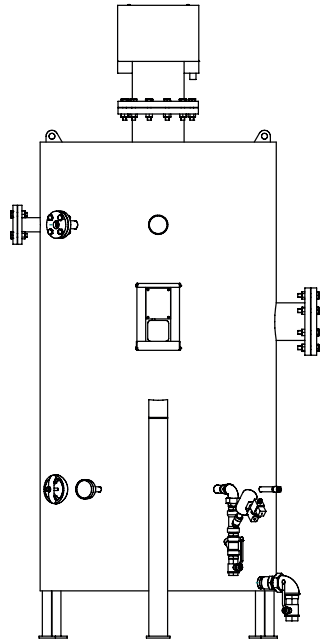


# Unical®

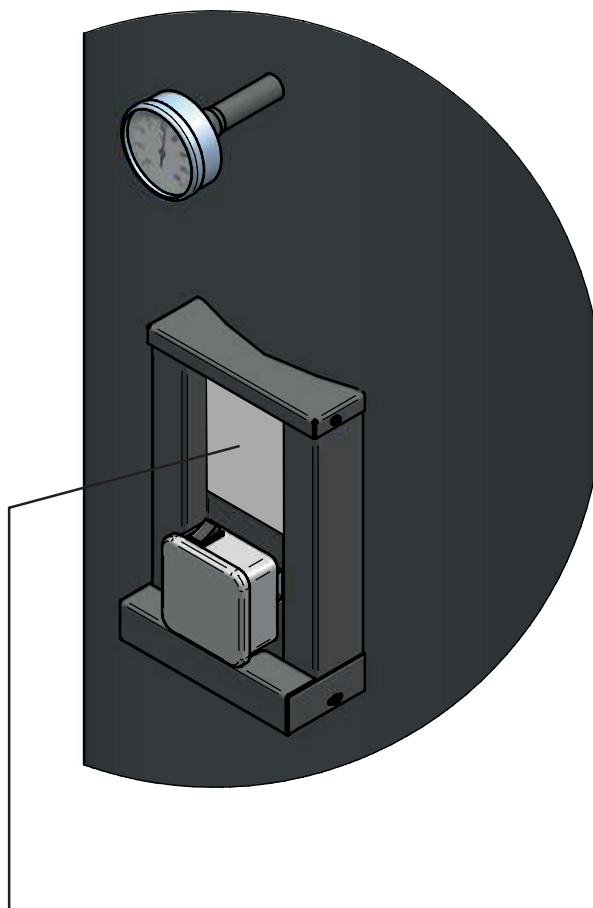


# SERBHA

100 300 500 800 1200

**INSTALLATION AND MAINTENANCE INSTRUCTIONS**

# DATA PLATE



<b>MODEL</b> MODELLO	
<b>SERIAL NUMBER</b> N° DI FABBRICA	
<b>MANUFACTURING YEAR</b> ANNO DI FABBRICAZIONE	
<b>GROUP / FLUID</b> GRUPPO / FLUIDO	<b>2 / WATER</b> <b>ACQUA</b>
<b>MAX DESIGN PRESSURE PS [bar / kPa]</b> PRESS. MAX AMMIS. PS [bar / kPa]	
<b>MAX ALLOWABLE TEMPERATURE TSmax [°C]</b> TEMPERATURA MAX AMMIS. TSmax [°C]	
<b>MIN ALLOWABLE TEMPERATURE TSmin [°C]</b> TEMPERATURA MIN AMMIS. TSmin [°C]	
<b>TOTAL VOLUME [ l ]</b> VOLUME TOTALE V [ l ]	
<b>CATEGORY</b> CATEGORIA DI RISCHIO	
<b>WATER CONTENT [ l ]</b> CONTENUTO ACQUA [ l ]	
<b>TARE [kg]</b> TARA [kg]	

1	GENERAL INFORMATION .....	4
1.1	General warnings .....	4
1.2	Symbols used in the manual .....	5
1.3	Safety warnings .....	5

2	TECHNICAL FEATURES AND DIMENSIONS .....	7
2.1	General description of the range and components .....	7
2.2	General features .....	8
2.3	Dimensions .....	8
2.4	Operating data .....	9

3	INSTRUCTIONS FOR THE INSTALLER .....	10
3.1	General warnings .....	10
3.2	Installation standards .....	10
3.3	Supply conditions .....	10
3.4	Handling .....	10
3.5	Hydraulic connections .....	11
3.6	Electrical connections .....	11
3.7	Wiring diagram .....	12-13
3.16	Commissioning .....	28

4	INSPECTIONS AND MAINTENANCE .....	14
4.1	Maintenance instructions .....	14

# 1

## GENERAL INFORMATION

### 1.1 - GENERAL WARNINGS

This document is the Technical Manual for installation, use and maintenance.

