

# **AEL**

HEATING SOLUTIONS  
Telephone: 01928 579 068 for Technical Assistance

2019/20

## **AELTHERM-DHW (Domestic Hot Water) and AELTHERM -SP (Swimming Pool Water)**

### **GENERAL INSTRUCTIONS FOR INSTALLATION, USE, AND MAINTENANCE**

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## AELTHERM - SP: TECHNICAL DATA

### GENERAL INFORMATION

All the materials, construction criteria, and testing methods comply with the applicable European and Italian standards. The power ratings, performance, and safety features are guaranteed by testing carried out both on the single components and on the finished equipment in accordance with international standards and regulations. Finally, the AEL/TS preassembled units are all checked one by one before packing and shipping.

We invite you to read this section carefully to learn how to use the system safely and correctly, avoid troublesome problems, and prevent breakdowns.

Store this manual in a safe place as a ready reference for any doubts you may have concerning operation and/or maintenance.

Do not hesitate to contact AEL Tel: 01928 579068 for periodic maintenance of your unit. Our technicians will be happy to place all their experience and expertise at your disposal.

Please also take note the following:

- AEL/TS reserves the faculty to make modifications to the technical and construction characteristics, for the purpose of improving its products, at any time and without notice.
- This document is the exclusive property of AEL/TS reproduction of the illustrations and/or text, in whole or in part, by any means, if therefore strictly prohibited.
- This installation, use, and maintenance manual is considered an integral part of the product and as such must be kept with the unit at all times, in a safe place known to the user.
- AEL/TS reserves the right to modify this manual at any time and without notice.
- Before unpacking the unit, check that the packing (crate, container, and the unit itself) shows no significant breakage or damage. In case any such gross damage is noted, communicate the fact to the delivery personnel and contact the AEL immediately. After having removed all the packing materials, verify the contents and report any damages or shortages within 7 days. If in doubt, DO NOT USE the equipment and contact AEL Tel: 01928579068.
- The preassembled unit must be installed by a company certified in accordance with Law no, 46 of 05 March 1990; upon completion of installation, the installer company must issue a statement attesting to the conformity of the installation with best practice guidelines (that is, a statement that the system has been installed in full compliance with current applicable laws and regulations and the instructions supplied by AEL/TS in this manual), to the system owner.
- The unit must be used only for the use envisioned by AEL/TS for which it was expressly dimensioned and constructed. AEL/TS declines any and all responsibility, under contract and otherwise, for injury to persons and/or animals and for any damage to property that may derive from erroneous installation and/or maintenance and/or improper use.
- In case of significant leaks, shut off water supply from the main meter and immediately contact the AEL/TS Technical Assistance Service Tel: 01928 579068 or other professionally qualified personnel.
- After an extended period of non-use, it will be necessary to repeat the unit startup procedure. This operation must be carried out by professionally qualified personnel only.
- For any problems not addressed in this manual, contact the manufacturer's technical service.
- The unit must undergo maintenance at least once per year; maintenance must be carried out only by personnel authorized by AEL/TS or other professionally qualified personnel.

**WARNING:**

*Do not attempt to carry out any operations on the unit before having read and understood the instructions provided in this manual.*

**WARNING:**

*Failure to observe these warnings and precautions and/or tampering with the safety devices installed on the Modulo TS unit will release AEL/TS from any and all liability in case of accidents involving persons and/or damage to property and/or to the unit itself.*



**ELECTRICAL SHOCK HAZARD: LIVE TERMINALS IN ELECTRICAL PANEL**  
***Disconnect from mains power supply before conducting any work.***

## APPLICABLE STANDARDS AND REGULATIONS

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All TECHNO SYSTEM pre-assembled modules meet the essential requirements of the Directives

- EMC 2014/30/UE
- Low Voltage 2014/35/UE
- RoHS 2011/65/UE
- PED 2014/68/UE Art.4 par.3

TECHNO SYSTEM S.r.l. hereby states that the equipment is not a source of noise at levels harmful to persons, animals, and/or property.

## WARRANTY

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Unless otherwise specified in the sale contract, the warranty period extends for 12 months from the date of delivery.

In case of defective operation, contact AEL Tel: 01928 579 068.

