Kopec Enterprises Inc.

Owner's Manual & Installation Guide

Model 525S
Model 525TI
Model 600SC
Model 650TI
Model 650SC
Model 700TI

INTRODUCTION

KOPEC Enterprises, Inc., located in Pompano Beach, Florida, designs and manufactures the industry's most cutting-edge swimming pool heat pumps. We consistently strive to provide our customers with the best-made pool heaters at the most competitive prices, and we back it all up with great customer service and continued support.

Year after year, ***KOPEC*** heat pumps stand up to the elements and have environmental and cost benefits that far outweigh other heating sources, such as gas and propane. ***KOPEC*** heat pumps work without fossil fuel dependency and without environmental pollutants. They also have no safety concerns.

Each of our hand-assembled, hand- tested pumps, meets exacting specifications and standards. All ***KOPEC*** products are Safety Certified by Applied Research Laboratories, and, all the performance results are confirmed by an independent certified test lab.

KOPEC offers a large selection of heat pumps for both residential and commercial pools and spas. Our pool heaters are used in applications worldwide, for houses, condos, hotels, spas and Olympic-sized pools.When it's quality that counts, you can count on ***KOPEC*** *QUALITY*.

This product can be very simple to use, but it is important to understand the instructions for operation and precautions for installation. Please take a few minutes to read this manual

INDEX

GENERAL SAFETY INSTRUCTIONS

All electrical installation must be done by a qualified, licensed electrical contactor in accordance with all national and local wiring codes.

Unit must be bonded to the pool equipment or a 6 ft. copper rod.

Once installed, always shut off main power to the unit whenever the access panel is opened or removed.

UNIT INSTALLATION

LOCATION- The placement of the pool heater is very important in insuring the maximum operating efficiency, while keeping installation costs to a minimum and allowing access for service and maintenance.

The unit is best suited for outdoor installation and should not be installed indoors. If the unit must be installed indoors, adequate air exchange must be provided to insure efficient unit operation. (Please call the manufacturer for details).

CLEARANCE- Please allow 12 inches of clearance from walls, fences, or bushes around the sides and back of your unit, and at least 24 inches in the front for operation and service access. Allow 4 feet of vertical clearance from the top of the unit to the roof overhang. (This will provide quieter operation and will prevent re-circulation of cold air into the unit, which will affect the units heating efficiency).

SPRINKLERS and ROOF RUN OFF- Redirect or cap any sprinklers that directly hit the unit, and do not install the heater under or near an area which will subject it to large amounts of water run off. A gutter or downspout may be needed to protect the heater.

SLAB OR BASE THE UNIT SITS ON- Please provide a secure level surface at least 36” x 36” for the units base.

RISK OF ELECTRICAL SHOCK OR ELECTROCUTION

The electrical supply to this product must be installed by a licensed or certified electrician in accordance with the National Electrical Code and applicable local codes and ordinances. Improper installation will create an electrical hazard, which could result in death or serious injury to pool or spa users, installers, or others due to electrical shock, and may also cause damage to property. Read and follow the specific instructions inside the manual.

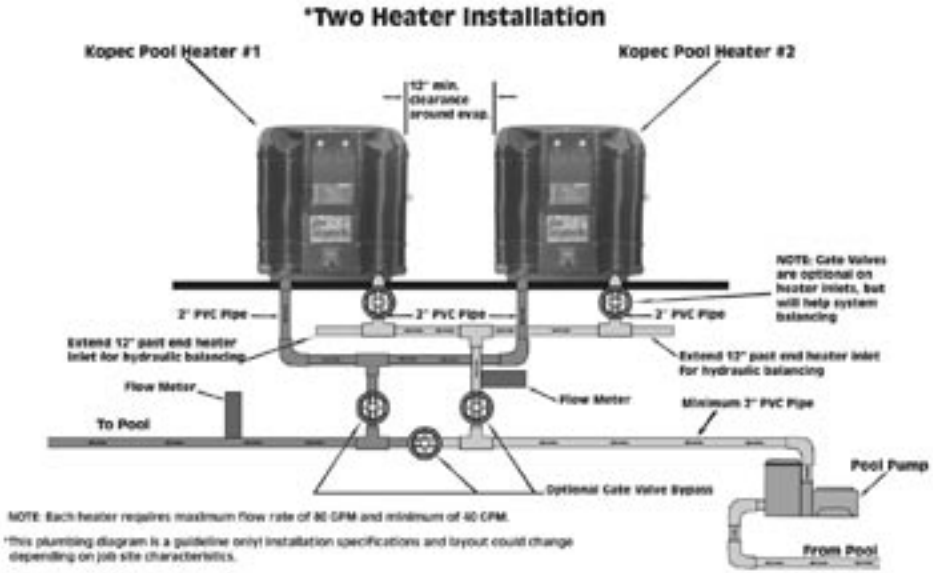
Drainage- A drain fitting is provided in the bottom of the unit. This fitting allows unit condensation or rainwater to escape, keeping the inside of the unit relatively dry. Keep the drain fitting clear of leaves or debris to insure proper drainage. You can divert the drain water by attaching a ½ inch garden hose to the drain fitting and redirecting it to area better suited for drainage. (Ask your installer).

PLUMBING *See Plumbing Diagram on pages 4-5*

Piping Sequence- Pool -to- water circulating pump -to- filter-pool heater--to- check valve -to- chlorinator -to- pool (if a chlorinating device is used, it must be downstream of the heater, with a flapper-style check valve installed in a vertical run between it and the heater.) See Page 16 on unit protection for more details.

