

Sunblazer Ultra Heat/Cool Pool/Spa Heat Pump

Model: SBHC130

WARNING

FOR YOUR SAFETY – This product must be installed and serviced by a contractor who is licensed and qualified in pool equipment by the jurisdiction in which the product will be installed where such state or local requirements exist. The maintainer must be a professional with sufficient experience in pool equipment installation and maintenance so that all of the instructions in this manual can be followed exactly. Before installing this product, read and follow all warning notices and instructions that accompany this product. Failure to follow warning notices and instructions may result in property damage, personal injury, or death. Improper installation and/or operation may void the warranty.

Improper installation and/or operation can create unwanted electrical hazard which may cause serious injury, property damage, or death.


 **ATTENTION INSTALLER** – This manual contains important information about the installation, operation and safe use of this product. This information should be given to the owner/operator of this equipment.

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Important Information Log

Please Read Carefully

For your records, please complete the information requested below.

Should warranty service be required, the following information will be requested to initiate service.


Model Number: _____	Dealer Name: _____
Serial Number: _____	Dealer Address: _____
Purchase Date: _____	Dealer Phone #: _____

Keep your sales slip and this booklet together in a safe place for future reference.

Also, please be sure to complete and mail in the warranty registration form, provided separately from this booklet.

Section 1. Important Safety Instructions

READ AND FOLLOW ALL INSTRUCTIONS

Sunblazer Heat/Cool heat pumps are designed and manufactured to provide many years of safe and reliable service when installed, operated and maintained according to the information in this manual and the installation codes referred to in later sections. Throughout the manual, safety warnings and cautions are identified by the “” symbol. Be sure to read and comply with all of the warnings and cautions.

ATTENTION

Installation and service must be performed by a qualified installer or service agency.

WARNING

The U.S. Consumer Product Safety Commission warns that elevated water temperature can be hazardous. Consult heater operation and installation instructions for water temperature guidelines before setting temperature.

The following “Safety Rules for Hot Tubs”, recommended by the U.S. Consumer Product Safety Commission, should be observed when using the spa:

- Spa or hot tub water temperature should never exceed 104°F (40°C). One hundred degrees Fahrenheit (100°F [38°C]) is considered safe for a healthy adult. Special caution is recommended for young children.
- The drinking of alcoholic beverages before or during spa or hot tub use can cause drowsiness which could lead to unconsciousness, and subsequently result in drowning.
- **Pregnant women take note!** Soaking in water above 102°F (38.5°C) can cause fetal damage during the first three (3) months of pregnancy (which could result in the birth of a brain-damaged or deformed child). If pregnant women are going to use a spa or hot tub, they should make sure the water temperature is below 100°F (38°C) maximum.
- The water temperature should always be checked with an accurate thermometer before entering a spa or hot tub. Temperature controls may vary by as much as 1°F (1°C).
- Persons with a medical history of heart disease, diabetes, circulatory or blood pressure problems should consult their physician before using a hot tub or spa.
- Persons taking any medication which induces drowsiness (e.g., tranquilizers, antihistamines, or anticoagulants) should not use spas or hot tubs.

Prolonged immersion in hot water can induce hyperthermia.

Hyperthermia occurs when the internal body temperature reaches a level several degrees above the normal body temperature of 98.6°F (37°C). Symptoms include dizziness, fainting, drowsiness, lethargy, and an increase in the internal body temperature. The effects of hyperthermia include:

- Lack of awareness of impending hazard
- Failure to perceive heat
- Failure to recognize need to leave spa
- Physical inability to leave spa
- Fetal damage in pregnant women
- Unconsciousness resulting in a danger of drowning

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

PREVENT CHILD DROWNING: Do not let anyone, especially small children, sit, step, lean or climb on any equipment installed as part of your pool's operational system. Locate the components of your operational system at least 1.5 m (5 ft) from the pool so children cannot use the equipment while in the pool and be injured or drown.

SAVE THESE INSTRUCTIONS

Section 2. System Information

2.1 Materials Needed for Installation

The following items are needed and are to be supplied by the installer for **all** heat pump installations:

1. Plumbing connections (2").
2. Level surface for proper drainage. (See equipment pad for pitch requirements.)
3. Suitable electrical supply line. See rating plate on unit for electrical specifications. A junction box is not needed at the heat pump; connections are made inside of the heat pump electrical compartment. Conduit may be attached directly to the heat pump jacket.

NOTE: Flex conduit is recommended for connecting the electrical supply wires to the heat pump so that the front panel may be removed easily for servicing.

4. Electric cutout switch that will interrupt all power to the unit. This switch **must** be within line of sight of the heat pump.
5. Watertight conduit to run the electrical supply line.

2.2 Specifications

Suitable for outdoor use only. Clearances shown in Section 3.2 must be adhered to.

