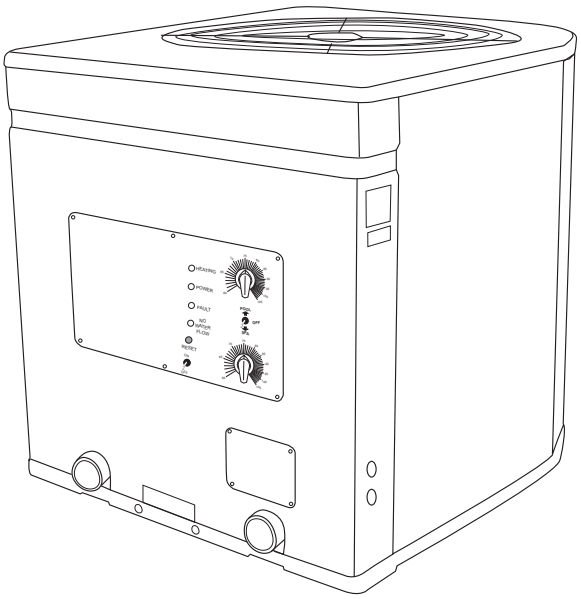
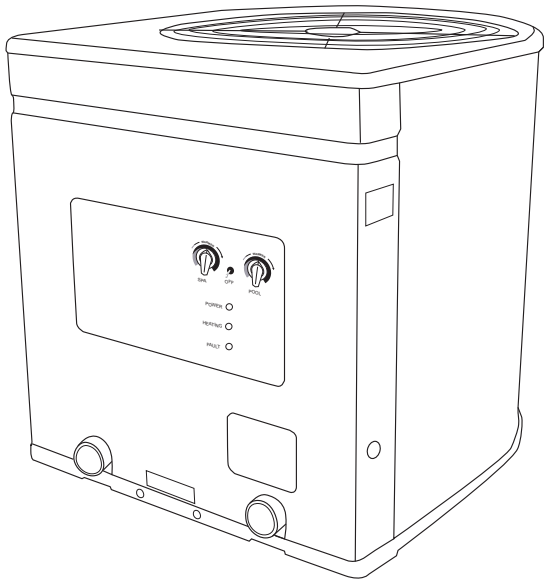
SWIMMING POOL & SPA HEAT PUMPS

INSTALLATION MANUAL



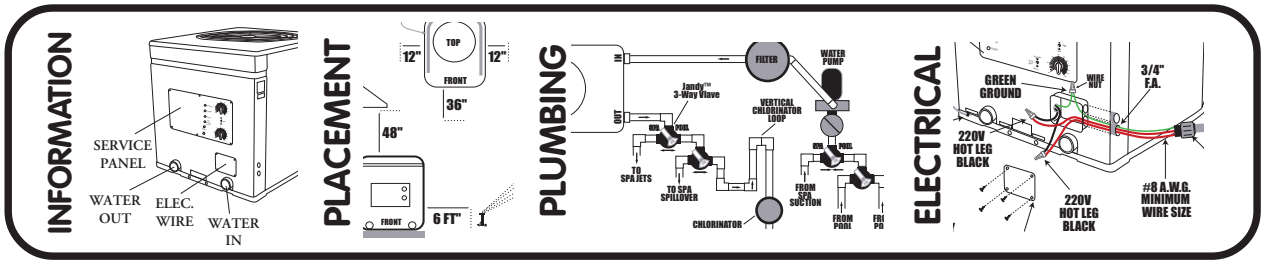


Models 120 & 90

For serial numbers starting with:
Model 120's, 121390 & Up
Model 90's, 900350 & Up

Model AT600

For serial numbers starting with:
600209 & Up



WARNING: Specifications may change without notice. Intended for licensed factory authorized installers only! Users should review separate owners operational manual.

ETL LISTED ETL VERIFIED

PHPMA MEMBER Pool Heat Pump Manufacturers Association

MEMBER NATIONAL POOL & SPA INSTITUTE

WARNING: Specifications may change without notice.

Table of Contents

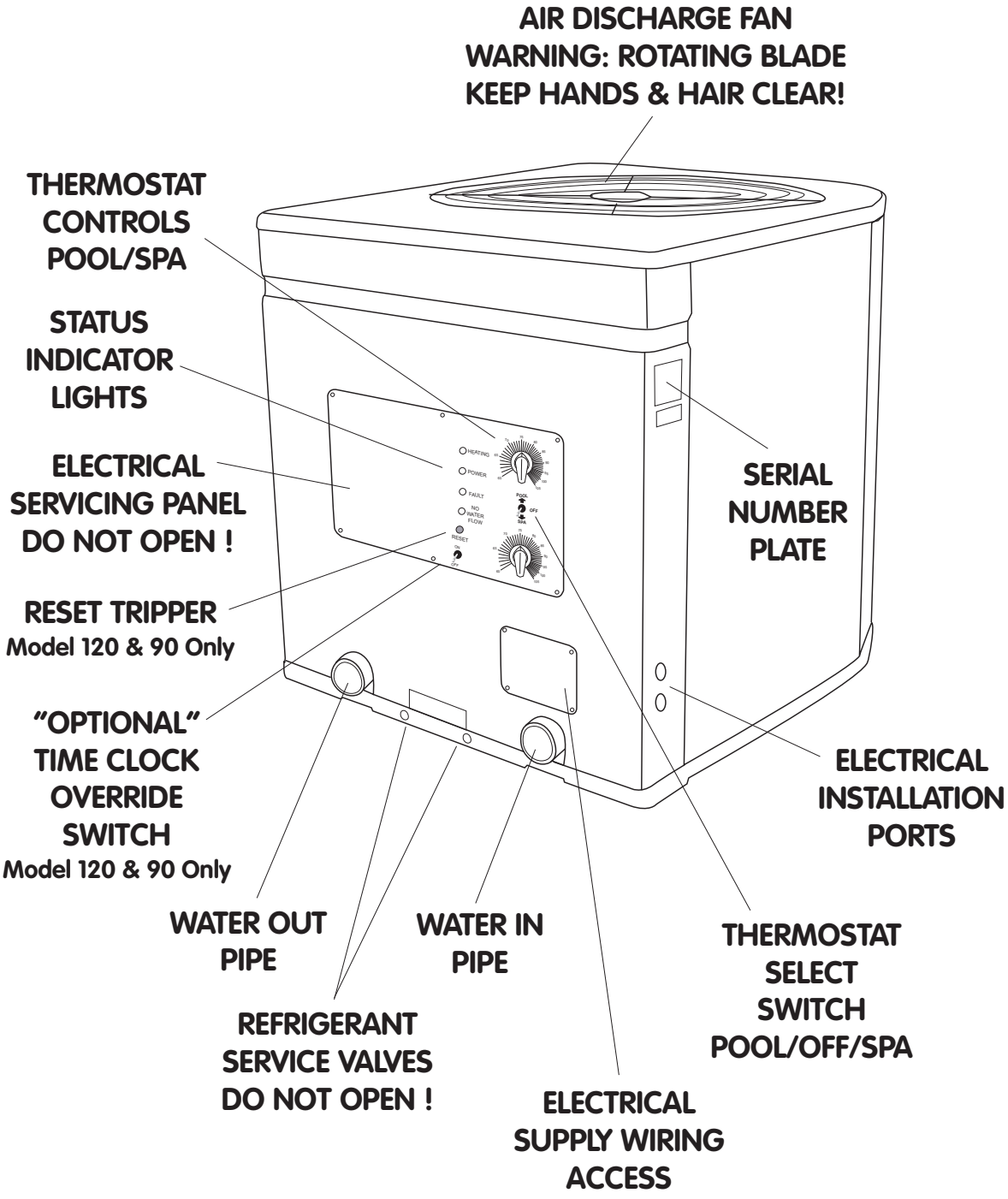
calorex U.S.A. L.L.C.

5826 Corporation Circle Ft. Myers Florida 33905

888-297-3826 • www.calorexusa.com • calorexusa@earthlink.net

Written & Illustrated by Michael Glore

Model 120 & 90 Unit Description

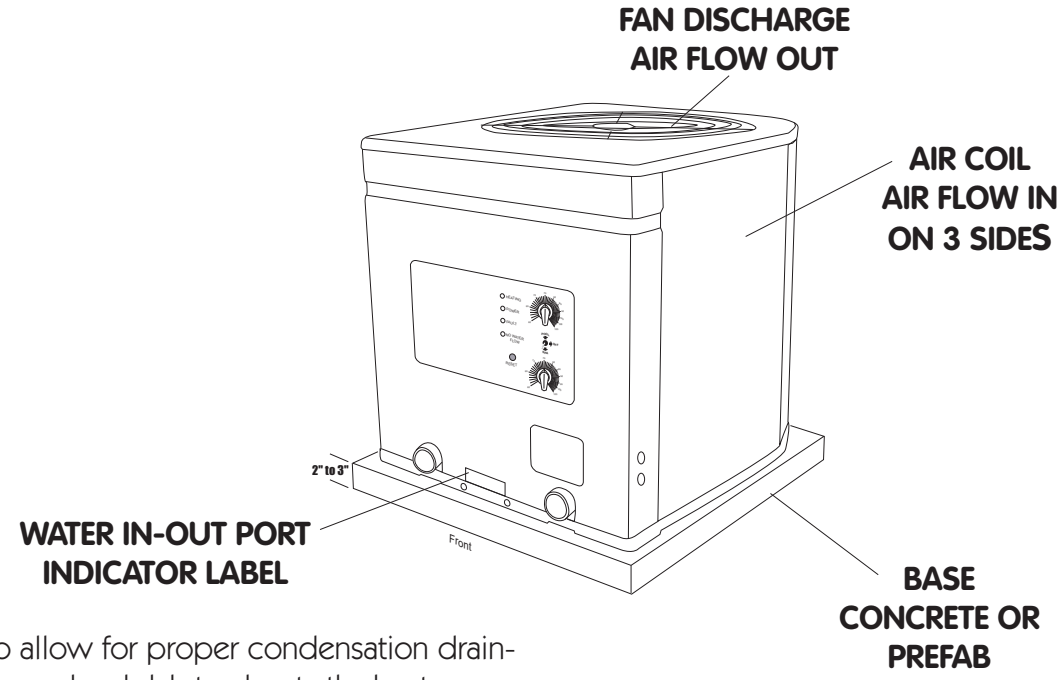


WARNING

DANGER FROM ELECTRICAL SHOCK & ROTATING FAN !
SHUT OFF ALL POWER BEFORE SERVICING !
CAUTION: MORE THAN ONE DISCONNECTION MAY BE REQUIRED TO ELIMINATE ALL POWER TO THIS UNIT INCLUDING POWER TO THE OPTIONAL TIME CLOCK OVERRIDE !

NOTE: The model AT600 has a slightly different control panel configuration.

Heat Pump Placement & Clearances



1. To allow for proper condensation drainage, use a level slab to elevate the heat pump to at least the same height as the pool filter system slab or 2 to 3 inches "minimum" above grade.