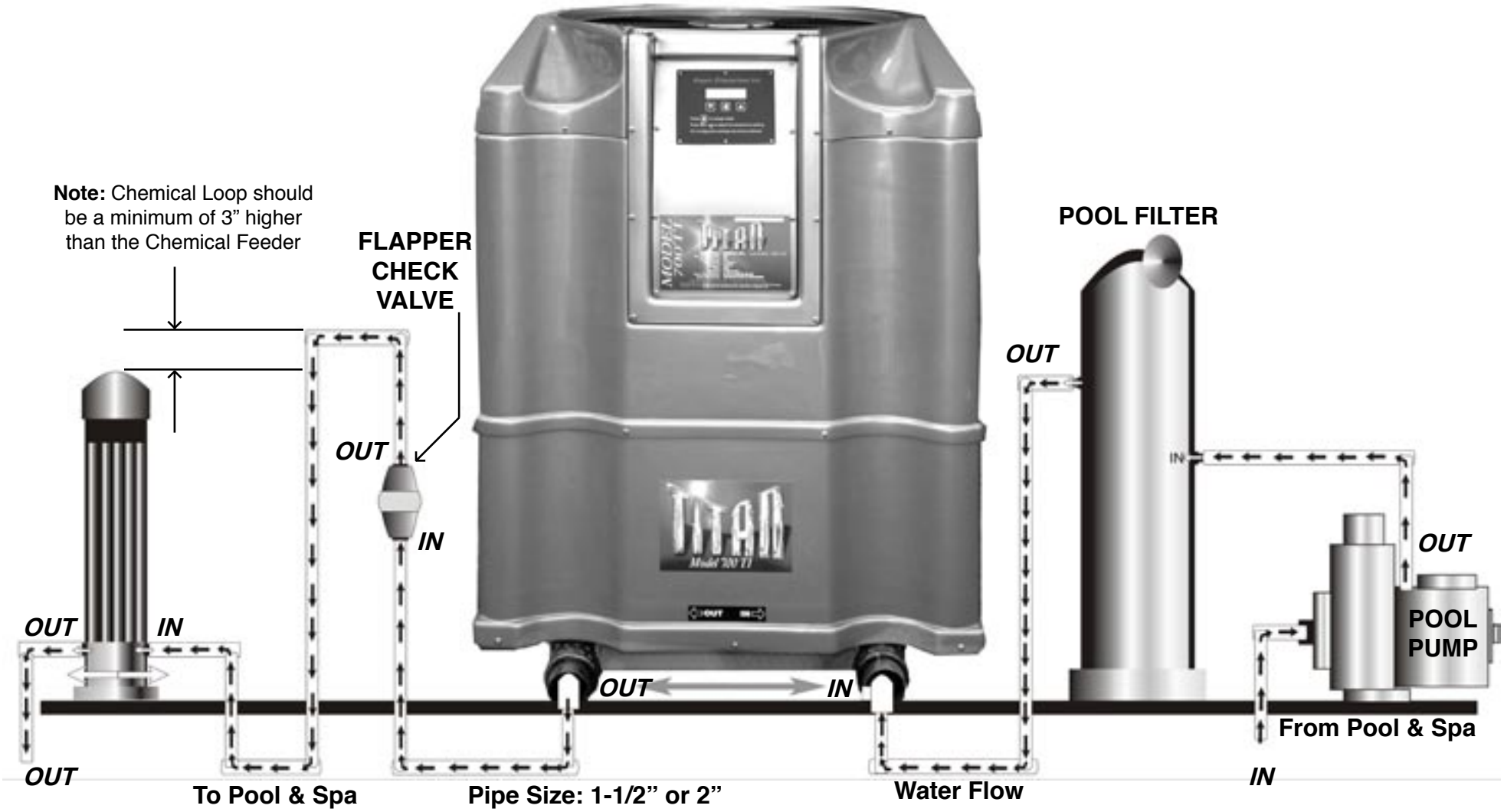
Pipe Connections - Water IN from filter is on the RIGHT. Water OUT to pool is on the LEFT. Normal applications do not require an external bypass. The unit is equipped with 2 inch unions.

Multiple Unit Installations- All plumbing on multiple installations must be in PARALLEL by using an equalized manifold supply pipe. DO NOT install in series. Visit our web site for multiple unit plumbing diagrams



PLUMBING DIAGRAM

Layout for the correct plumbing setup for the Kopec Pool Heater



DANGER

RISK OF ELECTRICAL SHOCK OR ELECTROCUTION

The electrical suppplyto this product must be installed by a licensed or certified electrician in accordance with the National Electrical Code and applicable local codes and ordinances. Improper installation will create an electrical hazard, which could result in death or serious injury to pool or spa users, installers, or others due to electrical shock, and may also cause damage to property. Read and follow the specific instructions inside the manual.

ELECTRICAL

A qualified, licensed electrician, in accordance with all national and local code requirements, must perform the electrical installation of your Kopec pool heater.

Standard power supply- 208/240v 60hz- 1 Phase. 3 phase units are also available.

Breaker Size- 50 amp (models 525 ,650 and 700)

Electrical access and installation- The unit is equipped with a 1" inch all thread coupling, which is easily adaptable to rigid or flexible conduit, as well as junction boxes. Remove access panel to expose electrical controls, then feed main power leads and ground through the units short conduit, allowing a little slack for service purposes. Hook main power leads to the top of the main contactor. This contactor will have compressor and fan leads already connected to the load or bottom side of the contactor. Hook ground wire to the ground lug mounted near the top of the electrical control pocket.

