

INSTALLATION AND OPERATION MANUAL



Crosswind Side Discharge Heat Pump Pool Heater

Inverter Models
CROSSWIND-30-I through -65-I

On/Off Models
CROSSWIND-40-O through -65-O
(Canada Only)



FOR YOUR SAFETY: Do not store or use gasoline or other flammable vapors and liquids or other combustible materials in the vicinity of this or any other appliance. To do so may result in an explosion or fire.

NOTE: The instructions in this manual are for the use of qualified individuals specially trained and experienced in the installation and maintenance of this type of equipment and related system components. Installation and service personnel are required by some states to be licensed. Persons not qualified shall not attempt to install, service, or maintain this equipment.

This manual should be maintained in legible condition and kept adjacent to the heat pump pool heater or in a safe place for future use.

Catalog No. 6100.64
Effective: 11-15-19
Replaces: New
P/N 241827 Rev.1

ATTENTION: Please Take This Opportunity to Quickly Register Your Unit

While your unit is being installed by your professional and licensed installer of choice, please take this opportunity to quickly register your unit. With the necessary information in hand, registering your new heat pump pool heater only takes a few moments and is the best way to ensure efficient warranty support during the period of time the unit is covered by warranty protection.

See **Figure 1** at the bottom of the page to locate and record your model and serial number. Once you have done this, please make sure you also have the following information on hand:

- Name, phone number, and email address of homeowner
- Physical address of where the unit is installed; please include any 'subdivision' or similar information
- Any service challenges present at the house/ neighborhood: gated community, locked access at house, guard dog, etc.
- Date of installation of the new unit
- Name and phone number of the professional and licensed entity that performed the installation for you

With all of the above information in hand, please contact us and ask to register your brand new heat pump or do it online at:

<http://warranty.raypak.com>

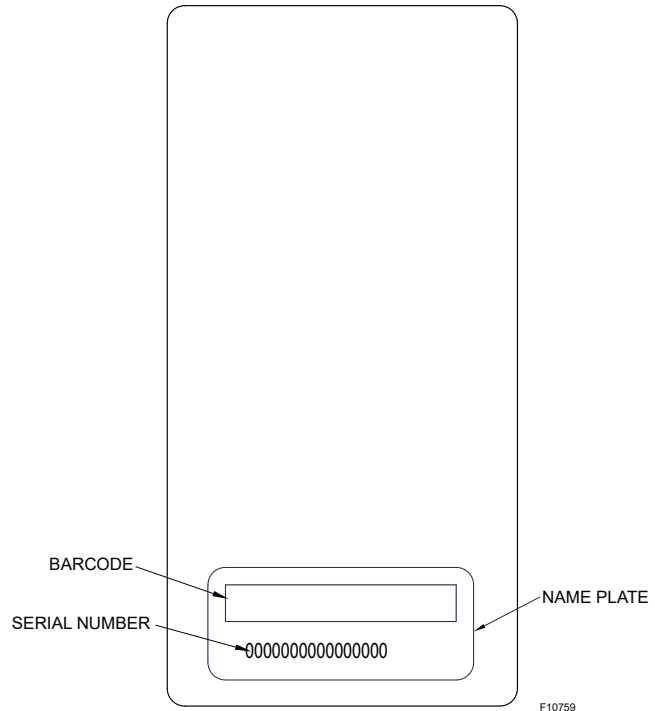
(800)-260-2758 M-F 8:30 - 4:30 EST

You will be given a Warranty Registration Confirmation number which you should notate and keep in one location along with your Installation and Operation Manual, a copy of your warranty (provided with your manual) and the above information.

This would also be a good time to review both the manual and the warranty so that you are aware of how to correctly operate your new equipment as well as how to keep from voiding any aspects of your warranty. During the life of your unit, please feel free to use the phone number on the last page below to contact us with any questions you may have about operation, warranty, and/or service.

Thank you very much choosing us to satisfy your pool heating needs.

Warranty Registration Confirmation #: <hr/>



For location of this label on your unit, see **Figure 8**
Figure 1. Model and Serial Number Information

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1. WARNINGS

Pay Attention to These Terms

▲ DANGER	Indicates the presence of immediate hazards which will cause severe personal injury, death or substantial property damage if ignored.
▲ WARNING	Indicates the presence of hazards or unsafe practices which could cause severe personal injury, death or substantial property damage if ignored.
▲ CAUTION	Indicates the presence of hazards or unsafe practices which could cause minor personal injury or product or property damage if ignored.
CAUTION	CAUTION used without the warning alert symbol indicates a potentially hazardous condition which could cause minor personal injury or product or property damage if ignored.
NOTE	Indicates special instructions on installation, operation, or maintenance which are important but not related to personal injury hazards.

▲ CAUTION: Elevated water temperature can be hazardous. The U.S. Consumer Product Safety Commission has these guidelines:

1. Spa water temperatures should never exceed 104°F (40°C). A temperature of 100°F (38°C) is considered safe for a healthy adult. Special caution is suggested for young children.
2. 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.
3. Pregnant Women Beware! Soaking in water over 102°F (39°C) can cause fetal damage during the first three months of pregnancy resulting in the birth of a brain-damaged or deformed child. Pregnant women should stick to the 100°F (38°C) maximum rule.
4. Before entering the spa or hot tub, users should check the water temperature with an accurate thermometer; spa or hot tub thermostats may err in regulating water temperatures by as much as 4°F (2.2°C).
5. Persons with a medical history of heart disease, circulatory problems, diabetes, or blood pressure problems should obtain a physician's advice before using pools or hot tubs.
6. Persons taking medications which induce drowsiness, such as tranquilizers, antihistamines, or anticoagulants, should not use spas or hot tubs.

▲ CAUTION: Please do not place hands into the outlet of the swimming pool heater, and do not remove the heater fan screen at any time.

▲ CAUTION: Improper chemical content in a swimming pool or spa can damage the heat pump pool heater. **DO NOT** add pool/spa chemicals to the pool/spa via the skimmer or any other apparatus (feeder, chlorinator, etc.) That is on the influent side (i.e. before) of the heater. This will damage the heat pump pool heater and could void the heat pump pool heater warranty. **ALWAYS** follow the product manufacturer's directions when adding any chemicals to your pool.

▲ CAUTION: These heat pump pool heaters are charged with R-410A refrigerant. Ensure that all service work is done with gauges and equipment suitable for R-410A.

▲ WARNING: This pool/spa heat pump pool heater is an electromechanical machine that incorporates a pressurized refrigerant gas in a sealed system. **ONLY** trained and qualified service personnel are authorized to install or service this equipment. Without proper training and knowledge of such equipment, any attempt to install or service the unit could result in serious injury or even death.

General Precautions

Attention

1. Follow the instructions to set a comfortable water temperature and avoid overheating.
2. Please don't stack anything near the heat pump that can block air flow to the inlet or exhaust area, or the efficiency of the heater will be reduced and/or stopped. For unit clearance information, see **Figure 2**.
3. Please do not put hands into the outlet of the heater, and do not remove the screen of the fan at any time.
4. If there are abnormal conditions such as noise, smell, smoke or electrical leakage, please switch off the heater immediately and contact the local dealer. Don't try to repair it yourself.
5. Do not use or stock combustible gas or liquid close the heater such as thinners, paint and fuel in order to avoid fire.
6. The piping between the pool and the heater should be less than 30 ft (9.1 m) long, or heater performance may not be ensured.

Safety

1. Please keep the main power supply switch far away from children.
2. If a power outage happens while the heater is running, the heater will restart automatically when power is restored. Please switch off the power supply when there is a power outage, and reset the temperature when power is restored.
3. Please switch off the main power supply in the event of lightning and stormy weather to prevent machine damage from a lightning strike.
4. If the heater is stopped for a long time, please cut off the power supply and drain water completely from the heater by opening the union of the inlet pipe.

Special Attention

Please read this instruction manual carefully and operate strictly according to the user manual before starting the heat pump, otherwise the heat pump may be damaged or cause you unnecessary harm.

This product is only for heating swimming pool or spa water, and cannot be used for other applications.

Inlet and outlet water nozzles are not designed to bear the weight of external pipes. Support the piping independently.

Make sure power is turned off before opening the case and performing service work.

1. The heater must be installed by a qualified electrician.
2. Set heating temperature within the recommended range to maximize comfort.
3. Keep the air inlet and exhaust free from obstructions.
4. This heater has a power-off memory function.
5. When the ambient temperature is at or below 32°F (0°C) make sure the main power switch is turned off and all water is drained from the heat exchanger.
6. Never place your hand or any other object into the air inlet or exhaust of the heater.
7. If you see, hear, smell or otherwise sense anything unusual (such as abnormal noise, smell, smoke, or electrical leakage) switch off the main power switch immediately and contract your local dealer installer.
8. Do not attempt to repair the heater yourself.

2. WATER CHEMISTRY

NOTE: Corrosive water causes damages which will not be covered under warranty.

Chemical imbalance can cause severe damage to your heater and associated equipment. Maintain your water chemistry according to **Table A**. If the mineral content and dissolved solids in the water become too high, scale forms inside the heat exchanger tubes, reducing heater efficiency and damaging the heater. If the pH drops below 7.2, this will cause corrosion of the heat exchanger and severely damage the heater. **Heat exchanger damage resulting from corrosive water will not be covered by the warranty.**

For your health and the protection of your pool equipment, it is essential that your water be chemically balanced. The following levels must be used as a guide for balanced water.

⚠ CAUTION: Free chlorine must not exceed 5 ppm which can damage the heater and is not covered under warranty.

- Occasional chemical shock dosing of the pool or spa water should not damage the heater providing the water is balanced.
- Automatic chemical dosing devices and salt chlorinators are usually more efficient in heated water unless controlled, they can lead to excessively high chlorine levels which can damage your heater.
- Further advice should be obtained from your pool or spa builder, accredited pool shop, or chemical supplier for the correct levels for your water.