2. Allow the minimum air flow clearances on top and the sides as shown here. Make sure the unit can "breathe" well. Do not install indoors or where the discharge air can accumulate and be drawn back through the heater. **Make sure the front is accessible for future service.**

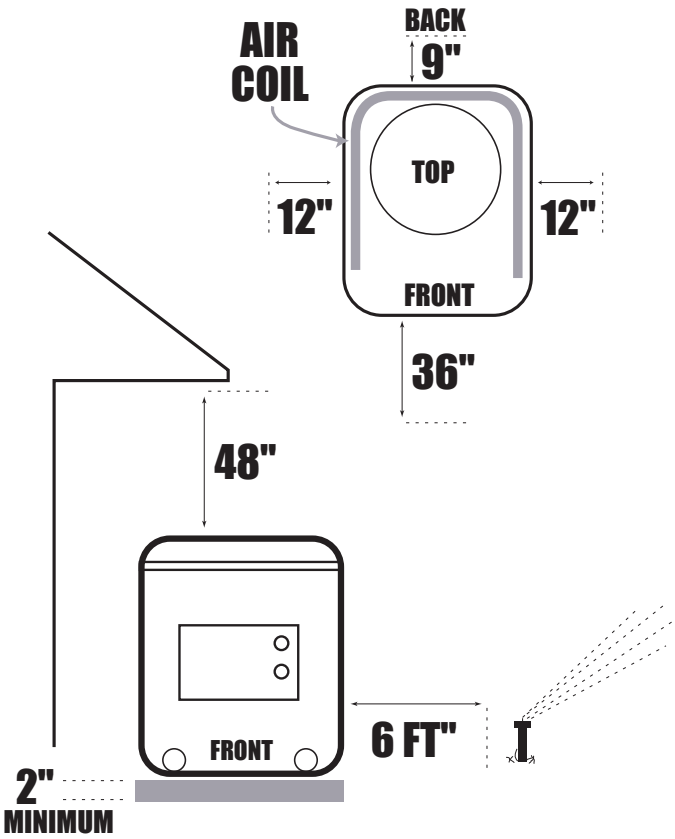
3. Keep sprinkler heads at least 6 feet away from the heat pump. Do not allow the sprinkler to spray the unit in any way to prevent damage.

4. If the unit is installed under a sharp roof pitch or under a roof valley without a gutter, a gutter or diverter should be fitted to prevent excessive water from rushing through the unit.

5. Keep all plants and shrubs trimmed away from the heater to the minimum clearances shown here to prevent air coil damage.

6. If the heater is installed above or below the pool water level by more than 3 feet you may require an external water flow switch. See the bottom of page 7 for more information.

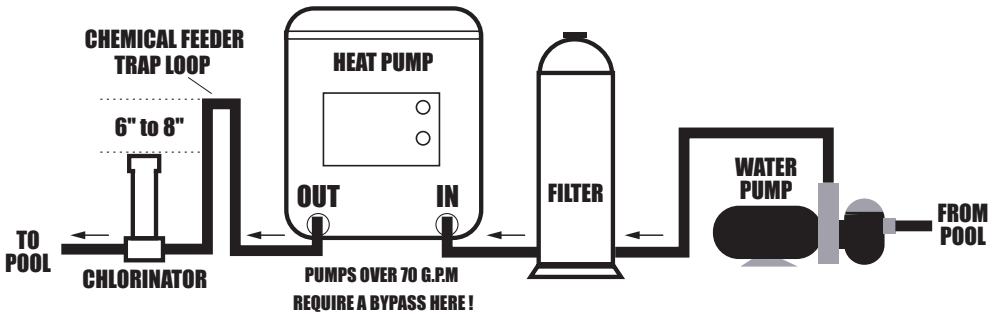
Minimum Air Flow & Access Clearances



Plumbing & Water Connections

For a simple pool only or spa only, install the plumbing piping as shown:
Connections from factory are 2" pipe slip.
Water **IN** on the **RIGHT**, Water **OUT** on the **LEFT,**
PLUMB AFTER the **FILTER** & **BEFORE** any **CHLORINATORS** or **CHEMICAL FEEDERS**

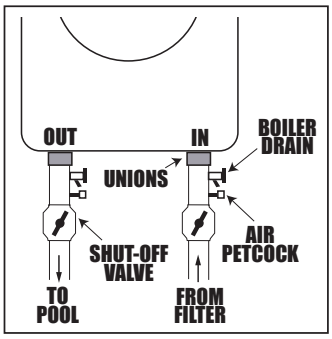
See page 6 for pool/spa plumbing diagrams.



Be sure to install a **CHEMICAL TRAP LOOP** at least 6 to 8 inches above the chlorinator/feeder top to prevent chlorine backup into the heater when the water pump is off. All chemical feeders should be installed **DOWN LINE** of the heater. All feeders should be installed at the **same or below the heater piping elevation** to prevent chemical back up into the heater.
DO NOT : Install the heater down stream from any chemical feeders.
DO NOT : Allow chemical feeders on the suction side of the water pump.
DO NOT : Allow any chemicals or chlorine to be fed through the skimmer.
DO NOT : Allow the pool water pH to go below 7.4. DO NOT allow the alkalinity to go below 90 p.p.m. DO NOT allow the chlorine to go above 5 p.p.m. for extended periods. Chemical damage is not covered by and may void warranty.

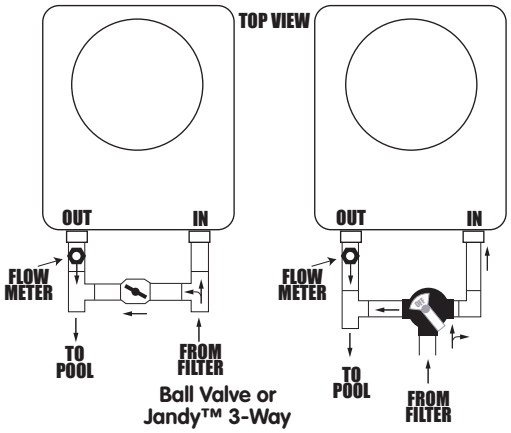
Freezing Condition Plumbing

In areas where extended freezing conditions exist, the heater must be plumbed as shown so it can be winterized. Water left inside the heater will freeze and cause damage. Plumb in a union, shut off valve, a boiler drain and a air petcock valve on the water in and water out lines as shown here. Isolate the heater with the shut off valves and use pressurized air to clear the heat exchanger of all water. In areas where freezing conditions are temporary, the water pump should be set to run 24 hours to prevent freezing. Freeze damage will void warranty.



Bypass for Flow Rates Over 70 G.P.M.

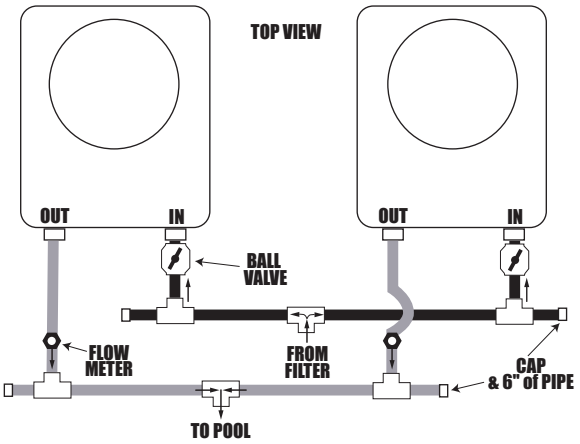
Typically the automatic internal water bypass can handle up to a 1.5 H.P. water pump or 70 G.P.M. If the water pump exceeds 1.5 H.P. then install either of the optional bypasses as shown below.



The installation of a flow meter on the WATER OUT line is suggested. Adjust the bypass to divert a minimum of 40 to 50 G.P. M. through the heater. Flow meters should be installed per the manufacturers instructions.

Multi Unit Water Connections

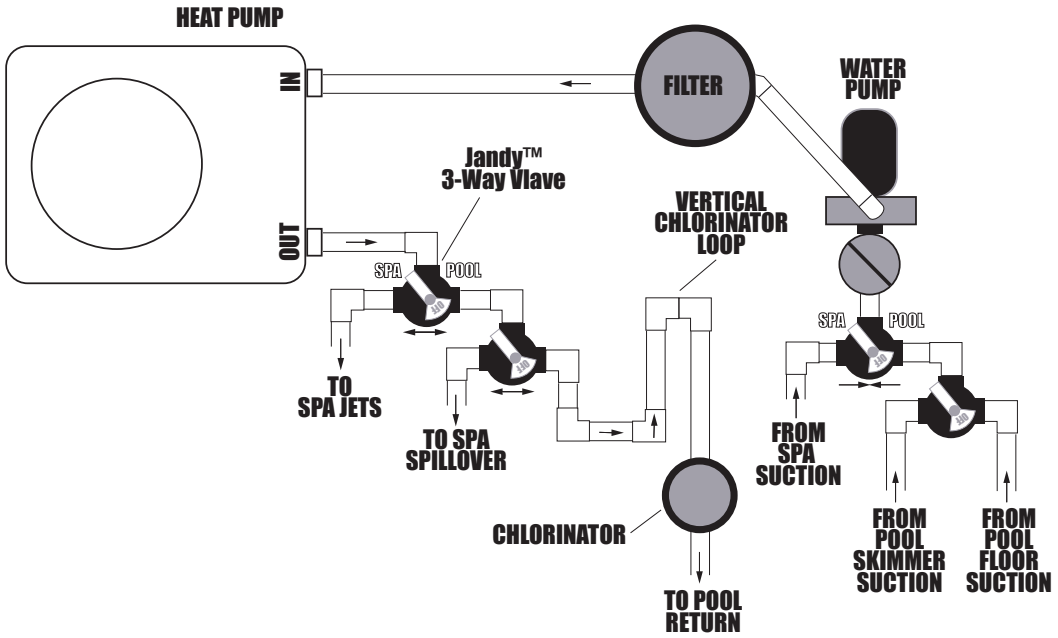
Plumb multiple units as shown below. Use flow meters on each WATER OUT line if two or more units are plumbed together.



Use ball valves to balance the water flow through each unit. Using T's, caps and a minimum 6 inch pipe extension on the plumbing manifold will help equalize the water flow better than 90°'s. Flow meters should be installed per the manufacturers instructions.

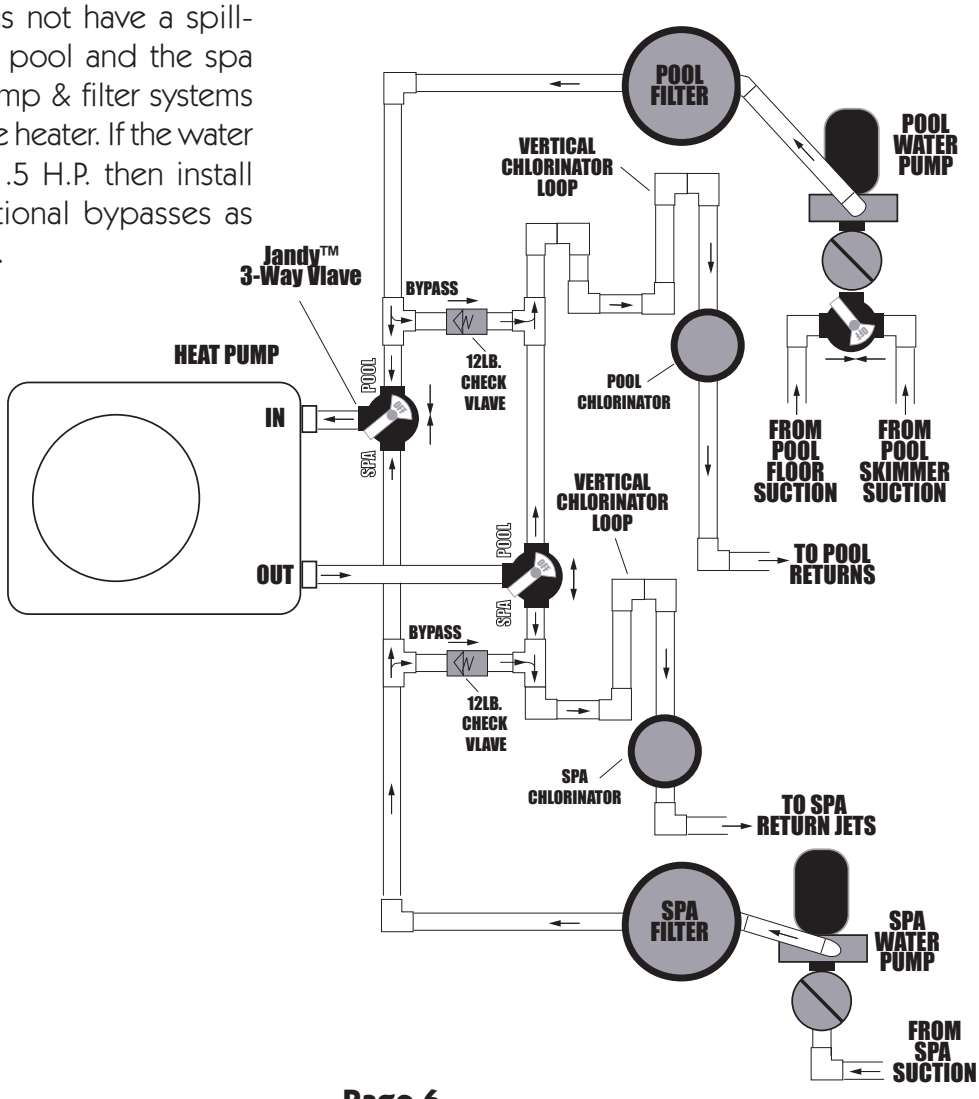
Plumbing & Water Connections for Pool/Spa Combinations

For a connected pool and spa, where the spa has a spill over type waterfall into the pool. Where one pump and one heater is used for either the pool or the spa. If the water pump exceeds 1.5 H.P. then install either of the optional bypasses as shown on page 5.



