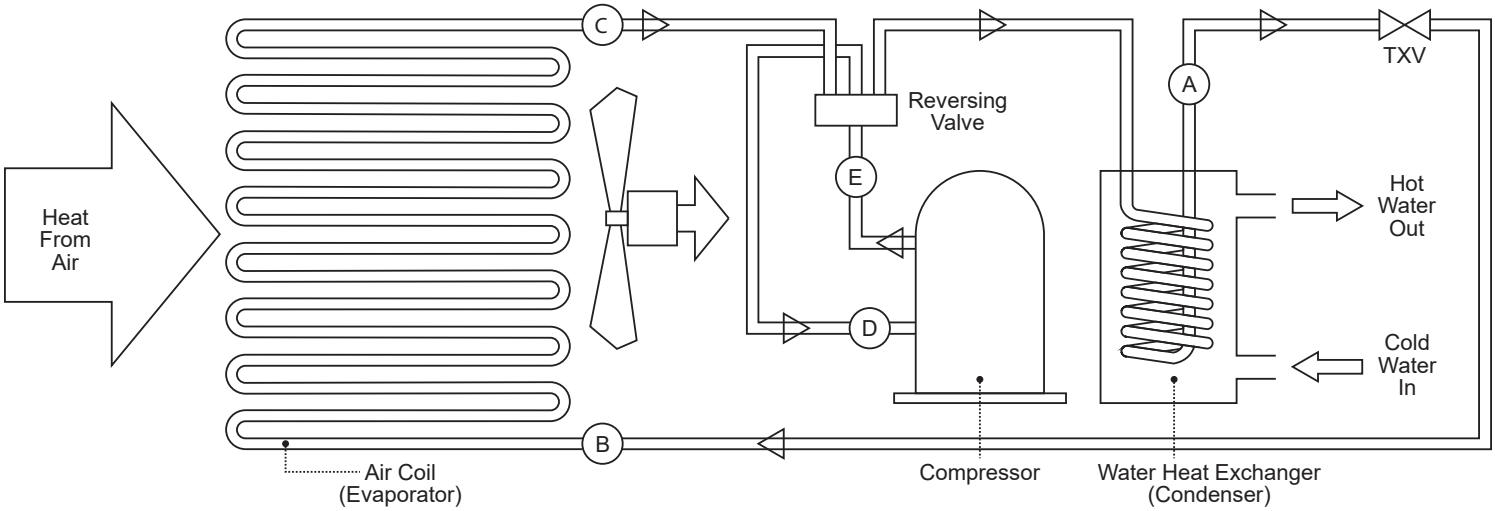
FIGURE 15: Location of Components (Heating Operation Flow Shown)



The heat pump takes heat from the environment and uses it to heat the pool water. During heat pump operation, high temperature, high-pressure sub cooled liquid Refrigerant (A) is throttled by Metering Device (TXV) and turned into low temperature, low-pressure saturated liquid (B). The two-phase Refrigerant flows through the Air Coil (Evaporator), where the liquid refrigerant evaporates into vapor by absorbing heat from the surrounding air. At the outlet of the Air Coil (Evaporator) it becomes a low temperature, low pressure superheated vapor (C). The Compressor receives this flow at the suction line (D), and compresses it into a high temperature, high pressure superheated vapor, which is discharged from the Compressor (E) and flows into the Water Heat Exchanger (Condenser). The heat carried by the flow is then released to the pool water. At the same time, the high temperature, high-pressure superheated vapor is then condensed back to high-pressure sub cooled liquid (A), which completes the cycle. The water, which is being forced through the Water Heat Exchanger (Condenser) by the pool pump, is thus heated as it passes through.

Heat Pump Protection Features

These heat pumps are equipped with safeguards that will stop heater operation to protect the unit in case of the following events:

- Excessively high refrigerant pressure
- Excessively high water temperature
- Loss of refrigerant
- Fan Motor Failure
- Evaporator Freeze-up
- Low Ambient Temperature

Control Setup Heat Only Models

This pool heater is equipped with a digital thermostat which allows the user to select the desired water temperature. The heater will then function automatically to maintain the desired temperature. The heater has 3 modes of operation:

1. SPA - in this mode, the heater will automatically function to maintain the water temperature setting for SPA mode.
2. POOL - in this mode, the heater will automatically function to maintain the water temperature setting for POOL mode.
3. REMOTE OPERATION - In this mode the heater will respond to a remote call for heat or to control unit operation mode. Use the set button in Figure 16a to select POOL/SPA modes. The arrows will indicate which mode is currently active.

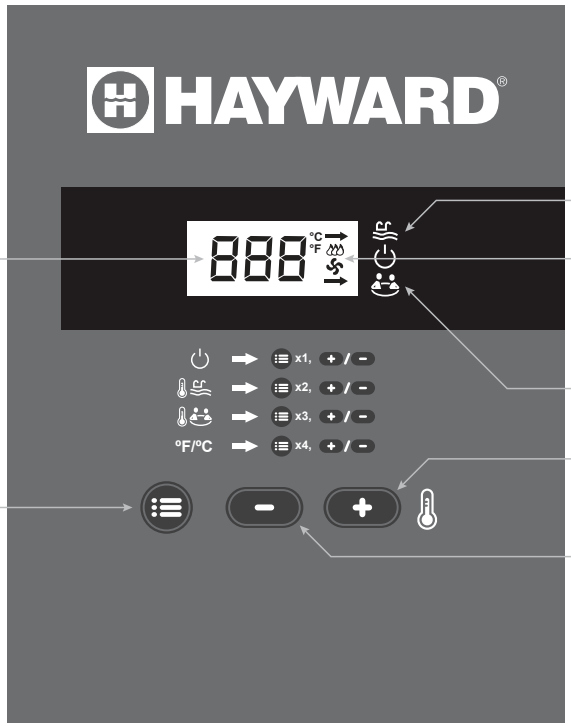
Control Setup Heat/Cool Models

This pool heater is equipped with a digital thermostat which allows the user to select the desired water temperature. The heater will then function automatically to maintain the desired temperature. The heater has 4 modes of operation:

