ASTRAL STEAM SERIES

STEAM GENERATOR & ROMAN BATH

MANUAL TÉCNICO. PUESTA EN MARCHA Y FUNCIONAMIENTO
TECHNICAL MANUAL. START-UP AND OPERATION
MANUEL TECHNIQUE. MISE EN ROUTE ET FONCTIONNEMENT
TECHNISCHES HANDBUCH. INBETRIEBNAHME UND BETRIEBSWEISE
MANUALE TECNICO. AVVIAMENTO E FUNZIONAMENTO
MANUAL TÉCNICO. ARRANQUE E FUNCIONAMENTO

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FIVE KEY POINTS. (Please read carefully before start-up)

1.

Check unit's condition upon receipt. If the unit is damaged or if the shipment is incomplete, write it down on the delivery note and immediately send a claim to the company that forwarded the shipment.

2.

It is essential that the fitter receives the installation manual. Read the manual and follow the product's safety, use and handling instructions carefully. Keep the manual for further reference.

3.

The installation must be carried out by qualified technical personnel, who will undertake to comply with the manufacturer's instructions and applicable regulations. They must have standard-issue material and be trained in the installation of cooling systems. The manufacturer will not be liable for any damage during installation, which may cause harm to animals, objects and people. The manufacturer will not be liable for installation errors.

4.

This steam-generating unit must be used for the purposes for which it has been designed. Any other use that does not conform to this will be considered hazardous. Violation of the preceding points may compromise the security of the steam-generating unit's operation. Any damage due to error in installation, use or misuse of the instructions or applicable installation regulations, will be excluded from any warranty.

5.

In the event of third-party sales, it is advisable that this manual is included with the equipment, in case the new client or fitter should wish to refer to it.

1 INTRODUCTION

Thank you for putting your trust in our steam-generating products. Our company has over 25 years of experience in the field of climate control, expertise that is made available to you through this product and also includes technical developments that make your steam-generating unit the perfect piece of equipment to resolve once and for all the issues of climatisation of your steam room or Roman bath.

IMPORTANT

Please take a few minutes to read this manual so that you may find out the potential of this product and to take into account everything necessary for its correct and long-lasting operation.

WE RECOMMEND THAT YOU MAKE A NOTE OF THE FOLLOWING			
DEVICE			
REFERENCE NO.		MODEL	

FITTER

NAME		TOWN/CITY	
ADDRESS			
TELEPHONE		START-UP DATE	

USER

NAME		TOWN/CITY	
ADDRESS			
TELEPHONE		START-UP DATE	

(To be filled in by the fitter) **FITTER'S STAMP:**

Your must fill in and send this warranty card for all units in order for it to become effective

Table 1: Product details and fitter's details.

1.1 CHECKING THE PACKAGING

This equipment comes with recyclable packaging that can withstand rough transport conditions. However, you should examine the device during installation to ensure there is no damage, thus avoiding any subsequent malfunction.

The manufacturer will not be held liable in this event.

IMPORTANT

It is very important not to incline the packaging, as it was designed not to be tilted. It must always be kept upright.

If the unit is damaged or if the shipment is incomplete, write it down on the delivery note and send an immediate complaint to the company that forwarded the shipment.

Inside the parcel you will find the following elements:

EQUIPMENT: STEAM GENERATOR

- Steam-generating unit.
- Essential oil application system (1 essential oil in the standard model and 4 essences in the model that includes the multiple oils kit).
- Installation manual.
- Warranty.

EQUIPMENT: ROMAN BATH

- Roman bath equipment.
- Essential oil application system (1 essential oil in the standard model and 4 essences in the model that includes the multiple essential oils kit).
- Installation manual.
- Warranty.

2 STEAM ROOMS

A steam room is a sealed enclosure designed to hold several occupants in a sitting or laying down position and built with materials sharing common features such as resistance to oxidation and temperature.

This enclosure includes electrical equipment that generates and injects steam inside this area, controls and regulates such steam generation and temperature automatically.

The correct parameters for temperature / humidity in a steam room are 100% humidity and a temperature ranging between 43ºC and 46 ºC.

The correct parameters for temperature / humidity in a Roman bath are 50% humidity and a temperature ranging between 40ºC and 60 ºC.

	STEAM GENERATOR	ROMAN BATH
TEMPERATURE	43ºC – 46ºC	40ºC – 60ºC
RELATIVE HUMIDITY	100%	50% - 70%

Table 2: Temperature and moisture content conditions

ASTRAL's steam generating units are used in these facilities, where automated steam generation is needed.

2.1 ORIGINS OF THE STEAM BATH & THE ROMAN BATH

Thermal steam and Roman baths originated in Ancient Greece, where they were used as treatment to cure diseases and to stimulate the body.

Later on, the Romans adapted these forms of therapy. With the expansion of the Roman Empire, the use of steam and Roman baths also spread.

During the evolution and development of the steam bath, it has been known by different names depending on the region: Steam bath, Hammam, Turkish bath, Roman bath, banja... Likewise, the Roman bath used to be called by its Latin name "sudatorium".

The development and spread of the use of steam as a therapeutic element to improve the body, a new more generic name was coined, 'thermae', which means the premises where they would be a mix of steam rooms and Roman baths with hot-water and even cold water pools used in combination with body massage. The name of those places still lives on: thermal bath houses or spa.

Nowadays, advances in technology have enhanced this ancient healing therapy, not only in terms of materials but also in components and the automated generation of steam.

2.2 BENEFITS

The steam and heat generated in a steam room produce highly beneficial effects on our health. The heat opens up the blood vessels and the steam penetrates the airways having a positive effect on the respiratory system, circulatory system, musculoskeletal system and on the skin, amongst others, contributing to create a feeling of health, pleasure and comfort that may appear to last during and after taking a steam bath.

- The skin is deeply cleansed due to the intense blood supply produced by the heat, which eliminates dirt and toxins from the skin, achieving a high level of skin purification.
- It helps stimulate the skin's glandular system, contributing to its optimum functioning.
- It relaxes, strengthens and stimulates the muscles and the osteoarticular system, the heart and the circulatory system.
- It relieves joint pain and joint swelling.
- It improves nasal and lung congestion.

RELAXATION → Diminishes nervous tension

OXYGENATION → Widening of the respiratory branches

SMOOTHING → Humidifying of airways

STIMULATION OF BLOOD FLOW → Opening up of peripheral blood vessels

SWEATING → Elimination of skin toxins

In addition, steam baths prevent the skin drying up thus delaying the appearance of wrinkles because it moisturises the skin deeply, making it glossier and smoother.

INFORMATION

It is a misconception to believe that steam baths produce weight loss.

This is a misconception because the weight loss during sessions is quickly recovered once rehydrated. Therefore, you must avoid staying in the steam room for too long for that purpose, as it may have an adverse effect on health.

2.3 HOW TO TAKE A STEAM BATH

The way to take a steam bath is not an exact science, each person has their own resistance to heat and humidity and this is why the following points should only be used as general guidelines:

1. It is advisable to have a shower prior to entering the steam room.
2. The average time to spend in a steam room is from 5 to 15 minutes, although as we have already pointed out, this will depend on each individual. The one thing to bear in mind is not to force oneself to spend more time in the steam room, you must exist whenever you feel you need to, there is no minimum time period.
3. Leave the steam room and take a shower at room temperature.
4. Go back to the steam room and repeat steps 2 and 3, up to a maximum of three times. As it has been mentioned, do not force the time spent inside the steam room.
5. Take a 10 to 15 minute break, preferably on a deck chair or similar type of seat.
6. Take another shower at room temperature to conclude this process.

3 TECHNICAL SPECIFICATIONS

STEAM GENERATOR

Humidifying equipment built on a solid steel frame and light metal chassis, lacquered, anti-corrosion and resistant to solar radiation. Equipped with the following parts:

- Stainless steel tank (thickness: 3mm) and entirely accessible.
- Filling and draining electrovalves.
- Tank water-level electronic control.
- Pressure safety valve.
- Central data processing unit, automated.
- Special wiring resistant to high temperatures.

ROMAN BATH

Humidifying equipment built on a solid metal chassis, lacquered, anti-corrosion and resistant to solar radiation. Equipped with the following parts:

- Stainless steel tank (thickness: 3mm) and entirely accessible.
- Filling and draining electrovalves.
- Tank water-level electronic control.
- Pressure safety valve.
- Electric air resistors.
- Quiet and reliable axial fans.
- Central data processing unit, automated.
- Special wiring resistant to high temperatures.

ESSENTIAL OILS SYSTEM

Essential oils application systems, equipped with the following parts:

- Essential oil reservoir made of polythene and lower drain barb.
- Solenoid dosage valve (peristaltic pump as an option).
- Possibility of aroma selection within a range of 40 essential oils.

MULTIFUNCTION CONTROLLER

Detachable and built-in multifunction controller It allows for the remote control of all equipment functions from up to 20 metres. Technical specifications:

- Very hard and resistant casing made of acrylonitrile butadiene styrene (ABS).
- Multifunction screen.

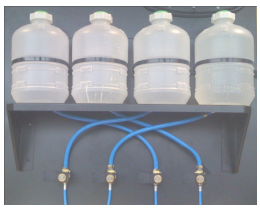
OPTIONALS

DESCALING EQUIPMENT

Descaling equipment made of reinforced polyester and highly-resistant cabinet:

- Reservoir made in fibreglass reinforced polyester (FRP).
- Automatic multiway valve.
- Residual hardness mixing screw.
- Food grade descaling resin.
- Cabinet with capacity for several regenerations.

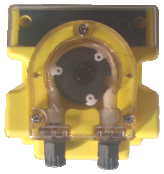
MULTIPLE ESSENTIAL OILS SYSTEM



Application system for 3 additional essential oils to the standard one, equipped with the same parts:

- Essential oil reservoirs made of polythene and lower drain barb.
- Solenoid dosage valves (peristaltic pump as an option).
- Possibility of aroma selection within a range of 40 essential oils.

PERISTALTIC PUMP (ONLY APPLICABLE TO STEAM GENERATOR)



This is the part responsible for compensating for height differences when applying essential oils at a higher level than the level the equipment is placed at.

- Solid, long-lasting and reliable design.

STEAM DIFFUSER (ONLY APPLICABLE TO STEAM GENERATOR)

Part responsible for providing the correct steam distribution within the steam room.

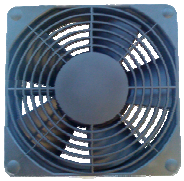
- Made of stainless steel, corrosion-resistant and resistant to high temperatures.
- Designed with double enclosure to prevent high temperatures in its surrounding outline.

EXTERNAL LIGHT POINT

Part responsible for providing a correct light distribution within the steam room.

- Robust light point, for wall or ceiling mounting.
- Base plate, ring and light diffuser made of plastic.
- High corrosión resistance.
- Humidity protection, IP66.

EXTERNAL FAN



Part responsible for providing a correct air renovation within the steam room:

- Light and robust design.
- Humidity protection on the motor and printed circuit board.
- High temperatura protection.
- Stainless steel bearings.

3.1 SIZE

The following diagram shows the equipments' general dimensions:

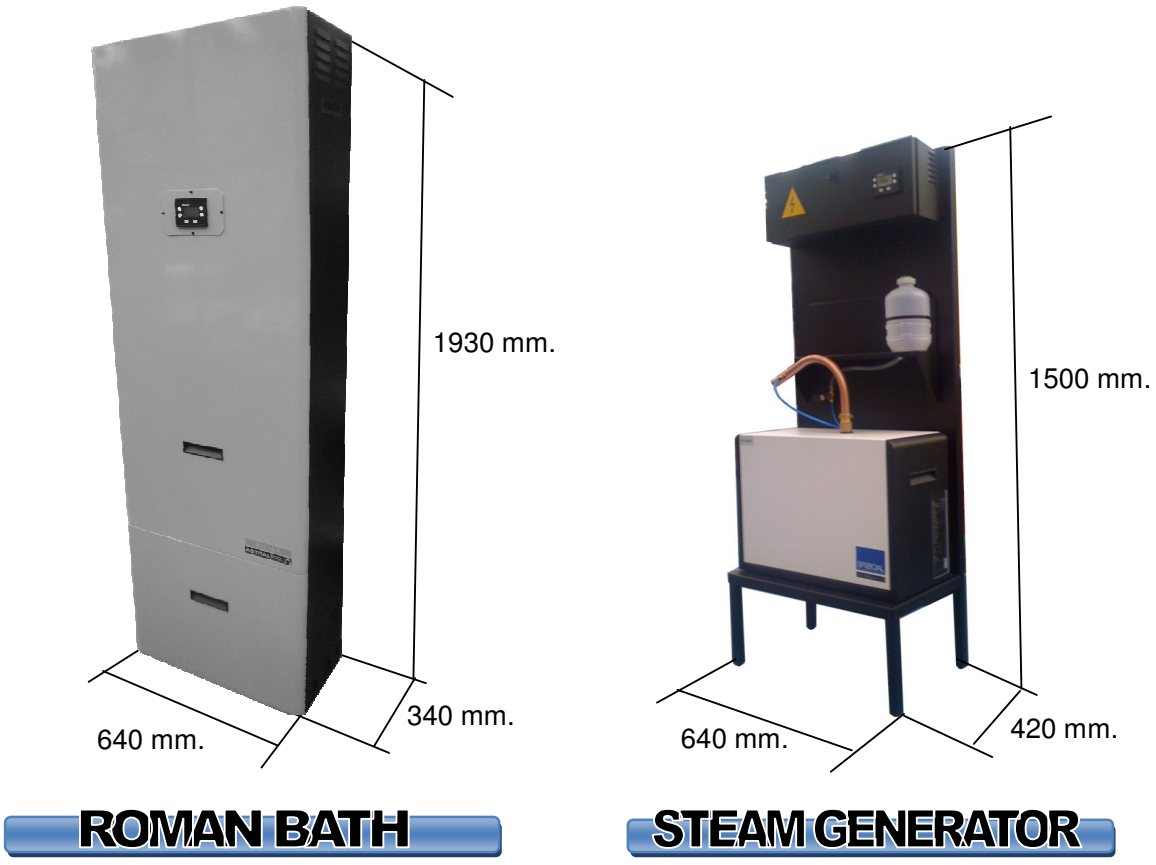


Figure 1: Equipments' dimensions.

3.2 SPECIFICATIONS TABLE

STEAM GENERATOR

SPECIFICATIONS		MODEL					
		3kW	6kW	9kW	12kW	15kW	18kW
WATER POWER OUTPUT (kW)		3	6	9	12	15	18
STEAM GENERATION (Kg/h)		4	8	12	16	20	24
ENCLOSURE VOLUME (m^3)	WITH INSULATION	8,5	16,0	24,0	32,0	40,0	48,0
	WITHOUT INSULATION	4,0	8,0	12,0	16,0	20,0	24,0
ELECTRICITY CONSUMPTION (A)		MONOPHASIC MODELS (230V I + N 50-60 Hz)					
		13.0	26.0	NAO[1]			
		MONOPHASIC MODELS (400V III + N 50-60 Hz)					
		4.5	9.2	13.7	18.4	23.0	27.5
TARE WEIGHT (Kg.)		56					
WORKING WEIGHT (Kg.)		65					
RESISTORS (No.)		1	1	1	2	2	2
STEAM HOSE (Ø)		22 mm.			28 mm.		

[1] NAO means that it is not an applicable option. English acronym for "Not An Option".

ROMAN BATH

SPECIFICATIONS

		MODEL 3kW	6kW	9kW	12kW	15kW	18kW
AIR POWER OUTPUT: 4.5kW							
WATER POWER OUTPUT (kW)		3	6	9	12	15	18
STEAM GENERATION (Kg/h)		4	8	12	16	20	24
ENCLOSURE VOLUME (m^3)	WITH INSULATION	8,5	16,0	24,0	32,0	40,0	48,0
	WITHOUT INSULATION	4,0	8,0	12,0	16,0	20,0	24,0
ELECTRICITY CONSUMPTION (A)		MONOPHASIC MODELS (230V I + N 50-60 Hz)					
		33.0	45.6	NAO[1]			
		MONOPHASIC MODELS (400V III + N 50-60 Hz)					
		11.5	16.0	21.0	25.2	30.0	34.2
TARE WEIGHT (Kg.)		100					
WORKING WEIGHT (Kg.)		112					
RESISTORS (No.)		1	1	1	2	2	2
AIR POWER OUTPUT: 9.0kW							
WATER POWER OUTPUT (kW)		3	6	9	12	15	18
STEAM GENERATION (Kg/h)		4	8	12	16	20	24
ELECTRICITY CONSUMPTION (A)		MONOPHASIC MODELS (230V I + N 50-60 Hz)					
		NAO[1]					
		MONOPHASIC MODELS (400V III + N 50-60 Hz)					
		18.5	23.0	27.5	32.2	36.8	41.2
TARE WEIGHT (Kg.)		103					
WORKING WEIGHT (Kg.)		115					
RESISTORS (No.)		1	1	1	2	2	2

OPTIONAL

DESCALING EQUIPMENT

CAPACITY (l)	m^3 BETWEEN REGENERATIONS / HARDNESS (ºHF)						Qmax (m^3)	SALT CONSUMPTION (kg)
4	1.3/20	0.9/30	0.6/40	0.5/50	0.4/60	0.3/70	0.6	0.8

MULTIPLE ESSENTIAL OILS SYSTEM

NUMBER OF ESSENTIAL OILS	VOLUME PER ESSENTIAL OIL (l)
4	2

PERISTALTIC PUMP

MAXIMUM FLOW (l/h)	MAXIMUM PRESSURE (bar)
3	1.5

Table 3: Technical specifications

4 WARNINGS AND CONDITIONS OF USE

4.1 SAFETY INSTRUCTIONS

Please read the safety instructions before using the machine:

IMPORTANT

Incorrect handling of the equipment may result in serious risk of damaging the device and serious risk of harming the user, including risk of death.

Do not pull, damage, heat, change or place heavy objects on top of the power cable. This would damage the cable and produce electric shock and risk of fire.	**IMPORTANT**: Clean the plug properly. Any dirt or incorrect connection may lead to fire or electric shock.
Never put sticks, your fingers or any other object into the steam outlet. Steam comes out at high temperature, this would cause very serious injuries.	**KEEP OUT OF THE REACH OF CHILDREN.**
Do no connect/disconnect the machine to the mains whilst in use. This may carry the risk of fire due to sparks, etc.	If the unit is not working properly, this may cause fire or damage. Seek advice from your fitter.
In case of any anomaly (such as a burning smell, etc.), stop the unit and pull out the plug or shut down the electricity supply.	The client must not repair or install the unit themselves.
The machine must not be sprayed by water or mud.	Connection: Do not tie any ground wires to the steam pipe or water tank. This would cause a fire risk.
Do not pull the power supply cable. To disconnect, please firmly hold the plug in your hand. There is a risk of fire if you pull off the cable.	Do not place animals or indoor plants directly exposed to the steam outlet. This would cause injury to the animals and plants.
If a maintenance check is going to be performed, please turn off the unit and disconnect it or shut it down from the power supply.	If it is likely that the machine may not be used for a long time, please disconnect the plug or shut it down from the power supply. There may be an accumulation of leaves and dust that could lead to a fire.
Do not handle the plug with wet hands as this may cause an electric shock. In the event of a storm, turn off the unit to avoid any damage caused by lightening.	Do not spray insecticides or any other flammable sprays towards the unit. This may cause a fire.