Plumbing & Water Connections for Separate Pool & Spa

For a separate pool and spa not connected, and does not have a spill-over. Where the pool and the spa have separate pump & filter systems but using the same heater. If the water pump exceeds 1.5 H.P. then install either of the optional bypasses as shown on page 5.



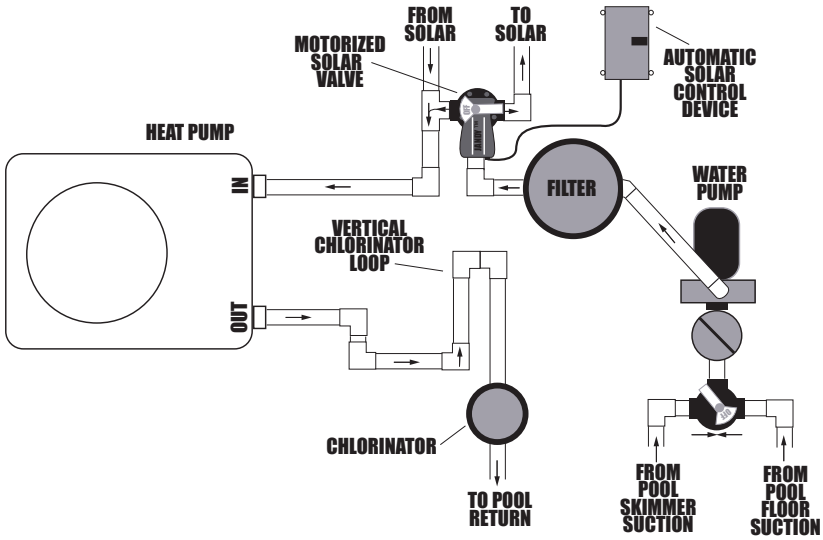
Plumbing & Water Connections with Solar

Plumbing for a system where a solar pool heater is installed. It is strongly advised that an automatic solar control device be used when used with the heat pump.

The heat pump and solar can be operated together. The heat pump will share the heating load with the solar. If there is no heat coming from the solar panels, the solar control device will turn off the solar by rotating the motor valve, otherwise it should be turned off manually. The heat pump will then maintain the pool/spa temperature.

To use the heat pump as a back-up to the solar, set the heat pump thermostat 2 to 4 degrees below the solar's target temperature setting. Therefore, if the solar is not maintaining water temperature, the heat pump will come on to assist the solar. Some thermostat fine tuning may be required by the user.

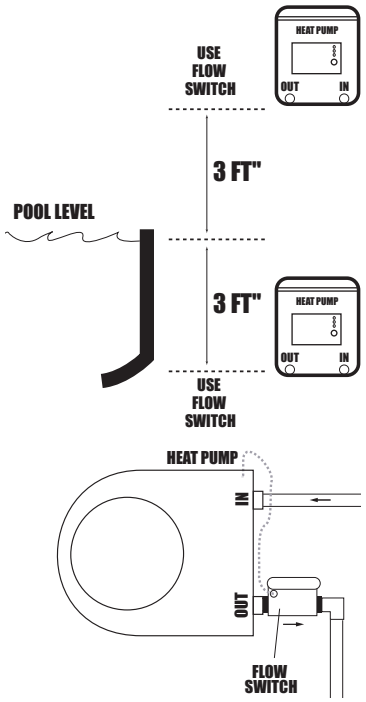
If the water pump exceeds 1.5 H.P. then install either of the optional bypasses as shown on page 5.

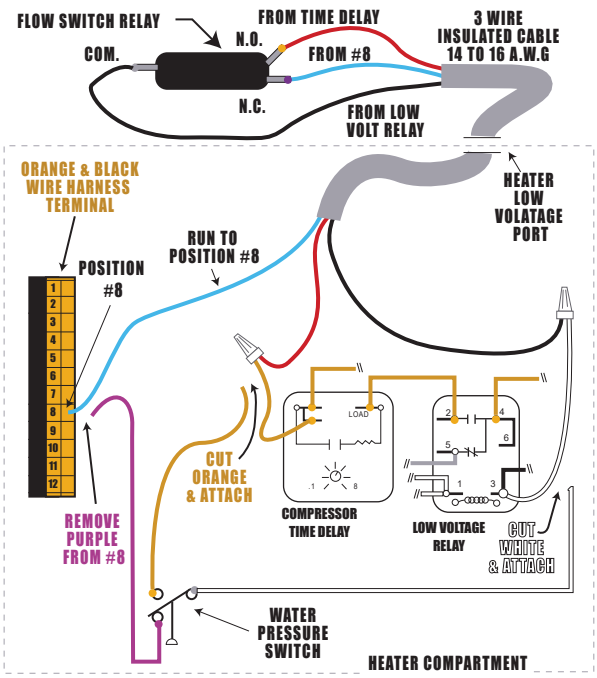


NOTE: If the solar is operated on cloudy days, while raining, at night or at low air temperatures, it may cool the pool or spa. A automatic solar control will shut the solar off when there is no solar activity, otherwise it should be shut off manually during these times.

Plumbing & Water Connections for Above or Below Water Level

If you install the heat pump above or below the pool or spa water level by more than 3 feet, the internal water pressure switch may be effected by the static pressure of the pool water. In some cases it may be necessary to install a water FLOW switch. The water flow switch is not effected by changes in water pressure but only water movement. We suggest installing the Grid Brand Model 25 flow switch and disabling the internal water pressure switch. Plumb in the flow switch as shown here. Then run a THREE wire insulated cable from the flow switch into the heater and attach to the existing water pressure switch leads located behind the large service panel and wire as shown below. **REVIEW PAGE 12 & 13 FOR SIMILAR ACCESS TO LARGE ELECTRICAL SERVICE COMPARTMENT BEFORE CONTINUING. REVIEW UNIT WIRING DIAGRAM ON PAGE 14 & 15 ALSO !**





Electrical Connections & Wiring

The Premium Models 120 & 90 and AT600 require a MINIMUM of #8 A.W.G. copper stranded wire, (or larger if needed.)

You must increase the wire size under low voltage, high amp draw, and/or long-run conditions as required by National Electrical Code.

You must bond the heater external to the pool/spa steel as required by local codes. A bonding lug is located on the bottom left exterior of the unit. **NOTE :** See wiring diagrams on pages 14 & 15. See page 16 for 3 phase wiring diagram.

See page 17 for factory specification listings also.

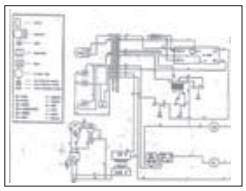
DANGER FROM ELECTRICAL SHOCK & ROTATING FAN ! SHUT OFF ALL POWER BEFORE REMOVING ANY PANELS ! CAUTION: MORE THAN ONE DISCONNECTION MAY BE REQUIRED TO ELIMINATE ALL POWER TO UNIT INCLUDING POWER TO THE OPTIONAL TIME CLOCK OVERRIDE !

BREAKER SIZE RECOMMENDATION
MODEL 120 & AT600: 50 AMPS
MODEL 90: 40 AMPS
MINIMUM WIRE SIZE for ALL MODELS
#8 A.W.G. COPPER STRANDED OR LARGER

TRANSFORMER WIRING CHANGE FOR 208 VOLTAGE
NOTE: If the power supply is 208 and not 220 volts, you must make a simple wiring change to the low voltage side of the transformer. See diagram on transformer.

WARNING ! 3 Phase Compressor Is Rotation Sensitive! Use Refrigerant Gages! Do Not Go By Fan Rotation Since It Will Always Be Single Phase! *SEE PAGE 16 FOR THREE PHASE WIRING DIAGRAM*

SERVICE WIRING DIAGRAM & EXTERNAL CONTROL INSTRUCTIONS



This unit is equipped with a start-up time delay on the compressor only. Whenever the unit is started or restarted, there will be a 5 to 7 minute delay before the compressor will operate.

Wiring for "Optional" Time Clock Override

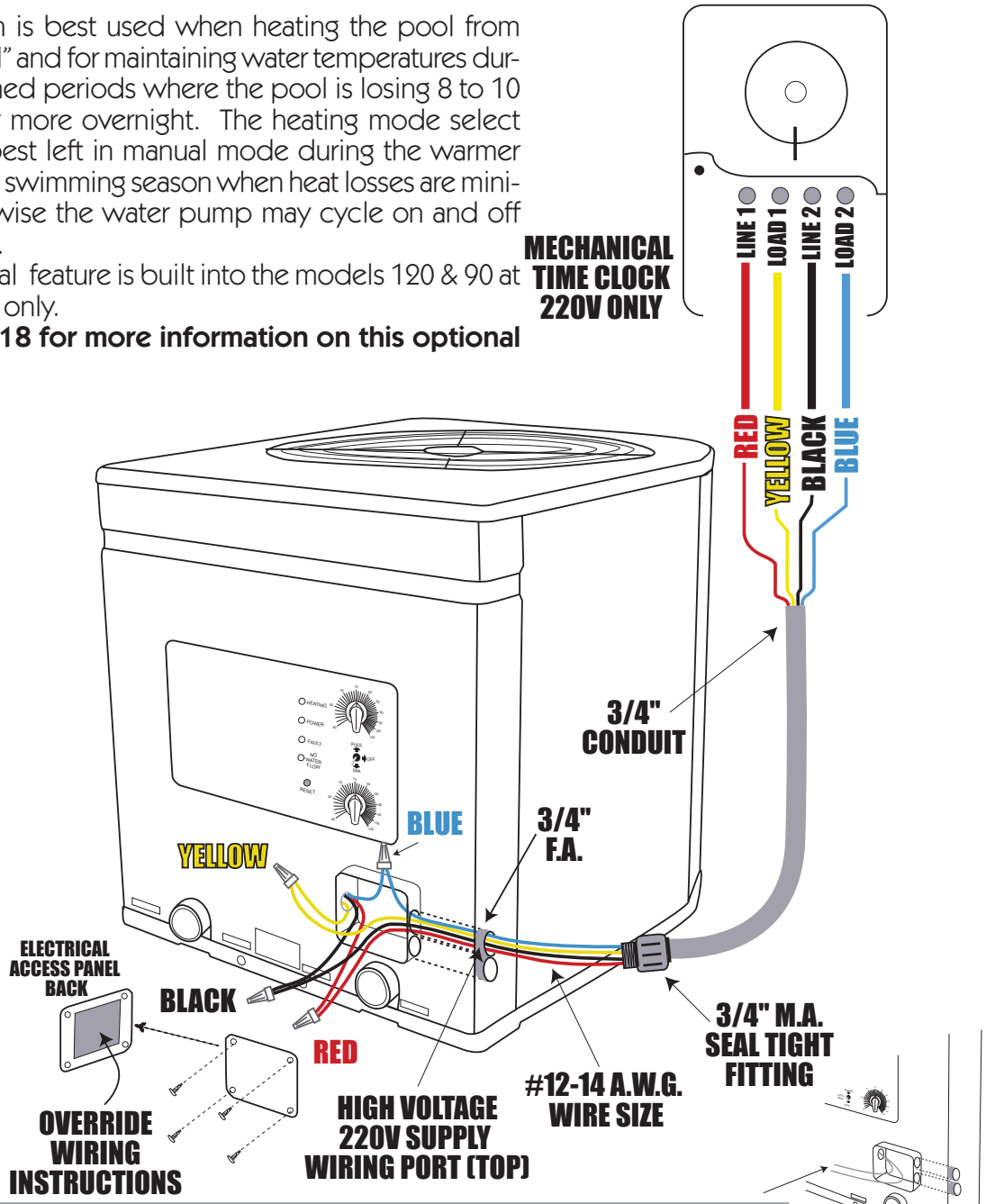
Models 120 & 90 Only

Run 3/4" conduit between the heater and the mechanical water pump time clock. Run Four wires (14 to 12 A.W.G.) of the following colors, Red, Black, Yellow and Blue through the conduit. Attach as shown here:

RED to Time Clock LINE #1
BLACK to Time Clock LINE #2
YELLOW to Time Clock LOAD #1
BLUE to Time Clock LOAD #2
*** WARNING * : Do not cross phase power legs or short will occur and breaker will trip. See model 120 & 90 wiring diagram on page 14 also !**

When the Optional "Time Clock Override" switch is ON, the water pump will turn on every time the heat pumps thermostat calls for heat. The heater will start after the water pump and will heat the water up to the set temperature, then the water pump and heater will turn off. **NOTE:** The water pump will always be on during the time period set on the clock.