Failure to observe the instructions and precautions set forth herein constitutes improper use and as such shall release AEL/TS from any and all liability in case of accidents involving persons, animals, and/or property and/or damage to the unit itself, and shall also immediately invalidate the warranty.

## BASIC SAFETY RULES

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Let us remind you that it is of utmost importance to observe the basic safety rules set forth below when using any equipment supplied by both electrical energy and water.

- This equipment should not be used by unassisted children and/or disabled persons.
- Do not touch the unit when standing in bare feet or if parts of the body are wet.
- Do not conduct any cleaning and/or maintenance before the unit has been disconnected from the electrical supply.
- Do not modify the safety and/or regulation devices in any way without authorization from the manufacturer. In this regard, follow the manufacturer's instructions carefully.
- Do not pull, detach, or twist the electrical cables exiting the unit, even when the unit is disconnected from the electrical supply.
- Do not expose the unit to atmospheric agents. It is not designed to operate outdoors and is not equipped with suitable protection for such use.
- Store the packing materials in a place inaccessible to children, since they constitute a potential hazard; dispose of all such materials correctly.
- Never use the water pipes as a ground connection.

### **WARNING:**

*It is important that the user be acquainted with the positions and functions of all the commands/controls before starting up the AELTHERM unit.*

*In case of breakdown and/or malfunction, deactivate the unit and do not attempt any repairs. For repairs, contact only authorized and/or otherwise qualified personnel.*

**AELTHERM Preassembled Stand Alone Units.**

The AELTHERM range are preassembled units made up, essentially, of temperature regulation equipment and plate heat exchangers (readily accessible for inspection) supplied by hot water, designed for heating water for domestic use (baths, showers, etc.), instantaneously or in conjunction with storage tanks (for indirect production), or for heating pool water (chlorine-treated fresh water or salt water).

**WARNING:**

*System installation for various applications calls for good knowledge of the equipment/components and possible system layouts. We therefore recommend consulting our Technical Office for any questions you may have concerning installation and/or connection.*

*The pump, which in each case is adequate for the system in terms of flow rate and hydraulic head, circulates the hot water between the boiler and the heat exchanger.*

**Description and Intended Use**

The AEL/TS preassembled units are available in the versions illustrated below:

**AELTHERM - DHW** (for instantaneous production of domestic hot water)

This type of preassembled unit is designed for producing domestic hot water (DHW) for use in any situation in which the available heating power is sufficient to meet the demand. The unit is equipped with a modulating valve on the primary side of the exchanger, actuated by a temperature sensor installed on the outlet side of the secondary circuit to regulate the flow of water to the exchanger in order to obtain domestic hot water at the desired temperature.

With this model, the user can run a weekly ANTI-LEGIONELLA cycle programmed via the onboard weekly clock/calendar (and set daily switch-on and switch-off at selected times) and memorize the results of up to 50 cycles. The function features the possibility of signaling (via acoustic alarm and display message) any probe malfunctions and/or failed (uncompleted) cycles.

As a standard feature, this model includes a so-called “boiler crisis” probe on the boiler outlet fitting. The probe can signal shutdown of the heating circuit pump (not supplied) to give precedence to the exchanger and thus avoid that the boiler temperature fall below a preset critical temperature or, alternatively, give an alarm when this situation is imminent. This is possible if the above-mentioned heating pump (or alarm) is connected to the regulator station terminal board (“CRISIS” terminal: see wiring diagram).

The desired “crisis” or critical temperature may be set on the regulator (for further information, refer to the Regulator manual included with this manual). Remember that the “crisis” terminal does not power the above-mentioned pump but only permits interrupting the phase or the neutral wire (the terminal is not powered but acts only as a cutout switch). An example of boiler crisis setting: if a boiler output temperature of 75 °C is set, the temperature to be set on the regulator will be 65/70 °C.

***For DHW using a storage tank ( must specify)***

This type of preassembled unit is designed to produce hot water in systems in which the available boiler power is insufficient to produce the required quantity of hot water instantaneously and it is therefore necessary to augment the system with a hot water storage tank. The unit is equipped with a control valve on the primary side of the exchanger; the valve is commanded by a regulator, which, via a temperature probe on the inlet to the secondary circuit, provides for adjusting the flow of water to the exchanger in such a manner as to attain heating and to maintain the water in the storage tank at the desired temperature.

