INTERMATIC®

Libertyville, Illinois 60048
www.intermatic.com



AHN and Traditional Pool Heat Pumps

Installation & Operating Instructions

SAFETY SECTION

Safety Signals

⚠ Warning

Failure to heed the following may result in permanent injury or death
- A "Warning" signal appears in this manual, requiring special attention for personal safety. (Specific instructions will appear in this box.)

⚠ Caution

Failure to heed the following may result in equipment damage.
- A "Caution" signal appears in this manual where special care is required to avoid equipment damage. (Specific instructions will appear in this box.)

Refrigerant Circuit Service Only by Qualified, EPA Certified Technician

⚠ Warning

Failure to heed the following may result in permanent injury or death.
- The heater contains refrigerant under pressure. Repairs to the refrigerant circuit must not be attempted by untrained and unqualified individuals. Service must be performed only by qualified HVAC technicians. Recover refrigerant before opening the system.

⚠ Caution

Failure to heed the following can result in damage to equipment and/or property.
- Failure to properly winterize heat pumps may result in serious equipment damage. Freeze damage is not covered under the heat pump warranty.

⚠ Caution

Failure to heed the following can result in damage to equipment and/or property.
- While the plumbing connections are winterized (not fully tightened), Pool and spa water must not be circulated through the heat pump. Loss of water through loose plumbing connections may result in damage to the circulating pump, pool/spa structure, and/or other equipment.

Safety During Cleaning Operations

⚠ Warning

Failure to heed the following may result in permanent injury or death.
- POSSIBLE ELECTRIC SHOCK HAZARD . . . When washing the heat pump with a water hose, disconnect all power to the pool equipment pad- including, but not limited to, the heat pump, water pump, and any other electrical equipment. Do NOT spray water directly into electrical components. Do NOT restore electrical power until all water has dried completely.

⚠ Caution

Failure to heed the following may result in damage to equipment.
- Do not use a pressure cleaner to wash the heat pump. Damage to evaporator fins and other components will result.

Water Chemistry Safety

⚠ Caution

Failure to heed the following can result in damage to equipment.
- While your heat pump's titanium-based heat exchanger provides impervious protection against poor water chemistry, improper water chemistry may cause expensive damage to the pump, filter, pool shell, etc. To avoid equipment damage, maintain Pool/Spa water per standards detailed later in this manual.
- During pool refinishing or acid cleaning, the water flow through the heater must be shut off. Water flow to the heater must remain off until water chemistry is once again in balance and the water is clear in appearance. Failure to follow these instructions may void the heater warranty.

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ATTENTION INSTALLER

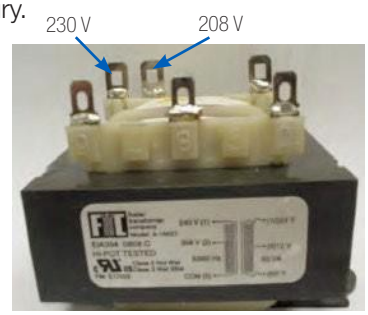
NOTICE: Read all instructions before installation. Please remove this instruction manual from the Electrical area and store it with proof of purchase. All installation and service must be performed by a qualified HVAC contractor or service center and conform to all national, state, and local codes. Used and maintained properly, your heat pump will provide many years of safe and economical service. However, as with any mechanical or electrical device, certain operational and maintenance factors must be observed to get the most from your heat pump while ensuring personal safety for you and others.

Should you, the owner, suspect your heat pump is not performing correctly, by referring to the section in this manual entitled: “Troubleshooting,” you can determine if a call for service is required. Your HVAC contractor can be one source of service, or Customer Support personnel stand ready to assist you. For questions concerning installation, modifications, operation, service, and upkeep, please contact your installer or Customer Support. Warranties may be voided if the heater has been improperly used, maintained, or repaired.

In addition to voiding the manufacturer’s warranty, unapproved installation methods, nonstandard modifications, poor or incorrect maintenance, service by unqualified personnel, or improper use of the heater may result in personal injury and property damage. For personal safety and to avoid damage to equipment, follow all safety instructions displayed on the heat pump and within this manual.

FIELD WIRING

This Heat Pump is pre-wired for 230 only! The instructions below must be followed if 208 volts is the supply voltage. Before hooking power to the main contractor, ensure the proper connections have been made to match the supply voltage on the supplied transformer. Using a voltmeter, determine the incoming voltage. If 208V supply is being used, disconnect the factory lead (1) and reconnect it on (2) as noted in the pictures below. Failure to do so will result in voiding warranty, damage to the unit, or injury.

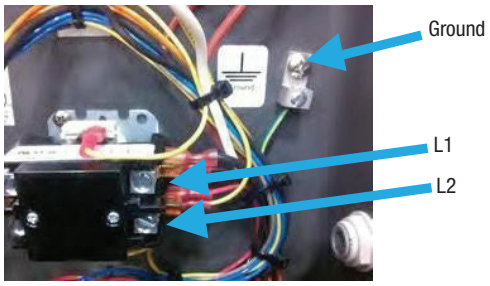


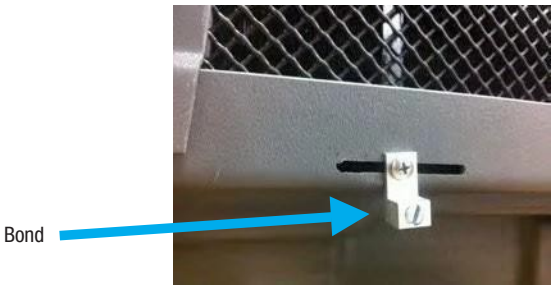


Incoming power is to be connected to L1 and L2 at the contactor after, as shown. To ensure proper connections tighten the screws securely to 40-45 in-lbs. After the L1 & L2 lugs are torqued, move the wire side to side to settle the wire strands and torque again. Failure to do so may result in wires becoming loose, which can result in voiding the warranty, damage to the unit, or serious injury.