This option is best used when heating the pool from "dead cold" and for maintaining water temperatures during non timed periods where the pool is losing 8 to 10 degrees or more overnight. The heating mode select switch is best left in manual mode during the warmer parts of the swimming season when heat losses are minimal, otherwise the water pump may cycle on and off repeatedly.
The optional feature is built into the models 120 & 90 at the factory only.
See page 18 for more information on this optional feature.



NOTE: Some older models prior to 2/15/00 may have two white wires located inside the electrical access panel. If you are using the time clock override, wire nut these two wires together. If this option is not utilized leave the two white wires separated.

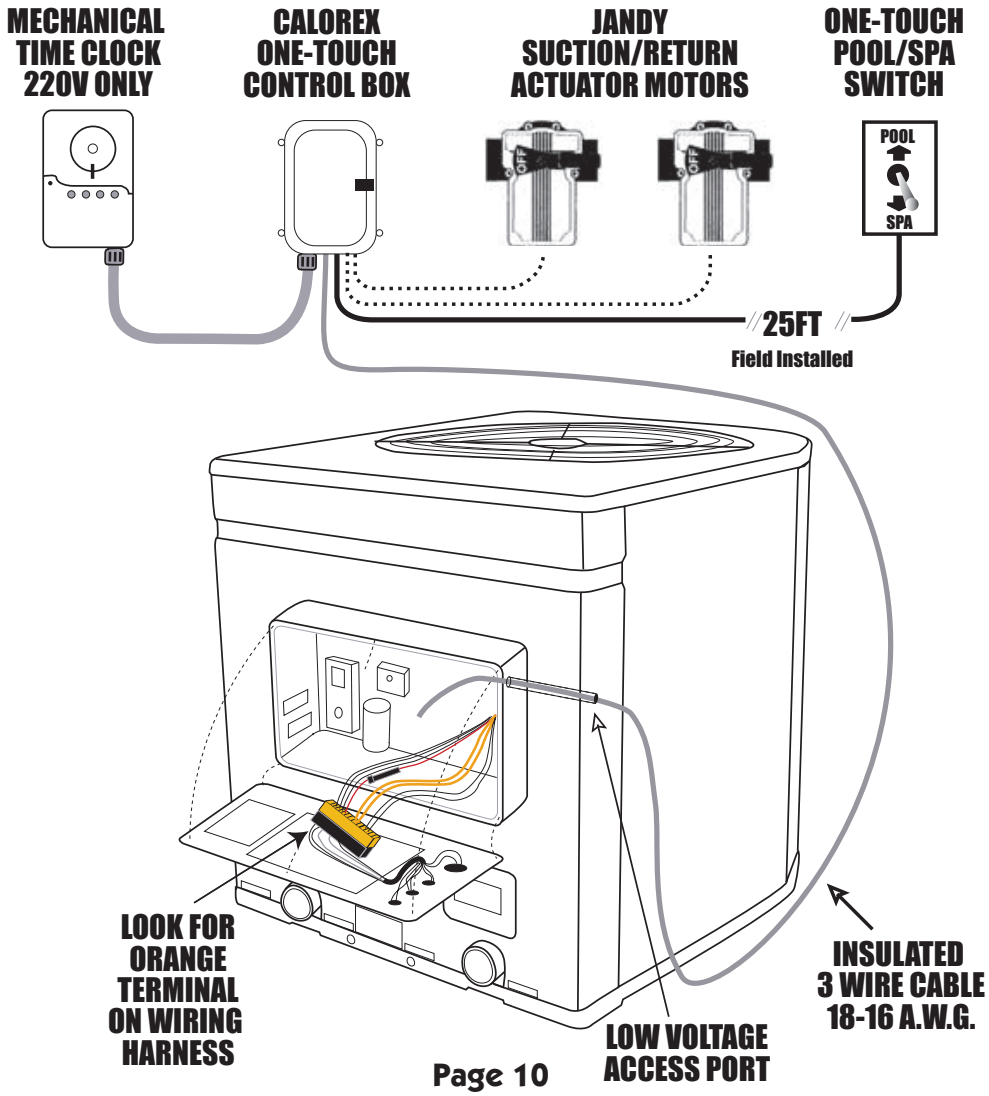
Optional One Touch Pool & Spa Control Wiring

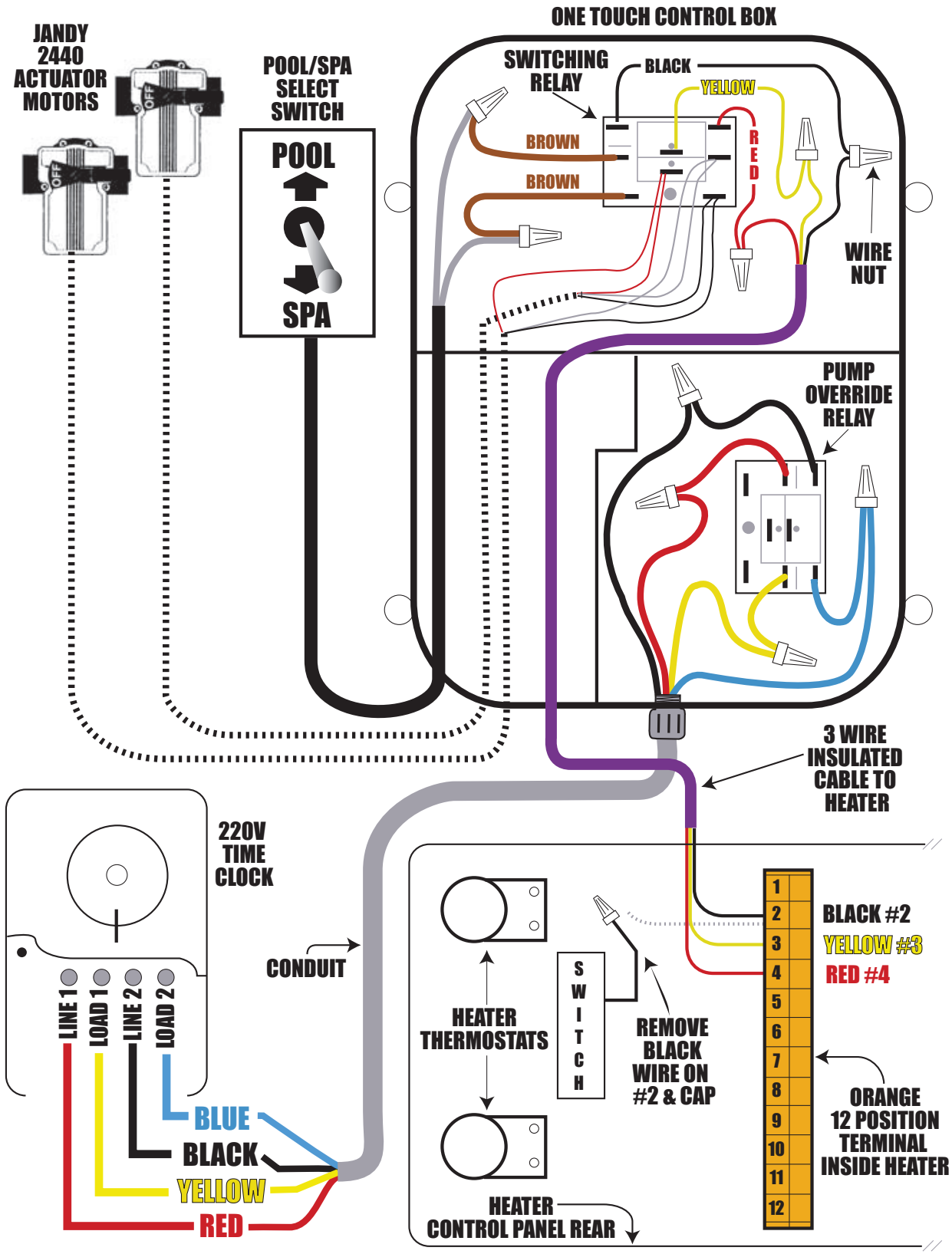
The Model 120, 90 and AT600 can be retrofitted with our simple, automated “one touch” pool/spa combination control. The one touch control will perform the following functions when you switch from pool mode to spa mode: Activate the two included Jandy™ 2440 actuator motors. Activate the spa thermostat. Override the filter pump time clock to start the water pump, keeping it running while in spa mode.

Installation of the one touch control is as follows: Mount the one-touch control box near the water pump timer. Run conduit with four #14 or #12 A.W.G. wires between the time clock and the control. The wiring to water pump time clock is similar to what is shown on page 9. NOTE: For models 120 & 90 only, the optional time clock override (shown on page 9), will have it’s own independent high voltage wires to the time clock as well.

Run a 3 wire insulated cable (18 to 16 A.W.G.) from the control through the heat pumps low voltage access port located on the right side of the heater and wire as shown here. Mount the one touch selector switch in the pool area (must be 6 feet from pool/spa water !). Run your “field installed” insulated switch cable to the control box and wire as shown here. Switch cable up to 25 feet must have a minimum wire size of #16. Increase the switch cable wire size to #14 A.W.G if over 25 feet, at a maximum of 50 feet. **Review wiring diagrams on pages 14 & 15 for the appropriate model number being installed.**

Assuming the plumbing is similar to the schematic on page 6 and Jandy brand 3-way valves are in place, mount the supplied Jandy actuator motors, one on the suction valve and one on the return valve. Label the piping on either side of the motor valves (pool or spa) so the valve position can be identified by the user. The actuator motor wires come already attached to the one touch control, if not, wire them as shown on page 11.





NOTE 1: There are colored wire extensions connected to the relays inside the one touch control for the time clock override and the pool/spa select connections. Wire nut your wire to each accordingly. The Jandy JVA2440 actuator motors come from the factory already attached to the switching relay, if not, attach as shown here. REVIEW WIRING DIAGRAMS ON PAGE 14 & 15 ALSO !

NOTE 2: The heaters pool/off/spa switch will be disabled when the one touch is installed.

NOTE 3: Use a 3 wire insulated cable between the heater and the one touch control box that is a minimum size of 18 to 16 A.W.G. wire.

NOTE 4: An air button type pool/spa select switch can be ordered in place of the toggle type switch as long as there is conduit running to the pool area. Specify when ordering.

