore si riserva la facoltà di far decadere la garanzia della macchina.

11. DECOMMISSIONING

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

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

12. DISASSEMBLY

To disassemble the machine, follow the installation procedure in reverse order - see cap. "5. INSTALLATION" on page 21.

All dismantled components must be divided by material to make identification easier and then disposed of at the authorised collection centres, as instructed in cap. "13. DISPOSAL" on page 39.

13. DISPOSAL

13.1 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.

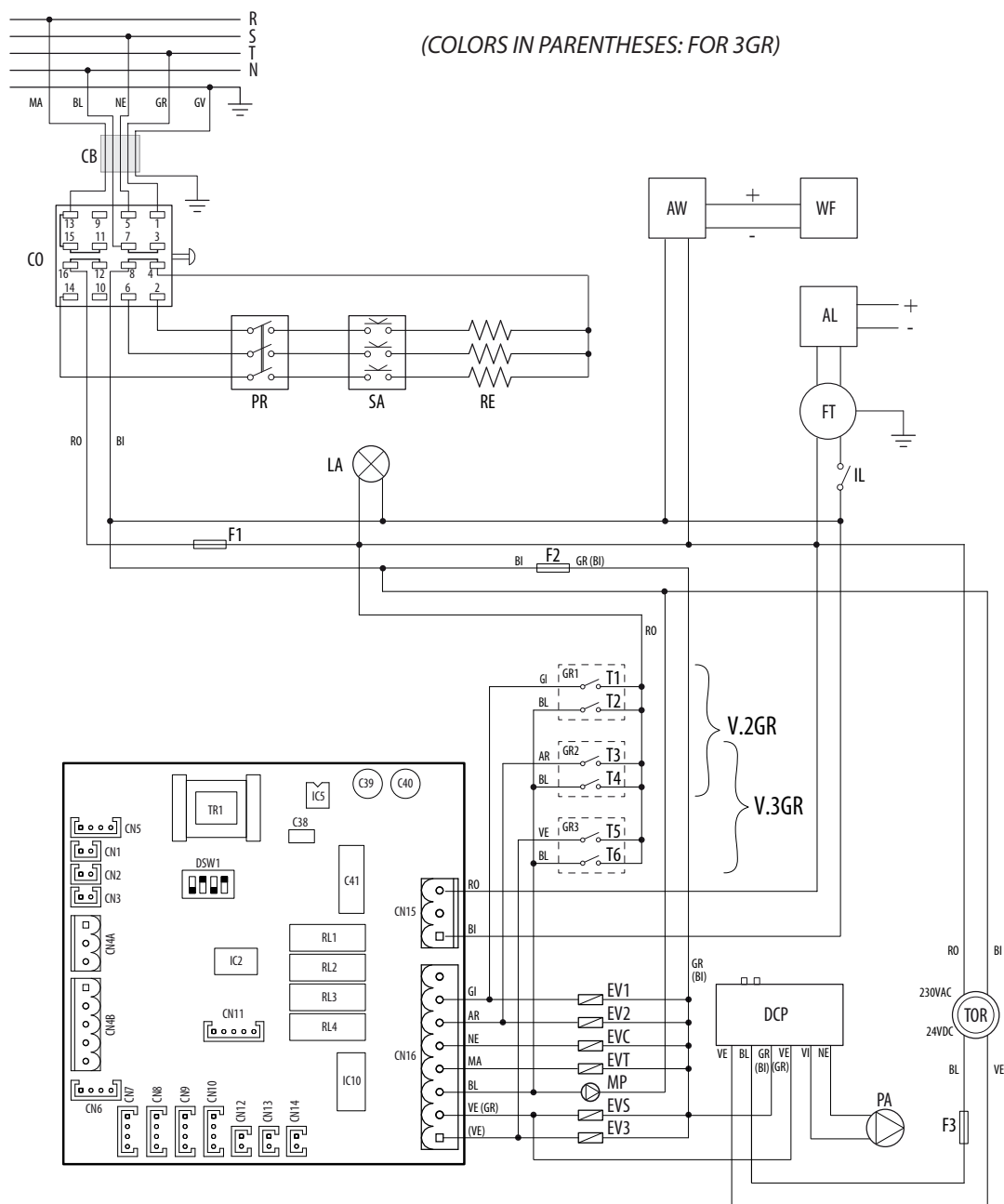
13.2 Environmental information

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.