Water Pipe/Heater Connection	
Plastic	2" PVC (Unions included)
Flow Rate	
Maximum	70 gpm (265 lpm)
Optimum	45 gpm (170 lpm),
Minimum	30 gpm (114 lpm)
Operating Water Temperature	
Minimum	32°F (0°C)
Maximum	104°F (40°C)
Maximum Working Water Pressure	
	75 psi (0.52 MPa)
Maximum Working Refrigerant Pressure	
	600 PSI
Dimensions	
Height:	45 in
Width / Length:	32 in
Technical Specifications	
Voltage Requirements	208-230 VAC 60Hz
Output	130,000 BTUs/hr
Minimum Circuit Amp	40
Compressor:	
RLA	32.5
LRA	148
Weight	255 lbs

Section 3. Installation

3.1 Location Recommendations

- Make sure the heat pump is not located where large amounts of water may enter the heater. This includes *roof water run-off* and *sprinklers*.
 - **Re-direct any suspect sprinkler heads away from the heater.** Use a deflector if necessary. (Corrosive sprinkler water damage will void the warranty!)
 - In cases where roof run-off is unavoidable, use of a down spout and/or gutters will protect the heater.
- Make sure that the digital control does not face directly towards the sun. Damage will not occur, but visibility in direct sunlight may be difficult.

3.2 Clearances

The pool heat pump is designed for outdoor installation only. Adequate air circulation is necessary for proper heat pump operation. Totally enclosed areas are not recommended. The heat pump should not be installed under a walkway or a porch.

- At least 4 feet clearance should be allowed above the unit for unrestricted air discharge.
- All sides of the heat pump require a minimum of 6 inches clearance from all walls or other air flow restrictions.
- At least 24 inch access must be available for control panel.

These are manufacturer's tested minimum values given. Where local and national codes apply, and values are different from those specified, use the greater value to ensure safe and proper installation.

3.3 Equipment Pad

Install the heat pump on a flat, slightly pitched surface, preferably a concrete or fabricated slab (pad). This allows proper drainage of condensation and rain water from the base of the unit. If possible, the pad should be placed at the same level or slightly higher than the filter system equipment pad. Slightly pitch the pad so that condensate run-off is directed away from the equipment pad. The base should be completely isolated from the building foundation wall to prevent the possibility of sound or vibration transmission into the building. The heater should be located as close as practical to the existing pool pump and filter to minimize water piping length.

Condensation will occur from the evaporator coil while the unit is running and drain at a steady rate, usually 3 to 5 gallons per hour, depending upon ambient air temperature and humidity. The more humid the ambient conditions, the more condensation will be produced. The bottom of the unit acts as a tray to catch rainwater and condensation.

3.4 Condensation and Drainage

Normal heat pump operation will result in water draining from the bottom of the heater. This is due to the evaporator coil condensing water from the humid air. Condensate water will drain out through the drain holes located in the base pan. Your heater typically

produces 3 to 5 gallons of water per hour. When the heater is shut off for a period of time, the water created from condensation will evaporate.

3.5 Anchor Clamps

In Florida, building codes require that the heat pump be anchored to the equipment pad or platform to withstand high wind pressures created during hurricanes. Other jurisdictions may have similar requirements. Please check your local codes for further details.

This heat pump is provided with anchor clamps designed to hold the unit to the equipment pad in high wind conditions. Installation of the anchor clamps is recommended in all installations and are required in Florida (reference Florida Building Code, Mechanical Section 301.13).

To install the anchor clamps:

1. Be sure that the heat pump is in its permanent location on the equipment pad.
2. Place the clamps at the base of the heat pump in the locations indicated in *Figure 1*.
3. Fit the hook of each clamp over the lip on the base panel of the heat pump. The hook should fit between the lip of the base panel and the evaporator coil guard (see *Figure 2*).
4. Mark the position of the hole in each clamp on the equipment pad.
5. Drill a hole in the cement using a masonry drill bit, with a diameter as determined by the concrete anchor, at each of the marks on the equipment pad. The hole should be approximately 1-3/4" deep.
6. Insert a bolt anchor into each of the holes. Be sure the anchors are set completely into the holes.
7. Position the anchor clamps so that the holes in the clamps are over the bolt anchors. Be sure that the clamp hooks are over the lip of the heat pump base (see *Figure 2*).
8. Insert an anchor bolt through each clamp into the anchor and tighten to secure the clamp and heat pump to the equipment pad.