The appliance is manufactured, tested and certified in compliance with the Essential Safety Requirements of Directive 2014/68/EU "P.E.D. – Pressure Equipment Directive".



**ATTENTION!**

The appliance must be operated within the limits for which they were designed; any other use must be considered improper and therefore dangerous.

These design limits are given:

- on the data plate applied on the appliance;



**ATTENTION!**

This manual is an integral and essential part of the supply and must be delivered to the user.

In the event that the appliance is transferred in use or sold to other Users (change of destination or move) make sure that the appliance is transferred together with this installation, use and maintenance manual so that it can be consulted by the entrusted installer, the maintenance technician and the new owner.

Installation, operation and maintenance must be carried out in compliance with the regulations in force, following the instructions described in this manual; also, any operation must be carried out by professionally qualified and authorised personnel.



**ATTENTION!**

Incorrect installation, inadequate use and maintenance of the appliance can cause damage to persons or property, for which the MANUFACTURER is not liable.



**CAREFULLY READ AND FOLLOW THE INSTRUCTIONS CONTAINED IN THIS MANUAL BEFORE CARRYING OUT ANY OPERATION**



**ATTENTION!**

**THE APPLIANCE IS NOT DESIGNED TO BE INSTALLED OUTDOORS, BUT MUST**

**BE LOCATED WITHIN THE APPROPRIATE PREMISES (BOILER ROOM).**

**OUTDOOR OPERATION MAY LEAD TO DAMAGE, THUS RESULTING IN SERIOUS DANGER CAUSED BY:**

- collapse/burst of framework aimed at the pressure containment for embrittlement of the metal parts of the framework making up the pressurised body;
- collapse/burst for failed operation/inhibition of the safety and adjustment accessories;
- damage due to impairment of safety equipment/adjustment due to the action of rainwater;
- minimum temperature not compatible with the minimum allowable for the set/components, during the expected life;
- impairment of the IP protection of electrical parts not suitable for operating the set outdoors under the action of atmospheric agents.

## 1.2 - SYMBOLS USED IN THE MANUAL

Pay special attention when reading this manual to the parts marked by the symbols:



**DANGER!**  
 Serious danger for  
 personal safety and life



**ATTENTION!**  
 Possible dangerous  
 situation for the product  
 and the environment



**NOTE!**  
 Tips  
 for the user

## 1.3 - SAFETY WARNINGS

Please strictly adhere to the safety warnings to avoid danger and damage to people and property.

### Addressees

The following instructions are intended exclusively for specialised personnel.

- The interventions to the electrical system must only be carried out by specialised and qualified personnel, according to the law.
- Commissioning must be done by professionally qualified personnel.

### Standards

In case of intervention, follow:

- the accident-prevention regulations,
- the environmental protection standards,
- the operating safety standards,
- the provisions of the Insurance Institute against accidents at work,
- Directive 2014/68/UE.

### Interventions on the system



- Disconnect the system supply voltage (e.g. acting on the individual switch or on the main switch) and make sure that voltage is disconnected.

## Hot surfaces



Risk of burns caused by contact with hot surfaces:  
- steam pipe,  
- hot water pipe,  
Comply with the safety standards at work!

## Repairs



**Attention**  
It is not allowed to carry out repair work on parts with technical safety function. Replace the faulty parts with original Unical spare parts only.

## Additional components, spare parts and parts subject to wear



**Attention**  
Spare parts and pieces subject to wear that were not tested with the system can jeopardise its operation. The installation of parts not approved and unauthorised modifications may compromise safety and affect the warranty rights. For the replacement, only use original Unical spare parts.