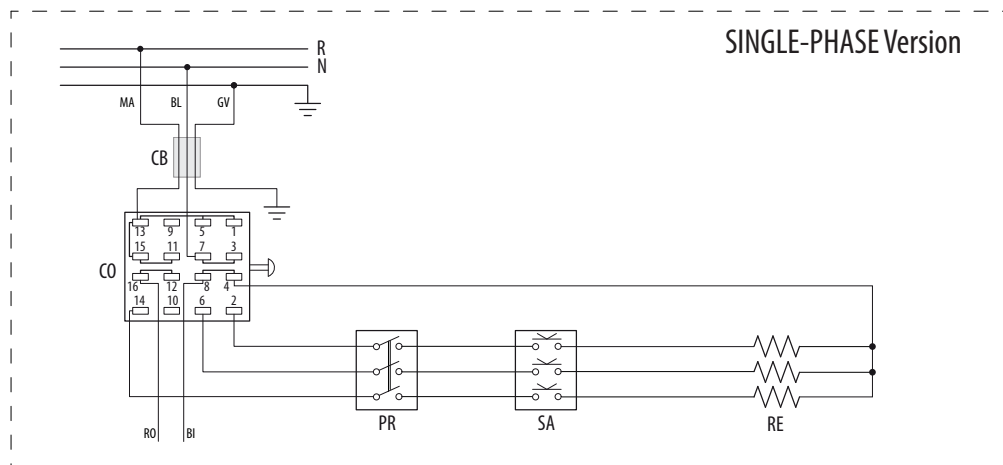
14. WIRING DIAGRAM

14.1 Machine connection



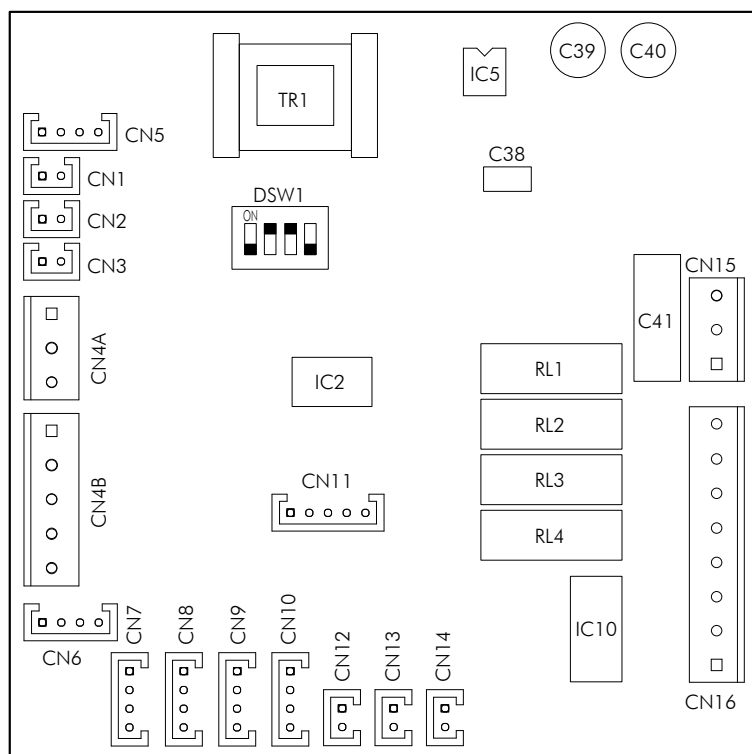
AL	LED power supply
AW	Wi-Fi power supply
CB	Wiring
CO	Power switch
DCP	Double Control Pump
EV1	Group 1 Solenoid Valve
EV2	Group 2 Solenoid Valve
EV3	Group 3 Solenoid Valve
EVC	Water Refill S.V.
EVT	Tea
EVS	Frothed milk S.V.
F1	Fuse (10A)
F2	Fuse (6,3A)
F3	Fuse (1A)
FT	FA.06.007 filter (EU only)
IL	LED switch
LA	Indicator light
PA	18 V air pump
PR	Heating unit pressure switch
RE	Resistenza caldaia
SA	Heating unit heating element
TOR	Toroid
T1	GR1 dispensing button
T2	GR1 dispensing button
T3	GR2 dispensing button
T4	GR2 dispensing button
T5	GR3 dispensing button
T6	GR3 dispensing button
WF	Wi-Fi

AR	Orange
BI	White
BL	Blu
GI	Yellow
GR	Grey
GV	Yellow-Green
MA	Brown
NE	Black
RO	Red
VE	Green
VI	Violet



FUSE	
F1 (10A)	Total protection
F2 (6,3A)	Solenoid Valve protection
F3 (1A)	Toroid protection

14.2 Circuit board



CN1	Level LED
CN2	Not Used
CN3	Frothed milk NTC
CN4A	Level probe
CN4B	Volumetric counters
CN5	Autostea
CN6	Not Used
CN7	Tea button
CN8	Auxiliary
CN9	RS 232 connection (Wi-Fi)
CN10	Keypad connection
CN11	CPU programming
CN12	Auxiliary
CN13	Auxiliary
CN14	Auxiliary
CN15	Board power supply
CN16	User outputs

CN1 - LEVEL LED	
Slow flashing	The heating unit is being filled with water
Fast flashing	Timeout: the heating unit water filling phase has stopped
Steady light	Water filling OK

DSW1	DSW2	DSW3	DSW4	CONFIGURATION
ON	OFF	OFF	Not used	1GR COFFEE
ON	OFF	ON	Not used	1GR AUTOSTEAMER
OFF	ON	OFF	Not used	2GR COFFEE
OFF	ON	ON	Not used	2GR AUTOSTEAMER
ON	ON	OFF	Not used	3GR COFFEE
ON	ON	ON	Not used	3GR AUTOSTEAMER

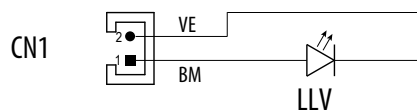
Standard setting of the circuit boards that are supplied as spare parts.

Modify the SW setting according to the characteristics of the product.