GROUNDING AND BONDING

Grounding and bonding the unit is required. Failure to do so will result in the warranty being void, damaging the unit, or serious injury.





UNIT SETUP

Water Flow:

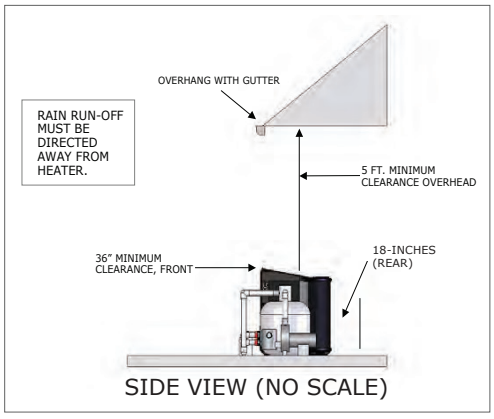
The recommended water flow rate is 40 to 80 GPM (varies per model). The minimum water flow rate is 25 GPM, and the maximum water flow rate is 80 GPM. Waterflow exceeding the maximum flow rate requires a bypass. Damage due to excessive water flow will void the warranty. Any chemicals added (Chlorinators, Salt Generators, etc.) must be added downstream of any heater(s) with a check valve separating them. For any questions regarding plumbing recommendations, please call the manufacturer.

Drainage:

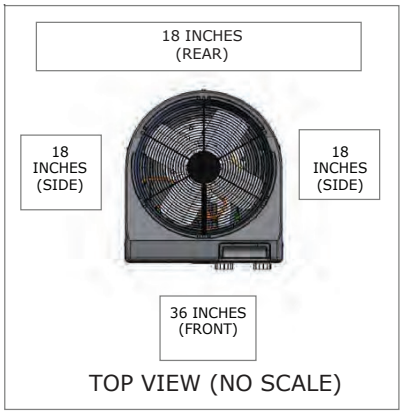
Place the heat pump on a flat, slightly pitched surface, such as a concrete or fabricated pad, for proper drainage of condensation and rainwater. Place the pad at the same level or slightly higher than the filter system equipment pad. Ensure the pad is not pitched more than ¼ in. per foot in any direction as needed for runoff. Make sure the Heat Pump is not located where large amounts of water may run off from a roof into the unit.

Location:

Ensure sufficient clearance around the Heat Pump for maintenance and airflow. Proper airflow is required for the Heat Pump to operate efficiently. At least 36 in. access must be available in the front and 18 in. on all the other sides of the Heat Pump for service and proper airflow. When installing two or more Heat Pumps side-by-side, the coil clearance increases to 24" between Heat Pumps. It is also recommended that if the Heat Pump is installed under a cover or vertical overhang, the unit must have a minimum of 5 feet clearance from the top of the Heat Pump. Any additional heaters, such as solar or L.P., must be downstream of the Heat Pump. See the diagrams below for clearance requirements.



FRONT-REAR-OVERHEAD



FRONT-SIDES-REAR

Commercial & Multiple Heater Setups:

Please Note: Due to health code requirements requiring a mandatory GPM, some request circumstances restrict the water flowing throughout the Heat Pump to Increase the total required GPM for the system. This can result in improper water flow, high electric bills, voiding warranty, loss of performance, overheating of the Heat Pump, damage to the unit, or serious injury. A water flow meter is required on all heat pumps. A water flow meter will help guarantee a longer, better life and performance of your Heat Pump.

OPERATION

This brief information is provided to installers, service personnel, and owners. This section intends to provide rapid access to very basic operational information. Individuals routinely using, installing, maintaining, and servicing this heat pump are strongly encouraged to read this entire manual. Herein, the terms Heat Pump, Heater, and Unit are used synonymously. These instructions are intended for local heat pump control independent of an external controller. Owners: If your installation includes an external controller, contact your installation dealer or the external controller manufacturer for instructions on how to operate the external controller.

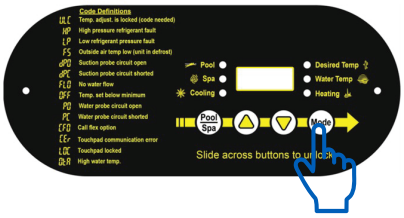
These instructions are for starting in the heating mode. Owners of Heat-Cool units, to utilize all features of their heater, will certainly want to also refer to owner-level programming.

A. Verify Electrical Power is Present at the Heater:

1. Ensure the unit has connected electrical power; the heater controller display should be illuminated.
2. If the display is blank, ensure the electrical breaker and heater disconnect are switched to “ON.”
3. For now, leave the water circulation pump OFF.

B. Set the Heat Pump Controls (Refer to Control Panel Layout:

1. The Heat Pump touchscreen control panel has a sleep mode. This prevents rain that touches the display from making unwanted settings changes. To wake up the control panel, tap a button on the display until it is illuminated. Then, slowly slide a finger across the buttons, as shown below.



