AeroTemp™

by Aqua Cal®

OWNER'S MANUAL

IMPORTANT !!! Please read these notes about the applicability of this manual:
This manual applies SPECIFICALLY to AeroTemp models: 12000A-A, 8500A-A, and 6500A-A (the second "A" might possibly appear as "B", indicating a 3-phase unit). These heaters were equipped with a titanium heat exchanger and a P.N. 700004 microprocessor. A 700004 microprocessor can be identified by the presence of a 4-Amp circuit breaker visible through the face of the control panel.

History of other AeroTemp Models:
Earlier versions of this heater were produced beginning in 2001; these earlier heaters were equipped with a cupronickel heat exchanger, and used the same 700004 microprocessor (as above models). These earliest AeroTemp versions bore model numbers containing no revision letter... example: 12000-A (the "A" in this model number signifies 208/240 Single-Phase voltage). This manual is useable FOR MICROPROCESSOR INFORMATION ONLY for heaters of this vintage, The heat exchanger information will be INCORRECT, AS WILL THE WINTERIZING INFORMATION.

The last-produced versions of THIS AeroTemp platform went out of production in January, 2004, when the AeroTemp brand began production on the HeatWave platform. These last-produced AeroTemp models can be identified as having a "B" rev letter in their model number... for example: 8500B-A. These models contained the 6200P microprocessor and titanium heat exchangers. Because the 6200P microprocessor differs substantially from the 700004 micro, this model is NOT a good candidate for use with this manual. Instead, the following manuals used with a model 100 or120AHDEBNA would be more appropriate: HP7 Dealer & Service 100/120 Owners 100/120 Dealer & Service

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INTRODUCTION

Congratulations! You have purchased the most advanced, high efficiency, micro computer controlled heat pump available. A heat pump pool heater is a highly efficient, cost effective method of pool heating. Intelligent operation and care will result in many years of enjoyment and pleasure.

The Aerotemp heat pump pool heater is a self contained unit designed specifically for pool heating. The unit operates on the proven principle of heat pump technology, using the largest solar collector available, the Earth and its atmosphere, the Aerotemp pool heater processes the sun's free energy, extracting heat from the sun warmed air and transferring it efficiently to the pool water. Because the Aerotemp pool heater moves the free heat from the outside air to the pool water, rather than create heat, as a fossil fuel or electric resistance heater does, the Aerotemp pool heater can heat your swimming pool for up to 80% less than these other less efficient methods.

In general, compared to other types of pool heaters such as gas or oil fired, the Aerotemp heater has a lower heating capacity on a BTU/hr basis. Therefore, it will be required to operate longer to accomplish the desired results. At certain times, it may be necessary to run the heat pump up to 24 hours per day. However, this should not be of concern to the owner because the heater is designed to operate continuously. Even though it may operate continuously for many hours, it will still heat the pool with far greater economy than other types of heaters.

As with all pool heaters, you are advised to use a pool cover at night and when the pool is not in use. This will keep evaporation, the greatest source of heat loss, to a minimum, greatly reducing the overall pool heating costs. During warmer weather, the pool cover may be required only at night or not at all.

GENERAL SAFETY INSTRUCTIONS

Read and follow all instructions.

- All electrical connections must be done by a qualified electrician, according to the local electrical codes.
- Always cut off the unit's main power whenever the access panel is open or removed.
- Always install the machine outdoors (unless approved by the manufacturer), while respecting the minimal clearances needed for proper operation and heating.
- Recommended water quality standards must be strictly adhered to as follows:

PH Level	7.4 to 7.6
Chlorine concentration	1.0 to 3.0 PPM (parts per million)
Total Alkalinity	80 to 100 PPM

WARNING: PAY PARTICULAR ATTENTION TO THE PROPER USE OF CHEMICAL PRODUCTS FOR WATER TREATMENT.

At the beginning of each season you must properly balance your water according to the standards prescribed above BEFORE circulating water inside the heat pump.

At the end of each season, if the heater is no longer used, and proper pool water chemistry is not maintained, it should be disconnected from the water line, flushed with fresh water and drained to prevent any corrosion.

The instructions in this manual are important... and there are only a few of them. So please take a few minutes to familiarize yourself with them. After sending in the warranty card, keep this manual in an easy to find location for future reference. The Aerotemp unit combines simplicity with trouble free performance. As with most appliances, an understanding of what it does, what you should do and what you should not do is important. Proper installation and operation reduces heating costs and increases efficiency. The Aerotemp pool heater is designed with features that make it simple to operate, maintain and service. Proper installation enhances these features and minimizes problems.

