TREVOR-MARTIN CORPORATION

INSTALLATION/OPERATING INSTRUCTIONS

FOR

AQUEFIER POOL HEATERS
Model TK125T

Trevor-Martin Corp., 4151 112th Terrace North, Clearwater, FL 33762

Bulletin PH-125T
Rev. 3

IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW INSTRUCTIONS

SAVE THESE INSTRUCTIONS

TO THE HOMEOWNER

Congratulations on your decision to purchase an AQUEFIER Pool Heater. The AQUEFIER Pool Heater is designed to heat your swimming pool by taking heat from a tankless water heater and transferring it into your pool, even if the tankless water heater is being used for domestic hot water or space heating.

Your AQUEFIER Pool Heater operates in conjunction with your pool filter pump. Once you, or your pool timer turn the pump on, the AQUEFIER Pool Heater starts up, measures the water temperature in your pool, compares it to your chosen pool temperature, and starts adding heat if required.

CAUTIONS / DISCLAIMERS

The AQUEFIER Pool Heater operates in conjunction with your pool equipment. Improper installation can cause damage to both your Pool Heater, your pool pump, and filter piping.
Only skilled technicians with appropriate training and experience should perform the installation. The Manufacturer accepts no liability for equipment damage, personal property damage, or personal injury arising from the improper installation of this Pool Heater.

The installation must be in compliance with local codes and ordinances.

Wiring should only be done by licensed electricians.

Local Plumbing, Mechanical and Electrical Codes take precedence over any instructions contained herein.

SPECIAL NOTE: Installations subject to freezing ambient temperatures must make provisions for freeze protection to avoid damage to this appliance. The safest method of freeze protection is to provide for draining of the heat exchanger and water lines. Freeze damage is specifically excluded from the Warranty for this appliance.

IMPORTANT SAFETY INSTRUCTIONS

When using this electrical equipment, basic safety precautions should always be followed, including the following.

READ AND FOLLOW ALL INSTRUCTIONS.

To reduce the risk of injury:

a. The water in a pool or tub should never exceed 104 degrees F. A water temperature in excess of 104 degrees F is considered unsafe for all persons. Lower water temperatures are recommended for extended use (exceeding 10 – 15 minutes) and for young children.

b. Since excessive water temperatures have a high potential for causing fetal damage during the early months of pregnancy, pregnant or possibly pregnant women should limit pool or tub water temperatures to 100 degrees F.

c. Before entering a pool or tub, the user should measure the water temperature at several occupant locations using an accurate thermometer since the tolerance of the water temperature-regulating devices may vary as much as + or – 5 degrees F.

d. Alcohol, drugs, or medication should not be used before or during pool or tub use since their use may lead to unconsciousness with the possibility of drowning.

e. Obese persons and persons with a medical history of heart disease, low or high blood pressure, circulatory system problems, or diabetes should consult a physician before using a pool or tub.

f. Persons using medication should consult a physician before using a pool or tub since some medications may induce drowsiness while other medications may affect heart rate, blood pressure, and circulation.

LOCATING THE POOL HEATER FOR INSTALLATION

The AQUEFIER Pool Heater must be installed outside near the pool pump/filter on a level area. Allow at least 18 inches clearance on all sides and 4 feet clearance on top of the Pool Heater. It is very important to have 2 feet of clearance on the front of the Pool Heater for service access.

The unit should be set on a solid, level foundation, preferably a concrete slab at least 4 inches thick. The slab should be above ground level and surrounded by a graveled area good for drainage. Secure the Pool Heater to the slab and secure the slab firmly to the ground; particularly if you are located in an area where hurricane codes are applicable.

Other location considerations include:

1. Keep the Pool Heater at least 10 to 15 feet away from pool chemical storage to minimize effects of corrosive chemical vapors, particularly chlorine vapors.
2. Allow for proper drainage of leakage during air purging or heat exchanger condensation formed by the normal operation of the Pool Heater.
3. Do not install the Pool Heater in an enclosed area, such as a filter equipment room. It is important to allow fresh air to cool the controller and pump.