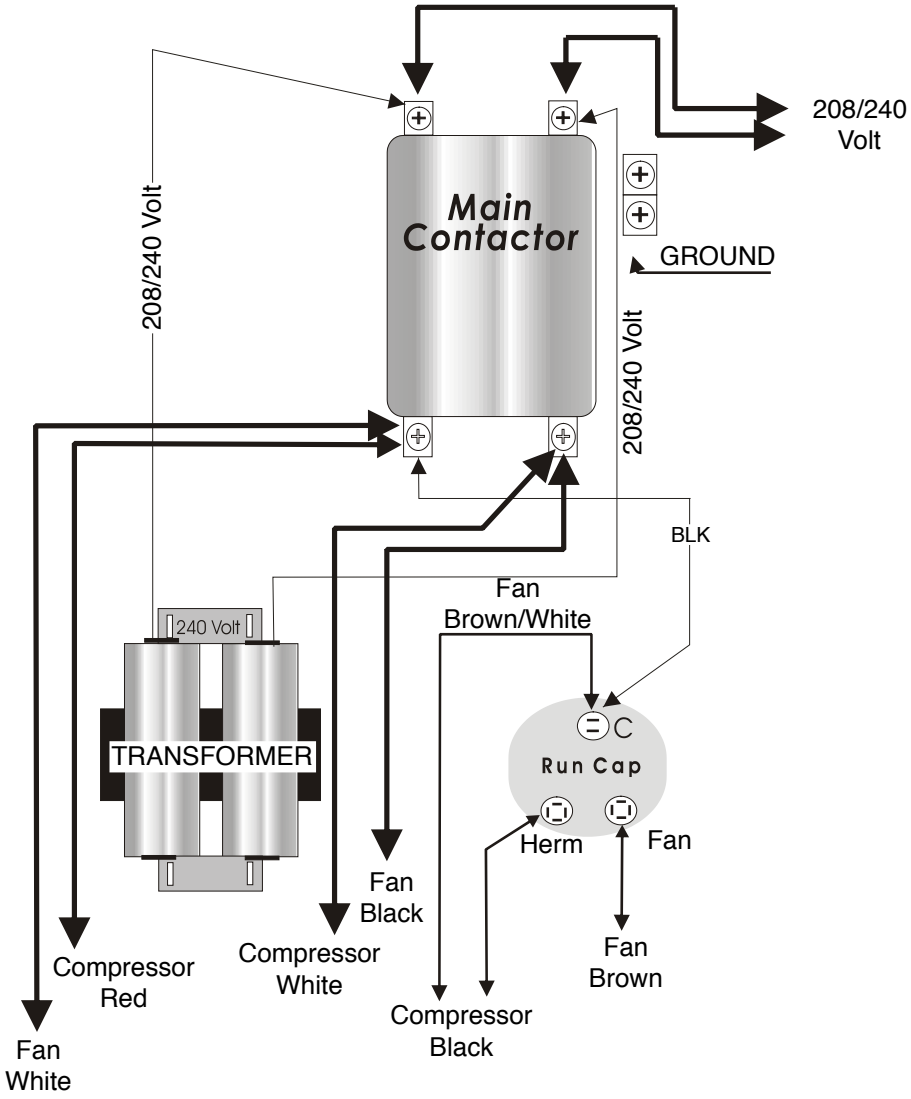
Unit Bonding- Unit must be bonded to the pool equipment or a 6 ft. copper rod. A bonding lug is provided on the bottom right side of the unit. Failure to bond the unit could damage the units heat exchanger and void the warranty.

Flexible Conduit- When codes allow, use flexible conduit at or near the unit for easy service access.

Unit disconnect, breaker or fuse- Per code, a unit disconnect must be in line of sight of the unit.

Note- Shut off main power before removing the units electrical access panel!