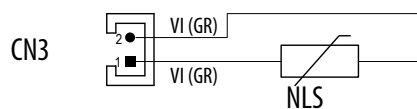
14.3 Connector connection

(COLORS IN PARENTHESES: FOR 3GR)

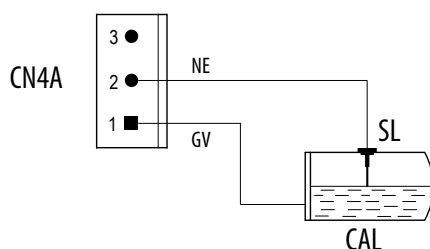
Level LED



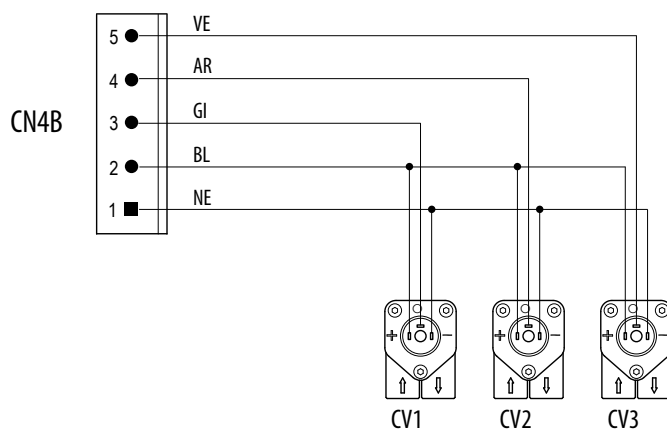
Frothed milk NTC



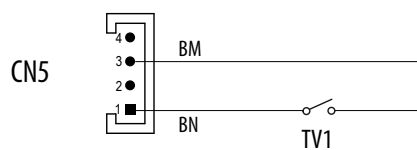
Level probe



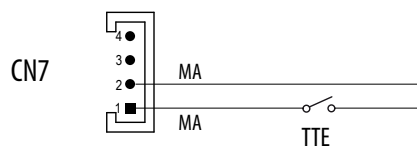
Volumetric counters



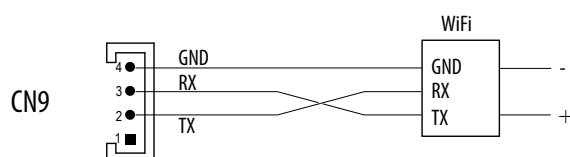
Steam button (1GR)



Tea button



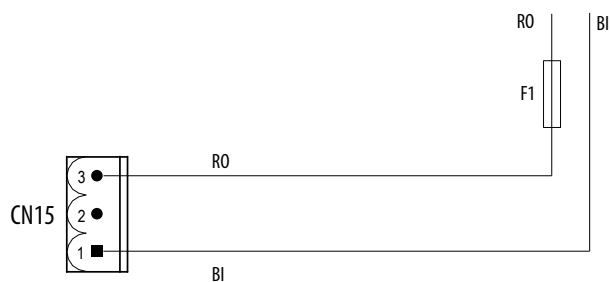
RS 232 (Wi Fi)



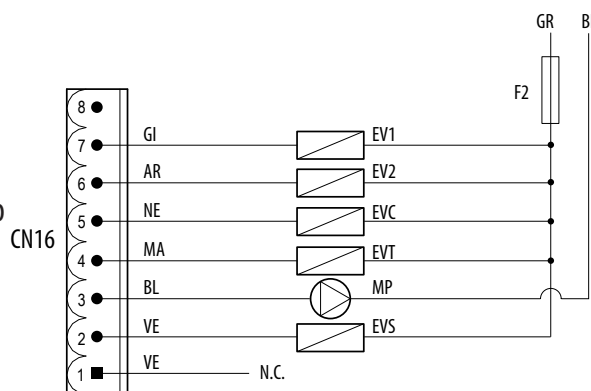
CAL	Heating unit
CV	Volumetric counter
LLV	Level LED
NLS	Frothed milk NTC
SL	Heating unit level probe
TTE	Tea button
TV1	Steam Button (1GR)

AR	Orange
BI	White
BL	Blu
BM	White-Brown
BN	White-Black
GI	Yellow
GR	Grey
GV	Yellow-Green
MA	Brown
NE	Black
VE	Green
VI	Violet

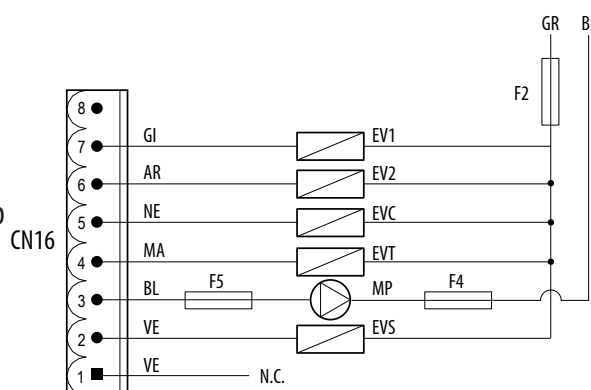
Control unit power supply



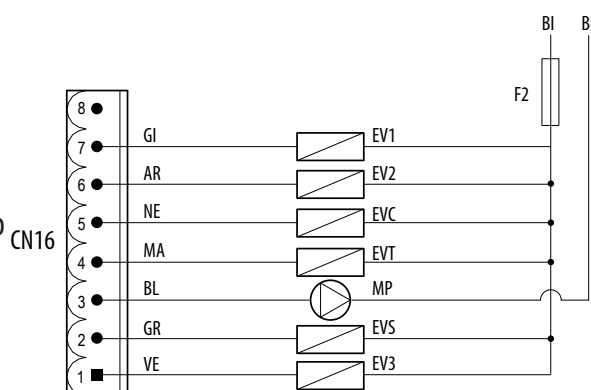
Solenoid valves and motor pump
- Standard version (1-2 GR) -