A beach location presents additional concerns. Exposure to salt water spray and high winds will cause premature wear on the controls and pump. Salt and sand accumulation will clog up the digital controls, causing both corrosion and severely reduced performance. Preventive measures include: building a windbreak around the Pool Heater; raise the Pool Heater up off the beach to reduce sand being sucked or blown in; increased frequency of cleaning of the interior and exterior of the cabinet.

Finally, special care must be taken to check the elevation of the Pool Heater relative to the pool water level. The AQUEFIER Pool Heater uses a pressure switch to determine that water flow is present. If the Pool Heater is located more than 3 feet below the pool water level, or if the pool piping passes more than 3 feet above the water inlet of the Pool Heater, the Pool Heater's pressure switch can be fooled into a false reading. This will result in the Pool Heater starting up without water flow, and potentially damaging the Heater. Furthermore, an excessively dirty filter can reduce the water flow enough to prevent the pressure switch from turning the Pool Heater on.

INSTALLING THE POOL HEATER

Pool Heater installation is divided into two sections: **electrical connections, and pool piping connections.** The Factory has fully installed the pump and heat exchanger and preset the controls. There are no job-site installation requirements for the Pool Heater. **Wiring should only be done by licensed electricians.**

ELECTRICAL CONNECTIONS

Power to the Pool Heater

The AQUEFIER Pool Heater requires a 230-volt, 20-amp circuit with a breaker, and a ground connection. The Filter Pump Circuit may be suitable for dual use. The Pool Heater grounding conductor shall be the same size or larger than the live power supply conductors.

Use a length of (3) wire #12 gauge watertight flexible conduit to connect to the Pool Heater cabinet. Enter the Pool Heater cabinet through the openings provided at the end of the cabinet. Remove the control box cover panel strip back the wires and connect directly to the **contactor** inside the control box. Ground the Pool Heater per local codes.

This Pool Heater is to be installed in accordance with Article 680 of the National Electrical Code, ANSI/NFPA 70, and with the requirements of the authority having jurisdiction.

Bonding to Pool Steel: Electrical corrosion, known as electrolysis, will occur if the heater is not bonded to the pool reinforcement steel. Most local codes also require that the water pump be bonded. Connect using a #8 gauge or larger solid copper wire to bond the cabinet to the pool reinforcement steel.

POOL PIPING CONNECTIONS

The Pool Heater is designed to handle the full flow from the pool pump. No bypass is required if the water flow is in the 20 to 80 gallon per minute range.

The Pool Heater piping must be connected at a point in the pool piping loop after the pool water passes through the filter and before the chlorinator, salt water generator or baquicil chemical feeder. Connecting the Pool Heater after the chlorinator, salt water generator, or baquicil chemical feeder will cause premature failure of the Pool Heater. **Failure to maintain proper pool chemistry will significantly shorten the life of the Pool Heater and is not covered under Factory Warranty.** To prevent premature failure of the heat exchanger due to the back-siphoning of the chlorinator when the pool pump is turned off, **install a chemically resistant check valve and a piping loop that extends at least 8 inches above the top of the chlorinator.**

The Pool Heater comes equipped with clear PVC stubs to allow a visual check of water flow and water condition. Connect to these stubs with 1.5 inch PVC couplings and an appropriate length of 1.5 inch PVC pipe; taking care to note which stub is “water in” and which is “water out”.

Good practice also suggests considering the use of 3 way valves on the inlet and outlet to enable the pool owner to bypass the Pool Heater if service or maintenance is required.

OPERATING THE POOL HEATER

The AQUEFIER Pool Heater is designed to be easy to operate. The end panel contains a digital temperature control readout. The Pool Heater is set to reach and then maintain the selected pool water temperature, **as long as the pool pump is running**. Once the selected pool temperature has been reached, control of the pool pump is returned to the pool timer. The Pool Heater will also, if programmed and installed to do so, turn the pool pump on periodically to maintain pool temperature.