Automatic Chlorinators and Chemical Feeders

All chemicals must be introduced and completely diluted into the pool or spa water before being circulated through the heater. Do not place sanitizing chemicals in the skimmer. High chemical concentrations will result when the pump is not running (e.g. overnight).

Chlorinators must feed downstream of the heater and have an anti-siphoning device to prevent chemical backup into the heater when the pump is shut off.

See plumbing diagrams starting with **Figure 10**.

NOTE: High chemical concentrates from feeders and chlorinators that are out of adjustment will cause rapid corrosion to Modehe heat exchanger. Such damage is not covered under the warranty.

Recommended Level(s)	Fiberglass Pools	Fiberglass Spas	Other Pool and Spa Types
Water Temperature	68-88°F (20-31°C)	89-104°F (31-40°C)	68-104°F (20-40°C)
pH	7.3-7.4	7.3-7.4	7.6-7.8
Total Alkalinity (ppm)	120-150	120-150	80-120
Calcium Hardness (ppm)	200-300	150-200	200-400
Salt (ppm)	4500 Maximum	4500 Maximum	4500 Maximum
Free Chlorine (ppm)*	2-3	2-3	2-3
Total Dissolved Solids (ppm)	3000 Maximum**	3000 Maximum**	3000 Maximum**

*Free Chlorine **MUST NOT EXCEED 5 ppm!**

**In saltwater chlorinated pools, the total TDS can be as high as 6000 ppm.

Table A. Pool Water Chemistry

3. BEFORE INSTALLATION

⚠ WARNING: This heat pump pool heater is an electromechanical machine that incorporates a pressurized refrigerant gas in a sealed system. **ONLY** trained and qualified service personnel are authorized to install or service this equipment. Without proper training and knowledge of such equipment, any attempt to install or service the unit could result in serious injury or even death.

This manual contains important information on the use, maintenance and troubleshooting of your new heat pump pool heater. This unit must be properly installed, maintained and operated for optimal performance.

This heater is an extremely efficient, economical machine designed specifically for pool heating. It is similar in design and operation to a typical residential air conditioning system. The unit employs a hermetic motor/compressor operating in a refrigeration cycle to extract heat from ambient air and deliver it to the circulating pool water.

As with all heat pump pool heaters, and compared to other types of heaters such as gas or oil-fired, this heater has lower BTU/hr heating capacity. As a result, it will be required to operate longer to accomplish the desired results. It may, at certain times, operate as much as 24 hours per day. However, this should not be of concern to the owner, because the unit is designed to operate continuously. Even though it may operate continuously for many hours, it will still heat the pool with greater economy than other types of fossil fuel heaters.

Place a recommended cover over the pool at night and other non-use periods. This will keep evaporation, the main cause of main heat loss, to a minimum, and will greatly reduce pool heating costs. During warmer weather, the cover may be required only at night.

INSTALLATION

Installation Considerations

Locate the heater carefully to minimize installation costs while providing maximum efficiency of operation, and to allow adequate service access, as follows:

For unrestricted air intake and service access, position each side of the unit according to **Figure 2**.

⚠ WARNING: This unit is designed for outdoor installation; **DO NOT** install it in an enclosed area such as a shed or garage.

To minimize water piping, locate the unit as close as possible to the existing pool pump and filter.

Irrigation water should be directed away from the heater as irrigation water spray can damage the heater.

Rain water run offs - the unit is designed to operate outdoors and can be exposed to rain. However, rain water run off falling directly onto the unit can cause damage and/or shorten the life of your unit. This may also void your warranty. Install rain gutters or rain diverters on your roof if the unit is installed in a position where contact with rain run off may occur.

⚠ WARNING: Do not install the unit within 3 ft (0.9 m) of fossil-fuel-burning heaters. Air intake along the sides of this heater could disturb the combustion process of the unit, and could cause damage or personal injury. Mount the unit on a level, sturdy base, preferably a concrete slab. The size of the base should be at least 3 ft by 3 ft (0.9 m x 0.9 m).

Installation Requirements

The heater must be installed by a pool professional. End users are not qualified to install the heater. Damage may occur to the heater or threaten the safety of the user.

1. The heater must be installed OUTSIDE in a well ventilated area to avoid air recirculation, or in a place with adequate room for both installation and maintenance. Please refer to the following illustration.
2. This unit requires a minimum of 12 in (305 mm) of clearance from walls, shrubbery, equipment, etc. around the entire perimeter of the heater. This allows for ample air intake. Ample clearance around the air outlet is required to prevent recirculation of air. We recommend not placing the unit underneath eaves, decks, or porches, as this causes recirculation of discharged air, thereby reducing the efficiency of the heater, or even stopping it.

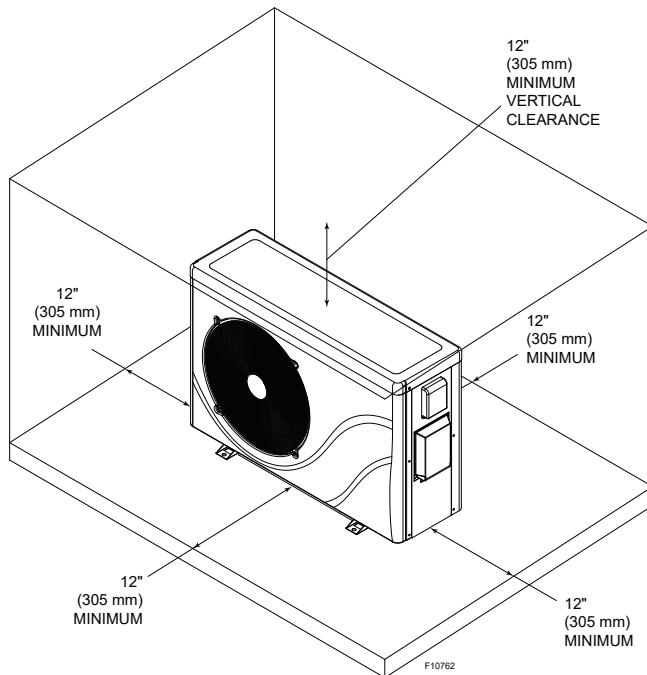


Figure 2. Ventilation Clearances

3. Do not stack anything that will block air flow near the inlet or outlet areas, or have any barrier within 20 in (508 mm) behind the main heater, or the efficiency of the heater will be reduced.
4. The heater needs a pool pump (to be supplied by the user). For recommended pump flow rates, see **Table J** for Inverter Models, or **Table K** for On/Off Models.
5. When the heater is running, there will be condensation water discharged at the base. Please place the drainage nozzle into the condensation outlet and attach it securely, then contact a drainage pipe from it to the drain.
6. The piping between pool and the heater should be less than 30 ft (9.1 m), or heater performance cannot be ensured.
7. For best results, insulate the pipes between the pool and heater.
8. It is important to keep the area next to the heater clear of shrubs, bushes and chemicals containers. These could prevent air from circulating fully through the heater, and will affect the operation of the heater or damage the heater.
9. When installed in areas where freezing temperatures can be encountered, drain the water circuit to prevent possible freeze-up damage. See page 20 for proper procedures.
10. If the heater is below the water line of the pool, an external WFS might be needed.