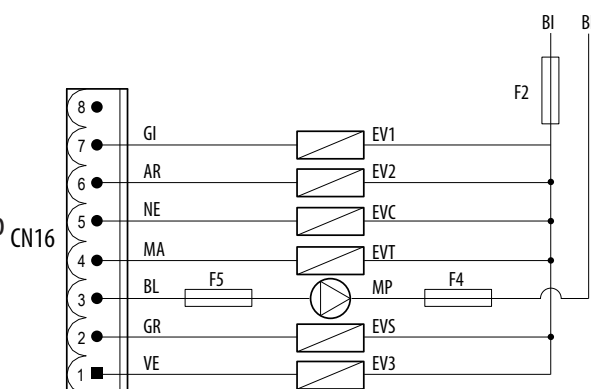
Solenoid valves and motor pump
- UL version (1-2 GR) -



Solenoid valves and motor pump
- Standard version (3 GR) -



Solenoid valves and motor pump
- UL version (3 GR) -

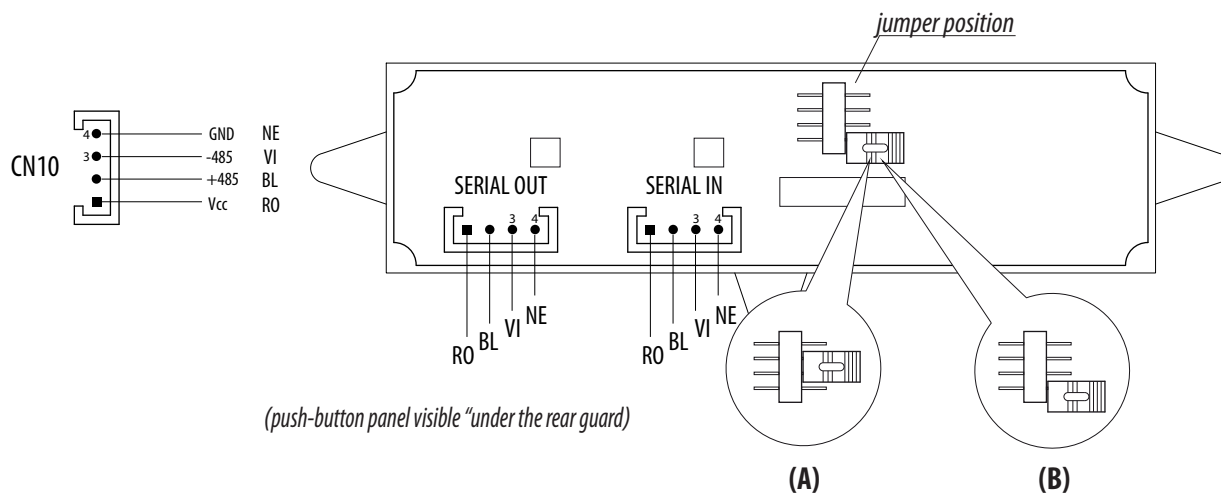


EV1	GR1 Solenoid Valve
EV2	GR2 Solenoid Valve
EV3	GR3 Solenoid Valve
EVC	Heating unit filling solenoid valve
EVS	Frothed milk solenoid valve
EVT	Tea dispensing solenoid valve
F1	Fuse (10A)
F2	Fuse (6,3A)
F3	Fuse (1A)
F4	Fuse (15A) *
F5	Fuse (15A) *
MP	Motor pump
N.C.	Not Connected

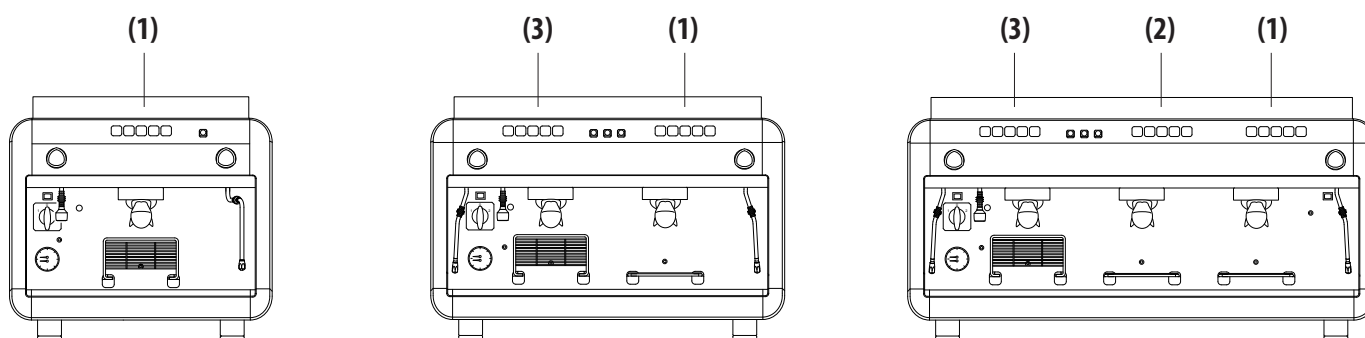
AR	Orange
BI	White
BL	Blue
GI	Yellow
GR	Grey
MA	Brown
NE	Black
RO	Red
VE	Green
VI	Violet