2. The code UnL will briefly appear, and then either the code FLO or the water temperature will appear. The user settings can be made without water flowing.
3. Press the MODE button until the heat HEA (heat) indication displays. This action will enable the remaining programming keys.
4. Using the POOL/SPA selector key, select the Pool mode. An illuminated Pool indicator light on the display’s left side will confirm the Pool control has been selected. Use the up and down arrow keys to set the desired water temperature for the pool. If heating only a Spa, use the down arrow key, lower the Pool temperature until OFF is displayed, and proceed to step C.
5. If the Heat Pump is used to heat a Spa, use the POOL/SPA selector key to select the spa, then use the up and down arrow keys to set the desired water temperature. An illuminated Spa indicator light on the display’s left side will confirm the Spa control has been selected. If heating only a Pool, using the down arrow key, lower the Spa temperature until OFF is displayed.
6. The Heat Pump controls are now set to maintain the desired water temperature for the Pool and Spa.

C. To Begin Heating

1. Verify MODE is set to HEA (heat), then depending on which body of water is to be heated, use the POOL/SPA selector key to select Pool or Spa.
2. Position water valves to flow from the pool or spa through the heater and back to the pool or spa.
3. Start the water pump. The Heat Pump fan will start, and the unit will begin heating after a four-minute delay. The Heat Pump controller incorporates a short cycle time delay for compressor protection. If the operation of the Heat Pump is interrupted, compressor start-up is interrupted for four minutes. The selected body of water will be brought to temperature and maintained per the setting determined previously in “Set the Heat Pump Controls.”
4. In operation, whenever the actual (displayed) water temperature falls below the desired set point, the unit will begin heating.

D. Program Filter Pump Run Time:

Most pool/spa systems utilize a timer or multi-function controller to manage filter pump run times. If your system incorporates such a device, follow the instructions below:

1. Upon start-up, it will be necessary to allow the filter pump to run continuously until the water has reached the desired temperature set-point. It could take multiple days to reach that desired temperature. If a timer controls the pool filter pump, it will be necessary to override the timer to allow 24-hr. operation.
2. Once the desired temperature has been obtained (typically 1-4 days), reset the pump control device.
3. A heat pump can only operate when the filter pump is running. Therefore, it may be necessary during cooler weather to extend the water pump’s hours of daily operation. The increased run time is necessary to keep up with

increased weather-related heat losses. In colder months, run times can exceed eight to twelve hours daily.

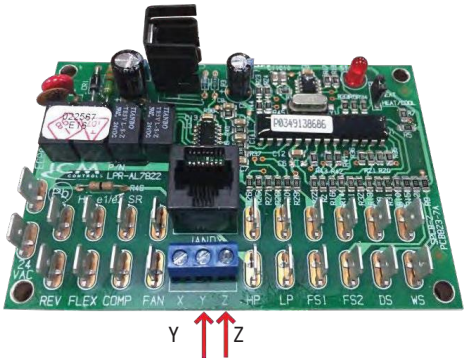
E. To Stop The Heat Pump:

1. Select OFF via the MODE selector. This method of shutdown preserves the controller settings.
2. An interruption of water flow–such as when a pump timer is in control will also halt heat pump operation.

OPERATING HEAT PUMP WITH EXTERNAL CONTROLLER

A. Two-wire remote system

1. Caution: Turn off & disconnect all electrical connections to the Heat Pump & the remote Automation system.
2. Connect the two wires from the remote system to Terminals Y-Z of the Heat Pump (Out of the X-Y- Z Terminals located on the internal control board in the heat pump's electric box)
3. Close the Heat Pump panels and restore power to the Heat Pump.
4. Turn the Pool thermostat to the OFF position by pressing the down key on the heat pump control panel (set temperature below 45 degrees). Then press the POOL/SPA key once to select Spa thermostat. Set the Spa thermostat to the OFF position by pressing and holding the down key on the heat pump control panel (set temperature below 45 degrees)
5. Please note: the next several steps are timed. If you do not press the next button in time, the board will reset, causing you to restart the steps starting with this step. Simultaneously press and hold the up and down keys until CF1 is displayed.

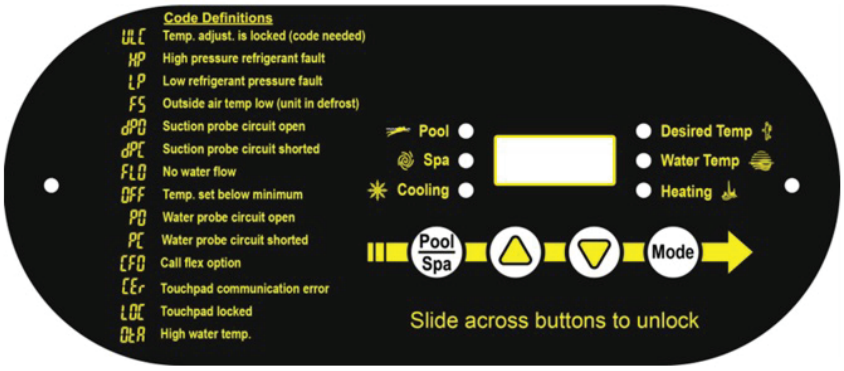


6. While CF1 is displayed, press the POOL/SPA key repeatedly until LOC is displayed. Now press the up key repeatedly until 17 or 050 is shown.
7. Press the POOL/SPA key repeatedly until JAO is displayed. Then press the up key repeatedly until two is shown. Press no other buttons.
8. After a delay of about 15 seconds, the water temperature will display. Now, you can start controlling your heat pump with the remote system.