ELECTRICAL DIAGRAM

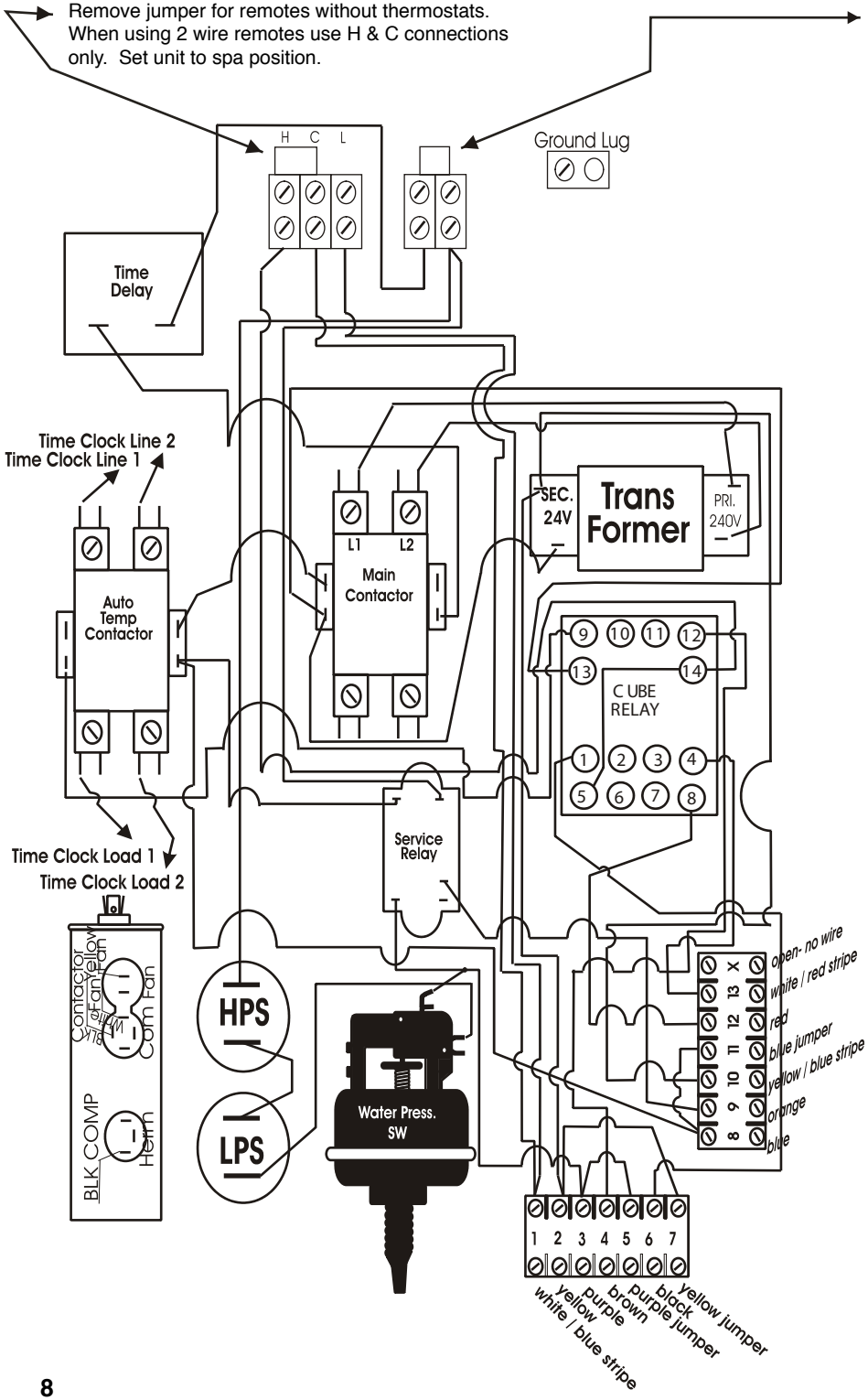


RISK OF ELECTRICAL SHOCK OR ELECTROCUTION

The electrical supply to this product must be installed by a licensed or certified electrician in accordance with the National Electrical Code and applicable local codes and ordinances. Improper installation will create an electrical hazard, which could result in serious injury or death to pool or spa users, installers, or others due to electrical shock, and may also cause damage to property. Read and follow the specific instructions inside this manual.

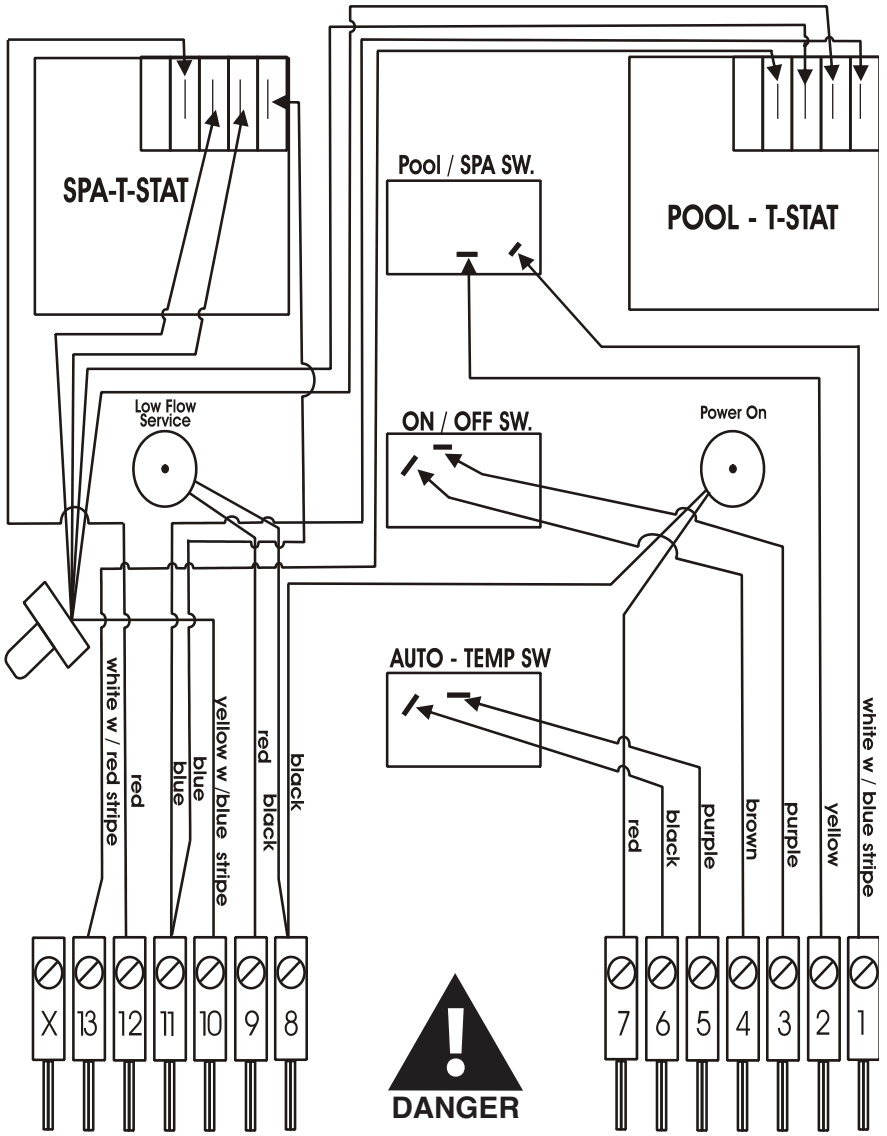
DANGER

Remove jumper for remotes without thermostats.
When using 2 wire remotes use H & C connections only. Set unit to spa position.