Interfacing with:

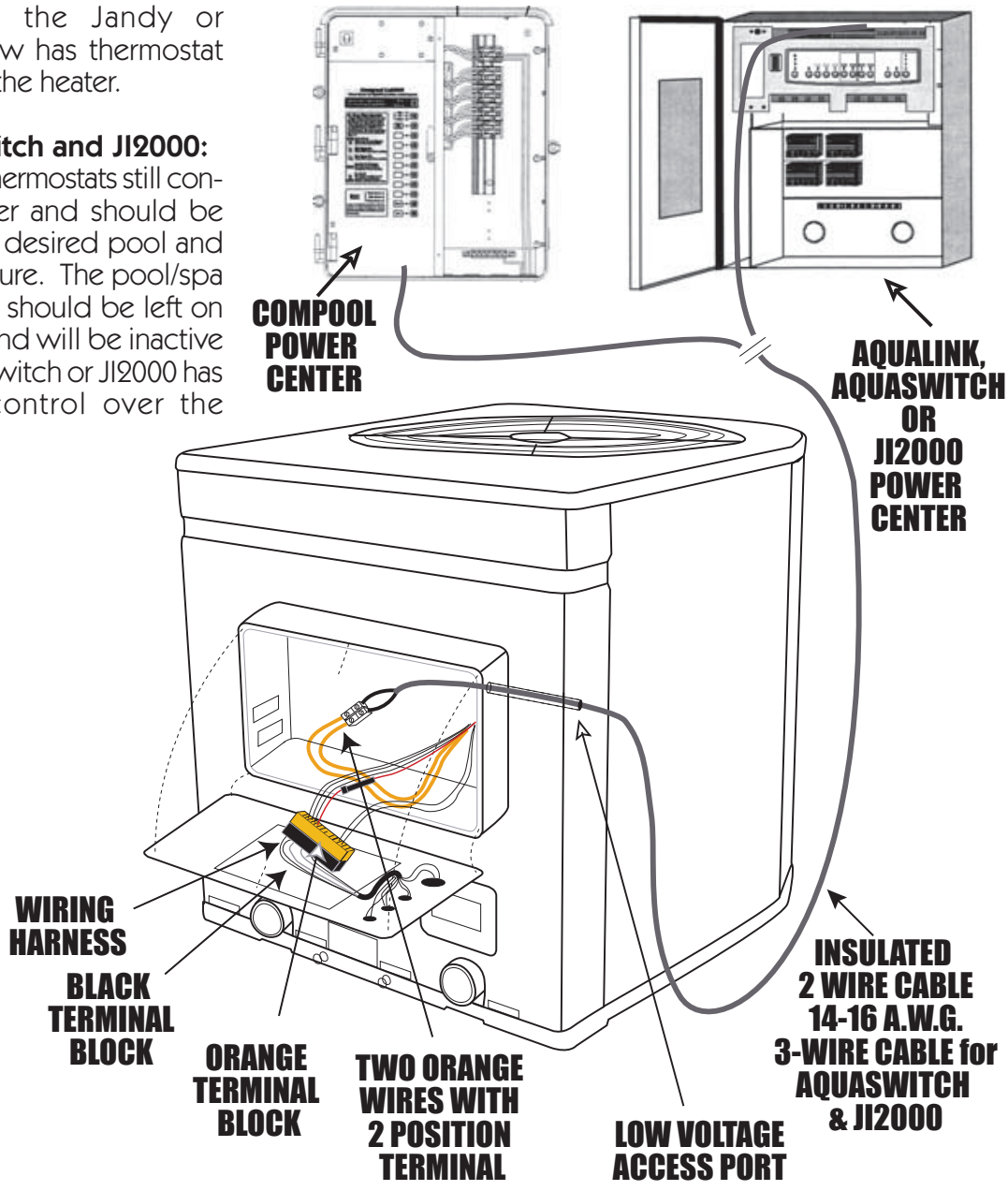
Jandy™ AquaLink RS, AquaSwitch. JI 2000 & Compool™

To interface the heat pump with the Jandy™ AquaLink RS series or Compool, run a 2 wire (16 A.W.G. or larger) insulated cable from the device to the heat pump. If you are using a Jandy AquaSwitch or JI2000 control use a 3 wire cable. Review wiring diagrams on page 14 & 15.

Remove the 6 screws from the heaters front service access panel and open. Look for the wiring harness leading to the back of the service panel where the orange and black terminal bars meet. You will find two orange wires attached to a separate (white) two position terminal. A orange loop wire is on one side of this terminal, it must be removed & discarded. Then, attach the 2 wire cable coming from the AquaLink RS or the Compool control to the 2 position terminal where the orange loop was prior. See Page 13.

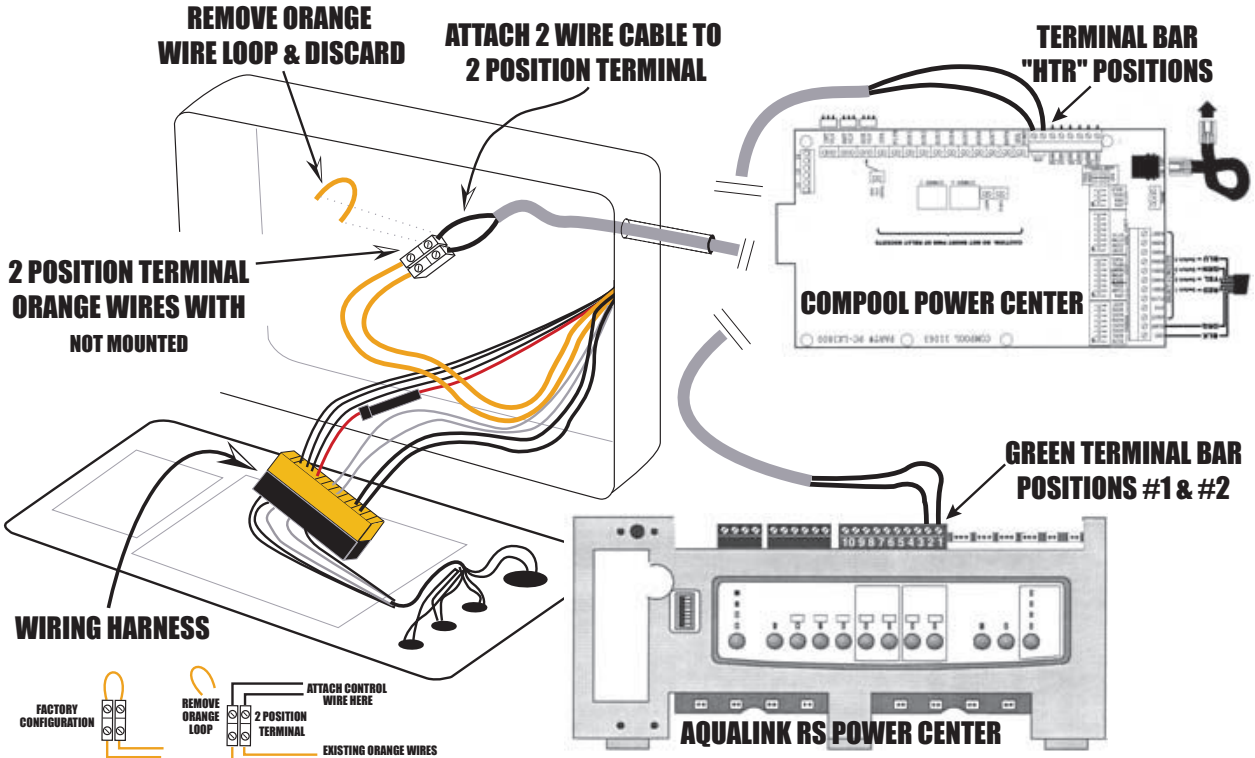
NOTE for AquaLink RS and Compool: Turn both heater thermostats all the way up and set the mode selector switch to pool and do not use the heater controls as the Jandy or Compool now has thermostat control over the heater.

For AquaSwitch and JI2000: The heater's thermostats still control the heater and should be preset to the desired pool and spa temperature. The pool/spa select switch should be left on pool mode and will be inactive as the AquaSwitch or JI2000 has switching control over the heater.



Jandy™ & Compool™ Connections

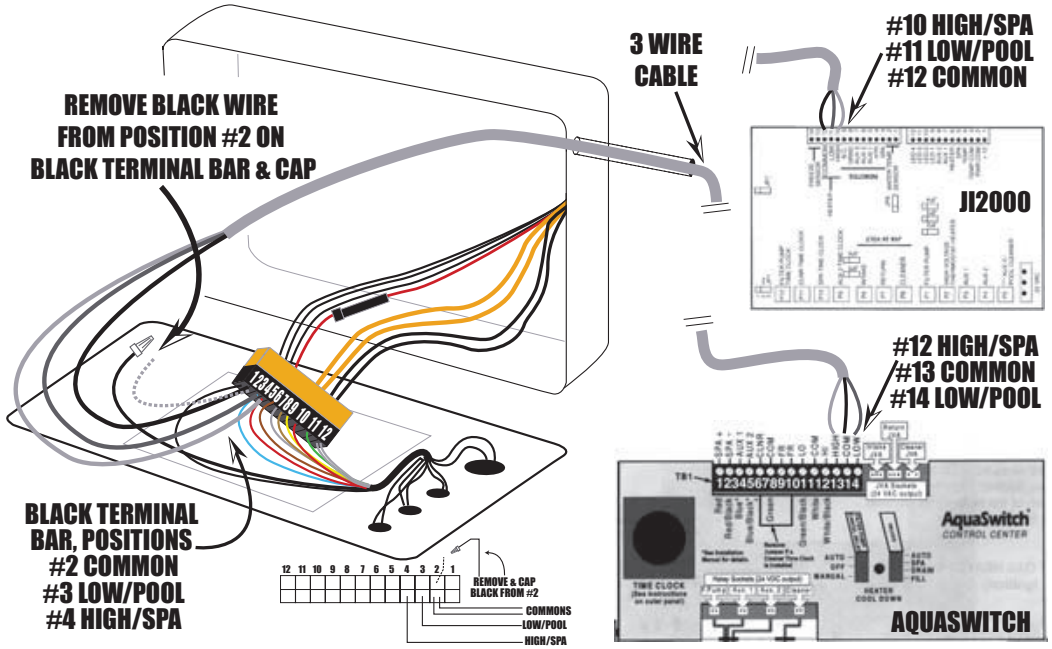
for Compool Attach the 2 wire cable to the Compool's power center board located on the terminals labeled "HTR" *See the controllers installation guide also.



for AquaLink RS Attach the 2 wire cable to positions #1 and position # 2 on the 10 slot, green terminal bar inside the AquaLink's power center. *See the controllers installation guide also.

AQUASWITCH or JI2000

First, remove the black wire located in position # 2 on the black terminal bar and cap. Do not remove any other factory wires that may share the same positions as the 3 wire cable.