B. Three-wire remote system

1. Caution: Only non-powered circuits shall be connected to the FS-2 terminals. The warranty does not cover damage from supplying power to FS-2 terminals.
2. Turn off & disconnect all electrical connections to the Heat Pump & the Remote Automation System.
3. Run (18ga min.) low voltage wiring to common and spa connections of the external controller. (Pool wire not used). Using female spade connectors, connect the two wires to the FS-2 Terminals to the right of X-Y-Z. DO NOT USE X-Y-Z TO CONNECT THE 3 WIRES.
4. Close the Heat Pump panels and restore power to the Heat Pump.
5. Make sure the pool water pump is on.
6. Turn the Pool thermostat to your desired water temperature for the Pool position by pressing the down key on the Heat Pump control panel. Then, press the POOL/SPA key once to select the spa thermostat. Set the Spa thermostat to your desired water temperature for the spa by pressing and holding the down key on the control panel.
7. The next several steps are timed. If you do not press the next button in time, the board will reset, causing you to restart the following steps starting with this step. Simultaneously press and hold the up and down keys until CF1 is displayed.
8. While CF1 is displayed, press the POOL/SPA key repeatedly until LOC is displayed. Now press the UP key repeatedly until 17 or 050 is displayed.
9. Press the "POOL/SPA key repeatedly until FS2 is displayed. Press the up key repeatedly until one is displayed. Press no other buttons.
10. After a delay of about 15 seconds, the water temperature will be displayed. Now you can start controlling your Heat Pump with the remote system & enjoy. When the remote system calls for heat, the Heat Pump will display in the Spa mode when heating the Pool or Spa.

HEAT PUMP CONTROLLER



A. Control Buttons, Indicator Lights, and Display (as indicated by circled numbers)

1. POOL / SPA SELECTOR – Selects either pool or spa thermostat.
2. COOLING INDICATOR LIGHT – Indicates the unit is cooling.
   (Note: this light is nonfunctional with heat-only models.)
3. UP ARROW – Increases temperature setting. (Maximum setting is 104˚F)
4. DOWN ARROW – Decreases temperature setting. (Minimum setting is 45˚F)
5. HEATING INDICATOR LIGHT – Indicates the unit is heating.
6. MODE SELECTOR – Used to select between the Heating, Cooling, Auto-changeover, and Off for Heat & Cooling models and used to select between Heating and Off for heat-only models.
7. SPA INDICATOR LIGHT – Indicates the heater references the spa thermostat.
8. POOL INDICATOR LIGHT – Indicates the heater references the pool thermostat.
9. LED DISPLAY – Displays water temperature when no keys are being pressed. Displays desired temperature when the up arrow or down arrow is pressed. It also displays operational, programming, and fault codes as applicable.
10. DESIRED TEMPERATURE LIGHT – Indicates temperature set point is being displayed. Indicates temperature set point is being changed due to the up arrow or down arrow being pressed.
11. WATER TEMPERATURE LIGHT – Indicates current water temperature is being displayed.

B. Operational & Programming Codes

Display	Description
UnL	The code will briefly appear when the controller is woken up.
ULC	Enable the Heat Pump lockout feature. Heat pumps are shipped from the factory with the [ULC] option disabled
LOC	If LOC is displayed and followed by a 0, the ULC feature will be enabled.
FLO	No water flow was detected. The filter pump is Off, or the Heat Pump is not receiving the correct water flow.
OFF	The Mode selector has turned Off the Heat Pump, or the temperature setting has been lowered below 45°F.
CFI	Select the water temperature format (Celsius/Fahrenheit).
ULC	Enable the Heat Pump lockout feature.
ELC	Enter the lock code. Select the passcode to lock the interface.
ACH	Auto changeover (Heat and Cool models). The Heat Pump will maintain the set temperature within 3°F. The indicator light will display if the Heat Pump is in Heating or Cooling mode.
HEA	Heat the water to the temperature at the set point.
COO	Cool the water to the temperature set point.
CFO	Call Flex Options. This is a programming entry point when used with an Aquacal Call/Flex add-on kit (# 0030-LEDS). Permits the use of CALL or FLEX options.

C. Setting Up Operational Codes

This section covers features and settings typically accessed first by the installer and then remaining accessible by the end user (the owner). If preferred, all programming may be performed without water flow, waiting to start the water pump as the last step in the setup and process.

Applying Power to the Controller:

1. When power is applied, the controller performs a lamp test, and the display will read [888] briefly. User settings can be made without water flowing.
2. The Heat Pump then displays as normal. If the circulation pump is ON and adequate water flows through the heater, it will display the actual water temperature. If the circulation pump is OFF, it will display FLO.
3. The Heat Pump touchscreen control panel has a sleep mode LOC. This prevents rain that touches the display from making unwanted settings changes. To wake up the control panel, tap a button on the display until it is illuminated. Then, slowly slide a finger across the buttons.
4. The code UnL will briefly appear, and then either FLO or the water temperature will appear. The LED indicators will display which body of water is being treated, whether heating or cooling and the water temperature.