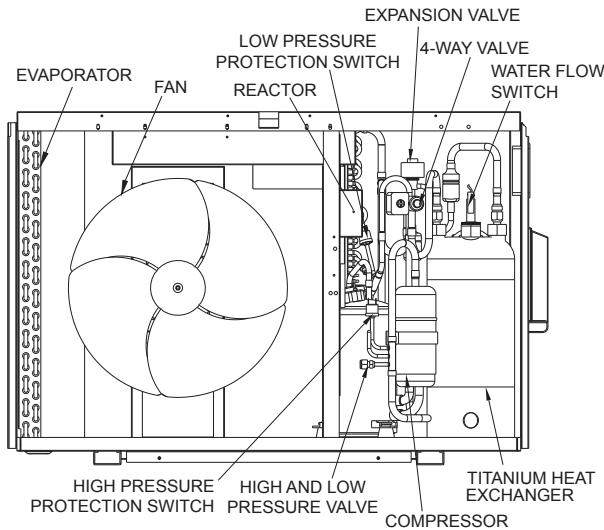


Figure 4. Inverter Model - Component Locations, Front View

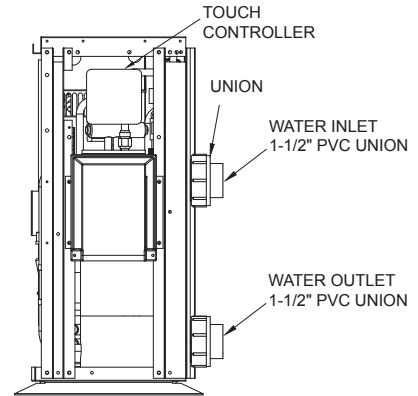


Figure 5. Inverter Model - Component Locations, Right Side View

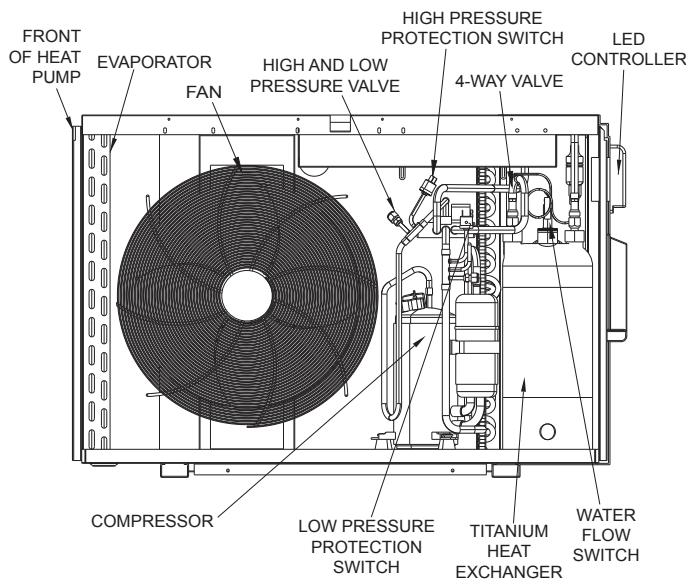


Figure 6. On/Off Model - Component Locations, Front View

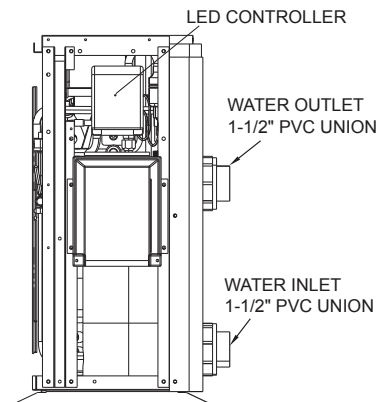


Figure 7. On/Off Model - Component Locations, Right Side View

Inverter Models 60Hz (Heating and Cooling)					
Models	Unit Size (BTUH)	Raypak P/N	Rheem P/N	RUUD P/N	Jacuzzi P/N
CROSSWIND-30-I	30k	17738	17742	17746	17750
CROSSWIND-40-I	40k	17739	17743	17747	17751
CROSSWIND-50-I	50k	17740	17744	17748	17752
CROSSWIND-65-I	65k	17741	17745	17749	17753

On/Off Models 60Hz (Heating and Cooling)					
Models	Unit Size (BTUH)	Raypak P/N	Rheem P/N	RUUD P/N	Jacuzzi P/N
CROSSWIND-40-O	40k	18122	18125	18128	18131
CROSSWIND-50-O	50k	18123	18126	18129	18132
CROSSWIND-65-O	65k	18124	18127	18130	18133

Table B. Model Identification

Specifications and Dimensions

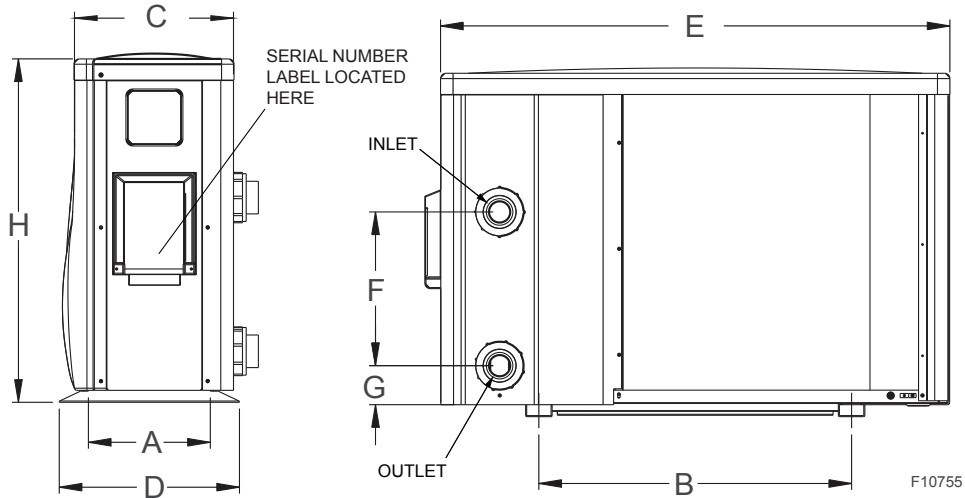


Figure 8. Dimensions

Models	Part No	A	B	C	D	E	F	G	H	Weight lb (kg)
CROSSWIND-30-I	079714	12.40 (315)	23.22 (312)	12.28 (312)	13.39 (340)	39.02 (991)	11.42 (290)	2.91 (74)	25.87 (657)	103.62 (47)
CROSSWIND-40-I	079715	12.40 (315)	23.22 (312)	12.28 (312)	13.39 (340)	39.02 (991)	11.42 (290)	2.91 (74)	25.87 (657)	105.82 (48)
CROSSWIND-50-I	079716	12.40 (315)	23.22 (312)	12.28 (312)	13.39 (340)	39.02 (991)	12.99 (330)	2.91 (74)	25.87 (657)	114.64 (52)
CROSSWIND-65-I	079717	15.55 (395)	23.22 (312)	15.35 (390)	16.54 (420)	39.02 (991)	14.17 (360)	2.91 (74)	25.87 (657)	136.69 (62)
CROSSWIND-40-O	079718	12.40 (315)	23.23 (590)	12.3 (312)	13.39 (340)	39.02 (991)	11.02 (280)	3.03 (77)	25.87 (657)	125.66 (57)
CROSSWIND-50-O	079719	15.55 (395)	24.02 (610)	15.35 (390)	16.54 (420)	39.02 (991)	12.20 (310)	3.03 (77)	25.87 (657)	154.32 (70)
CROSSWIND-65-O	079720	15.55 (395)	23.23 (590)	15.24 (387)	16.54 (420)	39.02 (991)	14.96 (380)	3.03 (77)	29.80 (757)	171.96 (78)

Table C. Basic Product Data - in. (mm)

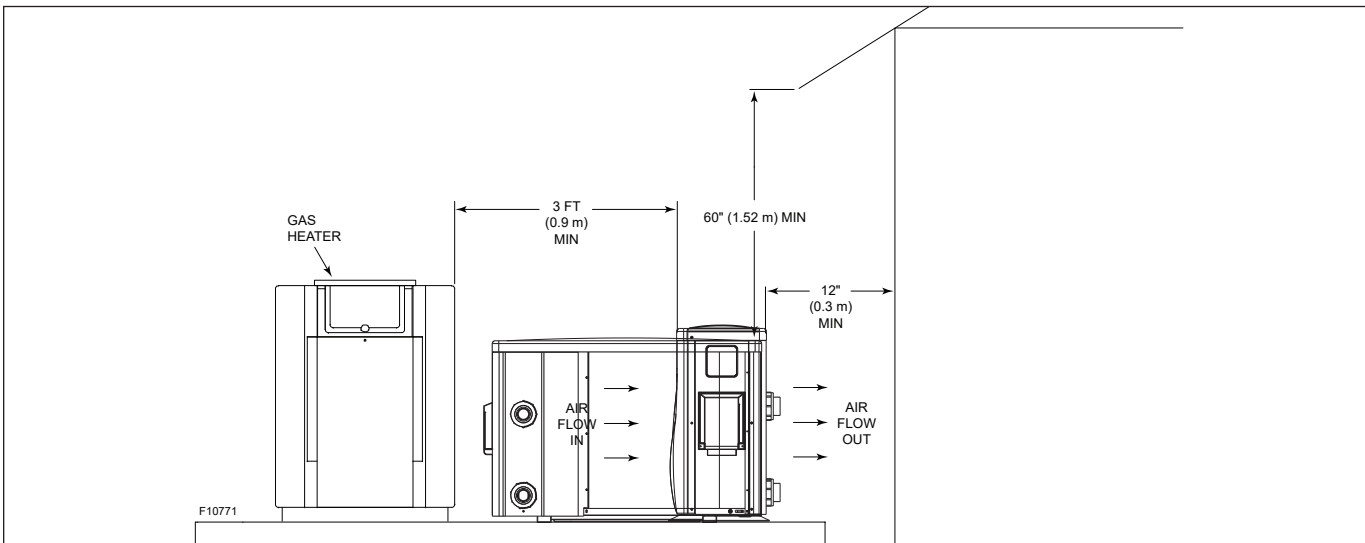


Figure 9. Installation Clearances

Water Connections

⚠ CAUTION: The heater inlet and outlet connections are NOT interchangeable. They must be connected as instructed below.

⚠ WARNING: Chemical feeders can result in serious damage to, or premature failure of the heater and may void the heater warranty. Install a check valve and/or a Hartford loop AFTER the heater and BEFORE any chlorinating devices. Install any automatic chemical feeders AFTER the heater.

1. Connect the heater in the return water line between the filter and the pool/spa. See the Plumbing Diagrams beginning with **Figure 10**.
2. Connect the filter outlet to the fitting marked at the bottom front of the unit.
3. Connect the fitting marked to the return piping to the pool/spa. Unit inlet/outlet connection fittings are 1-1/2-inch PVC unions.

Water connections from the heater to the main return line can be PVC pipe or flexible pipe approved for the purpose and, in either case, should be at least equal in size to the main pool/spa circulation piping.

1. Shutoff diverter valves, preferably three-way valves which allows for a bypass route, on the inlet and outlet lines of the heater are required:
 - a. to protect (completely bypass) the heater from any harmful chemical treatments (i.e. Acid wash, back-to-back super chlorinators, stain treatments, etc.); or
 - b. to be able to isolate the heater for service/repair or freeze preparation and still allow pool/spa circulation to continue.

Please install any automatic chemical feeders downstream of the heater.

Please refer to the plumbing diagrams, starting with **Figure 10** for further instruction.

Please note that some municipalities do not allow the use of a shutoff valve on the effluent/outlet side of any heating equipment, especially when there is one on the inlet side. These entities typically instead allow a PVC tee and spring check valve on the effluent/outlet side. This is acceptable and can also double as your protection from chemical feeders and chlorinators that are downstream of the unit.

Operate the pump and check the system for leaks.

