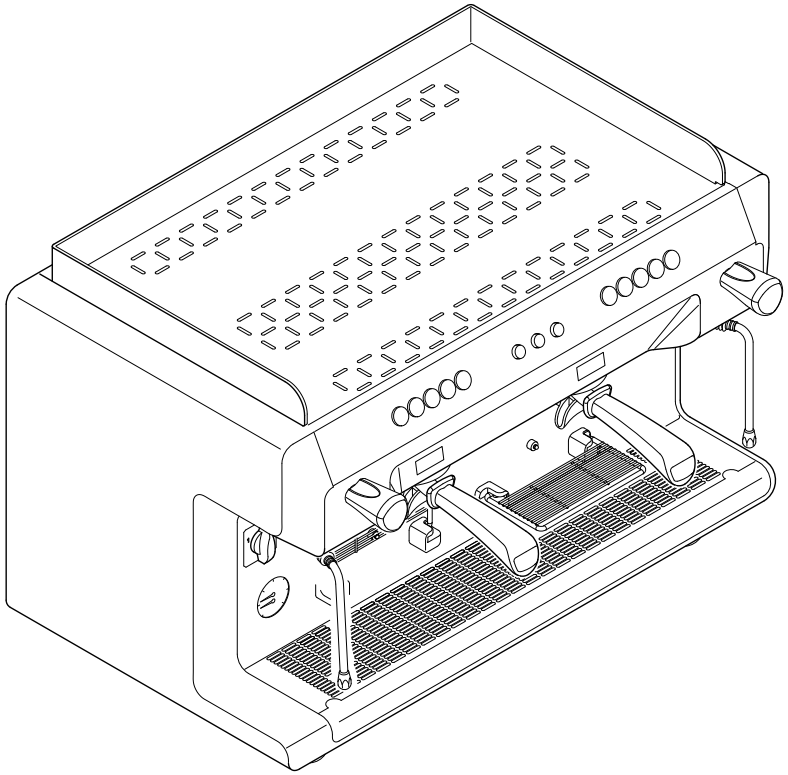
Astoria®
Think espresso

Core200

AEP
SAE



EN

ESPRESSO COFFEE MACHINE

Use and Maintenance Manual. TECHNICIANS' Instructions.

CE

IMPORTANT: Read carefully before use. Store for future reference.

I. SAFETY PRECAUTIONS

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

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

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

I.II. SAFETY PRECAUTIONS

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

I.III. TRANSPORT AND HANDLING

Hand crushing hazard

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

I.IV. INSTALLATION

Electrical hazard

High temperature hazard

Risk of explosion

It is prohibited to perform maintenance on moving components

Installation operations must always and exclusively be performed by the Technician and in compliance with the current health and safety regulations.
The appliance's water supply must provide water which is suitable for human consumption, and must conform with the regulations in force in the place of installation.
The Technician must carry out the hydraulic connections in accordance with the hygiene and hydraulic safety standards regarding environmental protection which are in force in the place of installation.
To ensure electrical safety, the appliance must be connected to an effective earthing system, and the system in which it is installed must be equipped with a suitable differential circuit breaker, in compliance with the safety laws and standards.
The effectiveness of the earthing system and functionality of the differential circuit breaker - both of which are fundamental for guaranteeing the appliance's electrical safety - are the responsibility of the person in charge of the electrical system on which the equipment is installed.
The manufacturer cannot be considered responsible for any damage caused by an inadequate electric system.
Make sure that the electric mains power is enough to supply the energy needed for the machine to correctly operate.
The appliance installation operations must be carried out with the electrical mains switched off. To make the electrical system safe and be able to carry out operations when the machine is not powered, the Technician must apply the rules prescribed by current technical standards (disconnect the power supply, avoid reclosures, check that there is no voltage, etc.).

I.V. MAINTENANCE AND CLEANING

Electrical hazard

High temperature hazard

Risk of explosion

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

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

- Do not carry out maintenance work when the machine is 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 nozzles 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.

It is the task of the Technician to inform the User about the methods of periodic testing of pressure equipment and safety devices in accordance with the legislation in force in the country of installation.

I.VI. EMERGENCY SITUATIONS

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

SHORT CIRCUIT FIRE

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

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

General contents

1. INTRODUCTION

Read this manual carefully. It provides important safety information to the Technician regarding the operations indicated in this document.
Keep this Manual in a safe place. If you lose it, you can ask the Manufacturer for another copy.
The Manufacturer of the appliance cannot be held responsible for any damage caused due to the non-observance of the requirements listed in this manual.

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

This document assumes that the machine is installed in a location where the current work safety and hygiene standards are observed.
The instructions, drawings and documentation contained in this Manual are technical and confidential. They are the sole property of the Manufacturer, and may not be fully or partially reproduced in any way.
The Manufacturer reserves the right to make any improvements and/or modifications to the product. We guarantee that this Manual reflects the technical state of the appliance at the time it was released to the market.
We encourage the Technicians to make any proposals in regards to improving the product or its Manual.

1.1 Guidelines for reading the Manual

This Manual is divided into separate chapters. The chapter order is linked to the temporal logic of the life of the machine. Terms, abbreviations and pictograms are used to facilitate the immediate understanding of the text.
This Manual consists of cover, index and series of chapters. Each chapter is sequentially numbered. The page number is shown in the footer.
The machine identification data is displayed on the machine's nameplate and the EU declaration of Conformity, whilst the date and revision of the Instruction Manual is provided on the last page.

Abbreviations

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

Units of measurement

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

1.2 Storing the Manual

The Instruction Manual must be stored carefully. The manual should be stored, handled with care with clean hands and not placed on dirty surfaces. The Manual must be stored in an environment protected from moisture and heat.
Do not remove, tear or arbitrarily modify any of its parts.
On the Technician's request, the manufacturer can provide additional copies of the machine's Instruction Manual.

1.3 Method for updating the Instruction Manual

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

Should the Manual become illegible or otherwise hard to read, the Technicians must request a new copy from the Manufacturer before carrying out any operations on the machine.
It is absolutely forbidden to remove or rewrite parts of the Manual.
The instructions, drawings and documentation contained in this manual are confidential and the sole property of the Manufacturer. They may not be reproduced in any way, either in full, or in part without prior authorisation.
The Technician is responsible for complying with the instructions contained in this Manual.
Should any incident occur as a result of these recommendations being used incorrectly, the Manufacturer declines any liability.
This manual is also available on the manufacturer's website (indicated on the cover of the manual).

1.4 Recipients

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

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

RECIPIENT QUALIFICATIONS

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

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

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

1.5 Glossary and Pictograms

This paragraph lists uncommon terms or terms whose meanings are different than those most commonly used.
Abbreviations are explained below, as well as the meaning of pictograms describing the operator's qualification and the machine status; they are used to quickly and uniquely provide the information needed to correctly and safely use the machine.

1.5.1 *Glossary*

User

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

Technician

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

Danger

A potential source of injury or damage to health.

Dangerous area

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

Risk

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

Guard

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

Personal protective equipment (PPE)

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

Intended use

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

Machine status

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

Residual risk

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

Safety component:

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

1.5.2 *Pictograms*

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

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

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

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

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

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

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

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

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

NOTE symbol used to provide important information about the topic.

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

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

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

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

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

1.6 Guarantee

All of the machine's components are covered by a 12-month guarantee, except for electrical and electronic components and parts prone to wear and tear.
If any work is carried out on the machine electronics when the machine is still live, any guarantee will automatically be invalidated.

2. MACHINE IDENTIFICATION

2.1 Make and model designation

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

2.2 General description

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

2.3 The manufacturer's customer support service

ASTORIA MACCHINE PER CAFFÈ S.R.L.
Via Condotti Bardini, 1
31058 SUSEGANA (TV) - ITALY
Tel. +39.0438.6615 - Fax +39.0438.60657
E-mail: service@astoria.com
Web-site: www.astoria.com

2.4 Intended use

The espresso coffee machine has been designed to professionally prepare hot beverages such as tea, cappuccinos and weak, strong and espresso coffee, etc. The appliance is not intended for domestic use, it is intended for professional purposes only.
The machine can be used under all the conditions set forth, contained or described in this document; any other conditions must be considered dangerous. The machine must be installed in a place where its access is restricted to qualified personnel only who have received suitable training (coffee shops, restaurants, etc.).

Permitted uses

All uses compatible with the technical features, operations and applications described in this document, in addition to those that 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 indicated in this paragraph or for uses that differ from or are not mentioned in this Manual.
- with materials other than those listed in this Manual.
- with safety devices that have been disabled or are not working.

Incorrect use of the machine

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

Improper use

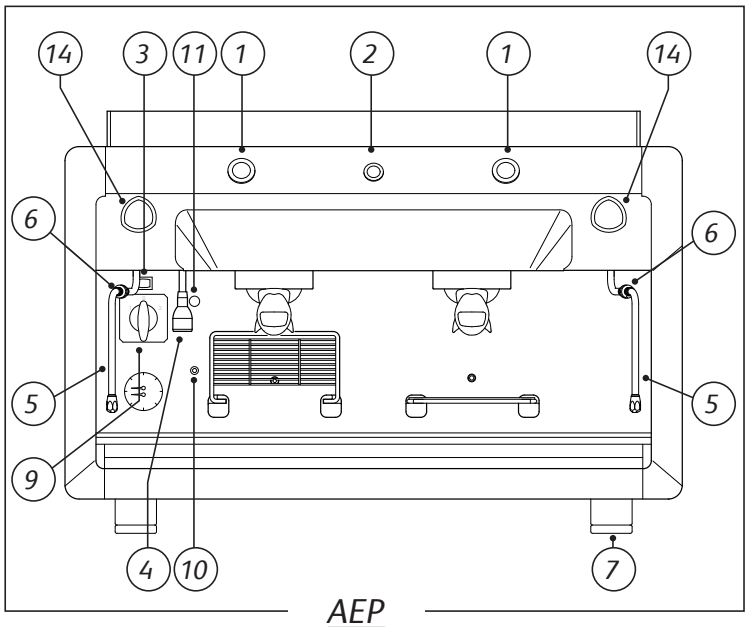
The only permitted uses are described in the Manual; any other use is considered improper and therefore, hazardous.

General safety features

The Technician must be aware of accident risks, safety devices and the general safety rules set forth in EU directives and by the legislation of the country where the machine is installed.
The Technician must know how all the machine's devices work. They must also have fully read and understood this Manual. Maintenance work must be performed by the Technician after the machine has been properly prepared. The tampering or unauthorised replacement of one or more machine components, the use of accessories which modify its use and the use of materials other than those recommended in this Manual, can cause accidents.

2.5 Machine diagram

1. Manual coffee dispensing button
2. Water dispensing button
3. Work surface LED switch
4. Hot water dispensing nozzle
5. Steam dispensing nozzle
6. Scald protection
7. Adjustable foot
8. Pressure gauge
9. Machine start-up power switch
10. Heating unit level warning light
11. Power indicator light
12. Pushbutton panel for coffee selections
13. Service pushbutton panel
14. Steam dispensing knob
15. Hot water dispensing knob (Compact model)
16. Timer display
17. Cup holder shelf
18. Filter holder
19. Coffee dispensing spout
20. Raised cup grille
21. Cup holder grille
22. Cup warmer switch
23. Cup warmer indicator light
24. Blind filter
25. Tamper
26. Cleaning brushes



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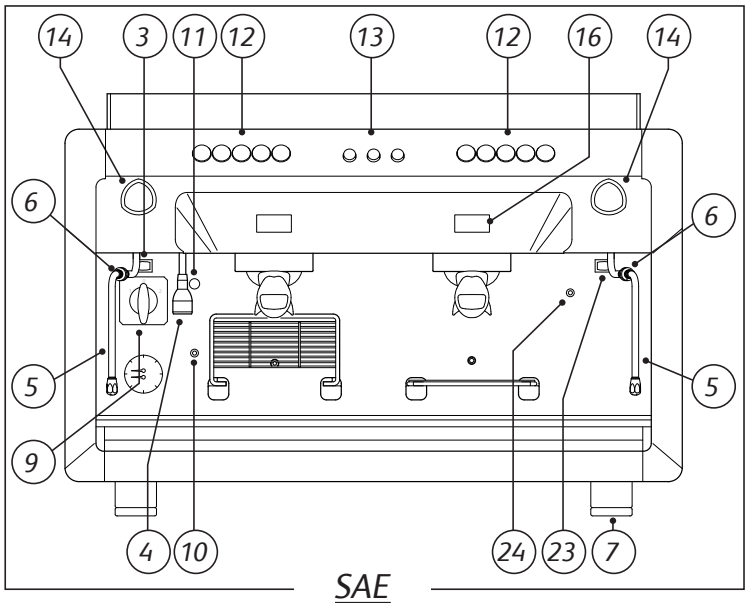

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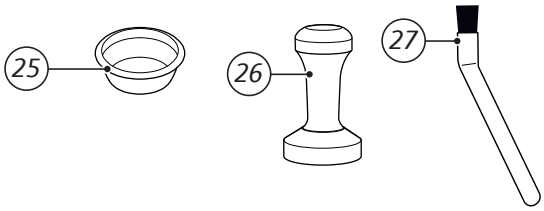
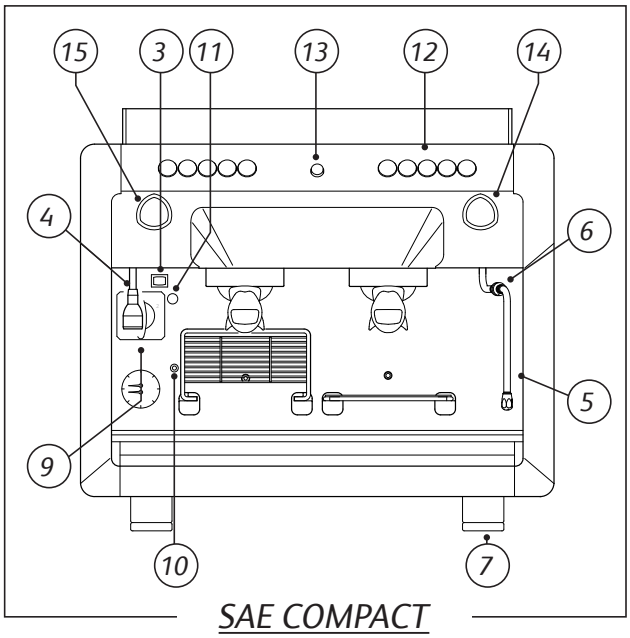
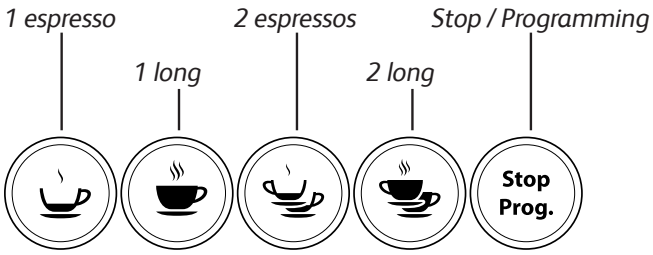




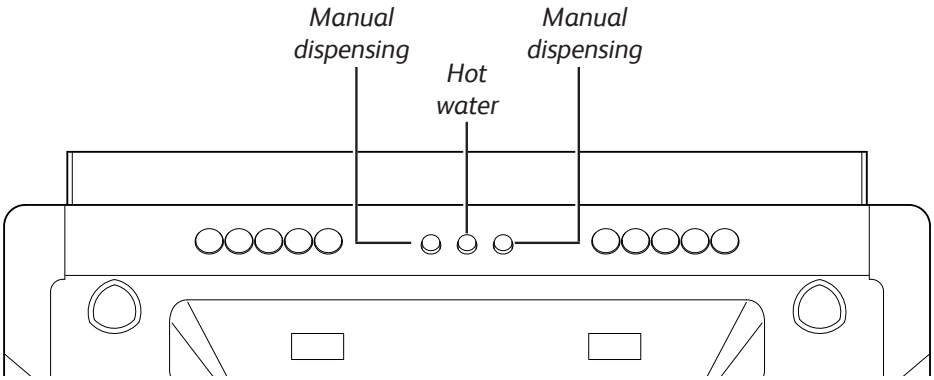
SAE COMPACT

2.6 Pushbutton panels

Coffee dispensing group pushbutton panel

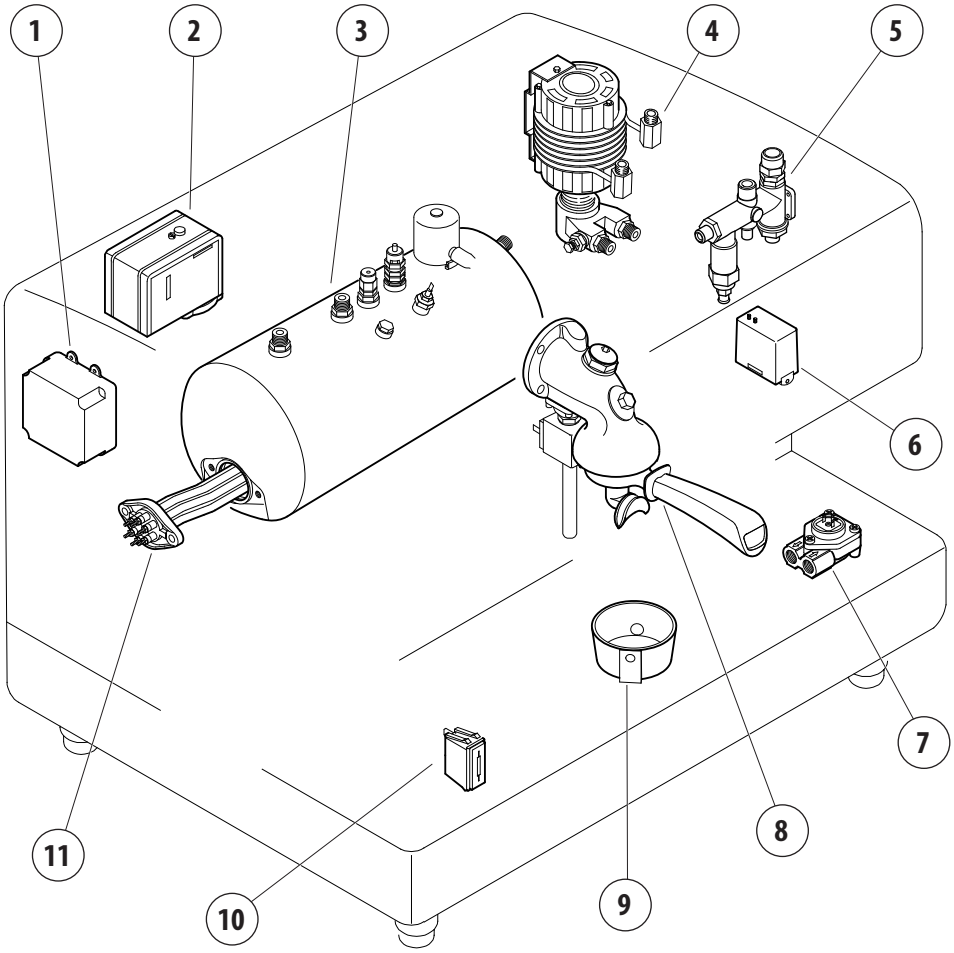


Steam pushbutton panel



2.7 Internal components

1. Electronic control unit
2. Pressure switch
3. Heating unit
4. Motor pump
5. Multifunctional dispenser
6. Air pump control unit (18 V)
7. Volumetric dosing device
8. Dispensing group
9. Drain tray
10. Fuse holder
11. Electric heating element