**AELTHERM-SP** (for pool heating)

This type of preassembled unit is designed to heat the chlorinated water used for small, medium and large size pools. The unit is equipped with a control valve on the primary side of the exchanger; the valve is commanded by a regulator, which, via a temperature probe on the inlet to the secondary circuit, provides for adjusting the flow of water to the exchanger in such a manner as to attain heating and to maintain the water in the in the pool at the desired temperature.

***For heating salt-water pools ( Must specify)***

This type of preassembled unit features has the same control as the standard unit but is constructed using components suitable for sustaining prolonged contact with salt water.

All the AEL/TS units are fully preassembled and precabled and feature:

- Possibility of directly setting the DHW (\*) setpoint via easy-to-access dedicated pushbuttons.
- The possibility of conducting DHW (\*) management via the onboard clock/calendar, featuring weekly programming.
- Onboard weekly calendar for DHW (\*) management, with half-hour interval on/off setting option.
- The possibility of signaling probe malfunction via an acoustic alarm or display message.
- The possibility of resetting the values to factory defaults.
- The possibility of integrating the unit with solar-panel systems.

All the AELTHERM units also feature:

- Option to install a GSM or PSTN modem connection to send SMSs or emails to notify alarms or malfunctions.

AEL/TS has opted for equipping its units with a **3-way valve** that never closes but if it be the case provides for shunting to bypass, and a **continuously-running pump** (which shuts down only if the unit is manually disconnected from the power supply) in order to guarantee that the boiler does not suffer thermal shock: allowing hot water to recirculate through the primary circuit even in the absence of heat exchange prevents inflows of cold water from reaching the boiler (in the case of cast iron boilers, the temperature excursion **could result in severe damage**).

Furthermore, a continuously-running pump provides an additional **anti-condensation** function and also eliminates the risk of **pump burnout** as a consequence of repeated stops and starts.

The bypass pipe on the primary side of the AELTHERM unit is equipped with an **orifice** that guarantees an acceptable flow rate even when the 3-way valve is set all the way to the bypass position (that is, fully shunting flow away from the exchanger); this feature eliminates the risk that the pump may go off curve and consequently, in the long run, burn out.

In the case in which the unit is set to run periodic **high-temperature anti-Legionella cycles** (Model DHW only), install (if not already supplied) a 2-way on/off valve on the cold water inlet side and wire it to the connectors on the electronics card inside the electrical panel (for identification of the valve command contacts, refer to the electrical panel wiring diagram included with this manual). The valve will close automatically during the anti-Legionella cycles **in order to prevent accidental scalding**.

Never exceed the maximum temperatures and pressures reported on the equipment data plate.

The unit described above must be used only for the purpose for which it was expressly designed and built by AEL/TS. AEL/TS do not accept any and all responsibility, under contract and otherwise, for injury to persons and/or animals and for any damage to property that may derive from erroneous installation and/or maintenance and/or improper use.

**WARNING:**

*For information concerning operation, details of the various available controls and regulations, and/or explanations of the alarms displayed on the control panel, refer to the "REGULATOR" section of this manual.*

**WARNING:**

*Operations/work on the units must be carried out by authorized or otherwise professionally qualified personnel only. Failure to observe these precautions will release AEL/TS. from any and all liability in case of accidents involving persons and/or damage to property.*

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## IMPROPER USE

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The unit may not be used for any applications other than those described above or in the initial written quotation.

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## DELIVERY

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### **Assembled**

The unit is delivered is a single preassembled and precabled block, complete with onboard electrical system.

### **Receipt/Acceptance**

Please check within 7 days from the time of delivery of an AELTHERM preassembled water heating unit to your premises:

- Possible damage during shipping.
- Conformity of delivery with order.

**In case of doubt concerning the integrity and/or conformity of your delivery, contact our offices immediately to set in motion the actions necessary to resolve the problems noted. All communications must include at least the information reported on the equipment data plate and/or in the shipping documents.**

### **Warehousing**

If a unit must be placed in storage prior to installation, the warehouse must be dry and suitably heated. We also recommend covering and/or adequately protecting the devices installed onboard the unit in order to prevent foreign bodies from coming into contact with the same. Introduction of foreign bodies is a possible cause of malfunction / breakdown.