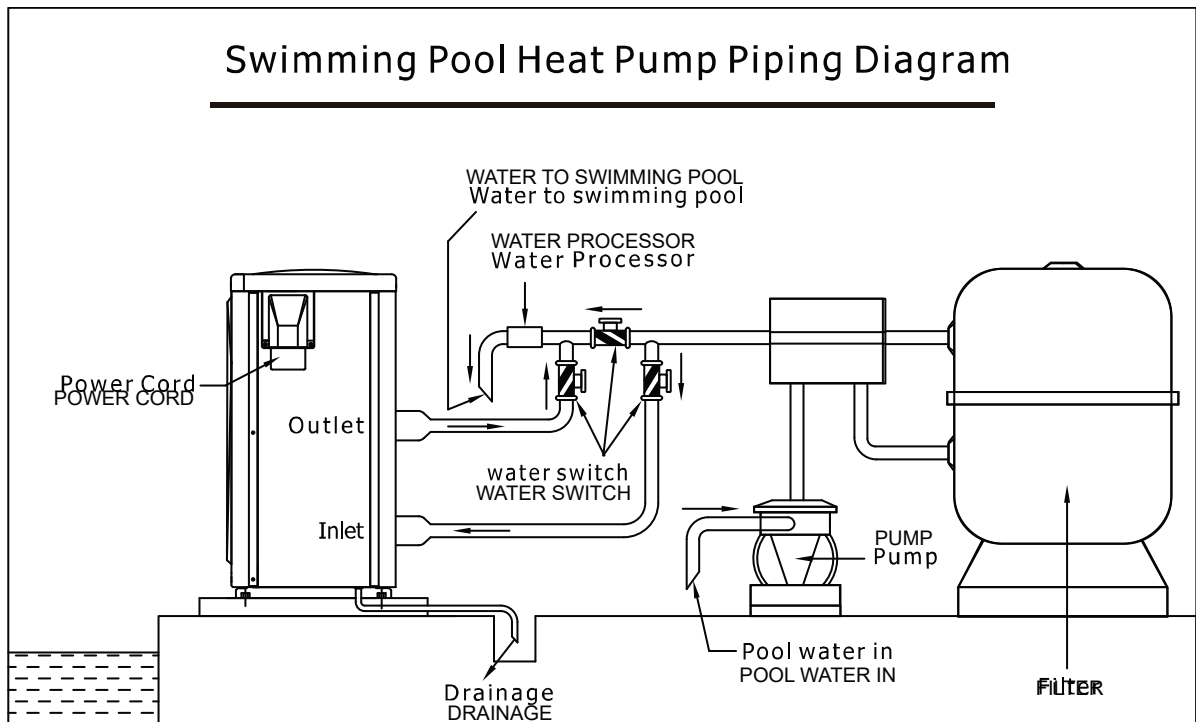


Figure 10. Drawing and Piping Layout for reference only

4. ELECTRICAL WIRING

Wiring

Electrical installation should be done by a licensed electrician only.

1. Confirm the power supply is at the rated voltage of the appliance and make the connection.
2. Ground the heater.
3. Wiring must be installed by a professional installation technician and follow the circuit diagram.

Electrical Connections

Electrical installation should be done by a licensed electrician only.

Refer to the unit rating plate below the control panel for precise power requirements for your unit, and for ampacity and over-current protection requirements.

All wiring must be in accordance with the National Electrical Code, NFPA No. 70, latest edition, and all applicable state and local codes. The wiring diagrams are located on page 13 through page 16.

⚠ WARNING: This heater **MUST** be installed using flexible conduit for supply wiring to the unit. This will allow movement of the conduit whenever the junction box is removed for service.

Locate the equipment disconnect means within 3 ft. (0.9 m) of the heater's electrical enclosure, or as close to the heater as possible. Always satisfy applicable codes and standards.

In sizing power wiring, be especially aware of up-sizing requirements necessary due to wiring distances. Always satisfy applicable codes and standards.

NOTE: Refer to the National Electrical Code, Article 680, for general requirements for swimming pools and equipment, and to Article 440 for special considerations necessary for circuits supplying hermetic refrigeration motor/compressors.

This heater is pre-wired to work with external control systems, heat-on-demand options and other external time clock overrides. Refer to the external control system's instructions.

Models	Power	Min. Circuit Ampacity	Breaker Size (Amp)	
			min.	max.
CROSSWIND-30-I	208-230VAC 60HZ/1PH	12A	15A	15A
CROSSWIND-40-I		16A	20A	20A
CROSSWIND-50-I		17.2A	20A	25A
CROSSWIND-65-I		12A	15A	15A
CROSSWIND-40-O		12A	15A	15A
CROSSWIND-50-O		16A	20A	20A
CROSSWIND-65-O		20A	20A	25A

* Reference only - see National Electric Code or local codes for wire gauge length limits.

Table D. Electrical Power Requirements

Automation Control, Inverter Models Only

2-Wire System - Heat Only

The Crosswind inverter models have temperatures sensor for temperature automation control.

Heater 2-Wire Controllers (Heat Only)

1. Install wires from the automation controller for "Heat" on the terminal strip inside the heater electrical compartment on the side of the heater.
2. Remove the jumper wire on the terminal block from terminals marked #5 and #6. See **Figure 11**, and wiring diagrams on **page 15** and **page 16**.

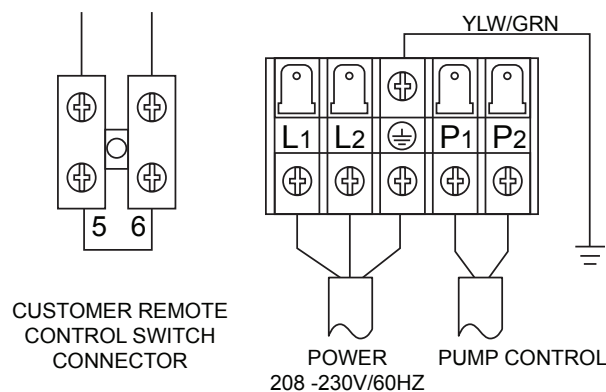


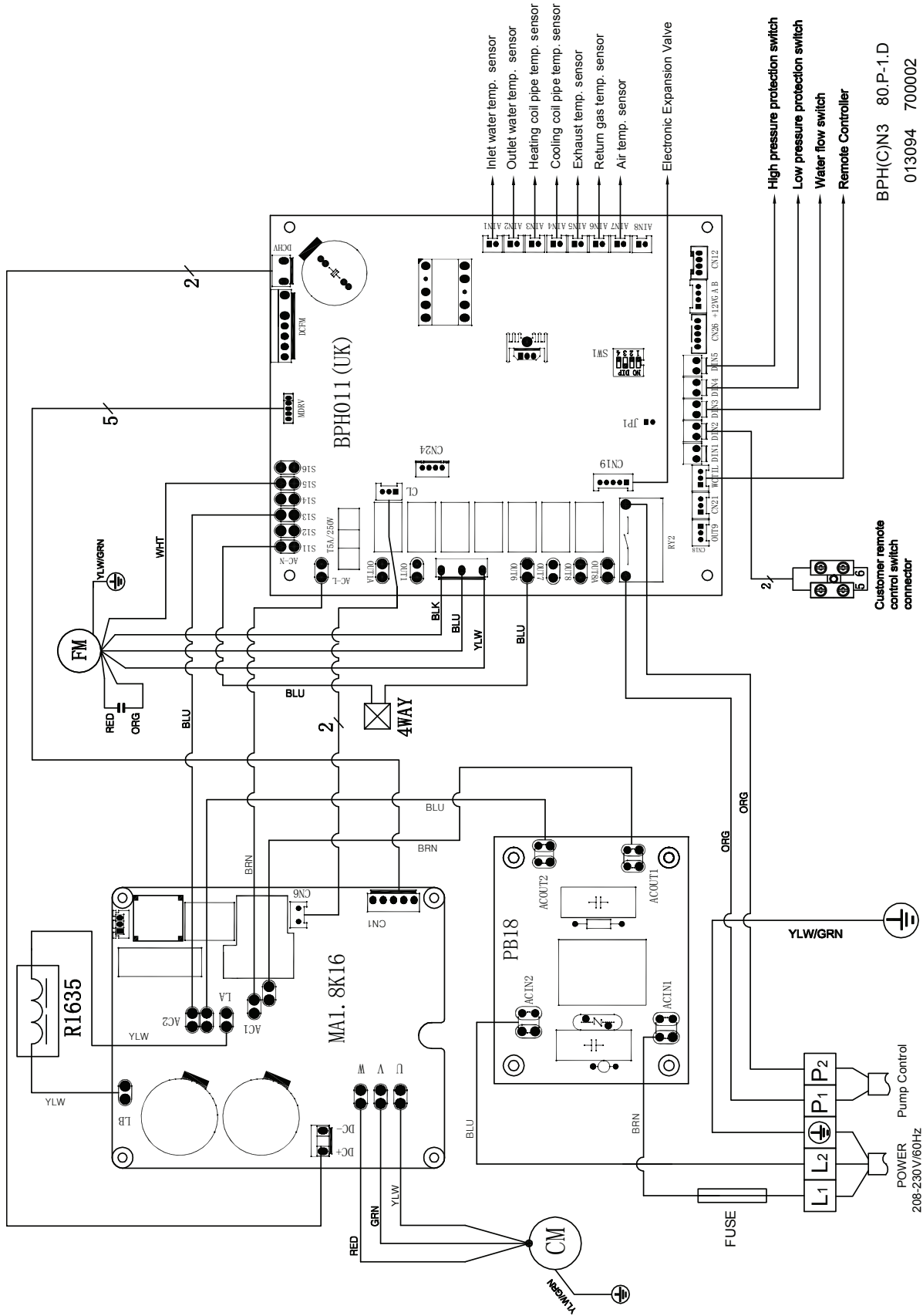
Figure 11. Automation Control 2-Wire System Connection

3. Install the automation control wires for "Heat" to terminals #5 and #6.
4. Set temperature setting on the heater to 104°F (40°C).

NOTE: When the automation controller has a HEAT command the unit will be in the HEAT mode. When the automation controller does not have a HEAT command the unit will be in the OFF mode.