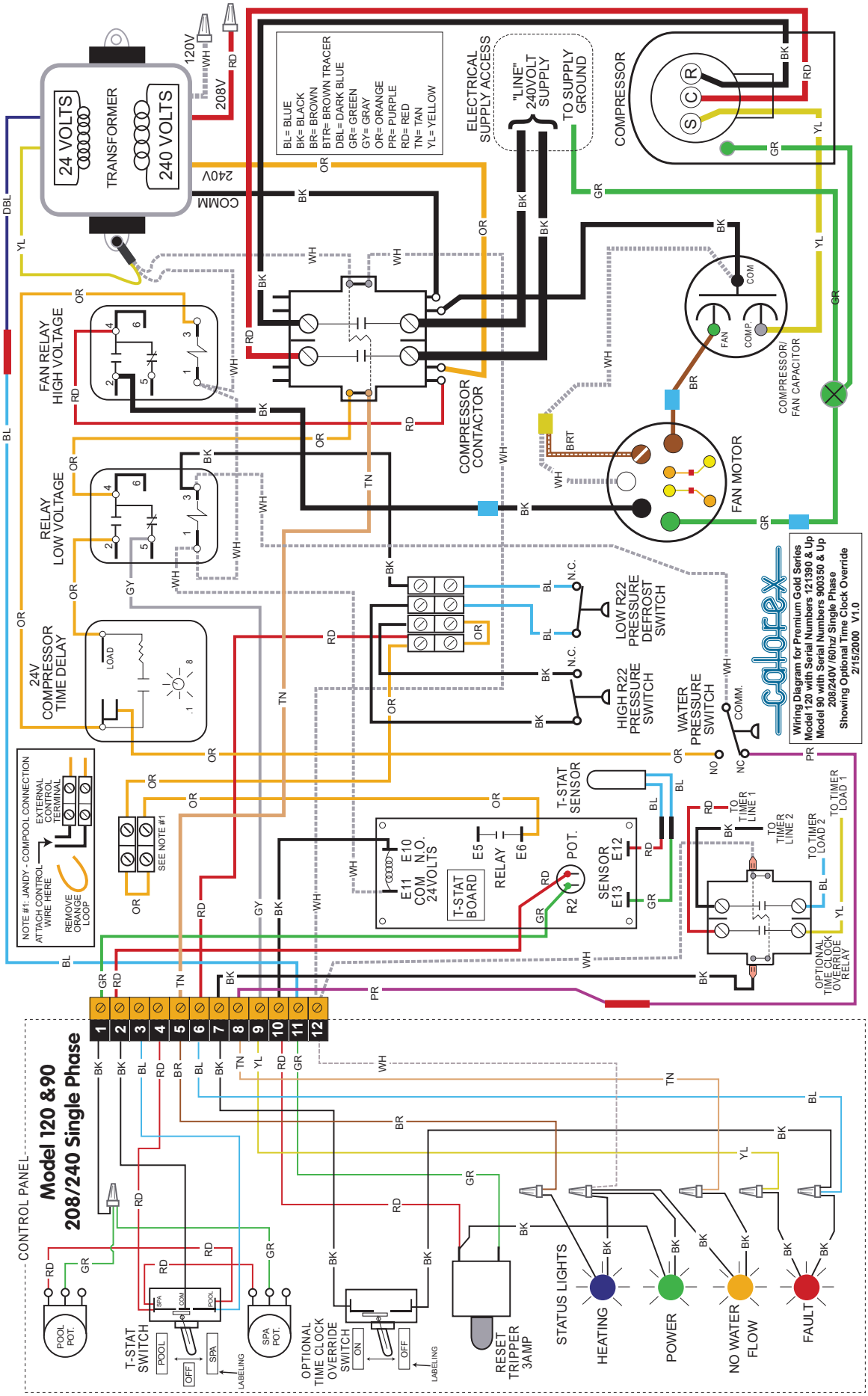
Next, attach the 3 wire cable to the **HEATER** on the black terminal bar as follows:
#2 COMMON
#3 LOW/POOL
#4 HIGH/SPA

Attach the other end of the 3 wire cable to the **JI2000** as follows:
#10 For the HIGH/SPA
#11 For the LOW/POOL
#12 For the COMMON

Attach the other end of the 3 wire cable to the **AquaSwitch** as follows:
#12 For the HIGH/SPA
#13 For the COMMON
#14 For the LOW/POOL

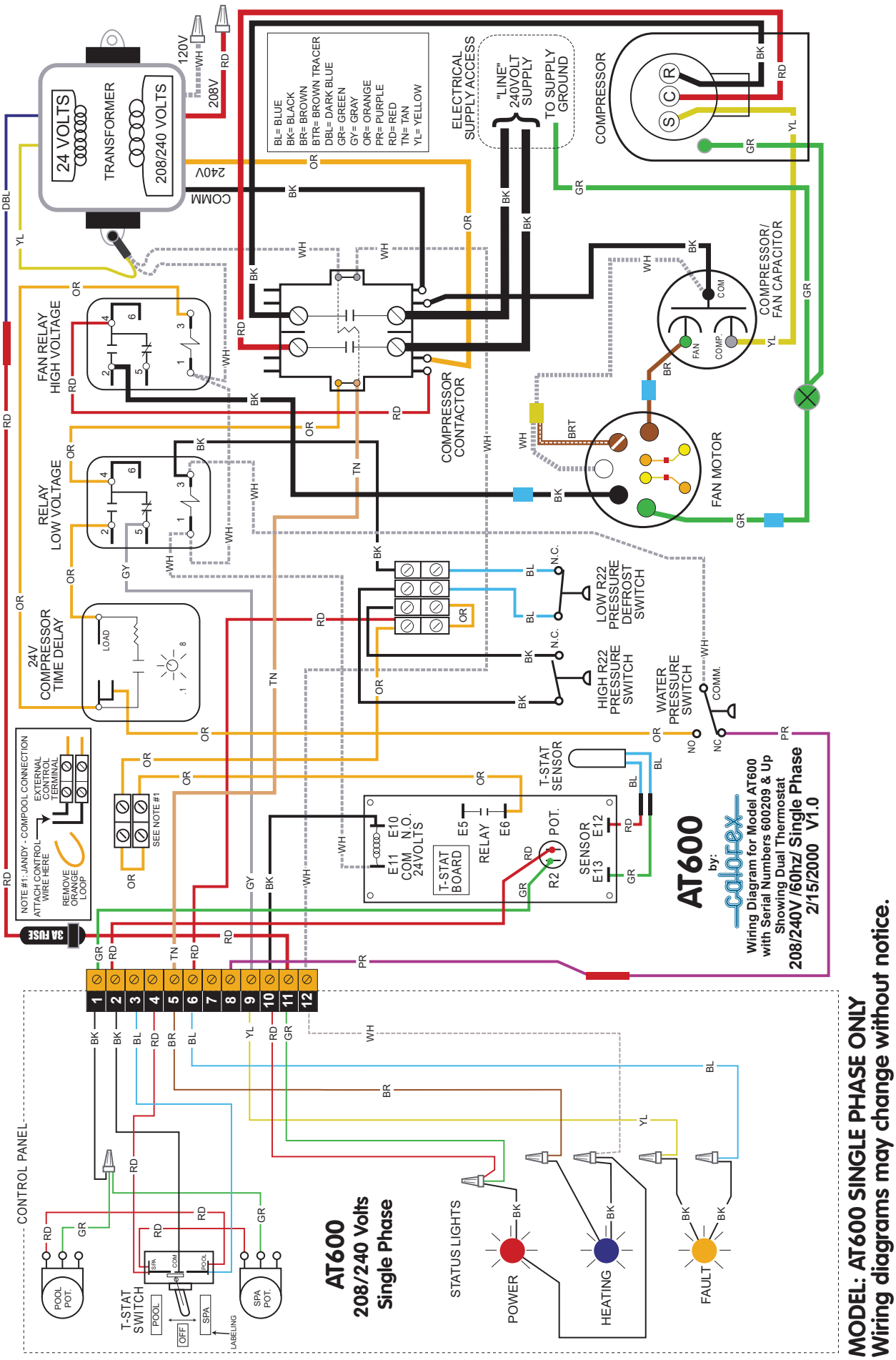
***See the controller's installation guide also.**

Wiring Diagram Models 120 & 90 Only Single Phase 220 Volts
with Optional Time Clock Override



MODELS: 120 & 90 SINGLE PHASE ONLY.
Wiring diagrams may change without notice.

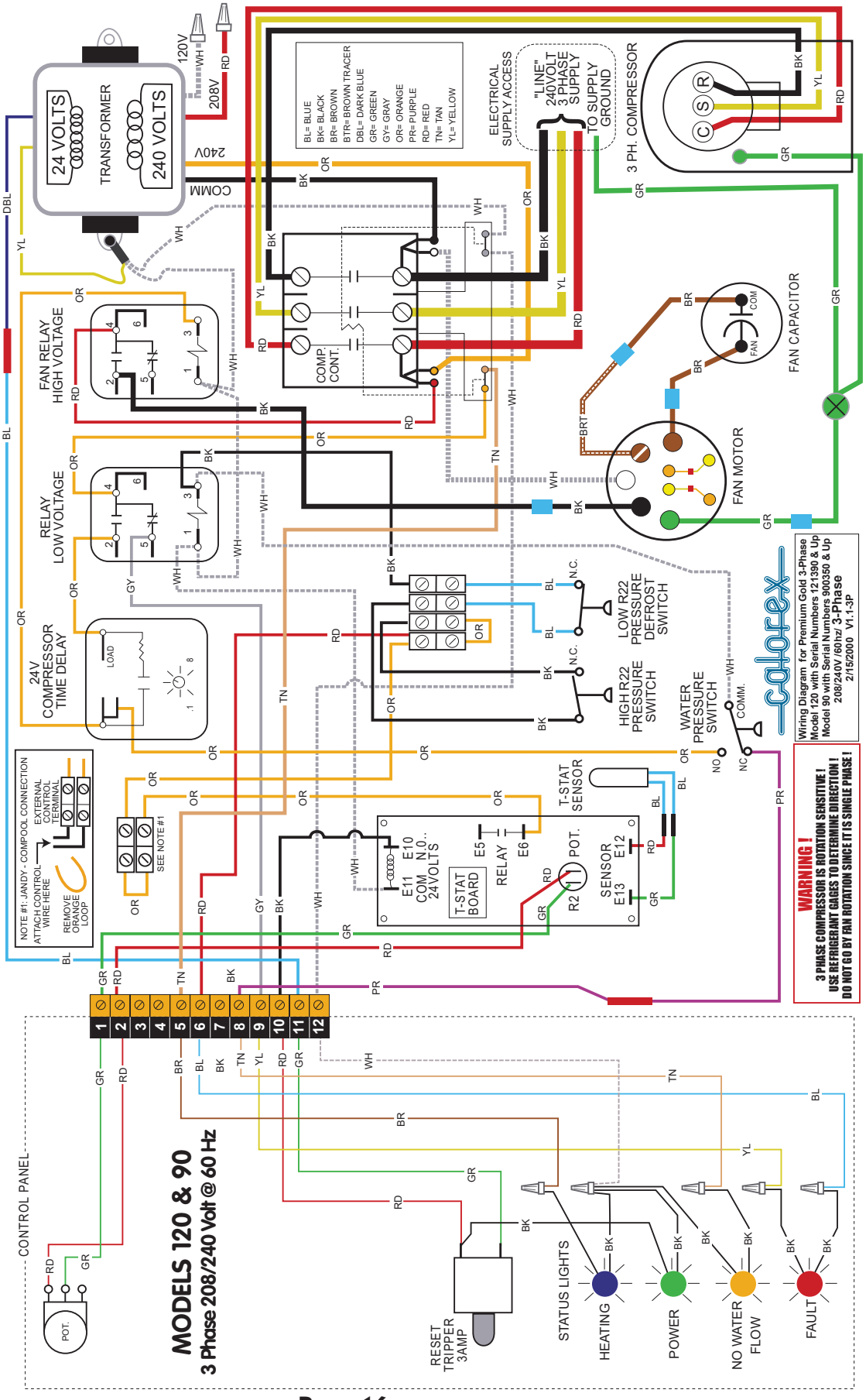
Wiring Diagram AT600 Dual Thermostat 208/240 Volt Single Phase



Wiring Diagram Model 120 Only Single Thermostat 3-Phase 220 Volts

WARNING: THREE PHASE MODELS:

3 Phase Compressor Is Rotation Sensitive! Use Refrigerant Gages!
Do Not Go By Fan Rotation Since It Will Always Be Single Phase!



MODEL 120 THREE PHASE ONLY.
Wiring diagrams may change without notice.