1. HEAT - in this mode, the heater will automatically function to maintain the water temperature setting for HEAT mode.
2. COOL - in this mode, the heater will automatically function to maintain the water temperature setting for COOL mode
3. AUTO - in this mode, the heater will automatically function to maintain the water temperature setting for AUTO. It will operate in HEAT or COOL mode as required.
4. REMOTE OPERATION - In this mode the heater will respond to a remote call for HEAT or COOL mode. Use the set button in Figure 16b to select HEAT/COOL/AUTO modes. The arrows will indicate which mode is currently active.

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FIGURE 16a: Heat Only User Interface Keypad



Display Window: When powered is supplied to the unit, the display will either show sensor temperature (in degrees F or C) or the diagnostic code.

Menu Button: Activates the On/Off, Pool, Spa, or Temperature function of the controller. Mode is confirmed with Heating Mode Indicator “On/OFF”, “POL”, “SPA”, or “F_C”.

Pool Mode

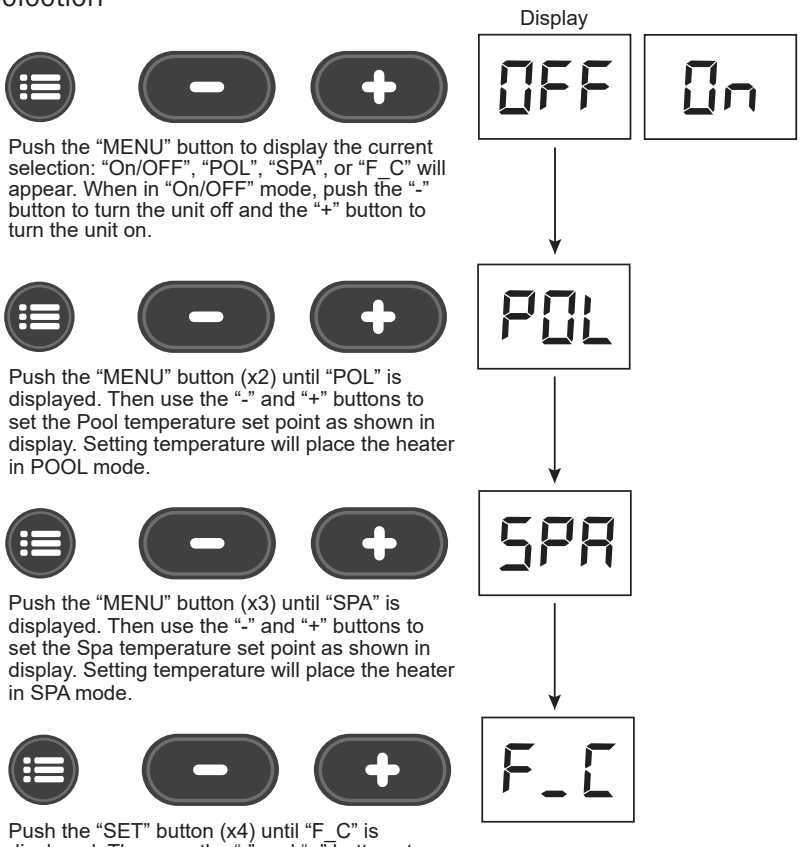
Run Indicators: Confirms the compressor (♨) or fan (🌀) operation and the thermostat is controlling a demand for heat.

Spa Mode

Plus “+” Button: Raises the heater’s set point temperature or changes parameters.

Minus “-” Button: Lowers the heater’s set point temperature or changes parameters.

FIGURE 17a: Heat Only Function Selection



Push the “MENU” button to display the current selection: “On/OFF”, “POL”, “SPA”, or “F_C” will appear. When in “On/OFF” mode, push the “-” button to turn the unit off and the “+” button to turn the unit on.

Push the “MENU” button (x2) until “POL” is displayed. Then use the “-” and “+” buttons to set the Pool temperature set point as shown in display. Setting temperature will place the heater in POOL mode.

Push the “MENU” button (x3) until “SPA” is displayed. Then use the “-” and “+” buttons to set the Spa temperature set point as shown in display. Setting temperature will place the heater in SPA mode.

Push the “SET” button (x4) until “F_C” is displayed. Then use the “-” and “+” buttons to select °F or °C display as shown.

Heat Only Operation

Automatic Reset Time: The heater will automatically reset when an error condition is corrected and resume operation.

Temperature Adjustment: This control allows the user to have 2 individual pre-set temperature settings, “SPA” and “Pool”. To adjust the temperature while in SPA or POOL mode, use the (Plus) and (Minus) buttons. When the numeric display adjustment is complete, the control will return to displaying the actual measured water temperature. The temperature settings for both SPA and POOL modes are initially set at the factory to 65°F. The minimum allowed settings for SPA and POOL modes is 50°F. The maximum allowed settings for heating modes is 104°F.

Dual Pool And Spa Set Points: The unit can keep two temperature settings in memory: one for pool mode (max: 95°F/35°C), and the other for spa mode (max: 104°F/40°C). The heater will operate in the mode that temperature was last selected (i.e. if you push either Plus or Minus in “Pool” mode, the heater will operate in “Pool” mode). Once the heating mode has been programmed, it will be displayed for five seconds, and will then return to the actual pool water temperature. The arrows on the right side of the display indicate the chosen heating mode.