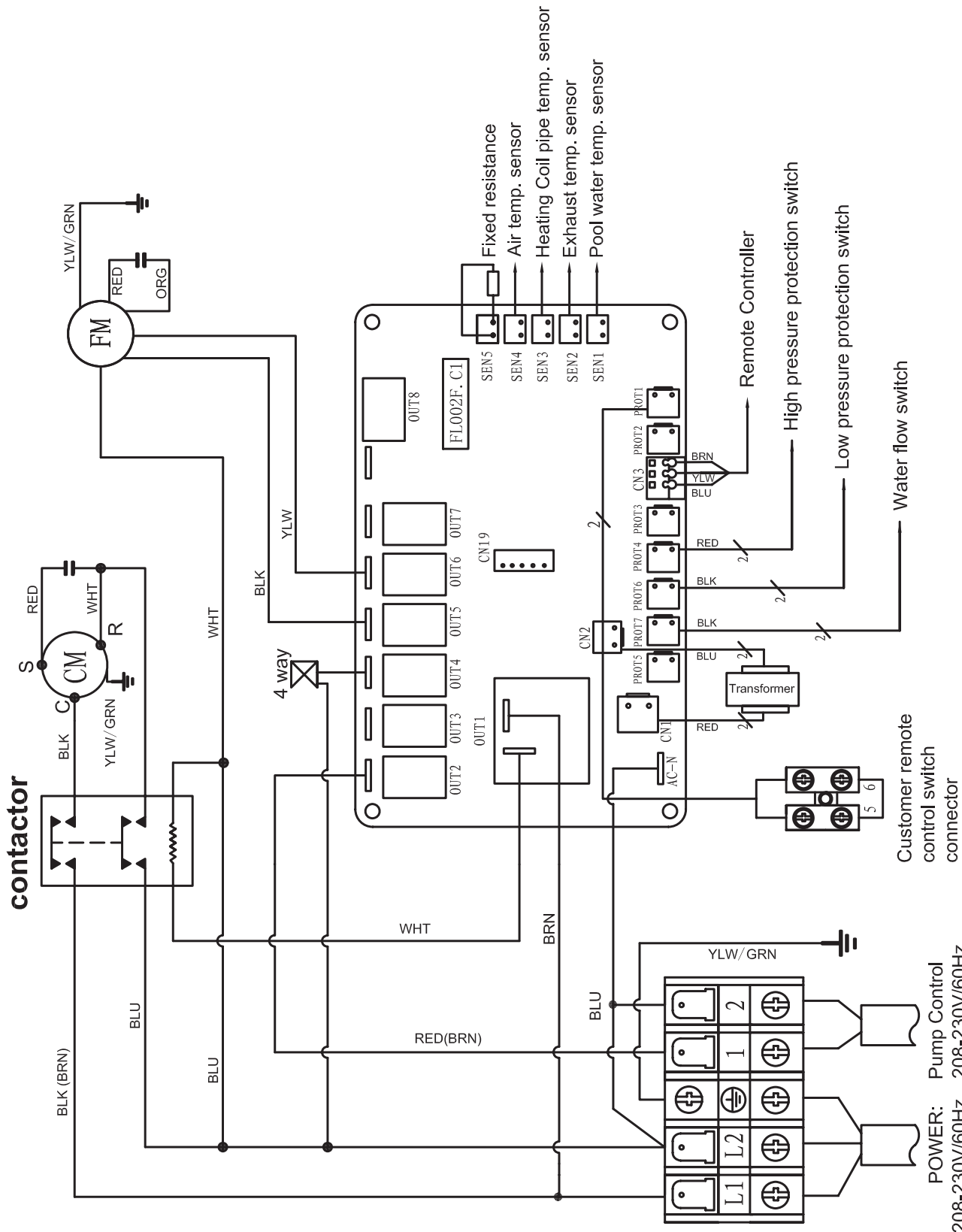
5. WIRING DIAGRAM

Crosswind 30-I, 40-I, 50-I



BPH(C)N3 80.P-1.D
013094 700002

Crosswind 30-O, 40-O

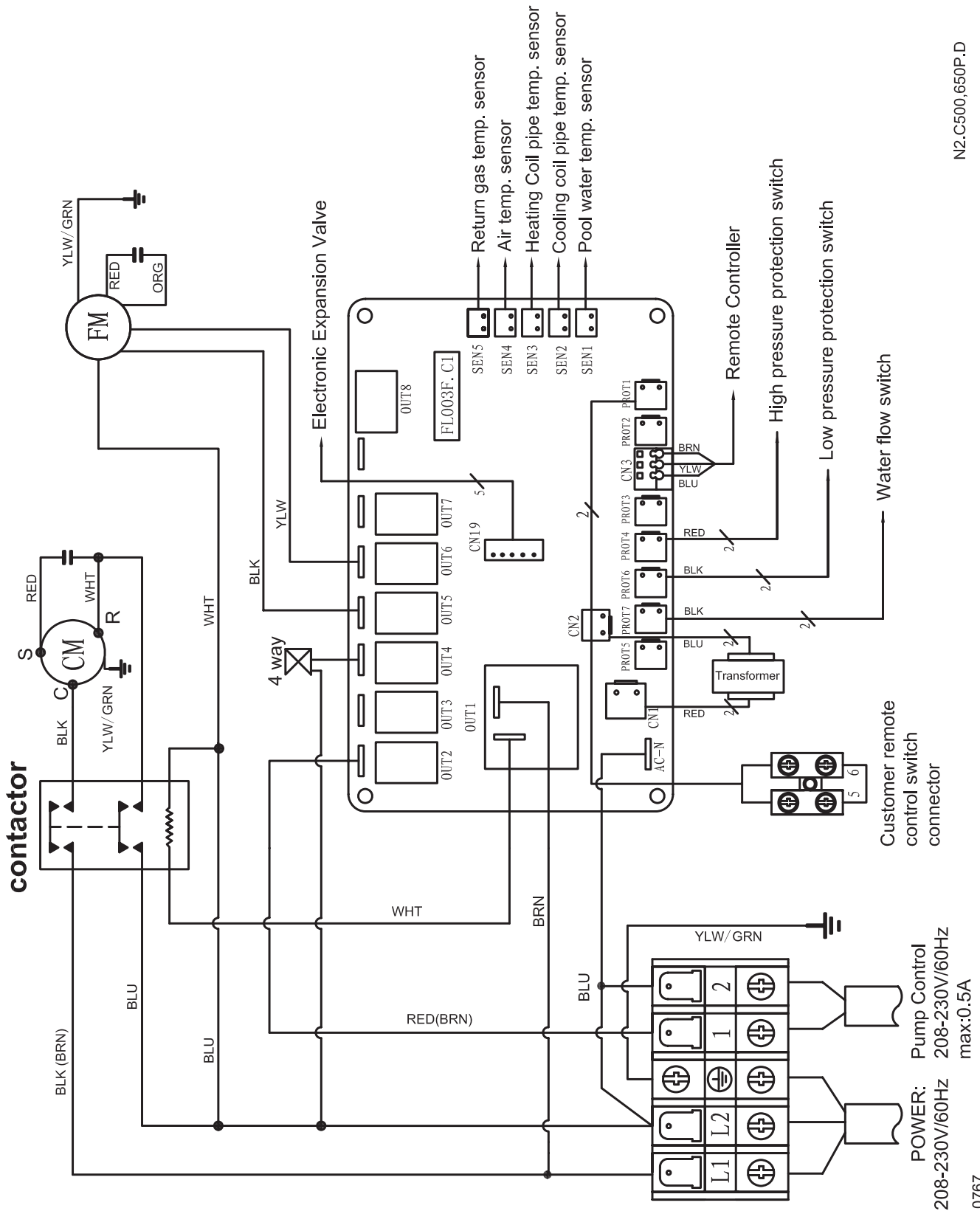


POWER: Pump Control
208-230V/60Hz
max:0.5A

N2.380nP.D

F10766

Crosswinds 50-O



POWER: Pump Control
208-230V/60Hz
max:0.5A

N2.C500.650P.D

F10767

6. CONTROLS

Inverter Models Only

The Display controls general operation. The layout, main functions and buttons are shown below.

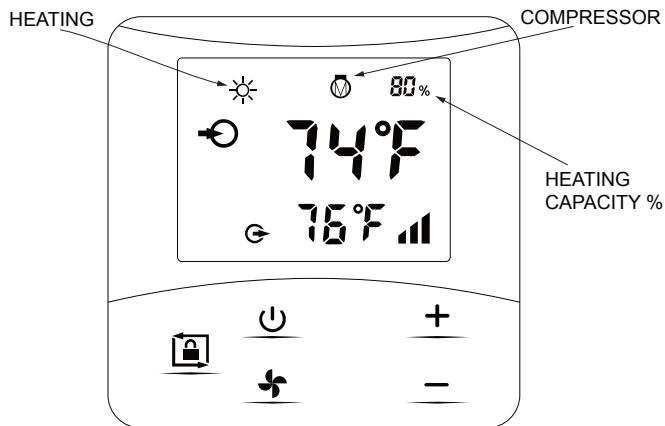


Figure 12. Operation Display, Models 30-I through 65-I

Symbol	Designation	Button Functions
		Press 3 seconds to unlock/lock screen
	ON/OFF	Power On/Off
	Speed	Smart/Silent Mode
	Up	Temperature Adjustment
	Down	Temperature Adjustment

Table E. Display Button Functions

Power On

Press the LOCK button for 3 seconds to light up screen, then press POWER to power on the heater.

Adjust/Set Temperature:

When screen is unlocked, press UP or DOWN to display or adjust the set temperature.

To change from Fahrenheit to Celsius, press the and the DOWN for 3 seconds.