Factory Specifications

Model	Model 120	Model 90
BTU Output	112,000* / 95,000**	90,000* / 77,000**
Coefficient of Performance	6.3* / 5.4**	6.4* / 5.5**
Compressor	Copeland Scroll™ ZR67	Copeland Scroll™ ZR54
Heat Exchanger Condenser	Cupronickel Alloy-Water w/ Copper Jacket-Exterior	
Air Coil Evaporator	Polyester Clad MT.Holly Gold™ Copper Tube w/ SineWave Fin	
Fan Motor	1/4 H.P. @ 1.6 Amps	
Air Flow	4000 C.F.M. w Built In Cowling Venturi	
Electrical (208/240v/60Hz)	1 or 3 Phase	1 Phase Only
Normal Operating Amps (1 /3 Phase)	22.5 /17.5	19.5
Compressor RLA	27.9 / 20.7	28
Minimum Circuit Ampacity	36.5/ 25.5 Apms	37 Amps
Suggested Breaker Size	50 Amps / 30 Apms @ 3/Pahse	40 Amps
Min/Max Water Flow	20/70 GPM	20/70 GPM
Water Plumbing	2" Full Flow w Auto Bypass & Chemical Check Valve	
Refrigerant Charge	R22	R22
Cabinet Construction	Corrosion Proof Molded PVC w/ All Stainless Fasteners	
Weight	320 lbs.	300 lbs.
Dimensions	31W x 36L x 37H	31W x 36L x 33H

WARNING: THREE PHASE MODELS:

3 Phase Compressor Is Rogation Sensitive! Use Refrigerant Gages!
Do Not Go By Fan Rotation Since It Will Always Be Single Phase!

Model	AT 600
BTU Output	106,000* / 94,000**
Coefficient of Performance	6.1* / 5.1**
Compressor	Copeland Scroll™ ZR67
Heat Exchanger Condenser	Cupronickel Alloy-Water / Copper Jacket-Exterior
Air Coil Evaporator	Oversized: Copper Tube w/ Lanced Fin
Fan Motor	1/4 H.P. @ 1.6 Amps
Air Flow	4000 C.F.M. w/ Built In Cowling Venturi
Electrical (208/240v/60Hz)	Single Phase
Normal Operating Amps	22.5
Compressor RLA	27.9
Minimum Circuit Ampacity	36.5
Suggested Breaker Size	50 Amps
Min/Max Water Flow	20/70 GPM
Water Plumbing	2" Full Flow w/ Auto Bypass & Chemical Check Valve
Refrigerant Charge	4.5 lbs. R22
Cabinet Construction	Corrosion Proof Molded PVC w All Stainless Fasteners
Ship Weight	305 Lbs.
Dimensions	35H x 31W x 34L

calorex U.S.A. L.L.C.

5826 Corporation Circle
Ft. Myers Florida 33905

888-297-3826

www.calorexusa.com

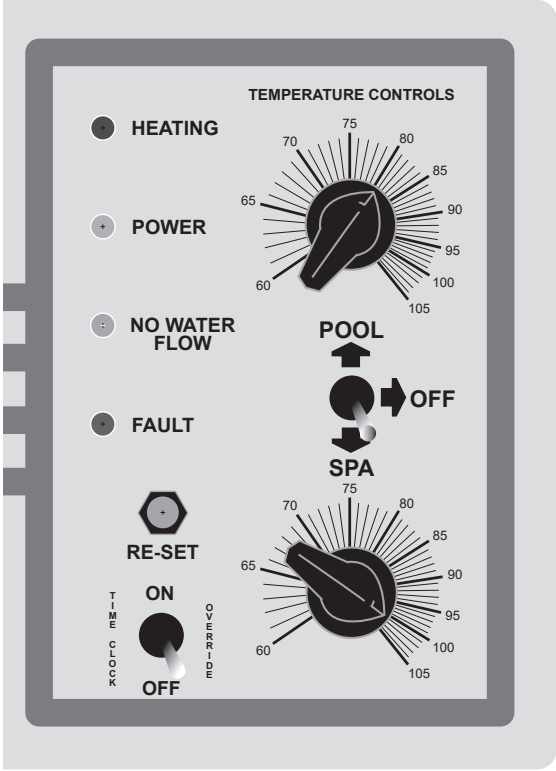
ETL LISTED ETL VERIFIED

PHPMA MEMBER Pool Heat Pump Manufacturers Association

MEMBER NATIONAL POOL & SPA INSTITUTE

Specifications may change without notice.

Control Panel Information



TEMPERATURE CONTROLS: The top Thermostat controls the pool temperature. The bottom Thermostat controls the spa temperature. If you do not have a spa you can use the two thermostats as a high and low temperature preset.

THERMOSTAT/OFF SWITCH- POOL/OFF/SPA: The Thermostat/Off Switch determines which thermostat is active, up for pool, down for spa. You can disable the heater by placing the selector switch in the center "OFF" position.

RESET TRIPPER BUTTON: The Reset Button will trip if there is some sort of short or ground fault in the control wiring. The reset has a grey rubber cover. When the reset has been tripped, the reset plunger springs forward into the rubber cover so it can be reset. You can not feel the plunger switch behind the rubber cover unless it has been tripped.

"OPTIONAL" WATER PUMP TIME CLOCK OVERRIDE SWITCH: When this switch is in the ON position the Time Clock Override feature is designed to start the water pump whenever the pool requires heat. When this switch is in the OFF mode position, the heater will operate only when the water pump is running during the timed period set on the time clock. NOTE: The time clock override works best if used during cooler weather conditions where the pool is loosing more than 8 to 10 degrees over night or when the pool is being heated from "dead cold". This option is factory installed as specified when ordered.

BLUE HEATING LIGHT: This light indicates that the unit is heating and the compressor is running. The compressor starts after a 5 to 7 minute time delay. NOTE: The water pump must be running at the same time in order for the heater to run. NOTE: For older units prior to February 2000, this light will come on whenever the thermostat is calling for heat.

GREEN POWER LIGHT: This light indicates that the heater has control power. WARNING: This is not a line power indicator and caution should be used since more than one power disconnection may be required to isolate the heater electrically. WARNING: If the optional Time Clock Override is installed, you must shut off the water pumps main power disconnect as well.

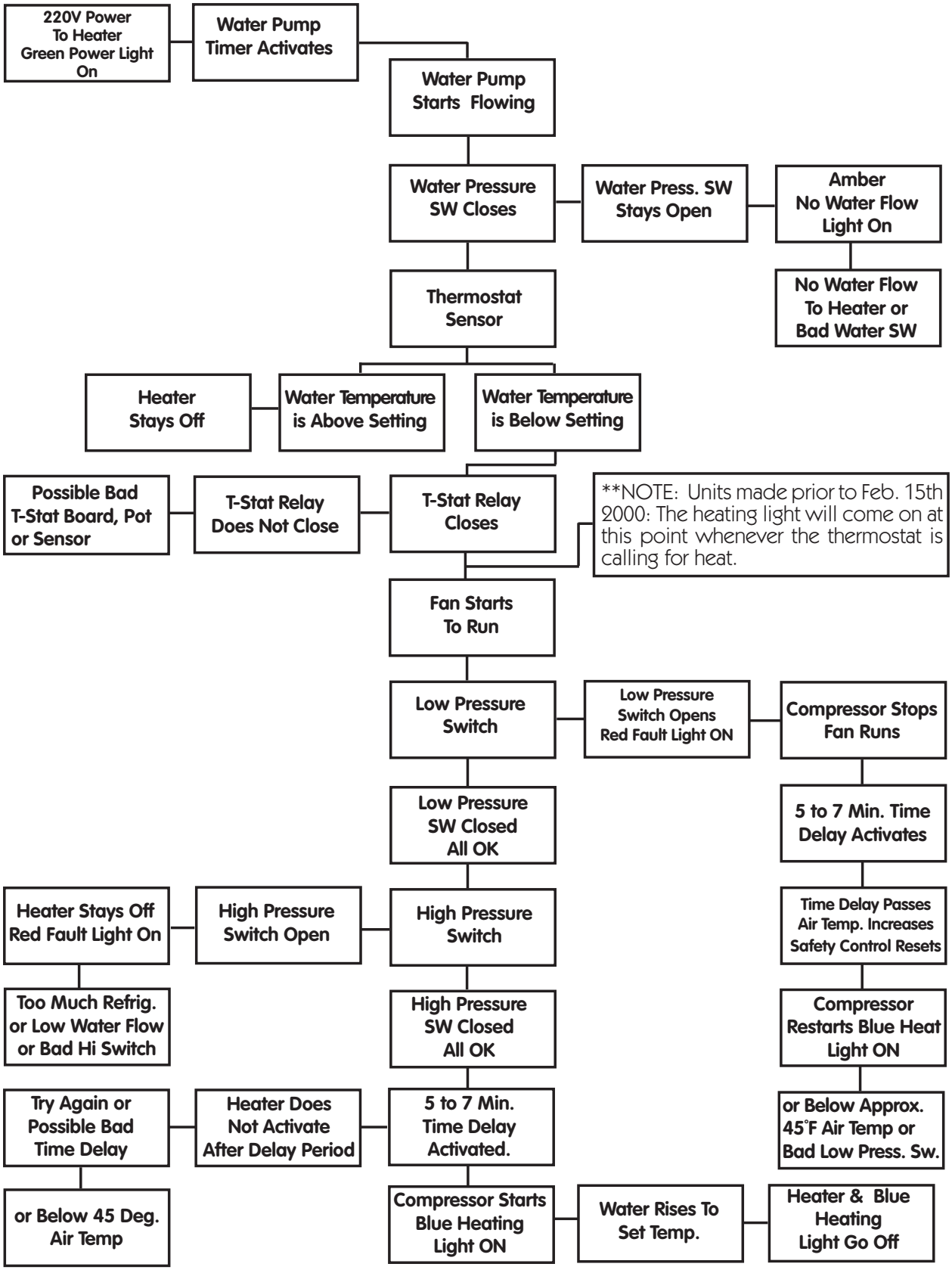
AMBER NO WATER FLOW LIGHT: This light indicates there is no water flow through the heater. The heater is designed to shut off whenever the water pump is not pumping water through the heater. If this light is on while the water pump is running, the water pump may not be supplying enough flow for the heater to operate properly. During normal operation the heater turns off and on with the water pump, (as long as the thermostat is calling for heat).

RED FAULT LIGHT: This light indicates that the internal safety control system has disabled the heater. If either the high or low refrigerant pressure switch has tripped this light will come on. During cold weather where the air temperature drops below approximately 45 degrees (depending on humidity), the low refrigerant pressure switch (or defrost control) is designed to disable the compressor only. In this "defrost mode" the fan will continue to run through the 5 to 7 minute time delay and/or until the outside air temperature increases to the operational range before the compressor will attempt to restart. The heater should be shut off when the air temperature is expected to drop below the operational range for an extended period. Units made prior to February 2000 the fan and compressor will shut off in defrost mode.

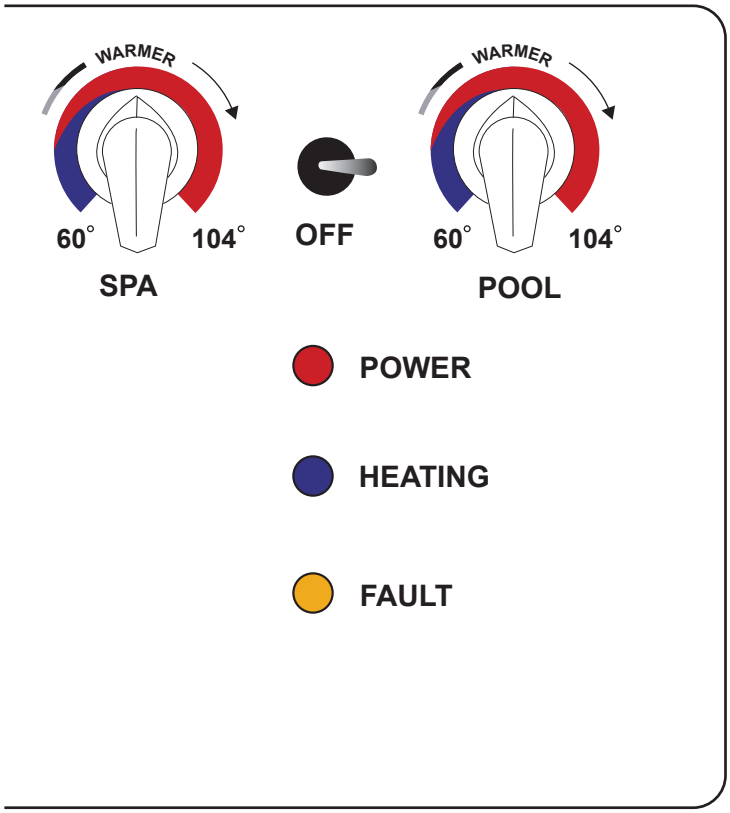
The high refrigerant pressure switch is designed to shut the compressor and fan off if a heat buildup occurs for whatever reason. Typically the high refrigerant pressure switch will trip if the water flow through the heater is restricted. It may also trip if the air flow is restricted through the heater.