Remove jumper for remotes without thermostats.
Make sure pool heater's thermostats are at maximum setting.

KEI Control Panel Diagram #1



RISK OF ELECTRICAL SHOCK OR ELECTROCUTION

The electrical supply to this product must be installed by a licensed or certified electrician in accordance with the National Electrical Code and applicable local codes and ordinances. Improper installation will create an electrical hazard, which could result in serious injury or death to pool or spa users, installers, or others due to electrical shock, and may also cause damage to property. Read and follow the specific instructions inside this manual.

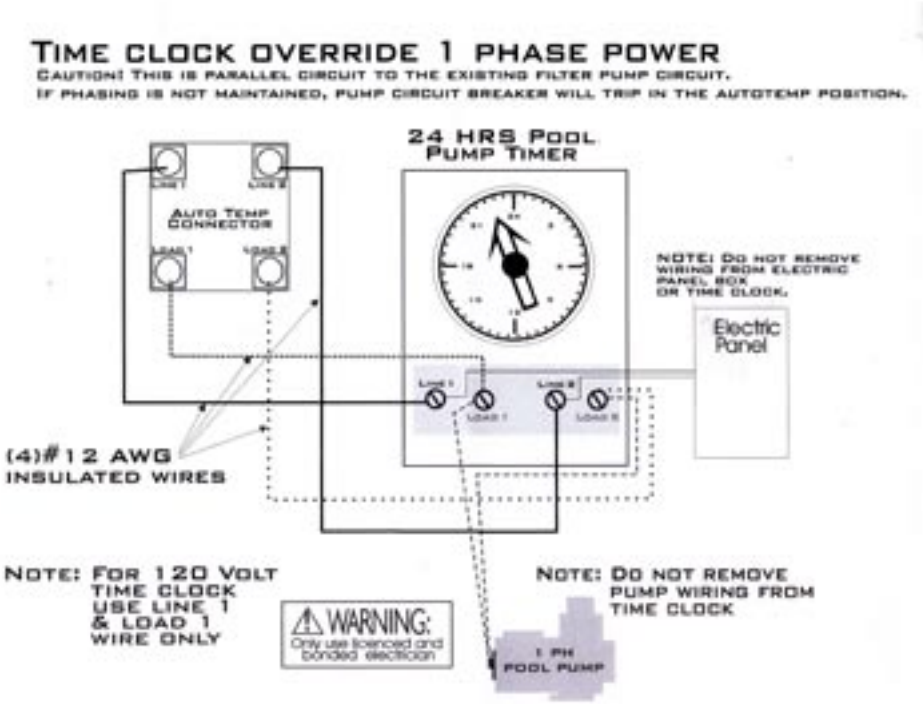
AUTO TEMP FEATURE

(Pool Mode Only)

The Auto Temp feature is standard in all Kopec Enterprises, Inc. pool heater models. To activate this feature additional installation by an electrician is required. Electrical installation instructions are on page 11 of this manual. An additional copy of the instructions for the electrician can be found behind the control panel in the component pocket of the heater.

In the Time Clock mode your heater will operate only during the water circulating pump time clock run period (normally 6-8 hours a day depending on pump and pool size). When the time clock run period ends the pump and heater will turn off and stay off until the time clock and pump comes on again the next day. During the off period it is common for the Low Water/ Trouble light to be on if the water drops below the desired temperature setting. This is an indication the unit wants to turn on but will not until the water pump turns on via the time clock period.

In the Auto Temp mode your heater will override the time clock setting, turn on the water pump and operate whenever the pool temperature drops below the desired setting. The heater will be able to run when it needs to anytime day or night which will insure your desired temperature will be maintained at all times. Auto Temp is a convenient feature for inconsistent swim applications, morning swimming, therapeutic needs and during the cooler months when time clock periods would need to be increased to maintain desired pool temperatures.



DANGER

RISK OF ELECTRICAL SHOCK OR ELECTROCUTION

The electrical supply to this product must be installed by a licensed or certified electrician in accordance with the National Electrical Code and applicable local codes and ordinances. Improper installation will create an electrical hazard, which could result in serious injury or death to pool or spa users, installers, or others due to electrical shock, and may also cause damage to property. Read and follow the specific instructions inside this manual.

TITAN 700TI

Digital Control Operator Instructions

When the unit is powered on the digital controller will display the current water temperature flowing through the unit.

To select pool or spa mode: Press the hand button to select pool or spa position.