# USE AND MAINTENANCE

## SETTINGS

Values may be set for the following parameters:

- Temperature of the hot water produced by an AELTHERM unit: enter settings on the regulator (for more information, refer to the Regulator manual included as an annex to this manual).
- Temperature, date, and duration of the anti-Legionella cycles (Model DHW only): enter settings on the regulator (for more information, refer to the Regulator manual included as an annex to this manual).

## MAINTENANCE

The AELTHERM water heating unit requires no special maintenance. We nevertheless recommend conducting a general inspection (at least once per year) in order to ensure good operation (for details, see the following sections of this manual: OPERATIONAL CHECKS and CONSUMPTION CHECK).

If there is the risk that the system may freeze during periods of non-use, it must be emptied before such adverse conditions arise.

Alternatively, a suitable antifreeze may be added to the heating circuit.

### **WARNING:**

*The operations described above must be carried out only by authorized or otherwise professionally-qualified personnel. Failure to observe these precautions will release AEL/TS from any and all liability in case of accidents involving persons and/or damage to property.*



### **ELECTRICAL SHOCK HAZARD: LIVE TERMINALS IN ELECTRICAL PANEL**

***Disconnect from mains power supply before conducting any work.***

## OPERATIONAL CHECKS

The periodic checks and inspections listed below will guarantee correct, safe, and economical operation of the equipment.

- a) Check that there are no leaks in the unit or along the piping connecting the unit to the use points.
- b) Check that the temperatures in the primary circuit are aligned with design values.
- c) Check that the pressures in the primary circuit are aligned with design values.
- d) Read the water delivery and return temperatures; take special note of the difference between the recorded values.
- e) Check the secondary circuit Return and Delivery pressure and temperature differentials.
- f) Check that the safety devices are operating correctly and efficiently.
- g) Check the condition of the circulation pumps, adjustment valves, safety valves, expansion vessels, and the other unit components (refer to the checklist in the FIRST STARTUP subsection of the INSTALLATION section of this manual).
- h) Check that there are no unexplained noises.
- i) Check that the electric motors/servomotors do not overheat.
- j) Check for air in the piping. To eliminate air, use the bleeder valves on the AELTHERM unit. Should it be noted that the water pressure requires frequent top-ups, contact your installer to check if:
  - there are no water leaks in the system;
  - the piping is free of corrosion/scaling; if corrosion is present, treat the water in the circuit appropriately.

### In case of blackout

The AELTHERM unit shuts down automatically and resumes normal operation when power is restored.



### **BURNING/SCALDING HAZARD:**

***In case of sudden blackout, the flow control valve will not move to the closed position. Even though the pump is stopped, water may circulate in the system by natural convection, creating the risk of excessive temperature increase. In this case, close the flow control valve by hand (refer to the control valves servomotors manual included with this manual).***

### In case of interruption of water supply

It is important that the primary circuit of an AELTHERM unit never be emptied of water. Lack of water will cause breakdown of the circulation pump installed on the unit.

### **WARNING:**

*In case of water leaks inside the unit, close the on/off valves immediately and disconnect the unit from the electrical power supply.*

## CONSUMPTION CHECK

It is recommended that the user verify correct operation of the unit at pre-established intervals, collecting all available data on the flow rates in the primary and secondary heat exchanger circuits and data concerning electrical power consumption.

## TECHNICAL ASSISTANCE FOR REPAIRS

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Contact AEL Tel: 01928 579068 for any repairs to / modifications of your AELTHERM unit.

When contacting a representative of our company, please provide at least the data listed below:

- Date of commissioning of the unit.
- Serial numbers of the unit and the heat exchangers.
- Type of heat exchanger.
- Description of the problem.
- Address at which the unit is installed.
- Name and phone number of the person to be contacted.

## DECOMMISSIONING OF THE MODULO TS UNIT

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Proceed with the operations described below, in order:

- a) Close the on/off valves on the primary circuit (not supplied with unit).
- b) Check that there is no water seepage or leakage from the plate heat exchangers.
- c) If necessary, cut power to the electrical panel.