## Draining boiling water



**Attention**  
Purge and desalination water can reach temperatures of 100°C and more. Before being conveyed to the sewage system, it must be cooled to a temperature of < 35°C.

## Safety Guidelines



**If there is a risk of imminent damage, decommission the appliance immediately.**

In case of serious damage to the feed water tanks, immediately inform the authorised inspection body before carrying out repairs.

Comply with the technical instructions.

Access to the boiler room is forbidden to unauthorised personnel.

Keep the boiler room clean, well lit and, above all, free from foreign objects that obstruct the operation.

During operation, keep the prescribed exits open and free.

Immediately report any visibly phenomena on welding seams, not-hermetic damaged points or with first signs of rust, unusual behaviour of the operating equipment and system components, anomalous noises inside the boiler.

System faults and defects that cannot be eliminated must be equally reported to the manufacturer.

All boiler components and adjustment devices must be protected against rain, water and steam leaks. Any damage or leaks must be immediately repaired.

# 2

## TECHNICAL FEATURES AND DIMENSIONS

### 2.1 - GENERAL DESCRIPTION OF THE RANGE

Drain collection cooler tank for Steam generators  
 Tank for expansion and cooling of steam generator purges, making evacuation possible at suitable and allowed temperature.  
 Made in carbon steel, vertical structure with cambered bottoms and support legs for fastening to the ground; painted externally.  
 There are various flanged connections for connection to drainage and sewage network; temperature control valve for cold water intake.  
 The SERBHA drainage tanks are designed in conformity to Directive PED 2014/68/UE.

The range includes 5 models from 100 litres to 1200 litres.

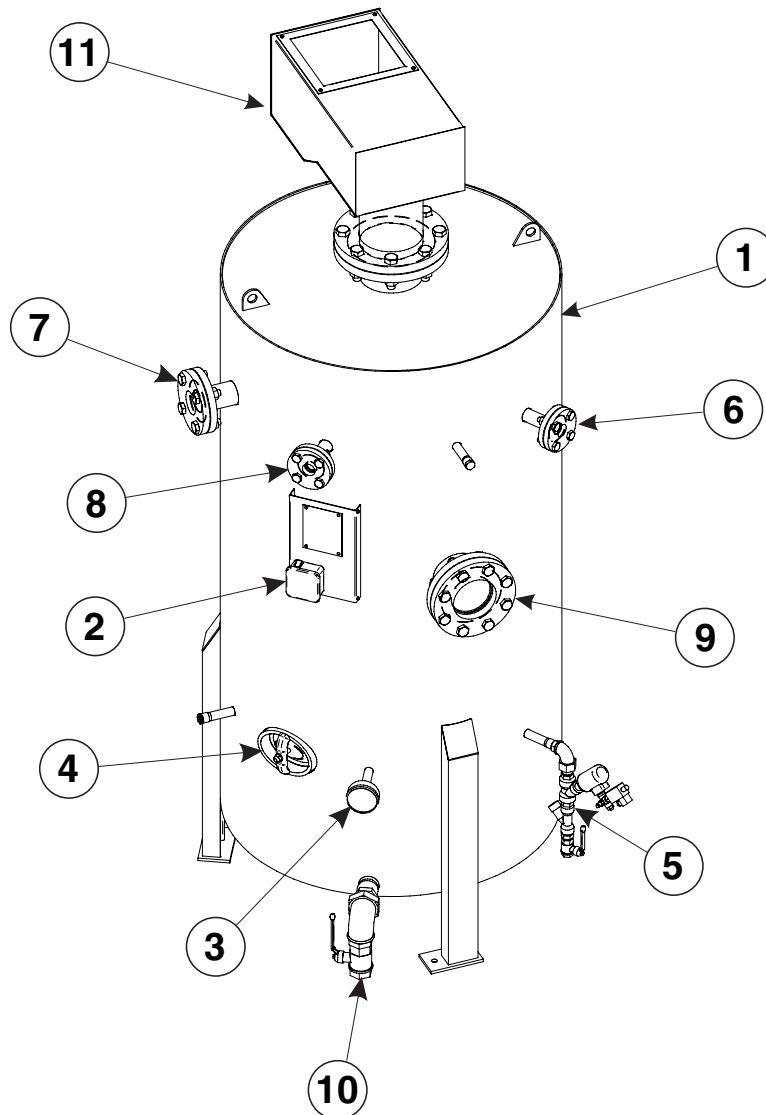
#### Supply composition:

- 1 - Cooling tank
- 2 - Automatic temperature adjustment system with NTC probe.
- 3 - Thermometer
- 4 - Hand hole
- 5 - Cooling water inlet unit
- 6 - Drain inlet
- 7 - BLOW DOWN Inlet
- 8 - TDS drain inlet
- 9 - Cooled water outlet connection
- 10 - Manual drain with ball valve (tank bottom drain)
- 11 - Steam outlet with fan system.



#### NOTE:

The boiler blowdown tank is supplied completely assembled, including the steam outlet head. The steam outlet head is supplied mounted on the tank only for shipping; during installation, between the tank and the head, insert a suitable vent pipe.



## 2.2 - GENERAL FEATURES

They are recommended for manually or automatically controlled bottom drain, to house manually controlled purge valves for continuous purging, automatic control valves and control systems for TDS, tanks, accessories and equipment for heat recovery.

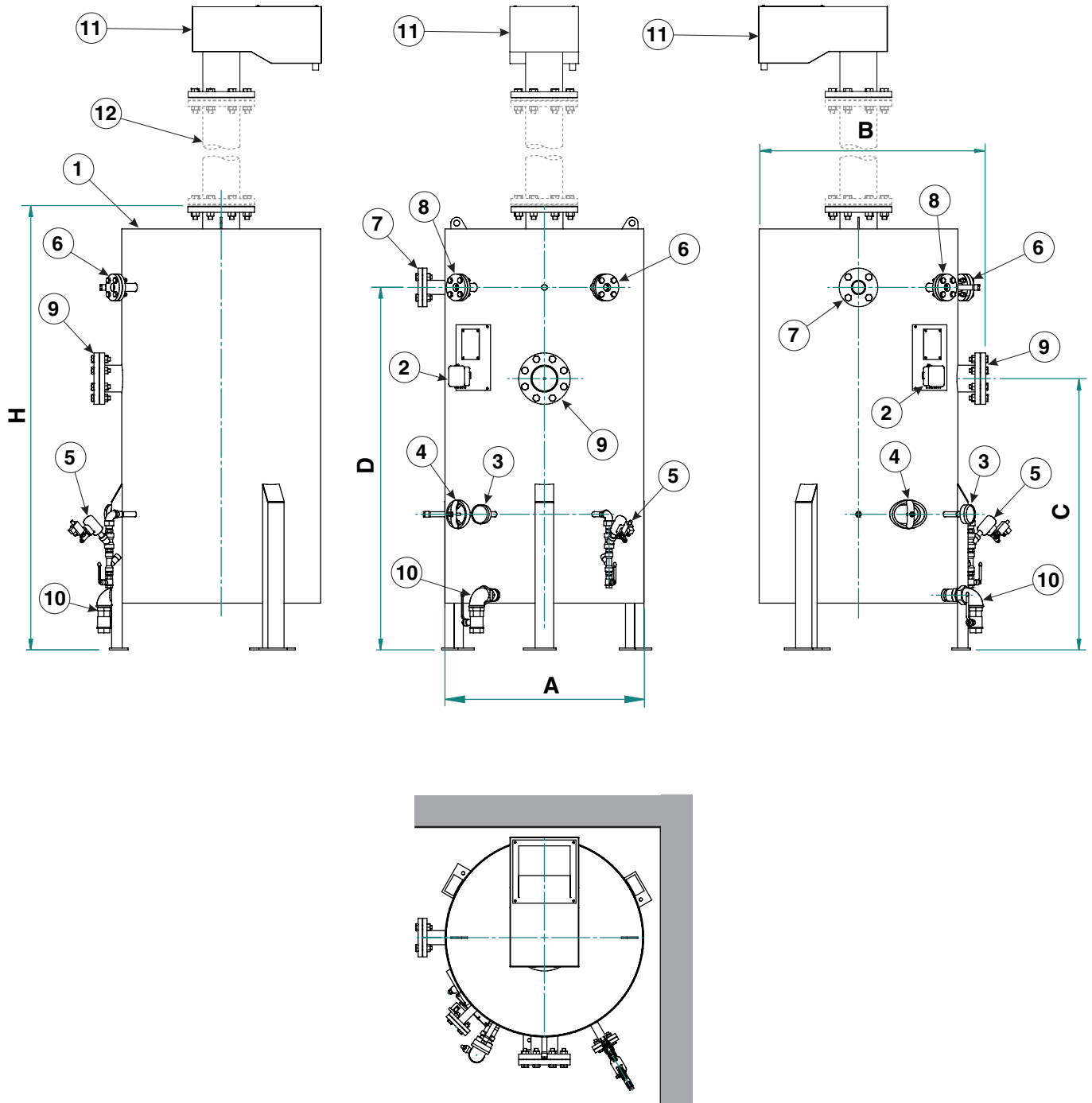
The SERBHA cooling tanks are vertical, with 5 models, in externally painted carbon steel.