Fahrenheit Versus Celsius: The control will display temperatures in either degrees Fahrenheit or Celsius. To change the temperature display, Press the MENU key until you see F_C and by pressing one of the arrow keys, you can switch to °F or °C. Once the temperature unit has been programmed, it will be displayed for five seconds, and will then return to the actual pool water temperature in the mode that you have chosen.

Defrost Function: The Defrost function is provided to prevent the evaporator coil from freezing when the outside air temperature is near 50°F (10°C). The temperature at which this function will operate is not exact and each unit will vary depending upon conditions surrounding the heat pump, clearance around the heat pump and heat pump maintenance. This time period will vary from 15 minutes to several hours depending on ambient air conditions.

Normal Operation For Pool & Spa Modes: The control continually compares the water temperature with the set point and the high limit temperature. When the water temperature is more than 1° below the set point a call for heat is generated and a heating cycle is initiated.

1. Apply power to the pool heater by plugging in the non-fused disconnect block or moving the circuit breaker to the “ON” position.
2. Make sure the pool filter pump is operating properly.
3. Push the “MENU” button (x1) until “On/OFF” is displayed. Then use plus button to select “On” mode as shown in display. The minus button will select the “OFF” mode.
4. Push the “MENU” button (x2) until “POL” is displayed. Then use plus and minus buttons to set Pool temperature set point as shown in display.
5. Push the “MENU” button (x3) until “SPA” is displayed. Then use plus and minus buttons to set Spa temperature set point as shown in display.
6. Push the “MENU” button (x4) until “F_C” is displayed. Then use plus and minus buttons to select Fahrenheit or Celsius mode as shown in display.
7. The fan will start immediately. Allow 3 minutes for the Heat Pump to start.
8. When the unit starts, confirm that air is being discharged upward from the unit and the air is cooler than the ambient air.
9. Allow the Heat Pump to operate for 10-15 minutes in order for system pressure to stabilize.
10. Using a thermometer, ensure that the discharge air is at least 8ºF (4ºC) cooler than the ambient air temperature. If discharge air does not have at least an 8ºF (4ºC) temperature change, refer to Performance Monitoring / Troubleshooting section in this manual.
11. If Heat Pump fails to start:
    a. Check temperature settings to confirm call for heating
    b. Check water flow and water pressure switch
    c. Ensure that power is on
    d. Check TROUBLE SHOOTING SECTION in this manual or Call for service

FIGURE 16b: Heat/Cool User Interface Keypad

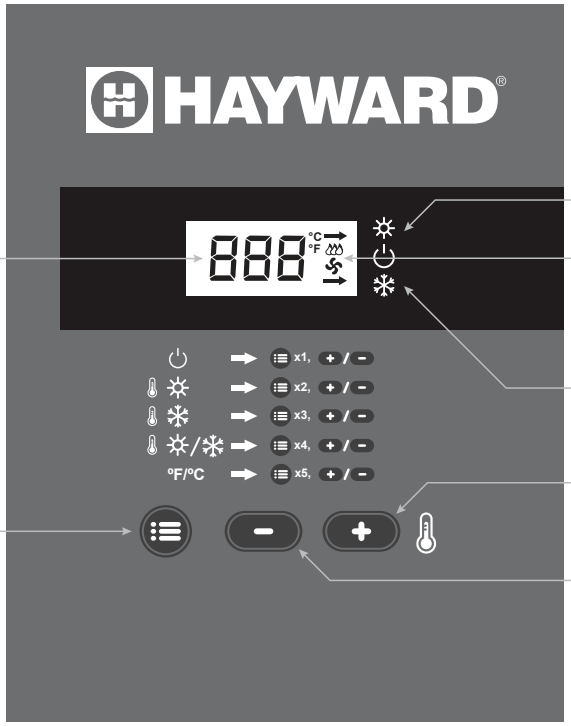
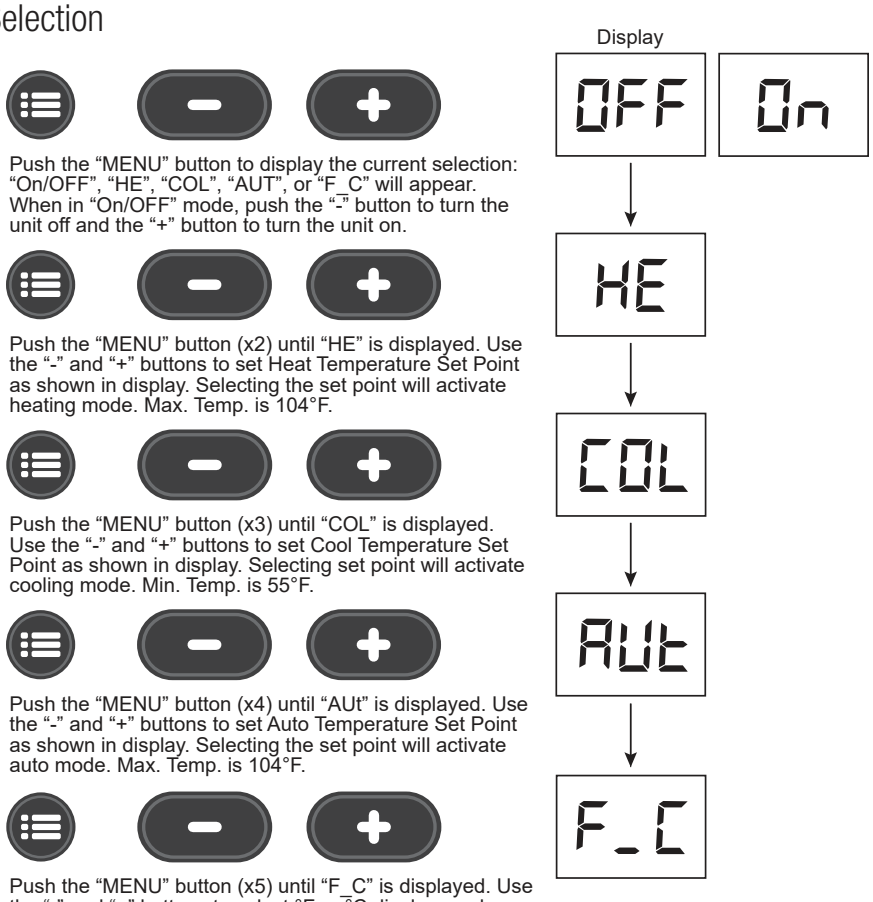