## EMPTYING THE AELTHERM UNIT

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Prepare the circuit to be emptied by closing the on/off valves (not supplied with the unit):

- a) Check that the system filling valves are closed.
- b) Open (if installed) the discharge valve; alternatively, disconnect a fitting on the underside of the unit. If possible, channel the water to the unit drain.

## END-OF-LIFE DISPOSAL OF THE AELTHERM UNIT

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Should it become necessary to disassemble the unit for disposal, first isolate the electrical and hydraulic systems. Disconnect the flanged or threaded unions and proceed with disassembly to the single component level. Dispose of the components in accordance with applicable laws and regulations concerning disposal of the materials of which they are made up (stainless steel, synthetic rubbers, carbon steel, etc.).

All the substances deriving from the work on the Modulo TS unit and/or cleaning, maintenance and/or repair must be collected and disposed of correctly. Do not dispose of any of these materials indiscriminately in the environment.

**WARNING:**

*The precautions set forth above are mandatory for safeguarding the environment and human health and safety.*



# AELTHERM – TROUBLE SHOOTING – TIPS and ADVICE

## LIST OF POSSIBLE SYSTEM ANOMALIES AND RECOMMENDED CHECKS AND REMEDIAL ACTIONS

PROBLEM	CAUSE	REMEDIAL ACTION
The hot water delivery temperature (from the secondary) is below the preset value.	Temperature probe breakdown.	Check that the probe on the secondary side is operating correctly.
	Flow control valve breakdown.	Check operation of the flow control valve. In case of servomotor breakdown, the valve may be opened and closed manually, making use of the cap supplied as standard equipment (for information on how to perform this operation, refer to the technical information sheet for the valve, supplied with this manual).
	Regulator station breakdown.	Check that the regulator is operating correctly.
	Temperature and/or flow rate values on the primary side are below design values.	Check that the boiler (primary side) and/or the circulation pump is/are operating correctly.  Check for excessive head losses in the circuits.
	Scaling. Defective check valve (if installed).	Eliminates the encrusting of the exchanger  Check that the check valve is operating correctly.
Complete absence of regulation.	The servo is not operating correctly.	Check the electrical connections.  Check if the servo opens and closes normally, without forcing, when operated by hand.
	Erroneous settings on the regulator station..	Check the values set on the regulator (check the clock/calendar and the dates and times of operation).
	Regulator station breakdown.	Check that the panel switch is set to "On."  Check that the ground-fault circuit interrupter with overload protection has not tripped (not supplied with unit).  Check for blown safety fuses.
No circulation on primary side.	Pump breakdown.	Check that the pump rotor is not gripped (this may occur after a period of non-use).  Check the direction of rotation of the pump rotor.  Check the electrical connections and power supply.  Check that pump control is active.  Check the regulator settings.
Increase in the delivery / return pressure differential on the secondary or primary.	Clogged filter/s (not supplied).	Check the filters on the primary and secondary sides (if installed).
	Incorrect pump calibration.	Check pump rotation speed.
	Clogged exchanger.	Inspect the heat exchanger plates.
	Defective check valve (if installed)	Check that the check valve is operating correctly.
No heat exchange.	On/off valves closed (not supplied with unit).	Open the valves.
	No circulation.	Restore correct circulation.
	Pump is powered but does not turn.	Free (unblock) the pump rotor.
	Clogged filters (if installed).	Clean the filters.
	Breakdown or bad calibration of regulator.	Repair or correctly calibrate the regulator