* Only for UL versions

14.4 Push-button panel connector



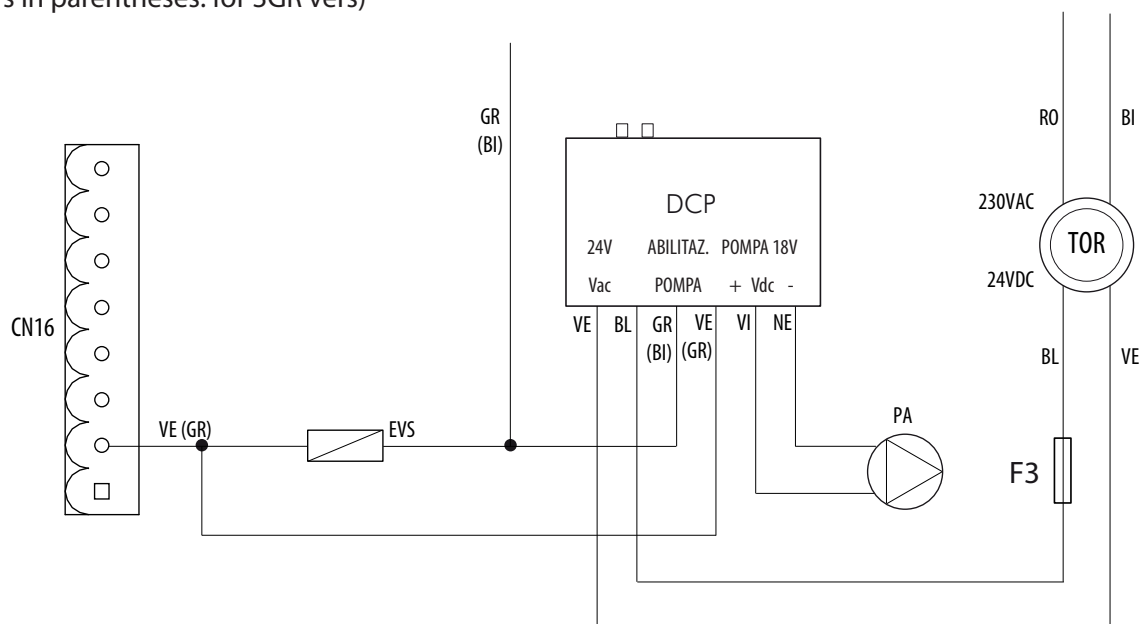
VERSION	Push-button		
	(3)	(2)	(1)
1GR COFFEE	-	-	jumper pos.: (B) code: 18371196
1GR AUTOSTEAMER	-	-	jumper pos.: (B) code: 18371196
2GR COFFEE	jumper pos.: (A) code: 18371196	-	jumper pos.: (B) code: 18371196
2GR AUTOSTEAMER	jumper pos.: (A) code: 18371249	-	jumper pos.: (B) code: 18371196
3GR COFFEE	jumper pos.: (B) code: 18371248	jumper pos.: (A) code: 18371196	jumper pos.: (B) code: 18371196
3GR AUTOSTEAMER	jumper pos.: (B) code: 18371249	jumper pos.: (A) code: 18371196	jumper pos.: (B) code: 18371196



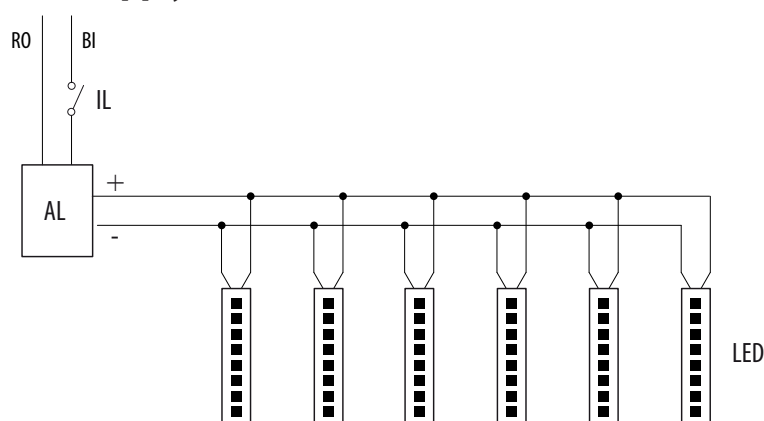
push-buttons diagram

14.5 Steam Connection

(Colors in parentheses: for 3GR vers)