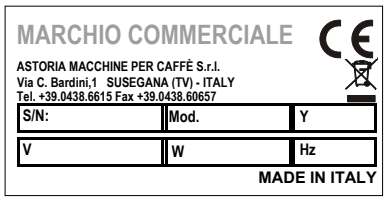
2.8 Data and CE marking

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

TECHNICAL DATA TABLE		COMPACT	2GR	3GR
220-240 V	Power	2900-3100 W	2800-3900 W	5300-5700 W
380-415 V		2900-3100 W	3600-3900 W	5300-5700 W
Frequency		50-60 Hz	50-60 Hz	50-60 Hz
Heating unit		7 L	9.0-9.3 L	9.0-9.3 L
Safety valve calibration		0.19 MPa (1.9 bar) +/- 0.015 MPa		
Heating unit operating pressure		0.08 - 0.14 MPa (0.8 - 1.4 bar)		
Mains water pressure		0.15 - 0.6 MPa max. (1.5 - 6 bar max.)		
Coffee dispensing pressure		0.8 - 0.9 MPa (8 - 9 bar)		
Working environment temperature		5 - 35°C 95° MAX. R.H.		
Sound pressure level		< 70 dB		

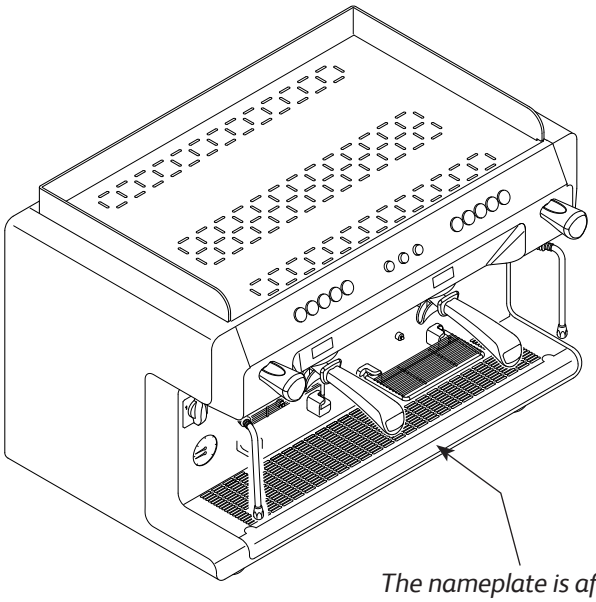
Conforming to directive 2006/42/CE, the machine is marked with the CE code with which the manufacturer states under his responsibility that the machine is safe for persons and things.
Alternative markings can be affixed according to the target markets, provided they comply with current product regulations.
The nameplate which provides the appropriate markings, identification data and specific technical data, is affixed under the drain tray.
An example of a nameplate is provided below.

When contacting the Manufacturer, always provide the following information:



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

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



The nameplate is affixed under the drain tray

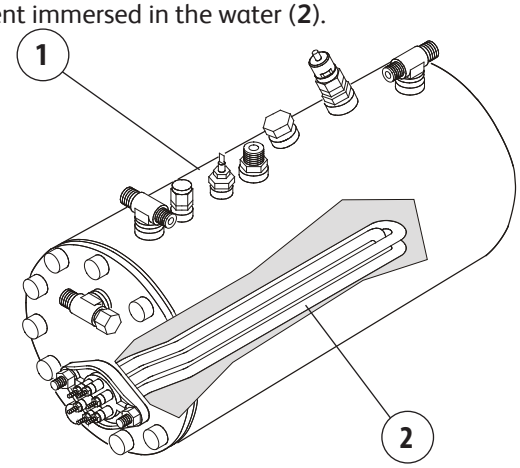
It is forbidden to remove or modify the nameplate. Should it deteriorate or become illegible, contact the Manufacturer.

To correctly connect the machine to the electric mains, refer to Chap. "12. WIRING DIAGRAMS" on page 47.

2.8.1 *Heating unit*

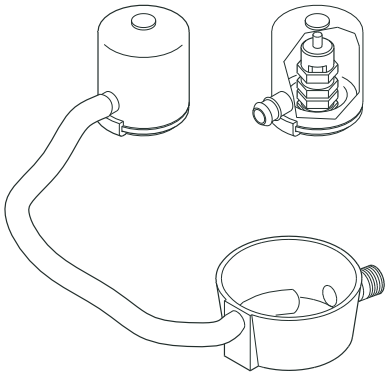
The heating unit is made of copper sheet metal (**1**). The heat exchangers are assembled onto this unit and are in turn connected to the dispensing group. The water used for dispensing coffee is taken directly from the heat exchanger. During the dispensing process, cold water is sent inside the exchanger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

The heating unit is electrically heated by an electric heating element immersed in the water (**2**).

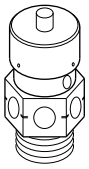


2.8.2 *Overflow device*

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.



2.8.3 *Pressure relief safety valve*



The pressure relief safety valve has a calibration of 0.19 MPa (1.9 bar) +/- 0.015 MPa in order to ensure that the pressure in the steam heating unit does not exceed 0.21 MPa (2.1 bar). Should a fault occur, the capacity of the valve is such as to be able to eliminate all the excess pressure in the heating unit.

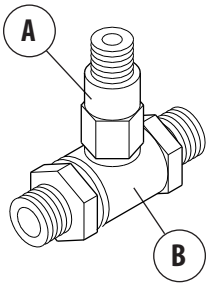
The safety valve should be checked regularly as indicated in Chap. "7. MAINTENANCE AND CLEANING" on page 34.

Two safety valves are installed on all machines with 4 groups.

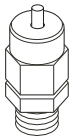
2.8.4 *Expansion valve + check valve*

This is a valve consisting of an expansion valve and a check valve.

- **Expansion valve (A):** 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).
- **Check valve (B):** its function is to prevent the water back-flowing into the hydraulic circuit exchangers.



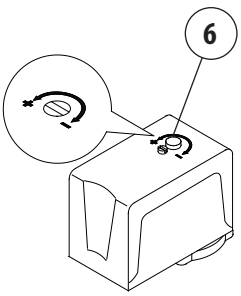
2.8.5 *Negative pressure valve*



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 can be carried out with the machine in operation by turning the screw (**6**) located on the body of the component.

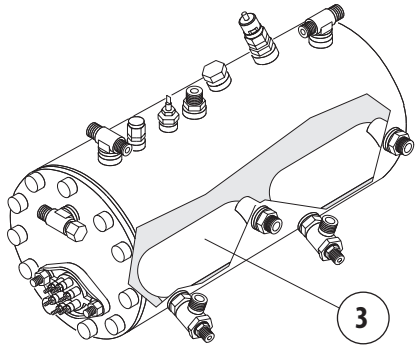


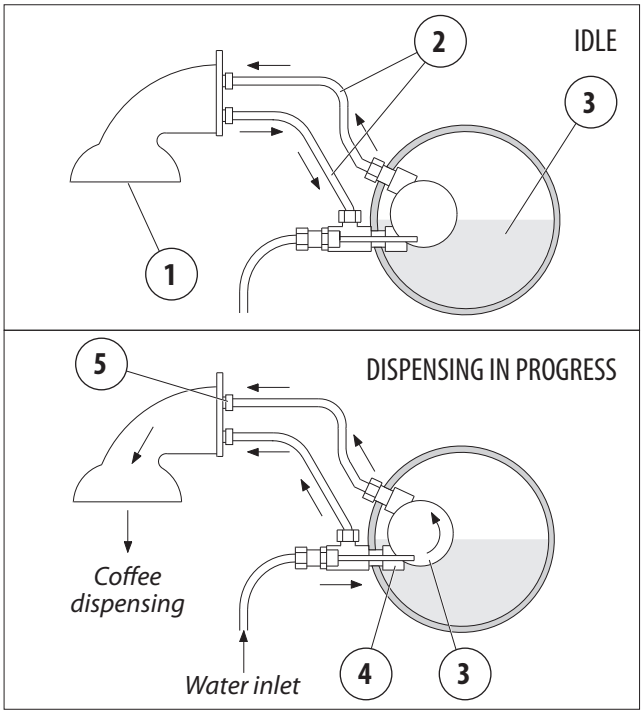
2.8.7 *Group*

In this system, the dispensing group (**1**) is heated by a thermosiphonic circuit (**2**) connected to the heat exchanger (**3**). The same water is used 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 8-9 bar for dispensing.

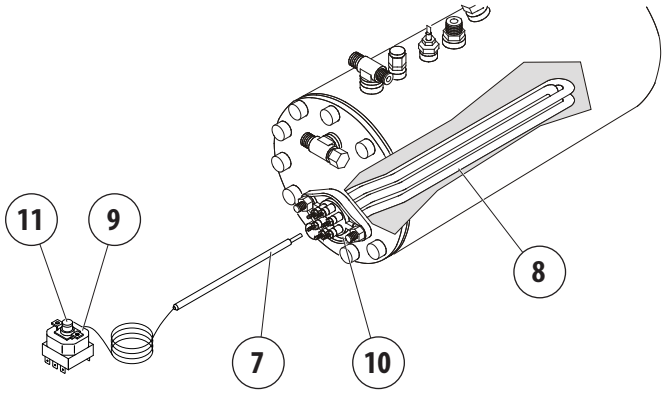
The injector (**4**) and the flow reducer (**5**) are important components for the dispensing group's operation. To increase the coffee extraction temperature, remove the flow reducer (**5**) or replace it with one that has a bigger diameter. To decrease the temperature, replace it with one that has a smaller diameter. If necessary, the exchangers can be replaced by removing the flange and disconnecting the relative hydraulic circuit pipes. These operations should be carried out when the machine has been switched off and has cooled down: always replace the seals.





2.8.8 *Safety thermostat*

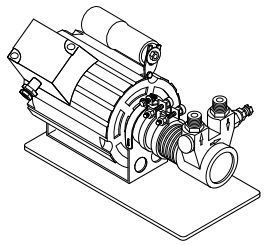
The thermostat prevents any damage occurring to the electrical heating element if there is no water in the heating unit. The thermostat bulb (**7**) is located inside a sheath (**8**) in the middle of the heating elements. The thermostat contacts (**9**) are connected to the electric heating element (**10**). 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 (11). However, before starting the machine up again, identify what prevented the water from being fed into the heating unit.

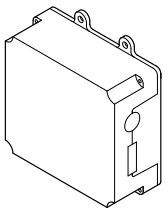
2.8.9 *Motor pump*

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



2.8.10 *Electronic control unit*

The electronic control unit is installed on the SAE versions. Its purpose is to electronically control the coffee dose via the water flowing through the dosing device and to check that the heating unit is being filled with water.
Some versions of the control unit are set up to be connected to the dispensing accounting systems by means of a specific interface device.

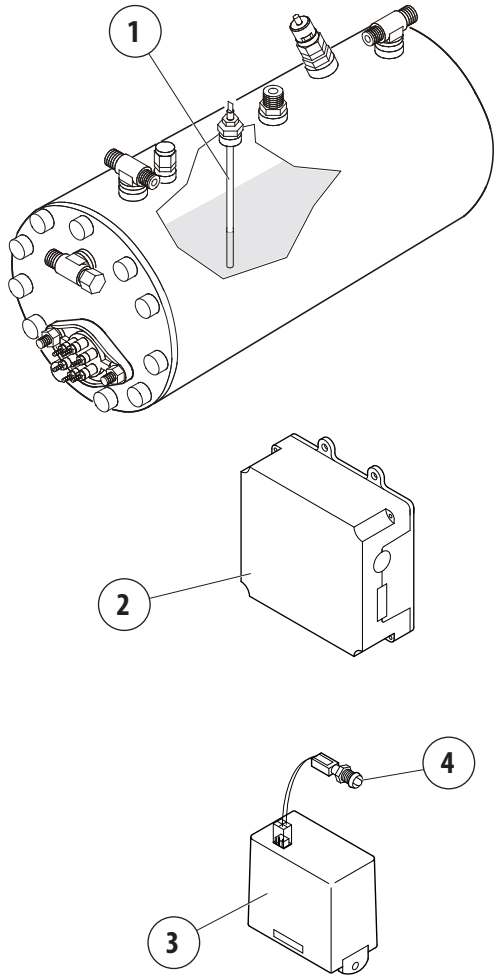


2.8.11 *Automatic Water Entry*

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

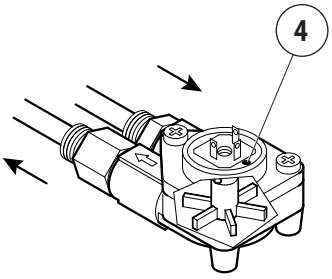
- A probe inserted into the heating unit (**1**) consisting of a stainless steel rod.
- The standard control unit (**2**) on SAE versions and the electronic level regulator on the other versions (**3**).
- A hydraulic circuit with a solenoid valve controlled by the regulator.

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). The LED (4) located on the front of the machine body comes on to indicate activation of this system. When installing machines with 3 groups, the initial water filling time may exceed the established timeout limit. Should this occur, simply turn the machine off and then back on to restore normal operating conditions.



2.8.12 *Volumetric dosing*

The volumetric dosing device that is installed on the SAE versions, measures the quantity of water sent to the group in order to dispense coffee.
The dispenser generates electrical impulses which are sent to the electronic control unit.
These impulses are read by the control unit and counted while the dose is being programmed.
The flashing LED light (**4**) indicates that the electrical impulse has been sent from the dosing device to the control unit.

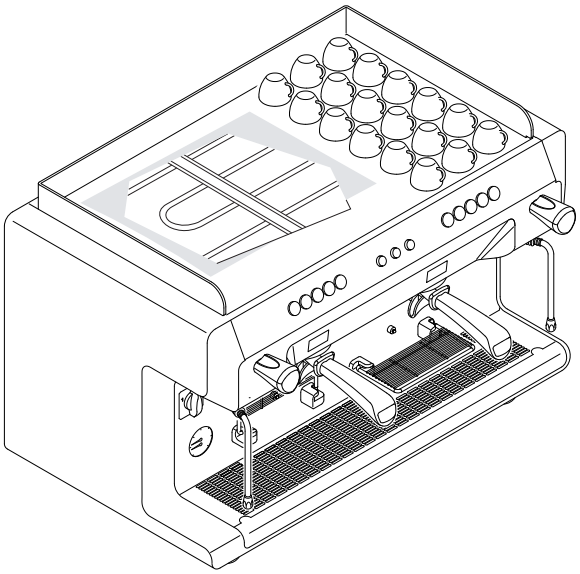


2.8.13 *Electronic pushbutton panels*

The electronic pushbutton panels on the SAE versions allow the coffee doses to be selected and programmed. They are connected to the electronic control unit.
To use and programme these, please consult the user manual.

2.8.14 *Cup warmer*

The cup warmer device warms the cups before they are used. In some versions it is possible to adjust the temperature by following the instructions on the user manual.



2.8.15 *Hot water nozzle*

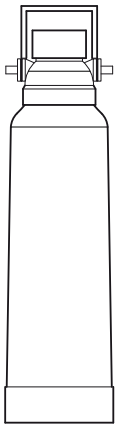
The hot water nozzle is connected to a heating unit suction hose. Depending on the model, hot water can be dispensed in two ways:

- COMPACT version: by turning the adjustment knob on the front of the machine.
- AEP-SAE version: by selecting a button connected to a solenoid valve.

2.8.16 *Steam nozzle*

The steam nozzle is connected to the top of the heating unit. Steam is dispensed by turning the adjustment knob on the front of the machine.

2.8.17 *Water filter*

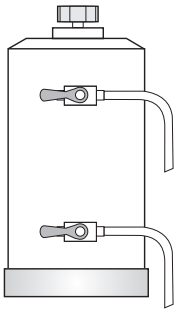


In the mains water, non-soluble salts are present which cause limestone to form in the heating unit and other parts of the machine.
Drinking water can also contain heavy metals and substances, such as chlorine which are harmful to health.
The filter makes it possible to eliminate or substantially reduce the presence of these mineral salts.
The cartridge contained in the water filter must be replaced at the frequency specified by the manufacturer.

To use and maintain the water filter, follow the instructions provided in para. "7.4 Water Filter Maintenance" on page 38.

2.8.18 *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.).