### Operation

Operation of the purge tank is simple and no special operational instructions are necessary.

The tank makes it possible to safely expand the hot water from high to low pressure, resulting in a production of flash steam and the water contained in it is mixed with cold water from the mains in order to lower its temperature before sending it to the sewage network.

## 2.3 - DIMENSIONS





## KEY

- 1 - Cooling tank
- 2 - Automatic adjustment system for temperature, with NTC probe.
- 3 - Thermometer
- 4 - Hand hole
- 5 - Cooling water inlet unit
- 6 - Drain inlet
- 7 - BLOW DOWN inlet
- 8 - TDS drain inlet
- 9 - Cooled water outlet connection
- 10 - Manual drain with ball valve (tank bottom drain)
- 11 - Steam outlet with fan system
- 12 - Vent pipe

## 2.4 - OPERATING DATA

Model	Level water content	Total Volume	Empty weight	H	A	B	C	D
	l.	l.	kg	mm	mm	mm	mm	mm
SERBHA 100	100	200	140	1105	550	645	670	830
SERBHA 300	300	600	210	1505	750	845	910	1160
SERBHA 500	500	1000	270	1895	850	945	1160	1550
SERBHA 800	800	1600	370	2245	1000	1095	1340	1750
SERBHA 1200	1200	2400	520	2475	1150	1295	1490	1980

Model	Cooling water inlet	Drain inlet	Blow Down inlet	TDS drain inlet	Cooled water outlet	Bottom drain
SERBHA 100	1/2"	DN 25	DN 50	DN 25	DN 80	1 1/2"
SERBHA 300	1/2"	DN 25	DN 50	DN 25	DN 100	1 1/2"
SERBHA 500	1/2"	DN 25	DN 50	DN 25	DN 100	1 1/2"
SERBHA 800	1"	DN 25	DN 50	DN 25	DN 150	1 1/2"
SERBHA 1200	1"	DN 25	DN 50	DN 25	DN 150	1 1/2"

# 3

## INSTRUCTIONS FOR INSTALLATION

### 3.1 - GENERAL WARNINGS



**ATTENTION!**

The appliance is intended solely for the use for which it was expressly designed. Any other use is to be considered improper and therefore dangerous.

The installation requirements of systems in a building always depend on the regulations in force in the country of installation.



**ATTENTION!**

The appliance must be installed by a qualified technician with the technical-professional requirements according to the law in force which, under his own responsibility, guarantees compliance with standards according to good practice rules.

---

### 3.2 - INSTALLATION STANDARDS

It must be installed by a professionally qualified technician, who shall take the responsibility of observing all local and/or national laws published in the official journal, as well as the applicable technical standards.

---

### 3.3 - SUPPLY CONDITIONS



Upon receipt remove the packaging and make sure the contents are intact.

---

### 3.4 - HANDLING

The appliance is equipped with lifting eyebolts. Pay attention when handling the boiler and use equipment suitable for its weight.

### 3.5 - HYDRAULIC CONNECTIONS



The pipes to the device must be supported and arranged so as not to create dangerous efforts for the stability of the connections themselves.