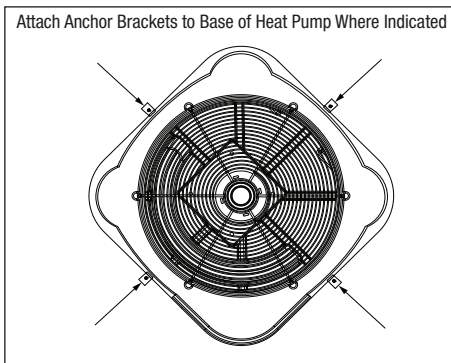


Figure 1. Anchor Clamp Positions

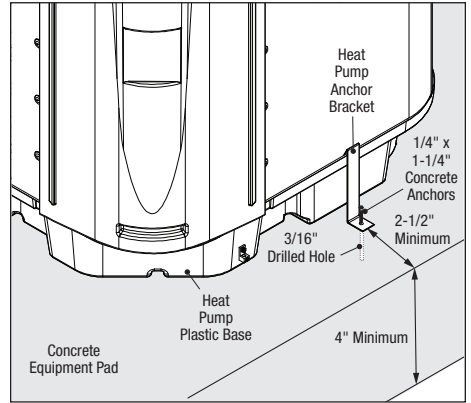


Figure 2. Anchor Clamp Installation

Section 4. Water Connections

For your convenience the heater's inlet and outlet are labeled.

2" PVC Unions are provided with the heater.

The piping sequence is as follows:

Pool Circulation Pump ⇔ Filter ⇔ Heater ⇔ Chlorinator ⇔ Pool

To minimize harm to the pool equipment, any inline chlorination device must be located as the last item returning to the pool. Use only rigid PVC piping and all joints should be cleaned then secured with PVC glue. Make sure that the direction of the water flow through the heater is correct as indicated by the labels on the unit. When the piping installation is complete, operate the pool pump and check the system for leaks.

When the pool heater is installed below the pool water level, isolation valves must be installed. The pool heater should not be installed more than 6 feet below the pool water surface, or no more than 15 feet above the pool level. Be advised that when pool equipment is located below the pool surface a leak can result in large-scale water loss or flooding. Sunblazer cannot be responsible for such water loss or flooding or the damage caused by either occurrence.

The recommended flow rate is 45 gpm through the heater.

Flow Rate for SBHC130
MIN 30 gpm
MAX 70 gpm

IMPORTANT

A plumbing bypass is required for installations exceeding 70 gpm.

For questions on multiple heater installations, please contact our engineering department.

Multiple unit installations should always be in parallel circuits and no closer than 12 inches apart.

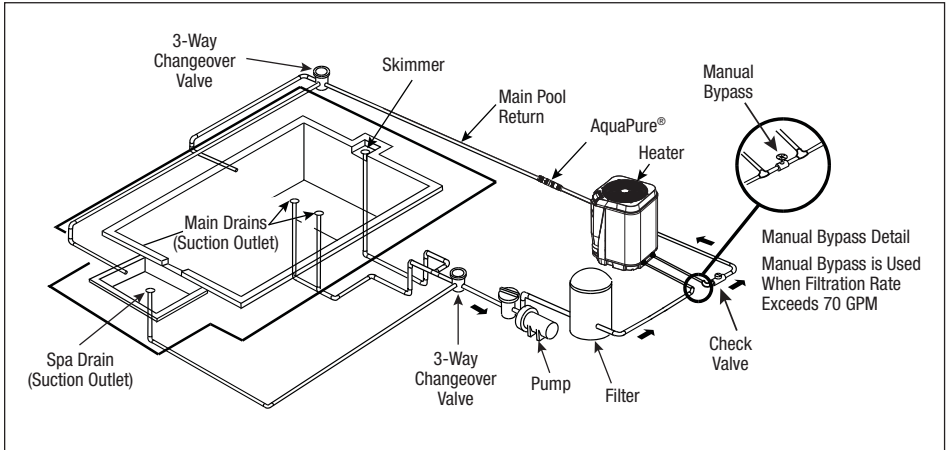


Figure 3. Standard Plumbing Layout

4.1 Check Valve Installation

⚠ WARNING

A check valve can interfere with the proper operation of certain Suction Vacuum Release System (SVRS) products. To avoid possible entrapment hazard, serious injury, or death, make sure to review the operation/owners manual of your particular SVRS product before installing the check valve.

The heat pump must be protected from back-siphoning of water. If there is any chance of back-siphoning, provide a check valve between the pool and the filter pump inlet.

When an automatic chemical feeder is installed in the plumbing, it must be installed downstream of the heat pump. A check valve must be installed between the heat pump and the chemical feeder to prevent back-siphoning of chemically saturated water into the heat pump where it will damage the components.

Section 5. Electrical Connections

The wiring of your heater should be performed by a qualified electrician in accordance with local code requirements.

⚠ WARNING

ELECTRICAL SHOCK HAZARD. This heat pump contains wiring that carries high voltage. Contact with these wires may result in severe injury or death. Disconnect power circuit before connecting the heat pump.