Do no install the unit near a flammable gas source as there may be a gas leak and this would cause an explosion.

Depending on the place where the unit is installed (humid place, etc.), use electrical protection with a 30 mA differential circuit breaker. Otherwise, electric shock may occur.

WARNING

Do not leave the installation damaged. The unit may cause an accident.	Do not leave or install anything on top of this unit. This may cause an accident due to the object's or unit's fall.
Check compatibility with the mains given the details above before commencing the installation of the steam-generating unit.	

SPECIFIC INSTRUCTIONS: It is mandatory that the user contacts a specialist company with experience in installing and repairing these kinds of steam-generating devices. The user must not install or repair the steam-generating unit on their own or with the help of a third party.

5 INSTALLATION OF THE UNITS

5.1 INSTALLATION ENCLOSURE

ASTRALPOOL's steam-generating equipment must be installed in an enclosure adhering to the following:

1. The installation enclosure must be external to the steam room, as the electrical components may be damaged by dampness.

   A dry, well-ventilated enclosure where there are no chemical or corrosive products such as chlorine, acids, etc. and where it will always be protected from the elements and from water.

2. The absolute maximum distance allowed between the equipment and the steam room is 15 metres of length for the steam pipe of the steam generator and next to the steam room for the Roman bath.

3. The enclosure must have a smooth and solid surface (such as concrete or hard steel frame) and must be protected from the risk of flooding.
4. The enclosure must be wide enough to have some free space around the device of approximately 0.6m at the front, sufficient for maintenance, and 0.5m on each side.

- Electrical connection must follow current regulations (NF C 15 100, EC 1 364) Channelling for those connections must be fixed.

The requirements for the installation enclosure regarding the Roman bath are as follows:

ROMAN BATH

The Roman bath, due to its design features, is prepared to control the temperature and the humidity in the steam room independently. Therefore, the operation of this equipment consists in aspirating air from the steam room, treat that air and push it back into the enclosure. That is, it heats the air and injects humidity to the same air flow. Thus the Roman bath is located next to the enclosure to be climatised.

The Roman bath has two openings at the rear of the equipment through which it carries out the aspiration of air from the steam room and subsequent injection into the steam room. The size of said openings is shown below:

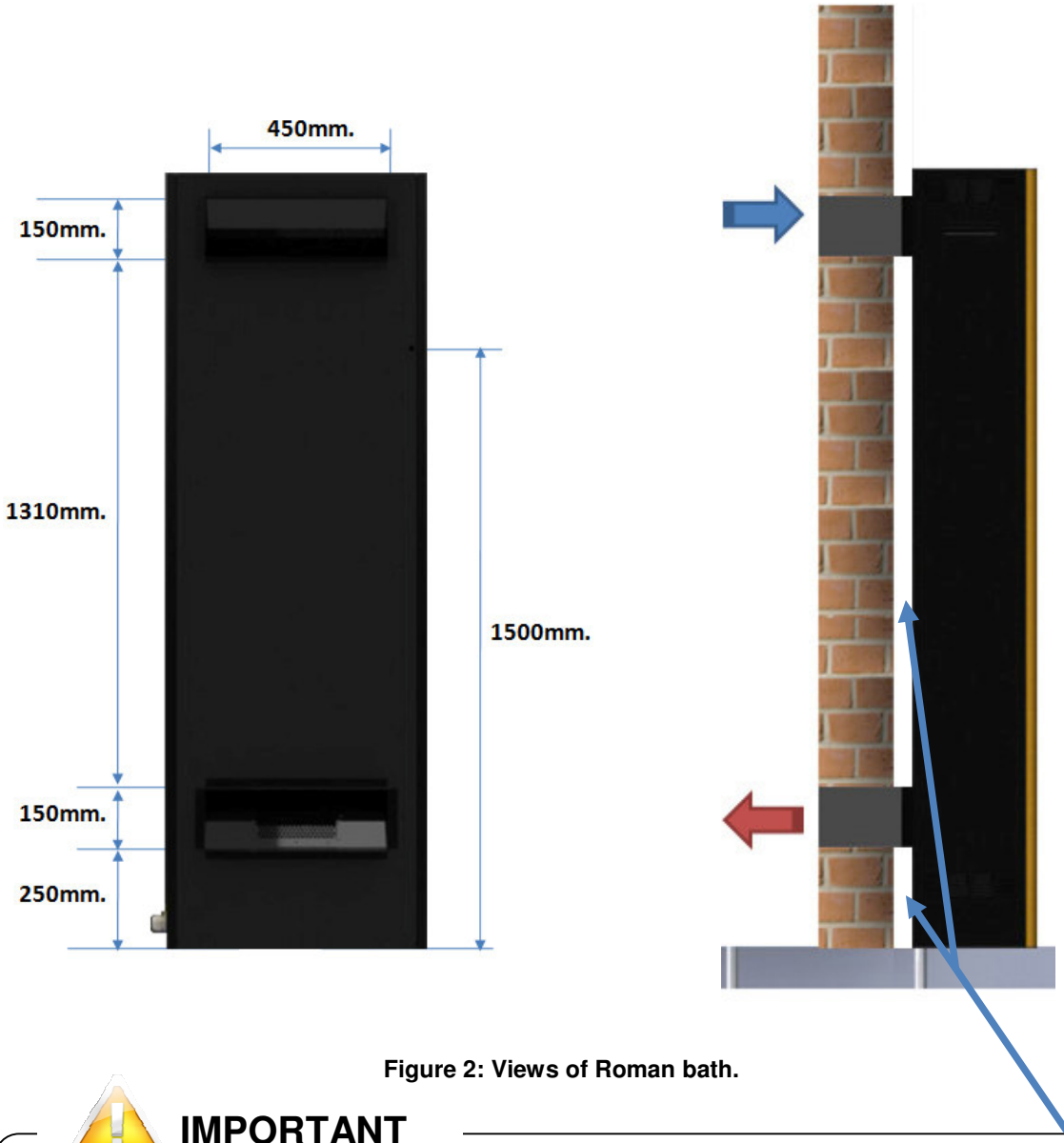


Figure 2: Views of Roman bath.

IMPORTANT

The Roman baths must be installed leaving room from the wall of separation of steam room, so that it can produce an adequate air flow for equipment cooling. This space must be 25mm. minimum.

5.2 ELECTRICAL CONNECTION

The power supply for the steam generator / Roman bath must come, preferably, from a sole circuit provided with standard-issue protection components (see above: protection by a 30mA differential) and a magnetic circuit breaker.

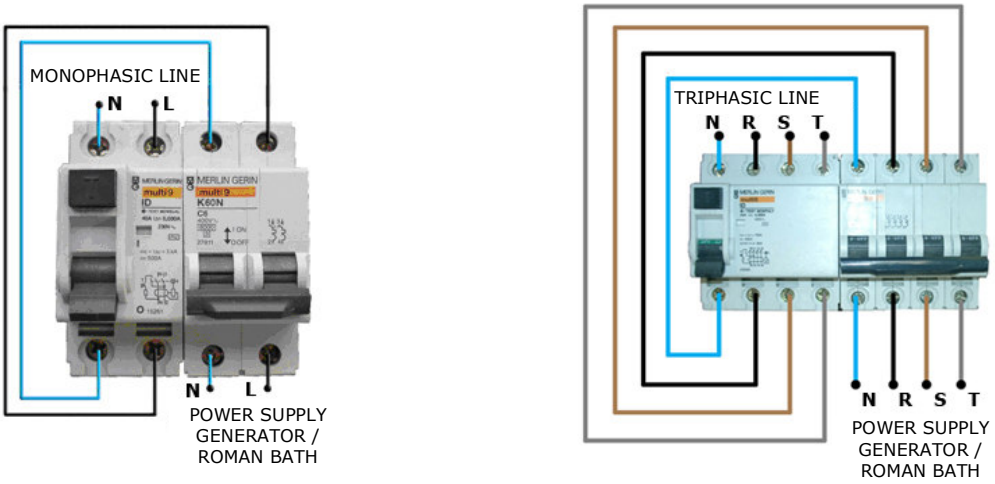


Figure 3: Monophasic and triphasic electrical connection.

- The electrical installation must be carried out by a qualified professional (such as an electrician) in accordance with rules and regulations applicable in the country of installation.
- The steam-generating circuit must be attached to a safety earth circuit at the Terminal block level.
- The cables must be installed correctly so that they do not cause any interference (through the wire guides).
- The steam generator is prepared to be connected to a main power supply of 230/2/50Hz or 400/4/50Hz, depending on whether it is an earthed monophasic or triphasic model.
- The next table shows some indicative sections, which must be verified and adapted according to the installation needs and conditions.
- The cross-section of cables to be installed must comply with current legislation that prevent overheating and a voltage decrease. As a guide, you can use the general power supply table for lengths of less than 25 metres.
- The acceptable tolerance of voltage fluctuation is +/- 10% during operation.

5.2.1 Electrical data

	MONOPHASIC MODELS	TRIPHASIC MODELS
VOLTAGE (V)	230V I + N 50-60 Hz	400V III + N 50-60 Hz
No. OF WIRES	2P + EARTH	4P + GROUND

STEAM GENERATOR	3kW	6kW	9kW	12kW	15kW	18kW
	MONOPHASIC MODELS					
SECTION (mm^2)	2,5	6	NAO[1]			
ELECTRICITY CONSUMPTION (A)	13,0	26,0				
	TRIPHASIC MODELS					
SECTION (mm^2)	2,5	2,5	2,5	4,0	6,0	6,0
ELECTRICITY CONSUMPTION (A)	4,5	9,2	13,7	18,4	23,0	27,5

ROMAN BATH	3kW	6kW	9kW	12kW	15kW	18kW
	AIR POWER OUTPUT: 4.5kW					
	MONOPHASIC MODELS					
SECTION (mm^2)	6,0	10,0	NAO[1]			
ELECTRICITY CONSUMPTION (A)	33,0	45,6				
	TRIPHASIC MODELS					
SECTION (mm^2)	2,5	4,0	4,0	6,0	6,0	6,0
ELECTRICITY CONSUMPTION (A)	11,5	16,0	21,0	25,2	30,0	34,2
	AIR POWER OUTPUT: 9.0kW					
	TRIPHASIC MODELS					
SECTION (mm^2)	4.0	4,0	6,0	6,0	10,0	10,0
ELECTRICITY CONSUMPTION (A)	18,5	23,0	27,5	32,2	36,8	41,2

Table 4: Electrical data.

The electrical connection must be carried out by the fitter taking the following points into account:

1. Please perform the connection according to the circuit diagram included in this manual.
2. Before connecting the equipment, you must check that the electrical installation is disconnected and that there is no voltage between the power supply phases.
3. Connect the lead-in wires to the machine's input terminal.
4. Connect the ground wire to the relevant terminal.

The provision of any legislation in force with respect to any electric lines against direct or indirect faults and contacts must be followed at all times.

Verify the tightness of all electrical connections.

You must check that the electrical resistance between the ground and any electrical terminal is over 1 megaohm. If not, the equipment cannot be started up until the electrical loss may be located and repaired.

If there are fluctuations of the input voltage, it is recommended to install a voltage stabilising system to prevent damaging the equipment.

[1] NAO means that it is not an applicable option. English acronym for "Not An Option".

5.2.2 Circuit Diagrams

STEAM GENERATOR: MONOPHASIC EQUIPMENT

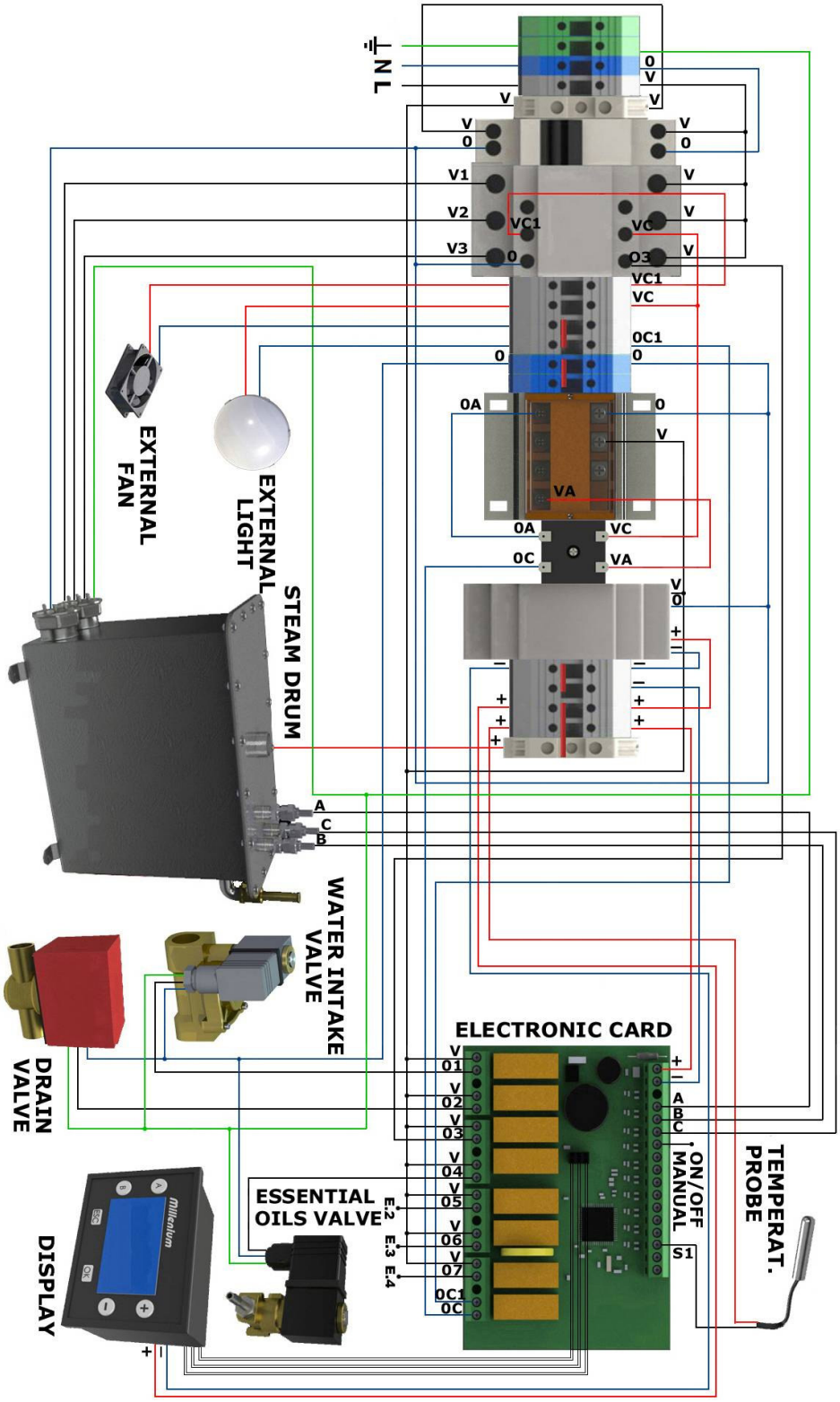


Figure 4: Steam-generator circuit diagram (monophasic).

STEAM GENERATOR: TRIPHASIC EQUIPMENT

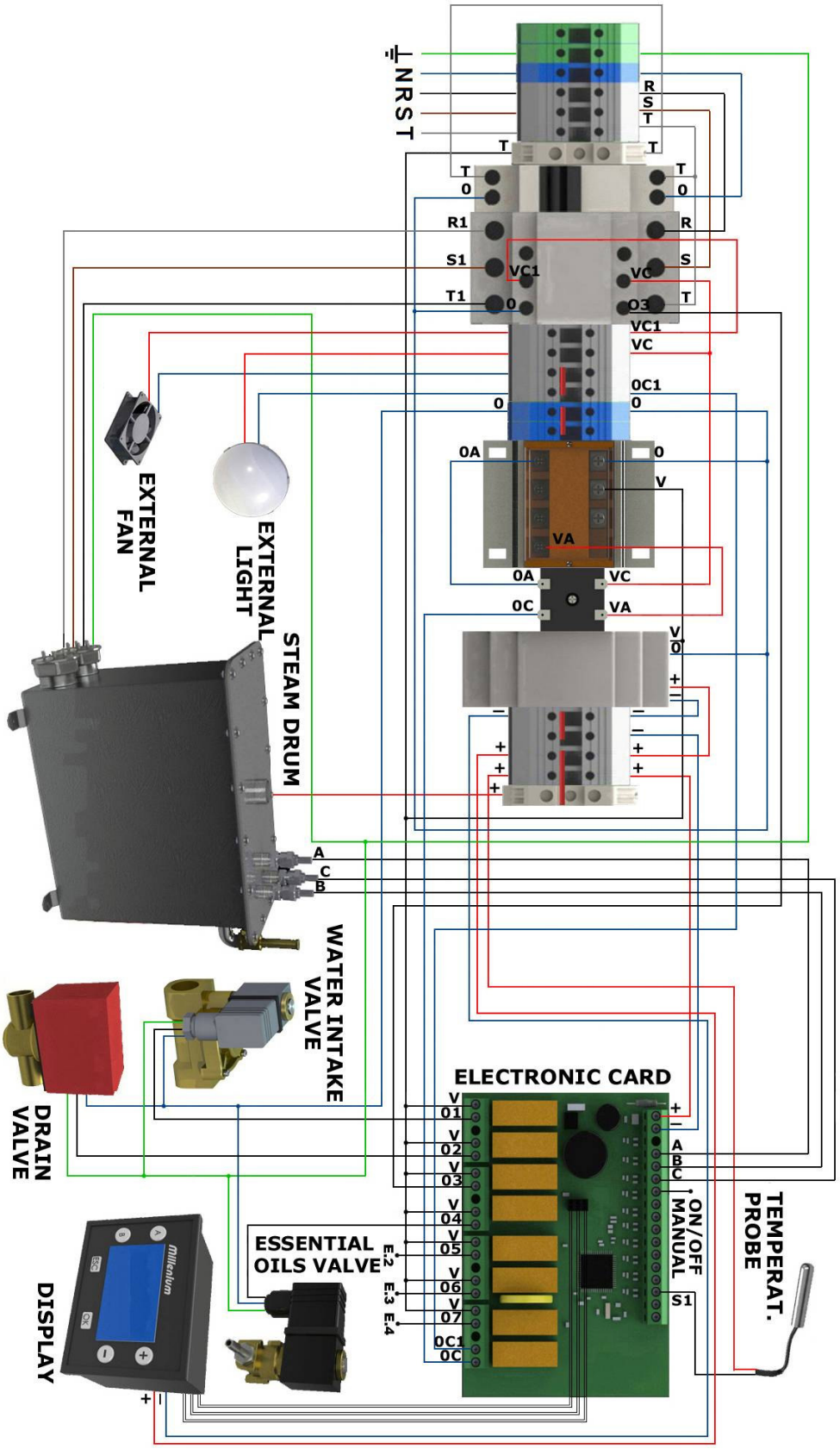


Figure 5: Steam-generator circuit diagram (triphasic).