Make sure the hydraulic pipes are not used as earth connections for the electrical or telephone system. They are not suitable for such a use because serious damage could occur to the hydraulic pipes.

---

### 3.6 - ELECTRICAL CONNECTIONS

#### General warnings



Have the electrical system checked by personnel professionally qualified according to law, attesting the adequacy:

- of the electrical system to the power loads absorbed by the generator,
- of the earthing system,
- of the cables
- of a unipolar switch installed outside the boiler room, pursuant to current legislation.



The electrical safety of the appliance is guaranteed only when it has been properly connected to an efficient earthing system carried out as intended by safety standards in force: pipes of the gas, water and heating systems are absolutely unsuitable as earthing connections.



**ATTENTION!**  
**THE MANUFACTURER IS NOT LIABLE FOR INJURIES TO PERSONS AND DAMAGE TO GOODS CAUSED BY AN INADEQUATE EARTHING SYSTEM.**

#### Connection to the electrical power supply

The generators are equipped with a fully-assembled electrical panel that is connected to the various accessories on the generator itself.



For connection to the control panel, refer to the electrical diagram in par 3.7.1



**Danger!**

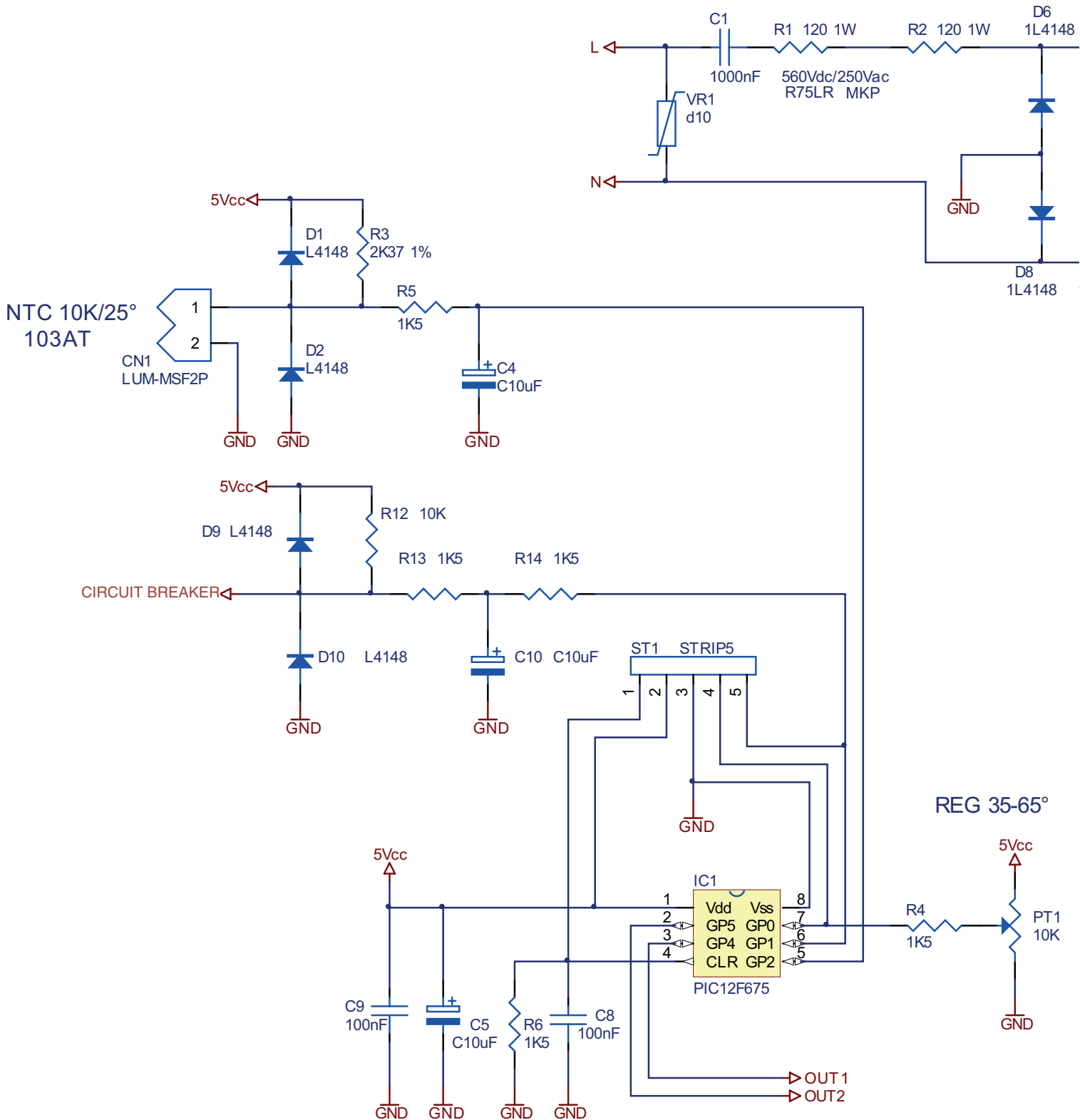
**Only a qualified technician may perform the electrical installation.**