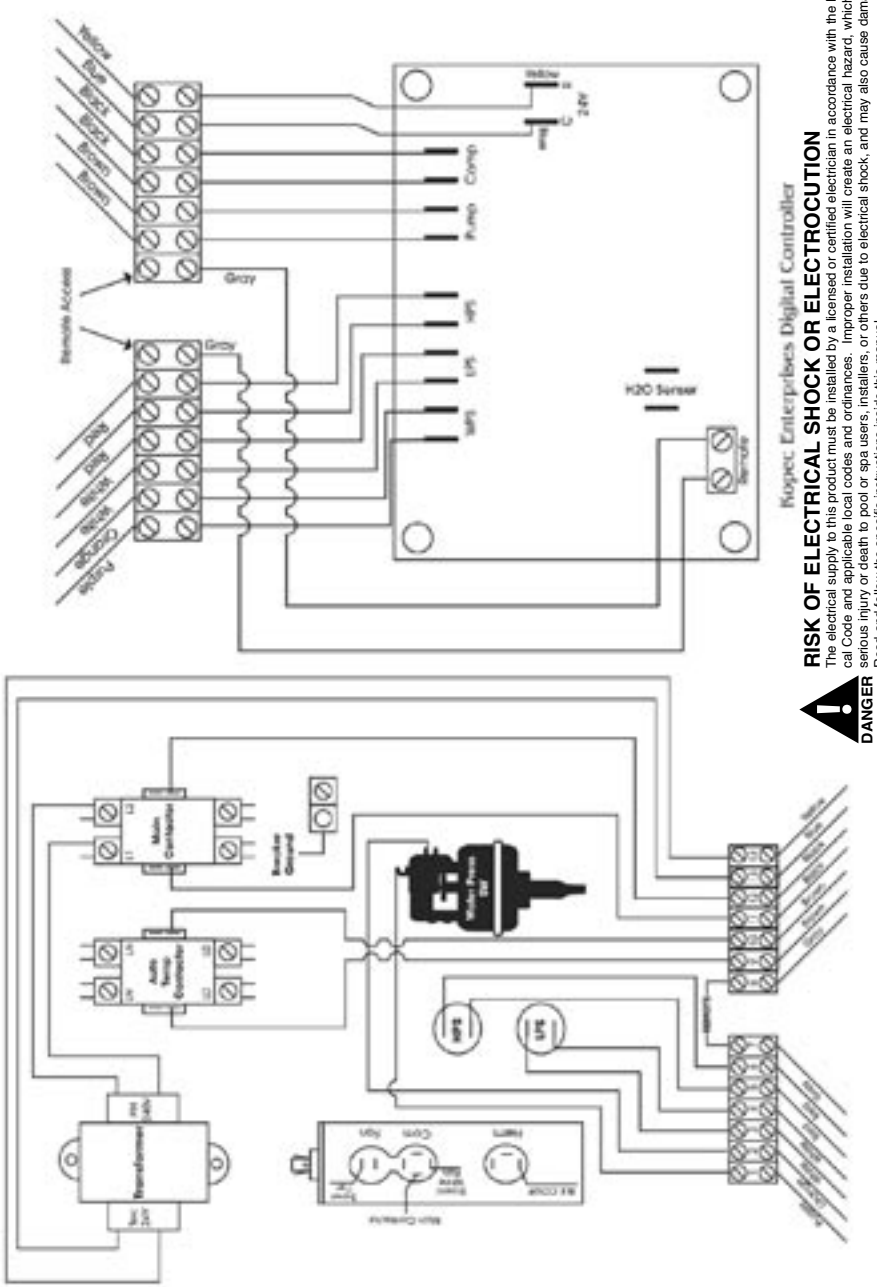
To adjust water temperature: Press the up and down arrows to change to the desired water temperature setting.

There will be up to a 10 minute time delay before the unit will turn on.

To lock digital control access: Press and hold the hand button for 5 seconds to lock or unlock digital control access.

To activate “Auto Temp” feature: Press and hold the hand button and the up arrow to enable or disable the Auto Temp feature.

Remote Control: For remote control interfacing press and hold the hand button and the down arrow to access the remote control menu. Press the up or down arrow to select the desired remote control option. For remotes WITHOUT thermostats select the pool/spa option. For remotes WITH thermostats select the T-stat option.



RISK OF ELECTRICAL SHOCK OR ELECTROCUTION

The electrical supply to this product must be installed by a licensed or certified electrician in accordance with the National Electrical Code and applicable local codes and ordinances. Improper installation will create an electrical hazard, which could result in serious injury or death to pool or spa users, installers, or others due to electrical shock, and may also cause damage to property. Read and follow the specific instructions inside this manual.

DANGER

HOW TO OPERATE YOUR POOL HEATER
(Analog Models Only)

Once the plumbing and electrical installations are complete, you're now ready to turn on your pool heater. But first, here are some tips before starting your unit.

Water Flow- This is critical to the efficient operation of your unit, (see troubleshooting).

Make sure your filter is clean and your circulating pump is on before starting your unit.

Also, confirm all plumbing valves are adjusted to allow maximum water flow to the unit. **(DO NOT bypass any water away from unit unless your circulating pump is oversized.)**

Turn off any waterfalls or fountains to improve heating time.

Scroll Compressors- It is not uncommon for units equipped with scroll compressors to require 2-3 initial start-up attempts after sitting for extended periods without operating.

Time Delay- There is a built in 5-10- minute start-up time delay to protect the compressor from short cycling under unequilized refrigerant conditions.
Dual Thermostats- Your unit is equipped with two thermostats for convenient pool/spa temperature settings.

How to set the pool/spa temperature (analog model only) Purchase an inexpensive floating thermometer and place in your pool. Locate pool thermostat control knob (knob on left) and turn to the maximum setting (clockwise). In 5-10- minutes, the unit will turn on and begin heating. Monitor the water temperature as it increases. Depending on the temperature of the pool at start-up, heat up time could take as much as 24-48 hours. Once the pool has reached your desired temperature, slowly turn the temperature control knob counter clockwise, (down) until the unit shuts off. The temperature is now set. Repeat steps for spa temperature setting.

Tip- The unit will automatically maintain your desired temperature, providing your circulating pump is running via your pool time clock. Circulating pump operation time may need to be increased on the time clock, depending on outside temperature conditions or desired water temperature.