ROMAN BATH: MONOPHASIC EQUIPMENT

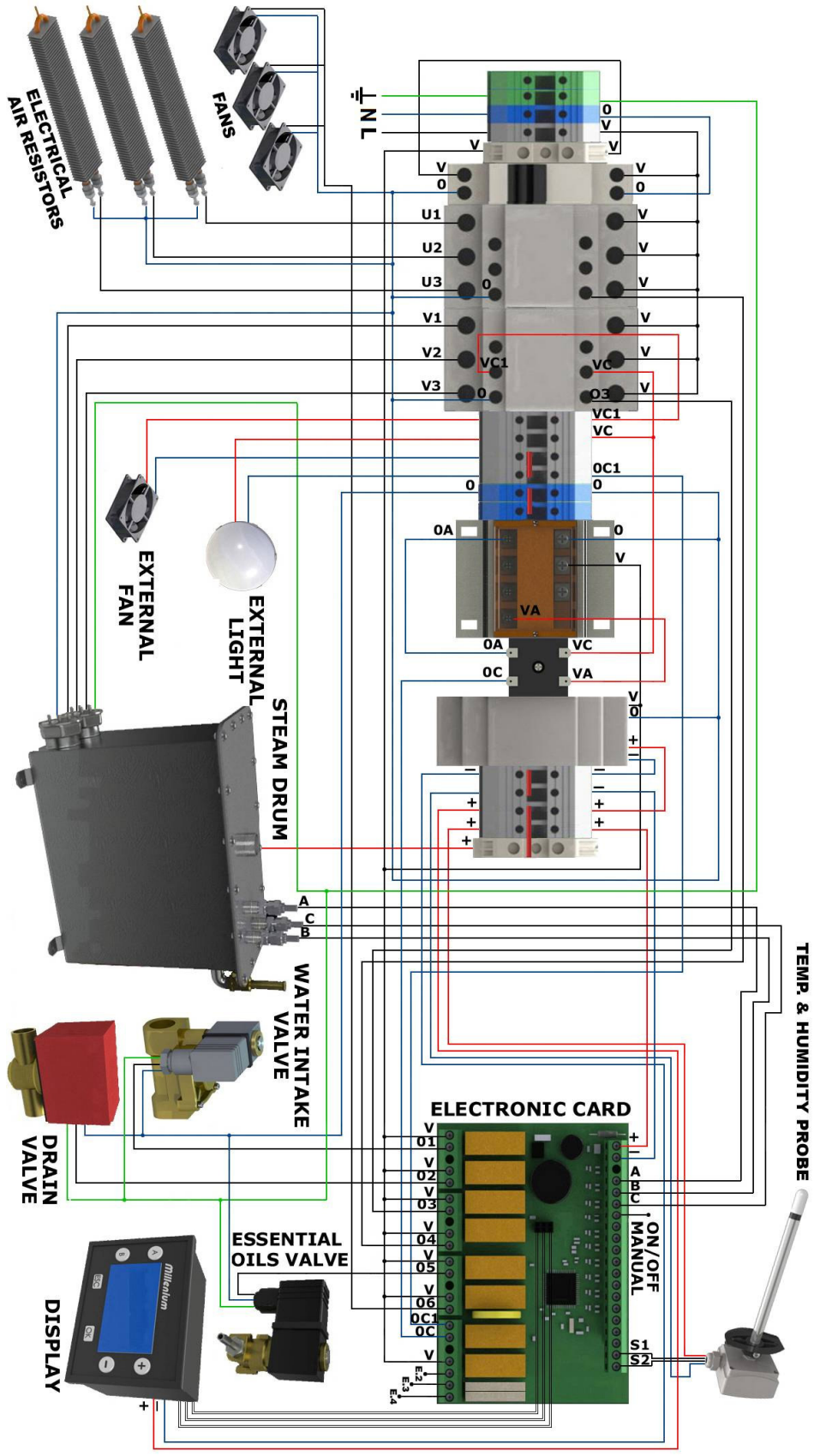


Figure 6: Ro man bath circuit diagram (monophasic).

ROMAN BATH: TRIPHASIC EQUIPMENT

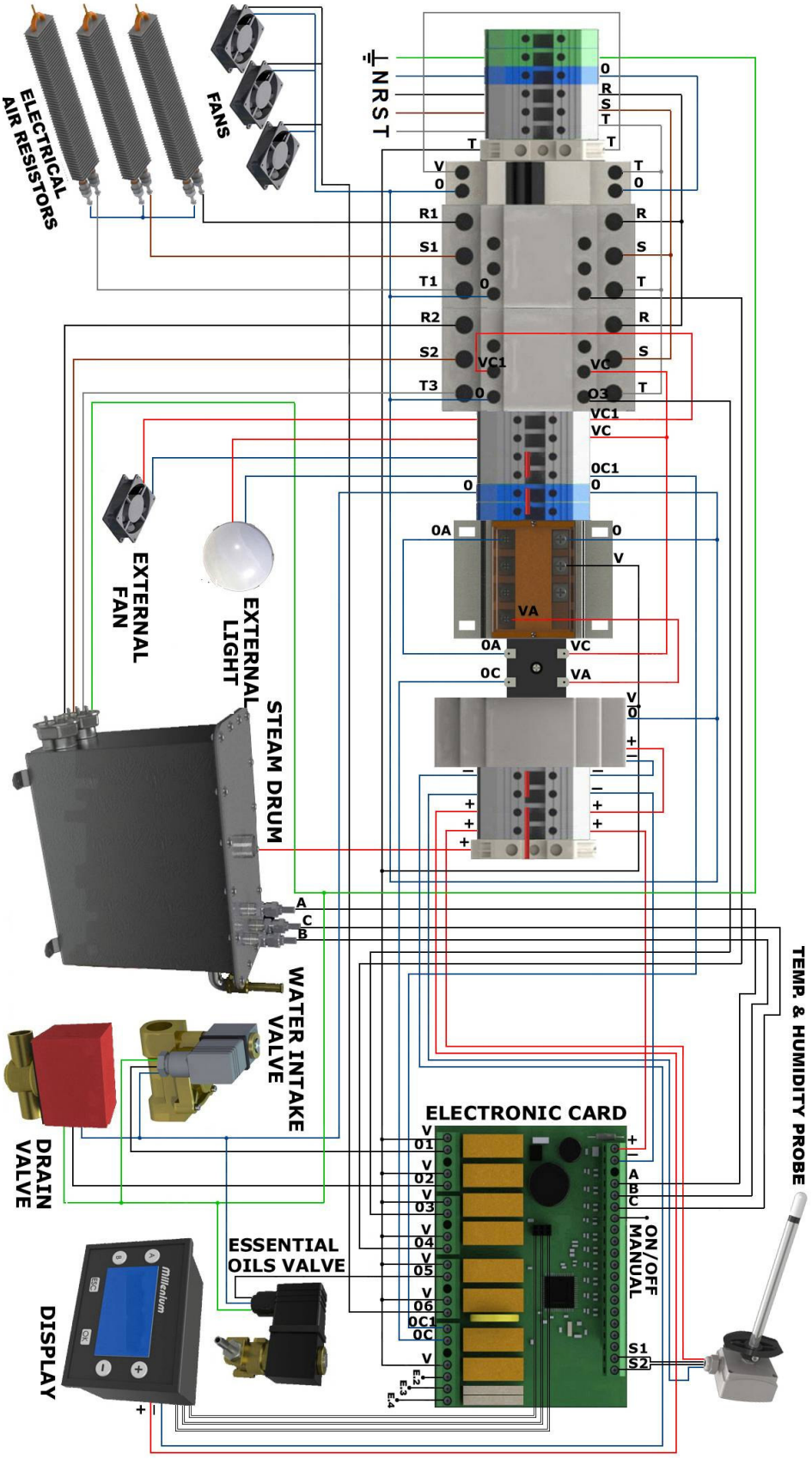


Figure 7: Roman bath circuit diagram (triphasic).

5.3 WATER INTAKE AND OUTLET

The units have a water supply intake and a drain outlet. For the steam generator, both are located on the left-hand side of the equipment, at 480mm from the ground. For the Roman bath, they are located on the lower right-hand side of the equipment.

The water intake from the water mains is equipped with a filter to avoid the potential intake of foreign bodies into the equipment's steam drum.

The water intake from the main water supply is identified because it is lacquered in blue and the drain outlet in red.

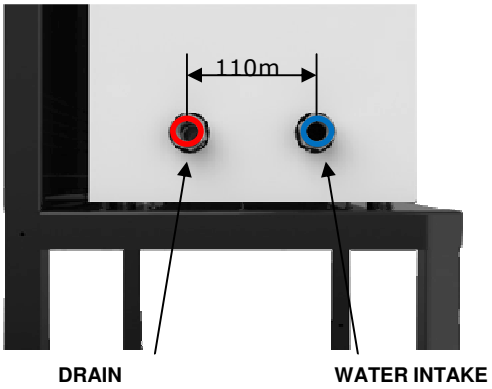


Figure 8: Water intake.

WATER INTAKE

Both pieces of equipment have a ¾" inch water intake in order to allow in the water from the main water supply. Such intake may be connected to the main hot or cold water supply; this choice makes no difference. The maximum pressure allowed for water from the main supply is 5 bar.

DRAIN

Both equipments have a ¾" inch drain needed for equipment maintenance and certain self-maintenance processes that are carried out automatically by the machines.

The drain pipe must be located on top of the sewer drain to be able to drain the equipment properly.

The drain pipe must be made of copper or similar and it must be installed at a descending slope angle towards the sewer drain, without U-bends.

IMPORTANT

Before starting-up the equipment, the water hardness of the main water supply must be analysed. If such hardness exceeds 5 French degrees (50mg. of $CaCO_3$ per litre of water), you must install a water softener at the water inlet.

If water hardness exceeds such value and the water softener is not installed, limescale will be deposited on the equipment's internal components. This will lead to malfunctions that will eventually cause early breakdown of the equipment; this is not covered by the warranty neither for parts nor for labour.

Moreover, before starting-up the equipment you must rinse the water intake pipe so that the filter that comes with the equipment is not obstructed.

ATTENTION

It is very important that the water pressure from the main water supply is lower or equal to 5 bar. Otherwise, the water intake valve may not be able to shut-off the flow of water.

The use of too high pressure water inlet is harmful to the mechanisms for opening and closing the equipment valve, which lead to premature failure of the valve, in addition, a high water inlet pressure may cause excessive installation waste and other harmfull sucesses such as water hammer, which can lead to premature failure of seams and joints.

5.4 TEMPERATURE PROBE

Steam generator's temperature probe must be installed at a height between 150 and 170cm from the floor of the steam chamber. It must be located where the temperature and the humidity of the enclosure will be most representative. So they must not be installed in corners where there is little circulation of air in the enclosure or places where the occupants of the steam room may affect the correct readings.

The temperature probe may be installed at greater distance, al long as 10 meters, from the equipment by using a two-wire low voltage pipe.

5.5 STEAM DISCHARGE

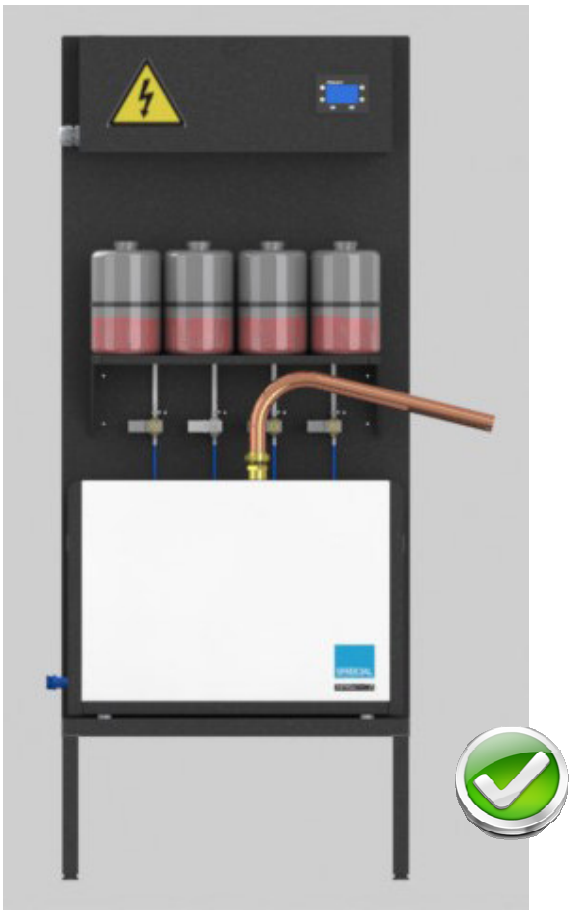
INFORMATION

This section 5.5 and the following 5.6 and 5.7 only apply to the steam generator, as the Roman bath does not need a steam installation, diffuser or aromas.

The steam pipes aligns the steam drum from the steam generator with the enclosure where the steam flow is to be discharged. This lining up must be done so we achieve an optimum steam flow with the least energy loss possible. The lower the energy loss, the less steam condensation will be produced. In this sense, it is ideal that the length of the steam pipe be as short as possible.

In order to obtain an optimum installation of the steam pipe you have to take a few points into account:

1. The steam pipe must be made of copper or stainless steel with an external diameter of 28 or 22 mm.
2. The steam pipe must not have any U-bends where steam condensation may accumulate, as this can obstruct the steam coming out.



3. The steam pipe should have the least possible number of bends and they must not be very pronounced, so you must not install elbow bends at 90º.

Figures 9: Steam discharge specifications.

4. The steam pipe must be installed at an angle towards the steam room in the event that the equipment is at the same level or above steam room level.

5. The steam pipe must also be installed at an angle towards the steam room in the event that the equipment is below steam room level, but only on the last stretch where the essential oils are applied, the rest of the steam pipe's length must be at an angle towards the steam generator.

   In this event, if the steam room is above steam generator level, the equipment must have a peristaltic pump in order to compensate for the difference in heights.

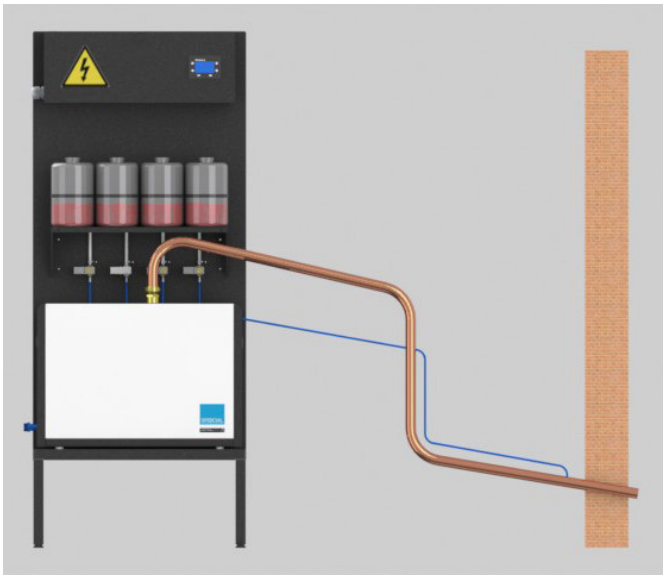


Figure 10: Same-level steam discharge.

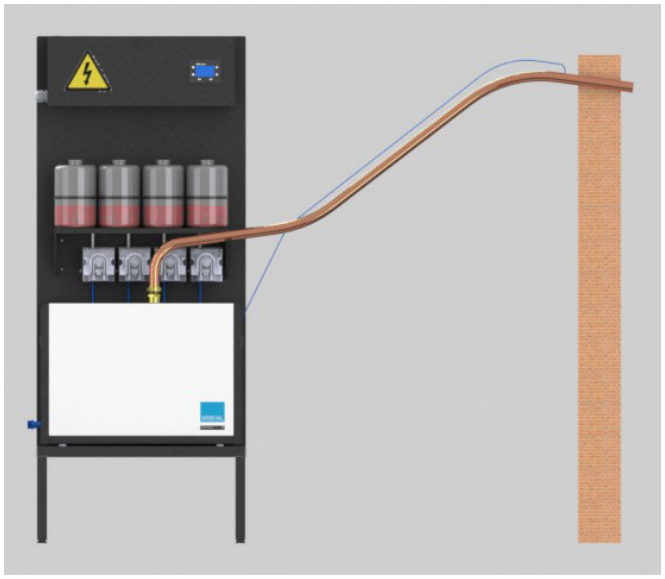


Figure 11: Higher-level steam discharge.

6. The steam pipe must be insulated in order to avoid loss of energy.

7. No other parts that may limit the flow of steam must be installed in the steam pipe, such as shut-off valves, reducers or pressure controllers.

IMPORTANT

☑ The steam pipe must be made of copper or stainless steel with a diameter of 28 or 22 mm.

☑ The steam pipe must have no U-bends that may obstruct the steam coming out.

☑ The steam pipe must have few bends and they must not be sharp bends.

☑ The steam pipe must be installed at an angle towards the steam room in the event the equipment is at the same level.
If the equipment is lower than the steam room, the steam pipe must be at an angle towards the steam-generating equipment only for the stretch where the application of essential oils is located, the rest must be at an angle towards the equipment.

☑ The steam pipe must be insulated in order to avoid loss of energy.

ATTENTION

If you have more than one steam-generating unit, you must never connect both steam outlets to one single steam pipe. This would exceed the safety pressure within the units' steam drums and consequently run the risk of damaging the internal parts of the units and endanger the safety of the steam room users.
If you have more than one unit, you must allow for the steam to circulate to each one of them independently.

5.6 STEAM DIFFUSER

For a correct distribution of steam within the steam room, we recommend that you install an adequate steam diffuser. The Astral Steam Series range of products has an optional steam diffuser specifically designed for this purpose.

It is a steam diffusing system made of special polished stainless steel resistant to high temperatures and anti-corrosion, due to the high environment humidity.

There are two steam diffuser models. The difference is based on the treatment the condensed water receives during this process.

- **OPEN MODEL:**
  This is a steam diffuser model designed to be installed in already existing steam rooms, where there is no possibility of installing a drain in the existing facilities.

This diffuser model has to dump the condensates produced inside it directly into the steam room (because it cannot divert them). However, it does this safely enough for the users because, despite being liquid water, it still retains a high temperature, as it is effectively condensed steam.

Thus, this diffuser model has a lower opening allowing the condensates to escape and a total longer length than the closed diffuser model needed to cool the condensates to acceptable levels.

- **CLOSED MODEL:**
  This is a steam diffuser model designed to be installed in steam rooms already under construction, as it is possible to install a drain, which is a more convenient solution to the preceding one since there will be no condensing within the steam room.

This diffuser model collects the condensates produced inside it and diverts them through an opening to the outside of the steam room towards a drain. Therefore, we avoid the dumping of condensed steam into the steam room.

This diffuser model has a closed lower part and a shorter total length than the open model.

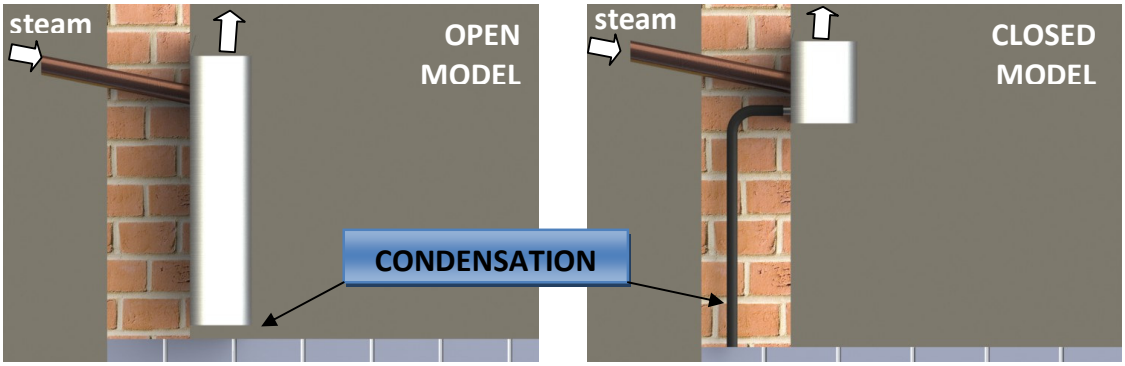


Figure 12: Steam diffusers.