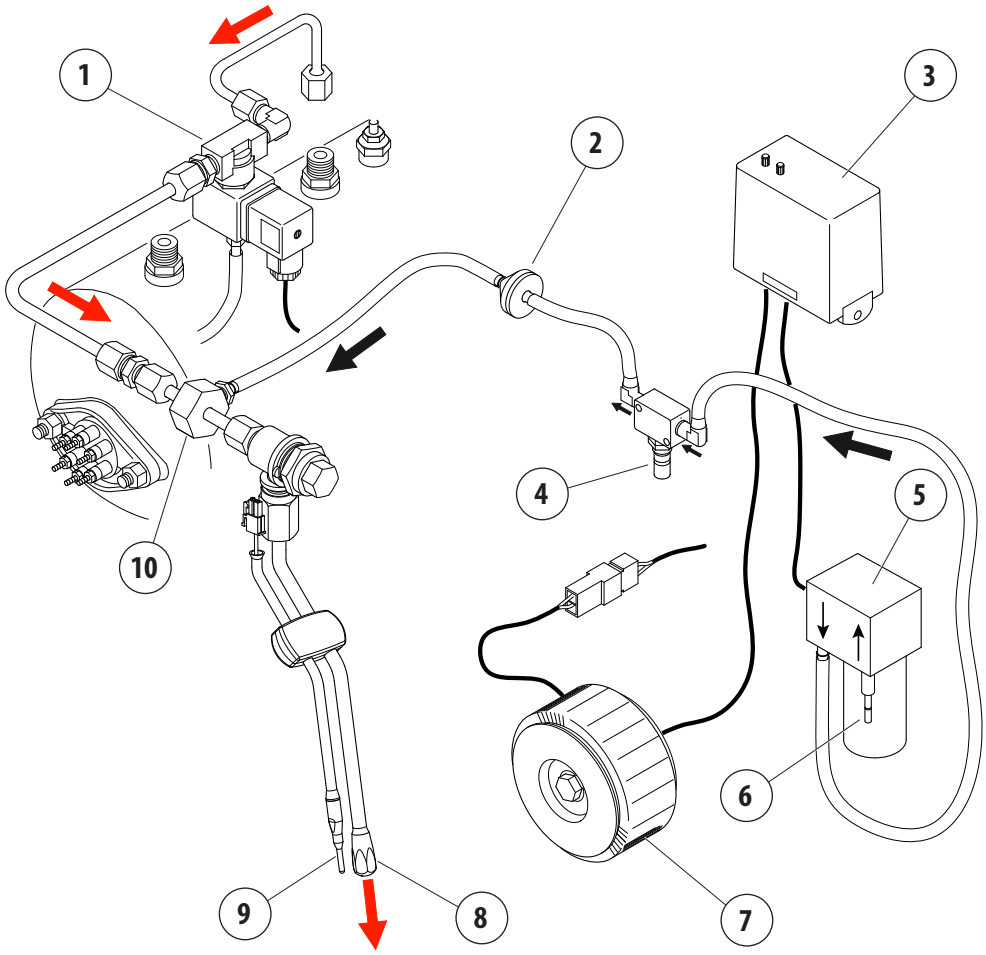
To use and regenerate the water softener, follow the instructions provided in para. "7.5 Softener Regeneration" on page 40.

2.8.19 *Automatic steam wand (optional)*

The “Automatic steam wand” system - fitted on some versions with a display - enables milk to be automatically frothed at the programmed temperature. The operating principle of the automatic steam wand is listed below:

- Press the frothed milk or heated milk button .
- The solenoid valve opens (**1**) which consequently allows the steam to flow from the heating unit to the nozzle (**8**).
- The system simultaneously activates the air suction pump (**5**) which is controlled by the control unit (**3**) and powered by the transformer (**7**). The milk froth can be adjusted by changing the amount of air intake when opening the valve (**4**).
- After the air has passed through the non-return valve (**2**), it mixes with the steam in the mixing Interface (**10**).
- Steam comes out of the nozzle (**8**);
- The probe (**9**) 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.



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 Dimensions and weight

Model	COMPR.	2GR	3GR
Maximum gross weight	70 kg	77 kg	110 kg

3.4 Handling the packed machine

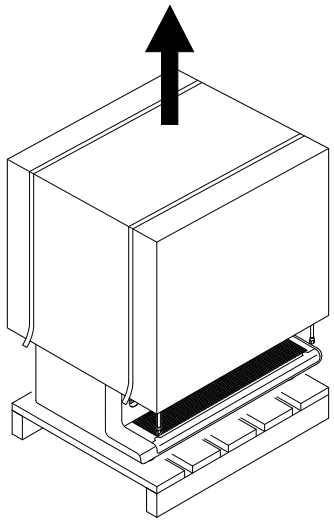
Upon arrival, the machine must be unloaded and handled with care, carefully following the instructions on the packaging, or those contained in this Manual.

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 plus the safety margins which are required by current standards.

3.5 Unpacking the machine

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

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



After unpacking the machine, check that there are no damaged parts due to transport or missing parts. Should there be any, immediately inform (no later than 7 days after delivery) both the CARRIER and the MANUFACTURER, by indicating the machine data and providing photographic evidence.
We recommend that you keep the packaging until the guarantee has expired.
Wood, nails, staples, cardboard: non-polluting material which must be recycled properly.
Plastic: polluting material that must not be burned (danger of toxic fumes), nor disposed of as normal waste; to be disposed of according to current regulations.

4. STORAGE

4.1 Overview

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

4.2 Storing the machine after operation

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

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

Store the machine taking the following precautions:

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

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

- Room temperature: +5°C - +35°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 than those listed, contact the MANUFACTURER before they become a potential problem.

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

5. INSTALLATION

5.1 Safety precautions

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

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

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

5.2 PPE features

When installing the machine, the following PPE is required:

The use of protective gloves is mandatory.

The use of eye protection is mandatory.

The use of safety shoes is mandatory.

5.3 Environmental conditions

5.3.1 *Room temperature*

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

5.3.2 *Relative humidity*

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

5.3.3 *Altitude*

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

5.4 Installation and operation spaces

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

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

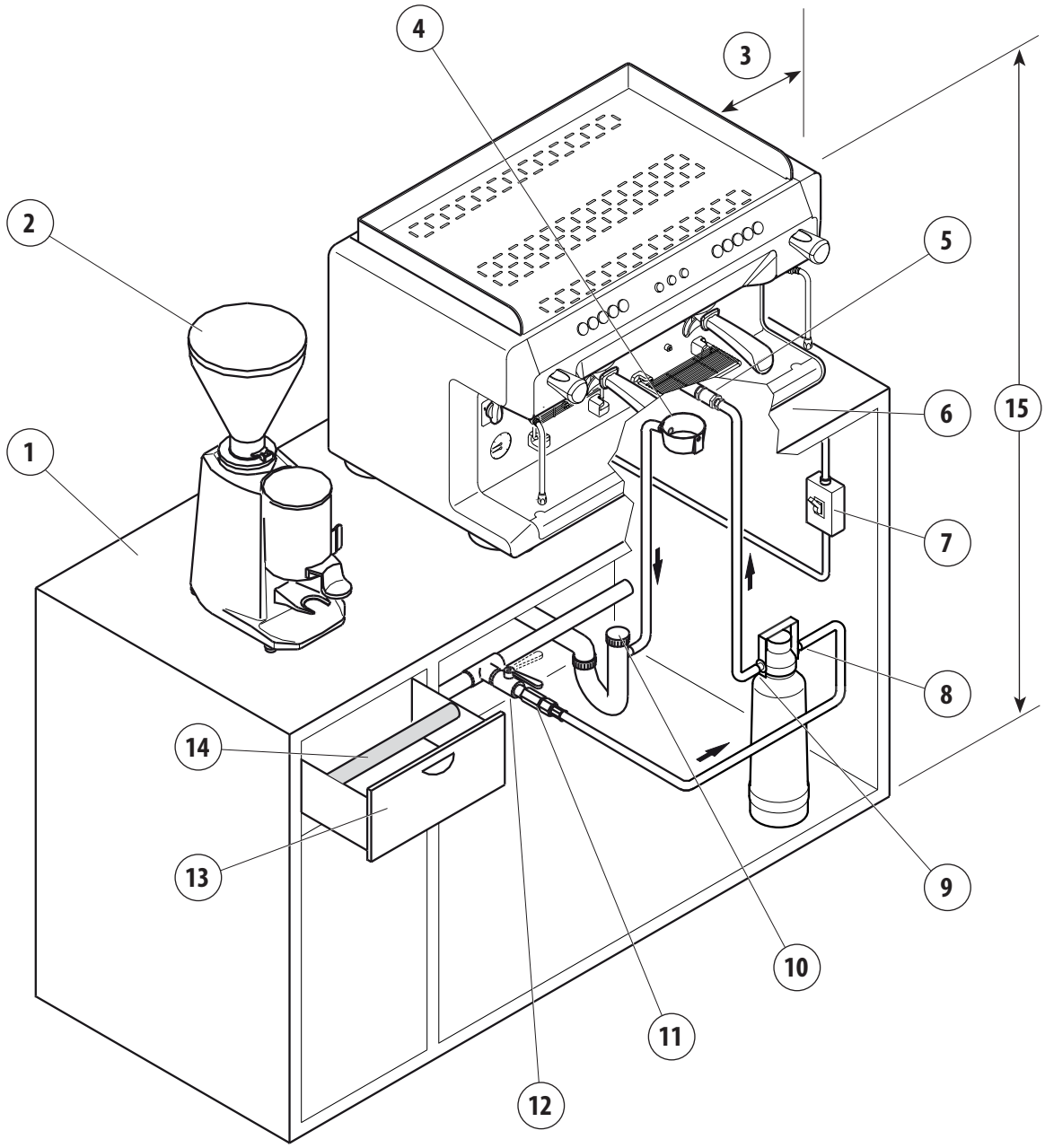
5.5 Support base

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

- Ensure that there is sufficient space for the machine to be positioned and used correctly.
- The worktop (**1**) must be comfortable and able to withstand the machine's weight. The height of the upper section of the machine (**15**) must be at least 150 cm from the floor.
- The base must be perfectly level and have no irregularities.
- The terminals for connecting to the water mains (**5**) and electrical mains (**7**) must be in the immediate vicinity of the support base;
- The machine can also be positioned against a wall, but please leave enough space - at least 50 cm (**3**) - on the right and left for easy access during cleaning operations.
- Fit a drawer under the worktop (**13**) which will be used to deposit used coffee grounds and if possible, fit a rubber support as well (**14**) to knock the filter holder against.

FOR THE USA: Replace the machine's feet (6) with the raised ones supplied.
The new feet must be firmly fastened to the machine by means of the specific nut.

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).

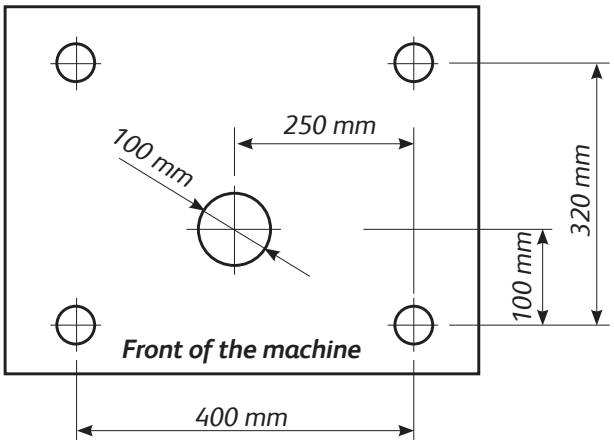


1. Support base
2. Grinder-dispenser
3. 50 cm minimum distance between the machine and the wall
4. Drain tray
5. Water mains inlet
6. Adjustable feet of the machine
7. Electrical mains switch
8. Water filter inlet
9. Water filter outlet
10. Sewer drain
11. Water mains check valve
12. Water mains valve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

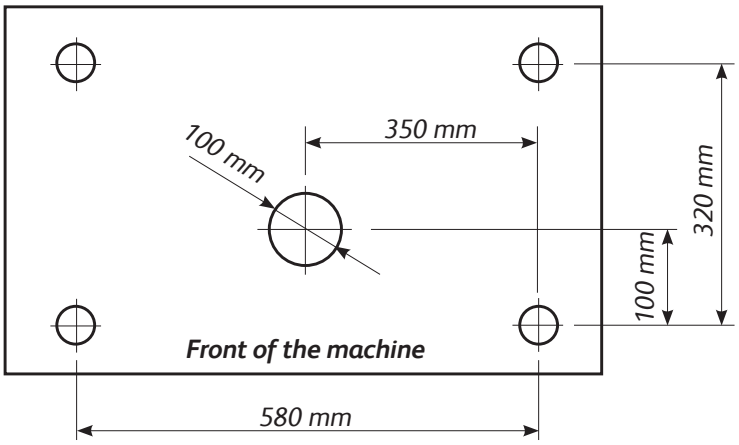
5.6 Drilling the support base

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

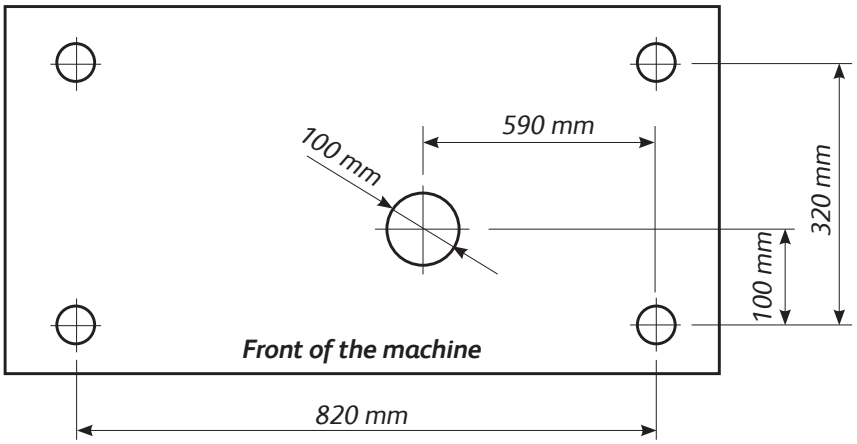
COMPACT



2 GROUPS



3 GROUPS



5.7 Hydraulic connection

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

5.7.1 *Water supply*

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

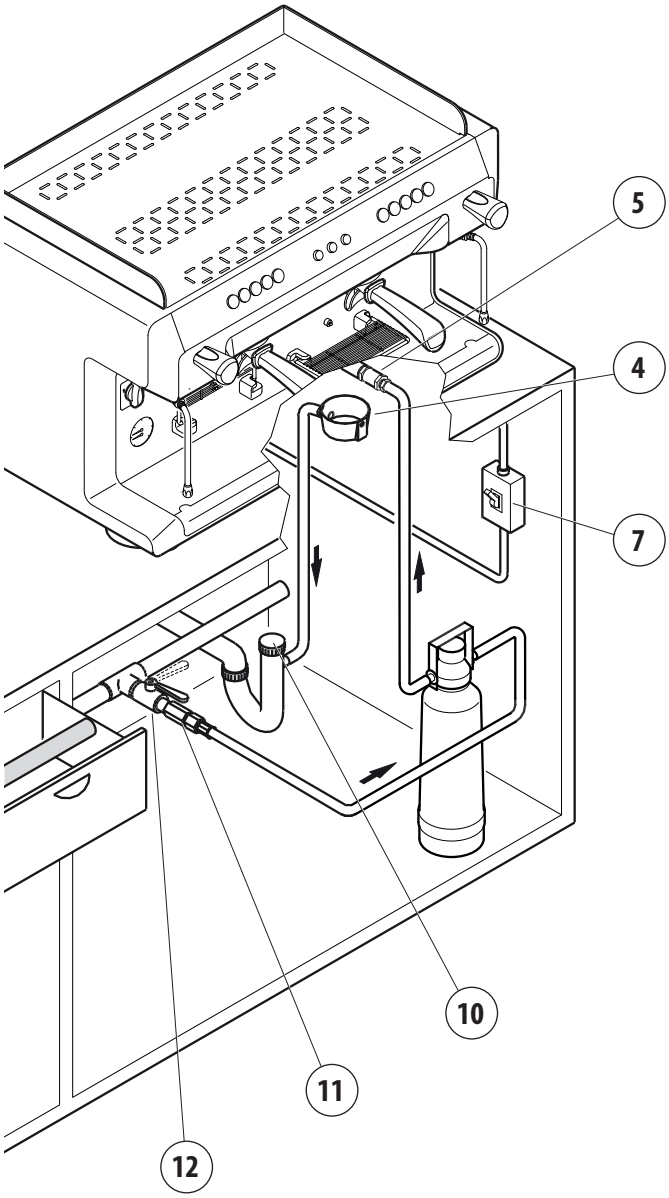
5.7.2 *Materials to be used*

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

5.7.3 *Hydraulic connections*

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

- Add a valve to the water mains (**12**) in order to stop the water back-flowing to the machine.
- In order to prevent damage, it is advisable to install the water purification filter where it will be protected from accidental blows.
- If there is no water purification filter, connect the water mains (**12**) directly to the machine's water inlet (**5**).
- 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;
- The drain must be connected to a siphon that can be inspected and periodically cleaned, in order to prevent unpleasant odours returning.
- To avoid oxidisation building up and damage to the machine over time, do not use iron connections for the hydraulic system, even if they are galvanised.



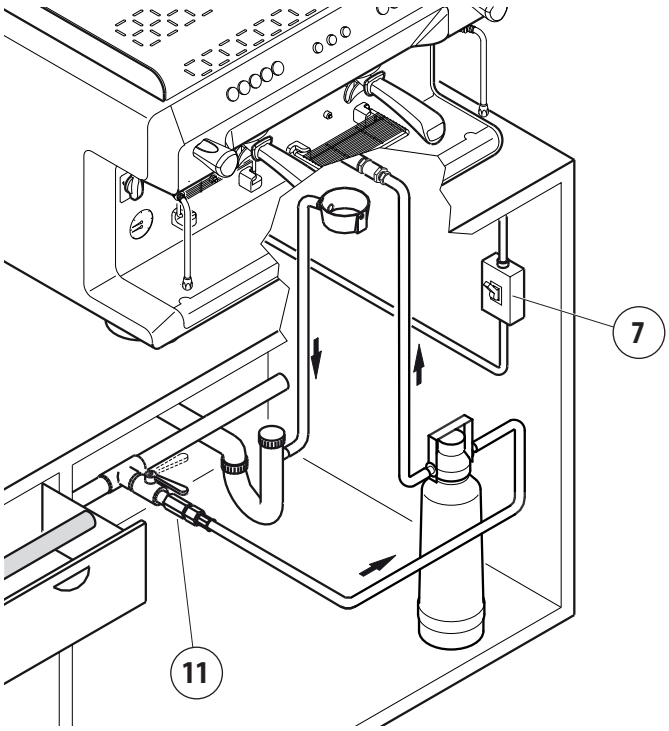
After installation and before using the machine, the water in the hydraulic circuits must be replaced, as indicated in para. "6.9 Water Renewal" on page 28.