The main power disconnect must be off before opening the access panel.

IMPORTANT

The electrical conduit **must** be run up through the base of the unit and connected at the control box with a conduit connector.

Check the heat pump data label for required breaker size. Copper wire and a properly sized breaker must be used.

5.1 Main Power

Electrical wiring to the heat pump must be in accordance with the latest edition of the National Electric Code® (NEC®), ANSI/National Fire Protection Association (NFPA 70®) in the United States, and in Canada, the Canadian Electrical Code (CSA® C22.1), unless local code requirements indicate otherwise.

The heat pumps come factory-wired intended for use with 230 VAC, 60 Hz single phase. See the rating plate for the electrical specifications. All wiring must be done by a certified electrician.

The following is the procedure to wire the Sunblazer heat pump to the electrical source specified on the rating plate:

1. Be sure the power to the circuit for the heat pump is turned off.
2. Remove the three (3) screws that attach the service/access panel to the heat pump unit (see Figure 4).
3. Remove the front panel.
4. Remove the screw on the right side of the control box.
5. Open the control box.
6. Run the electrical conduit through the base of the unit.
7. Connect the electrical conduit to the right-side of the control box with the conduit connector.
8. Connect the wires to the terminals on the main contactor as shown in the wiring diagram. See Figure 5.

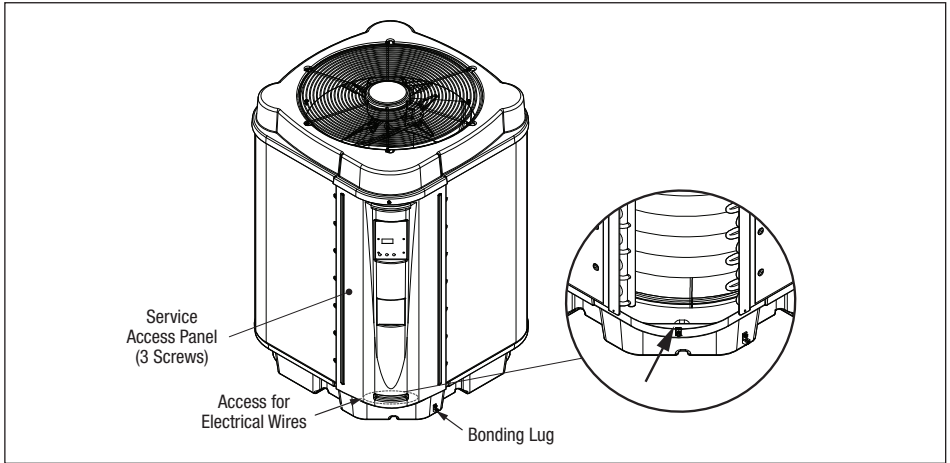


Figure 4. Sunblazer Heat/Cool Heat Pump Front Access Panel

9. Connect the ground wire to the ground lug provided in the electrical compartment.
10. Close the control box and secure with the provided screw.
11. Reseat the service access panel and secure with the provided screws.
12. Connect a copper bonding wire (8 AWG). In Canada, it shall be not smaller than 6 AWG (13.3 mm²) to the bonding lug on the right side of the heat pump.

⚠ WARNING

ELECTRICAL SHOCK HAZARD. This heat pump contains wiring that carries high voltage. Contact with these wires may result in severe injury or death. Disconnect power circuit before connecting the heat pump.

⚠ WARNING

Follow all applicable installation codes. Prior to installation or performing any service, turn off all switches and the main breaker in the pool/spa pump electrical circuit. Failure to comply may cause a shock or hazard resulting in severe personal injury or death.

While disconnecting and/or connecting any electrical wiring, be careful not to damage or abrade any of the wiring.

⚠ CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

5.1.1 Disconnect Means

A means for disconnecting the power to the heat pump must be located within sight of the equipment and installed in accordance with local code.

5.2 Bonding

⚠ CAUTION

This heat pump must be connected to a bonding grid with a solid copper wire not smaller in diameter than 8 AWG (In Canada, it shall be no smaller than 6 AWG.)

The National Electrical Code and most other codes require that all metallic components of a pool structure, including reinforcing steel, metal fittings, and above ground equipment be bonded together with a solid copper conductor not smaller than 8 AWG. The heat pump, along with pumps and other pool equipment must be connected to this bonding grid. To ensure this requirement is met, a bonding lug is provided on the front bottom right below the control access panel (see *Figure 4*). ALL metal and electrical components of the pool system must be bonded together. On many older pools, the bonding wire may not exist. In this case, a 6 to 8 ft. copper rod must be driven into the ground near the pool equipment and all electrical and metal components must be bonded to the rod.