MAJOR COMPONENT DESCRIPTION

- **Micro computer control:** automatically allows you to achieve optimum performance throughout the full range of operating conditions, making the Aerotemp pool heater the most efficient pool heater available. The microcomputer also features a digital display, programmable thermostat and service analyzer.

- **Evaporator:** Fabricated from copper tube and coated aluminum fins. It is within the evaporator that the freon gas absorbs the sun's free heat.

- **Cabinet:** Rust proof UV treated plastic cabinet designed to blend in perfectly with your pool landscape.

- **Fan and motor:** High efficiency specially designed fan and motor allows for maximum performance and low noise.

- **Heat exchanger:** High performance titanium resists corrosion and optimizes heat transfer.

- **Compressor:** Available with high efficiency hermetic or super high efficiency scroll (ATS12000 only).

LOCATION

The placement of the pool heater is very important in keeping installation costs to a minimum, while providing for a maximum efficiency of operation as well as allowing adequate service and maintenance access.

The unit is designed for outdoor installation and should not be installed in a totally enclosed area such as a shed, garage, etc. unless ventilation is provided to ensure adequate air exchange for proper operation. Re-circulation of cold discharge air back into the evaporator coil will greatly reduce unit heating capacity and efficiency.

When installed in a geographical location where freezing climate can be encountered, the water circuit should be drained to prevent possible freeze-up damage. **See section on Winterizing for details.**

WARNING: Winterizing procedures must be strictly followed to prevent permanent damage to the Heatpump.

The unit should be located as close as practical to the existing pool pump and filter to minimize water piping. The use of 90 degree bends and short radius elbows in the water piping should be kept to a minimum.

All models feature up-flow evaporator air for quiet operation. Air is pulled through the evaporator coil and discharged through the top grille. At least 4 feet clearance should be allowed above the unit for unrestricted air discharge. The unit must not be installed under a porch. Any side of the unit should be located at least 24 inches from a wall or other obstruction for unrestricted air intake and service access.

Mount the unit on a sturdy base, preferably a concrete slab or blocks. The base should be completely isolated from the building foundation or wall to prevent the possibility of sound or vibration transmission into the building. The size of the base should be not less than 36" x 36".

If installed indoors, adequate air circulation ability must be provided. Air must be able to get to the unit and cooled air must exit without potential recirculation. An auxiliary fan is normally required.

NOTE: Consult the factory for detailed information on indoor locations.

WATER PIPING

The piping sequence: pool - pump - filter - heater - pool (inline chlorinators, if used, must be downstream of the heater to minimize harm to the pool equipment). See section on Chemical Usage for more details on chlorination and chemical feeding. Rigid PVC piping is recommended, all joints should be glued with PVC glue. If rigid PVC is not available, you can use soft or flexible piping with stainless steel clamps. When the piping installation is complete, operate the pool pump and check the system for leaks. Then check the filter pressure gauge to see that excessive pump head pressure is not indicated.

Note: Certain installations have valves, which isolate the heat pump from the water circuit. If the heat exchanger is deprived of water circulation for several days, high chlorine gas concentration could cause excessive corrosion. If the disconnect switch is turned off, be sure the pool water is allowed to circulate through the unit, or has been flushed with fresh water and blown out with compressed air. For information see the winterizing section in this manual. (See page 7 for diagram)

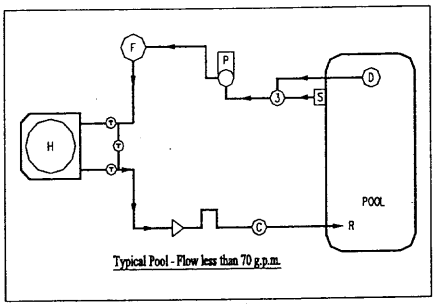
ELECTRICAL

The wiring of your Aerotemp heat pump should be done by a qualified electrician in accordance with local and national electrical codes.

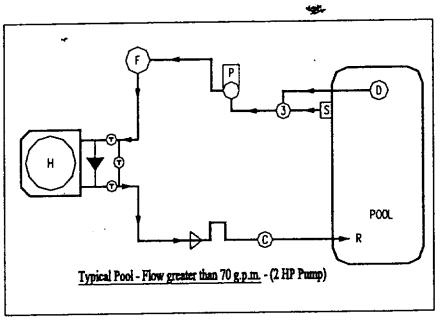
It is important that the heat pump be electrically grounded and bonded for safety, along with preventing severe electrolytic corrosion. It may be necessary to install a grounded circuit breaker.

