

Qualiterme

TECHNICAL INSTRUCTIONS MANUAL FOR INSTALLATION AND PREVENTIVE MAINTENANCE



THERMOREGULATOR



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Apresentação

Congratulations! You've just purchased a product manufactured under ISO 9001 quality control. We believe you've made an excellent investment. Qualiterme continually strives to produce equipment with the highest efficiency, profitability, and cutting-edge technology to meet customer demand, generating profit and greater production results for your company.



"Reservamo-nos o direito de realizar alterações, visando melhorias às máquinas, sem prévio aviso."

With over 25 years in the market, the company Qualiterme has an area of approximately 17,127.50 m², located in the São José neighborhood in Novo Hamburgo, our company is focused and committed to developing products and services that surpass us every day and satisfy the needs of our customers!

Qualiterme is a company that manufactures industrial refrigeration equipment, developing high-quality equipment using cutting-edge technology. We offer our customers the right equipment for each industry sector, including dairy, brewery, plastics, hospitals, and other industries. We have a strong sales and after-sales team, technical assistance, quality control, and product development engineering. Qualiterme is focused on meeting its customers' needs with productivity and cost-effectiveness.

Receiving Your Equipment

You've just received a product with the quality and trust of Qualiterme. Please carefully review the items below to ensure your equipment is in perfect condition as ordered:

- » The equipment is as per your purchase order;
- » The equipment was not dropped or tampered with during transportation;
- » The equipment is complete, no parts are missing;
- » Check that the equipment serial number is exactly the same as the one on the invoice;

NOTE: If you find any non-compliance with the equipment, contact Qualiterme's sales department.

Transporting/Handling the Thermoregulator

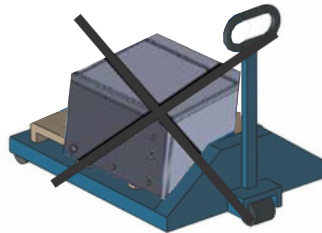
All thermoregulator models have casters for easy transportation and movement. Transporting the thermoregulator lying down or tilted at an angle greater than 15° from the vertical is strictly prohibited.

The Thermoregulator must not be dropped under any circumstances, as this may compromise the functioning of its components and result in the total loss of the product's warranty.

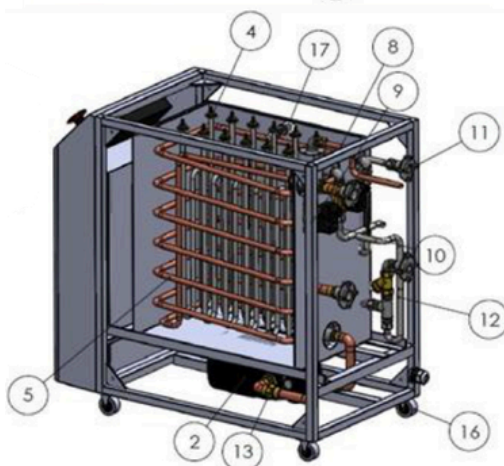
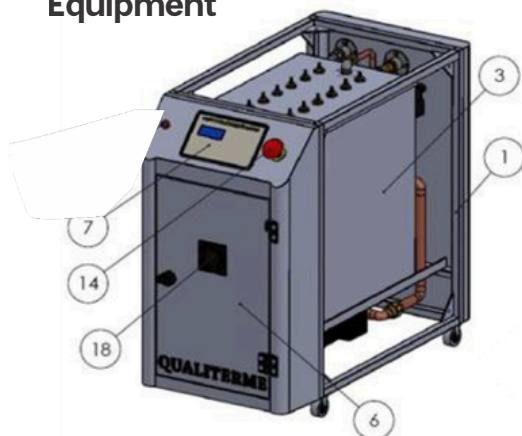
CORRECT WAY:



INCORRECT WAY:



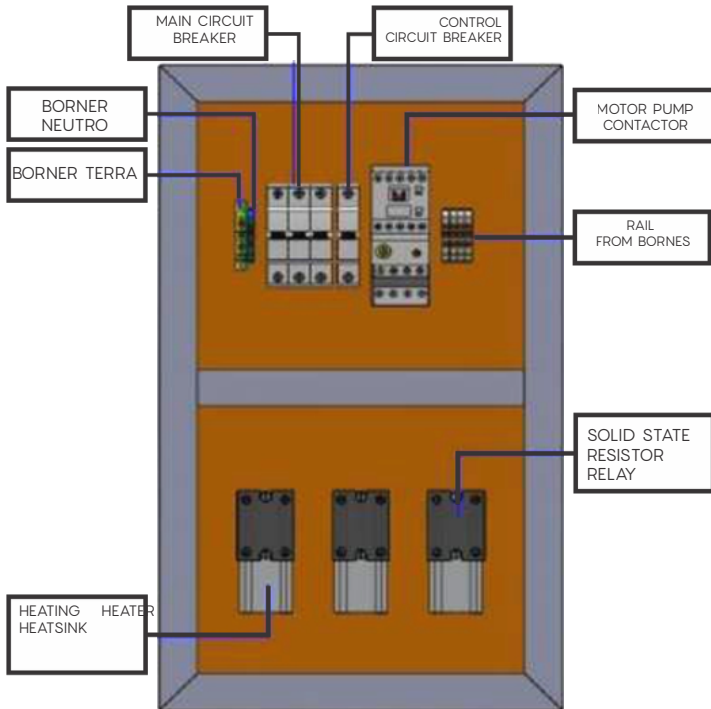
Getting to Know Your Equipment



LEGEND

1- STRUCTURE	10- ELECTRO VALVE
2- MOTOR PUMP	11- CONNECTION
3- RESERVOIR	12- FLEXIBLE STEEL HOSE
4- ELECTRICAL RESISTANCE	13- BRASS UNION
5- COOLING COIL	14- EMERGENCY BUTTON
6- ELECTRICAL PANEL	15- SOUND ALARM
7- CONTROL PANEL	16- ROTATION
8- SIGH	17- ELECTRIC BUOY
9- SOLENOID	18- COOLER

Electrical Panel



Equipment Components



Electronic Controller (PLC)

It is responsible for controlling the equipment, having a fault and audible alarm system, it also has a inlet and outlet temperature reading system.



Electronic Controller (PLC)

The PLC is responsible for all the equipment control logic, using Carel hardware with software fully dedicated to Qualiterme equipment.

Note: Only one of the PLC models is used in each equipment, varying according to your needs.



Sound alarm

It emits an audible and visual signal when a fault is detected.



Emergency Button

It must be initiated by a single human action to stop the equipment and machine operating modes. The goal is to remove power as quickly as possible without creating additional risks.



Y Filter

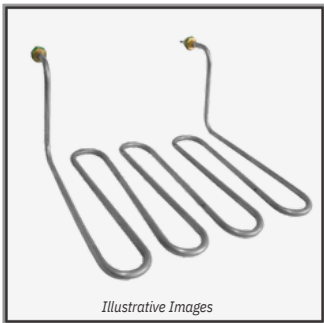
Installed at the tower's water inlet, it removes impurities from the process. If these impurities are present in the installed water network, this filter will quickly saturate when the thermoregulator is turned on. The filter should be opened and cleaned periodically, or after a maximum of 30 days of use. If you notice that the thermoregulator is taking too long to complete the filling function (Illustrative Images), you should open the filter immediately, even if you have just installed the thermoregulator, as dirt accumulated in the piping may become lodged in the filter.



Illustrative Images

Solenoid Valve

It has two solenoid valves, one for filling the reservoir and the other for the cooling cycle. This solenoid opens whenever the reservoir is above the setpoint temperature. This circulates water through a coil placed inside the reservoir, controlled by the PLC controller, as previously set.



Illustrative Images

Resistance

Responsible for heating the water in the reservoir It is extremely important that the reservoir level is always high to prevent the resistance from heating up, thus causing overheating and burning of the same.



Illustrative Images

Solid State Relay

These are devices responsible for switching resistive or inductive loads in the system, controlling the temperature commanded through the output activated by the PLC at 24v. Every time the controller reads the temperature and sends the +24v signal, the relay will activate the resistance, heating the water.



Illustrative Images

Disconnecter

Switch

It is designed to perform disconnection and isolation maneuvers on an electrical circuit. Under normal conditions and with its contacts closed, it must maintain the conductivity of its rated current, including short-circuit currents until the circuit breaker opens, without overheating, ensuring the disconnection of power within the electrical panel for maintenance. It does not perform the function of a circuit breaker, for example, which trips if the circuit is overloaded or overheated.