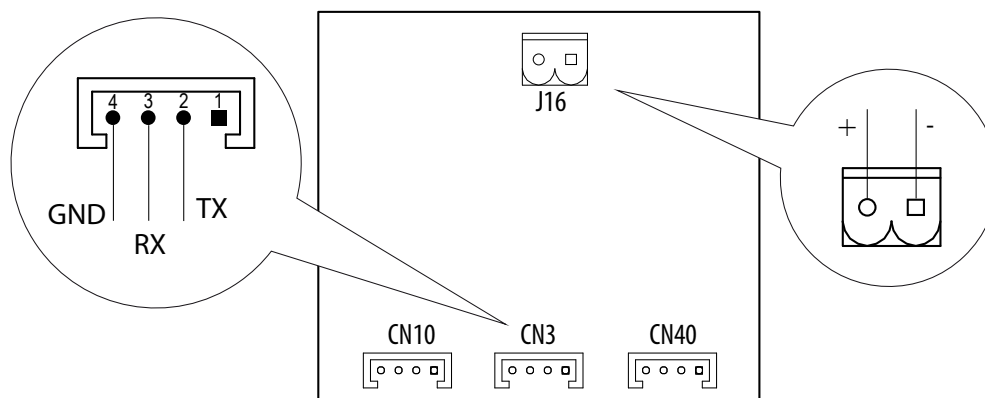


14.6 LED Power Supply Connection



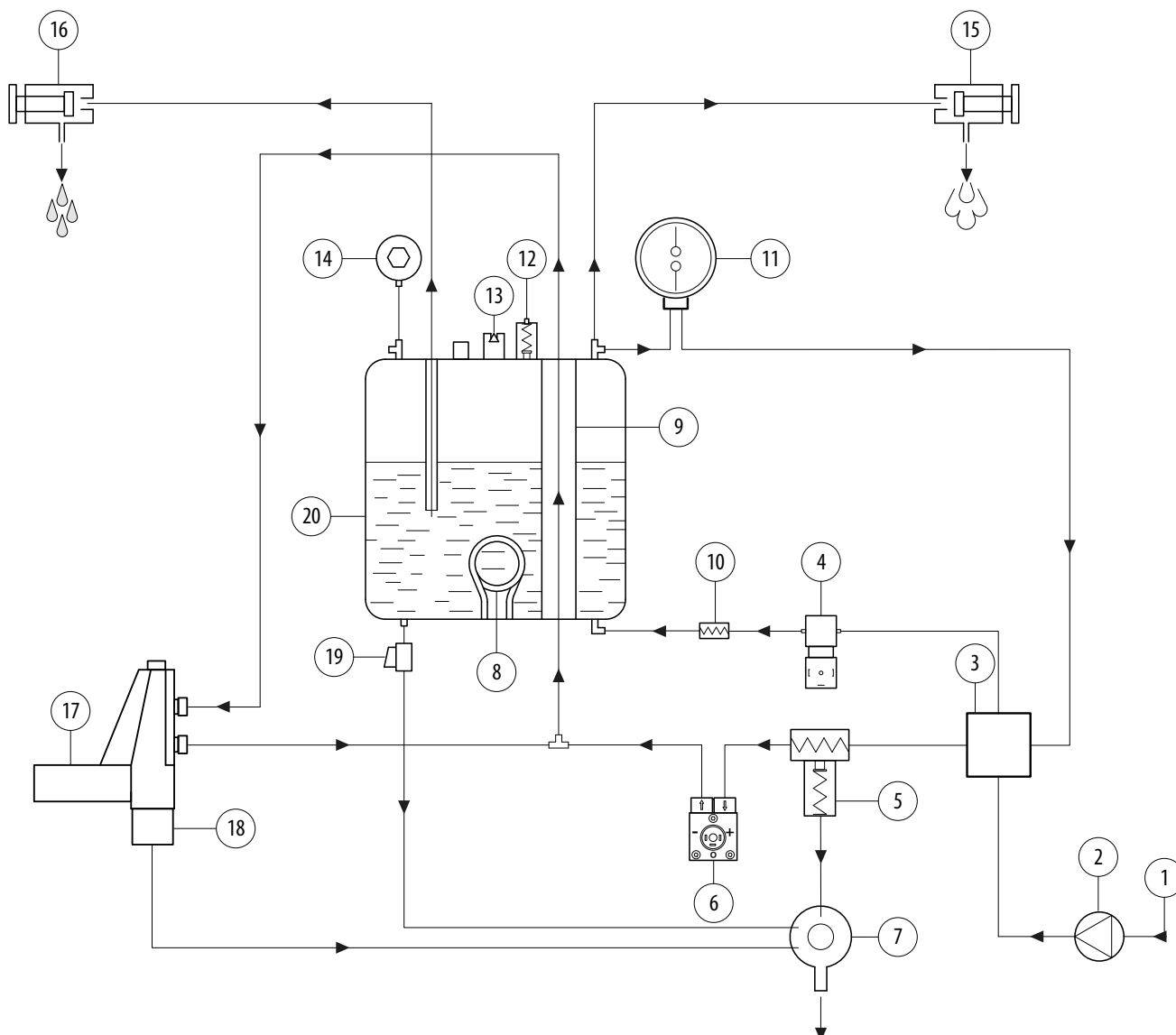
AL	LED power supply
BI	White
BL	Blue
DCP	Pump double check
EVS	Frothed milk solenoid valve
F3	Fuse (1 A)
GR	Grey
IL	LED switch
NE	Black
PA	18 V air pump
RO	Red
TOR	Toroid
VE	Green
VI	Violet