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

The water mains must supply cold water fit for human consumption (potable water) at a pressure between 0.15-0.6 Mpa (1.5 and 6 bar). If the pressure is higher than 0.6 MPa (6 bar), connect a pressure reducer before the pump.
All the filling couplings are 3/8 male gas types. The drain tray is connected to a pipe with an internal diameter of 20 mm.
If an external tank is used, the connection pipe between the machine and the tank must not exceed 150 cm.
The machines are fitted with a "Timeout" device which allows the heating unit to be filled up with water within a maximum time. This function prevents water from flowing out of the heating unit's valve (flooding) and keeps the motor pump from overheating.

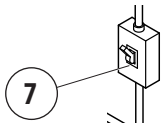
FOR THE EUROPEAN COMMUNITY: when connecting to a water mains or an external tank, a non-return valve (11) must be positioned upstream from the machine, as set forth by the EN 1717 standard.

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



5.7.4 *Electrical connection*

- The conformity of the electrical system, effectiveness of the earthing system and functionality of the differential circuit breaker - all of which are fundamental for guaranteeing the appliance's electrical safety - are the responsibility of the person in charge of the electrical system on which the equipment is installed.
- Before installation, make sure that the electrical system is equipped with the protection device (**7**), as indicated in the safety notes on page 30.



- To connect the machine to the electric mains, refer to Chap. "12. WIRING DIAGRAMS" on page 47.
- Do not use extension leads or electrical adapters for multiple outlets.
- The access spaces to the machine and main switch must be left clear, in order to allow the user to intervene without any constrictions and leave the area immediately when needed.

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

The electrical system must be equipped with a protection device (8) that ensures an omnipolar disconnection from the mains with a contact opening distance in overvoltage category III conditions and which guarantees a suitable residual-current device, equal to 30 mA, in compliance with current laws and safety regulations.

Always connect the motor pump cable before the machine power supply cable, by following the diagram provided. Failure to comply with the instructions given above may cause serious damage to the machine and/or motor pump and will invalidate any guarantee.
We recommend that you promptly report any problems encountered during the appliance's installation to the Manufacturer.

6. COMMISSIONING

6.1 Safety precautions

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

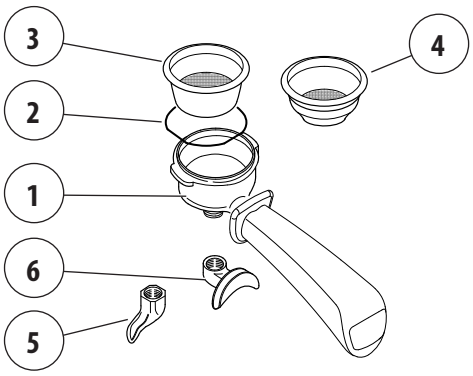
6.2 Preparing the filter holders

6.2.1 *Filter holders*

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

6.2.2 *Spouts*

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

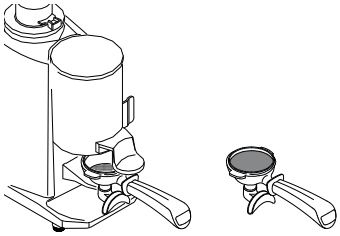


Properly connect the single filter with the single spout and the double filter with the double spout.

6.2.3 *Grinding and dosing coffee*

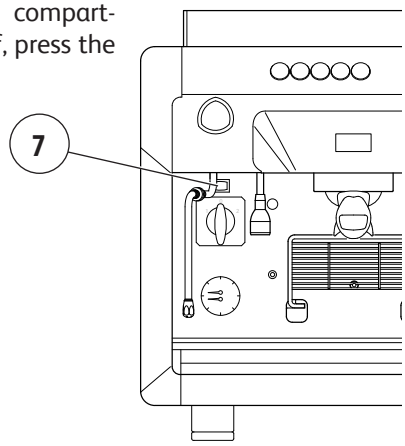
It is important to have a grinder-dispenser next to the machine so that the coffee can be ground on a daily basis.
To adjust the coarseness of the ground coffee, use the appropriate regulator located on the grinder-dispenser hopper.
The coffee must be ground and dispensed according to instructions provided by the manufacturer of the grinder-dispenser. The following points should also be kept in mind:

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



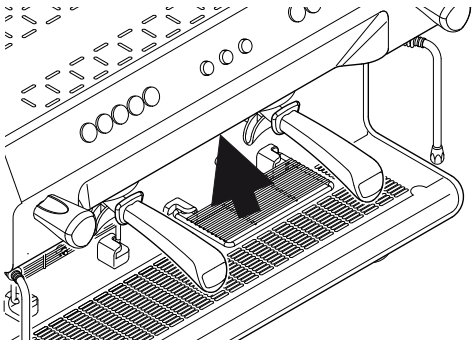
6.3 Dispensing compartment lighting

To turn the machine's compartment lighting on and off, press the switch (**7**).



6.4 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.
To clean the grilles, see paragraph 7.7.6.

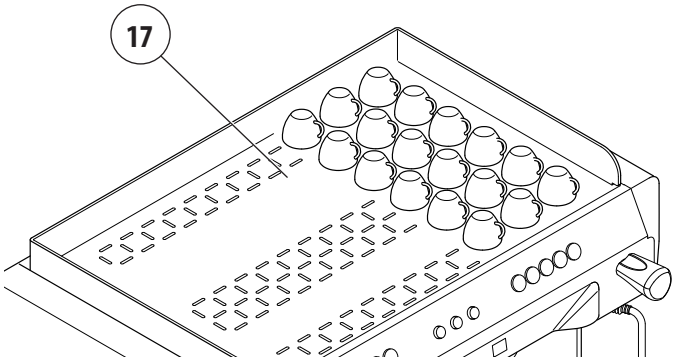


6.5 Cup warmer

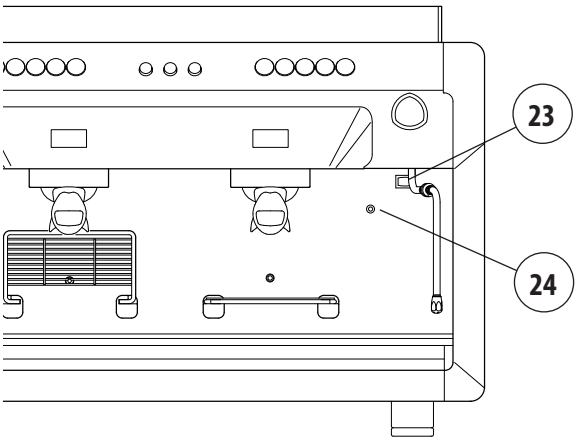
For safety reasons, we do not recommend placing cloths or other objects on the cup warmer shelf in order to prevent the machine from overheating.

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

Place the cups to be warmed on the cup warmer shelf (**17**) and turn the device's switch (**23**) to **ON**.



Check that the indicator light (**24**) on the front of the machine lights up; when lit, this indicates that the cup-warming device is active.



6.6 Automatic steam wand (if applicable)

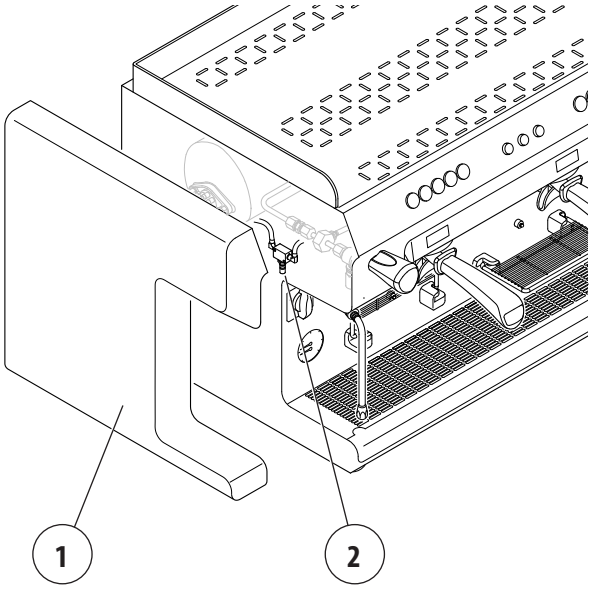
6.6.1 *Adjusting the temperature*

To programme the temperature of the milk to be heated, refer to para. 6.13.3.
However, we recommend that this does not exceed 60°C.

6.6.2 *Adjusting the milk froth*

To adjust the automatic steam wand milk frothing settings, proceed as follows:

- Remove the left side panel from the machine (**1**).
- Turn the screw of the adjustment valve (**2**):
  - To reduce the froth, turn it clockwise.
  - To increase the froth, turn it anticlockwise.
- Reposition the side (**1**) on the machine.

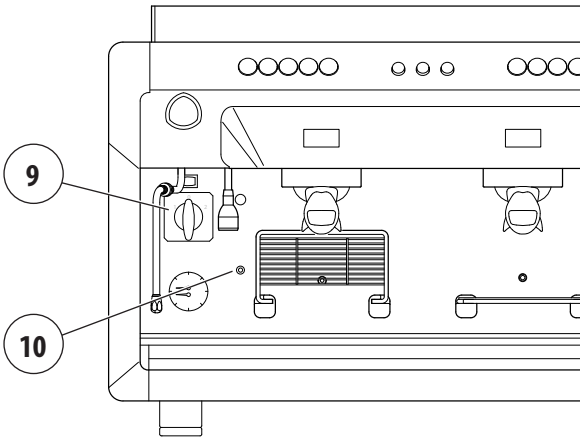


6.7 Machine initial start-up

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.

If the machine is inactive for longer than a week, the Technician must replace 100% of the water inside the hydraulic circuits.

Turn the power switch (**9**) 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 (**9**) 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.



LED level (10) warnings

Flashes	The heating unit is being filled with water
Steady light	Water filling OK

When the timeout device cuts in due to a block during the heating unit water filling phase, all the LEDs on all the pushbutton panels will flash.

If there is no water (first installation or after heating unit maintenance), the heating unit must be filled in advance in order to prevent the heating element from overheating.

6.8 Turning the machine off

Turn off the machine via the main switch (**9**).

6.9 Water renewal

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

- When the installation is complete, the appliance must be started, brought to the nominal working condition and left in the “ready-to-operate” status for 30 minutes.
- Next, the appliance has to be turned off and fully emptied of the first water introduced into the entire hydraulic circuit, in order to eliminate any initial impurities.
- The appliance must then be filled again with water and brought to nominal working conditions.
- Upon reaching the “ready-to-operate" status, the following dispensing operations must be performed:
  - Continually dispense from each coffee group, in order to empty at least 0.5 litres from the coffee circuit. If there are several dispensing points attached to the same exchanger/coffee heating unit, divide the volume by the number of dispensing points.
  - Empty the heating unit of all its hot water by continuously dispensing through the specific nozzle. If there are multiple dispensing points, divide the volume by the number of dispensing points.
  - Continuously release steam for at least 1 minute from each steam dispensing point.

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

Before using the machine, run a few empty dispensing cycles with the filter holder attached for a few seconds 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.

6.10 Dispensing coffee

6.10.1 *Preparing the filter holder*

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

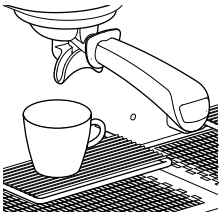
- Fill the filter with a dose of ground coffee (approx. 6-7 g); follow the procedures specified by the manufacturer of the grinder-dispenser.
- Compress the coffee with the special press.
- Clean the rim of the ground coffee filter before attaching the filter holder to the dispensing group.
- Hook the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

6.10.2 *Dispensing - AEP version*

- Place the coffee cup under the dispensing spout.
- Press the desired dispensing switch (**1**): the coffee will begin being dispensed, and it can be stopped via the same switch once the desired amount of coffee has been obtained in the cup.

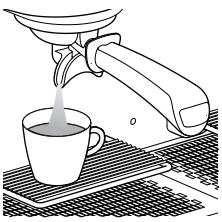
6.10.3 *Dispensing - SAE version*

Do not remove the filter holder from the dispensing group when coffee is being dispensed.
Do not insert your fingers or any other object into the filter holder.

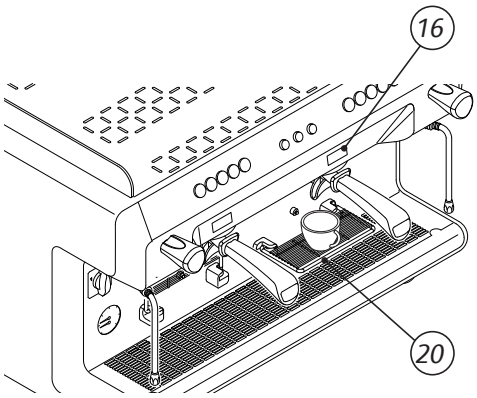


- Put the coffee cup under the dispensing spout
- Press the desired dose button (e.g.) and wait for the coffee to finish being dispensed.

- To stop coffee dispensing ahead of time, press the button again.
- Use the manual dispensing button should the pushbutton panel malfunction or to continuously dispense coffee.



When using small-sized cups, a specific raised cup grille (20) is available.



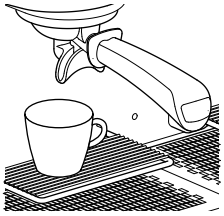
The display (16) beneath each keypad will count the duration of the dispensing cycle in seconds.

6.10.4 *Programming coffee doses*

Each dose must be programmed with freshly ground coffee and not with previously-used coffee grounds. The system automatically exits the programming mode 20 seconds after the last operation was carried out.

Do not remove the filter holder from the dispensing group when coffee is being dispensed.
Do not insert your fingers or any other object into the filter holder.

- Always programme the right pushbutton panel first. This way, all the pushbutton panels will be automatically programmed. If necessary, subsequently programme the others.



- Place the cup under the dispensing spout.
- Press and hold the **Stop Prog.** button for at least 5 seconds until the same button starts to flash.

- Press the desired dose button, for example .

- To confirm the dose, press the button again or the **Stop Prog.** button.

- Repeat this operation for the other dose buttons.

- When you have finished programming, press the **Stop Prog.** button or wait 20 seconds.

6.10.5 *Pre-set values*

Use this procedure to reset the factory values for the coffee beverage doses.
Proceed as follows:

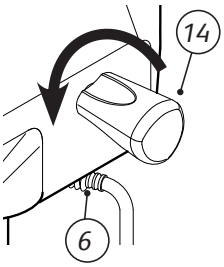
- Turn the machine off.
- Restart the machine by pressing and holding the , and **Stop Prog.** buttons on the right pushbutton panel.
- Only release the buttons when the **Stop Prog.** button LEDs are flashing on all the pushbutton panels.
- Switch the machine off and back on again.

6.11 Dispensing via the steam nozzle

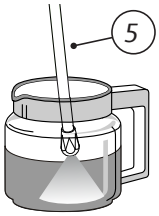
Carefully move the steam nozzle using the specific anti-scald rubber grip (6).
Do not direct the steam towards hands or other parts of the body. Do not touch the steam nozzles with bare hands; use the appropriate PPE.

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

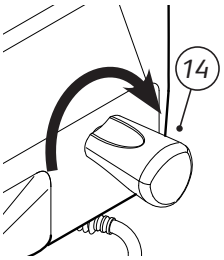
- Immerse the steam nozzle (5) into the liquid to be heated.



- Rotate the valve knob (14) anti-clockwise.



- The quantity of steam will be proportional to how open the valve is.



- To stop dispensing, turn the valve knob (14) clockwise.

To optimally froth the milk, follow these simple rules:

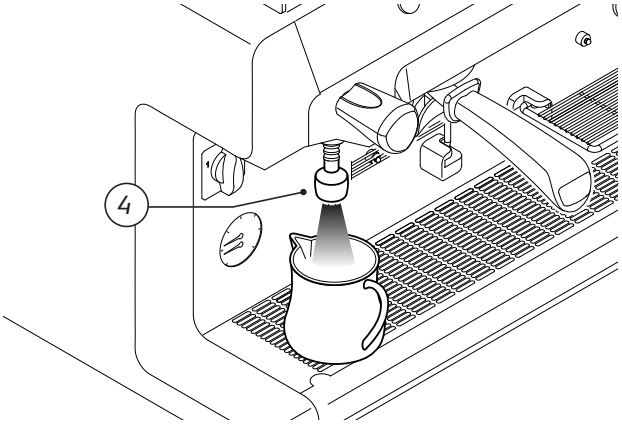
- Heat only the amount of milk you intend to use; once heated, it will have to be completely poured from the jug and not heated again.
- Froth the milk starting with a temperature of about 4°C.

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

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

6.12 Dispensing hot water

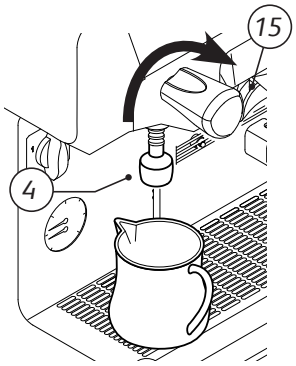
Danger of scalding. Do not direct hot water towards hands or other parts of the body. Do not touch the hot water nozzle with bare hands; use the appropriate PPE.



6.12.1 *COMPACT version*

- Place the jug under the hot water nozzle (4).

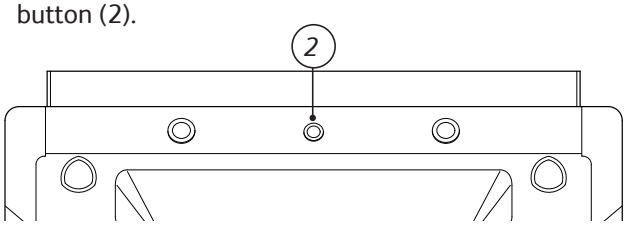
- Rotate the valve knob (15) anticlockwise.
- The hot water flow will be proportional to how open the valve is.



- To stop dispensing, turn the valve knob clockwise.