Properly sized breaker and copper wire must be used. See data plate located on the exterior of the unit for circuit ampacity and breaker size.

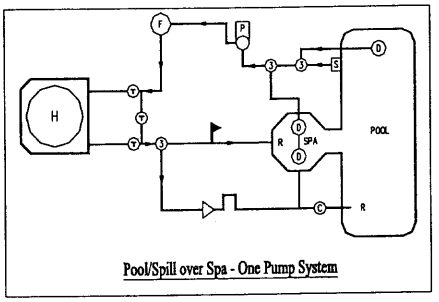
DANGER: THE UNIT MUST BE DISCONNECTED FROM ALL EXTERNAL POWER SOURCES PRIOR TO OPENING THE ELECTRICAL ACCESS PANEL. FAILURE TO DO SO COULD RESULT IN PERSONAL INJURY OR POSSIBLE DEATH.



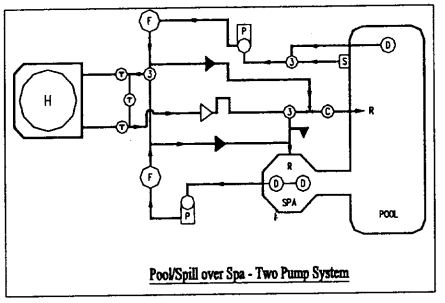
Typical Pool - Flow less than 70 g.p.m.



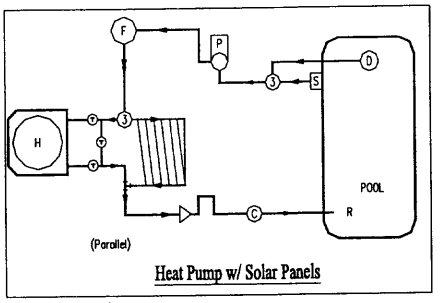
Typical Pool - Flow greater than 70 g.p.m. - (2 HP Pump)



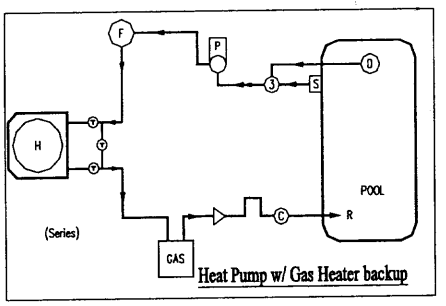
Pool/Spill over Spa - One Pump System



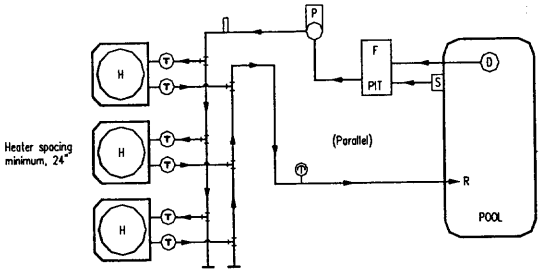
Pool/Spill over Spa - Two Pump System



Heat Pump w/ Solar Panels



Heat Pump w/ Gas Heater backup



Multiple Heat Pump Installation

LEGEND

3 - 3 way valve
C - Chlorinator (if used)
D - Drain
F - Filter
H - Heat pump
P - Pump
R - Return
S - Skimmer

- Flow Switch (ADT Kit)
- Throttle valve
- Thermometer
- Hartford Loop
- Bypass Check Valve *
- Flow meter
- Chemical Check Valve

* Note: Bypass check valve spring rate is specific to each model. Reference external bypass check valve selection chart for specific rate.

OPERATION OF ELECTRONIC CONTROL PANEL

The display of the control panel shows the pool water temperature in degrees Fahrenheit.

To **RAISE** the desired water temperature push the up arrow.

It will show you the programmed temperature and will increase gradually one degree at a time. To **LOWER** the desired temperature push the down arrow. It will show you the programmed temperature and will decrease one degree at a time.