Smart/Silent mode selection

Smart mode, as default, will be activated when the HEAT PUMP is on, and the screen shows .

Press FAN to enter Silent Mode. The display screen will show .

NOTE: Select Smart Mode for initial heating.

Screen Lock

If no button is used within 30 seconds, the screen will lock automatically. At this point the backlight will turn off and 0% will display.

Alternatively you can lock the display by pressing the LOCK button for 3 seconds to achieve the same result.

To unlock the screen and use any other button, follow the Power On instruction above.

Defrosting

Auto Defrosting:

1. When the heater is defrosting, HEATING will continually flash.
2. After defrosting, HEATING will stop flashing.

Manual Defrosting:

1. When heater is heating, press FAN and MINUS together for 5 seconds to start manual defrosting, will flash continuously.

After defrosting, HEATING will stop flashing.

NOTE: Manual defrosting intervals should be more than 30 minutes and the compressor should run for more than 10 minutes.

On/Off Models Only

The Display controls general operation. The layout, main functions and buttons are shown below.

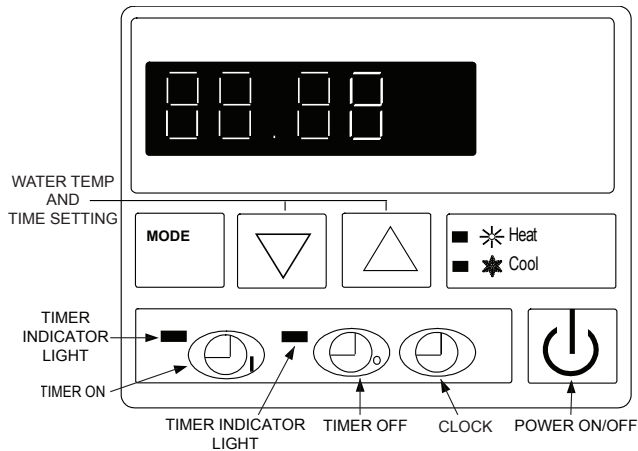


Figure 13. Operation Display, Models 40-O through 65-O

Symbol	Designation	Button Functions
	Power	Power Switch
	Clock	Set local time
	Timer Off	Set the time required machine auto-stop
	Light A	Shows the auto-stop time being set
	Timer On	Set the time required machine auto-work
	Light B	Shows the auto-work time being set
	Cool	Shows the cool mode (for heat and cool models only)
	Heat	Shows the heat mode
	MODE Key	Heat or cool mode selection (only available in heat and cool machine)
	Down-ALLOW	Set required temperature and time
	Up-ALLOW	Set required temperature and time
	LED screen	Display time, temperature and machine failure code

Table F. Display Button Functions

Using the On/Off Display Unit

Display defaults

- The LED screen will display the time when the machine is off.
- The LED screen will display the current water temperature in the pool when the machine is on.

Heat/Cool Mode

- Press the MODE button to switch from one mode to another.

NOTE: Available only in heat and cool models.

Setting pool water temperature

Temperature can be adjusted either when the machine is on or off.

- Press UP or DOWN to set to your required pool water temperature.
- The numbers on the LED screen will flash during adjustment.
- After five seconds of inactivity, the LED will stop flashing, the adjusted target temperature will be saved, and the LED screen will revert to the default display.
- Later on, at any time, should you wish to check the temperature, press UP or DOWN again to access its setting.

Setting the clock

- The clock can be set either when the machine is on or off.
- Press CLOCK to set the time to your local time zone. The displayed time on the LED screen will now flash.
- To set the hour press CLOCK again then press UP or DOWN .
- To set the minute press CLOCK before it stops flashing and then press UP or DOWN .
- After setting, press CLOCK and the water temperature will appear. After 30 seconds, it will stop flashing and the LED screen will return to its default.

Automatic on/off settings

The display can be programmed to turn the machine on and off automatically.

Setting the ON time

- Press CLOCK to access the timer function.
- When the indicator light is on and the time is flashing, press CLOCK again to set the hour. Use UP or DOWN to adjust.
- While the display is still flashing, press to set minute. Use UP or DOWN to adjust.
- After adjustment, press TIMER ON to confirm the setting, and the water temperature will be displayed. After 30 seconds, the controller display will be revert to its default mode.

Setting the OFF time

1. Press CLOCK (⌚) to access the timer function.
2. When the indicator light is on and the time is flashing, press CLOCK (⌚) again to set the hour. Use UP (▲) or DOWN (▼) to adjust.
3. While the display is still flashing, press (⌚) to set minute. Use UP (▲) or DOWN (▼) to adjust.
4. After adjustment, press TIMER OFF (⌚) to confirm the setting, and the water temperature will be displayed. After 30 seconds, the display will revert to its default mode.

Canceling automatic mode

1. Press TIMER ON (⌚) or TIMER OFF (⌚) to cancel automatic on/off operation.
2. While the LED is still flashing, press CLOCK (⌚). Note that when the timer indicator light goes off, and LED shows water temperature, the timer automatic on/off function is canceled.

After 30 seconds, the display will revert to its default mode.

Defrosting

NOTE: Manual defrosting intervals should be more than 30 minutes and the compressor should run for more than 10 minutes.

7. OPERATING INSTRUCTIONS

Start-Up Procedures

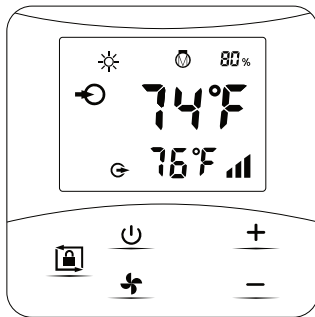


Figure 14. Heater Control - Inverter Models Only

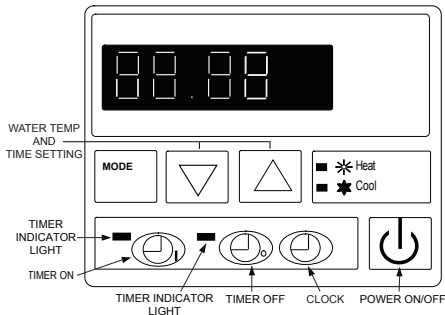


Figure 15. Heater Control - On/Off Models Only

If your heater has been installed correctly, operating the heater is an easy task. The display allows you to turn the heater ON or OFF and adjust the temperature settings for the pool or spa. The temperature range is factory-set from 64°F (18°C) to 104°F (40°C) - HEAT ONLY. 54°F (12°C) to 86°F (30°C) - COOL ONLY.

Details on **Inverter Models** for starting, and adjusting the settings, see page 17. For **On/Off Models** see page 18.

Before Start-Up

Model Identification

The model number of the heater can be found on the rating plate, **Figure 1**.

Water

Water must be flowing through the heater during operation. Ensure that the system is filled with water and that the pump is operating.

⚠ WARNING: Operation of the heater without water circulation will cause rapid and severe damage to the heater, and will void the warranty.

Starting

NOTE: The user must start the pool pump before the heater, and turn off the heater before the pool pump, or the heater will be damaged.

The user should start the pool pump, and check for any leakage of water; Power on and press the ON/OFF button on the heater, and set a suitable temperature at the thermostat.

In order to protect the heater, the heater is equipped with a time-delay starting function. When starting the heater, the blower will run for 1 minute before the compressor.

After the heater starts up, check for any abnormal noise from the heater.

After Start-Up

Feel the inlet and outlet pipes. Outlet pipe should be only slightly warmer than the inlet. It should not be hot.

Details on **Inverter Models** for adjusting the settings see page 17. For **On/Off Models** see page 18.

Model Identification

The model number of the heater can be found on the name plate, **Figure 1**.

Maintenance

CAUTION: Turn off heater power supply before service work including cleaning, examination or repair. Do not touch any electronic components until the LED indication lights on the PCB is off.

When a power outage happens while the heater is running, the heater will restart automatically when the power is restored. Please switch off the power supply when there is a power outage, and reset the temp when power is restored.

If the heater is stopped for a long time, please cut off the power supply and drain water completely from the heater by opening the union of the inlet pipe.

Check bolts, cables, and connections regularly for looseness and adjust as needed.

Cold Weather Operation

In the 'off' season when the pool is not going to be used at all:

1. Cut off the power supply to avoid damage to the heater.
2. Drain water from the heater by removing the piping connection on both the inlet and outlet side, from the pool to the heater. As needed, use a shop dry/wet vac or air pressure to purge any excess water.
3. Unscrew the water union of the inlet pipe (top) to let water flow out completely from the outlet (bottom).

CAUTION: If water is left in the system during freezing weather, the titanium heat exchanger may be damaged.

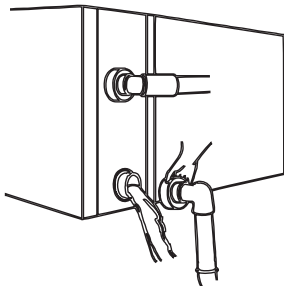


Figure 16. Inlet and Outlet Connections

4. Cover the heater when not in use to protect it from the weather.
5. Clean the heater exterior with standard household detergent or clean water. Never use gasoline, paint thinner or other flammable liquids.

Testing

Inspection before use:

1. Check installation of the entire heater and pipe connections according to the pipe connecting drawing.
2. Check the electric wiring according to the electric wiring diagram; and grounding connection.
3. Make sure that the main heater power switch is off.
4. Check the temperature setting.
5. Check the air inlet and outlet.

8. TROUBLESHOOTING

If these solutions, below, do not work, contact your dealer. Do not attempt to repair the heater yourself.