FIGURE 17b: Heat/Cool Function Selection



Heat/Cool Operation

Automatic Reset Time: The heater will automatically reset when an error condition is corrected and resume operation.

Temperature Adjustment: This control allows the user to have 3 individual pre-set temperature settings, Heating ("HE"), Cooling ("COL") and Automatic ("AUt"). To adjust the temperature while in Heating, Cooling or Automatic mode, use the (Plus) and (Minus) buttons. When the numeric display adjustment is complete, the control will return to displaying the actual measured water temperature. The temperature settings for both Heating and Cooling modes are initially set at the factory to 65°F. The minimum allowed settings for Heating and Cooling modes is 55°F. The maximum allowed settings for Heating and Cooling modes is 104°F. It is best not to try and set the maximum heating below the minimum cooling set points. FAHRENHEIT VERSUS CELSIUS: The control will display temperatures in either degrees Fahrenheit or Celsius. To change the temperature display, Press the MENU key until you see F_C and by pressing one of the arrow keys, you can switch to °F or °C. Once the temperature unit has been programmed, it will be displayed for five seconds, and will then return to the actual pool water temperature in the mode that you have chosen.

Defrost Function: The Defrost function is provided to prevent the evaporator coil from freezing when the outside air temperature is near 50°F (10°C). The temperature at which this function will operate is not exact and each unit will vary depending upon conditions surrounding the heat pump, clearance around the heat pump and heat pump maintenance. This time period will vary depending on ambient air conditions.

Normal Operation For Heat, Cool & Auto Modes: The control continually compares the water temperature with the set point and the high limit temperature. When the water temperature is more than 1° below the set point, a call for heat is generated and a heating cycle is initiated.

1. Apply power to the pool heater by plugging in the non-fused disconnect block or moving the circuit breaker to the "ON" position.
2. Make sure the pool filter pump is operating properly.
3. Push the "MENU" button (x1) until "On/OFF" is displayed. Then use plus button to select "On" mode as shown in display. The minus button will select the "OFF" mode.
4. Push the "MENU" button (x2) until "HE" is displayed. Then use plus and minus buttons to set Heating temperature set point as shown in display.
5. Push the "MENU" button (x3) until "COL" is displayed. Then use plus and minus buttons to set Cooling temperature set point as shown in display.
6. Push the "MENU" button (x4) until "AUt" is displayed. Then use plus and minus buttons to set Automatic temperature set point as shown in display. Unit will activate Heating or Cooling as needed to maintain the set point temperature.
7. Push the "MENU" button (x5) until "F_C" is displayed. Then use plus and minus buttons to select Fahrenheit or Celsius mode as shown in display.
8. The fan will start immediately. Allow 3 minutes for the Heat Pump to start.
9. When the unit starts, confirm that air is being discharged upward from the unit and the air is cooler than the ambient air for heating mode and warmer than the ambient air for cooling mode.
10. Allow the Heat Pump to operate for 10-15 minutes in order for system pressure to stabilize.
11. Using a thermometer, ensure that the discharge air is at least 8ºF (4ºC) cooler than the ambient air temperature in heating mode. If discharge air does not have at least an 8ºF (4ºC) temperature change, refer to Performance Monitoring / Troubleshooting section in this manual.
12. If Heat Pump fails to start:
    a. Check temperature settings to confirm call for heating/cooling.
    b. Check water flow and water pressure switch
    c. Ensure that power is on
    d. Check TROUBLE SHOOTING SECTION in this manual or Call for service

Water Testing

Water Pressure Switch Test / Adjustment Procedure: The pressure switch is preset at the factory for most typical pad level installations. When the heater is located above or below the level of the pool or spa, the pressure switch will require adjustment to compensate for the change in static pressure. The following procedure is recommended when the switch needs adjustment and/or is replaced:

1. Be sure the filter is clean before making any adjustment.
2. Turn "ON" the filter pump and ensure all air is out of the water lines, and ensure water flow rate is at least the rated minimum (see SPECIFICATION SECTION).
3. Turn "ON" the heater and adjust the temperature control to create a call for heat.