14.7 Wi-Fi Connection



15. HYDRAULIC DIAGRAMS

15.1 1GR Version

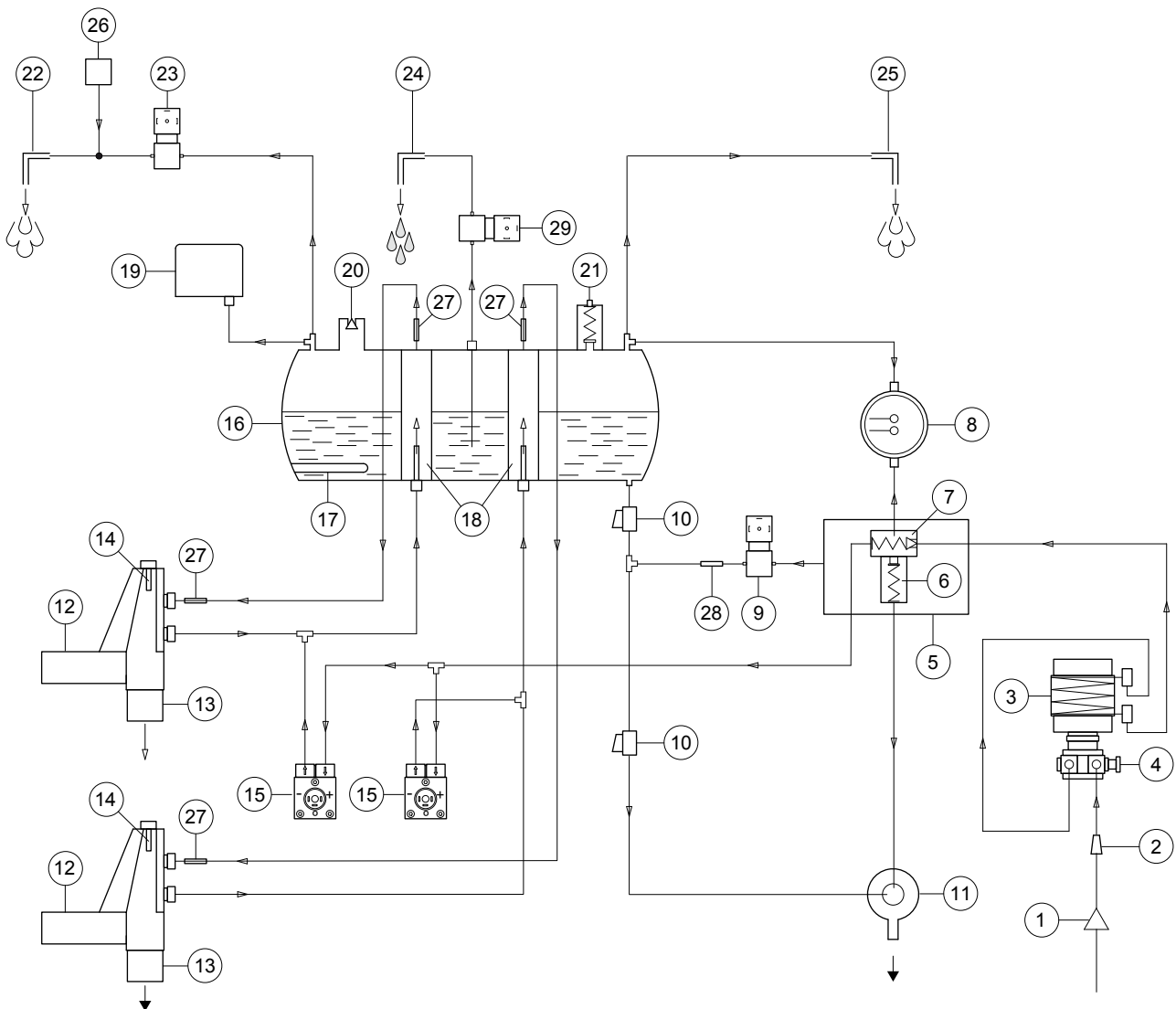


1	Water mains inlet
2	Water inlet filter
3	Motor pump
4	Pump pressure adjustment
5	Distributore multifunzione
6	Expansion valve
7	Check valve
8	Pressure gauge
9	Filling solenoid valve
10	Tap

11	Drain tray
12	Dispensing group
13	Heating unit solenoid valve
14	ø 0.7 injector
15	Volumetric dosing device
16	Heating unit
17	Heating unit heating element
18	Heat exchanger
19	Pressure switch
20	Negative pressure valve

21	Safety valve
22	Frothed milk steam nozzle
23	Frothed milk solenoid valve
24	Hot water spout
25	Steam spout
26	Air pump
27	ø 4 injector
28	Ø 1.2 injector
---	Autosteamer Version