Motorcycle Pump

Responsible for circulating water from the regulator to the process.



Cooler

To prevent excessive heat produced by electrical components from burning or impairing their operation, they must be cooled. Therefore, the cooler serves to eliminate the heat generated by the operation of electrical components.



Level Buoy

This electric buoy installed in the reservoir is intended to send a signal when the tank is full or empty to the PLC and trigger the command to refill it.

Faults and Probable Causes

Thermoregulators are fully inspected and tested in our factory, however if any failure occurs, check the list of failures and probable causes below.

»ñ< NA ñ/3ñTD-3NF Low level detected in the reservoir. This fault is explained in detail in basic components / electro float.

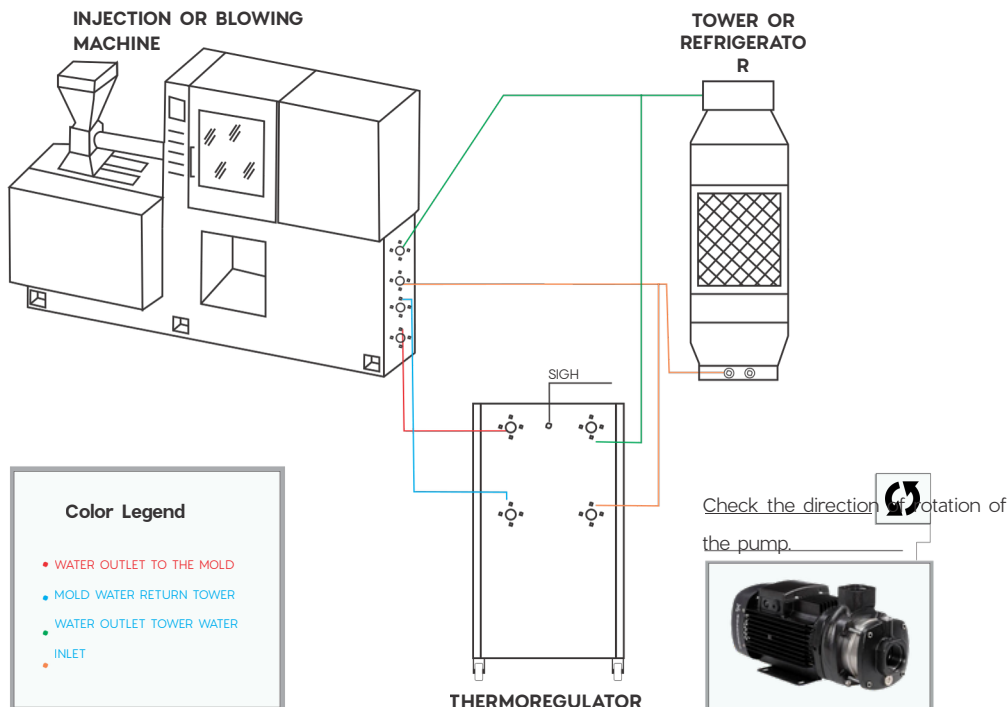
»ñ< NA ñT ñ)ZS) F Occurs when the circulation pump drive system is faulty. This fault is explained in detail in the starting instructions.

Installatio

n

- »Remove the thermoregulator from its packaging and ensure that it has not been damaged during transport.
- »If any damage or malfunction is noticed, report it to the supplier.
- »The equipment must be installed in a sheltered location, where there is no accumulation of dirt.
- »It is recommended that the sides and front of the thermoregulator be far enough away from obstacles to allow for any maintenance work.
- »Connect the thermoregulator to the appropriate electrical power (check the mains voltage and power to see if it is compatible with the equipment).
- »Fill the reservoir and secure the water inlet and outlet connections to the tower and mold.

ALL THERMOREGULATOR POWERS ARE DESCRIBED ON THE IDENTIFICATION PLATE.



Departure

Instructions

- » Make sure the previous instructions have been followed correctly.
- » Make sure that the supply voltage is the same as that indicated on the thermoregulator nameplate.
- » Start by pressing the on/off button on the thermoregulator control panel.