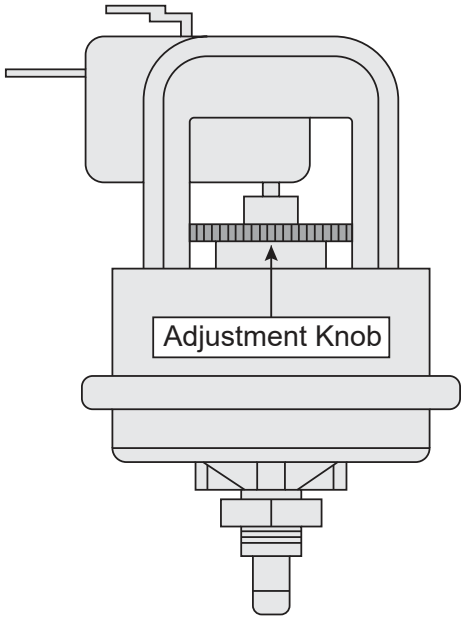
4a. For Installations with Heater above water level: If the heater does not start, adjust the pressure switch by turning the adjustment knob on the pressure switch counter-clockwise, until the heater starts. Turning the adjustment knob counterclockwise decreases the pressure needed to close the switch.

4b. For Installations with Heater below water level: Turn the adjustment knob on the pressure switch clockwise, until the heater turns off, then turn the knob¼ turn counter-clockwise, so that the heater turns back on. Turning the adjustment knob clockwise increases the pressure needed to close the switch.

5. Check the function of the pressure switch by turning the filter pump on and off several times and confirming that the heater turn off immediately when the pump is turned off. Never allow the heater to operate with less than the minimum rated water flow rate.

Two-Speed Pump: In a few cases the pressure from a two-speed pump is below the 1- pound minimum required to operate the water pressure switch on the heater. This is apparent when the pressure switch cannot be further adjusted. In these cases the pump must be run at high speed to operate the heater. If the pump and piping arrangement are such that the required 1-pound minimum pressure cannot be obtained, do not attempt to operate the heater. Correct the installation.

FIGURE 18: Water Pressure Switch



NOTICE: Heater installation, checkout, and start-up should now be completed. Be sure to leave this manual with the pool owner.

Maintenance & Service

Periodic Inspection: The heater is designed and built for long life when installed and operated according to the manufacturer's directions. Regular inspection by qualified service personnel is recommended to keep the heater working properly. The following inspection points are suggested to help maximize heater life:

1. Periodically check the fan discharge area. The fan discharge must never be obstructed in any way and minimum clearances must be observed. Remember that shrubs grow and in time may obstruct
2. Keep the entire pool heater area clean and free of all debris, corrosive materials, and other flammable vapors and liquids. Remove any leaves or paper from around the heater.
3. Do not store chlorine, other pool chemicals, or other corrosives in the vicinity of the heater.
4. Do not use the heater if any part has been under water. Contact a qualified service technician to inspect the entire heater and replace any part of the control system that was under water. If heater has been totally submerged in water it must be removed and the entire heater must be replaced.
5. An inspection program is a good preventative maintenance measure. Keep this manual in a safe place for future reference for yourself as well as for a service technician to consult when inspecting or servicing the heater. Additional inspection procedures to be performed by a qualified service technician.

Water Chemistry

⚠WARNING: Water Chemistry. Failure to maintain proper water chemistry may cause premature heat exchanger damage or failure.

The heat exchanger in your pool heater is made from the highest quality of materials. The titanium condenser is a premium material and the processes used to manufacture the heat exchanger are state of the art in pool heater design and manufacture. However, it remains vital that the heat exchanger be protected from damaging or corrosive chemicals, insufficient water flow or improperly balanced water chemistry. Heat exchanger damage or failure resulting from improper flow, improperly balanced pool water or the improper addition of sanitizer into the water is NOT covered under the terms of the warranty. The following factors are critical to heat exchanger protection. Follow these guidelines to help prevent pre-mature damage or failure to your heater and heat exchanger.

1. **Water Flow Through Heater:** Water must be flowing through the heater at the minimum rated flow rate during operation. Check that the pump is operating and the system is filled with water and purged of all air prior to starting the heater. The minimum rated flow rates are listed in the specifications section. Some installations may require an adjustment to the water pressure switch for proper low-flow protection. Test your system and if necessary, adjust the water pressure switch as described in WATER TESTING SECTION OF MANUAL.

2. **Water Chemistry:** The chemistry balance and mineral content of swimming pool and spa water changes rapidly due to the addition of sanitizing chemicals, user loads, exposed rain, effect of sun, and more. Improper chemistry balance and mineral content can cause scaling and deposits to form on pool walls, in the filtration system, in the heat exchanger tubes and additionally can promote corrosive action to all metals in the water path. Changing spa water regularly and maintaining the correct chemical balance in your pool/spa will keep the pool/spa safe and sanitary, and will help heat exchanger longevity. Use a 4-way pool/spa water test kit to check your water frequently (at least weekly). Use the following guidelines to help maintain proper water chemistry:

TABLE 4: Water Chemistry

Chemical	Recommended Level	Effect of Low Levels	Effect of High Levels
Chlorine	1 - 3 ppm	Hazy water, algae growth, bacteria causing infections	Swimmer irritation, bleaching of clothes/hair, corrosive to heat exchanger
Bromine	2 - 4 ppm		
pH	7.4 - 7.6	Corrosive to heat exchanger, swimmer irritation	Cloudy water, scaling of heat exchanger, reduced sanitizer effectiveness
Total Alkalinity	80 - 120 ppm	Corrosive to heat exchanger, large fluctuations in pH	Scaling of heat exchanger
Calcium Hardness	200 - 400 ppm	Corrosive to heat exchanger	Scaling of heat exchanger
Salt	2700 - 5000 ppm	Poor salt chlorinator performance	Corrosive to heat exchanger

3. **Skimmer Chlorination:** Placing chlorine or bromine Tablets directly into the skimmer may result in high chemical concentrations flowing through the heater. DO NOT place chlorine or bromine Tablets in the skimmer.