INSTALLATION

The installation of these two steam-diffusing models is similar, the only difference being the height of installation, because the open model is higher than the closed model.

Both models have a back opening for the steam pipe, which will discharge the steam flow within the diffuser. Likewise, both diffusers have adequate openings for their correct and safe attachment to the supporting wall.

Similarly, both steam diffusers have an internal chamber where the steam is distributed and a separate external chamber so that the diffuser's external temperature is not excessively high. Even so, you must avoid any contact between your body and the diffuser's outside surface.

IMPORTANT

You must always take into account that the steam is discharged by the diffuser at around 100ºC so it is vital to install the equipment safely for users, to prevent any potential burns.

ATTENTION

You must avoid contact between any part of the body and the outside surface of the steam diffuser, as prolonged contact will harm the user (burns).

5.7 APPLICATION OF AROMAS

Together with the steam generator we include the necessary components for applying aromas and subsequent mix of essential oils within the steam flow.

In order to do this correctly you must take into account the two potential configurations of the equipment:

The equipment is located at the same level or higher than the steam room.

In this event, the application is done through a dosage solenoid valve specially designed for this purpose. The connection of the essential oils pipe and the steam pipe must be done from the half-way point of the total length of the steam pipe. This is because in the first half of the steam pipe the pressure generated by the steam flow is too high to allow the correct mix of the essential oils and the steam.

The equipment is located at a lower level than the steam room.

In this event, the application of essential oils is performed by a peristaltic dosage valve specially created for this functionality. In this event, the connection of the essential oils pipe and the steam pipe may be carried out at any point along the steam pipe as the peristaltic pump can compensate for the pressure generated by the steam flow, as long as the connection point is at a descending angle towards the steam room's outlet.

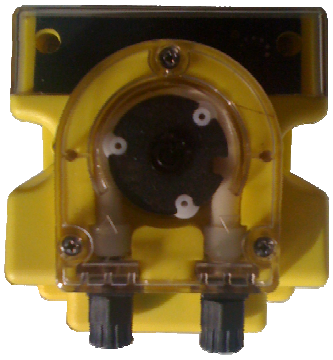


Figure 13: Peristaltic pump.

IMPORTANT

Please follow the installation rules, otherwise non-compliance may result in the aromas returning to the inside of the steam drum in the steam generator, which may endanger the process of steam generation, the equipment itself and the steam room occupants.

This is so because the current range of aromas in the market has an alcohol base that, in contact with boiling water, instantly creates a persistent foam. This foam tends to fill in the entire volume of the equipment's steam drum, obstructing the drum's steam outlet, thus increasing the pressure producing pressure pulses that drag the boiling water from the drum in such a way that it is finally expelled through the steam room outlet.

If you do not follow the installation rules the warranty will be null and void both for parts and labour.

6 DESCRIPTION AND OPERATION OF THE CONTROLLER

INFORMATION

Please note that all of the information described below applies both to the steam generator and to the Roman bath, unless otherwise mentioned in writing.

Inside user menu: increases/activates the selected parameter's value.

Inside user menu: reduces/deactivates the selected parameter's value.

Exit user menu.

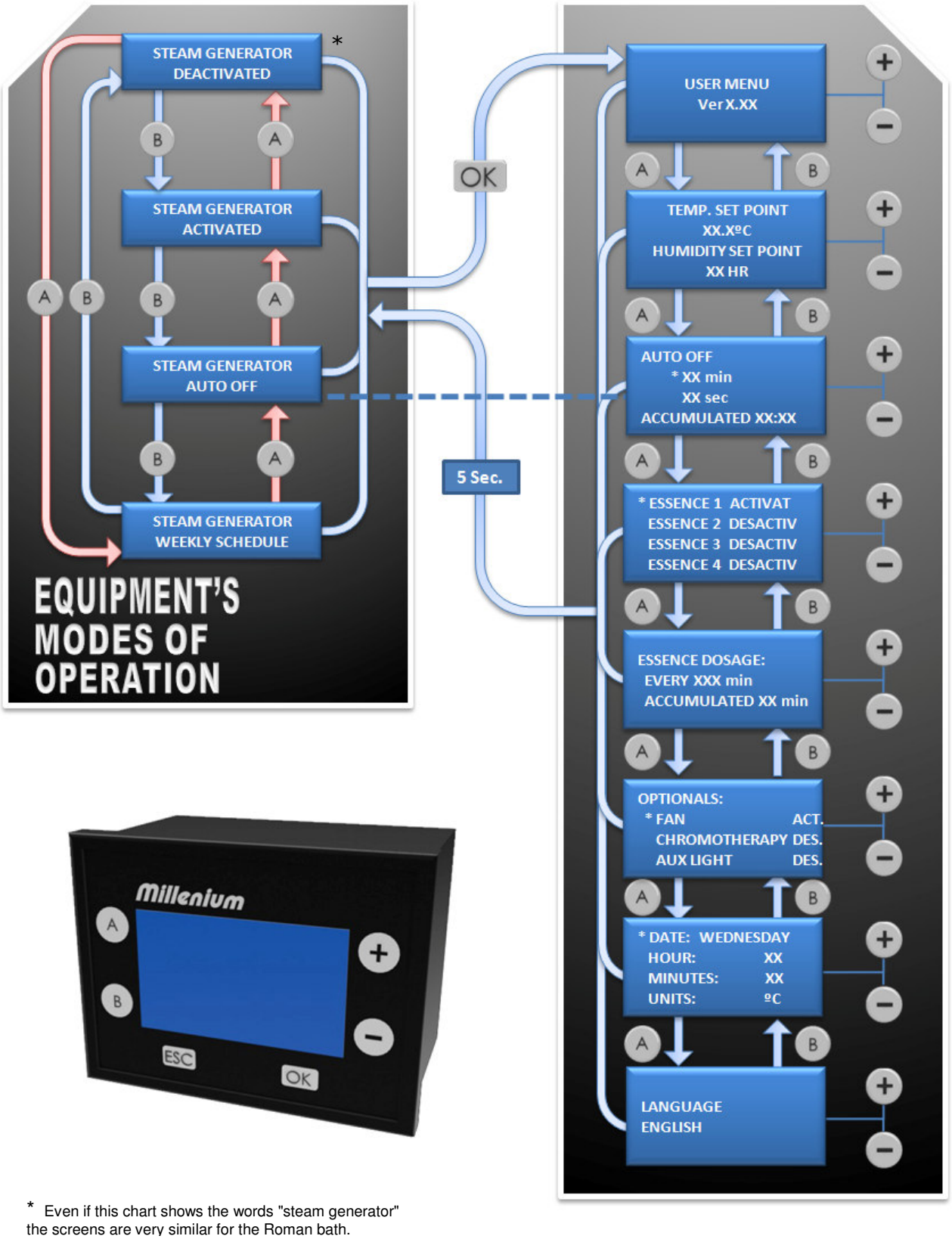
Access to user menu.

Outside user menu: change the equipment's operation.
Inside user menu: upward navigation through the user menu.

Outside user menu: change the equipment's operation.
Inside user menu: downward navigation through the user menu.

Figure 14: Equipment's display description.

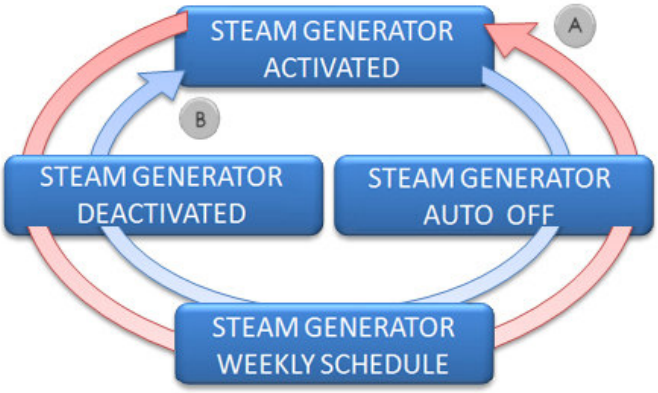
6.1 CONTROLLER'S ORGANISATION CHART



* Even if this chart shows the words "steam generator" the screens are very similar for the Roman bath.

Figure 15: Control system's organisational chart.

6.2 EQUIPMENT'S MODES OF OPERATION



The equipment has four status options (modes of operation). As it was shown above, "Controller's organisational chart", the way to change a mode of operation is by pressing the A or B keys.

Now we describe each mode of operation for the equipment:

Figure 16: Modes of operation.

MODO 5: DEACTIVATED

This mode means that the equipment is deactivated (inactive).

It is used to render the equipment inactive. Generally, it is used together with mode of operation 2, described below. And both modes make up the activation and deactivation procedure for the equipment.

However, during this mode the equipment carries out certain self-maintenance operations, as you will see in detail under section 7 further on.

MODO 6: ACTIVATED

This mode means that the equipment is activated and it will generate steam as long as the temperature measured by the room temperature probe installed in the steam room is lower than the desired temperature (temperature set point).

The equipment measures the chamber's temperature constantly through the room temperature probe and, once the desired temperature has been reached, the equipment will go into standby during which time it will continue to measure the chamber's temperature.

Whenever the chamber's temperature may be outside of the internal equipment's temperature differential, steam generation will be activated once more.

The following diagram illustrates the equipment's operation under this mode:

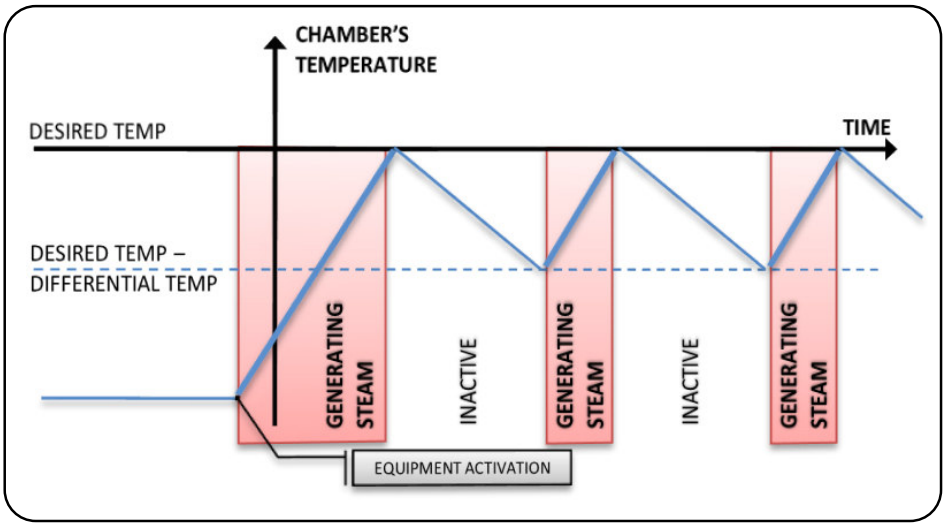


Figure 17: Equipment's operation diagram.

MODO 7: AUTO SWITCH-OFF

This mode of operation allows you to start a countdown, as soon as this setting is selected, during which the equipment will be working as it were in the previous mode (2), activated, with the exception that upon reaching 0 the equipment will deactivate, changing to mode 1.

The countdown value is set within the user menu, under the auto switch-off category. The equipment has a default value of 1 hour for this parameter.

MODO 8: WEEKLY SCHEDULE

Under this mode of operation, the equipment will activate and deactivate according to the user menu's settings programmed for the different time schedules for each day of the week.

That is, the equipment will change from working in mode 1 (deactivated) to working in mode 2 (activated) whenever the time of day coincides with the beginning of the time schedule set and, whenever said time schedule ends, the equipment will go back to working in mode 1 (deactivated).

Within the user menu you can set different time schedules for every day of the week, being able to define up to three independent schedules per day.

Weekly schedule programming is described in section 8 with more detail.

The following diagram shows an example of the equipment working in this mode, for which 2 time schedules have been specified. One from 06:00 to 12:00 and a second one from 15:30 to 20:00.

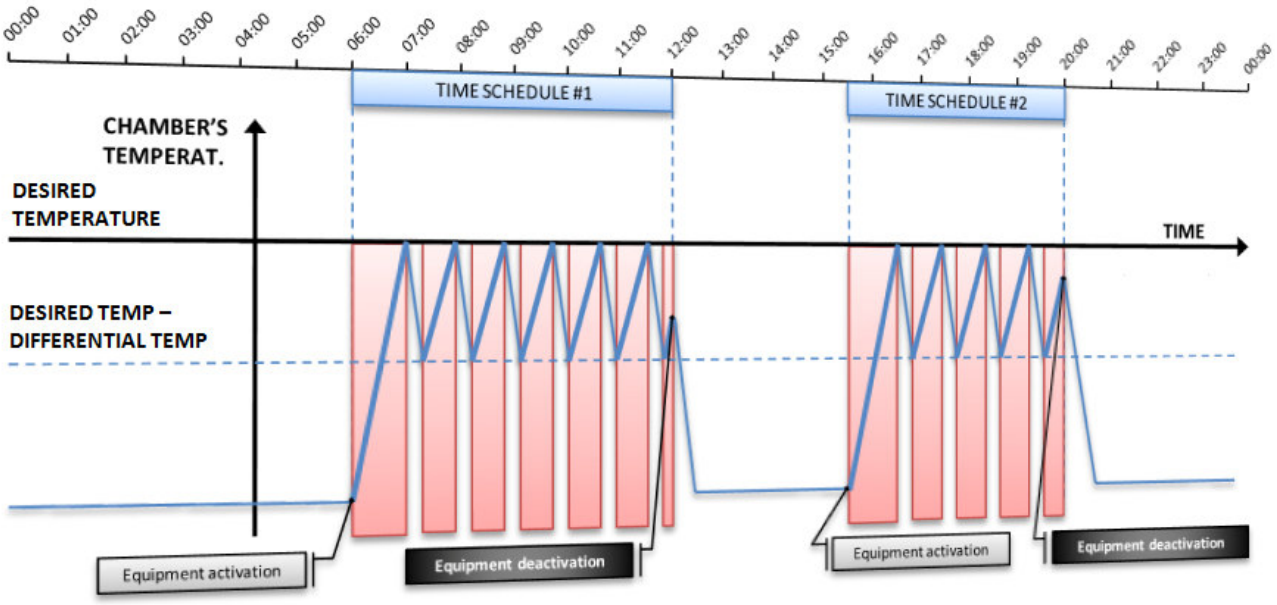
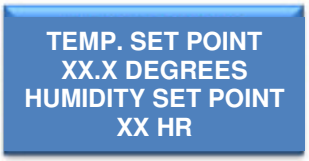
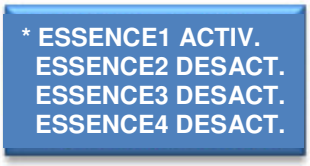
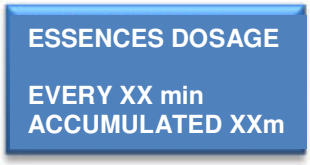


Figure 18: Equipment's operation according to weekly schedules.

6.3 USER MENU FUNCTIONS

The user menu contains certain parameters that can be edited and control the operation of certain functions within the equipment.

To access the user menu, you simply have to press OK: 

	The first screen appearing after pressing MENU indicates that we have just accessed the user menu and it also shows the software version.
	Then we will see the screen for the temperature (steam generator) and humidity setpoint (only Roman bath). On this screen you can define the temperature (steam generator) and humidity (if it is a Roman bath) desired setpoint.
	Now we find the screen corresponding to the "Auto switch-off" mode. Here we can define the hours we want the equipment to be working for. Once that time has elapsed, the equipment will disconnect itself.
	After that, we have the screen controlling the essential oils. And whether the machine has MULTIPLE-ESSENTIAL OILS available. From these screens we can activate or deactivate the application of the essential oil selected (if we have the multiple-essential oil option we can even mix the essential oils). **ESSENTIAL OILS #2, #3 and #4 MAY BE ACTIVATED ONLY IF THE EQUIPMENT HAS THE OPTIONAL MULTIPLE-ESSENTIAL OIL KIT.**
	Now we find the screen where we can set the frequency of essential oil applications.
	Next we move to the screen controlling the activation or deactivation of the light point and the air renovation fan: **FAN + INTERNAL LIGHT**

Continúa en la página siguiente.

*DATE WEDNESDAY HOUR: XX MINUTES: XX UNITS: CELSIUS	A continuación podremos configurar los parámetros de fecha, hora y unidades de medida. Las unidades de medida disponibles son: **º CELSIUS ↔ º FARENHEIT**
LANGUAGE: ENGLISH	Finalmente, podremos cambiar el idioma en que se muestran las pantallas de información del equipo (bajo pedido). Las posibilidades son: • CASTELLANO • ENGLISH • ITALIANO • FRANÇAIS • DEUTSCH • PORTUGUES

Table 5: User menu functions.

6.4 INFORMATION MESSAGES

These messages shown by the equipment's display are in charge of communicating information about the equipment's status and the processes underway.

Now we will show you the information messages for each piece of equipment corresponding to the 4 different operation modes available.

MODE 1: DEACTIVATED (STEAM GENERATOR)

As you can see, two different screens may appear. This is due to the self-maintenance process as explained under section 7.

Whilst the equipment is deactivated, the screen messages will be the following:

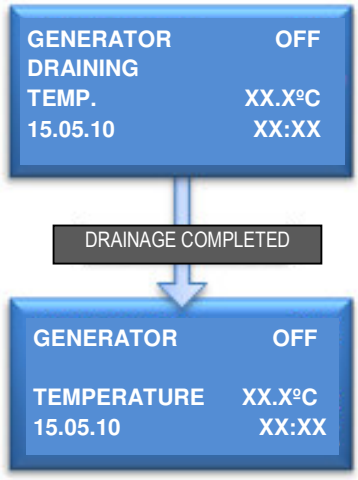
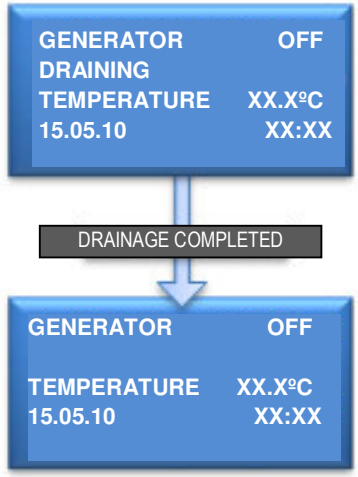
	If the equipment has been working in any of the following modes: **MODE 2: Activated** **MODE 3: Auto switch-off** And then it has been deactivated, either manually by the user or because it has reached the end of the auto switch-off timing, the machine drains the water within the equipment after 60 minutes so that there is no hot water kept inside it because, in the long run, this may spoil the internal parts. As soon as this maintenance drainage is finished, the numerical value of the countdown will disappear.
	On the other hand, if the equipment is working in the remaining mode of operation: **MODE 4: Weekly schedule** And it is not within any given time schedule, we will see the wording "PROGRAM" indicating that the equipment is in this operation mode. As before, in order not to keep hot water inside the equipment, which may damage the internal parts, it proceeds to drain the water inside the equipment after XX minutes. As soon as this maintenance drainage is finished, the numerical value of the countdown will disappear.