Limited heat exchange.	<p>Air bubbles in the two circuits</p> <p>Deposits of dirt and scaling in the two heat exchanger circuits.</p> <p>Primary temperatures lower than design values.</p> <p>Primary flow rate below design values.</p> <p>No countercurrent.</p>	<p>Purge the air from the circuits.</p> <p>Clean and/or descale the heat exchanger, using appropriate products (in case of full obstruction, replace the exchanger).</p> <p>Increase the temperature on the primary or increase the number of plates.</p> <p>Increase the circulation rate.</p> <p>Correctly reconnect the piping to the unit.</p>
Excessive temperature rise and no regulation.	No electrical power supply (the control valves may be open).	<p>If possible, restore power supply and check that the regulator components are operating correctly.</p> <p>If electrical supply cannot be successfully restored, manually close the flow control valves (refer to the control valves servomotors manual included with this manual).</p>
Increased head losses.	Scaling and/or clogging/blockage.	Clean and/or descale the heat exchanger, using appropriate products (in case of full obstruction, replace the exchanger); clean the filters (if installed).
Dripping in general.	Maximum pressure above permissible value (refer to data plate).	Lower the pressure to the value given on the data plate.
Frequent scaling (for production of domestic hot water).	<p>The valve on the primary side seeps/leaks. Natural circulation may occur.</p> <p>Excessively hard water.</p>	<p>Check that the valve is operating correctly.</p> <p>Install a water softening system.</p>
Increase in pressure on one of the two circuits, due to communication between the circuits.	Corroded and/or perforated plates.	Replace the damaged exchanger plates and/or gaskets.
Low temperature at secondary side outlet.	Secondary flow rate higher than design value.	Reduce flow at the valve at inlet to the secondary circuit (valve not supplied).

**WARNING:**

*In case of malfunctions and/or alarms displayed on the control panel, refer to the Regulator section of this manual.*

**Note: should it be necessary to contact our technical service, refer to the instructions given in the TECHNICAL ASSISTANCE FOR REPAIRS subsection, above.**

# INSTALLATION

(This section is intended for the exclusive use of professionally qualified personnel and / or authorized AEL/TS personnel)

## INSTALLATION TIPS

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The AELTHERM units are not equipped with ground-fault circuit interrupters. The units **MUST**, therefore, be connected only to lines equipped with a ground-fault circuit interrupter with overload protection adequate to ensure protection against direct and/or indirect electrical currents/shocks, as prescribed by IEC standards.

Before connecting the AELTHERM unit to the water supply, we recommend thoroughly cleaning the supply piping to which the unit will be connected, in order to ensure that there are no welding residues/shavings, grease, and/or sludge that could compromise good operation of the unit and damage the heat regulation, measurement, and safety devices and/or the exchanger plates and/or the pump.

We also recommend suitably pre-treating the water used to fill the circuits and/or the domestic water, in order to avoid undesired phenomena such as scaling, which can cause significant reductions in exchanger efficiency and consequently higher operating costs.

Install adequate on/off valves on every inlet and outlet of the AELTHERM unit (if not already supplied) for facilitating maintenance.

Check that the system includes adequate expansion vessels on the two circuits (if the circuits are the closed type).

When AELTHERM units are installed on older systems or systems to be renovated, ensure that:

- The electrical system meets the requirements of applicable specific standards and the work is carried out by qualified personnel.
- Expansion vessels are installed where necessary and that said vessels are sufficient to absorb the entire expansion of the fluid contained in the system.
- All the safety devices called for by current applicable laws and regulations are installed.
- The system is clean, flushed of any sludge and scaling, bled free of air, and perfectly sealed.
- The Modulo TS unit is compatible with the existing system.
- A system for treating the primary supply/top-up water is installed.

### **WARNING:**

*Failure to observe the above prescriptions constitutes "improper use" in that it can compromise technical performance and the safety of personnel, authorized or not. Such improper use shall release AEL/TS from any and all liability in case of accidents involving persons, animals, and/or property and/or damage to the unit itself, and shall also immediately invalidate the warranty.*

**Note: Pay special attention to tightening the hydraulic fittings (for threaded connectors, use 3-piece fittings).**

## INSTALLING THE AELTHERM – DHW UNIT

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For correct installation, the following should be kept in mind:

- Verify that the water pressure to which the AELTHERM-DHW unit is subjected is not in excess of the design pressure value reported in the technical data sheet contained in this manual.
- Verify that the safety valves of the AELTHERM –DHW unit are connected to a discharge drain. Should the safety valves trip in the absence of such a connection, the installation site could flood and cause damage for which the manufacturer assumes no liability.
- The piping must never be used as a ground connection for the electrical system. This practice is strictly prohibited since it can cause serious damage to the components of the system.
- AELTHERM-DHW units cannot be installed outdoors. The units are not designed for this type of installation and are not provided with adequate protection.
- When installing, allow the minimum spaces around the unit, as reported in the DIMENSIONS section of this manual, for technical work on the system and for maintenance operations.