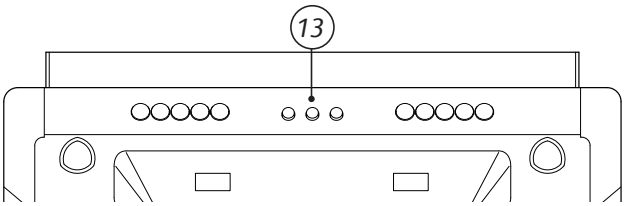
6.12.2 *AEP version*

- Place the jug under the hot water nozzle **(4)**.
- Press the water button (2).
- To stop dispensing water ahead of time, press the same button (2).



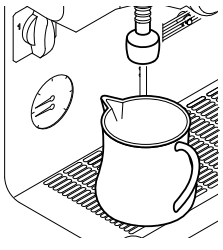
6.12.3 *SAE version*

- Place the pot under the hot water nozzle.
- Press the water button on the service pushbutton panel (13) and wait for the hot water to be dispensed.
- To stop the dispensing cycle ahead of time, press the hot water dispensing button again.



6.12.4 *Programming the hot water (SAE version)*

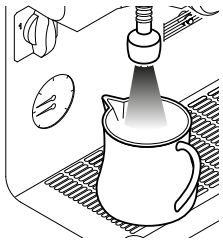
- Place the pot under the hot water nozzle.



- Press the **Stop Prog.** button for at least 5 seconds until it begins to flash.

- Press the water button .

- To confirm the dose, press the water button again.



- When you have finished programming, press the **Stop Prog.** button or wait 20 seconds.

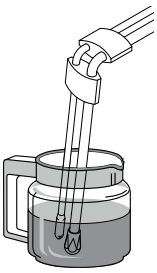
6.13 Dispensing with the automatic steam wand

6.13.1 *Tips regarding its use*

- Only froth the amount of milk that you intend to use; once heated, the milk will have to be completely poured out of the jug and cannot be reheated.
- The automatic steam wand only guarantees an accuracy of ± 3°C between the set temperature and the actual milk temperature, if the starting milk temperature is 4°C.
- As the steam automatically stops dispensing when the set milk temperature is reached, only fill the jug half way in order to prevent the milk froth from spilling out.
- Use a suitably-sized jug for the amount of milk that requires frothing (approx. 200 ml is recommended) and make sure that it is circular and not conical (see the image).

6.13.2 *Dispensing*

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

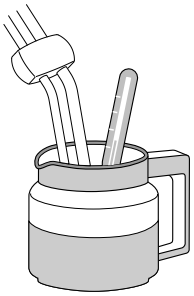


- Immerse the automatic steam wand nozzle tips into the milk.
- Press the button.
- Wait until the dispensing process has been completed.
- To stop dispensing ahead of time, press the same button again.

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

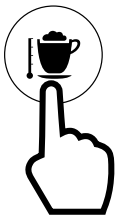
6.13.3 *Programming*

- Immerse the steam nozzle into the milk to be frothed, together with a thermometer to check its temperature.

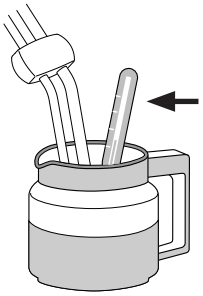


- Press the STOP/PROG. button for at least 5 seconds until it begins to flash.

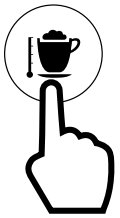
- Press the automatic steam wand button .



- Check the temperature of the milk via the thermometer and, once the desired temperature has been reached, stop the steam from dispensing by pressing the automatic steam wand button .



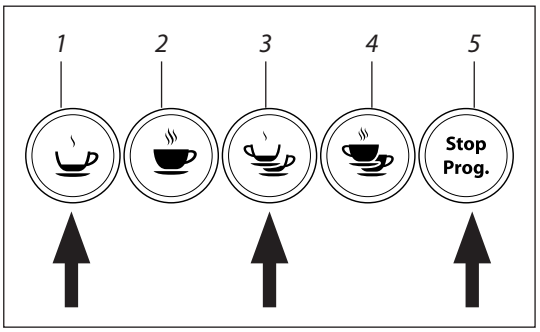
- When you have finished programming, press the STOP/PROG. button or wait 20 seconds.



6.14 Pre-set values

Use this procedure to reset the factory values for the coffee beverage doses.
Proceed as follows:

- Turn the machine off.
- Turn the machine back on by pressing and holding buttons (**1**), (**3**) and (**5**) on the right pushbutton panel.
- Only release the buttons when the K5 LED is flashing on both pushbutton panels (STOP/PROG. buttons).
- Switch the machine off and back on again.



6.15 Tips for a good cup of coffee

Wash the filters and filter holders on a daily basis, as indicated in para. 7.7.2 a pagina 44. The failure to perform this cleaning operation will negatively affect the quality of the dispensed coffee.
To obtain high-quality coffee, it is important that the water hardness does not exceed 6-7°f (French degrees). If the water hardness exceeds these values, it is advisable to use a water filter or softener. Avoid using a water softener if the water hardness is less than 4°f.
If the taste of chlorine in the water is particularly strong, install a special filter.
Do not to keep large amounts of coffee beans on hand. If you change the type of coffee, we recommend calling out the Technician to adjust the water temperature and coffee grinder.
If the machine has not been used for a certain period of time (2-3 hours), carry out a few dry runs. Make sure that the machine is constantly cleaned and periodic maintenance is carried out.

7. MAINTENANCE AND CLEANING

7.1 Safety precautions

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

7.2 PPE features

When installing the machine, the following PPE is required:

The use of protective gloves is mandatory.

7.3 Maintenance

7.3.1 *Scheduled maintenance*

Perform the following maintenance according to the specified frequency.
If the machine is used intensively, the checks need to be performed more frequently.

Component	Type of operation	Quarterly	Yearly
PRESSURE GAUGE	Check the heating unit pressure which must be between 0.08 and 0.14 MPa (0.8 and 1.4 bar). Periodically check the water pressure when coffee is being dispensed: check the pressure indicated on the gauge, which must be in the range of 0.8 to 0.9 MPa (8 and 9 bar).	X	
FILTERS AND FILTER HOLDERS	Check the condition of the filters. Check for any damage on the edge of the filters and check whether any coffee grounds settle in the coffee cup, and replace the filters and/or filter holders, as required.	X	
DISPENSING GROUP	Replace the shower screen and group gasket as indicated in para. 7.3.4.	X	
WATER FILTER	Replace the water filter cartridge at the frequency indicated by the manufacturer. If limescale has formed in the hydraulic circuit, the filter will need to be replaced.	X	
WATER SOFTENER	Carry out the regeneration procedure as instructed by the manufacturer. Take care in areas where the water is very hard. The water will need to be regenerated more frequently, especially if the machine is used intensively.	X	
GRINDER-DISPENSER	Check the ground coffee dose (around 7 grams each time) and check the degree of grinding. The burrs must always have sharp cutting edges. Too much powder in the grounds is an indication that the coffee is deteriorating. We recommend contacting the Technician to replace the flat burrs after every 400/500 kg of coffee, or after every 800/900 kg for conical burrs.	X	
HEATING UNIT	Replace the water in the heating unit as indicated in para. 6.9.	X	
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. If the heating unit insulation needs to be removed, restore the insulation after the maintenance work has been completed. Remove and clean the heating unit level probes. Check for lime scale deposits on the heating element, on the exchanger (inside and out). If there is a lot of limestone build-up, this indicates that the water filter has not been replaced, or that the softener has not been regenerated. When replacing any components, always replace the relative gasket as well.		X

Component	Type of operation	Quarterly	Yearly
SAFETY VALVE SCNR VALVE NEGATIVE PRESSURE VALVE	Check that the safety valves, non-return drain valves and negative pressure valves are operating properly, as indicated in para. 7.3.5 - 7.3.6 - 7.3.7. If these need to be replaced due to malfunction, repeat the check with the newly-installed valve.		**X**
HYDRAULIC CIRCUIT	Check whether there is any lime-scale build-up in the hydraulic circuit. When replacing any components, always replace the relative gasket as well. If there is a lot of limestone build-up in the machine's hydraulic circuit, this indicates that the water filter has not been replaced, or that the softener has not been regenerated. Take care in areas where the water is very hard. The water filter will need to be replaced more frequently and the water softener will need to be regenerated more often, especially if the machine is used intensively.		**X**
DRAIN	Check for any leaks on the water mains and sewer connections. Check the condition of the drain tray and the drain connection tube.		**X**
DISPENSING GROUP	Check the efficiency of the dispensing group's solenoid valve.		**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**
VOLUMETRIC DOSING DEVICE	Check and clean the volumetric dosing device by removing any oxidation from the tips.		**X**
MOTOR PUMP	Visually inspect the condition of the machine’s wires.		**X**

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

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

7.3.2 *Maintenance after a short period of machine inactivity*

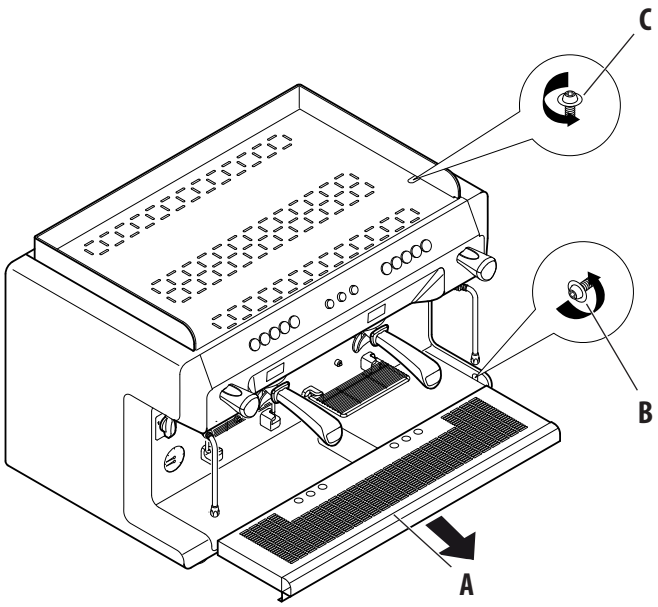
“Short period of machine inactivity” refers to a period of time exceeding one working week.
If the machine is switched back on after this period, all the water inside the hydraulic circuits must be replaced as indicated in para. 6.9.
Furthermore, all periodic maintenance operations must be carried out, see the previous paragraph.

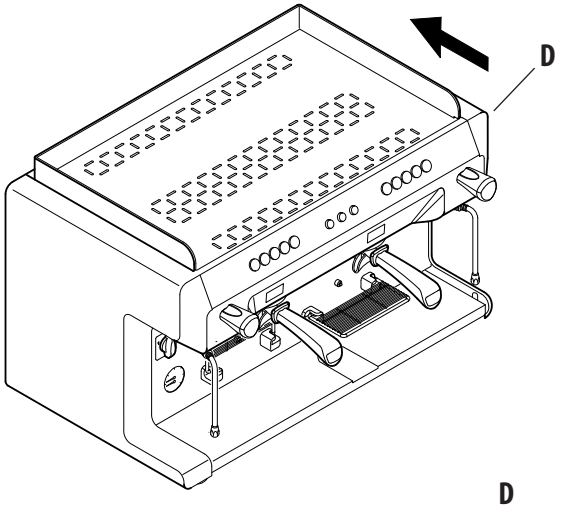
7.3.3 *Removing the machine's side panels*

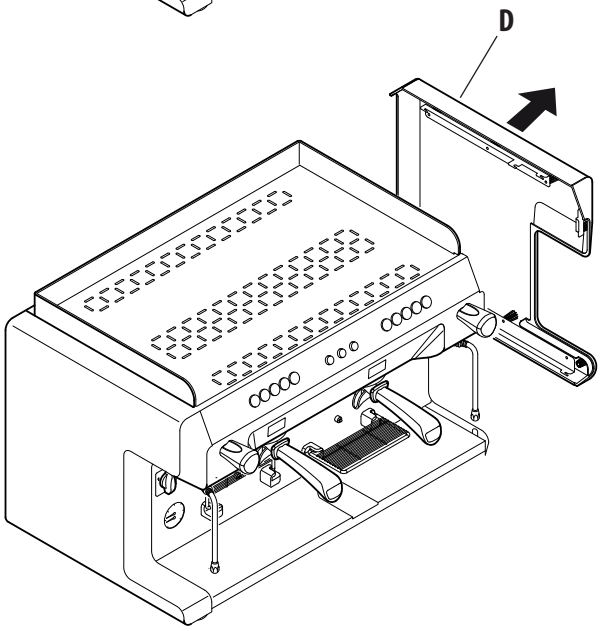
If maintenance work needs to be carried out inside the machine, correctly remove the side panels to avoid damaging them.
Proceed as follows:

- Turn the machine off.
- Remove the tray and 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 in operation.



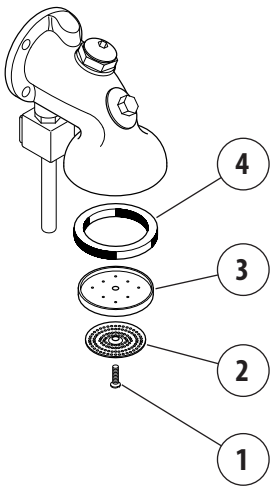




7.3.4 *Dispensing group maintenance*

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

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



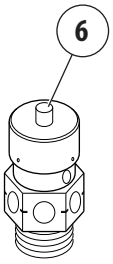
7.3.5 *SAFETY VALVE check*

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 (**6**) 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 bar (1.9 bar).

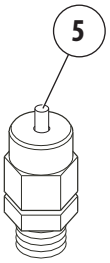
If any malfunctions are detected, the valve must be replaced. Only use the Manufacturer's original Safety Valves.

7.3.6 *NEGATIVE PRESSURE VALVE check*

First check:

- Remove the machine's upper grille.
- Use pliers to push the valve pin (**5**) downwards.
- If the pin will not budge, it probably means that the valve is encrusted with limestone and must be replaced.

Second check:



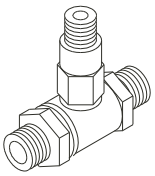
- Turn the machine off.
- Open the steam valves and release all the pressure from inside the heating unit.
- Turn the machine back on and check that the valve is closing normally.

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

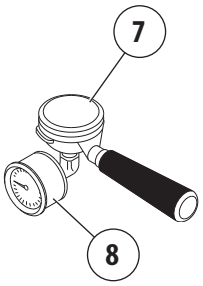
7.3.7 *NON-RETURN DRAIN VALVE check*

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

- Activate the dispensing groups for about 30 seconds.
- Attach a filter holder (**7**) with a pressure gauge (available on request) to the dispensing group.



- Activate the dispensing group, and use the pressure gauge (**8**) to monitor the pressure as it increases up to 0.8-0.9 MPa (8-9 bar).
- Check that the pressure is increasing due to the heated water expanding until it reaches approximately 1.2 MPa (12 bar): when this value is reached, it confirms that the valve is working correctly and the seals and solenoid valves are tight.



- Stop dispensing.
- Repeat the check on the other dispensing groups.

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

7.4 Water filter maintenance

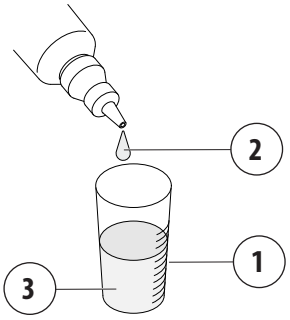
7.4.1 *Determining the water hardness*

As part of the filter maintenance, it is advisable to test the water beforehand.
To identify the carbonate hardness of the water use the special kit as follows:

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

1 DROP = 1°dKH

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



7.4.2 *Bypass configuration*

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

9°dKH water hardness

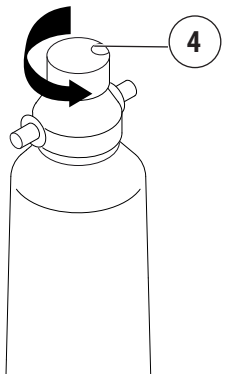
↓

Bypass adjustment 2

Water hardness (°dKH)	Bypass Adjust.	Filter capacity (litres)			
		V	M	L	XL
4	3	6,250	9,500	13,000	17,000
5	3	5,000	7,600	10,400	13,600
6	3	4,165	6,330	8,665	11,330
7	3	3,570	5,425	7,425	9,710
8	2	3,125	4,750	6,500	8,500
9	2	2,775	4,220	5,775	7,555
10	2	2,500	3,800	5,200	6,800
12	1	1,865	2,835	3,885	5,080
14	1	1,600	2,430	3,330	4,355
16	0	1,185	1,800	2,465	3,220
20	0	945	1,440	1,970	2,575
24	0	790	1,200	1,640	2,145
≥ 25	0	≤ 755	≤ 1,150	≤ 1,575	≤ 2,060

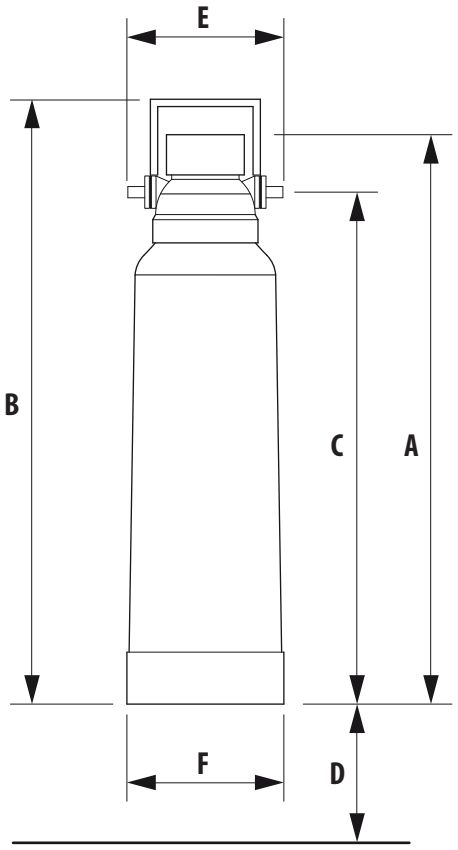
The values indicated in the table may vary, depending on the type of filter cartridge used.