National Electrical Code® (NEC®) requires bonding of the Pool Water. Where none of the bonded pool equipment, structures, or parts are in direct connection with the pool water; the pool water shall be in direct contact with an approved corrosion-resistant conductive surface that exposes not less than 5800 mm² (9 in²) of the surface area to the pool water at all times. The conductive surface shall be located where it is not exposed to physical damage or dislodgement during usual pool activities, and it shall be bonded in accordance with the bonding requirements of NEC Article 680. Refer to locally enforced codes for any additional pool and spa bonding requirements.

5.3 Wiring Diagram

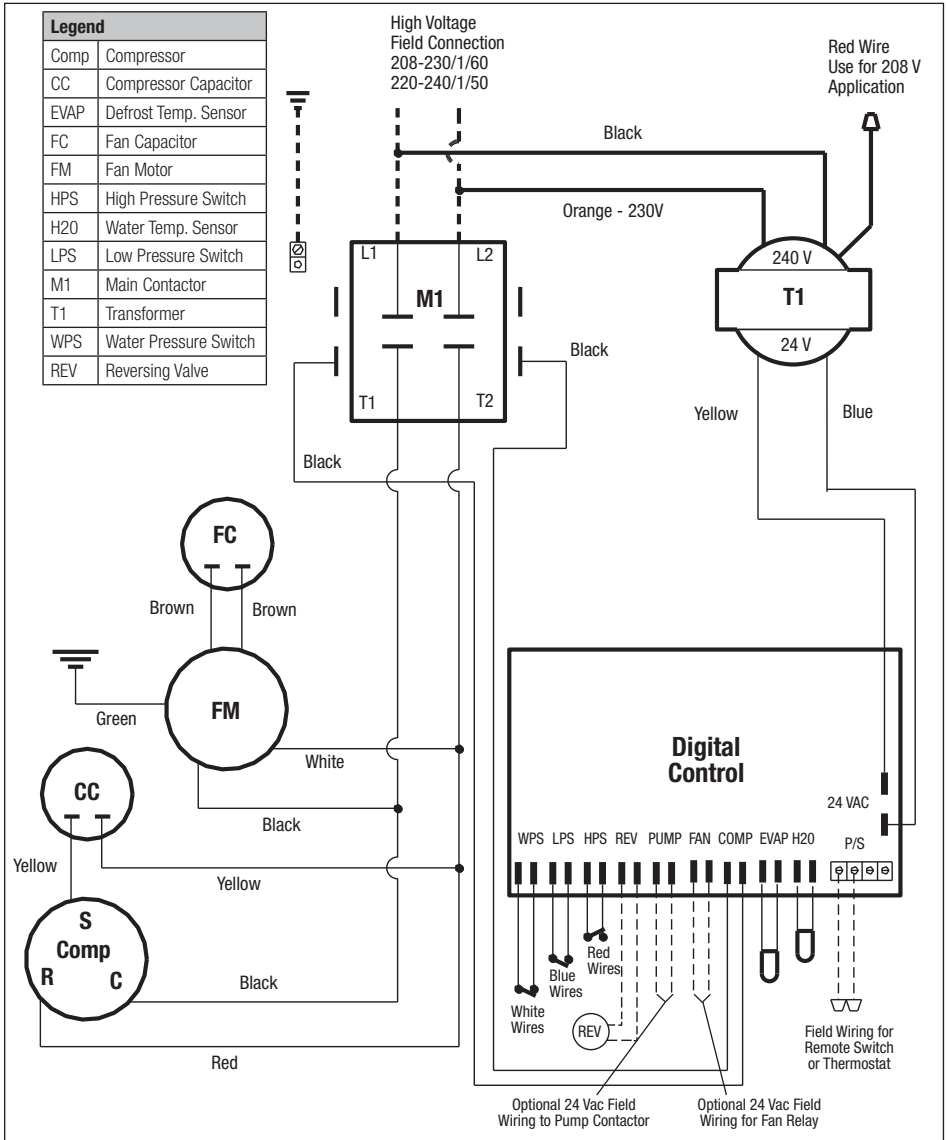


Figure 5. Sunblazer Heat/Cool Heat Pump Wiring Diagram

Section 6. Heat Pump Operation / Digital Control Operation

6.1 Initial Startup

Before starting the heater for the first time, it is important to verify that the dedicated circuit breaker and/or the service disconnect are in the "ON" position. Also make sure that the water is circulating freely through the heater and that the pump is activated.

You will then need to set the water temperature to your desired set point. The heater will start after a three minute time delay if the desired set point is higher than the actual pool water temperature.