FEATURES AND FUNCTIONS
(Analog Models Only)

Pool/Spa switch- This switch, located between the temperature knobs allows you to easily switch from pool to spa temperature settings without re-adjusting control knobs.

Tip- When switching from one mode to the other, always turn the plumbing valves to the correct position. For ex: when in pool thermostat mode, plumbing valves need to be adjusted so water is coming from and going to the pool.

Convenient on/off switch- This switch simply turns off the unit, eliminating the need to turn down the temperature setting or shutting off your breaker.

Tip-This feature should be used only when the unit will be off for extended periods of time, such as vacation or during the summer.

Power On Light- This green light indicates there is power to the unit.

Trouble/Service Light- This red light indicates low or no water flow or a low voltage electrical problem. Make sure your filter is clean and your circulating pump is on. If you have confirmed you have good water flow, call for service.

Tip- In temperatures below 45 degrees, the unit will shut down to protect the Compressor. If this happens, the red light will come on. The unit will start automatically when temperature increases near 50 degrees and the red light will go out. Do not call for service under these conditions. Allow enough time for the outside temperature to increase.

UNIT PROTECTION

It is your responsibility to maintain the correct chemical balance in your pool and spa water. Improper or inconsistent chemical maintenance could cause damage to your pool/spa equipment, pool surface or lining, pool heater and also could be harmful to your health. Here are a few tips to avoid these problems.

Install any chlorinating devise down stream of heater with a check valve and plumbing loop between the heater and the chlorinator.

DO NOT inject chlorine gas into your pool or spa.
DO NOT use floating chlorine tablet feeders.
DO NOT put solid chlorine tablets in the skimmer.

Maintain a consistent, chemically - balanced pool. Depriving a pool of chemicals, then “shocking” it with heavy chemicals is an incorrect and sometimes damaging practice when performed too often. This is common for homeowners who are out of town for extended periods of time .

If the heat exchanger in the unit is deprived of water for several days, high chlorine gas could cause excessive corrosion. Even if power to the unit is turned off, be sure that water can still circulate through the unit at all times, especially during the summer months when no heat is required.

Make sure your unit is electrically bonded, as described in the electrical section of this manual. This will help prevent electrolysis, which could damage the heat exchanger in your pool heater.

The following are recommended water quality readings. These readings should be maintained at all times to ensure good health while protecting your pool heater .

PH Level	**7.2-7.8**
Total Alkalinity	**80-100 PPM (parts per million)**
Total Dissolved Solids	**below 1200 PPM**
Chlorine Concentration	**(free) 1.0- 2.0 PPM**

Note- Damage due to abusive water chemistry or electrolysis is not covered under warranty. Please have your water checked regularly by a pool professional.

WINTERIZING YOUR POOL HEATER

During a short term freeze, run your circulating pump continuously to prevent damage to your filter, pump and pool heater.

Most Models -

During a long-term hard freeze, disconnect the unions on the heater and remove all the water from the heat exchanger to prevent the pipes from bursting (use a wet/dry vaccuum if needed to remove all water).

Note- Freeze damage is not covered by warranty so please take every precaution during freezing conditions.

UNIT MAINTENANCE

Your Kopec pool heater is basically maintenance free!

Keep the condensation drain fitting free of any leaves or debris.

Hose off any debris that may be in the evaporator fins to ensure good airflow.

Clean plastic cabinet occasionally to maintain the bright shiny color

PERFORMANCE AFFECTING FACTORS

It is very important to understand that heat pump pool heaters are designed to maintain temperature and do not heat quickly. Initial heat up time could be as much as 24-48 hours, because it is necessary to heat the concrete walls in the pool, as well as the water. Once your desired temperature is reached, the heat pump will maintain the temperature, providing the circulating pump run time is adequate, depending on temperature desired, size of pool and outside weather conditions. Listed on the next page are a few factors to consider when evaluating your unit’s performance.

Size of your pool- Most of your heat loss is through the surface area of the pool. The larger the pool, the quicker it will lose temperature.

Wind- Since surface area is the biggest cause of heat loss, the more wind you have across your pool increases your heat loss even more. Normal wind speed is 2-3 mph.

Water temperature maintained- If you want a higher temperature, you'll have to run the unit longer to maintain it. The greater the difference between air temperature and water temperature means more heat loss and longer run time.

Pool cover- Covers reduce the surface heat loss and unit run time, which will reduce operational costs and help temperature maintenance in cooler conditions.

Outside air temperature- The warmer it is, the easier it is to maintain temperature. The unit has more heat to gather from the air and there is less surface heat loss, which greatly reduces run time and operational costs. The cooler it is, the more heat loss, which increases run time requirement.

Waterfalls, Spillways and Fountains- These features increase heat loss. Shut off features to cut down heat loss and improve heater's performance.

How does your Kopec Heat Pump heat your pool?

A heat pump uses a refrigerant technology to gather heat in the outside air and transfers it to your pool water. This technology is used because refrigerant can absorb and transfer heat.

The circulating fan pulls air through the evaporator coil which acts as a heat collector. The very cold liquid refrigerant in the evaporator absorbs the warmth from the outside air, which in turn changes the state of the refrigerant from a liquid to a gas. The refrigerant gas is then drawn into the compressor where it is compressed and increases to a very high temperature.

This extremely hot gas then flows into the heat exchanger, where the heat transfer begins. As the cool pool water flows through the heat exchanger, the hot gas gives up its heat,which increases the water temperature. Once the refrigerant gives up its heat, it returns to a liquid state, then passes through an expansion valve and into the evaporator coil to start the process all over again.