NOTE: The Pool Heater will not run without water flow.

Water Temperature Control

For description of temperature control operation see the included digital control manual.
After adjusting the temperature control, check the water temperature with an accurate thermometer. It may be necessary to calibrate the Pool Heater controller in rare instances.
CAUTION: Prolonged immersion in hot water may induce hyperthermia.

Hyperthermia occurs when the internal temperature of the body reaches several degrees above the normal body temperature of 98.6 degrees F. The symptoms of hyperthermia include dizziness, fainting, drowsiness, lethargy, and an increase in the internal temperature of the body. The effects of hyperthermia include:

Unawareness of impending hazard;

Failure to perceive heat;

Failure to recognize the need to exit the pool or tub;

Physical inability to exit the pool or tub;

Fetal damage in pregnant women; and

Unconsciousness resulting in danger of drowning.

WARNING:The use of alcohol, drugs, or medication can greatly increase the risk of fatal hyperthermia in pools and hot tubs.

Sequence of Operation

The control system includes **a time delay to accurately check the pool water temperature, and an anti-cycle timer.**

The time delay allows the control to get an accurate reading of the pool water temperature.

The water in the heater may be hotter or colder than the water in the pool depending on weather conditions. To measure pool water temperature accurately, the time delay allows the pool pump to run for approximately 5 minutes before it measures temperature.

The heater will continue to heat the pool until the temperature setpoint has been satisfied.

PLEASE NOTE:

1. It is important to remember that the Pool Heater will not run unless the pool pump is running.
2. Water vapor will condense on the outside of the unit and drain during normal operation.
3. There is a **5 minute start delay** built into the controls to prevent short cycling, and to assure that the temperature control is reading the pool water temperature accurately.
4. Raising the temperature control set point above the pool water temperature will not cause the Pool Heater to start up until the delay has been satisfied.
5. The digital temperature control will read the current pool water temperature whenever there is power to the Pool Heater. The temperature reading is not necessarily accurate unless the pool pump is moving water through the Pool Heater.

Power to the Pool Pump (If Equipped)

An optional feature on the Aquifier Pool Heater is the **Filter Pump Relay or "FIL"**. Since **the Pool Heater can not run without water flow**, the **Filter Pump Relay "FIL"** will keep the pool pump and the Pool Heater running until the pool has reached the desired temperature set-point. If the **"FIL"** is not wired in, the Heater can only run when the pump is either turned on manually, or by the pump timer.

To wire this optional feature in, the Pool Heater requires a circuit from the pool pump timer to the Pool Heater, and a circuit from the Pool Heater to the pool pump. The **"FIL"** can be used with either a 120 volt or a 230 volt, 1 phase pump, with current draws up to 25 amps. It should be noted that power to the pump can be supplied by the Timer and the Filter Pump Relay at the same time. **The polarity of both sources of power to the pump must be the same**. Failure to confirm polarity of pool pump will cause a dead short and possibly trip the breaker. The power supply to the timer and the **"FIL"** must come from the same breaker.

1. Wiring must be sized per National Electrical Code requirements based on the pump load and conductor length.
2. Conductors must be installed in approved conduit.
3. The Pool Heater, the pool pump, and the pump timer must be grounded per National Electrical Code requirements.

Open the pool timer and connect a second set of wires to the line side terminals #1 and #3 at the time clock. Use a length of watertight flexible conduit to connect to the Pool Heater cabinet, entering through the openings provided on the end of the cabinet. Remove the front door from the Pool Heater. Connect to the black wires labeled "LINE" hanging from the Pool Heater's control box. Wires are interchangeable one black to the #1 terminal and the other to the #3 terminal.