15.2 2GR Version

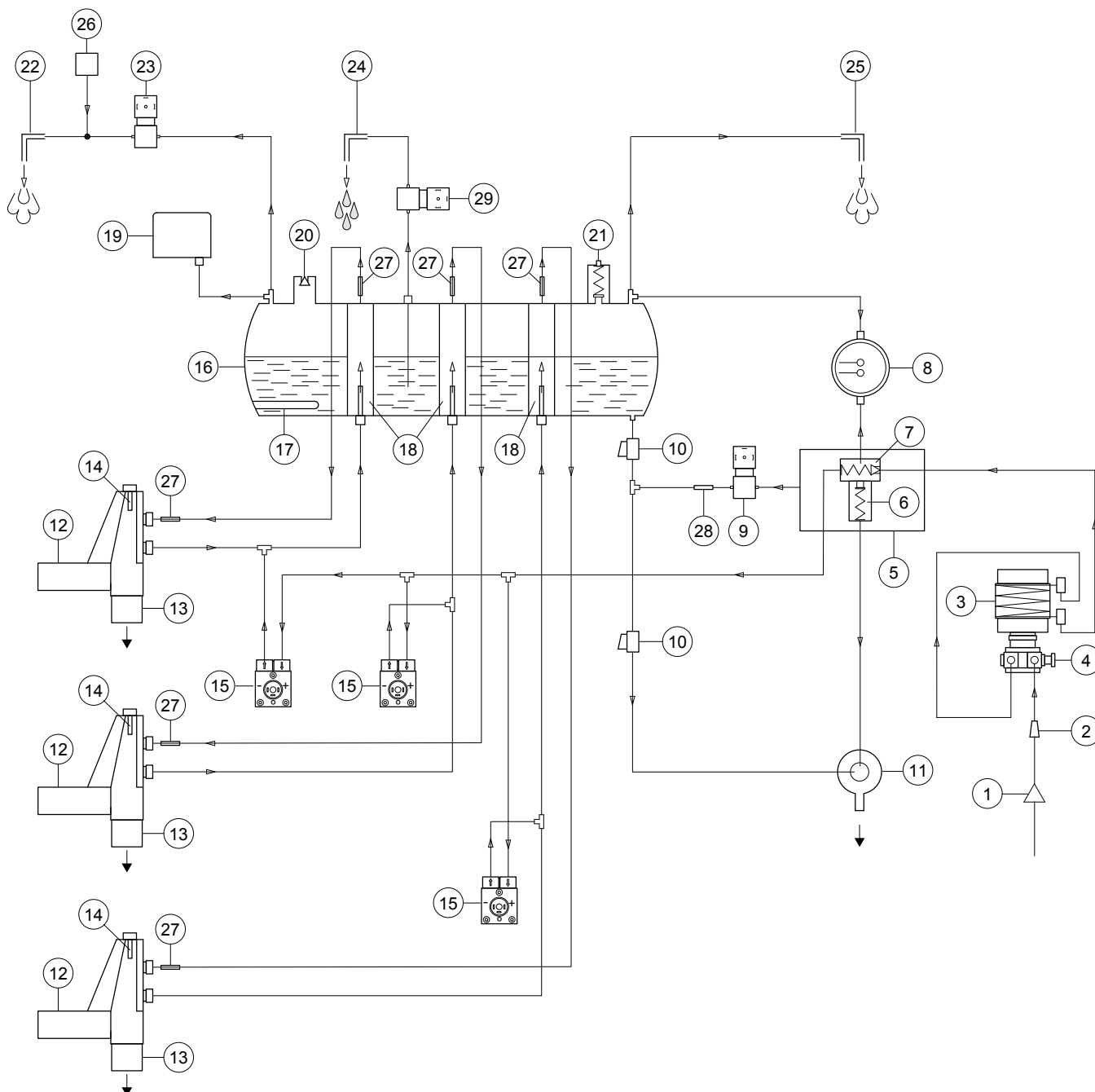


1	Water mains inlet
2	Water inlet filter
3	Motor pump
4	Pump pressure adjustment
5	Distributore multifunzione
6	Expansion valve
7	Check valve
8	Pressure gauge
9	Filling solenoid valve
10	Tap

11	Drain tray
12	Dispensing group
13	Heating unit solenoid valve
14	ø 0.7 injector
15	Volumetric dosing device
16	Heating unit
17	Heating unit heating element
18	Heat exchanger
19	Pressure switch
20	Negative pressure valve

21	Safety valve
22	Frothed milk steam nozzle
23	Frothed milk solenoid valve
24	Hot water spout
25	Steam spout
26	Air pump
27	ø 4 injector
28	Ø 1.2 injector
29	Hot Water solenoid valve

15.3 3GR Version



1	Water mains inlet
2	Water inlet filter
3	Motor pump
4	Pump pressure adjustment
5	Distributore multifunzione
6	Expansion valve
7	Check valve
8	Pressure gauge
9	Filling solenoid valve
10	Tap

11	Drain tray
12	Dispensing group
13	Heating unit solenoid valve
14	ø 0.7 injector
15	Volumetric dosing device
16	Heating unit
17	Heating unit heating element
18	Heat exchanger
19	Pressure switch
20	Negative pressure valve

21	Safety valve
22	Frothed milk steam nozzle
23	Frothed milk solenoid valve
24	Hot water spout
25	Steam spout
26	Air pump
27	ø 4 injector
28	Ø 1.2 injector
29	Hot Water solenoid valve

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