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



7.4.3 *Technical data*

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



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

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

7.5 Water softener regeneration

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

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

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

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

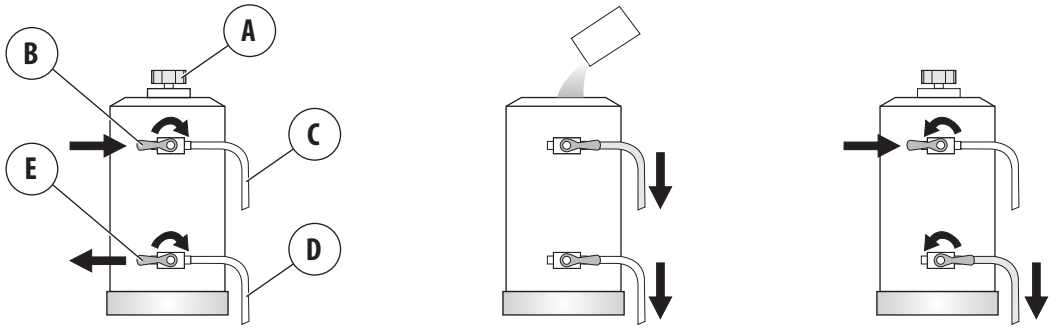
- °f: French degree
- °d: German degree = 1.8°f
- mg CaCO3

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

Amount of softened water based on hardness					
°f	30	40	60	80	salt
°d	16.5	22	33	44	
mg $CaCO_3$	30	40	60	80	
8 litres	1000 L	900 L	700 L	500 L	1.0 kg
12 litres	1500 L	1350 L	1050 L	750 L	1.5 kg
16 litres	2100 L	1800 L	1400 L	1000 L	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.



7.6 Malfunctions and solutions

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

Problem	Cause	Action
NO COFFEE IS DISPENSING	• There is no water in the mains. • The group solenoid valve is faulty. • The pump is jammed. • The group solenoid valve is clogged or dirty. • The group filter is clogged. • The volumetric dosing device is jammed. • The inlet and outlet valves of the dosing device are closed.	• Check that there is water in the mains. • Replace the group solenoid valve. • Replace the pump. • Clean or replace the solenoid valve. • Clean or replace the filter. • Check/replace the dosing device. • Open the valves.
THE COFFEE GROUNDS ARE WET	• The group solenoid valve drain is clogged. • The dispensing group is too cold. • The coffee has been ground too finely. • There's not enough ground coffee.	• Clean the group drain. • Wait until the group has fully heated up. • Adjust the coffee grinding. • Increase the amount of ground coffee.
GROUNDS FOUND IN CUPS	• The filter holder is dirty. • The filter holes are worn. • The coffee has not been ground evenly. • The group gasket is worn. • The pump pressure is too high.	• Clean the filter holder. • Replace the filter. • Replace the burrs. • Replace the seal. • Adjust the pump pressure.
THE CUP IS DIRTY WITH SPLASHES OF COFFEE	• There are steam pockets in the dispensing system. • There are air pockets in the hydraulic circuit. • The coffee has been ground too coarsely.	• Reduce the water temperature. • Check the cause and resolve the problem. • Adjust the grinder as appropriate.
COFFEE TOO COLD	• The heating element of the coffee 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. • Machine switch in “1” position • Limescale has reduced the water circulation. • 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 position "2". • Clean the exchanger connections, and clean or replace the two circulation pipes. • Eliminate air pockets in the hydraulic circuit in the following manner: • Disconnect the pump from the power supply. • Close the softener’s water valve. • Perform a dry dispensing run for a few minutes. • Reconnect the pump to the power supply. • Open the softener’s water outlet valve. • Dispense until water comes out; • Wait a few minutes for it to heat up.
COFFEE TOO HOT	• The 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 DISPENSING TOO FAST	• The coffee has been ground too coarsely. • The diameter of the injector is too big. • The dose of ground coffee is too small.	• Adjust the coffee grinding. • Replace the injector with one that has a smaller diameter. • Check the amount (grams) of ground coffee being used.

Problem	Cause	Action
COFFEE DISPENSING TOO SLOWLY	• The coffee has been ground too finely. • The injector is clogged. • The dispensing group is clogged. • The filter holder is dirty.	• Adjust the coffee grinding. • Replace the injector. • Check and clean the dispensing group. • Clean and replace the filters, if necessary.
SAE version: SHUTDOWN OF THE ELECTRONIC SYSTEM	• The control unit main fuse has burned out. • One of the volumetric dosing device's contacts is grounded.	• Replace the main fuse (125 mA). • Check the volumetric dosing device connection.
SAE version: COFFEE IS ONLY DISPENSING VIA THE MANUAL BUTTON	• The control unit fuse is burned out. • The solenoid valve coil is malfunctioning or has shorted.	• Replace the control unit fuse (1A). • Replace the coil of the solenoid valve.
SAE version: COFFEE DISPENSING IN INCONSISTENT MANNER THE COFFEE DOSE IS NOT CONSISTENT WITH SET VALUES 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 coffee has been ground too finely: there isn't enough water flow in the dosing device. • The non-return valve is losing pressure (the dose is too small). • The expansion valves are losing pressure (the dose is too small). • Water is leaking from the group solenoid valve when coffee is being dispensed or when in standby. • The volumetric dosing device is partially obstructed.	• Check that the volumetric dosing device connector has been connected properly. • Check 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. • Suitably adjust the grind and check the burrs, if necessary. • Check and replace the non-return valve, if necessary. • Check and replace the expansion valves, if necessary. • Clean and replace the solenoid valve, if necessary. • Clean or replace the volumetric dosing device.

7.7 Cleaning operations

7.7.1 *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 substance-based products (e.g. phosphoric, citric or sulfamic acids). The products/ cleaners used must be suitable for this purpose and not corrode the water circuit elements.
Do not use abrasive cleaners which may scratch the bodywork's surface.
Always use clean and sanitised cloths when cleaning.
When washing the filters, filter holders and all machine components, use Manufacturer-supplied cleaners or products specific for cleaning professional coffee machines.

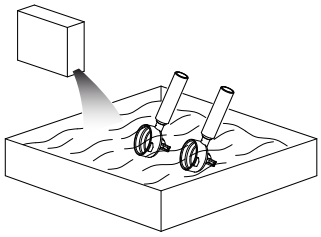
Cleaning	Daily	Weekly
Body and Grilles: Clean the panels of the body with a cloth dampened in lukewarm water. Remove the drip tray and cup holder grille and wash with hot water.	X	
Filters and Filter Holders: Wash the filters and filter holders on a daily and weekly basis, as indicated in para. 7.7.2. Perform the cleaning operations on a daily basis as indicated in para. 7.7.4 .	X	X
Steam nozzle: Keep the nozzle clean at all times using a cloth dampened in lukewarm water. Check and clean the nozzle tips, by clearing the steam outlet holes with a small needle. Perform the wash on a weekly basis, as indicated in para. 7.7.5	X	X
Dispensing group: Wash the dispensing group as described in para. 7.7.3 Internally clean the group on a weekly basis, as indicated in para. 7.7.4.	X	X
Grinder-dispenser and Hopper: Clean the hopper and the dispenser inside and out with a cloth dampened with warm water. When finished, dry all parts thoroughly.		X

7.7.2 *Cleaning the filters and filter holders*

Caution: only immerse the filter holder cup in water and try not to get the handle wet.
The cleaner must be diluted in cold water in the doses indicated on the package (see the manufacturer).

Daily:

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



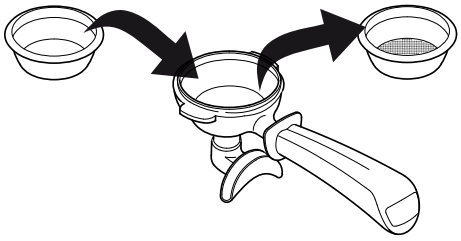
Weekly:

- Use a screwdriver to detach the filter from the filter holder.
- Soak the filter and filter holder in warm water with a suitable cleaner for 10 minutes.
- Rinse everything in cold water.

7.7.3 *Washing the dispensing group*

Wash the dispensing groups on a daily basis as indicated below:

- Remove the filter from the filter holder and fit a blind filter (see spare parts).
- Pour the specific cleaner into the filter holder with the blind filter and hook it to the dispensing group.



AEP version

- Carry out several dispensing cycles until the water comes out clean.
- Remove the filter holder from the group and carry out at least one dispensing cycle in order to eliminate any cleaner residues.
- Repeat the same operations for the other groups.
- Remove the blind filter from the filter holder and replace it with the original one.

SAE version

- Press and hold the **Stop Prog.** button on the keypad of the group you would like to wash and immediately afterwards, press and hold the button for at least 5 seconds (the button should flash).
- To start the wash cycle, press the button again (the and buttons should flash) .

- Wait for the wash cycle to be performed (this takes roughly 50 seconds).
- When the button flashes to indicate that the wash cycle has been completed, remove both the filter holder and blind filter, then replace the coffee filter in the filter holder.
- Reattach the filter holder to the dispensing group and press the button to start the rinse cycle.
- Wait whilst the automatic rinse cycle is being performed (roughly 30 seconds); this is indicated by the and buttons flashing).
- All of the buttons will light up to indicate that the rinse cycle has finished.
- Repeat the same operations for the other groups.

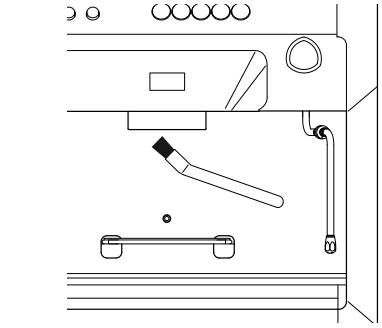
If there is a power failure during the wash or rinse cycle, when the machine turns back on, the button's LED will flash to indicate that the wash cycle was interrupted.

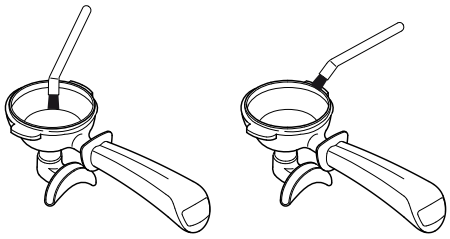
The operation will need to be performed again to remove any detergent remaining in the group.

7.7.4 *Cleaning the group shower screen, shower screen containment ring and filter holder*

Daily:

Clean the dispensing group and filter holder shower screens with the supplied brush on a daily basis.
Thoroughly clean the inside of the coupling ring and filter holder, as well as the edge and the wings of the filter holder, so as to eliminate any accumulated coffee residues.



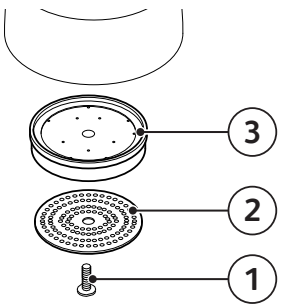


Weekly:

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

Clean the shower screen and shower screen containment ring as follows:

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



7.7.5 *Cleaning the steam nozzle*

Weekly

Clean the steam nozzle as follows:

- Insert the steam nozzle into a jug with water and a specific cleaner, in accordance with the manufacturer's instructions.

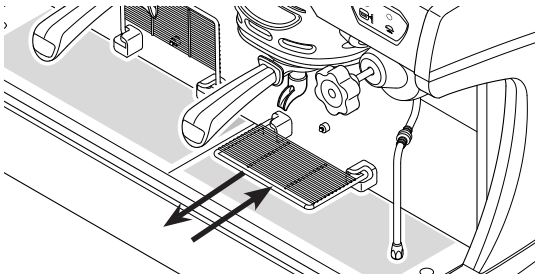
- Heat the solution with the steam nozzle.
- Let the nozzle cool down whilst keeping it immersed in the solution for at least 5 minutes, so that cleaner can rise inside the nozzle due to the cooling effect.
- Repeat the operation 2 or 3 times until no more milk residue is dispensed.

7.7.6 *Cleaning the raised cup grilles*

Daily

Clean the raised cup grilles as follows:

- Remove the grille from its housing by pulling it until it is fully unlatched.



- Clean with a cloth dampened in lukewarm water.
- Push the grille back towards the machine until it is fully latched.

8. SPARE PARTS

To replace machine components and/or parts, refer to the official documentation provided by the Manufacturer.

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

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

9. DECOMMISSIONING

9.1 Short period of machine inactivity

"Short period of machine inactivity" refers to a period of time exceeding one working week.
If the machine is reactivated after this period, the Technician must replace all the water contained in the hydraulic circuits as indicated in para. "6.6 Water replacement" on page 49.
All the scheduled maintenance operations must also be performed - see para. "10.3.1 Scheduled maintenance" on page 49.

9.2 Long period of machine inactivity

"Long period of machine inactivity" refers to a period of time exceeding 30 working days.
In this case, the machine must be disconnected from the electric, hydraulic and gas mains if fitted, and all the internal circuits must be drained of water.
To connect the machine after this period, follow the initial installation procedure.

10. DISASSEMBLY

To disassemble the machine, follow the installation procedure in reverse order - see chap. 5.
All dismantled components must be divided by material to make identification easier and then disposed of at the authorised collection centres, as instructed in chap. 11.

11. DISPOSAL

11.1 Disposal information

For the European Union and the European Economic Area only.

This symbol indicates that the product cannot be disposed of with household waste, pursuant to the WEEE Directive (2012/19/EC), the Battery Directive (2006/66/EC) and/or the national laws implementing those Directives.
The product should be handed over to a designated collection point, for example the dealer when purchasing a new product with similar features, or an authorised collection site that recycles electrical and electronic equipment waste (WEEE), as well as batteries and accumulators. Improper handling of this type of waste can have negative consequences on the environment and human health, due to the potentially hazardous substances which are usually found in this kind of waste.
Your cooperation in correctly disposing of this product will contribute to the effective use of natural resources and you will avoid incurring fines provided by law. For more information about recycling this product, contact either your local authority, the entity responsible for waste collection, an authorised dealer or your household waste disposal service.

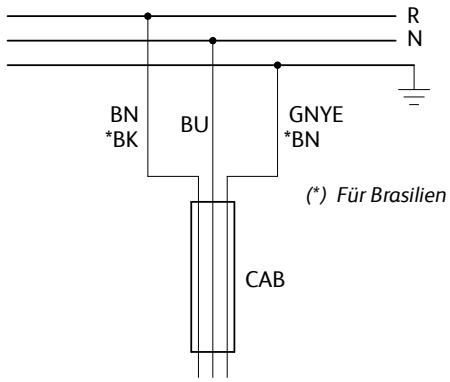
Before disposing of the machine, we recommend seeking advice from the Technician and/or the seller.

11.2 Environmental information

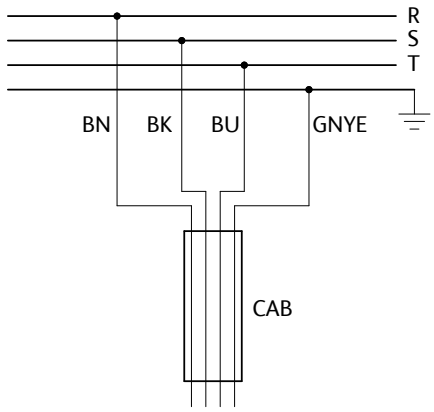
The machine features an internal lithium button battery, which is located in the circuit board and ensures data storage. Dispose of the battery in accordance with current national regulations.

12. WIRING DIAGRAMS

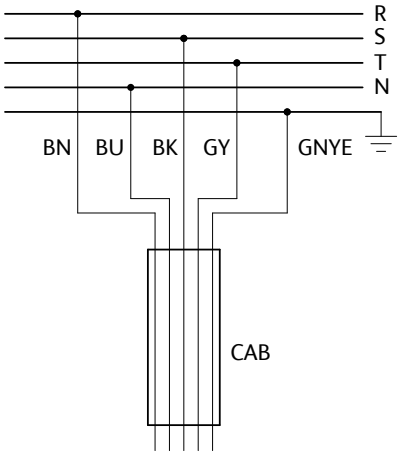
12.1 ELECTRIC MAINS connection



3-LEITER-KABEL (Phase+Neutralleiter+Schutzleiter



4-LEITER-KABEL (3 Phase+Schutzleiter

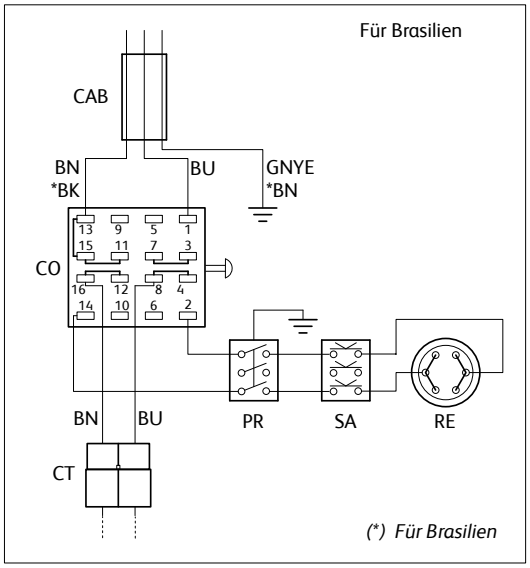


5-LEITER-KABEL (3 Phasen+Neutralleiter+Schutzleiter

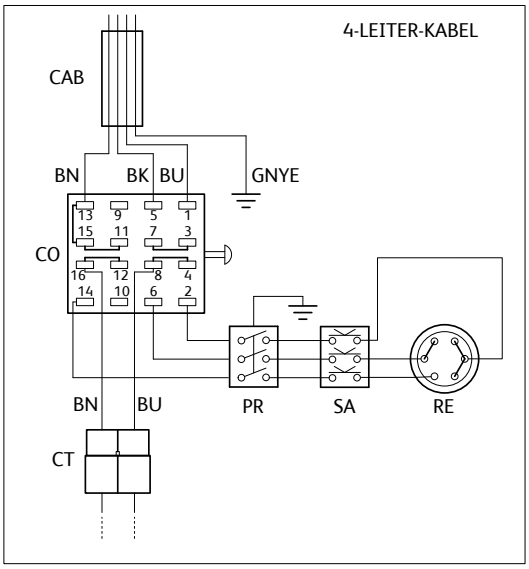
R	Phase
S	Phase
T	Phase
N	Neutral
⏚	Earth
BU	Blue
CAB	Power cable
GY	Grey
GNYE	Yellow-green
BN	Brown
BK	Black

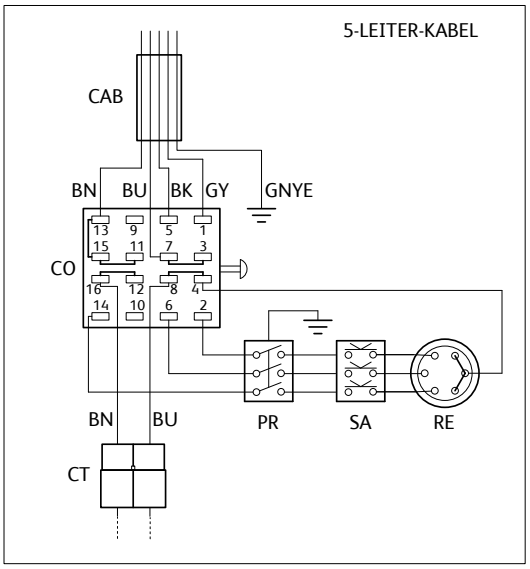
To correctly connect the machine to the electric mains, please refer to the information provided on the nameplate (see the example in paragraph 2.7).