Table 6: Modes of operation: DEACTIVATED (generator & Roman bath).

MODE 1: DEACTIVATED (ROMAN BATH)

This operation mode of the Roman bath is completely similar to the one shown on this page for the steam-generating equipment. The only thing that changes is the first line of information, instead of showing "GENERATOR" it will read "ROMAN BATH".

MODE 2: ACTIVATED (STEAM GENERATOR)

Whilst the equipment is working in mode 2, activated, the information shown on the screen will vary depending on the process underway.

The screen displays defined below detail the standard operation of the equipment, assuming that if changed to mode 2, the equipment is outside of temperature set point.

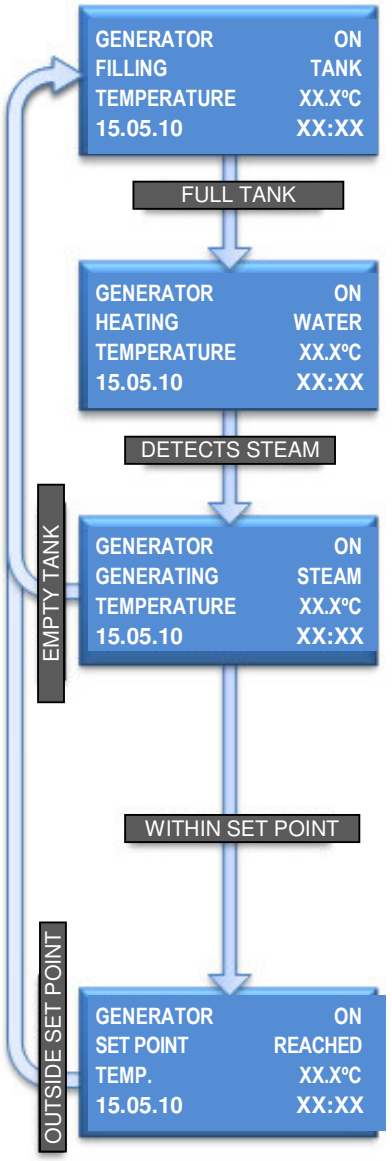
	When your first activate the machine, the equipment initially detects the enclosure's temperature and, if this is outside the temperature set point, then it will fill the internal reservoir with water up to the maximum level. During this process, you will see the following message on the screen: When the internal reservoir is full up to an adequate level, the equipment will commence to heat up the water of the internal reservoir. During the water heating process, with no steam generation, the message on the screen will be: Once steam generationhas started the equipment will detect this and the previous screen changes to this message: During this phase of operation, the essential oils are applied: **ESSENTIAL OILS ARE APPLIED ONLY IF STEAM IS BEING GENERATED** This is because it is necessary that the steamed essential oils are distributed properly within the entire volume of the enclosure to be climatised, which can be achieved by applying them into the steam flow. Finally, when the desired temperature is reached, steam generation will stop and you will see the following screen:

Table 7: Modes of operation: ACTIVATED (generator).

Please note that whilst the equipment is generating steam, the water inside the steam drum will slowly decrease down to a minimum level, which signals the point for the equipment to load more water and, as shown in the previous table, this means the equipment will proceed to the starting point.

Likewise, when the equipment reaches the temperature set point pre-defined by the user, the steam generation will stop. When the temperature inside the enclosure to be climatised is lower than the temperature differential set point internally defined, the equipment will start to generate steam from the beginning. That is, by filling up the steam drum.

INFORMATION

Please note that if the equipment goes into operation mode 2, activated, and it is within the set point range set by the user, the equipment will remain on standby until the temperature falls outside said set point range.

SET POINT DIFFERENTIAL:

The equipment is already programmed with an internal set point differential value that controls when the equipment must start working again after having reached the temperature desired by the user.

The following image shows a diagram of how this temperature differential works.

When the equipment starts-up, given that the temperature in the enclosure is lower than the desired temperature, the steam generation process commences, which gives a rise in temperature to the point of reaching the desired temperature. At that point, the equipment stops generating steam and remains on standby.

As the steam generation has come to a halt, the temperature in the enclosure will decrease over time. The steam generator will start working again and generating steam whenever the enclosure's temperature is lower than the desired temperature minus the temperature differential.

All of the above is equally applicable to the humidity set point of the Roman bath, which has a temperature and humidity set point. The differential for both of them are independent.

As an example, if the desired temperature is 42ºC and the differential is 2.5ºC, the equipment will not generate steam until the enclosure's temperature decreases to 39.5ºC (42ºC - 2.5ºC = 39.5ºC).

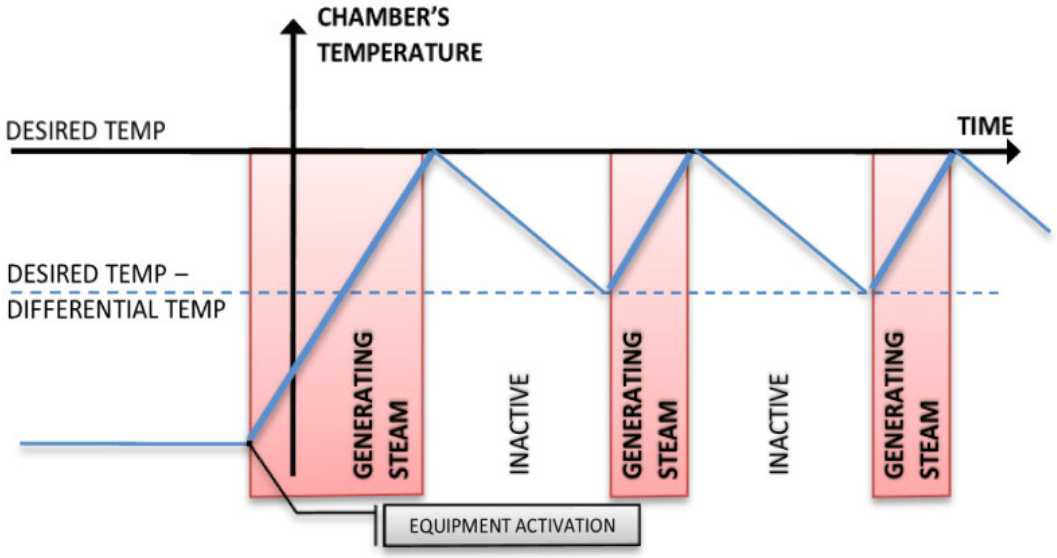


Figure 19: Temperature differential.

MODE 2: ACTIVATED (ROMAN BATH)

The diagram of screens displayed by the Roman bath equipment, having two independent set point values for temperature and humidity, are as follows:

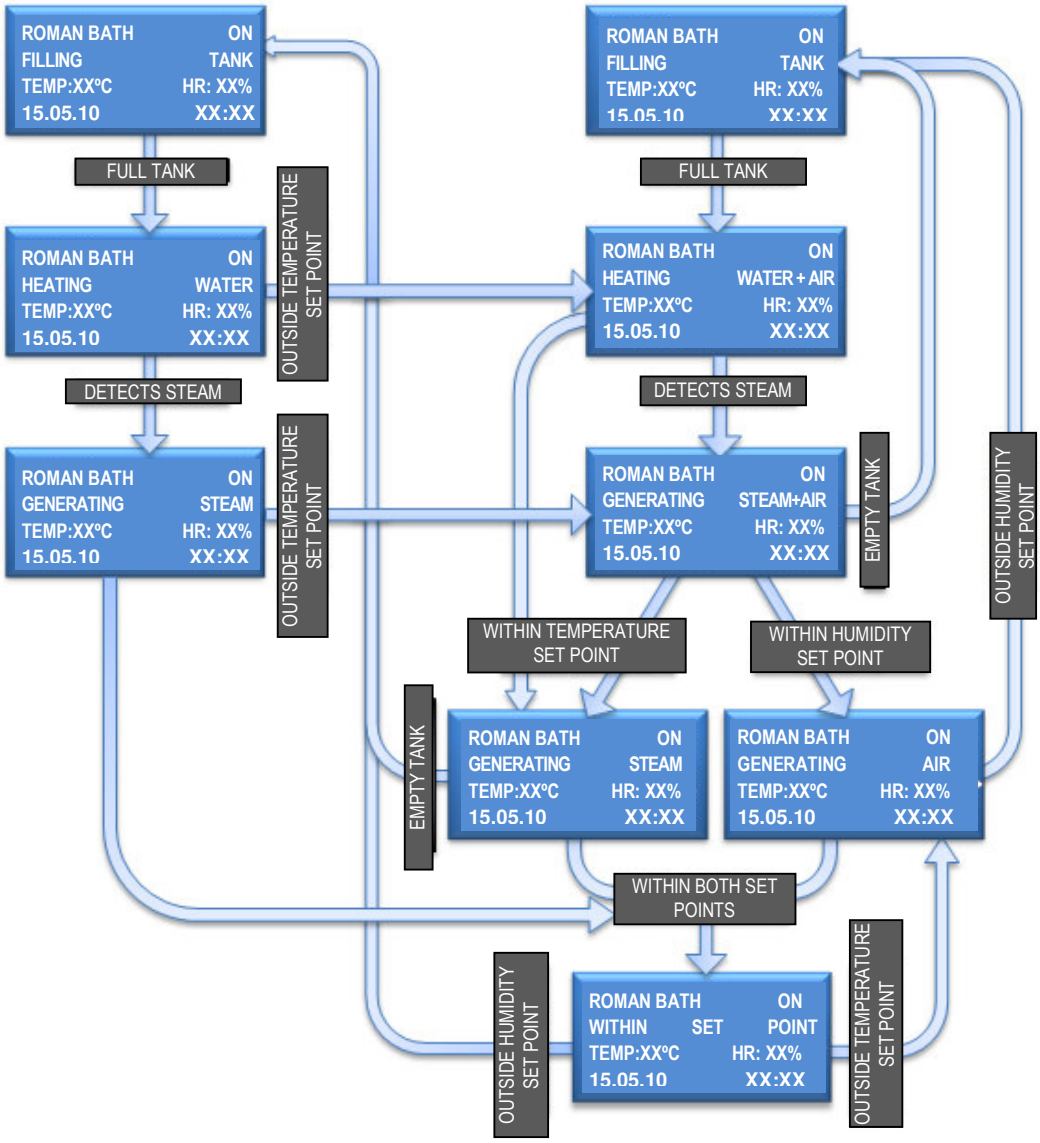
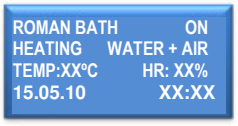


Table 8: Modes of operation: ACTIVATED (Roman bath).

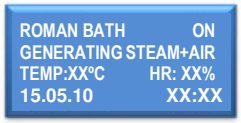
Now we will describe the process step by step:

At the time the equipment is activated, the machine will detect that it is not within the set point values for either temperature or humidity and thus it will proceed to heat air and to fill the steam drum with water in order to generate steam. The screen shows the following during this process:

When the equipment has finished filling up the internal steam drum with water, a relatively quick process, it will move onto the next screen showing that water and air are being heated. It shows the water is being heated as it has not reached boiling point yet and, therefore, the steam generation process has not started. In the unlikely but possible event that you may reach set point temperature, the equipment will show a screen that we will describe later on.



Once the equipment has detected the steam generation, the previous screen changes to the following, which shows the steam generation has commenced. As previously mentioned, it is during this phase when the application of essential oils is carried out. As no set point has been reached, there is also an indication that the air is being heated:



Next two things may happen: either the equipment reaches the two set points, temperature wise or humidity wise, or the water in the steam drum runs out during the ongoing steam generation process. If the latter happens, the equipment fills the steam drum with water again and it returns to the initial screen going over the whole process described above.

If, during the previous step, the equipment reaches the set point humidity, you will see this screen, which tells you that only the air is being heated as the humidity setting has already been reached and it is not necessary to generate more steam.

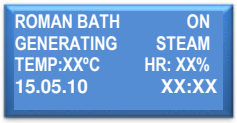
THE ASTERISK INDICATES THAT THE SET POINT HAS BEEN REACHED

If, during this time, the equipment falls outside the humidity set point already reached, it will return to the initial screen that indicates the steam drum is being filled with water and the whole process already described will commence again.

Recapping on the previous point where the equipment is generating steam and heating water, if, instead of reaching the humidity set point, the equipment reaches the temperature set point, the screen you will see is the one informing you that the equipment is only generating steam.

As from this point the equipment is only generating steam, sooner or later the steam drum will run out of water and it will proceed to fill it up with water again. But this time, as we are within the temperature set point, the information screen will be similar to the screen showing that the system is being filled with water, except that now the asterisk will appear next to the temperature, which indicates that it is within the temperature set point.

Similarly to the above, whilst the equipment falls outside the temperature set point, it will heat the water and subsequently generate steam. The difference here lies in that we are within the temperature set point, which makes the asterisk appear and the information messages are replaced by the following: During the steam generation process when reaching the temperature set point, it might fall outside it at any moment. This means that you will return to the similar process screen, but this time without an asterisk and showing that the water is being heated and steam generated and the air is also being heated.



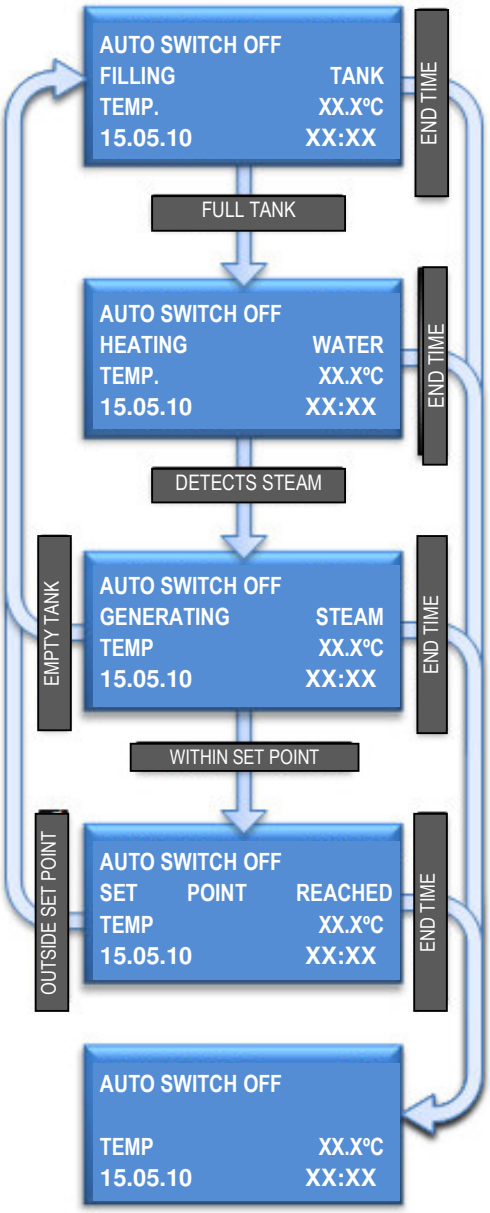
Finally, upon reaching both temperature set points the equipment will remain on standby and waiting to fall outside a set point, showing both asterisks, which indicate the equipment is within set points. At this point, the screen displays the following information:

MODE 3: AUTO SWITCH-OFF (STEAM GENERATOR)

This mode of operation allows you to start a countdown, as soon as this setting is selected, during which the equipment will be working as it were in the previous mode (2), activated, with the exception that upon reaching 0 the equipment will automatically deactivate itself, changing to mode 1, deactivated.

Therefore, the information screens shown during this operation mode are identical to the previous mode screens, with the exception of being informed that the name of the mode the equipment is operating in is that of auto switch-off:

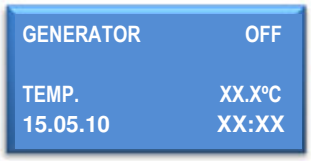
Instead of showing "**GENERATOR ON**", you will see: "**AUTO SWITCH OFF**", where these numerical values are the hours and minutes until equipment deactivation. That is, the transition to operation mode 1.



As you can see, the information screens are identical to those for the previous operation mode, except that instead of showing "GENERATOR ON", it will show "AUTO SWITCH OFF".

GENERATOR ON ↔ AUTO SWITCH OFF

In this respect, when the countdown reaches 0, the equipment will proceed to deactivation, regardless of whatever it is doing (whether heating water or generating steam or within temperature set point), showing the following screen:



In this event, the equipment will be working in operation mode 1, deactivated, see mode 1.

Table 9: Modes of operation: AUTO SWITCH-OFF (generator).

MODE 3: AUTO SWITCH-OFF (ROMAN BATH)

Similar to what has been explained for the steam generator under this operation mode, the Roman bath is exactly the same. This mode of operation allows you to start a countdown, as soon as this setting is selected, during which the equipment will be working as it were in mode (2), activated, with the exception that upon reaching 0 the equipment will automatically deactivate itself, changing to mode 1, deactivated.

Therefore, the information screens shown during this operation mode are identical to those for mode 2, with the only difference of being informed that the name of the mode the equipment is operating on is that of auto switch-off. Instead of showing "**ROMAN BATH ON**", you will see: "**AUTO SWITCH OFF**", being these numerical values the hours and minutes until equipment deactivation. That is, the transition to operation mode 1, deactivated.