4. **Chlorinator Installation:** Chlorinators must be installed downstream of the heater, and a check valve must be installed between the heater and chlorinator to prevent high chemical concentrations from back flowing into the heater. Make sure your piping arrangement meets the chlorinator installation requirements as shown on page 12.

5. **Use Bypass:** Until water chemistry is properly balanced, so that corrosive and potentially damaging water will not flow through the heater and therefore the heat exchanger. Close the bypass valve once the water is properly balanced. Ensure water flow through the heater is restored before operating the heater. A bypass feature is also advantageous for service needs and for the ability to remove the heater from the water path when not heating.

⚠WARNING: Bypass. Failure to close the bypass valve when attempting to operate the heater will result in extensive damage to the heat exchanger.

Winterization

In moderate climates, the heater can continue to operate during short-term cold spells. Do not use the heater to maintain the water temperature just above freezing or for freeze protection. Care must be taken to avoid freeze-up in the heater. When it is used during freezing weather, the pump must run continuously. The heater is not warranted against freeze-ups. In regions where freezing temperatures are encountered, all water must be drained from the heater when it is out of service, to prevent damage to the heater and piping. Draining the heat exchanger is recommended as part of the season's shutdown procedures.

NOTICE: A heater damaged by freezing is not covered under the manufactures warranty.

Draining The Heat Exchanger: This procedure applies to installations where the heater is located higher than the pool water level. If it is necessary to drain a pool heater located below the pool water level, you must either partially drain the pool, or isolate the pool heater from the pool using valves, then perform draining the heat exchanger.

1. Set the heater to STANDBY mode using the keypad.
2. Turn the electricity to the heater OFF at the circuit breaker panel.
3. Be sure the circulating pump is OFF.
4. If no drain plug is provided, open lower inlet water union and allow all water to drain from the heater.
5. Re-install the drain plug or reattach the water union.

Spring Start-Up: This procedure should be performed annually to ready your heater for the upcoming season. In addition to the steps outlined below, it is recommended that a PERIODIC INSPECTION also be performed.

1. Inspect and clean the heater, being sure the heater is free of leaves and debris prior to startup.
2. Properly attached inlet and outlet piping and confirm the drain valve is closed.
3. Turn the filtration system pump ON and allow the system to run long enough to purge all the air from the lines.
4. Turn the electricity to the heater ON at the circuit breaker panel.
5. Set the temperature control using the keypad to an operating mode ("POOL", "SPA", "HEAT", "COOL" or "AUTO") and adjust the set point to the desired temperature setting.
6. If operating difficulties are encountered, contact a qualified service company for assistance.

Component Service

NOTICE: Only qualified service technicians, with appropriate test equipment, should be allowed to service the heater. For conditions where refrigerant must be managed, an EPA certified technician is required. All of the components that comprise the system have an effect on heater operation. Before proceeding with heater related troubleshooting tips, be certain that the pump is operating correctly, the filters and strainers are not blocked, the valves in the piping are properly positioned, and the time clocks are properly set.

⚠ **WARNING: Explosion Hazard.** Do not attempt to repair broken or faulty components of this heater. Do not modify the heater or its components in any manner. To do so may result in a malfunction that could result in death, personal injury, or property damage. Check with the pool owner to see if any part of the heater has been under water. Replace any electrically operated component that has been under water.

⚠ **WARNING: Risk of Electric Shock.** Review all safety information provided in the Before You Begin section of this manual prior to servicing. Always disconnect power circuit before connecting the heat pump, or working on the heat pump. This equipment contains wiring that carries high voltage. Contact with these wires could result in death or personal injury and/or may also cause property damage.

Control System: The control system in this heater consists of the display keypad/control board and the terminal board. The locations of these components are shown in Figure 5. The control board functions as the heater's thermostat operator and safety control system, To remove/replace the display keypad/control board:

1. Turn pump and heater power OFF.
2. Remove the front access panel.
3. Disconnect all wires from the printed circuit board.
4. Detach the board from the access panel by removing the mounting screws.
5. Replace the board, and reverse the above steps to reassemble.

Thermistor: The thermistor monitors the return water temperature to thermostatically control pool and spa water to the selected temperature and to shut the heater off is the return water reaches 104 F. To replace the thermistor:

1. Turn pump, and heater power "OFF".
2. Remove the front access panel.
3. Unplug the thermistor connector from the terminal board.
4. Undo wire connection in the control box and push leads through the hole in the control box.
5. Withdraw the thermistor from the well in the water header.
6. Replace the thermistor.
7. Reverse steps above to complete the procedure.

Water Pressure Switch: The water pressure switch (Figure 18) is preset at the factory for most typical, deck level installations. When the heater is located above or below the level of the pool or spa, the pressure switch may require adjustment to compensate for the change in static head pressure. If adjustment is needed, the procedure is detailed in Water Pressure Switch Test / Adjustment Procedure.

NOTICE: Do not operate the pool heater without the function of a properly adjusted pressure switch or flow switch.

To replace the pressure switch:

1. Turn pump, and heater power "OFF".
2. Remove hose from switch body external to control box.
3. Remove the wires from the pressure switch.
4. Replace the pressure switch.
5. Reverse steps above to complete the procedure.

Transformer: The transformer converts the field supply voltage to 24 VAC output for powering the control board. To replace the transformer:
1. Turn pump, and heater power "OFF".
2. Remove the front access panel.
3. Disconnect all wires from the transformer leads.
4. Remove the (2) screws that secure the transformer to the control box.
5. Replace the transformer. Reassembly is the reversal of steps above.