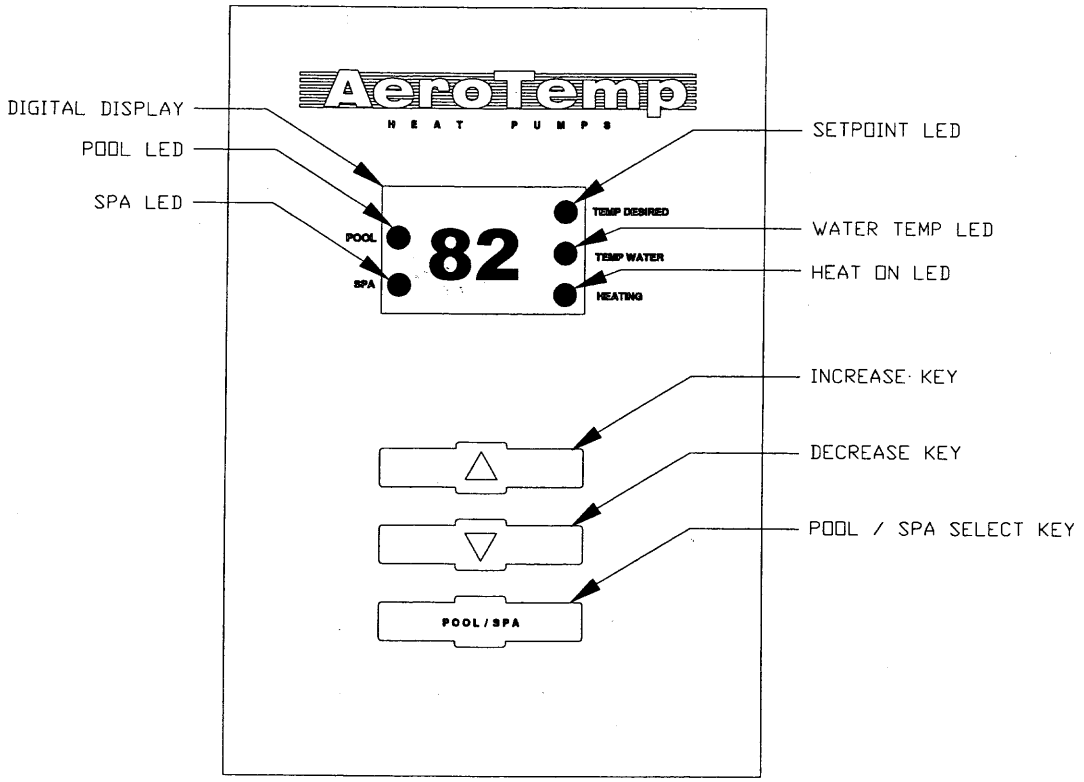
Once the temperature has been programmed to the desired pool water temperature, the programmed temperature will be displayed for approximately 15 seconds, then the digital display will return to the actual pool water temperature.

The electronic board has the capability of memorizing two different programmed temperature settings as follows:

* For a pool (maximum 95 degrees)

* For a spa (maximum 104 degrees)