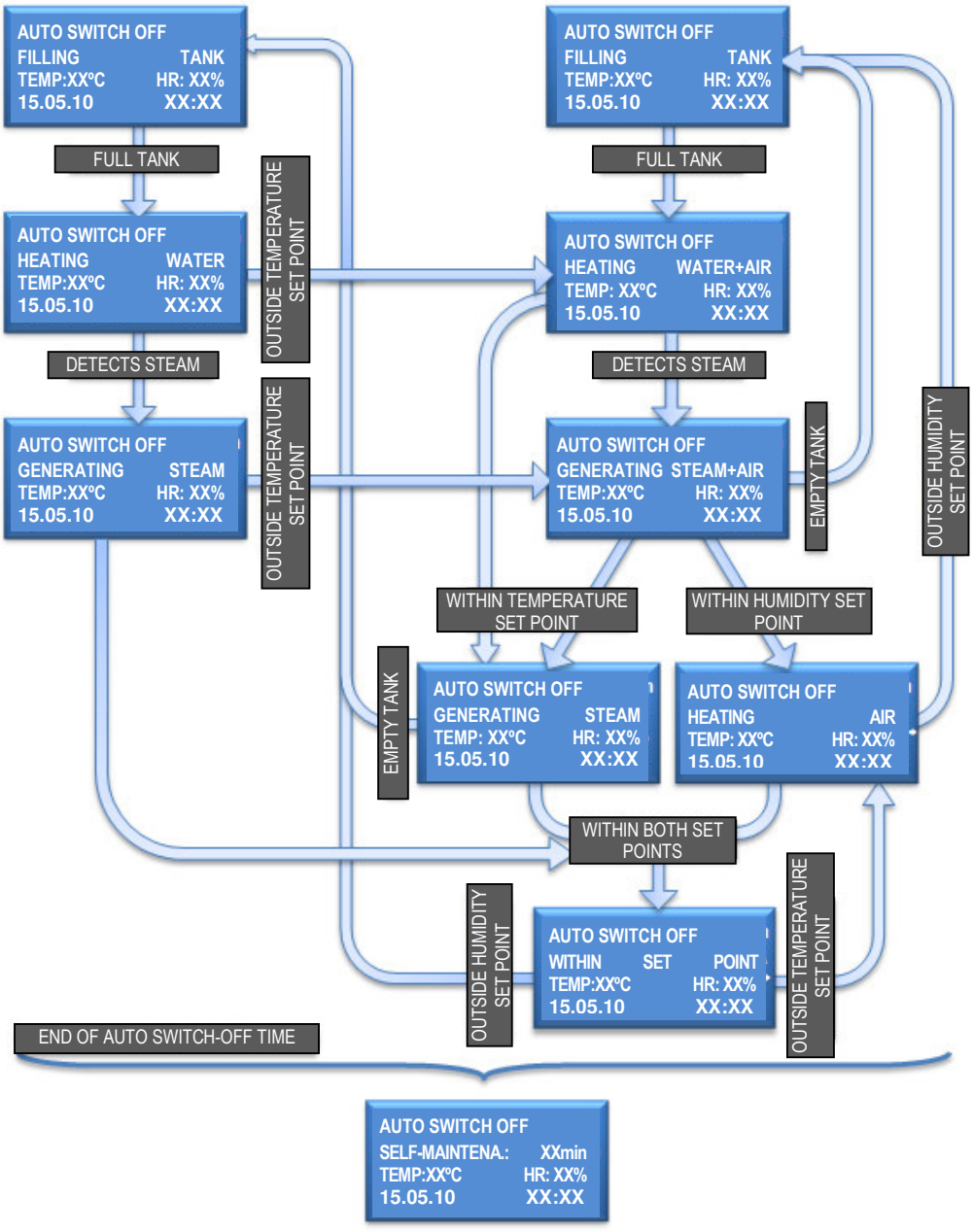


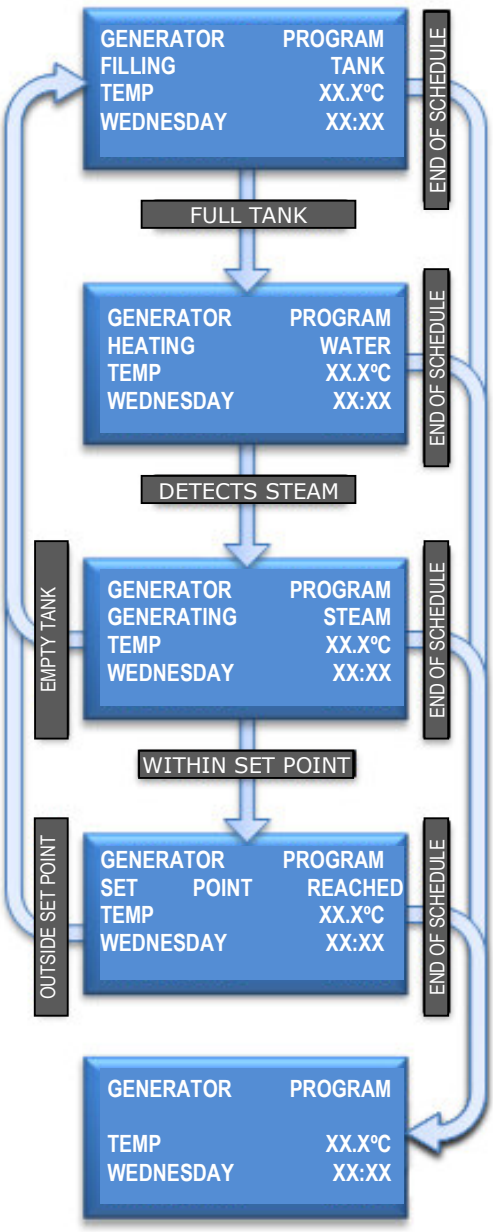
Table 10: Modes of operation: AUTO SWITCH-OFF (Roman bath).

MODE 4: TIME SCHEDULE PROGRAMMING (STEAM GENERATOR)

Under this mode of operation, the equipment will activate and deactivate according to the user menu's settings programmed for the different time schedules for each day of the week.

That is, the equipment will change from working in mode 1 (deactivated) to working in mode 2 (activated) whenever the time of day coincides with the beginning of the time schedule set and, whenever said time schedule ends, the equipment will go back to working in mode 1 (deactivated).

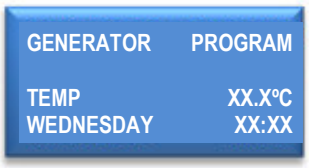
Therefore, the information screens shown during this operation mode are identical to the previous mode screens, with the exception of being informed that the name of the mode the equipment is operating in is that of auto switch-off:



As you can see, the information screens are identical to those for the initial operation mode, except that instead of showing "GENERATOR ON", it will show "GENERATOR PROGRAM".

GENERATOR ON ←→GENERATOR PROGRAM

In this respect, whenever the equipment reaches the end of the time schedule programmed, the equipment will proceed to deactivation, whatever it is doing (whether heating water or generating steam or within temperature set point), showing the following screen:



In this event, the equipment will already be in mode 1, deactivated (see operation mode 1), until it begins a new time schedule where, again, the equipment will behave as in mode 1, activated.

Table 11: Modes of operation: WEEKLY SCHEDULE (generator).

MODE 4: TIME SCHEDULE PROGRAMMING (ROMAN BATH)

Similarly to what has been explained for the steam generator in this operation mode, it is exactly the same for the Roman bath. Under this operation mode, the equipment will activate and deactivate according to how it has been programmed within the user menu for the operating time schedules for each day of the week. That is, the equipment will change from working in mode 1 (deactivated) to working in mode 2 (activated) whenever the time of day coincides with the beginning of the time schedule set and, whenever said time schedule ends, the equipment will go back to working in mode 1 (deactivated).

Therefore, the information screens shown during this operation mode are identical to those for mode 2, with the only difference of being informed that the mode the equipment is operating in is that of weekly schedules. Instead of showing "**ROMAN BATH ON**", you will see: "**ROMAN BATH PROGRAM**".

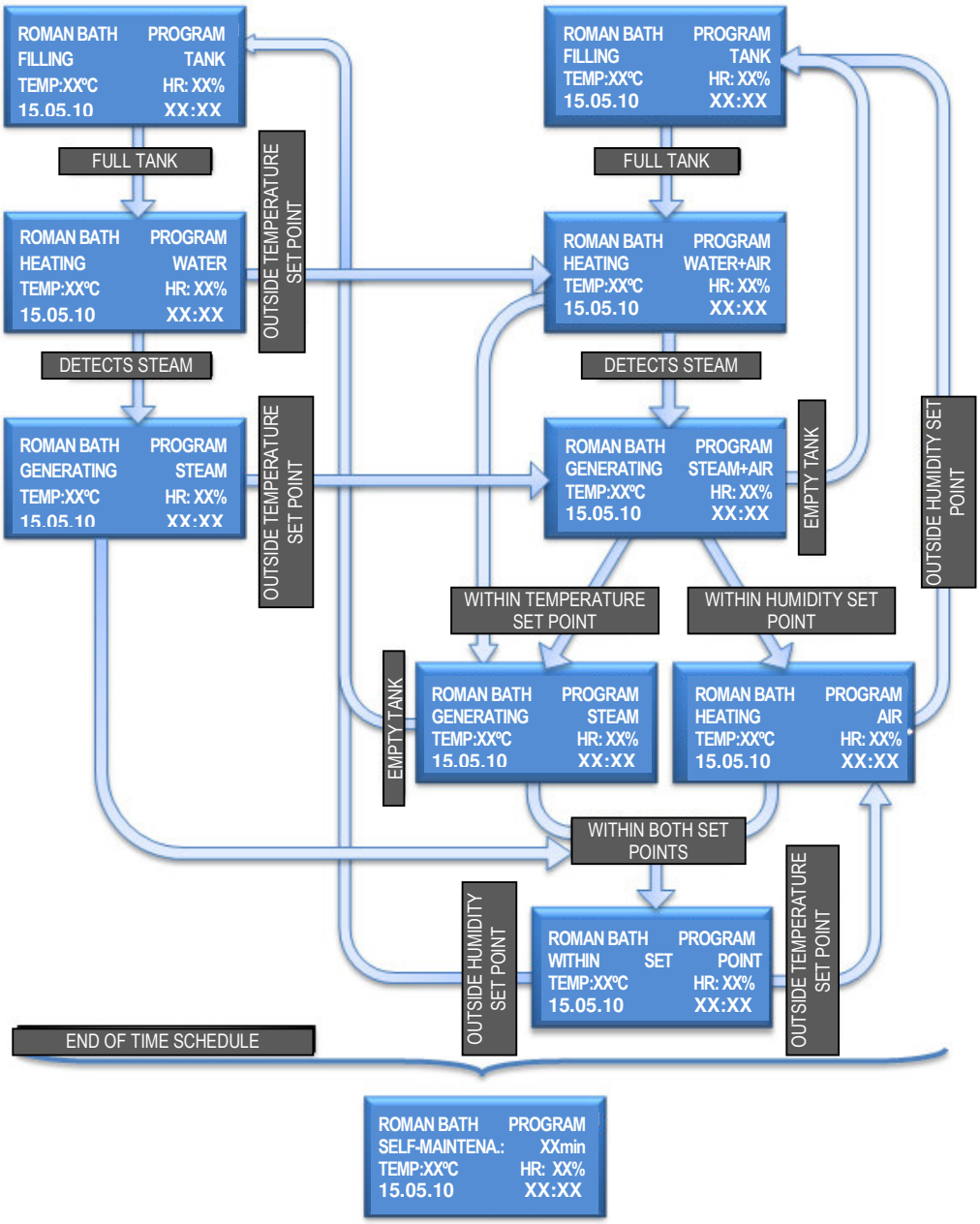


Table 12: Modes of operation: WEEKLY SCHEDULE (Roman bath).

6.5 WARNING MESSAGES

The program that controls the equipment's operation is designed to face any event that may occur. In this sense, if a specific error is detected, the equipment will act accordingly and will show the relevant information in the data display. Now we will describe all error messages that may occur and how to proceed if they occur.

SERIOUS MALFUNCTION TEMPERATURE PROBE	This error message comes up whenever the temperature probe is not correctly communicating with the electronic control card. Examine the temperature probe wiring as well as the probes integrity. Proceed to replacing the probe if necessary.
SERIOUS MALFUNCTION THERE IS NO WATER	This error comes up whenever the equipment has no water supply. It may be a problem with the water supply (external to equipment) or that the water inlet valve is stuck in the shut-off position. Check there is a water supply. Dismantle and clean the water inlet valve. If necessary, replace with a new valve.
SERIOUS MALFUNCTION MIN. LEVEL PROBE/DRAIN	This error message may have two possible causes: 4. The drain valve is not working correctly. In this case, dismantle the drain valve and clean it. If necessary, replace with a new valve. 5. A drain pipe is obstructed. Check that the status of the drain pipe is good. 6. The probe for the minimum level of water has been bypassed. Check the status of this probe, clean and/or replace if necessary.
SERIOUS MALFUNCTION MIN. LEVEL PROBE	This error appears whenever the minimum water level probe has become electrically isolated. Check that the connection of the minimum water level probe is correct (the connection wire must not be broken or cut). Clean the minimum level probe and/or replace if necessary.
SERIOUS MALFUNCTION MAX. LEVEL PROBE	This error appears whenever the maximum level probe becomes short circuited. Clean the probe and/or replace it if necessary.
SERIOUS MALFUNCTION MAX. LEVEL PROBE 2	This error appears whenever the minimum level probe becomes short circuited. Check that the connection of the minimum level probe is correct (the connection wire must not be broken or cut). Clean the minimum level probe and/or replace if necessary.

SERIOUS MALFUNCTION SAFETY PROBE	This error appears whenever the safety probe becomes short circuited. The way to proceed is similar to the previous two errors: Check the wiring of the safety probe and clean said probe.
SERIOUS MALFUNCTION SAFETY/WATER PROBE	This error has two possible causes: 3. The safety probe has short circuited. The way to proceed is to dismantle the probe and check its status. Clean it if necessary. 4. The water inlet valve has become stuck in the open position, which means water is constantly flowing in. Check, dismantle and clean the water inlet valve. If necessary, replace with a new valve.

Table 13: Warning messages.

INFORMATION

If any of these messages appear, first the equipment will try to resolve them by itself and it will proceed to use certain programmed processes for each malfunction with the aim of resolving each one of them.

After those processes have run, if the problem stills persists, the machine will be disconnected whilst displaying the warning on the screen. If otherwise the problem has been resolved, the equipment will return to the same operation mode it was in before the malfunction.

7 INSTRUCTIONS FOR MAINTENANCE

Maintenance must be carried out by a qualified professional. It should be carried out at least once a year and includes several elements:

1. Checking and cleaning the water inlet and drain valves, as well as the water intake filter.
2. Checking and cleaning the essential oils dosage valve.
3. Checking and cleaning the minimum level, maximum level and safety probes.
4. Checking the inside of the steam drum and cleaning of any build-up if necessary.
5. Revision of the safety mechanisms.
6. Removing dust and dirt from the electrical panel.
7. Checking the earth connections.

PREVENTIVE MAINTENANCE:

You must keep a record of each component maintained as well as the actions or repairs undertaken.

The surfaces of the outer casings may be cleaned with a cloth and a non-abrasive material.

Any maintenance must be carried out only after the machine has been disconnected from the power supply.

THINGS TO TAKE INTO ACCOUNT:

ELECTRICAL PANEL

Check all electrical connections.
Check there is no overheating of the electrical terminals.
Check that the safety systems are working correctly.
Check that the controller works correctly and that it is calibrated, reading against an approved and calibrated ambient thermometer.

IMPORTANT

Maintenance must be carried out by a qualified professional. Maintenance should be carried out at least once a year.

7.1 SELF-MAINTENANCE PROCEDURES

This steam-generating equipment has a series of self-maintenance procedures needed both to prolong the working life of the equipment and to prevent potential operating malfunctions.

STEAM DRUM WASHES

Through this process, the equipment manages to prolong the working life of the equipment by cleaning the steam drum, reducing both mineral build-up and impurities that may have accumulated. Morevoer, this process is also necessary to remove the excess of concentration of salts in the steam drum's water.

This consists of three steps:

- DRAINAGE: Firstly, the equipment drains the water from inside the steam drum.
- CLEANING: Secondly, the bottom of the steam drum is stripped with water.
- FINAL DRAINAGE: Lastly, the remaining water is drained from the inside the steam drum.

These washes of the steam drum are performed at pre-programmed intervals and their frequency is directly proportional to the equipment's power. That is, the more powerful the equipment, the more frequent the washes, because there is more steam generated per unit of time.

DRAINAGE BY SWITCH-OFF

Through this process, the equipment manages to prolong the operating lifetime of the internal electrical resistors of the equipment.

When it has been working and it remains in mode 1, disconnected, or whenever it is working in mode 4, weekly schedule, reaching the end of a time schedule, it remains on standby; this means that there is very hot water inside the steam drum. This is not advisable because, as the equipment is insulated in order to reduce energy loss to optimum levels, the heat will be kept for a long time inside the steam drum.

Over time this would damage the superficial layer of the resistors and it would eventually pierce them.

This is why the equipment, after entering in mode 1 or, as mentioned before, after ending a time schedule, proceeds to perform a 60 minutes countdown after which it will wash out the steam drum in the same way as before, following the 3 aforementioned steps of drainage, cleaning and final drainage.

8 WEEKLY SCHEDULE

As mentioned before, the equipment will activate and deactivate in operation mode 4 or weekly schedule mode according to the user menu's settings programmed for the different time schedules for each day of the week.

That is, the equipment will change from working in mode 1 (deactivated) to working in mode 2 (activated) whenever the time of day coincides with the beginning of the time schedule set and, whenever said time schedule ends, the equipment will go back to working in mode 1 (deactivated).

Within the user menu you can set different time schedules for every day of the week, being able to define up to 5 independent schedules per week.

To configure the different time schedules of operation of the equipment of weekly programming mode, follow these steps:

1. Click OK and ESC keys simultaneously. The following screen appears:

2. We place ourselves in PARAMETERS and press OK.

Once done, we are in the configuration screen slots:

Within this screen you can configure the slots every day of the week, can define up to five independent bands.

Parameters you can programme:

- no: 00, no: 01, no: 02 y no: 03 These are the four parameters that restrict two time slots. no: 00 indicates the beginning of the first time slot, no:01 the end of said first time zone, no:2 indicates the beginning of the second time zone and no:3 the end of the second time zone.
- ro 00:00 Time parameter for the beginning or end of the time slot.
- ON/OFF Modifiable parameter that indicates the equipment's operation within the specified time slot.
- D: MTWTFSS Parameter for specifying the days of the week we want the equipment working.
- S: 12345 Parameter that indicates the number of weeks the equipment is running each month.

PRACTICAL EXAMPLE:

Suppose we want to run the equipment as follows:

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
8:00							
10:00							
10:00							
12:00							
12:00							
14:00							
14:00							
16:00							
16:00							
18:00							
20:00							
22:00							
22:00							
0:00							

As we can see, the functioning of Monday, Tuesday, Thursday and Friday is identical, so are grouped in a common slot. We start by programming the start of the first strip:

Thus, we have defined that on Monday, Tuesday, Thursday and Friday, the team will be activated at **09:00**, **ON**, every week of the month, **12345**.

We continue by determining the end of this first zone of operation, applicable to such days:

Similarly we set up the other slots:

9 OPERATING CONDITIONS

Water physical and chemical parameters must be in between the following values:

- Ph..... 7.2 to 7.8
- Residual chlorine..... 1 to 2 ppm
- Alkalinity.....80 to 125 ppm
- Total dissolved solids.....</=300 mg/l
- Hardness..... < 5º French degrees (50mg. of $CaCO_3$ per litre of water)

IMPORTANT

Water hardness must be lower than 5 French degrees (50mg. of $CaCO_3$ per litre of water). It is higher than that, you must install a water softener.

The maximum environmental conditions allowed in order to guarantee the proper operation of the equipment are the following:

- Minimum installation air temperature:.....7º C
- Maximum installation air temperature:.....30º C
- Maximum installation air humidity:.....80 H.R.

The operating conditions will affect the output of the equipment.

10 BREAKDOWNS: CAUSE AND SOLUTION.

Below we list a number of reasons that may stop the equipment from working correctly, as well as the corresponding procedures to follow:

- ***THE EQUIPMENT DOES NOT START WORKING:***

Cause: There is no electrical supply or there is a blown fuse.

How to proceed: Check there is wlwctrical supply; check the fuses, replace if necessary.

Cause: Excessive main water inlet pressure.

How to proceed: Check that the main water inlet pressure is below 5 bar, if not, installa a pressure reduction valve.

- ***THE STEAM ROOM TAKES TOO LONG TO REACH THE TEMPERATURE SET POINT OR IT DOES NOT REACH IT:***

Cause: There is excessive ventilation in the steam room.

How to proceed: Reduce the ventilation to the steam room.

Cause: The temperature inside the steam room is too low.

How to proceed: Increase steam room temperature or change the steam generator for a more powerful model.