Contactor: The switches the incoming power to the compressor. To replace the contactor:
1. Turn pump, and heater power "OFF".
2. Remove the front access panel.
3. Disconnect all wires from the contactor terminals keep track of wire locations.
4. Remove the (2) screws that secure the contactor to the control box.
5. Replace the contactor. Reassembly is the reversal of steps above.

Troubleshooting

Error and Operation Codes: See Table 5: Display Code Index.

Troubleshooting: See Table 6: Troubleshooting Lookup Chart.

Automatic Reset Time: The heater will automatically reset when an error condition is corrected and resume operation.

NOTICE: These instructions are intended for the use of qualified personnel trained and experienced in the installation and servicing of this type of heating equipment and its related system components. Some states may require installation and service personnel to be licensed. Persons not qualified should not attempt to repair this equipment according to these instructions. These instructions and procedures are not for the use of "do-it-yourself" consumers.

NOTICE: As a preliminary check, make sure that all wire connections are clean and tight and that all wiring conforms to the wiring diagram.

Internal Wiring: If the heater display is blank after the electrical has been installed, refer to Troubleshooting Lookup Chart to determine the cause. Note, the cable between the display board and the terminal board is keyed to ensure correct connection.

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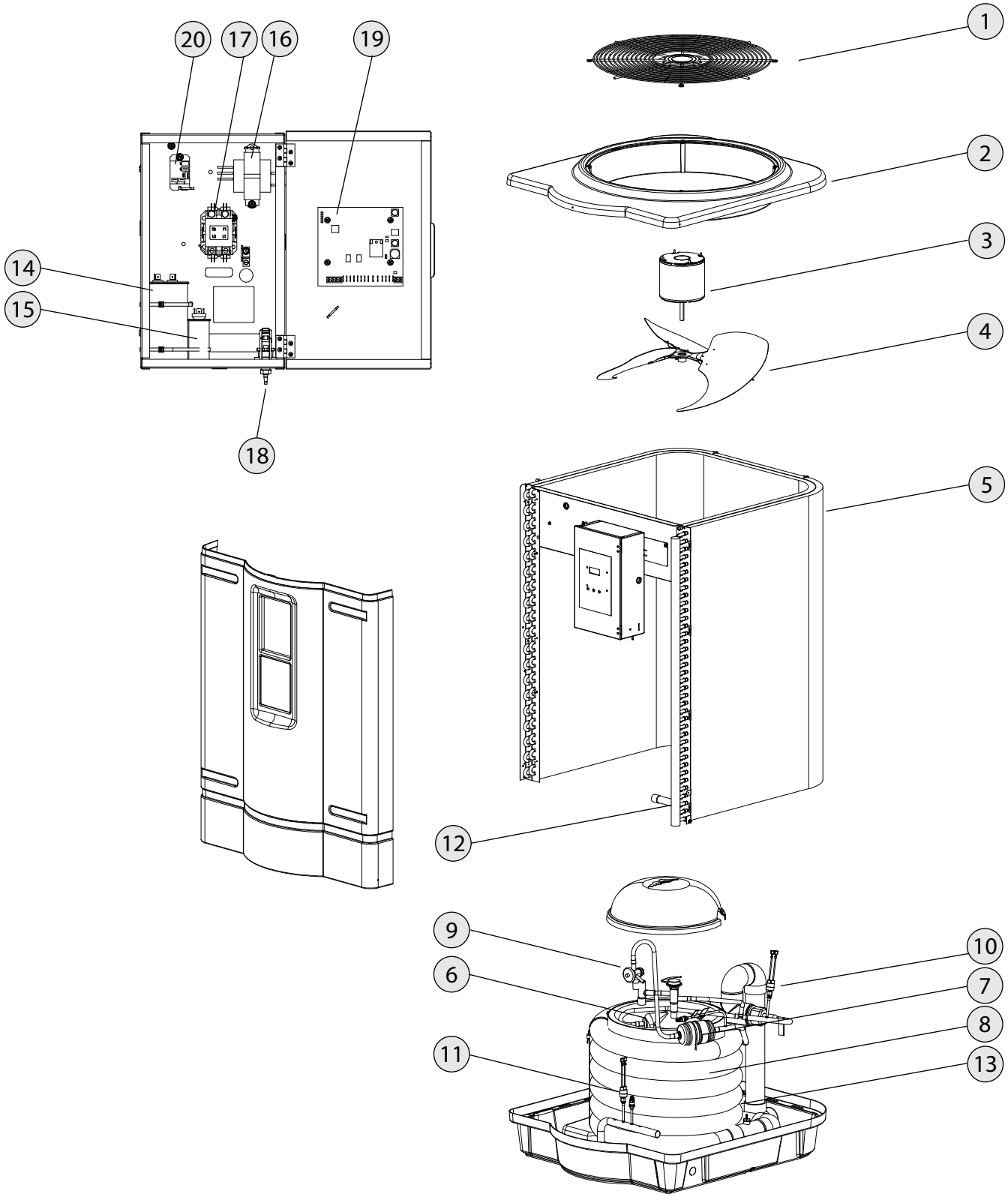
TABLE 5: Display Code Index			
Display	**Problem**	**Possible Cause**	**Information**
(blank)	No power to heat pump	Tripped circuit breaker, no power supply	Check breaker and ensure that the unit is properly installed.
		Faulty electrical component	Call for service.
	Unit will not turn on	Master power switch off	Turn on master power switch.
		Unit on 5-minute delay	Wait 5 minutes.
FLo	Water Pressure Switch circuit open	Low or no water flow or remote on/off in use	Normal operation for remote on/off.
			Check water flow to heat pump. Ensure pool pump is on.
			Clean your filter.
			Make sure all valves are fully open and bypass valve is closed.
			Turn off fountains, etc.
LP	Low Pressure Switch circuit open	Air flow obstruction	Remove debris, etc. restricting air flow to heat exchanger.
		Low ambient temperature cutoff	Wait for outside temperature to reach 60°F
		Unit low on refrigerant	Call for service.
HP	High Pressure Switch circuit open	Low water flow	Check water flow to heat pump. Ensure pool pump is on.
			Clean your filter.
			Make sure all valves are fully open and bypass valve is closed.
			Turn off fountains, etc.
		High water temp	Check pool temperature. Wait until pool needs heat.
			Call for service.
SO	Water Temperature sensor open	Sensor not connected to control board	Call for service.
SS	Water Temperature sensor short circuit	Sensor or sensor wires shorted	Call for service.
FS	Defrost Mode	Frost buildup on evaporator coil	No action required. Unit is defrosting automatically.
dSO	Coil Temperature sensor open	Sensor not connected to control board	Call for service.
dSS	Coil Sensor short circuit	Sensor or sensor wires shorted	Call for service.