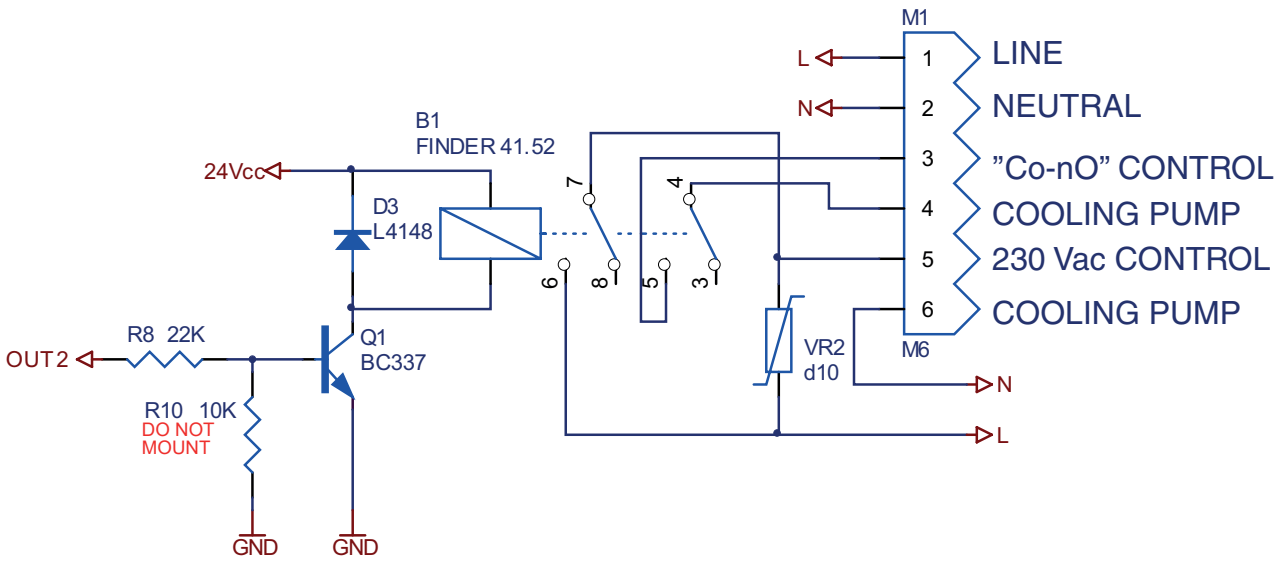
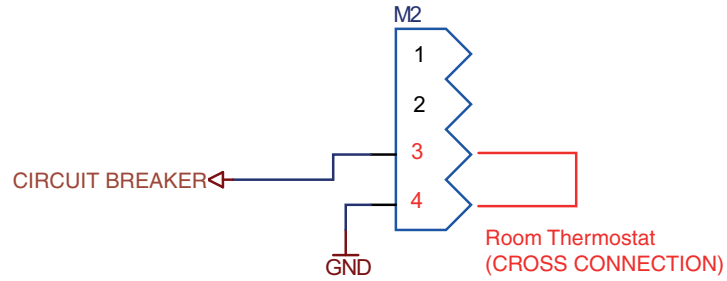
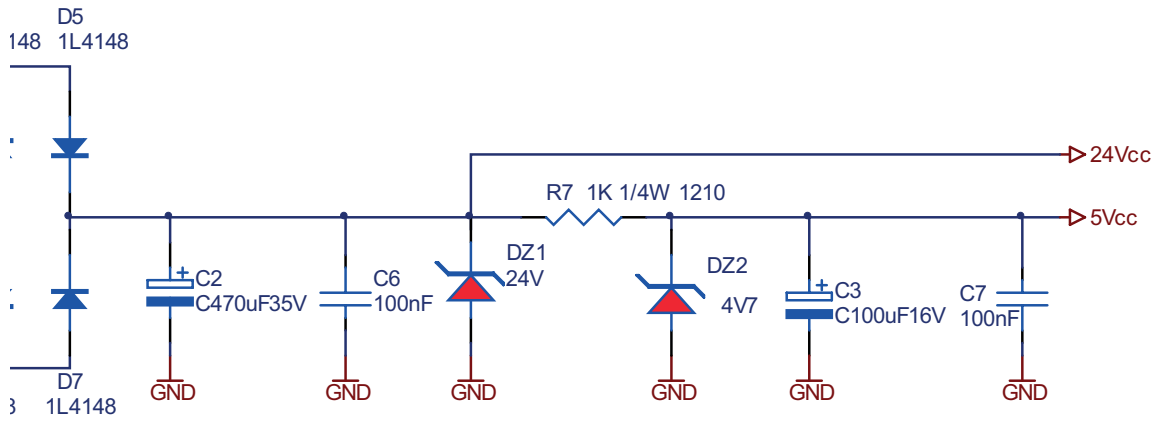
**Before performing connections or any type of operation on electrical parts, always disconnect electrical power and make sure that it cannot be reconnected accidentally.**