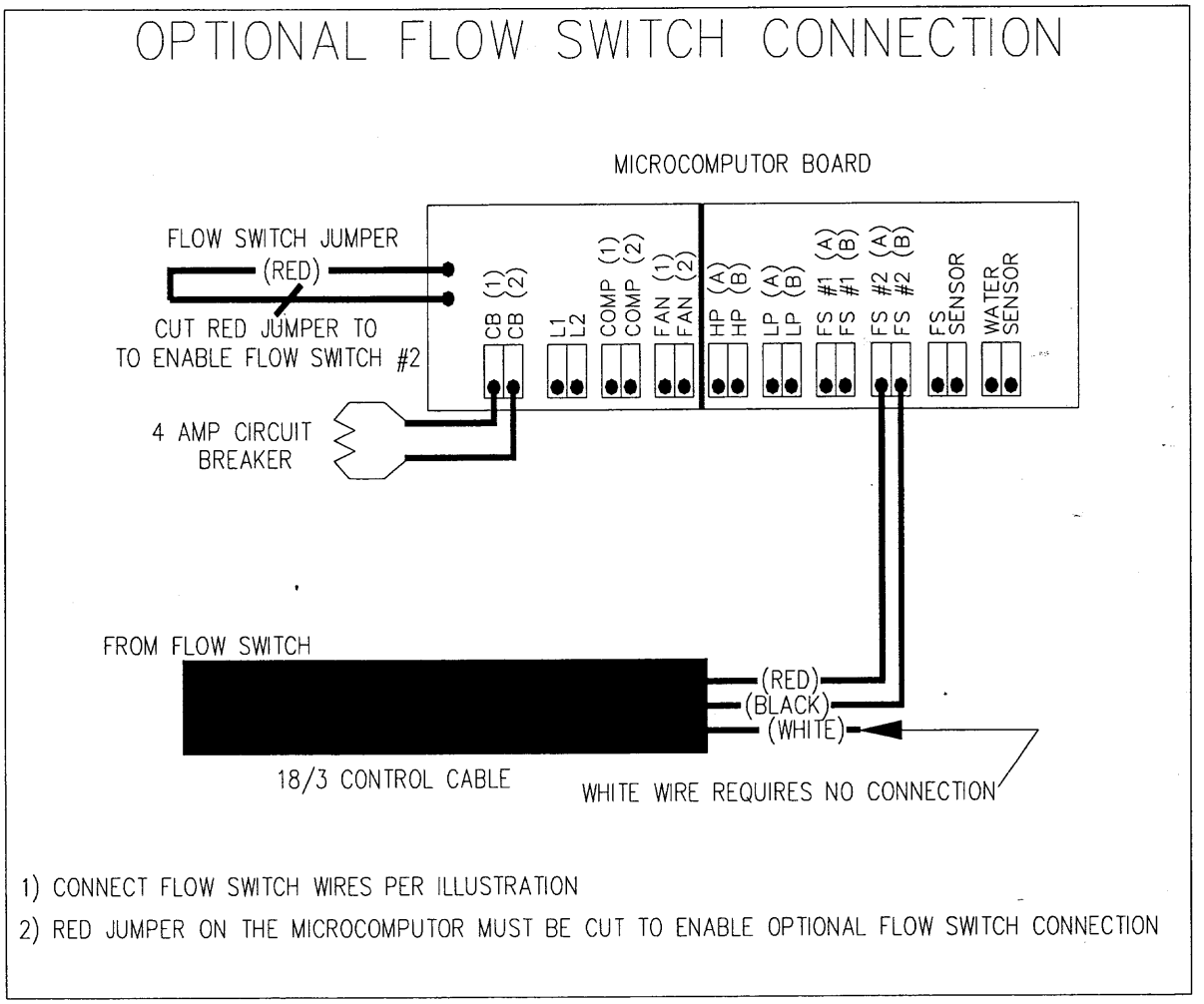
To have access to either one of these programs, press the **POOL/SPA** key. The lights on the left side of the display indicates the chosen program. (see next page for diagram)



AUTOMATIC MODE POOL/SPA

The program change between (POOL/SPA) can be done automatically as soon as water flow is directed to either the pool or the spa. An additional external flow switch must be added to the system and plugged into the microcomputer board at the designation (FLOW S. #2). See plumbing drawings for location of flow switch.

Note: Flow switch kits (Part # 0040) can be obtained from your installer or by calling the factory direct @ 800-786-7751



SERVICE ANALYZER CODES

DISPLAY	MEANING OF CODE
"OFF"	The desired programmed temperature point is below 60° F.
"LP"	Shortage of refrigerant gas in the unit or faulty low pressure control
"HP"	Low water flow in the unit or faulty high pressure control. Check water flow/backwash
"Po"	Water probe may be defective. Po = thermostat probe (water) is open. Check connection before replacing.
"Pc"	Pc= thermostat probe (water) is short circuited.
"Flo"	Insufficient water flow. The filter is in backwash position, the filter pump is stopped, or water pressure switch must be adjusted or it is broken.
"dPo"	Thermostat probe (suction) is open or defective. dPo = probe is open. Check connections before replacing.
"dPc"	dPc = thermostat probe (suction) is short circuited.
"FS"	Unit in the defrosting cycle. (The fan works but the compressor is stopped)

TO START-UP THE UNIT

When the unit is turned on or after a power shut down, the panel lights up and either indicates OFF or the temperature of the pool water circulating inside the heater. Program in the desired pool water temperature.

When the demand is actuated
- the fan starts
- the compressor starts after 3-5 minute delay

TO STOP THE UNIT

The unit can be stopped by switching off the electrical power supply or by programming the desired water temperature below actual pool water temperature. The machine will be "off" if the temperature set point is below 60° F. The display indicates "OFF".

INITIAL HEATING

Check the water temperature and note the time. A heat pump is slower (but more economical to operate) than gas. The speed of heating is dependent upon four basic factors:

- Size of the pool
- How many degrees the water is to be heated.
- Ambient air temperature - the warmer the air the less time required to heat
- Use of a solar blanket (see the following section)
- To achieve initial heating operate your heater and pool pump/filter for 24 hours per day until desired temperature is achieved. The initial heating time may vary from a day to a week or more depending upon the above four factors. After initial heating, operating time may be reduced to match losses.
- A pool solar blanket should be used whenever possible. Blankets minimize heat loss and conserve heat in your pool. Like a jacket holds body heat in on a chilly day, or closed doors and windows hold heat in a home, the blanket controls heat losses. Unblanketed pools lose 2-3 times more heat than a blanketed pool.