12.2 MACHINE Power Supply

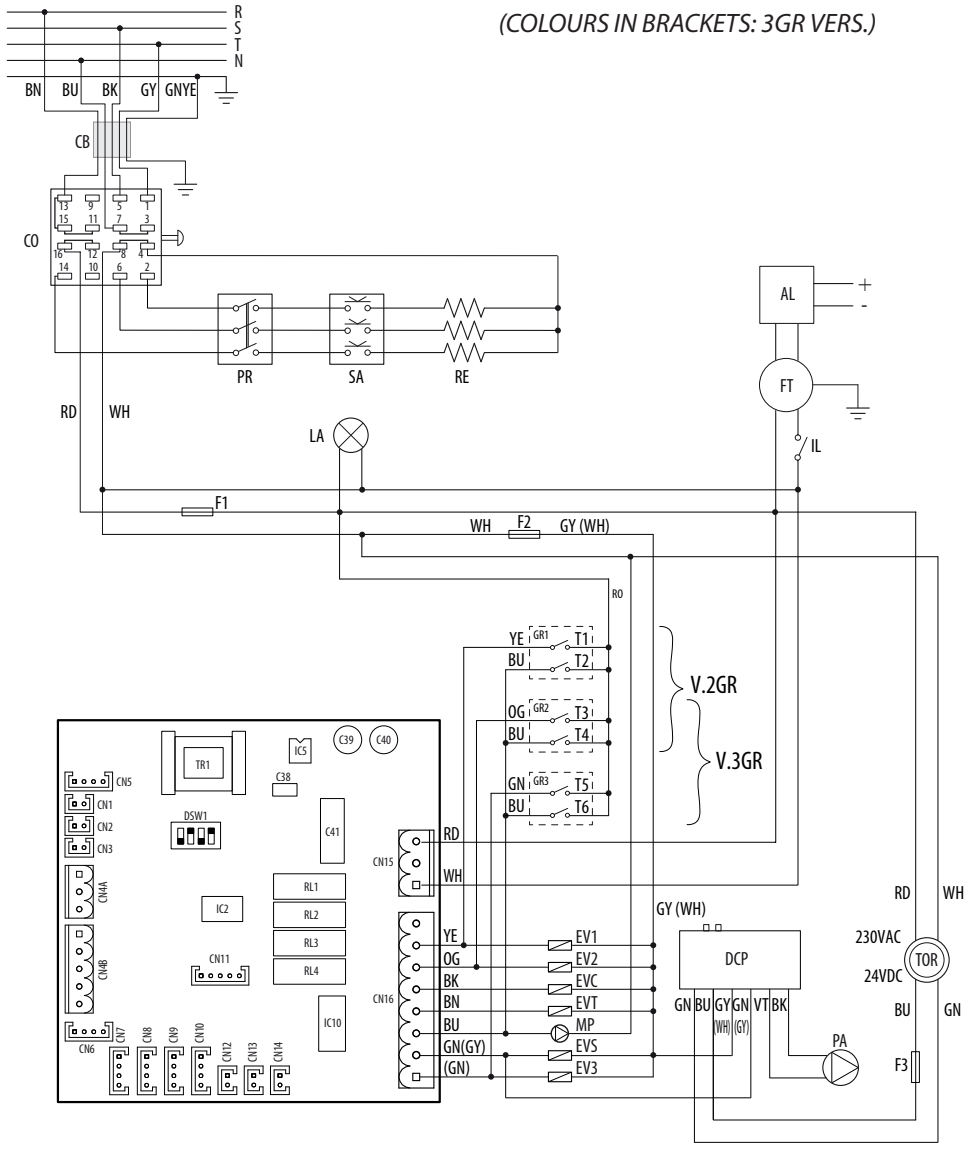


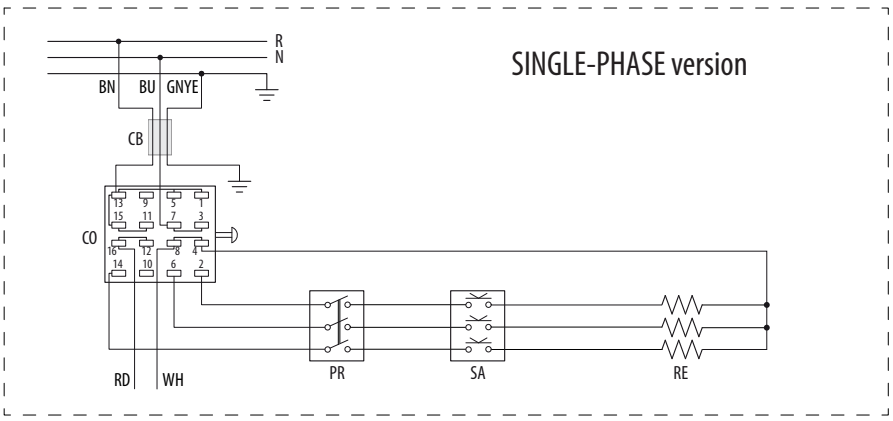
R	Phase
S	Phase
T	Phase
N	Neutral
⏚	Earth
BU	Blue
CAB	Power cable
CO	Power switch
CT	Connector
GY	Grey
GNYE	Yellow-green
IG	Main switch
BN	Brown
BK	Black
PR	Pressure switch
RE	Heating element
SA	Safety heating element
WH	White





12.3 Wiring diagram



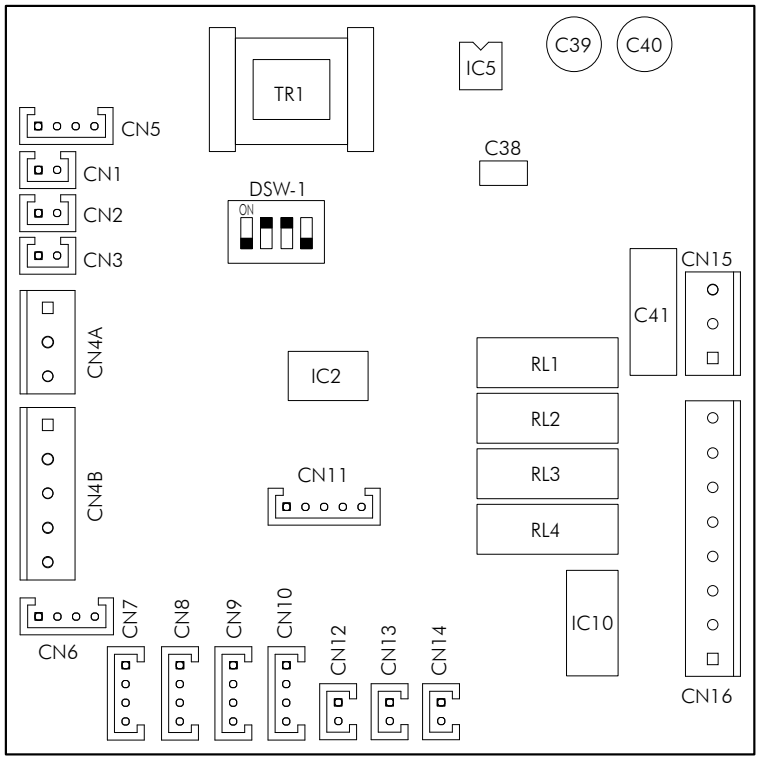


AL	LED power supply
CB	Wiring
CO	Power switch
DCP	Double check pump
EV1	Group 1 solenoid valve
EV2	Group 2 solenoid valve
EV3	Group 3 solenoid valve
EVC	Water-Filling Solenoid Valve
EVT	Tea solenoid valve
EVS	Frothed milk SV
F1	Fuse (10 A)
F2	Fuse (6.3 A)
F3	Fuse (1 A)
FT	FA.06.007 filter (EU only)
IL	LED switch
LA	Indicator light
PA	18 V air pump
PR	Heating unit pressure switch
RE	Heating unit heating element
SA	Safety 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

BN	Brown
BK	Black
BU	Blue
GN	Green
GNYE	Yellow-Green
GY	Grey
OG	Orange
RD	Red
VT	Violet
WH	White
YE	Yellow

FUSES	
F1 (10A)	Total protection
F2 (6.3 A)	Solenoid valve protection
F3 (1A)	Toroidal transformer protection

12.4 Circuit board



CN1	Level LED
CN2	Not Used
CN3	Frothed milk NTC
CN4A	Level probe
CN4B	Volumetric counters
CN5	Automatic steam wand button (1GR)
CN6	Not Used
CN7	Tea button
CN8	Auxiliary
CN9	Auxiliary
CN10	Keypad connection
CN11	CPU programming
CN12	Auxiliary
CN13	Auxiliary
CN14	Auxiliary
CN15	Board power supply
CN16	User outputs

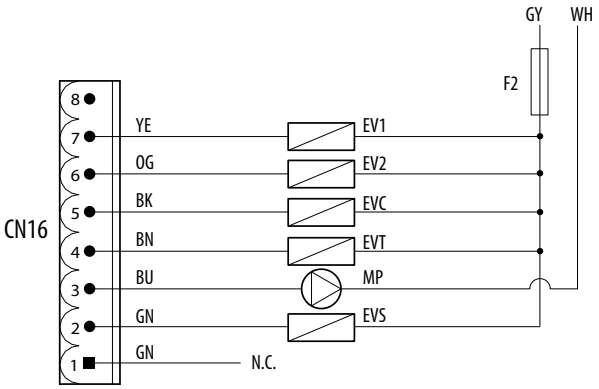
CN1 - LEVEL LED	
Flashes Slow	The heating unit is being filled with water
Flashes Fast	Timeout: the heating unit water filling phase has stopped
Steady light	Water filling OK

DSW1	DSW2	DSW3	DSW4	CONFIGURATION
OFF	ON	OFF	Not used	**2GR COFFEE/COMPACT**
OFF	ON	ON	Not used	**2GR AUTOMATIC STEAM WAND**
ON	ON	OFF	Not used	**3GR COFFEE**
ON	ON	ON	Not used	**3GR AUTOMATIC STEAM WAND**

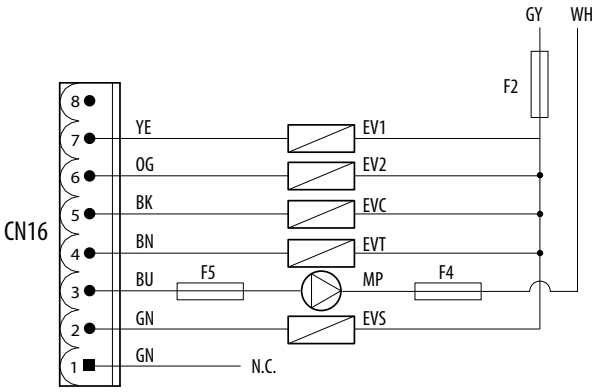
Standard setting of the circuit boards supplied as spare parts.
Modify the SW setting according to the characteristics of the product.

Control Unit Power Supply

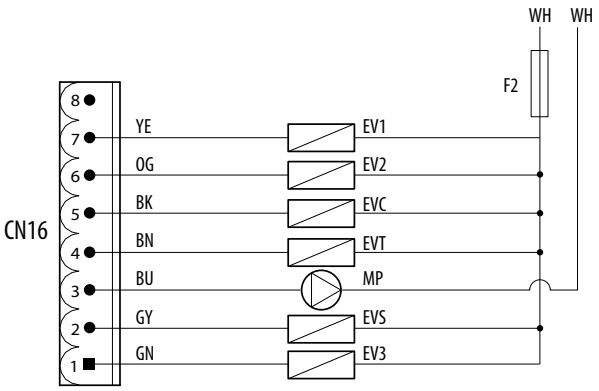
Solenoid valves and motor pump
- Standard version (1-2 GR) -



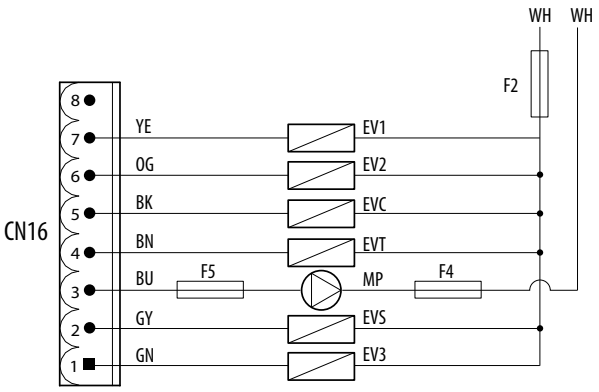
Solenoid valves and motor pump
- UL version (1-2 GR) -



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 solenoid valve
EVS	Milk solenoid valve
EVT	Tea solenoid valve
F1	Fuse (10 A)
F2	Fuse (6.3 A)
F3	Fuse (1 A)
F4	Fuse (15 A)*
F5	Fuse (15 A)*
MP	Motor pump
NC	Not connected

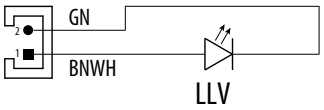
*For UL versions only

BN	Brown
BK	Black
BU	Blue
GN	Green
GY	Grey
OG	Orange
RD	Red
WH	White
YE	Yellow

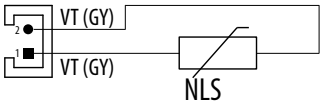
12.5 Connector connection

(COLOURS IN BRACKETS: VERS. 3GR)