COOLING OPTIONS
(Analog Models Only)

The cooling option enables you to cool your pool in the hot summer months when pool water can become too warm and is no longer refreshing. With a special refrigerant reversing valve along with additional components and wiring the cooling option can be activated with a simple flip of a switch. Depending on your model the cooling BTU's will range from 62,000 81,000. The BTU rating is based on the actual cooling capacity of the compressor in the unit. This rating is different from the heating rating but more than adequate considering it takes less BTU's to cool water than it does to heat.

When the pool temperature remains above you desired setting simply switch to "cool" mode on the heater control panel. Your Kopec pool heater will automatically cool the pool to the desired temperature setting. For cooler pool water turn down the pool thermostat knob towards the blue color on the dial.

Note Cooling option does not operate with the spa thermostat control.*

Note Cooling option is not available in models equipped with digital controls.*

TROUBLESHOOTING
(Analog Models Only)

Your Kopec pool heater is very easy to troubleshoot. 60% of service calls are customer or installation related. You will be charged for a service call if a service person is dispatched and there is nothing wrong with your unit. Please take a few minutes to read through this section to avoid these charges before calling for service. **When calling for service, please have your model and serial number available.**

Note- unauthorized personnel servicing your unit will void your warranty

Unit not starting. Green power light off- Breaker or fuse may be off. Reset or replace. If new installation, the unit may be wired wrong by electrician. If the unit still does not run, call for service.

Unit not starting. Green power light on- Unit could be in time delay mode. Wait full 5 minutes. Remember, do not turn thermostat up and down during the time delay mode. The time delay will reset and start over every time thermostat is adjusted. Check the temperature setting and the temperature of the pool. The pool may be at the desired temperature, therefore will not run. If you're not sure of the water temperature, adjust the thermostat to the maximum setting and wait 5 full minutes. Unit still does not run, call for service.

Unit not starting. Red trouble light on- If outside temperature is below 45 degrees, wait until it warms up to at least 50 degrees. Check water flow. The following causes of low water flow are:

Pump may be off. Adjust time clock so pump will run longer if needed.

Dirty filter or clogged pump basket.

Where applicable, plumbing valves could be turned in the wrong position, which could restrict or prevent water from getting to the heater.

Pool pump could be too small. At least a 1HP pump is suggested for adequate water flow.

TROUBLESHOOTING CONTINUED

If new installation, the unit could be piped backwards. Remember, water IN is on the RIGHT and water OUT is on the LEFT.

Note If your heater is in a pool / spa application, operate the heater in both pool and spa plumbing modes. If the unit runs in one mode and not the other, then it is likely that the problem is in the plumbing and not the heater.

Unit still not starting, call for service.

Unit is running, but not heating If cool air is blowing out of the top of the unit, then the unit is heating. Your circulating pump run time may have to be increased. (See the factors that effect performance section of this manual).

Note Remember that the unit will not run without water and your circulating pump time clock controls the amount of time the pump runs. If this is an initial start up, very cool or high desired temperature condition, you will have to increase your time clock pump-running period accordingly.
If you have considered all operating conditions and reviewed the factors that effect performance section of this manual, then call for service.

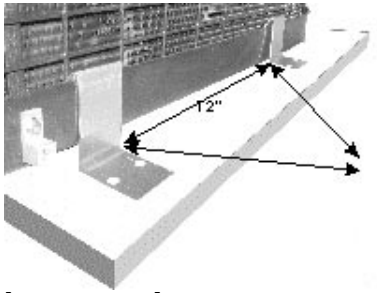
Unit is leaking water The leak is normal condensation or an internal plumbing leak. Shut off unit for at least 2 hours and leave circulating pump on. If leak stops, then it is normal condensation. If the leak continues, call for service.

KOPEC ENTERPRISES HURRICANE BRACKET INSTRUCTIONS

(2) – ¼" x 1 ½" Tapcon Concrete Screws with Gasketed Washers Per Bracket

Drill (2) – 3/16" Pilot Holes 2" Deep

(6) – Hurricane Brackets Part # KEI-0316



Important!
Brackets Must be Installed Every 12 Inches on the Left and Right Side of the Unit.

Kopec Enterprises Inc.

Please NOTE: Installation Instructions in accordance with Florida Building Code 301.13.1 option #3.

GENERAL INFORMATION

Serial #: _____
Model: _____
Date of Purchase: _____
Purchased From: _____
Installed By: _____

Note: A serial # is required when calling for service. Service will not be performed without a serial # or proof of date of purchase.

NOTES:

WARRANTY

The warranty varies depending on the date of purchase, unit model and the geographic location of the unit. Please refer to our web-site for a full description of your units warranty coverage. Kopecheatpumps.net

Kopec Enterprises Inc.
3033-9 NW 25th Avenue
Pompano Beach, Fl 33069
Phone: 954-917-8998 / Fax: 954-917-8994
Toll Free: 866-917-8998
Kopecheatpumps.net


Cool air output
Pool temperature control knob
Pool / spa selector switch
Convenient on / off switch
Spa temperature control knob
"Power on" green indicator light
Status indicator red light
Warm air thru evaporator air coil
Electrical service panel
3/4" Electrical Access
"autotemp" override switch
Serial # label
½" Drain Fitting
Water out 2" union
Water in 2" union
Bonding lug unit must be bonded

Kopec Enterprises Inc.

3033-9 NW 25th Avenue
Pompano Beach, FL 33069
Phone: 954-917-8998 / Fax: 954-917-8994
Toll Free: 866-917-8998
www.kopecheatpumps.net