HEATER RUNNING TIME

It is the responsibility of the owner to determine the length of pump and heater operating time necessary for their particular requirements. Most units should be sized to operate during the pool filtering cycle time of 8-12 hours daily, providing an even, steady flow of warm water over a long period of time. On warmer days the heater will run less because the heat loss will be less. Heat pumps are able to operate 24 hours per day when necessary.

DEFROST CYCLE

At low ambient air temperatures (between 37° and 45° F), condensation water on the fins of the evaporator tends to frost. In such a case, the controls will activate the defrosting cycle until all the frost is gone. A normal defrosting cycle (compressor stopped) lasts between 5 and 10 minutes. The pool heater won't be damaged if it is running at less than 45° F in said conditions, the unit will have more frequent defrosting.

THERMAL/OTHER PROTECTION DEVICES

The integrity and performance of your heat pump pool heater and its components is protected by its controls. In normal use, the Aerotemp unit should never reach the thermal protection level. However, if it should happen, you should verify your operating conditions as described below.

Water shortage (display indicates "HP" or "Flo").

The Aerotemp unit is designed to operate with a minimum water circulation of 20 GPM. The high pressure switch will shut off the compressor and "HP" will appear on the microcomputer, if there is not sufficient flow of water through the unit. Check for dirty filters or clogged skimmers. They are usually the cause of this condition.

The Aerotemp unit also has a built-in water pressure switch that will interrupt the operation of your unit should water circulation through the unit stop. The microcomputer board will display "Flo". If there is still a demand for heat, turn on your pool pump and the heater will start up once the normal water flow is re-established.

Your heat pump features other protection devices that could stop the unit.

- Low pressure cut-out switch
- Thermal protection for the fan and compressor
- Breaker on the microcomputer board (protects board against power surges). Should this surge protection breaker on the board trip (indicated by a blank board) simply reset the breaker by pushing in the reset button located on the lower right part of the board.

MAINTENANCE

The Aerotemp pool heater has been specifically engineered to give you years of satisfaction. Adequate water circulation and the proper use of chemical products is absolutely necessary to protect your investment.

To clean the plastic surfaces use soapy water and a clean soft cloth. Never use solvents or abrasives.

The dirt collected in the evaporators can be removed with a gentle water spray and the use of a soft brush. Be careful not to damage the aluminum fins.

Shutdown and Winterizing Procedures for AquaCal Heat Pumps

Shutdown procedure for climates above freezing.

In the event that your heater will not be used for an extended period, it is recommended that pool water be allowed to circulate through the heater during normally scheduled filtration cycles.

Should it become necessary to isolate your heater for an extended period (more than 1 week); it is recommended that the heater be winterized, please refer to steps 1 – 7 in the winterizing section of this manual.

Shutdown procedure for climates where below freezing conditions exist.

Warning: Failure to winterize the heating system properly may result in damage not covered by the manufacturer's warranty.

For detailed instructions on winterizing refer to steps 1 – 7 in the winterizing section of this manual.

Winterizing Instructions

Winterizing is done after disconnecting the water supply and return lines from the heat pump to remove residual water from the heater. This will prevent the heater from becoming damaged in freezing conditions.

Before beginning the winterizing process, ensure that the electrical power to the heat pump is disconnected. **Caution: Failure to do so could result in personal injury or possible death**. This can be done by ensuring that the circuit breaker feeding electrical power to the unit is in the off position. Also, ensure the pool water circulation pumps are turned off.

Step 1.

Disconnect the water supply and discharge pipes at the heat pump, allowing any water present to drain from the heater water connections.