**Note: We recommend installing a drain in close proximity to the unit to facilitate ordinary and unscheduled maintenance.**

**Note: Insofar as possible, the diameters of the system piping must be the same as the diameters of the pipes leading to the unit connectors.**

### **WARNING:**

*The operations described above must be carried out by authorized and/or otherwise professionally qualified personnel. Failure to observe these precautions will release AEL/TS from any and all liability in case of accidents involving persons and/or damage to property.*

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## CONNECTION TO THE **DOMESTIC HOT WATER CIRCUIT** (for Model AELTHERM - DHW)

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Connecting the AELTHERM – DHW unit to the domestic hot water circuit as shown in the DIMENSIONS section of this manual.

When connecting the circuit, insofar as possible avoid head losses, by limiting the number of elbows and using on/off valves of sufficient section to permit sufficient water flow.

The AELTHERM –DHW units can operate with a minimum water supply pressure of 0.5 bar, but in this case the delivery flow rate will be low. Best operation is obtained with water supply pressures of at least 1 bar.



### **TO PREVENT ACCIDENTAL BURNS/SCALDING:**

In the case in which the unit runs **periodic anti-Legionella cycles**, install (if not already supplied) a 2-way on/off valve on the cold water inlet side and wire it to the connectors on the electronics card inside the electrical panel (for identification of the valve command contacts, refer to the electrical panel wiring diagram included with this manual). The valve will close automatically during the anti-Legionella cycles.

**Note: It is advisable, in case of recirculation, to install an adequate check valve (if not supplied with the unit).**

### **WARNING:**

*Install an expansion vessel sufficient to absorb the entire expansion of the fluid contained in the system on the secondary circuit.*

## **AELTHERM – SP – SUITABLE FOR SWIMMING POOLS**

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### CONNECTION TO THE **SWIMMING POOL CIRCUIT** (for model AELTHERM - SP)

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Connect the AELTHERM -SP unit to the pool circuit as shown in the DIMENSIONS section of this manual.

This type of preassembled unit can be installed on systems in which filling and heating are handled by the same circuit or by two separate circuits. In the case of a system with a single circuit for filling and heating, **a bypass must be installed so that only a portion of the water that circulates to the pool is heated**; the desired temperature is attained only after mixing downline of the bypass.

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### CONNECTION TO THE BOILER

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Connect the AELTHERM-SP unit to the boiler circuit as shown in the DIMENSIONS section of this manual.

### **WARNING:**

*When making connections to threaded piping, **use only 3-piece fittings**.*

*When tightening this type of fitting, ensure that the piping and/or the on/off valve is adequately supported in order to prevent rotation and/or unscrewing. If the union is not properly tightened, **system seal will be compromised and leaks will result**.*



### **BURN/SCALDING HAZARD:**

*Touching the inlet and/or outlet piping can result in scalding or burns.*

**ELECTRICAL SHOCK HAZARD: LIVE TERMINALS IN ELECTRICAL PANEL*****Disconnect from mains power supply before conducting any work.***

The AELTHERM units are shipped fully cabled (refer to wiring diagram) and require only connection to the mains power supply.

Make the necessary connections as indicated in the annexed wiring diagram.

Check that the mains voltage is correct; that is, that it corresponds to the unit voltage requirement.

The unit must be correctly grounded.

Before switching on power to the unit, recheck all the electrical connections and the hydraulic seal.

**WARNING**

*The unit power circuitry must be protected by a **ground-fault circuit interrupter with overload protection.***

**WARNING:**

*The operations described above must be carried out by authorized and/or otherwise professionally qualified personnel. Failure to observe these precautions will release AEL/TS from any and all liability in case of accidents involving persons and/or damage to property and/or to the unit itself.*

**Electrical Safety**

The equipment is electrically safe only if it is connected to an efficient grounding system installed as prescribed by applicable laws and regulations. This fundamental safety precaution must be carefully verified. In case of doubt of any kind, request an inspection of your electrical system by qualified professionals. The manufacturer cannot be held liable for any damage attributable to failure to properly ground the equipment.

Use of any equipment component that utilizes electricity implies observance of several fundamental rules:

- Protection against direct contacts must be provided.
- It is strictly prohibited to use water piping as a ground connector.
- Connection to a ground-fault circuit breaker is compulsory.