Mode, Controls, and Starting the Heat Pump:

1. Once electrical power is supplied to the Heat Pump, sufficient water is circulating, and the heater controller has completed its self-test, it is ready to operate.
2. The heat pump is shipped with the controller mode function set to OFF. To begin heating the water, use the mode button and then the arrow keys to toggle to HEA (heat) mode. Using an arrow key, adjust the desired temperature set point above the actual water temperature to begin heating. There are two ways to switch the Heat Pump OFF. 1.) One of the functions of the mode button is OFF. The heater will shut OFF until the mode key selects an operational mode. 2.) The thermostat set point can be lowered below the minimum temperature (45ºF). This action will cause the display to read OFF.
3. If the Heat Pump is a Heat and Cool model, use the mode button to select one of the following modes: HEAT, COOL, or ACH (auto changer-over). Heating and cooling modes, such as ACH mode, are only available for specific models. Confirm what type of heat pump you have before setting modes. In the ACH mode, the Heat Pump will maintain the set temperature within 3°F. The indicator light will display if the Heat Pump is in Heating or Cooling mode.
4. Using the up-arrow key, increase the desired temperature until it exceeds the displayed temperature value. (Note: See user lock code section; if LOC, 0 is displayed upon pressing the up or down arrow keys.) Once the desired temperature has been entered, the display will read the actual temperature, and the heat pump will start operating. The compressor and the fan must be operating before the heating LED illuminates.

Pool/Spa Thermostat Settings:

1. Press the POOL/SPA key to toggle between the pool and the Spa temperature set points.
2. The Pool and Spa LED indicator lights, located to the left of the temperature display, will confirm the selected set point.

Changing the Pool Temperature Set-point:

1. Using the POOL/SPA key, select the Pool temperature set point. The Pool set point indicator light will confirm the selection.
2. The pool temperature set point is adjustable from a minimum of 45oF to a maximum of 104ºF. Pressing the up-arrow key will raise the set point one degree for every button push. Pressing the down-arrow key will lower the set point by one degree for every button push.

Changing the Spa Temperature Set-point:

1. Using the POOL/SPA key, select the Spa temperature set point. The Spa set point indicator light will confirm the selection.
2. The Spa temperature set point is adjustable from a minimum of 45ºF to a maximum of 104ºF. Pressing the up-arrow key will raise the set point one degree for every button push. Pressing the down-arrow key will lower the set point by one degree for every button push.

Selecting Between F° and C° (CF1):

1. Simultaneously press and hold the up and down arrow keys until the CF1 code appears.
2. With the CF1 code displayed, pressing the up-arrow or down-arrow keys will change the selection code to 0 or 1. Select 1 for the Fahrenheit temperature display or 0 for the Celsius temperature display. Once the desired temperature display mode has been selected, not pressing any buttons for 15 seconds will allow the controller to save the selection and return to the normal operating mode. Pressing the POOL/SPA key will save the selection and step to the following menu parameter (User Lock Code).

User Lock Code Option (ULC):

Heat pumps are shipped from the factory with the ULC option disabled. Enabling the ULC function permits the Heat Pump owner to restrict access to the unit's controls. With the ULC function enabled, unless the correct ULC code number is entered, changes to Level-1 programming are not possible (e.g., altering temperature set points). The ULC option is an electronic lockable cover for the controls.

1. Simultaneously press and hold the up-arrow and down-arrow keys until the CF1 code appears.
2. Press the POOL/SPA key once to display ULC.
3. With ULC displayed, pressing the up or down arrow key will display either 1 or 0. Selecting 0 will allow the keypad to remain unlocked. Choosing one will enable the user lock code option.
4. To enter a lock code number, press the POOL/SPA key once to display ELC (enter lock code). Use the up or down arrow keys to select a lock code. The code can be any number from 00 to 99. The factory set lock code is 0. Not pressing any buttons for 15 seconds will allow the controller to save the selection and return to the normal operating mode. Pressing the POOL/SPA key will also save the selection and step the controller to the following menu parameter (CFO).

Gaining Access to Controller with ULC Enabled:

1. Once the ULC option has been enabled, pressing any key will momentarily display LOC followed by 0, prompting the correct lock code number entry.
2. To access the controller, use the up-arrow key to scroll to the correct code number.
3. Press the POOL/SPA key to display the current water temperature. Control settings can now be viewed or changed as desired. After 4 minutes, if there is no controller activity, the control will return to the locked LOC mode. Make sure to record your lock code and store it in a safe place.

Deactivating the ULC function:

1. Press any key, enter the user lock code number, and press the [POOL/SPA] key.
2. Simultaneously press and hold the up arrow and down arrow keys until the CF1 code is shown on the display.
3. Use the POOL/SPA key to scroll to the ULC message, then press the down arrow key to change the display to 0. This will disable the User lock function.

User Lock Code is Activated, but Pass Number is Not Known:

1. Should the ULC option be enabled, and a lock code number other than the factory default (0) will be installed but is unknown; the following procedure may be followed to regain controller programming access.
2. Simultaneously press and hold the POOL/SPA and up arrow keys until the display shows 888. This operation will reset the controller to the factory default settings.
3. When reset to the factory default settings, the user lock code ULC is deactivated.
4. Because all other settings are returned to the factory default if an external controller is in use, reference the operating Heat Pump with the external controller section in this manual to reconfigure the controller.

Selecting Call Flex Pump Options (CFO):

The Call Flex option automatically adjusts the run time of the water circulator pump and heater based on changing weather conditions. Without Call Flex, as weather conditions grow progressively cooler during winter months or when unusually cold weather occurs, the run duration of the circulator pump may require manual adjustments to permit the heater to maintain or reattain the desired water temperature (the water pump must be running for the heater to operate). Likewise, without call-flex, one must remember to reset the pump run controls following cold weather events. The Call Flex option greatly reduces the need for seasonal, manually made pump run time adjustments. Call Flex is a dealer-installed option that does not come with every heater. If Call Flex was not part of the installation, and you would like to add Call Flex, your dealer can do so. Contact the installation dealer. The following steps control the Call Flex features if the installation has the Call Flex option.