Cause: The steam room is not very well insulated or not insulated at all.

How to proceed: Insulate the steam room better.

Cause: The resistors and the steam drum have excessive limescale.

How to proceed: Clean both the steam drum and the resistors with a descaling agent.

Cause: The electrical resistors are blown.

How to proceed: Check that the electrical resistors have a power supply. If so, check that they are not blown.

Cause: The steam room is of a larger volume than the equipment has been designed for.

How to proceed: Install a new more powerful steam-generating equipment or connect a second unit of the required power in master/slave mode.

- ***THE DESIRED TEMPERATURE IS REACHED INSIDE THE STEAM ROOM BUT THERE IS NO STEAM:***

Cause: The room temperature inside the steam room is too high (higher than 35º C).
How to proceed: Reduce the internal temperature inside the steam room, lower than 35ºC.

Cause: The temperature probe is out of order.
How to proceed: Check the readings from the temperature probe located inside the steam room. Adjust the readings if they do not coincide.

- ***ABSENCE OF HEAT OR STEAM IN THE STEAM ROOM:***

Cause: The steam generator has no water supply.
How to proceed: Check that the shut-off valve is open and that there is mains water pressure.

Cause: The drain valve is stuck in the open position.
How to proceed: Check the drain valve, dismantle and clean.

- ***HOT (OR COLD) WATER COMING OUT OF THE STEAM DIFFUSER BUT VERY LITTLE OR NO STEAM:***

Cause: The water intake water valve is stuck in the open position.

How to proceed: Check, dismantle and clean the water intake valve.

Cause: The drain valve is stuck in the open position.

How to proceed: Check the drain valve, dismantle and clean.

- ***THE PRESSURE SAFETY VALVE GOES OFF:***

Cause: The internal diameter of the steam pipe is rather reduced due to internal build-up.

How to proceed: Change the steam pipe for a new one.

Cause: The steam drum has a large amount of limescale accumulation.

How to proceed: Dismantle the steam drum and clean it with a descaling agent.

Cause: The steam pipe is too long and/or presents excessively pronounced bends.

How to proceed: Rectify the sharp bends so that the steam pipe only shows not very open bends (minimum radius of 50mm)

Cause: A large sack of water has accumulated inside the steam pipe.

How to proceed: Adjust the pipe so that it can eliminate the sack of water.

- ***THERE ARE CONSTANT RETURNS OF ESSENTIAL OILS:***

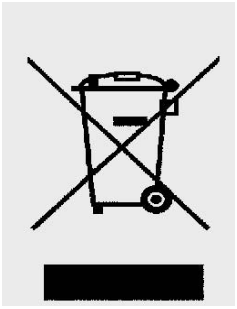
  Cause: The water intake valve is not shutting off the water intake completely.

  How to proceed: Check the correct installation of the steam pipe and the essential oils dosage pipe following the instructions under section 5.5.

  Check the water intake valve, replace if necessary. Check the pressure from the water mains. This must not exceed 5 bar.

11 PRODUCT RECYCLING INSTRUCTIONS

This machine has electrical and electronic components. When the ice generating unit concludes its working life, it should be dismantled by a specialist company or you may take it to your local authority's disposal facility.



In order to reduce the amount of electric and electronic waste, the danger of its components, to promote the reuse of the equipment, waste reclamation and to establish an adequate waste management that may improve the efficiency of environmental protection, a number of regulations applicable to the manufacture of the product and others related to an adequate environmental management once the product has become waste are set out.

Furthermore, it is intended to improve the environmental behaviour of all stakeholders involved in the lifecycle of electric and electronic devices such as manufacturers, distributors, users and, in particular, those directly involved in managing the waste from such equipment.

From 13th of August 2005, whenever you want to discard this equipment, you have two possible return options:

- If you buy a new one that is of equivalent type or has the same functions, you may hand it back to the distributor, at no cost to you, when buying the new one.
- Or you may take it to your local authority's disposal facilities.

The equipment is tagged with a symbol that has been cross-over (rubbish bin), and this symbol means that it must be separated from other urban waste and collected separately.

Potential effects on the environment or human health of the hazardous elements it may contain.

PVC

The most widely used plasticizing agent in applications of PVC is DEHP (Diethylhexyl phthalate). Trials carried out in several laboratories show that it does not pose a risk to human health in the concentrated levels used in finished products, according to reports from BUA in Germany (Advisory Committee on Existing Chemicals of Environmental Relevance) and the BGA (Health German Authority), amongst others. The results from such trials, together with data obtained from biodegradatio studies, confirm that DEHP cannot be considered hazardous for the environment. All additives used in PVC formulations and, thus, in food applications are fully regulated both at European and Spanish level.
In the European Union, there is the EU 90/128/EEC Commission Directive subsequently amended by EU 95/3/EEC. In Spain, there is the Spanish Royal Decree 1125/1982 of 30th of April, ratified by the Spanish Royal Decree 1042/1997 of 27th of June of that same year.
Modern technology applied to PVC production plants for some years allows us to declare that such plants do not pose a threat to the environment, the Life Cycle Analyses (LCA) show that the environmental impact of PVC is equivalent to that of other materials or even more favourable.

Copper (Cu)

Copper is one of the few materials that do not degrade or lose their chemical properties or physical properties during the recycling process. It can be recycled countless times without losing its properties and thus making it impossible to distinguish if an object of copper is made from primary or recycled sources.

In the European Union, the community directive 2002/96/EEC on electric and electronic devices waste favours a policy of minimisation of waste, including a mandatory and drastic reduction of industrial and household waste, and incentives to manufacturers who produce less waste.

12 SPARE PARTS

12.1 STEAM GENERATOR

To request or buy spare parts for the steam generator models, contact your local distributor. If you do not find what you need, contact ASTRAL's international services department.

PART No.		MODEL	CODE	MATERIAL
1	SUPPORTING LEG	ALL	45588R0001	Fe
2	STEAM GENERATOR FRAME	ALL	45588R0002	Fe
3	HTAL. G.V. SHEET	ALL	45588R0007	Fe
4	SIMEMBLOCK	ALL	45588R0008	
5	LOWER BASE	ALL	45588R0009	Fe
6	FEEDTHROUGH 30mm	ALL	45588R0006	
7	TANK	ALL	45588R0012	INOX
8	ELECTRICAL RESISTORS JOINT	ALL	45588R0010	
9	ELECTRICAL RESISTOR	3 kW	45588R0011	Fe
10	ELECTRICAL RESISTOR	3 kW	45588R0011	Fe
11	ELECTRICAL RESISTOR	3 kW	45588R0011	Fe
11	ELECTRICAL RESISTOR	3 kW	45588R0011	Fe
11	ELECTRICAL RESISTOR	3 kW	45588R0011	Fe
11	ELECTRICAL RESISTOR	3 kW	45588R0011	Fe
11	JOINT	ALL	45588R0013	Fe
11	TANK COVER	ALL	45588R0014	INOX
12	PRESSURE SAFETY VALVE	ALL	45588R0015	Cu
13	LEVEL PROBE	ALL	45588R0016	INOX
14	BALANCING PLATFORM	ALL	45588R0020	Fe
15	LEFT-SIDE COVER	ALL	45588R0018	Fe
16	RIGHT-SIDE COVER	ALL	45588R0019	Fe
17	PLASTIC HANDLE	ALL	45588R0017	
18	JEUCO JOINT	ALL	45588R0021	
19	JEUCO NUT	3 – 9 kW	45588R0022	Cu
20	JEUCO NUT	12 – 18 kW	45588R0022	Cu
21	PERISTALTIC PUMP SUPPORT	ALL	45588R0028	
22	PERISTALTIC PUMP	ALL	45588R0029	
22	ESSENTIAL OILS SUPPORT	ALL	45588R0023	Fe
23	ESSENTIAL OILS RESERVOIR	ALL	45588R0024	
24	ELECTRICAL PANEL	ALL	45588R0005	Fe

25	DISPLAY	ALL	45588R0027	
26	VERTICAL G.V. SHEET	ALL	45588R0025	Fe
27	SEAL PG21	ALL	45588R0003	
28	EARTH TERMINAL	ALL (T)	45588R0030	
29	EARTH TERMINAL	ALL (M)	45588R0030	
30	NEUTRAL TERMINAL	3 - 12 kW (T)	45588R0031	
30	NEUTRAL TERMINAL	15 - 18 kW (T)	45588R0031	
31	NEUTRAL TERMINAL	3 kW (M)	45588R0031	
31	NEUTRAL TERMINAL	6 kW (M)	45588R0031	
31	PHASE TERMINAL	3 - 12 kW (T)	45588R0032	
31	PHASE TERMINAL	15 - 18 kW (T)	45588R0032	
32	PHASE TERMINAL	3 kW (M)	45588R0032	
32	PHASE TERMINAL	6 kW (M)	45588R0032	
32	FUSE-HOLDER TERMINAL	ALL	45588R0033	
32	2 MAGNETOCALORIC POLES	ALL	45588R0034	
33	CONTACTOR	3 - 6 kW (T)	45588R0035	
34	CONTACTOR	9 kW (T)	45588R0035	
35	CONTACTOR	12 kW (T)	45588R0035	
35	CONTACTOR	15 - 18 kW (T)	45588R0035	
35	CONTACTOR	3 kW (M)	45588R0035	
35	CONTACTOR	6 kW (M)	45588R0035	
35	VOLT. TRANSFORMER	ALL	45588R0059	
35	RECTIFIER	ALL	45588R0060	
36	SUPPLY SOURCE	ALL	45588R0037	
37	ELECTRONIC CARD (AUTOMATIC)	ALL	45588R0036	
38	ESSENTIAL OILS VALVE BODY	ALL	45588R0045	Cu
39	ESSENTIAL OILS VALVE COIL	ALL	45588R0046	
40	ESSENTIAL OILS VALVE COIL WIRING	ALL	45588R0047	
41	ESSENTIAL OILS ¼'' BARB	ALL	45588R0048	INOX
42	STAINLESS CLAMP 8x12mm	ALL	45588R0049	Fe
43	GLASS HOSE 8x12mm	ALL	45588R0050	
44	ESSENTIAL OILS ⅛'' BARB	ALL	45588R0051	INOX
45	6mm VALVE COUPLER	ALL	45588R0052	Fe
46	4x6mm POLYURETHANE HOSE	ALL	45588R0053	
47	INTERSECTION 18 x ¾''	ALL	45588R0041	Cu

48	WATER PIPE Cu 18mm	ALL	45588R0040	
49	INTERSECTION 18 x ½''	ALL	45588R0039	
50	FILTER "Y" DOUBLE MESH	ALL	45588R0058	
51	½'' DOUBLE THREAD	ALL	45588R0061	
52	WATER VALVE	ALL	45588R0062	
53	WATER VALVE	ALL	45588R0038	
54	DOUBLE T MALE COUPLING 6mm x ⅛''	ALL (O)	45588R0054O	
55	MALE COUPLING 6mm x ⅛''	ALL (S)	45588R0054S	
56	CONNECTION SAE ⅛''	ALL	45588R0055	
57	TEMPERATURE PROBE COVER	ALL	45588R0058	
58	TEMPERATURE PROBE	ALL	45588R0056	
59	REMOTE DISPLAY BOX COVER	ALL	45588R0059	
60	REMOTE DISPLAY BOX	ALL	45588R0057	

CAPTION:

(M) Indicates monophasic equipment.

(T) Indicates triphasic equipment.

(S) Indicates standard equipment; that is, one single essential oil.

(O) Indicates multiple essential oils equipment; that is, four essential oils.

ALUMINIUM

TITANIUM

PLASTICS

COPPER

IRON

PAPER-CARDBOARD

STAINLESS STEEL

WOOD

ELECTRICAL MATERIAL

12.2 ENLARGED VIEW OF THE STEAM GENERATOR

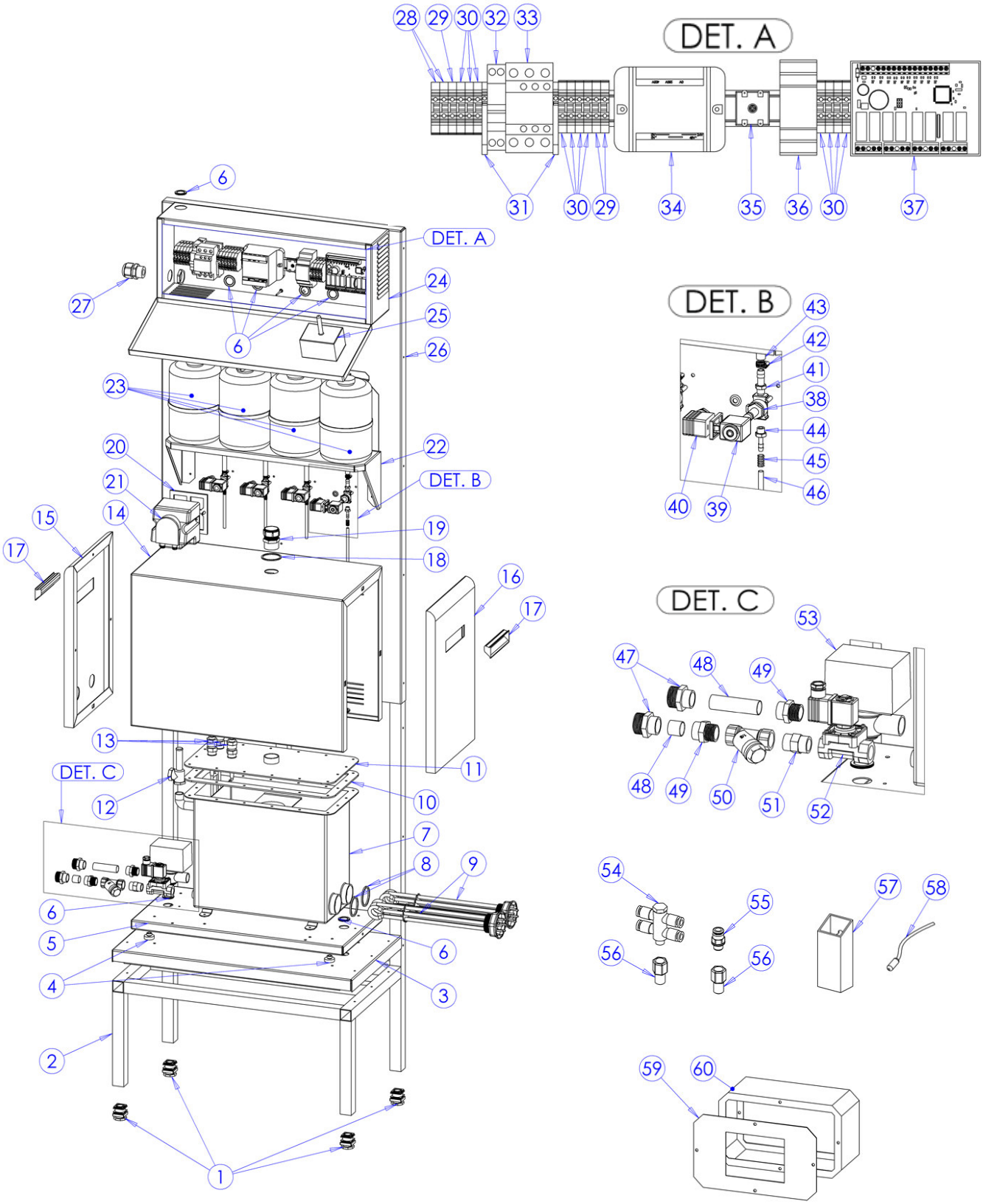


Figure 20: Enlarged view of the steam generator.

12.3 ROMAN BATH

To request or buy spare parts for the Roman bath models, contact your local distributor. If you do not find what you need, contact ASTRAL's international services department.

PART No.		MODEL	CODE	MATERIAL
1	ADJUSTABLE LEG	ALL	45596R0001	
2	LOWER BASE	ALL	45596R0002	Fe
3	TANK	ALL	45596R0003	INOX
4	ELECTRICAL RESISTORS JOINT	ALL	45596R0004	
5	ELECTRICAL RESISTOR	3kW	45596R0005	INOX
5	ELECTRICAL RESISTOR	6kW	45597R0001	INOX
5	ELECTRICAL RESISTOR	9kW	45598R0001	INOX
5	ELECTRICAL RESISTOR	12kW	45599R0001	INOX
5	ELECTRICAL RESISTOR	15kW	45600R0001	INOX
5	ELECTRICAL RESISTOR	18kW	45601R0001	INOX
6	GRAPHITE JOINT	ALL	45596R0006	
7	TANK COVER	ALL	45596R0007	INOX
8	SAFETY VALVE	ALL	45596R0008	Cu
9	LEVEL PROBE	ALL	45596R0009	INOX
10	FRONTAL REINFORCEMENT	ALL	45596R0010	Fe
11	SIDE REINFORCEMENT	ALL	45596R0011	Fe
12	SUPPORT FOR ELECTRICAL PANEL-	ALL	45596R0012	Fe
13	FIN HEATER	ALL	45596R0013	
14	FEEDTHROUGH	ALL	45596R0014	
15	ESSENTIAL OILS RESERVOIR	ALL	45596R0015	
16	SEAL PG 16	ALL	45596R0016	
17	FANS PLATE	ALL	45596R0017	Fe
18	PLASTIC HANDLE	ALL	45596R0018	
19	FAN	ALL	45596R0019	
20	SEAL PG 21	ALL	45596R0020	
21	SEAL PG 11	ALL	45596R0021	
22	SEAL PG 13.5	ALL	45596R0022	
23	TEMPERATURE & HUMIDITY PROBE	ALL	45596R0023	
24	BACK COVER	ALL	45596R0024	Fe
25	AIR DUCT	ALL	45596R0025	Fe
26	UPPER BASE	ALL	45596R0026	Fe
27	CORNER GUARD	ALL	45596R0027	Fe
28	ELECTRICAL ENCLOSURE	ALL	45596R0028	Fe
29	LEFT-SIDE COVER	ALL	45596R0029	Fe
30	RIGHT-SIDE COVER	ALL	45596R0030	Fe
31	DISPLAY COVER	ALL	45596R0031	Fe