**BURNING/SCALDING HAZARD:**

***In case of sudden blackout, the flow control valve will not move to the closed position. Even though the pump is stopped, water may circulate in the system by natural convection, creating the risk of excessive temperature increase. In this case, close the flow control valve by hand (refer to the control valves servomotors manual included with this manual).***

**WARNING:**

*In case of malfunction, **disconnect the unit from the electrical supply** and contact AEL/TS **immediately.***

**WARNING:**

*Always isolate general electrical supply upline of the equipment before carrying out any work on the unit.*

**WARNING:**

*All plant solutions and applications require a good knowledge of the devices and their conformation.*

*The pump, with flow and head appropriate to the system, allows the circulation of hot fluid between the boiler and the heat exchanger. The incorrect design of the pump, not respecting the above indicated specification may cause the malfunctioning of the AELTHERM unit..*

*If the pump is connected with on control cabinet the maximum absorption must not exceed the above indicated values. The failure to comply the above , may cause to damage of the electronic card or the control cabinet.*

**WARNING:**

*The manufacturer declines any and all responsibility for damage to property and/or injury to animals and/or persons deriving from failure to observe the applicable current laws and regulations or from erroneous installation or from inappropriate/incorrect use of the equipment due to failure to observe the instructions provided herein and in the documents provided in the annexes.*

## AEITHERM - FIRST STARTUP

Follow the instructions set forth below for correct equipment startup.

1. Check that the filling valves and the drain valves are closed (where applicable).
2. Slowly open the on/off valves on both the primary and secondary circuits (not supplied with the unit):
  - **SECONDARY circuit:** Open the on/off valves slowly, by hand, observing the behavior of the heat exchangers (that is, temperature, pressure, expansion, leaks to outside). We recommend correctly purging the air from the system during filling.
  - **PRIMARY circuit:** Open the on/off valves slowly, by hand, observing the behavior of the heat exchangers (that is, temperature, pressure, expansion, leaks to outside). We recommend correctly purging the air from the system during filling.

If the equipment and the devices operate as expected, go on to startup as such.

3. Connect the unit to the electrical supply by connecting the terminals inside the electrical panel (for more information, refer to the wiring diagram included as an annex to this manual).
4. Switch on the main switch on the electrical panel (the pump will begin to turn as soon as the unit is powered).
5. Enable flow control from the regulator display (refer to the REGULATOR section of the annex to this manual).
6. The unit as delivered is preset for certain default values. If these values are not the desired values, make the necessary modifications. For more information, refer to the REGULATOR section of the annex to this manual.
7. Check that no error messages are displayed on the control panel display. In case of breakdown or malfunction, refer to the Regulator manual included as an annex to this manual.
8. If the equipment and the automatic control and heat regulation devices operate as expected, the unit may be placed in continuous service.

**Note:** Current standards and regulations require that a thermal-magnetic circuit breaker installed upline of the unit.

**Note:** We recommend that an AEL/TS technician, or a technician recommended by us, be present at the time of first startup in order to observe any occurrences to avoid the risk of damage to the equipment.

**WARNING:**

*If leaks are noted inside the unit, close the on/off valves immediately and disconnect the unit from the electrical power supply.*

## RESIDUAL RISKS

The unit is designed in such a manner that the vast majority of possible risks are eliminated by the manufacturer. For operational reasons, the following residual risks cannot be totally eliminated:



**BURNING/SCALDING HAZARD:**

The unit contains piping in which fluids circulate at high temperature. All personnel, authorized and not, must take care not to touch the above-mentioned piping, which can cause scalding/burns.



**PHYSICAL HAZARDS:**

Take particular care when handling the components of the unit (above all, during maintenance); wear suitable PPE such as gloves, safety footwear, coveralls, etc.



**ELECTROCUTION HAZARD**

In the case a jet of water should spray onto the electrical connections inside the panel.

**WARNING:**

*Failure to observe the due precautions set forth herein constitutes improper use and as such shall release AEL/TS from any and all liability in case of accidents involving persons, animals, and/or property and/or damage to the unit itself, and shall also immediately invalidate the warranty.*