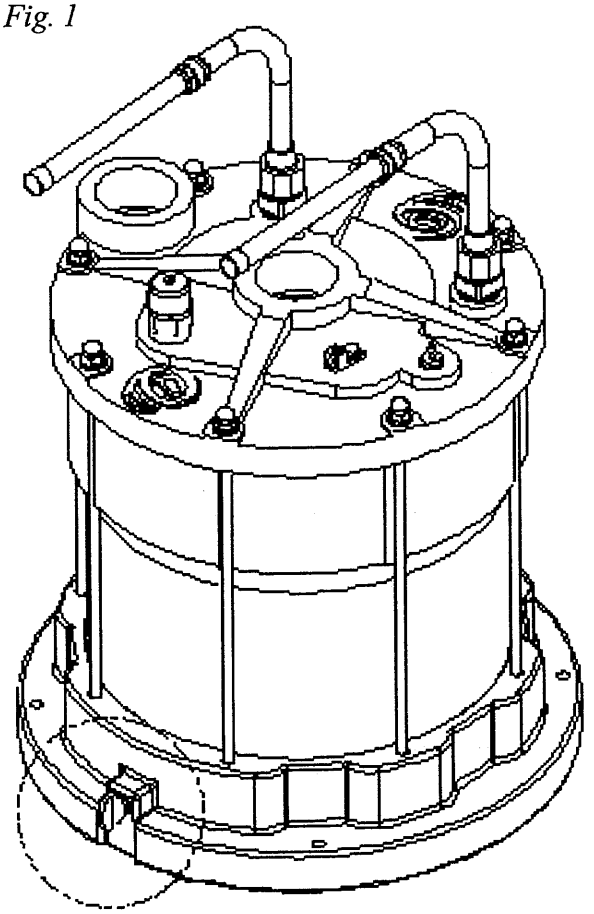
Step 2.

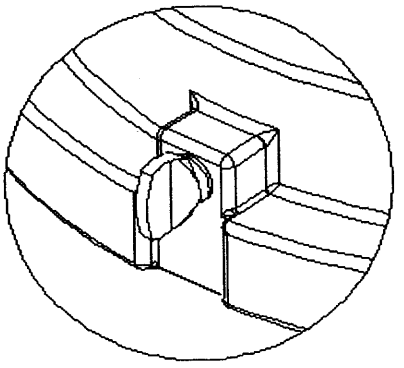
Remove the front panel(s) of the heat pump.

Step 3.

Locate the drain plug on the front Titanium Heat Exchanger.

Fig. 1

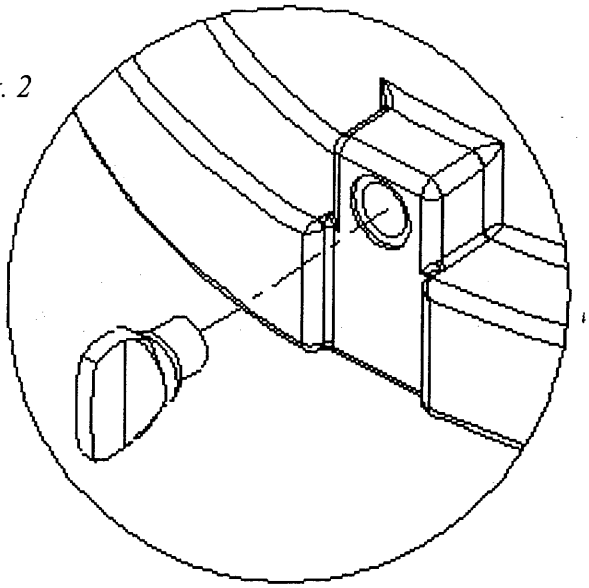




Step 4.

Remove the drain plug and let the unit drain for 10 minutes.

Fig. 2

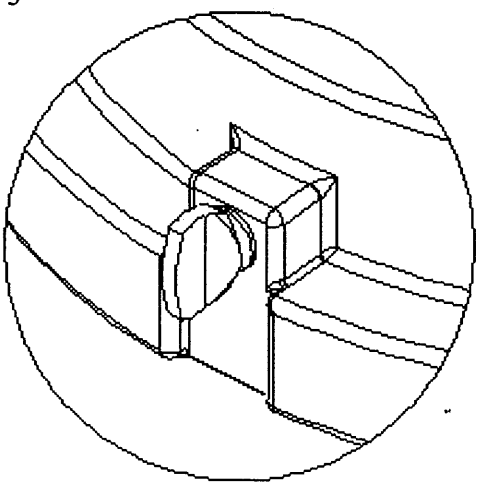


Step 5.

Replace the drain plug.

Note: Do not over tighten, tighten the drain plug by hand only; use of a wrench could damage the drain plug and or the housing.

Fig. 3



Step 6.

Replace the front panel(s) of the heat pump.

Step 7.