⚠ **WARNING:** To avoid possible outer jacket damage or injury: (1) no materials should be stored against the jacket and (2) care should be taken to avoid unnecessary contact (especially by children) with the jacket.

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TABLE 6: Troubleshooting Lookup Chart		
Problem	**Possible Cause**	**Possible Solution(s)**
Unit is not operating	No power to unit	Make sure power is on.
	Breaker is tripped	Check the breaker / see note above.
	Thermostat not turned up high enough	Turn thermostat up until unit comes on.
	5-minute delay timer still running	Be sure the 5-minute delay has passed.
	Low water flow	Make sure filter is clean.
		Make sure filter pump is on.
		Unhook cleaning devices.
	Outside temperature too low	Check outside ambient temperature or wait for warmer temperatures to operate (refer to Operation section).
	Fan not functioning	Call for service.
Heat pump is running but is not heating; "Run" light does not come on.	Check output air temperature to input air temperature. Differential should be at least 8°F (4°C).	Low ambient air temperature. Allow outside air temperature to exceed 50°F, then re-check.
	System component failure	Call for service.
Heat pump runs continuously	Thermostat set too high	Turn thermostat down.
	Evaporator is dirty	Clean it by running tap water over the coil without additional nozzle attachment. Do not use pressurized water as it can damage the coil and void warranty.
	Electrical component failure	Turn off pump. If the unit is still running after 2 minutes, turn off the power to the unit and call for service.
Heat pump is cycling on/off too quickly	Bad valve or improper water flow	Check valve settings and ensure water flow is sufficient (is the filter pump running continuously?). If heat pump continues to cycle, turn unit off to prevent compressor damage.
	Low refrigerant, low ambient temp, or high humidity with low ambient temp	Check evaporator coil for severe frost. Turn unit off to prevent compressor damage.
		If heat pump continues to cycle, turn unit off to prevent compressor damage. Call for service.
Water is coming out from bottom of unit	Condensation	This is normal and there is no reason to be concerned.
	Possible water leak	Turn the unit off for serveral hours, but leave the filter pump running continuously. If water quantity decreases, then it is only condensation. Otherwise, there is a possible leak.

Replacement Parts



No.	Item Description	100	112	125	140	120 H/C	140 H/C
1	FAN GUARD	SMX010171101					
2a	PANEL-TOP KIT, BLACK	SMX30904754					
2b	PANEL-TOP KIT, TAUPE	SMX309077011					
3	FAN MOTOR	SMX300055036					
4	FAN BLADE	SMX303140003					
5	EVAPORATOR	SMX24024414	SMX24013468	SMX24024408	SMX305099004	SMX24024408	SMX305099004
6	COMPRESSOR	SMX11012751	SMX11012753	SMX11012755	SMX11012755	SMX11012754	SMX11012755
7	FILTER DRIER	HPX1462				SMX15022309	SMX15022309
8	HEAT-EXCHANGER	SMX24022372	SMX2401347101	SMX24022371	SMX24024864	SMX24022306	SMX24022306
9	THERMAL EXPANSION VALVE (TXV)	SMX15012865	SMX1501347001	SMX15024595	SMX15024916	SMX15024595	SMX15024916
10	HP SWITCH	HPX11024258					
11	LP SWITCH	HPX11024259					
12	DEFROST SENSOR	SMX306000023					
13	WATER SENSOR	SMX306000024					
14	COMPRESSOR CAPACITOR	11022320					
15	FAN CAPACITOR	HPX11024151					
16	TRANSFORMER	HPX51100009901					
17	CONTACTOR	HPX1985					
18	WATER PRESSURE SWITCH	HPX2181					
19	CONTROL BOARD	HPX51100022301				HPX51100026601	
20	RELAY-POWER	HPX51100010301					
	REVERSING VALVE	NOT USED				SMX15022313	SMX15022313
	HOT GAS BYPASS VALVE	SMXHGBP1930 (HP21004TC)	NOT USED		SMXHGBP1930 (HP21404TC)	NOT USED	
	CONTACTOR-3 PHASE	NOT USED			HPX306000022 (3PHASE ONLY)	NOT USED	
	3 PHASE CONTROLLER	NOT USED			HPX306000048 (3PHASE ONLY)	NOT USED	
	COMPRESSOR PLUG	SMX10022329				SMX10024899	SMX10022329
	CONSUMER KIT	SMX14024927					
	COVER-WINTER	SMX0101349201					

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