When you press the ON/OFF button, the controller display will show the message "Filling." This device features a reservoir filling system via a solenoid valve that automatically fills the reservoir after it is turned on. From this point on, you must wait the required time for the reservoir to fill completely, which will vary depending on the pressure in each network. The motor pump and electrical resistances will only automatically activate after the reservoir is fully filled, as there is an electric float inside the tank that will signal the switch to turn on after the reservoir is full.



ATENÇÃO !!!

IF THE NETWORK OR PIPE IS VERY LONG OR LONG, IT MAY TAKE BETWEEN 1 AND 3 FILLINGS UNTIL ALL THE AIR IS REMOVED. FROM THE NETWORK.

Note: As this is equipment with an electronic controller, grounding of the equipment is mandatory.

Advanced Parameters:

F-02: DELAY FOR LEVEL ERROR

Time the level input must remain open to detect a level error: 001s to 990s. Default: 050s

Heating ramp break cycle F-03 and F04

F-03: RESISTANCE ON TIME

Time that the resistors must remain on while the machine is cycling heating until reaching the set-point: 00.0s to 25.0s. Default: 05.0s

F-04: RESISTANCE OFF TIME

The time the resistances must remain off while the machine is cycling the heating until reaching the set-point: 00.0s to 25.0s. Default: 05.0s.

Cooling cycle F-05 and F06

F-05: COOLING TIME ON

Time that cooling should remain on while the machine is cooling until reaching the set-point: 00.0s to 25.0s. Default: 05.0s.

F-06: COOLING TIME OFF

Time the resistors must remain off while the machine is cycling heating until reaching the set-point: 00.0s to 25.0s. Default: 05.0s

F-07: HYSTERESIS FOR HEATING CYCLE

How many degrees before the SET-POINT will the heating deceleration cycle begin? Until the temperature reaches the value (F01-F07), the resistors remain on: 1° to 100°. 100% of the time. Default: 10°

F-08: HYSTERESIS FOR COOLING CYCLE

When the temperature exceeds the SET-POINT, the cooling cycle will be performed, alternately turning the cooling output on and off according to the times configured in F05 and F06. If the temperature exceeds the value of (F01+F08), then the cooling output remains on. When it reaches the set-point, it turns off.

0° to 10°. Default: 2°

F-09: OFFSET DO SENSOR

Performs a digital correction of the sensor. Adding or decreasing the temperature as adjusted in this parameter -020° to +020°. Default: 000°

F-10: AUTOMATIC RECALL

When there is a power outage, the equipment should turn on or not. YES or NO. Default:

NO **F-11: MAXIMUM TEMPERATURE** Maximum setting for F-11.

F-12: TIME TO DETECT RESERVOIR LEVEL FAILURE

Time for the controller to consider that the level input is open. From 0 to 100s.

Standard 10.0 S.

F-13: CLOSED BUOY WEATHER

Time for the controller to consider that the level input is closed. From 0 to 100s. Default 1.0 St.

Storage

Keep the Thermoregulator in a sheltered, dry place, in a vertical position, following the instructions on the packaging;

Keep the Thermoregulator in its original packaging if possible. When unpacked, keep the Thermoregulator away from aggressive environments that could compromise its preservation;

Ensure that your connections are protected, preventing the entry of dirt or other elements that could damage the equipment's internal piping.

Ensure that the thermoregulator is in a safe enough place to avoid damage from bumps or scratches from objects, or even the possibility of it falling.

Electrical Table

MODEL	RESISTANCE	POWER	VOLTAGE	TOTAL CURRENT	POWER CABLE
TR 03-A	3 x 1.000W	3.000W	380V	8,1A	4 x 2,5mm 4
			220V	13,8A	x 2,5mm 4 x
TR 06-A	3 x 2.000W	6.000W	380V	16,2A	4mm
			220V	27,2A	4 x 6mm
TR 09-A	3 x 3.000W	9.000W	380V	24,3A	4 x 6mm
			220V	41,4A	4 x 10mm
TR 12-A	3 x 4.000W	12.000W	380V	32,4A	1 x 10mm
			220V	55,2A	4 x 16mm
TR 15-A	3 x 5.000W	15.000W	380V	40,5A	1 x 10mm
			220V	69A	4 x 16mm
TR 18-A	6 x 3.000W	18.000W	380V	48,6A	1 x 10mm
			220V	82,8A	4 x 25mm
TR 24-A	6 x 4.000W	24.000W	380V	64,8A	1 x 16mm
			220V	110A	1 x 25mm
TR 30-A	6 x 5.000W	30.000W	380V	81A	1 x 25mm
			220V	138A	1 x 35mm