1. Simultaneously press and hold the up and down arrow keys until the display shows CF1. Press the POOL/SPA key three times to scroll the display to CFO.
2. With the CFO code displayed, use the up or down keys to select 0 to disable the call flex option. Select 1 or 2 to enable the call flex option. Not pressing any buttons for 15 seconds will allow the controller to save the selection and return to the normal operating mode. Pressing the POOL/SPA key will save the selection and step the controller to the following menu parameter.
3. For further information, please refer to the Call Flex installation instructions for the Call Flex kit. For additional copies of these instructions, contact Customer Support.

MAINTENANCE AND OPERATIONAL RECOMMENDATIONS

The information in this section is written primarily for the Homeowner but may also apply to servicing dealers or HVAC service centers. This section contains information concerning planned maintenance, proper water flow, maintaining proper clearances, and other vital information. Please read this section now before calling Customer Support.

General Maintenance

It is recommended that a qualified Heat Pump service specialist should inspect and maintain heat pumps annually. Additionally, if the Heat Pump is located near the beach or coastal area, where salt spray and sand can become detrimental factors, more frequent service may be necessary.

Maintain Proper Water Flow

- Operating and maintaining the filter according to the manufacturer's specifications is important. As a filter gets dirty, the water flow to the heat pump is reduced. The higher the pressure on the filter gauge, the lower the flow rate.
- Like a dirty filter, large amounts of debris in the pump and skimmer baskets can reduce water flow. Keep baskets free of debris.
- Check for improper valve settings. A partially closed valve after the filter or a full-open bypass around the heater will cause insufficient water flow through the heater.
- If the conditions listed above remain unresolved, the water flowing through the heater may be reduced to a point where internal safety devices (i.e., "H.P." or "HP5") shut the heater off.
- Before calling for service, always check the filter, the pump basket, and the water valve positions. If the problem persists, please contact Customer Support.

IMPORTANT! Your heat pump is engineered for exceptional durability and reliability. The heat exchanger is equipped with titanium tubing, which is nearly impervious to water chemistry damage. However, other components of the heater, and the remainder of the pool/spa equipment in general, may be susceptible to damage from prolonged exposure to unbalanced water chemistry. Likewise, bathers may be exposed to health risks if water chemistry is not properly maintained.

Control Water Chemistry

For the longevity of the entire pool/spa installation and the safety of bathers, it is strongly recommended the water chemistry be checked regularly and maintained within proper norms. Please see the table below for a complete listing of recommended water chemistry levels.

RECOMMENDED WATER CHEMISTRY STANDARDS*

Chlorine: 1.0 – 3.0 ppm in pools, 1.5 – 3.0 ppm in spas

Bromine: 2.0 – 4.0 ppm in pools, 3.0 – 5.0 ppm in spas

pH: 7.4 – 7.6 ppm in pools, 7.2 – 7.8 ppm in spas

Total Alkalinity: 80 – 140 ppm in pools, 80 – 120 ppm in spas

Calcium Hardness: 200 – 400 ppm in pools and spas

Total Dissolved Solids: 1,000 – 2,000 ppm in pools,1,500 ppm above start-up of totaldissolved solids in spas

**Standards for commercial applications may vary from local to local*

ALWAYS MAINTAIN WITHIN LIMITS ESTABLISHED BY THE AUTHORITY HAVING JURISDICTION.

Control Irrigation and Storm runoff:

Control Irrigation: In regions where wells are used for irrigation, water quality is sometimes poor, and water spray can damage heater components. Regardless of water quality, irrigation must be directed away from the heat pump.

Prevent rainwater runoff from pouring directly into the heater. The heater is designed to withstand average rainfall, but solid streams of water from roof drip lines may eventually damage heat pump components.

If the heat pump resides beneath a roof edge, a rain leader (gutter) or rain shield will be necessary to promote heat pump longevity.

Heating in Cooler Weather:

Late night and early morning, generally the coolest times of the day, are the least efficient for heating. Heat pumps should be timed to operate during the warmest daylight portions of the day for the most efficient heating operation. Conversely, if cooling a pool, it is best to run the equipment at night. Please set the water pump and heat pump controls accordingly.

Pool/Spa Blankets:

A "solar" blanket will significantly reduce your heating bills. Check with the installation dealer to see if your heat pump was sized to be used in conjunction with a blanket. Blanketed pools typically lose only 3 – 4° of heat per night versus 8 – 10° overnight with an un-blanketed pool.

Reductions of 40-60%on heating bills can be achieved by using blankets. (Idea...Contact Customer Support to learn about Liquid Blanket innovations.)

Pool and Spa Combination Heating:

Everything stated for heating a pool applies to heating a spa—only the volume of water being heated is different. Your heat pump comes equipped with two thermostats. One thermostat is for the pool, and the other is for the spa. Position the pool and spa isolation valves as directed by your installer; select the appropriate thermostat (pool or spa), whichever you are heating, and with electrical power and water flow supplied to the heater, the water will be maintained at set point.

Water Pressure Switch Adjustments.

Plumbing Setups are Different – A simple adjustment of the water pressure switch may be needed. If the "FLO" or "FL3" code appears when the pool pump is on or if the unit does not indicate "FLO" when the pool pump is off, please call Customer Support at 1-815-675-7000 for detailed instructions.