6.2 Turning Heat Pump On/Off

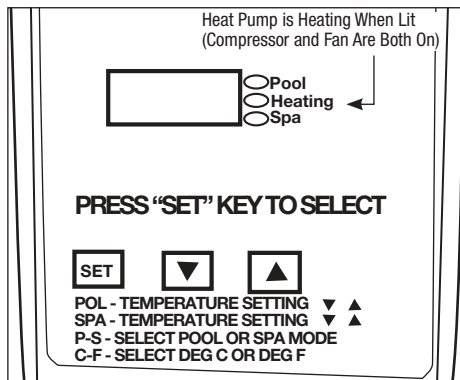


Figure 6. Heat Pump Control Panel

⚠ CAUTION

When the control is in the "OFF" mode, there is still high voltage to the unit. If you want to turn the unit off for long periods of time, shut the main power off to the unit at the main or service disconnect.

6.2.1 To Turn the Heater Off

1. Press & release the SET button four times until "OFF" appears.
2. Press UP twice until "OFF" appears.
3. Heater is now OFF.
4. Pool & Spa lights will not be illuminated beside the display indicating heater is off.

6.2.2 To Turn Heater On

1. Press & release the SET button four times until "OFF" appears.
2. Press DOWN twice until "ON" appears. Heater is now on.
3. Pool & Spa lights will illuminate beside display indicating heater is on.
4. Use the UP or DOWN to set desired temperature.

6.3 Pool/Spa Modes

The control is equipped with two independent thermostats, one for pool temperature and one for spa temperature. This is to allow the user to preset a temperature of their choice and switch between the two settings.

To change between pool and spa modes:

1. Press the SET button until the control reads P_S.
2. Press or to switch from POL to SPA.
3. Once the heating mode has been selected, it will be displayed for five seconds and then return to the actual pool water temperature. The lights on the right side of the display indicate the selected mode.

ATTENTION

There is a 3 minute time delay upon initiation of a heating cycle. This is to ensure that the critical components do not fail due to short cycling of the heater.

6.4 Displaying the Temperature in °F or °C

Heater comes pre-set in °F mode. If desired in °C mode, please call factory for instructions.

6.5 Keypad Lockout Feature

6.5.1 Locking

To lock the keypad:

1. Press the SET button for 5 seconds and the display will show spacing for a two digit code " _ _ " at the right hand side.
2. Press UP and DOWN buttons to enter the code starting from 00 to 99. Enter the code according to the pre-set.

The control is shipped with pre-set code of 20, and then press SET button. Each time a button is pressed the control will show "LOC" for 3 seconds and then show water temperature.

6.5.2 Unlocking

To unlock the keypad:

1. Press the SET button for 5 seconds and the display will show spacing for a two digit code " _ _ " at the right hand side.
2. Enter the code and press the SET button. If the correct code is entered then the control switches to show the water temperature.




If the incorrect code is entered then the control will flash "LOC" for 3 seconds and switch back to " _ _ ". If nothing is entered for the next 5 seconds then the control will switch to show water temperature and remain locked.

6.5.3 Setting the Code

1. With the power to the heater off, press and hold the SET button while applying power. The control will then show the spacing for two digits " _ _ ".
2. Enter the desired code and press SET to save it.

6.6 Changing the Set Point Temperature

To change the set point temperature:

1. Press the SET  button until either POL or SPA is displayed. The programmed temperature will be displayed.
2. Press either the UP  or DOWN  button to change the set point temperature.

After adjusting to the desired temperature setting, the display will revert to the actual pool water temperature after five seconds. The default factory setting is "OFF".






6.7 Heater Operating Time

It is the owner's responsibility to adequately set the pool pump run time to heat the pool. On colder days, the pool pump run time will need to be extended. The heater requires longer run time in colder weather. The heater is capable of running 24 hours per day if necessary. When you first run your heater, it may need to run continuously for 24 to 48 hours to get the pool up to the desired temperature. On warmer days the heater will not require as long of a run time because there will be less heat loss from the pool.

6.8 Hot Gas/Air Defrost Cycle






The heater is designed to enter the defrost cycle at ambient air temperatures below 48° Fahrenheit. During this cycle, the unit may shut down and the control will display "FS" until the ambient air temperature rises above frosting conditions. The heater is shipped from the factory with hot gas defrost enabled.

To change the mode of defrost follow the instructions below.

1. Press the UP  and DOWN  buttons simultaneously for five (5) seconds, then press the SET  button until "dEF" shows in the display.
2. Press the UP  button to select air defrosting. The display will show "Air".
3. Reverse cycle defrosting is selected with the DOWN  button. The display will show "rEC".

- Defrosting applies in pool and spa heat modes.
- Defrosting occurs when evaporator sensor reading is below 24°F (-4°C).
- Defrosting is terminated when evaporator sensor reading is above 40°F (4.5°C).
- During air defrosting the compressor is turned off.
- During reverse cycle defrosting, the compressor will keep running and the reversing valve is engaged. Evaporator temperature conditions for initiation and termination of defrosting are the same as for air defrosting above
- During defrosting "DEF" is displayed.