Remember that a bipolar switch must be installed on the power line with over 3 mm between contacts, easy to access, making maintenance quick and safe.

### 3.7.1 - WIRING DIAGRAM





Installation instructions

# 4

## INSPECTION AND OPERATIONS

### 4.1 - GENERAL RULES



The yield and duration of the appliance depends not only on a proper installation but also on good operation and maintenance.



**Routine maintenance is essential in the interest of the safety and durability of the appliance.**

**All maintenance must be carried out by qualified personnel.**



**Failure to perform Inspections and Maintenance can entail material and personal damage.**



**All cleaning and maintenance operations must be preceded by disconnecting the electricity and then closing the fuel supply.**

Therefore, observe the following guidelines:

- Periodically check the efficiency of the control and safety devices of the appliance.



**- It is absolutely forbidden to touch the hot parts of the generator which are heated and therefore burn. The same caution should also be used for at least the next hour when turning off the burner.**

- if maintenance is performed by several people, agree before starting work "who does what";
- during cleaning wear all PPE provided for specific activities, in strict accordance with the Safety Standards;
- carefully protect all equipment;
- when necessary to reassemble the components removed for cleaning, carefully check the state of the gaskets and / or provide for their replacement;
- protect screws and nuts with graphite grease which will facilitate their subsequent removal;

### Instructions for routine maintenance

Carry out the following checks:

- check the mechanical and electrical efficiency of the adjustment and safety devices;
- verify the sealing of all gaskets on the water side;

### Instructions for extraordinary maintenance



Scale deposits on the water side of the same walls as well as produce effects similar to those described above, are the cause of breaks (cracks on the tube plates, cracks on the pipes etc.) or dangerous overheating.

Interventions to prevent the above phenomena consist in:

#### **WATER SIDE:**

- internal inspection to ascertain the presence of deposits or signs of corrosion;

#### **WARNINGS**

**Should it be necessary due to leaks or seeping of the safety valve, care must be taken in the possible shutter and housing grinding, operations to be requested directly from the Manufacturer of the valve.**



# Unical<sup>®</sup>



[www.unical.eu](http://www.unical.eu)

**Unical** AG S.p.A. 46033 casteldario - mantova - italia - tel. +39 0376 57001 - fax +39 0376 660556  
info@unical-ag.com - export@unical-ag.com - www.unical.eu

Unical shall not be held liable for any inaccuracies due to transcription or printing errors.  
Furthermore, it reserves the right to modify its products as deemed necessary or useful, without affecting their essential features.