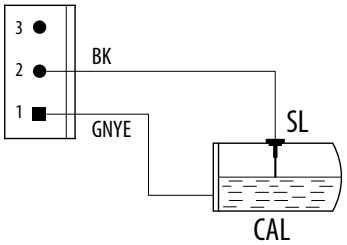
Level LED CN1



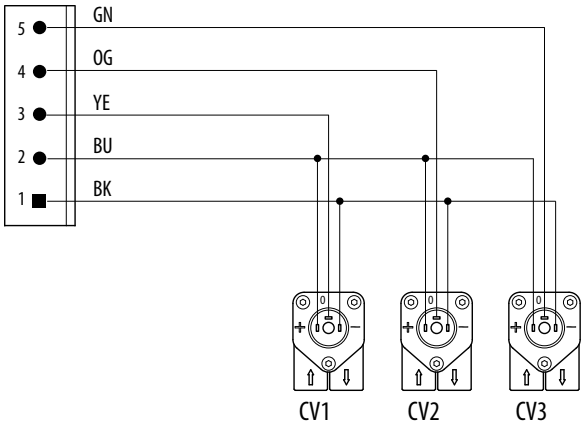
Frothed milk NTC CN3



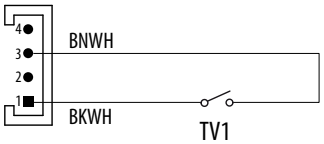
Level probe CN4A



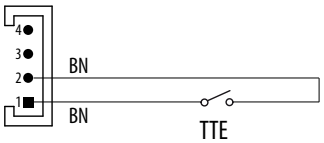
Volumetric counters CN4B



Automatic steam wand button (1GR) CN5



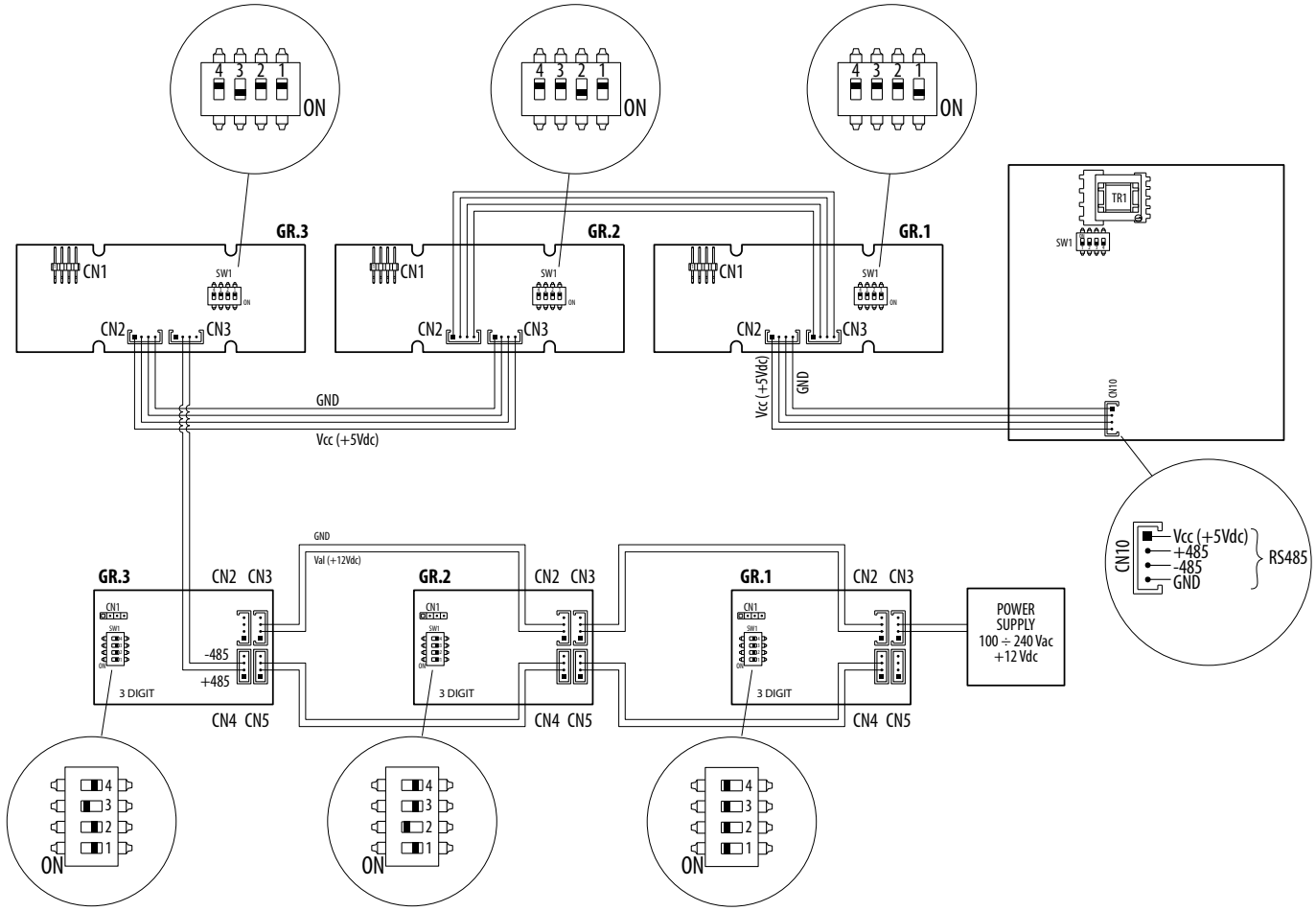
Tea button CN7



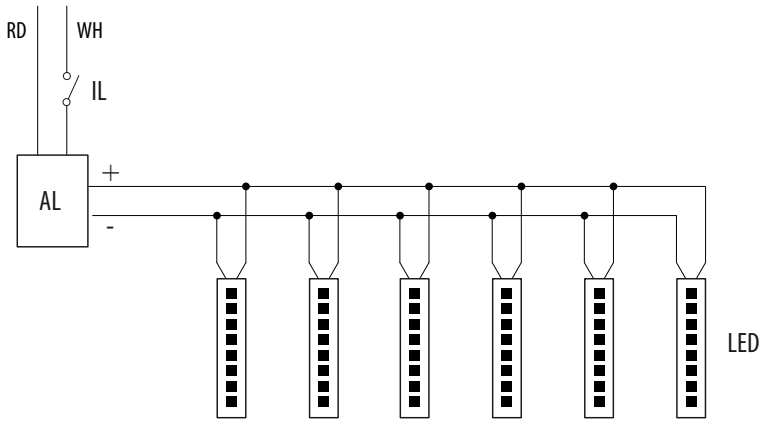
CAL	Heating unit
CV	Volumetric counter
LLV	Level LED
NLS	Frothed milk NTC
SL	Heating unit level probe
TTE	Tea button
TV1	Automatic steam wand button

BN	Brown
BK	Black
BU	Blue
BKWH	White/Black
BNWH	White/Brown
GN	Green
GY	Grey
GNYE	Yellow-Green
OG	Orange
VT	Violet
WH	White
YE	Yellow

12.6 Pushbutton Panel Connection

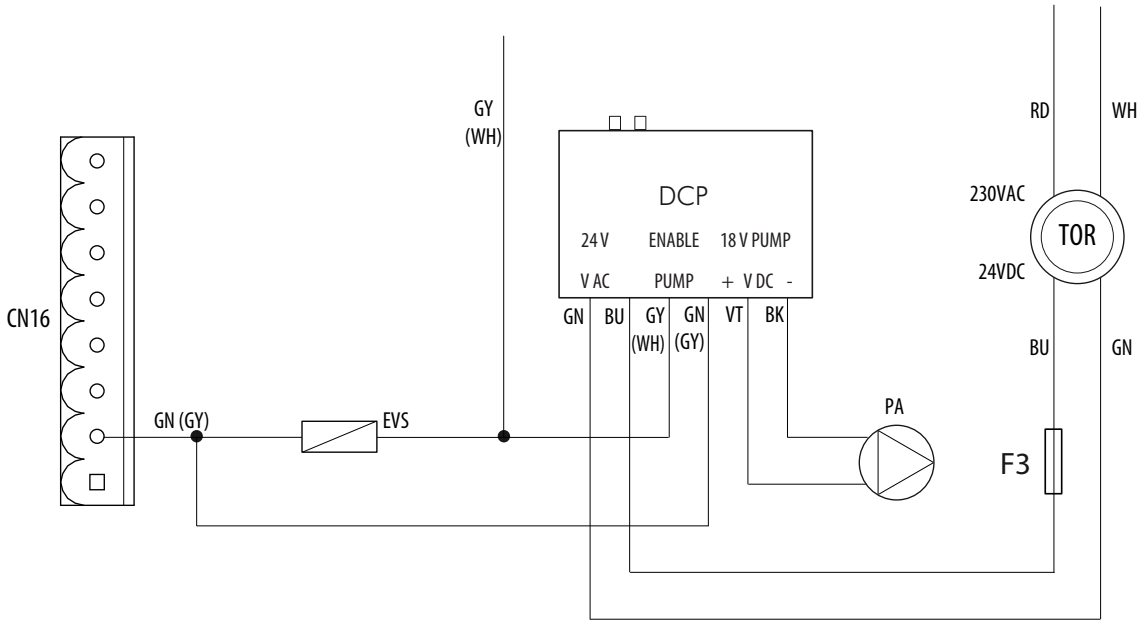


12.7 LED Power Supply Connection



12.8 Steam Connection

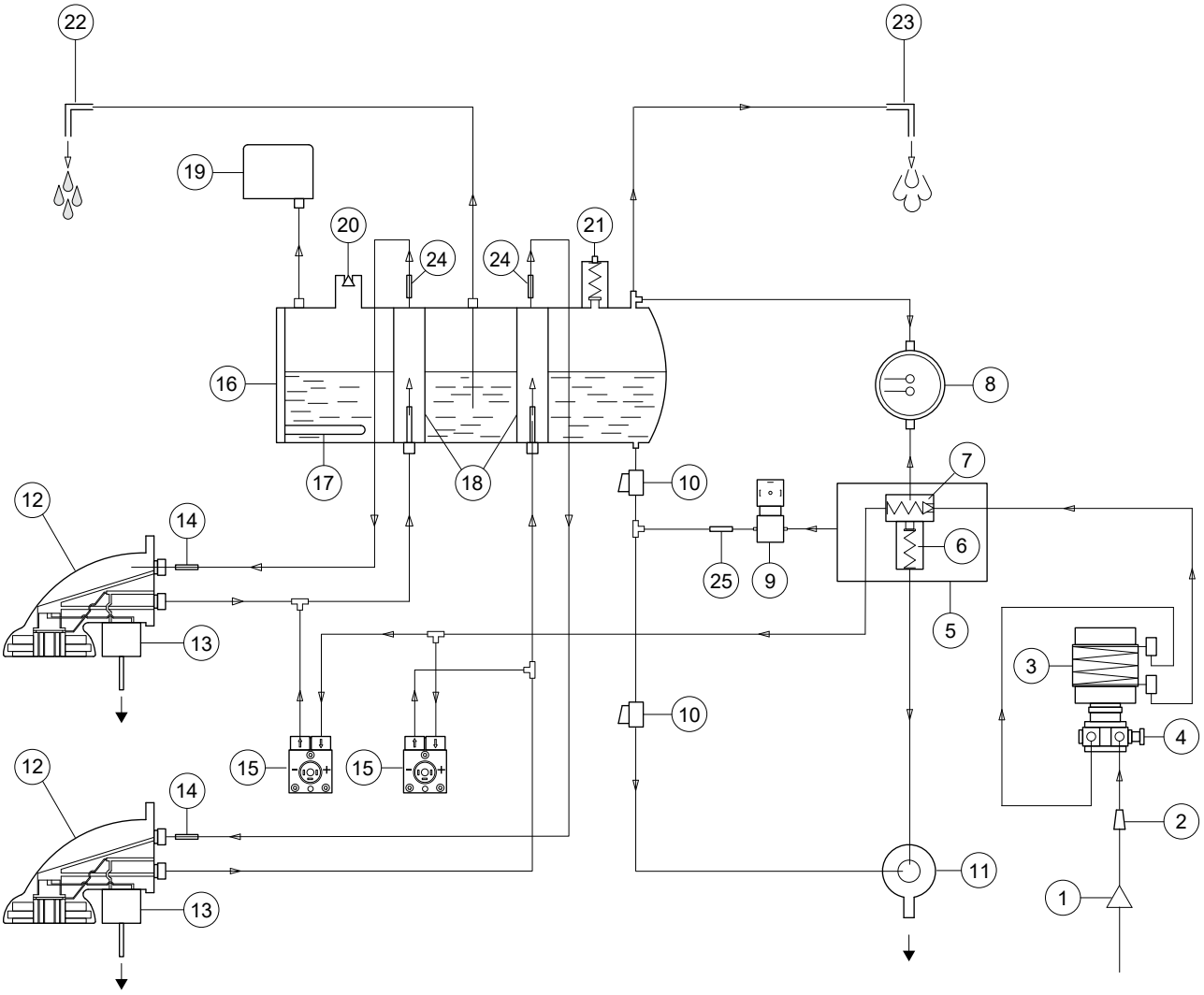
(COLOURS IN BRACKETS: VERS. 3GR)



AL	LED power supply
BK	Black
BU	Blue
DCP	Pump double check
EVS	Frothed milk solenoid valve
F3	Fuse (1 A)
GN	Green
GY	Grey
IL	LED switch
PA	18 V air pump
RD	Red
TOR	Toroid
VT	Violet
WH	White

13. HYDRAULIC DIAGRAMS

13.1 COMPACT version

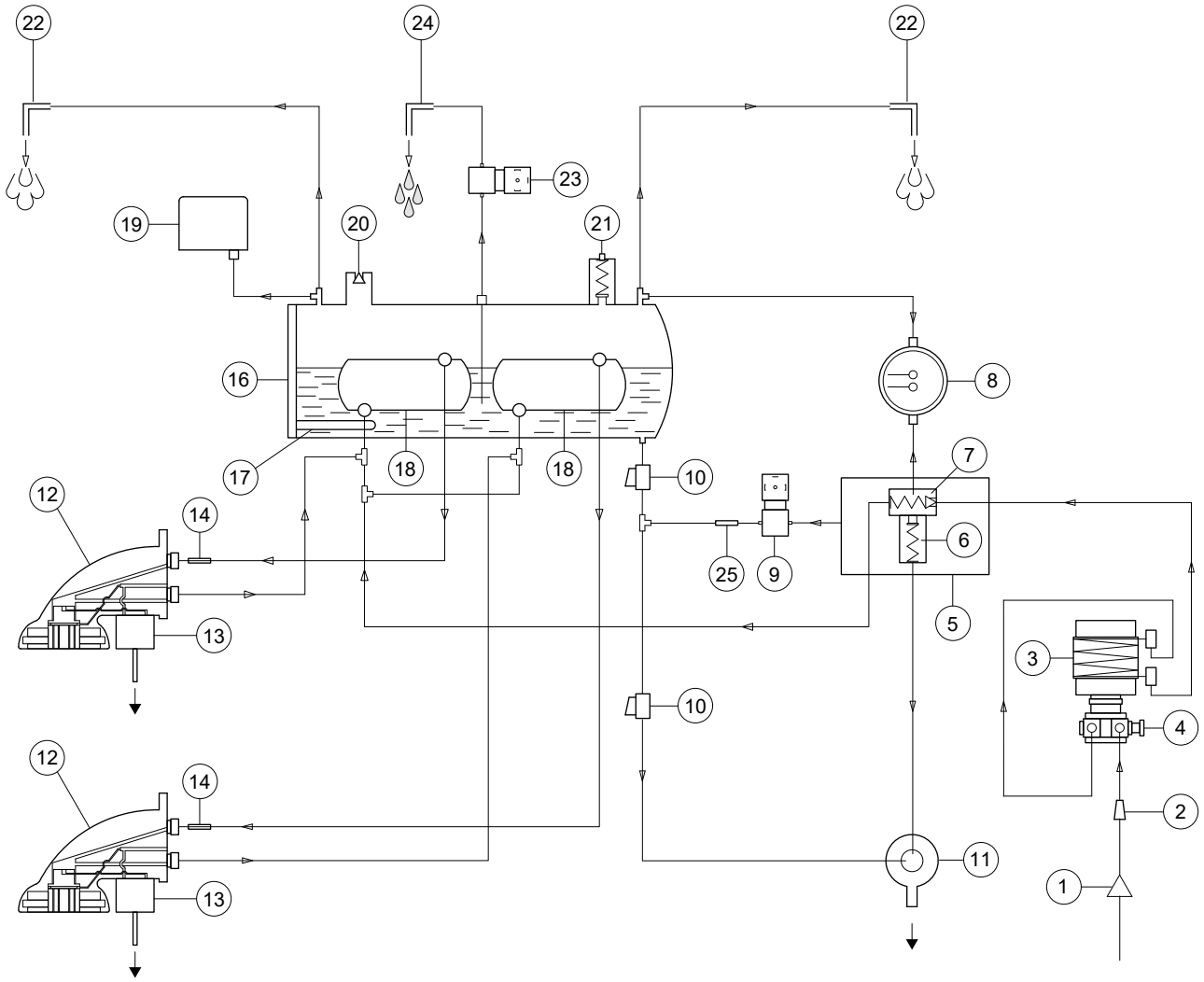


1	Water mains inlet
2	Water inlet filter
3	Motor pump
4	Pump pressure adjustment
5	Multifunctional dispenser
6	Expansion valve
7	Check valve
8	Pressure gauge
9	Filling solenoid valve

10	Valve
11	Drain tray
12	Dispensing group
13	Group 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	Hot water nozzle
23	Steam nozzle
24	Ø 4 injector
25	Ø 1.2 injector

13.2 AEP version

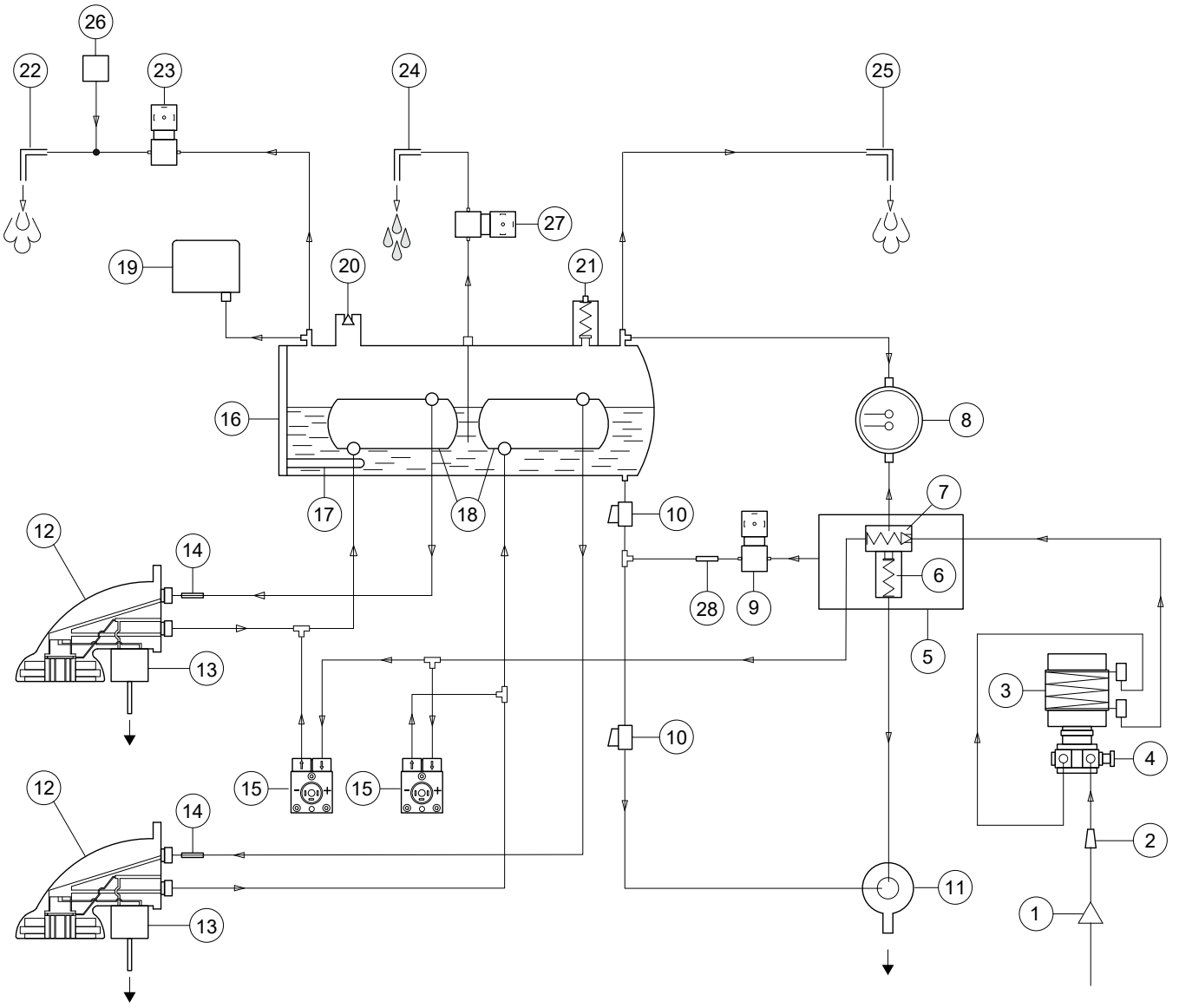


1	Water mains inlet
2	Water inlet filter
3	Motor pump
4	Pump pressure adjustment
5	Multifunctional dispenser
6	Expansion valve
7	Check valve
8	Pressure gauge
9	Filling solenoid valve
10	Valve

11	Drain tray
12	Dispensing group
13	Group solenoid valve
14	Ø 4 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	Steam nozzle
23	Hot water solenoid valve
24	Hot water nozzle
25	Ø 1.2 injector

13.3 SAE version



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

11	Drain tray
12	Dispensing group
13	Group 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 nozzle
25	Steam nozzle
26	Air pump
27	Hot water solenoid valve
28	Ø 1.2 injector

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