Open the junction box on the pool pump and connect a second set of wires to the pump terminals. Use a length of watertight flexible conduit to connect to the Pool Heater cabinet, entering through the openings provided on the side of the cabinet. Connect to the pair of blue wires, labeled "PUMP", found hanging from the Pool Heater's control box. Be sure that the polarity is correct or risk tripping circuit breaker.
Now that all the electrical wiring is complete it is important to read the section in the Digital Controller manual titled **"FIL".** Using the "FIL" Mode will allow the controller to start the water pump through the night and sample the water for an allotted time therefore maintaining a constant temperature.

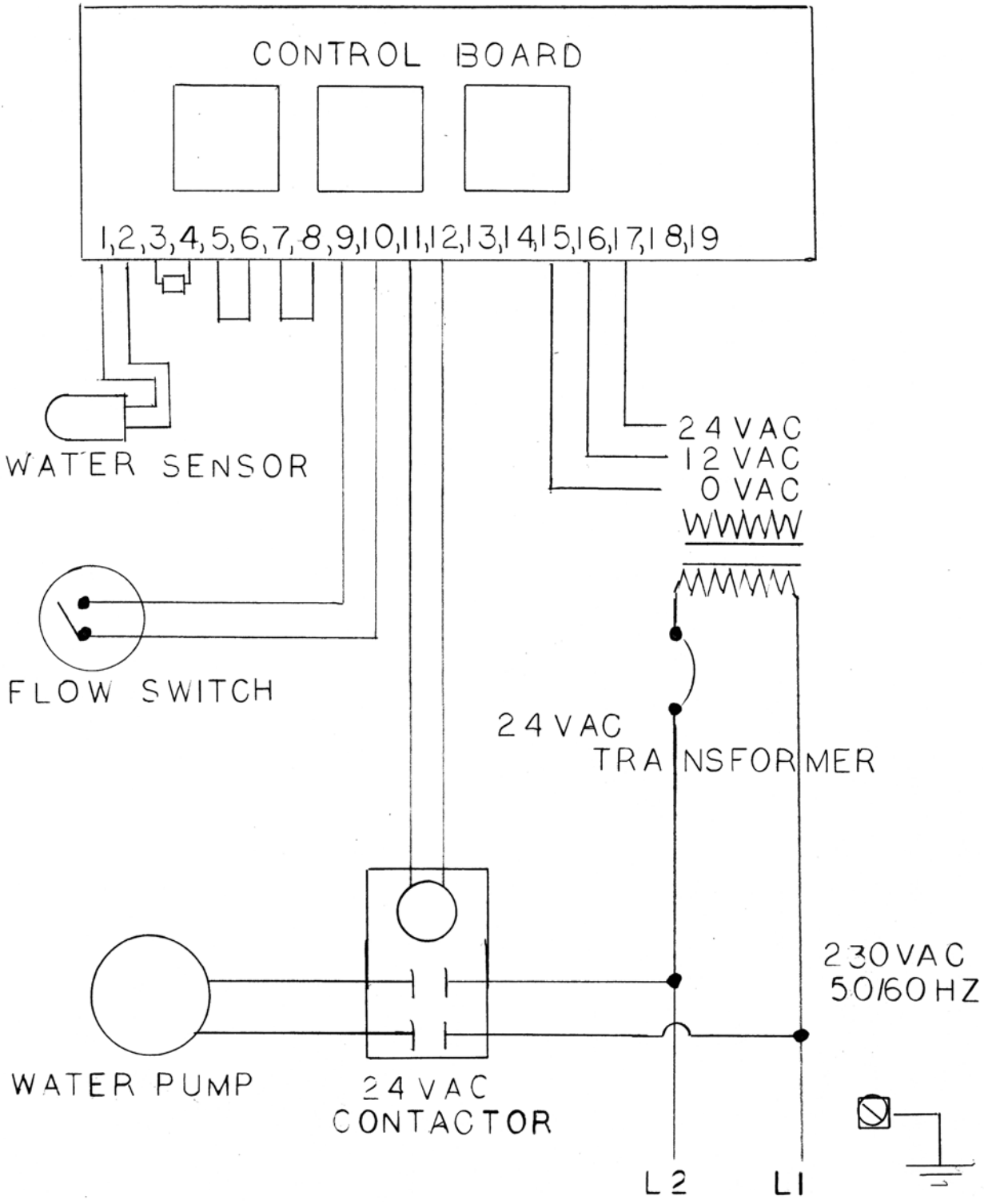

Figure 3A – Electrical Schematic

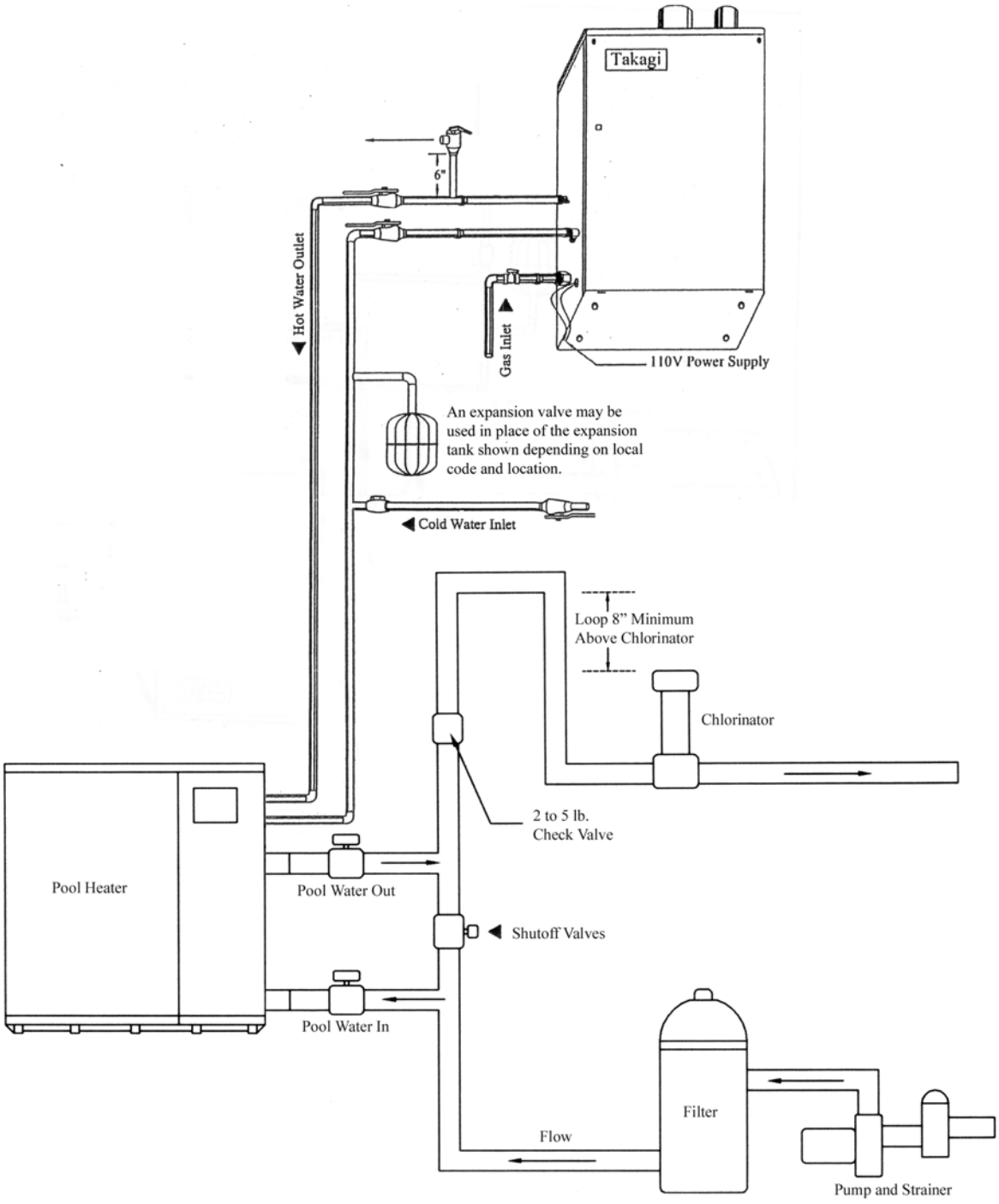

FIGURE 4 – PIPING CONNECTIONS

SHUTOFF VALVES AND BYPASS ARE FOR SERVICE ONLY
BYPASS SHOULD BE SHUT OFF DURING OPERATION
IF WATER FLOW IS IN THE 20 TO 80 GPM RANGE

The Pool Heater image on the left is for illustration purposes only and may not be an accurate depiction of the actual appliance.

Startup Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
Temperature display not lit Unit will not start	Check power supply to unit. Check circuit breaker or fuses Check 24 volt transformer	Turn on or reset breaker. Check transformer/replace if required.