Important information

Attention:

Weekly Observe:

- » **Wear of parts** safety items;
- » **Refrigerant gas level**;
- » **Cleaning the equipment**;
- » **Leaks, vibrations and strange noises**;
- » **Loose screws and parts**;

Loss of Warranty:

- » Failure to carry out revisions within the stipulated timeframe, whether by time or working hours;
- » Carry out any review in a company without prior authorization from Qualiterme:
- » Change equipment features or parts;
- » Installing parts outside of specifications on your equipment;
- » Using the equipment for purposes for which it was not designed.

Attention!!! It is mandatory to present the owner's manual during inspections.

Always schedule check-ups in advance to avoid potential disruptions.

General Notes

[illegible]

WARRANTY CERTIFICATE – QUALITERME

When you purchase Qualiterme products, you are choosing a company that has been developing technology applied to refrigeration systems for over 25 years, consolidating tradition, reliability and durability across all our lines.

To ensure the longest lifespan of your equipment, it's essential that you follow the manufacturer's instructions carefully. Failure to follow these guidelines will void your warranty.

WARRANTY CONDITIONS

The equipment has a 12-month warranty, 3 of which are legal and another 9 months granted by Qualiterme, counting from the date of billing and issuance of the Invoice.

The warranty exclusively covers manufacturing defects in parts and components, subject to analysis and verification by authorized Qualiterme technicians.

Excluded are: built-in accessories, items subject to natural wear and tear and faults resulting from misuse.

Qualiterme is not responsible, under any circumstances, for losses and damages resulting from equipment downtime, even in the event of a manufacturing defect.

LOSS OF WARRANTY

- The warranty will be automatically void in the following cases:
- Repairs, adjustments or alterations made by a professional not authorized by Qualiterme Technical Assistance.
- Replacement or modification of components without prior authorization from the Qualiterme Technical Department.
- Manipulation, removal or alteration of the equipment identification plate.
- Operation outside the technical specifications provided, or installation in an unsuitable location.
- Damage caused by corrosive environments or liquids without proper treatment.
- Changes in the hydraulic system.
- Damage resulting from inadequate transportation, falls, accidents or force majeure (lightning, sudden power surges, floods, storms, etc.).

WARRANTY SERVICE

All obligations arising from this certificate will be fulfilled by Qualiterme at its factory in Novo Hamburgo – RS.

The following are not included in this warranty:

Travel, accommodation or food expenses for technicians.

Transportation costs, freight of parts, packaging, insurance or any tax charges.

Qualiterme's responsibility is limited to the supply of parts and labor for repairs, exclusively at its factory.

Revisions (Optional)

To ensure optimal performance and extend the service life of your equipment, Qualiterme recommends periodic servicing; these services are optional and the responsibility of the equipment owner. Qualiterme recommends that servicing be performed according to the table below:

REVISION PLAN	
Equipment: _____	Serial No : _____
Client: _____	Delivery Date: ____ / ____ / ____
1st Revision Prevailing over what occurs first: 720 hours of operation or 4 months.	
Service order number:	Stamp or Responsible Signature
Revision performed by:	
Revision date:	
2nd Revision Prevailing over what occurs first: 1440 hours of operation or 8 months.	
Service order number:	Stamp or Responsible Signature
Revision performed by:	
Service date:	
3rd Revision Prevailing over what occurs first: 2160 hours of operation or 12 months.	
Service order number:	Stamp or Responsible Signature
Revision performed by:	
Service date:	
4th Revision Prevailing over what occurs first: 2880 hours of operation or 16 months.	
Service order number:	Stamp or Responsible Signature
Revision performed by:	
Service date:	
5th Revision Prevailing over what occurs first: 3600 hours of operation or 20 months.	
Service order number:	Stamp or Responsible Signature
Revision performed by:	
Service date:	
6th Revision Prevailing over what occurs first: 4320 hours of operation or 24 months.	
Service order number:	Stamp or Responsible Signature
Revision performed by:	
Service date:	

Qualiterme

Equipamentos de Refrigeração

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