NOTES: The heater should never run without water running through it from the filter pump. The heater will not heat faster if you turn the thermostat knob up higher. The Time Clock override mode may cycle the water pump on and off periodically to sample the pool water temperature. This cycling will be excessive if the Time Clock Override is used during warmer weather conditions when pool heat loss is minimal.

Operational Sequence & Troubleshooting Flow Chart for Models 120 & 90 Only



Control Panel Information for Model AT600 Only



TEMPERATURE CONTROLS: The right Thermostat controls the pool temperature. The left Thermostat controls the spa temperature. If you do not have a spa you can use the two thermostats as a high and low temperature preset.

THERMOSTAT/OFF SWITCH- POOL/OFF/SPA: The Thermostat/Off Switch determines which thermostat is active, move the switch to the right for pool mode, move the switch to the left for spa mode. You can disable the heater by placing the selector switch in the center "OFF" position.

RED POWER LIGHT: This light indicates that the heater has control power. WARNING: This is not a line power indicator and caution should be used since more than one power disconnection may be required to isolate the heater electrically.

BLUE HEATING LIGHT: This light indicates that the unit is heating and the compressor is running. The compressor starts after a 5 to 7 minute time delay. NOTE: The water pump must be running at the same time in order for the heater to run. NOTE: For units prior to February 2000, this light will come on whenever the thermostat is calling for heat.

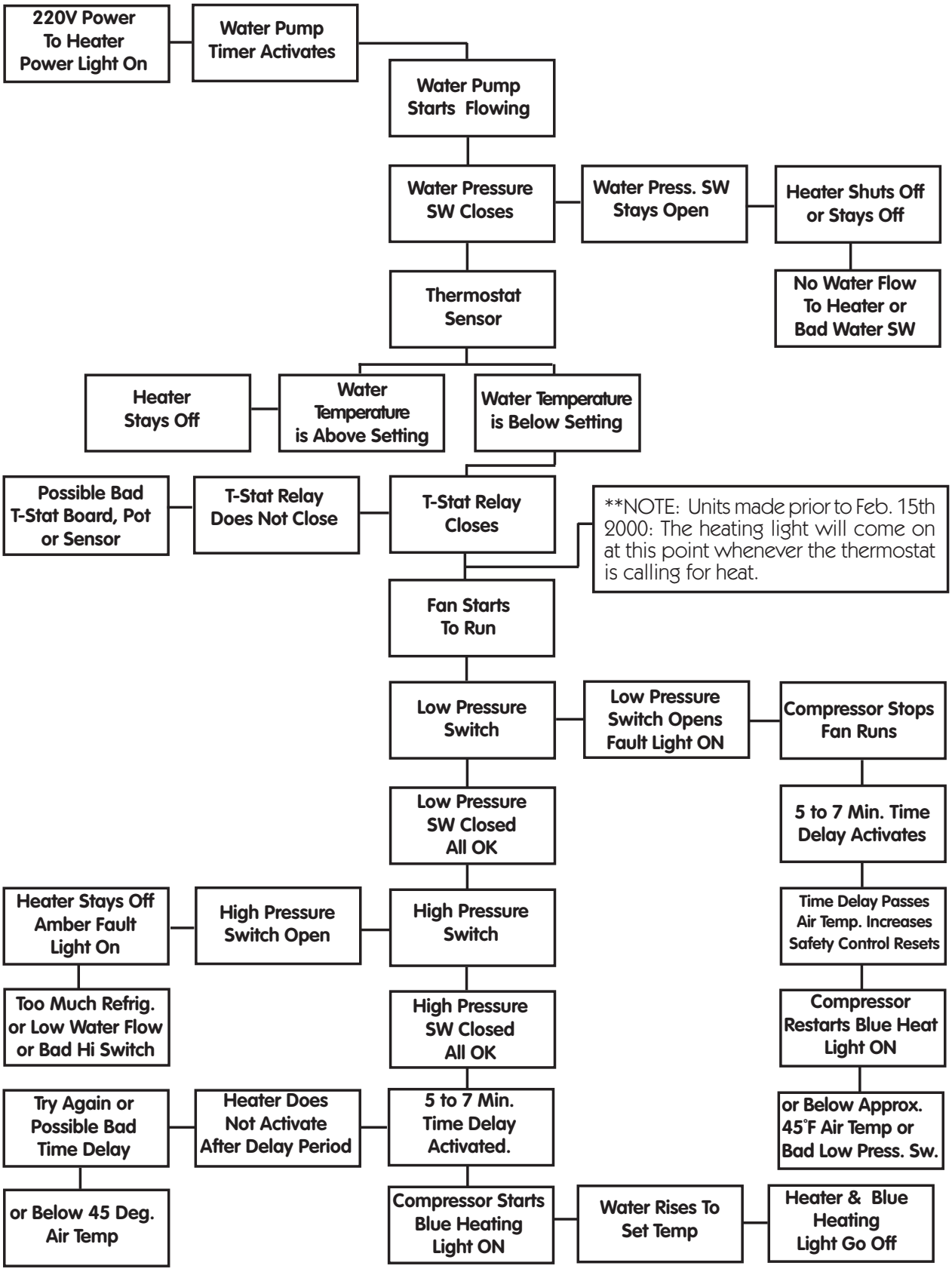
AMBER FAULT LIGHT: This light indicates that one of the internal refrigerant safety controls has disabled the heater. The amber light indicates that the low refrigerant pressure switch or the high refrigerant pressure switch has opened for whatever reason.

During cold weather where the air temperature drops below approximately 45 degrees (depending on humidity), the low refrigerant pressure switch (or defrost control) is designed to disable the compressor only. In this "defrost mode" the fan will continue to run through the 5 to 7 minute time delay and/or until the outside air temperature increases to the operational range before the compressor will attempt to restart. The heater should be shut off when the air temperature is expected to drop below the operational range for an extended period.

The high refrigerant pressure switch is designed to shut the compressor and fan off if a heat buildup occurs for whatever reason. Typically the high refrigerant pressure switch will trip if the water flow through the heater is restricted. It may also trip if the air flow is restricted through the heater.

NOTES: The heater should never run without water running through it from the filter pump. The heater is designed to shut off whenever the water pump is not pumping water through the heater (no indicator light). The heater will not heat faster if you turn the thermostat knob up higher. Units made prior to February 2000 the fan and compressor will shut off in defrost mode.

Operational Sequence & Troubleshooting Flow Chart for Model AT600 Only



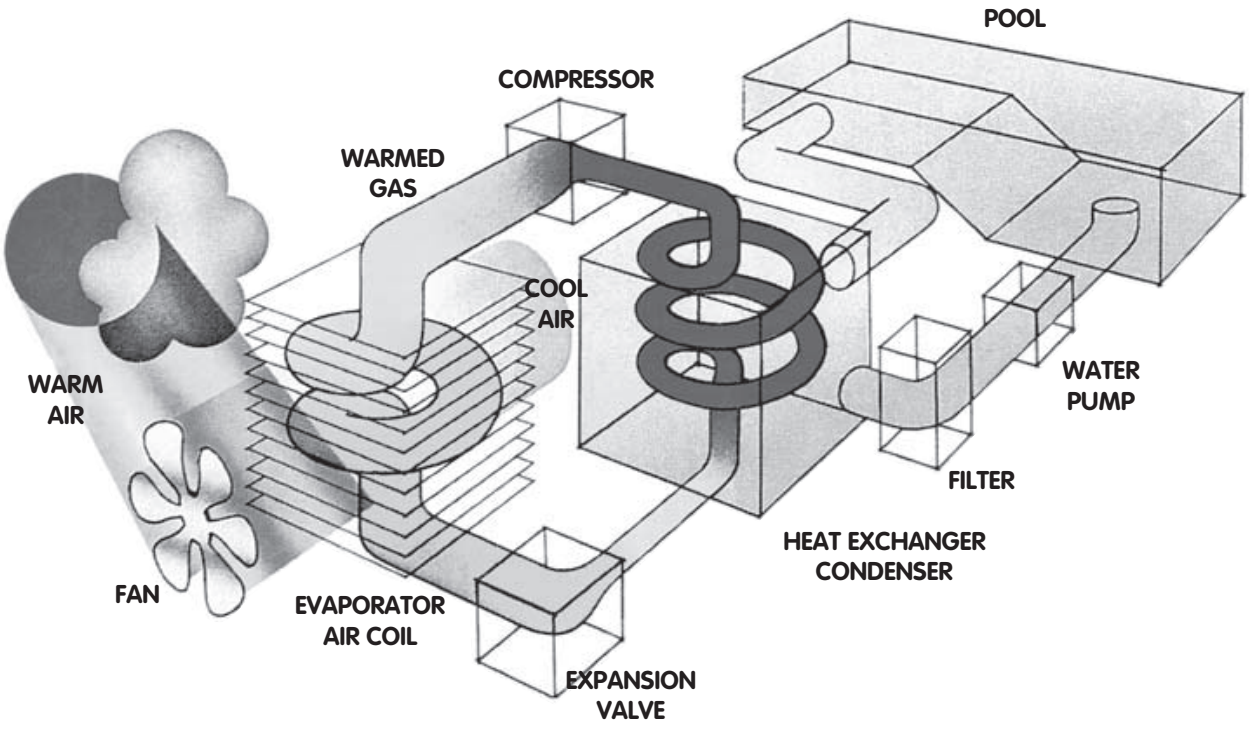
How Does A Heat Pump Warm A Pool ?

A swimming pool & spa pump utilizes proven refrigerant technology to capture the heat in the outside air and transfers it to the pool water. Refrigerant is used because of its ability to absorb and transfer heat energy.

The **fan** circulates air through the outer **evaporator air coil** that acts as a heat collector. The liquid refrigerant in the air coil absorbs the available heat in the ambient air, transforming it into a gas. The refrigerant gas is then pumped into the **compressor**. When this warmed gas is compressed, it intensifies or concentrates the heat, like a magnifying glass in the sun.

This intensely hot gas is then pumped into the **heat exchanger condenser**, where the actual heat transfer takes place. As the pool water passes through the heat exchanger, the hot gas gives up its heat to the cooler pool water.

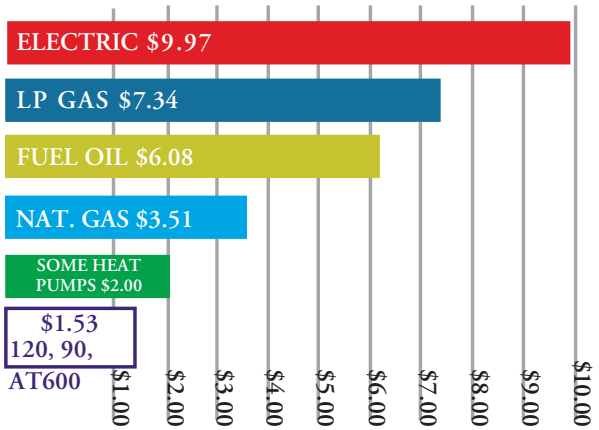
The refrigerant returns to a liquid state and is pumped through the **expansion valve** then into the evaporator air coil to start the process all over again.



How Efficient Is It ?

Operational Cost Comparison for Equal Amounts of Pool Heat

A Heat Pump is the Most Efficient Way to Heat Your Pool



Compared to L.P. gas heaters, a heat pump produces 5 times more heat for every $1.00 you spend on operation.

calorex U.S.A. L.L.C.

5826 Corporation Circle
Ft. Myers Florida 33905

888-297-3826

www.calorexusa.com

calorexusa@earthlink.net

Specifications may change without notice.