Temperature display lit Unit will not start.	Water flow less than the 20 gpm minimum required. Time delay and anticycle timers satisfied. Temperature set too low.	Check that pump is on. Check that water is flowing through heater. Check any bypass valves that are installed. Check filtering system. Check pump and impeller. Check that pressure switch is closed. (needs 2 psi to close) **Wait at least 8 min. without resetting on/ off switch or breakers.** Set temperature setpoint above water temperature.
Pool water does not reach temperature setpoint.	Heater runs only when pool timer is on. Outside air temperature is low.	Allow pool water pump and Pool Heater to run longer. Install solar blanket on pool.
Water dripping from bottom of unit.	Leak at pipe connection	Repair as required.

For specific controller issues, please see the Digital Controller manual.

POOL HEATER TK125T

LIMITED WARRANTY

FOR RESIDENTIAL APPLICATIONS

(15 / 2 / 1)

Trevor-Martin Corporation warrants each Pool Heater to be free of defects in materials and workmanship for 12 months from the Date of Installation. In the absence of suitable proof of Date of Installation (Bill of sale), the Warranty Period will commence 30 days after the Date of Manufacture. Additional Warranty coverage applies to specific components as follows: Titanium Heat Exchanger has a fifteen (15) year pro-rated replacement warranty; the circulator has a two (2) year limited warranty. Failures resulting from improper installation, abuse, accident, negligence, freezing, hard water, scale buildup, chemicals, external leakage, or Acts of God are specifically excluded from Warranty Coverage.