6.9 Cooling Mode

1. Press the SET  button 4 times until the display shows "PHC".
2. Press the DOWN  for COOLING MODE. The display will show "P_C" and the pool light will turn green.
3. Press the UP  for HEATING MODE. The display will show "P_H" and the pool light will turn red.
4. Adjust the desired set point temperatures using the UP  and DOWN  buttons.

6.10 Using an External Controller

Push the remote wires from the external controller through the rubber plug on the bottom left side of the control box.

1. Connect the two remote wires to the two wires from the heater control with the grey wire nuts.
2. For POOL/SPA Remote – Adjust both pool and spa temperature's to your desired setting.
3. For Remote Thermostat – Adjust pool temperature down to "OFF" and turn spa temperature up to 104°F.
4. For 3 wire remote controls, use 2 wires connected to COM & HIGH at the external controller.

Section 7. General Maintenance

Test	Recommended Level
Free Chlorine or	1.0 to 3.0 ppm
Bromine	2.0 to 4.0 ppm
pH	7.2 to 7.8 (Ideal ranges being between 7.4 and 7.6)
Total Alkalinity (TA)	80 to 120 ppm
Calcium Hardness (CH)	175 to 400 ppm
Cyanuric Acid	30 to 50 ppm
Total Dissolved Solids (TDS)	1000 to 2000 ppm (Excluding dissolved NaCl from Salt Chlorine Generator)
* Concentration levels taken from "Basic Pool and Spa Technology" published by APSP (Association of Pool and Spa Professionals).	

Table 1. Optimal Water Chemistry Ranges

7.1 Water Chemistry

Proper chemical balances are necessary for sanitary bathing conditions as well as ensuring your heat pump's long life. Be sure to keep your chemical and mineral concentration levels within the values indicated in *Table 1*.

NOTE: For spas, it is also necessary to perform water changes in addition to chemical treatment. It is recommended to change the spa water every 60 days for light usage and every 30 days if usage is heavy.

7.2 Cleaning

⚠ CAUTION

Make sure all power is disconnected to the heater prior to washing.

Your heater requires only minimal maintenance:

- Make sure the heater has good airflow through the evaporator. To ensure good airflow, remove any leaves, paper or other debris. Also, be sure to keep all shrubs trimmed back from the heater for allowance of sufficient airflow.
- **Make sure the drain holes in the base are free of debris to ensure proper drainage of condensate water.**

Cleaning of the evaporator coil is only as needed. If the heater's location is near an ocean or gulf, regularly inspect the coil for salt or sand build up. If build up is excessive, simply rinse the evaporator coil with fresh water. Use of a garden hose with low water pressure will work best. Use extra care, so that you don't bend the coil fins.

The heater's housing is made from a corrosion-free, UV resistant polymer. It is designed to last for many years. Any dust or debris can be wiped off with a cloth or sprayed off with fresh water.

⚠ CAUTION

**DO NOT USE ALCOHOL-BASED CLEANERS!
They could damage the polymer housing.**

7.3 Winterizing

In areas where freezing is prevalent, it is necessary to completely drain any standing water from the heater and disconnect it from the pool piping. Draining the water from the heater prevents the internal piping from cracking when exposed to freezing conditions. Cracked piping due to freezing is not covered under the warranty.

In areas where freezing conditions are non-existent, winterizing is not required.

7.4 Spring Startup

If your heat pump has been winterized, perform the following steps when starting the system in the Spring:

1. Uncover the heat pump and inspect the top and sides for any debris or structural problems.
2. Connect the water inlet and outlet unions located on the lower front panel of the heat pump.
3. Turn on the filter pump to supply water to the heat pump. Circulate water through the system long enough to cycle all of the pool water through the filter. Check for leaks in and around the heat pump.
4. Check the pool chemistry and balance as necessary.
5. Turn on the electrical power to the heat pump at the main breaker panel.

7.5 Inspection

Sunblazer heat pumps are designed and constructed to provide long performance life when installed and operated properly under normal conditions. Periodic inspections are important to keep your heat pump running safely and efficiently through the years.

Owner Inspection

⚠ CAUTION

Do not use this heat pump if any part has been under water. Immediately call a qualified service technician to inspect the heater and replace any part of the control system which has been under water.

Sunblazer recommends that you inspect your heat pump on a regular basis and especially after abnormal weather conditions. The following basic guidelines are suggested for your inspection:

1. Keep the top and surrounding areas of the heat pump clear of all debris.
2. Keep all plants and shrubs trimmed and away from the heat pump.