Spa Heating & Spa Setback Option:

Air blowing into your spa while it is being brought to temperature will often neutralize or partially counteract the heat being put into the spa by the heater; this added heat loss equates to increased time to bring your spa to the desired temperature. When heating a spa, be sure to turn off the air blower. Air induced through the spa jets should also be eliminated during warm-up whenever possible.

If your heater is being used only to heat a spa, the POOL thermostat can be used as a setback control: set the pool control at a point 10-15º F below the desired spa heat temperature and select the pool thermostat. This method allows the spa–when not in use–to be held at a heated temperature, but somewhat lower than normal spa-use temperature. One would want to blanket the spa if using this setback method. Using spa setback will result in reduced warm-up periods over full, cold starts.

Calculating Initial Heating Time

The time it takes to warm your pool or spa initially depends on several factors.

A. First, determine how many gallons of water are to be heated. Knowing this, you can then compute the equivalent pounds of water involved and the BTUs necessary to heat the volume of water to the desired temperature.

B. Next, find the approximate BTU output of your heat pump at the current ambient air temperature.

C. Finally, decide the temperature at which you plan to maintain your pool or spa.

The following worksheet can be used to calculate approximately how long it will take your heater to bring your pool or spa up to temperature. Remember that heating times will vary depending on weather conditions when the heater is in use. The use of a pool blanket can dramatically improve heat-up and heat maintenance performance.

Pool Volume (Length X Width X Average Depth) = _____ Pool Cubic Feet

X Gallons per cubic ft.(7.5) = _____ Pool Gallonage

X Pounds per Gallon (8.3) = _____ Pounds of Water

How many degrees do you want to raise the temperature of the pool?

# of Degrees _____ X Pounds of Water (per above) = _____BTU's Required BTU's Required (per above) _____÷ BTU Output of Heater = _____ Hrs. of Operation

<u>Optional Cold Weather Adjustment Factor:</u>

_____ Hrs. of Operation (per above) _____ X 1.25 (60º F outside air (O.A.) Temperature Factor) = _____ Hrs. of Operation at 60º F O.A.

During the Swim Season:

During the swim season, even if the pool or spa is not in use, allow water to flow through the heater. Doing so eliminates the need to reposition valves when you wish to heat the pool or spa.

When heating or cooling is not desired, leave heater controls in the OFF position.

Freeze Protection & Extended Shut Down:

In areas where freezing conditions are rare, allow the filtration system to run continuously throughout the freeze period. Typically, circulating (moving) water will not freeze during light freeze conditions.

In areas where freezing conditions are prevalent and sustained, the heat pump MUST be winterized. Please refer to the winterizing instructions below and on the following pages.

Winterizing:

After shutting down the pool and (or) spa with all water removed from the plumbing, disconnect the supplied unions on the front of the Heat Pump. Use an air blower to blow the water out of the Heat Pump. The air blower has to be high volume but low pressure, such as a shop vacuum in reverse. Blow into the inlet until the water stops coming out of the outlet, then blow into the outlet until the water stops coming out of the inlet. Cycle back and forth until no water comes out in any direction. Start the unions back on the Heat Pump to prevent dirt, debris, foreign objects, and (or) pests from entering the Heat Pump plumbing.

TROUBLESHOOTING

Fault Codes: If a fault code is displayed, check the table below to diagnose the circumstance and determine the required action

Display	Description
FLO	No water flow was detected. The filter pump is Off, or the Heat Pump is not receiving the correct water flow. Check to make sure the circulation pump is operating, and the filter is clean. There may also be a valve positioned incorrectly, allowing water to bypass the Heat Pump.
FS	With Heat-only models, FS indicates the outside air temperature may be too low for the heat pump to operate effectively, and the evaporator coil may be icing up. The Heat Pump will remain in this state until the air temperature rises. With Heat and Cool models, the FS indicated the Heat Pump is in defrost mode.
CEr	Touchpad communication issue. There may be a break in communication between the user interface panel and the bottom relay board. Check for damaged or broken communication cables. A qualified HVAC technician should be contacted.
dPC	The suction probe circuit is shorted. A qualified HVAC technician needs to replace the sensor.
dPO	The Suction probe circuit is open. A qualified HVAC technician needs to replace the sensor
P.O.	The water probe circuit is open. A qualified HVAC technician needs to replace the sensor.
P.C.	The water probe circuit is shorted. A qualified HVAC technician needs to replace the sensor.
OtA	High water temperature. The OtA is displayed when the water temperature is above 110°F; the fault is cleared when the water temperature reaches 100°F.
H.P.	High-pressure refrigerant fault. There may be insufficient water flowing through the Heat Pump, or the Heat Pump may have restricted airflow due to a dirty coil.
L.P.	Low-pressure refrigerant fault. Check for signs of ice buildup on the coil. A qualified HVAC technician should be contacted.

Heat Pump Fails to Operate

Is the display illuminated?
If not, ensure the main breaker breaker (located at the power supply panel) and the disconnect switch (located near the heat pump) are both turned ON.

Is the code "FLO" displayed?
If so, ensure the circulating pump is operating, and the filter is clean. There may also be a valve positioned incorrectly, allowing water to bypass the heat pump. Be sure water is flowing through the heater.

Is the Pool or Spa thermostat selected for the correct body of water to be heated, and have you tried selecting a higher temperature setting?
If not, the actual water temperature may exceed the selected thermostat's. Raise the desired water temperature above the actual water temperature; the fan should start, and after approximately four (4) minutes, the "Heating" light should illuminate. If the heat pump still fails to start and the unit is not in defrost (heat-only unit defrost display code is: "F.S."), contact Customer Support.