This constitutes the only Warranty in connection with this sale; and is in lieu of all other Warranties, expressed or implied, written or oral. No employee, agent, dealer or other person is authorized to give any other Warranty on behalf of Trevor-Martin Corporation; nor to assume for Trevor-Martin Corporation any other liability in connection with this product; except as may be authorized by an officer of Trevor-Martin Corporation in a signed written document.

THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE THAT APPLY TO THIS SALE.

LIMITATION OF REMEDY

Trevor-Martin Corporation will replace or repair, at its option, any product or component found to be defective during the Warranty Period: either by act of Factory Service on the installed unit; or if such product or component is returned to our Factory, listed below, freight prepaid, product will be repaired and returned to originator. All such returns of product require Factory authorization prior to shipment. Trevor-Martin Corporation will not accept liability for unauthorized returns.

Replacement or repair is the exclusive remedy available from Trevor-Martin Corporation for any product or component found to be defective. Trevor-Martin Corporation is not liable for unauthorized labor charges, or damages of any sort whatsoever, including incidental or consequential damages, associated with product or components returned under Warranty. For Warranty Service contact the installing Contractor or Trevor-Martin Corporation @ 1-800-875-1490.

Products or components replaced or repaired under the terms of this Warranty will be returned, transportation charges prepaid, by the best and most economical means.

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