The heat pump will produce condensation (water) while in operation. The heat pump base is designed to allow the condensation to exit through the bottom drain port when the unit is running. The condensation will increase as the outdoor air humidity level increases. Check the following at regular intervals to ensure proper condensate drainage:

1. Visually inspect and clear the bottom drain ports of any debris that could clog the ports.
2. Ensure that condensate water does not puddle inside the heat pump.
3. Ensure that condensate run-off is properly directed away from the equipment pad to keep it from undermining the pad.

During normal operation, the heat pump produces 3 to 5 gallons of condensate per hour. If condensate drainage is above this range during operation or if water continues to drain from the base when the heat pump is not in operation for more than an hour, a leak in the internal plumbing may have occurred. Call a qualified heat pump technician to investigate the problem.

Keep the top air flow discharge and air flow intake area clear of debris so the air flow through the heat pump is not restricted. The cooler discharge air from the top should not accumulate and be drawn into the side air intake coils. Keep all plants and shrubs trimmed away from the heat pump.

Make sure the front of the unit is accessible for future service.

Keep lawn sprinkler heads from spraying on the heat pump to prevent corrosion and damage. Use a deflector if needed.

If the unit is installed under a very sharp roof pitch or under a roof without a gutter, a gutter or diverter should be fitted to prevent excessive water from pouring down into the unit.

Professional Inspection

Inspections performed at least once a year by a qualified technician are required to maintain your heat pump's safe and efficient operation. The following basic safety checks must be performed.

1. Check for loose or broken wires and terminal connections.
2. Verify the pressure switch or flow switch operation. Turn the heat pump OFF. Disconnect the power to the pump time clock, or turn the pump time clock to an OFF position. Turn the heat pump back ON. The heat pump must not come on.
3. Inspect the electrical controls, specifically the following:
 - High and low limits
 - Pressure switch or flow switch
 - Temperature control
4. Inspect the evaporator coil for blockage and clean as necessary.
5. Check for spider webs or debris in the condensate drain; clean if necessary.
6. Conduct a normal operating cycle and observe that the unit operates properly.

Section 8. Service Information

All service must be handled by an Authorized Service Center. Warranty may be void if a non-authorized service representative provides service. Do not return the heater to your dealer, as they do not provide service.

Before calling for assistance or service, please check the Troubleshooting section of this manual. This may save you the cost of a service call. If you still need help, follow the instructions below.

When asking for help or service please provide a detailed description of the problem, your heater's complete model number and serial number, the purchase date and dealer purchased from. This information will help us respond properly to your request.

Keep a copy of your sales receipt showing the date of purchase. A valid proof of purchase will assure you of in-warranty service.

Section 9. Troubleshooting

To verify that your heat pump is heating your pool, place your hand above the unit. Cool air will blow out of the top of the heater, this occurs when the heating indicator is on. The water returning to the pool will be between 3° to 5° warmer* than the overall pool water temperature. There will also be water draining out of the base of the unit after 10 minutes of run time. *(*depending on model, ambient conditions, and water flow rate)*

The following table provides symptoms and solutions for general troubleshooting problems for the heat pump.

Condition	Possible Cause	Possible Solution
Control Displays "HP, HP3, or HP6"	Water flow restriction, valve is turned restricting flow.	Clean pump and filter. Adjust water valves. If problem persists, call factory for service.
Control Display flashing "dSd"	Defrost sensor malfunction or not connected.	Call factory for service.
Control Display flashing "PSd"	Water sensor malfunction or not connected.	Call factory for service.
Control Display flashing "FLO"	Pool pump is not on, water flow restriction, or incorrect valve position.	Turn pool pump on. Ensure that skimmer basket, pump strainer basket and pool filter are all clean. Ensure valves are set properly.
Control Display is flashing "FS" or "FS1, FS2, FS3, FS4"	Air temperature is too cold for heater operation.	Wait until air temperature warms up to at least 50°F. Every 15 minutes heater will cycle on for 2 minutes and determine if the temperature is warm enough.
Control Displays "FS5"	Air temperature too cold after 5 "FS" signals.	When air temp raises above 50°F press any key on the control. Built in one-hour standby mode if nothing is pressed. If still too cold, 15 min FS cycles will resume.
Control Display Flashing "LP" or "LP3"	Low refrigerant, or faulty low pressure sensor.	Call factory for service.
Pool is heating slowly or not getting up to temperature.	Low or restricted water flow through the heater. It is cold outside. Pump timer is not set for a long enough run time. Pool is not being covered. High wind speed over pool. Pool area shaded.	Clean or replace filter. Inspect and clean pool pump. Adjust water valves. Use a pool cover. Construct a wind break around pool. Set pool pump timer longer. Call factory for service.
Water is running out of the bottom of the heater.	The heater produces up to 3 gallons per hour of water condensing from the evaporator coil. Internal water leak.	Shut the heater off for several hours and leave the pool pump running. If the water is still running out, call factory for service.