Is the filter pump running?
Check to verify the filter pump is running and that sufficient water flow is circulating through the system.

Irregular code is shown on display.
If a code is shown on the display other than the Water Temperature or FLO, diagnose it and have the cause of the code corrected. See the Fault code table above.

Heat Pump is a tripping breaker..
Contact a licensed electrician to check and verify the breakers are in good condition and properly sized for the heat pump. Multiple heat pumps installed at the same site may benefit from special automatic sequencing controllers to avoid excessive power drops at start-up. A qualified technician should evaluate the heat pump if a fault occurs immediately when the compressor starts.

The heat pump is running but not heating, and run times seem longer than normal.

Is the air blowing out of the top of the unit noticeably cooler than the surrounding air?
(With the heating indicator light illuminated, a 9°F to 12°F difference is typical.) If not, contact Customer Support for service. But first, be sure all air coil surfaces are free from obstructions– low roof overhangs, landscaping, walls, fences, etc., can restrict airflow. The heat pump needs good airflow to operate at peak efficiency.

How many hours per day does the circulating pump operate?
Cooler weather conditions, or heating to a higher-than-normal temperature, may necessitate running the heat pump for a longer period. Was the heater sized considering the use of a pool blanket (check with the installing dealer)? A pool blanket can be useful in permitting shorter run times, leading to substantial energy cost savings.

Is the bright Yellow LED indicator light On?
Each heat pump comes with a patented yellow diagnostic indicator light visible externally on the top portion of the heat pump. This light alerts users to abnormal operating conditions such as reduced water flow or a dirty Heat Pump coil. Check to ensure there are no obstructions in the water flow. If a variable speed or two speed filter pump is being used, run the filter pump at a higher speed but do not exceed the maximum water flow rate your Pool and Spa was designed for. If increasing water flow and having your condensing unit does not shut the yellow indicator Off, contact Intermatic Technical Support.

What is the outside air temperature?
The heat pump may be in defrost mode if air temperatures are below 50°F. With Heat-Only models, the code FS will be displayed if the heater is defrosting. If air temperatures are not cold, but the heater remains in defrost, Technical Support.

Water Coming from the Heat Pump:

Is it a leak or just condensation from normal operation? Here's how to find out.
After the heat pump has been operating for some time, water may be observed surrounding the heater. The moisture seen is condensation produced as a normal by-product of transferring heat from the air into the pool or spa water. Significant amounts of water can be produced if the air humidity is high. Conversely, a low humidity condition may result in no condensation being produced.

If the water around the unit seems excessive test the water draining out the heater base for the presence of the sanitizer being used in the pool or spa. Using a water test kit or a test strip, check a water sample for chlorine or bromine. If the sample tests positive for sanitizer, call Customer Support. If the test is negative, the water is probably harmless condensate. Or, as an alternate method, shut the heat pump off, leaving the circulation pump running. Within a few hours, there should be a marked reduction in the amount of water seen around the bottom of the heat pump. If the water appears to be drying up, the water is probably harmless condensate, indicative of normal operation.

Note: *The water test method will not be effective if an ionizer or ozone generator is being used to produce the sanitizing agent.*

CAUTION! If, after testing, a water leak is suspected, immediately shut OFF the water pump and contact Customer Support.

Before calling Customer Support:

If you should need to call us for service or parts, please have the following information ready:

Model: _____ *Look for this information on a sticker located at the top of the front cover of this manual; otherwise, see the data plate on the side of the heater.*

Serial Number: _____

Installation Date: _____ *Refer to the installer's invoice for this information.*

Having the above information ready will speed up the service process and allow us to respond more quickly. A brief but concise description of what the unit is or is not doing will also help us to help you.

Please call Customer Support. We are here to serve you from 8 AM to 4:30 PM CST., Monday through Friday.

If you prefer, you may email the information to poolsupport@intermatic.com. (Provide your full address and a daytime telephone number.)

LIMITED WARRANTY

If within the warranty period specified, this product fails due to a defect in material or workmanship, Intermatic Incorporated will repair or replace the failed part or the entire unit with a new or factory refurbished product, at its discretion, free of charge. In most cases, the Purchaser must pay all labor and transportation charges on products or parts submitted for repair or replacement. This warranty is extended to the original purchaser only and is not transferable. The warranty of a replacement product is concurrent with the original warranty of the product being replaced.

This warranty does not apply to: (a) damage to units caused by accident, abuse in handling, misuse, neglect, improper installation, improper maintenance or acts of God; (b) units which have been subjected to unauthorized repair, use of non-genuine Intermatic replacement parts, opened, taken apart or otherwise modified; (c) units not used in accordance with manufacturer's instructions; (d) damages exceeding the cost of the product; (e) bulbs, batteries or the finish on any portion of the product, such as surface and/or weathering, as this is considered normal wear and tear; (f) transit damage, initial installation costs, removal costs, or reinstallation costs.

INTERMATIC INCORPORATED WILL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESSED OR IMPLIED WARRANTIES. ALL IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY MODIFIED TO EXIST ONLY AS CONTAINED IN THIS LIMITED WARRANTY. SOME STATES DO NOT ALLOW LIMITATIONS ON THE DURATION OF AN IMPLIED WARRANTY, SO THE LIMITATION MAY NOT APPLY TO YOU.

This warranty service is available by either (a) returning the product to the point of purchase or (b) by completing a warranty claim. You are required to provide a receipt, the model number and/or serial number when exercising this limited warranty.

Warranty periods can differ by product. For more details go to www.Intermatic.com or call 815-675-7000.

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