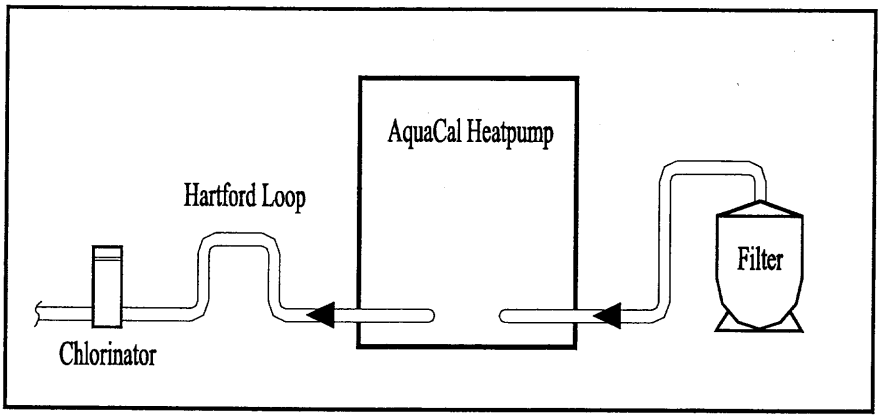
Cover the water inlet and outlet connections to prevent small animals and debris from entering the plumbing during the off-season.

It is now safe for the heater to be stored until it is placed back in service for the next heating season.

If you should require technical assistance please call AquaCal Inc. at 800-786-7751 Monday through Friday 8:00 a.m. to 5:00 p.m. EST.

USAGE OF CHEMICAL PRODUCTS

If you use an automatic in-line chlorinator or brominator, it must always be installed after the pool heater, and an isolated check valve loop (check valve as part of the automatic chlorinator is not acceptable) must be installed between the chlorinator and the heat pump. Furthermore, the chlorinator should be installed as low as possible (always below the level of the pool heater if possible) in order to avoid any chlorine return into the heater. The installation of a **Hartford Loop** (as shown below) is necessary in cases where the chlorinator can not be installed lower than the pool heater.



Suction line feeders rely on pump pressure to force chemicals into the suction side of the pump. This style relies upon small feeder hoses. When installed according to the manufacturer's instructions, this type is not dangerous to the heater.

Chlorine injection directly into the skimmer must be avoided. Highly saturated blasts of chlorine at filter pump start up can damage equipment. This warning also applies against the use of solid chlorine left permanently in the skimmer. Please consult your authorized dealer for information about the best way of distributing soluble chemicals into your pool.

The following are recommended water quality readings and should be maintained at all times.

PH LEVEL	7.4 TO 7.6
CHLORINE CONCENTRATION	1.0 TO 3.0 PPM (Parts per million)
TOTAL ALKALINITY	80 TO 100 PPM

NOTE: **FAILURE TO MAINTAIN THE ABOVE WATER QUALITY READINGS OR FAILURE TO PROPERLY INSTALL AUTOMATIC CHEMICAL FEEDERS MAY VOID THE HEATER WARRANTY.**

NOTE: If your pool heater fails to operate for reasons other than those mentioned above, please contact AquaCal, Inc. @ (800-786-7751) for service. Please be sure to have the following information available before calling for service. Having all the necessary information allows us to better serve you our valued customer.

UNIT MODEL#

UNIT SERIAL #

DATE OF INSTALLATION

NAME, ADDRESS AND PHONE #

NATURE OF THE PROBLEM

TROUBLESHOOTING

THE HEATER IS NOT RUNNING

- Heat pump control set to "OFF". Raise temperature set point above 60 degrees F
- Desired water temperature is reached. Unit will automatically re-start when the water temperature goes below the set point.
- Filter pump is not running (board should show "Flo"). Turn the pump on.
- Filter is dirty restricting the water flow. Backwash and clean filter.
- Breaker on microcomputer board is tripped. Reset it
- Main breaker is tripped. Reset it.

THE COMPRESSORS NOT RUNNING BUT THE FAN IS:

- The unit is in the defrost cycle. Digital panel now shows "FS". The compressor will start again automatically a few minutes after the display stops showing "FS".

THE HEATER IS RUNNING BUT DESIRED WATER TEMPERATURE CANNOT BE REACHED:

- Heat loss too big for the heater; cover your pool as often as you can.
- Evaporator is dirty. Clean it.
- Evaporator restricted due to improper location (see section on locating the unit). Relocate unit to open area with proper clearances.

NOTE: While your Aerotemp pool heater is in the heating mode, a large quantity of warm and humid air passes over the evaporator and causes condensation. It is normal to see condensation dripping under the evaporator.