32	DISPLAY	ALL	45596R0032	
33	TOP COVER	ALL	45596R0033	Fe
34	BOTTOM COVER	ALL	45596R0034	Fe
35	JEUCO NUT	3 – 9 kW	45596R0035	Cu
35	JEUCO NUT	12 – 18 kW	45599R0002	Cu
36	EARTH TERMINAL	3 – 18kW (T) (4,5)	45596R0036	
36	EARTH TERMINAL	3 & 6 kW (M)	45610R0001	
36	EARTH TERMINAL	3 - 12 kW (T) (9)	45596R0036	
36	EARTH TERMINAL	15 & 18 kW (T) (9)	45610R0001	
37	NEUTRAL TERMINAL	3 kW (T) (4,5)	45596R0037	
37	NEUTRAL TERMINAL	6 & 9 kW (T) (4,5)	45596R0036	
37	NEUTRAL TERMINAL	12 - 18 kW (T) (4,5)	45610R0001	
37	NEUTRAL TERMINAL	3 kW (M)	45610R0001	
37	NEUTRAL TERMINAL	6 kW (M)	45611R0001	
37	NEUTRAL TERMINAL	3 & 6 kW (T) (9)	45596R0036	
37	NEUTRAL TERMINAL	9 & 12 kW (T) (9)	45610R0001	
37	NEUTRAL TERMINAL	15 & 18 kW (T) (9)	45611R0001	
38	PHASE TERMINAL	3 kW (T) (4,5)	45596R0038	
38	PHASE TERMINAL	6 & 9 kW (T) (4,5)	45597R0002	
38	PHASE TERMINAL	12 - 18 kW (T) (4,5)	45599R0003	
38	PHASE TERMINAL	3 kW (M)	45599R0003	
38	PHASE TERMINAL	6 kW (M)	45611R0002	
38	PHASE TERMINAL	3 & 6 kW (T) (9)	45597R0002	
38	PHASE TERMINAL	9 & 12 kW (T) (9)	45599R0003	
38	PHASE TERMINAL	15 & 18 kW (T) (9)	45611R0002	
39	FUSE-HOLDER TERMINAL	ALL	45596R0039	
40	2 MAGNETOCALORIC POLES	ALL	45596R0040	
41	WATER CONTACTOR	3 & 6 kW (T)	45596R0041	
41	WATER CONTACTOR	9 kW (T)	45598R0002	
41	WATER CONTACTOR	12 kW (T)	45599R0004	
41	WATER CONTACTOR	15 & 18 kW (T)	45600R0002	
41	WATER CONTACTOR	3 kW (M)	45598R0002	
41	WATER CONTACTOR	6 kW (M)	45600R0002	
42	AIR CONTACTOR	ALL (T) (4,5)	45596R0042	
42	AIR CONTACTOR	ALL (T) (9)	45598R0002	
42	AIR CONTACTOR	ALL (M)	45599R0004	
43	PHASE TERMINAL	ALL	45596R0043	
44	NEUTRAL TERMINAL	ALL	45596R0044	
45	VOLT. TRANSFORMER	ALL	45596R0065	
46	RECTIFIER	ALL	45596R0066	
47	SUPPLY SOURCE	ALL	45596R0044	

48	ELECTRONIC CARD (AUTOMATIC)	ALL	45596R0045	
49	ESSENTIAL OILS VALVE BODY	ALL	45596R0046	
50	ESSENTIAL OILS VALVE COIL	ALL	45596R0047	Cu
51	ESSENTIAL OILS VALVE COIL WIRING	ALL	45596R0048	Cu
52	ESSENTIAL OILS ¼'' BARB	ALL	45596R0049	Cu
53	STAINLESS CLAMP 8x12mm	ALL	45596R0050	Fe
54	GLASS HOSE 8x12mm	ALL	45596R0051	Fe
55	ESSENTIAL OILS ⅛'' BARB	ALL	45596R0054	
56	6mm VALVE COUPLER	ALL	45596R0055	Fe
57	4x6mm POLYURETHANE HOSE	ALL	45596R0056	Fe
58	MALE COUPLING 6mm x ⅛''	ALL (S)	45596R0054S	
58	DOUBLE T MALE COUPLING 6mm x ⅛''	ALL (O)	45596R0054O	Cu
59	CONNECTION SAE ⅛''	ALL	45596R0055	Cu
60	WATER VALVE	ALL	45596R0067	Cu
61	½'' DOUBLE THREAD	ALL	45596R0068	Cu
62	FILTER "Y" DOUBLE MESH	ALL	45596R0064	Cu
63	INTERSECTION 18 x ½''	ALL	45596R0057	Fe Cu
64	WATER PIPE Cu 18mm	ALL	45596R0058	Cu
65	INTERSECTION 18 x ¾''	ALL	45596R0059	Cu
66	WATER VALVE	ALL	45596R0056	Cu
67	REMOTE DISPLAY BOX	ALL	45596R0063	Cu

CAPTION:

(M) Indicates monophasic equipment.

(T) Indicates triphasic equipment.

(S) Indicates standard equipment; that is, one single essential oil.

(O) Indicates multiple essential oils equipment; that is, four essential oils.

(4.5) Indicates that it is exclusive to equipment with air power output of 4.5kW.

(9) Indicates that it is exclusive to equipment with air power output of 9.0kW.

ALUMINIUM

TITANIUM

PLASTICS

COPPER

IRON

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STAINLESS STEEL

WOOD

ELECTRICAL MATERIAL

12.4 ENLARGED VIEW OF ROMAN BATH

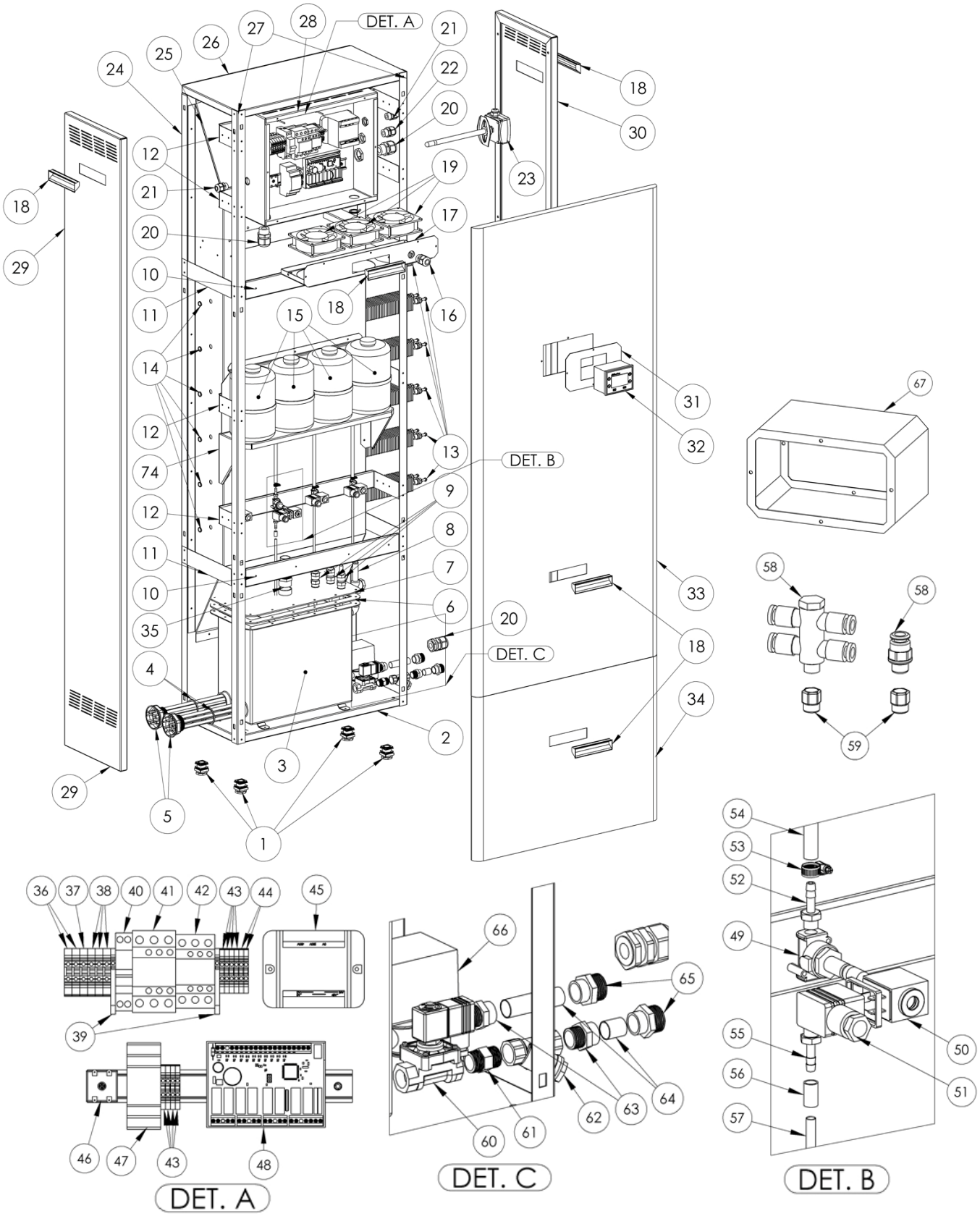

Figure 21: Enlarged view of the Roman bath.

13 MODELS

STEAM GENERATOR		
CODE		MODEL
TRIPHASIC	MONOPHASIC	
45588	45604	**STEAMHEAT 3kW**
45589	45605	**STEAMHEAT 6kW**
45590	NAO[1]	**STEAMHEAT 9kW**
45591		**STEAMHEAT 12kW**
45592		**STEAMHEAT 15kW**
45593		**STEAMHEAT 18kW**

ROMAN BATH		
CODE		MODEL
AIR POWER OUTPUT: 4.5kW or 9kW		
TRIPHASIC	MONOPHASIC	
45596	45610[2]	**THERMAL 3kW**
45597	45611[2]	**THERMAL 6kW**
45598	NAO[1]	**THERMAL 9kW**
45599		**THERMAL 12kW**
45600		**THERMAL 15kW**
45601		**THERMAL 18kW**

Table 14: List of available models.

14 WARRANTY

The warranty is valid for 2 years for all parts.

This warranty becomes null and void:

in the event of an installation error due to not having respected the instructions of this manual will render this warranty null and void.

IMPORTANT

The warranty is only effective if the voucher is duly filled in and sent, stamped and signed by all interested parties.

[1] NAO means that it is not an applicable option. English acronym for "Not An Option".
[2] Models only available for air power output of 4.5kW.

WARRANTY CERTIFICATE

1. GENERALITIES

1.1 In accordance with these provisions, the seller guarantees that the product under this warranty (the "Product") does not show any non-compliance at the time of sale.

1.2 The warranty period covers the Product for 2 years from the moment it is given to the buyer.

1.3 In the event of non-compliance of the Product, and if the buyer notifies the seller during the Warranty Period, the seller must repair or replace the Product (bearing this cost) wherever it may be deemed appropriate, unless it may not be possible or disproportionate.

1.4 Whenever the Product is not repairable or may not be replaceable, the buyer may request a proportional reduction in price or, if the non-compliance is significant, the termination of the sale agreement.

1.5 Those parts replaced or repaired pursuant to this warranty will not extend the original Warranty Period, although they will have their own warranty.

1.6 For this warranty to be effective, the buyer will have to prove date of purchase and the delivery of the Product.

1.7 If six months have passed since the delivery of the Product to the buyer and the buyer claims non-compliance of the Product, the buyer must show proof of origin and existence of the alledged malfunction or defect.

1.8 This Warranty Certificate does not limit or prejudice the rights of the consumer afforded to the consumer by national statutory law.

2. SPECIFIC PROVISIONS

2.1 This warranty covers any product referred to in this manual.

2.3 For this warranty to be effective, the buyer will have to strictly follow the manufacturer's instructions included in the documentation accompanying the Product, whenever such documentation is applicable by Product range and model.

2.4 Whenever a time schedule is set for replacement, maintenance or cleaning of Product parts or components, the Warranty will only be valid when such schedule has been duly followed.

3. LIMITATIONS

3.1 This warranty is only applicable to those sales made to consumers, "consumer" being the person who acquires the Product not for professional purposes.

3.2 No guarantees are made regarding normal wear and tear of the Product. With regards to parts, components and/or perishable or consumables such as batteries, bulbs, etc., the documentation accompanying the Product will be followed, where necessary.

3.3 The warranty does not cover those events where the Product: (I) has been subject to abuse; (II) repaired, maintained or handled by non-authorised persons or (III) repaired or maintained with non-orginal parts.

4.4 Whenever the non-compliance of the Product may be the result of incorrect installation or start-up, this warranty will only be valid whenever such installation or start-up is included in the Product's purchase-sale agreement and has been carried out by the seller or under the seller's responsibility.

COMPLIANCE STATEMENT

The above-listed products comply with:

EU Directive related to machine safety EEC 89/392/EC. EU Directive for electromagnetic compatibility EEC 89/336/EC and amendments. EU Directive low voltage equipment EEC 73/23/EC. European Regulation EN 60335-2-41. RoHS Regulation 2002/95 EC.

Unit _____

Reference no. _____ **Model** _____

FITTER

Name _____ **Town/City** _____

Address _____

Telephone _____ **Start-up date** _____

USER

Name _____ **Town/City** _____

Address _____

Telephone _____ **Start-up date** _____

(To be filled by the fitter) **FITTER'S STAMP:**

Your must fill in and send this warranty card for all units in order for it to become effective

SPAECIAL
THE WELLNESS SOLUTION

ASTRALPOOL

Declares under their own responsibility that all the equipment: STEAM SERIES
Manufactured since 12/01/2010, independent of the serial number, are in compliance with:
Machine safety directive 2006/42/EC.
Electromagnetic compatibility directive 2004/108/EC and its modifications.
Low-voltage equipment directive 2006/95/EC.
Directive 2000/14/CE concerning noise produced by equipment for outdoors use, as amended by Directive 2005/88/EC.
Restrictions in the use of certain risky substances in the electrical and electronic instruments 2002/95/EC (RoHS).
Relative to the electrical and electronic waste products 2002/96/EC (RAEE).
Relative to the electrical and electronic instruments and the management of their waste products Spanish R.D. 208/2005.
The registration, the evaluation, the authorization and the restriction of the chemical substances EC Nº 1907/2006 (REACH).

Declara bajo su única responsabilidad que todos los equipos: STEAM SERIES
Producidas a partir del 12/01/2010, independientemente del número de serie, son conformes con:
Directiva de seguridad de máquinas 2006/42/CE.
Directiva de compatibilidad electromagnética 2004/108/CE, y sus modificaciones.
Directiva de equipos de baja tensión 2006/95/CE.
Directiva sobre el ruido producido por máquinas para uso exterior 2000/14/CE y su corrección con la Directiva 2005/88/CE.
Directiva sobre restricciones a la utilización de determinadas sustancias peligrosas en aparatos eléctricos y electrónicos 2002/95/CE (RoHS).
Directiva sobre residuos de aparatos eléctricos y electrónicos 2002/96/CE (RAEE).
Real Decreto 208/2005 sobre aparatos eléctricos y electrónicos y la gestión de sus residuos.
Reglamento relativo al registro, la evaluación, la autorización y la restricción de las sustancias y preparados químicos CE Nº 1907/2006 (REACH).

Déclare sous ça responsabilité que toutes les machines: STEAM SERIES
Fabriquées a partir du 12/01/2010, indépendamment du numéro de série, sont conformes avec:
Directive de sécurité de machines 2006/42/CE.
Directive de compatibilité électromagnétique 2004/108/CE, et ses modifications.
Directive d'appareils de basse tension 2006/95/CE.
Directive 2000/14/CE sur les émissions sonores du matériel destiné à l'extérieur, et sa correction à la directive 2005/88/CE.
Directive relative à la limitation de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques 2002/95/CE (RoHS).
Directive relative aux déchets d'équipements électriques et électroniques 2002/96/CE (DEEE).
Espagnol Décret Royal 208/2005 sur les équipements électriques et électroniques et la gestion de leurs déchets.
Règlement concernant l'enregistrement, l'évaluation et l'autorisation des substances chimiques, ainsi que les restrictions applicables à ces substances (CE) nº 1907/2006 (REACH).

Bescheinigt in alleiniger Verantwortung, dass alle Geräte: STEAM SERIES
Ab 12/01/2010 produziert wurden, unabhängig von der Seriennummer, konform sind mit:
Richtlinie über Maschinensicherheit 2006/42/EG.
Richtlinie über elektromagnetische Verträglichkeit 2004/108/EG und ihren Änderungen
Richtlinie über Geräte mit Niederspannung 2006/95/EG.
Richtlinie 2000/14/EG über umweltbelastende Geräuschemissionen von zur Verwendung im Freien vorgesehenen Geräten und Maschinen, und zuletzt geändert durch die Richtlinie 2005/88/EG.
Richtlinie 2002/95/EG zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten (RoHS)
Richtlinie 2002/96/EG über Elektro- und Elektronik-Altgeräte.
Spanisch Königliches Dekret 208/2005 über die Elektro-und Elektronik-Altgeräte und die Bewältigung ihrer Abfälle.
Verordnung (EG) Nr. 1907/2006 zur Registrierung, Bewertung, Zulassung und Beschränkung chemischer Stoffe (REACH).

Dichiara sotto la sua diretta responsabilità che tutte le apparecchiature: STEAM SERIES
Prodotte a partire dal 12/01/2010, independentemente dal numero di serie, sono conformi a:
Direttiva sulla sicurezza macchine 2006/42/CE.
Direttiva sulla compatibilità elettromagnetica 2004/108/CE, e relative modifiche.
Direttiva sui dispositivi a bassa tensione 2006/95/CE.
Direttiva 2000/14/CE sulle emissione acustica ambientale delle macchine ed attrezzature destinate a funzionare all'aperto e la sua correzione con la direttiva 2005/88/CE.
Direttiva 2002/95/CE sulla restrizione dell'uso di determinate sostanze pericolose nelle apparecchiature elettriche ed elettroniche (RoHS).
Direttiva 2002/96/CE sui rifiuti di apparecchiature elettriche ed elettroniche (RAEE).
Spagnolo Regio Decreto 208/2005 sulle apparecchiature elettriche ed elettroniche e la gestione dei loro rifiuti.
Regolamento (CE) Nº 1907/2006 concernente la registrazione, la valutazione, l'autorizzazione delle sostanze chimiche (REACH).

Declara sob sua única responsabilidade que todos os equipamentos: STEAM SERIES
Produzidas a partir de 12/01/2010, independentemente do número de séria são conformes com:
A Directiva de segurança de máquinas 2006/42/CE.
A Directiva de compatibilidade electromagnética 2004/108/CE, e suas modificações.
Directiva de equipamentos de baixa tensão 2006/95/CE.
Directive 2000/14/CE relativa à Emissões sonoras para o ambiente dos equipamentos para utilização no exterior, alterada pela Directiva 2005/88/CE.
Directiva 2002/95/CE relativa à restrição do uso de determinadas substâncias perigosas em equipamentos eléctricos e electrónicos (RoHS).
Directiva 2002/96/CE relativa aos resíduos de equipamentos eléctricos e electrónicos (REEE).
Espanhol Real Decreto 208/2005, em equipamentos eléctricos e electrónicos e gestão dos seus resíduos.
Regulamento (CE) N.o 1907/2006 relativo ao registo, avaliação, autorização e restrição dos produtos químicos (REACH).

Signed the present conformity evidence / Signe la présente déclaration / Firma la presente declaración /
Firma la seguente dichiarazione/ Unterzeichnet diese Erklärung / Assina a presente declaração:

Los Corrales de Buelna 29/03/2010

Signature / Firma/ Unterschrift / Assinatura

Sr. Jesús Guitian. Chief Executive Officer of B-39390968

MANDATORY TECHNICAL REVISIONS CALENDAR

EQUIPMENT	SERIAL NUMBER	TECHNICAL SERVICE STAMP	DATE	NEXT REVISION DATE
☐ STEAM GENERATOR ☐ ROMAN BATH				
☐ STEAM GENERATOR ☐ ROMAN BATH				
☐ STEAM GENERATOR ☐ ROMAN BATH				
☐ STEAM GENERATOR ☐ ROMAN BATH				
☐ STEAM GENERATOR ☐ ROMAN BATH				
☐ STEAM GENERATOR ☐ ROMAN BATH				
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☐ STEAM GENERATOR ☐ ROMAN BATH				
☐ STEAM GENERATOR ☐ ROMAN BATH				

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