Failure	Reason	Solution
Swimming Pool Heat Pump Does Not Run	Main power off	Wait for the power to be restored
	Power switch is off	Turn on switch
	Fuse burnt	Replace fuse
	Circuit breaker tripped	Turn circuit breaker back on
Heat Pump Runs but Does Not Heat	Air inlet blocked	Remove obstructions
	Air outlet blocked	Remove obstructions
	3-minute protection	Please wait past 3 minutes for warming to start
	Temp set too low	Set temperature setting

Table G. Common Faults

Fault Codes

Failure Code	Failure Description
E1	High pressure protection
E2	Low pressure protection
E3	Low water pressure protection
E4	Single phase unit: loose wire terminal at PROT2 on the PC board Three phase unit: 3 phase sequence protection
P1	Pool water temp sensor failure
P2	Exhaust temp sensor failure (cooling coil temp for heat and cooling models only)
P3	Heating coil pipe temp sensor failure
P4	Gas return temp sensor failure
P5	Air temp sensor failure
E6	Compressor exhaust overload protection 212°F (100°C) (Heating model only)
P7	When air temp <32°F (0°C), the unit is in auto-stop protection mode, or anti-freeze mode (not a failure)
HEAT flashing	Defrosting (not a failure)

Table H. Fault Codes - On/Off Models Only

No.	Display	Failure Description
1	E1	High gas pressure protection
2	E2	Low gas pressure protection
3	E3	No water flow protection
4	E4	3-phase sequence (only for 3-phase heaters)
5	E5	Outdoor power supply abnormality protection
6	E6	Water temp difference between in/out too high (insufficient water flow protection)
7	E7	Low outlet water temp protection
8	E8	High exhaust temp protection
9	E9	Compressor over-heat protection
10	EA	Outer coil over-heat protection
11	Eb	Ambient temp protection (too high or low)
12	Ed	Two-level antifreeze
13	P0	Controller communication failure
14	P1	Water inlet temp sensor failure
15	P2	Water outlet temp sensor failure
16	P3	Gas exhaust temp sensor failure
17	P4	Outer coil temp sensor failure
18	P5	Gas return temp sensor failure
19	P6	Inner coil temp sensor failure
20	P7	Ambient temp sensor failure
21	P8	Coil temp sensor failure
22	P9	Current sensor failure
23	PA	Auto-start failure
24	F1	Compressor drive module failure
25	F2	PFC module failure
26	F3	Compressor start failure
27	F4	Compressor running failure
28	F5	Compressor module over-current protection
29	F6	Compressor module over-heat protection
30	F7	Current protection
31	F8	Coil over-heat protection

Table I. Fault Codes - Inverter Models Only

9. TECHNICAL PARAMETERS

Inverter Models Only

Parameter	Crosswind Inverter Models			
	30-I	40-I	50-I	65-I
Max intended pool volume gallons (liters)	2113 (8000)	2906 (11000)	3698 (14000)	4755 (18000)
Operating air temperature	32~109°F (0~43°C)			
Performance Condition: Air 80°F (27°C), Water 80°F (27°C), Humidity 80%				
Heating capacity (BTUH)	30,000	40,000	50,000	65,000
Heating capacity (BTUH) in silent mode	24,000	32,000	40,000	52,000
COP	10.0~5.8	10.3~6.0	10.6~5.98	11.2~5.61
Performance Condition: Air 80°F (27°C), Water 80°F (27°C), Humidity 63%				
Heating capacity (BTUH)	28,500	38,255	47,500	56,000
Heating capacity (BTUH) in silent mode	22,800	31,000	37,200	44,800
COP	9.0~5.4	9.1~5.86	9.7~5.5	9.9~5.35
Performance Condition: Air 50°F (10°C), Water 80°F (27°C), Humidity 63%				
Heating capacity (BTUH)	18,300	24,500	28,900	37,000
Heating capacity (BTUH) in silent mode	14,600	15,000	20,295	26,970
COP	4.4~4.0	4.5~4.0	5.1~4.15	5.2~4.3
Rated input power (kW)	0.2~1.5	0.23~1.95	0.28~2.45	0.34~3.4
Rated input current (A)	0.86~6.52	1~8.48	1.22~10.65	1.48~14.78
Power supply	208-230VAC/ 1 Ph/60Hz			
Refrigerant (R410A) in oz.	28.2	31.7	38.8	45.9
Advised water flux GPM (L/min)	13.2~17.7 (50~67)	17.7~26.4 (67~100)	21.9~30.6 (83~116)	28.5~37.5 (108~142)
Sound pressure 39" (3 m) dBA	33.4~45.2	33.6~45.5	34.9~45.0	38.2~49.3
Heat exchanger	Titanium in PVC			
Casing	ABS casing			
Air discharge	Horizontal			
Water pipe in-out Spec inches	1-1/2			
Net Dimension LxWxH inches (mm)	34x14.1x25.5 (864x359x648)	37.8x13.7x25.9 (961x348x648)	37.8x13.7x25.9 (961x348x658)	37.8x15.4x25.9 (961x390x658)
Net Weight lbs (kg)	222.7 (101)	277.8 (126)	330.7 (150)	379.2 (172)

* The values indicated are valid under ideal conditions: Pool is well covered, filtration system running at least 15 hours a day.

* The final specs will be in accordance with the specs of the product

Table J. Technical Parameters - Inverter Models Only

On/Off Models Only

Parameter	Crosswind On/Off Models		
	40-O	50-O	65-O
Heating capacity (Btu)	40000 BTU	50000 BTU	65000 BTU
Heating current: Air 80°F (27°C), Water 80°F (27°C)	7.7A	10.8A	
Heating power: Air 80°F (27°C), Water 80°F (27°C)	1.65 KW	2.3 KW	
Heating current: Air 80°F (27°C), Water 95°F (35°C)	9.6A	13.2A	
Heating power: Air 80°F (27°C), Water 95°F (35°C)	2.0 KW	2.7 KW	
Compressor RLA/LRA	9.7A/20A	11.6A/60.2A	
Fan motor rating	0.5 A	0.5 A	
Design pressure (High)	≤609 PSIG	≤609 PSIG	
Design pressure (Low)	≤261 PSIG	≤261 PSIG	
Refrigerant (R410A)	44.1 oz	60 oz	
Net weight	4056 oz	4303 oz	
Power supply	208-230VAC/ 1 Ph/60Hz		
Water circulation flow	67-100 L/min	83-116 L/min	
Noise	≤50 dB(A)	≤58dB(A)	
Waterproof class	IPX4	IPX4	

Table K. Technical Parameters - On/Off Models Only

10. REPLACEMENT PARTS

NOTE: To supply you with the correct part, it is important that you supply the heater model number, serial number and type of gas when applicable.

Any part returned for replacement under standard company warranties must be properly tagged with a return parts tag, completely filled in with the heater serial number, model number, etc., and shipped to the Company freight prepaid. If determined defective by the Company and within warranty, a like part or equal substitution will be returned, freight collect. Credit will not be issued.

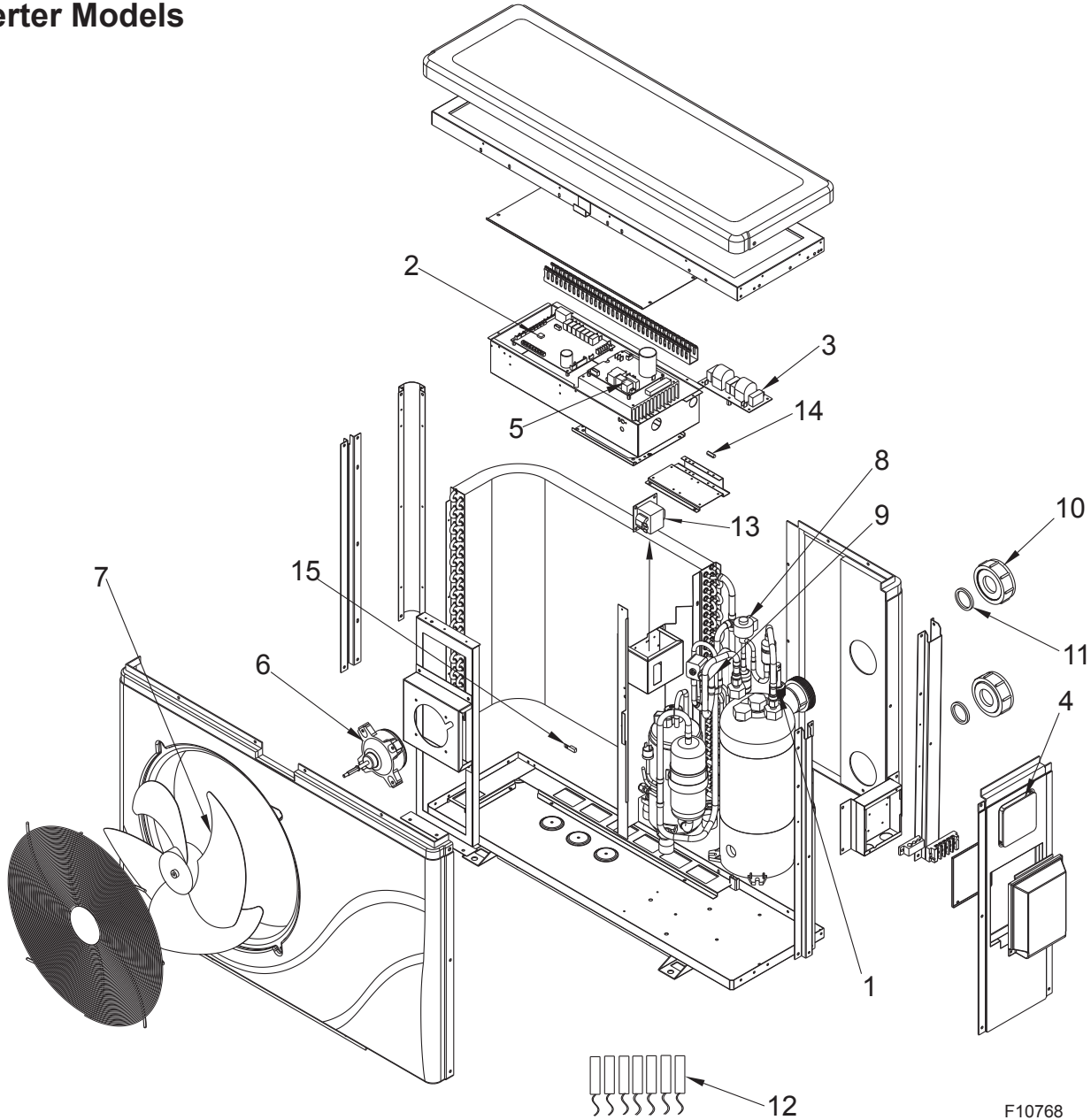
MANUFACTURER:

2151 Eastman Avenue
Oxnard, Ca 93030

1-800-260-2758

11. ILLUSTRATED PARTS LIST

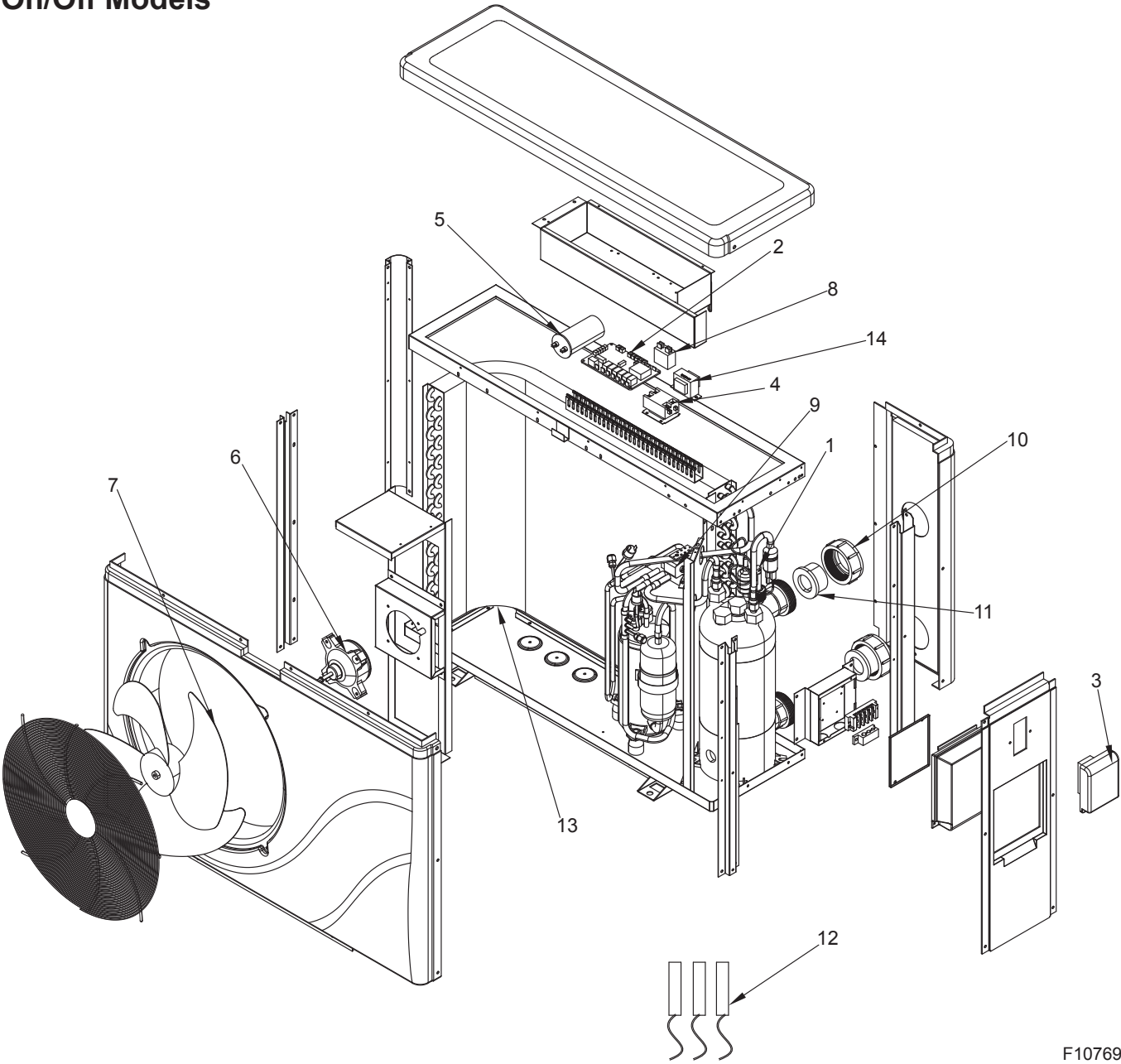
Inverter Models



F10768

CALL OUT	INVERTER MODELS DESCRIPTION	CROSSWIND-30-I (Kit P/N)	CROSSWIND-40-I (Kit P/N)	CROSSWIND-50-I (Kit P/N)	CROSSWIND-65-I (Kit P/N)	Instruction P/N
1	Water flow switch	H000404	H000404	H000404	H000404	241808
2	PC board	H000405	H000405	H000405	?H000405	241809
3	Power filter plate	H000406	H000406	H000406	H000406	241810
4	touch controller	H000407	H000407	H000407	H000407	241811
5	Inverter board	H000408	H000408	H000408	H000408	241812
6	fan motor	H000409	H000409	H000409	H000409	241813
7	Fan blade	H000410	H000410	H000410	H000410	241814
8	Electronic expansion valve coil	H000411	H000411	H000411	H000411	241815
9	4-way valve coil	H000412	H000412	H000412	H000419	241816
10	Water unions	H000413	H000413	H000413	H000413	241817
11	Water union gasket	H000414	H000414	H000414	H000414	241818
12	Full Set of Sensors	H000415	H000415	H000415	H000415	241819
13	Reactor	H000416	H000416	H000416	H000420	241820
14	Fuse	H000417	H000417	H000421	H000422	241821
15	Drain kit	H000418	H000418	H000418	H000418	241822

On/Off Models



F10769

CALL OUT	ON/OFF MODELS DESCRIPTION	CROSSWIND-40-O (Kit P/N)	CROSSWIND-50-O (Kit P/N)	CROSSWIND-65-O (Kit P/N)	Instruction P/N
1	Water flow switch	H000404	H000404	H000404	241808
2	PC Board	H000423	H000423	H000423	241809
3	LED Controller	H000424	H000424	H000424	241823
4	Contactora	H000425	H000425	H000425	241824
5	Compressor capacitor	H000426	H000426	H000426	241825
6	fan motor	H000427	H000427	H000435	241813
7	Fan blade	H000410	H000410	H000428	241814
8	Fan motor capacitor	H000429	H000429	H000430	241826
9	4-way valve	H000431	H000432	H000432	241816
10	Water Unions	H000433	H000433	H000433	241817
11	Water union gasket	H000414	H000414	H000414	241818
12	Full set of Sensors	H000434	H000434	H000434	241819
13	Drain kit	H000418	H000418	H000418	241822
14	Transformer	H000436	H000436	H000436	241828

12. WARRANTY

LIMITED WARRANTY
CROSSWIND SIDE DISCHARGE HEAT PUMP POOL HEATERS
All Models
United States (48 Contiguous States and Hawaii)

SCOPE OF WARRANTY

Raypak, Inc. ("Raypak") warrants to the original owner that the Crosswind Side Discharge Heat Pump Pool Heater sold with this limited warranty certificate (the "Heater"), when installed in any of the contiguous 48 states of the United States of America or Hawaii with a pool or spa by a properly licensed installer, will be free from defects in materials and workmanship under normal use and service for the Applicable Warranty Period. In accordance with the terms of this Limited Warranty, Raypak will, at its option, repair or furnish a replacement for any defective part of the Heater that fails in normal use and service during the Applicable Warranty Period. The repair or replacement will be warranted for only the unexpired portion of the original Applicable Warranty Period.

EFFECTIVE DATE

The Effective Date of this Limited Warranty is the date of original installation if properly documented. If you are not able to provide documentary proof of the date of original installation, the Effective Date will be the date of manufacture plus thirty (30) days. All Applicable Warranty Periods specified in this Limited Warranty are measured from the Effective Date.

APPLICABLE WARRANTY PERIOD – UNREGISTERED

If the Heater is installed with a pool or spa, the Applicable Warranty Period is ninety (90) days from the Effective Date, parts and labor, for the Heater and component parts.

EXTENDED WARRANTY PERIOD – SERVICE PROFESSIONAL \ BUILDER

If the Heater is installed by a properly licensed installer in a pool or spa in a single family residential dwelling (with the installation receipt attached to the registration) and registered with Raypak (www.raypak.com) within ninety (90) days of the Effective Date, then the Applicable Warranty Periods are one (1) year parts and labor, and two (2) years for parts only, with no labor coverage in the second year. Notwithstanding the foregoing, the titanium tube component of the titanium heat exchanger is warranted for seven (7) years from the Effective Date, with no labor coverage in the second through seventh years. If the Heater is installed anywhere other than a single family residential dwelling, then the Applicable Warranty Period for the Heater and its parts is limited to one (1) year, parts and labor.

LABOR AND SHIPPING COSTS

This Limited Warranty covers the reasonable cost of labor for repairs or replacements covered by this Limited Warranty, provided that said repairs or replacements are performed by a Raypak designated service provider during the Applicable Warranty Period and Raypak has pre-authorized said repair or replacement. This Limited Warranty does **NOT** cover refrigerant or other expendable materials. This Limited Warranty does **NOT** cover any travel time or other labor costs. Furthermore, unless applicable state law provides otherwise, this Limited Warranty does **NOT** cover any shipping costs to and from Raypak's designated service provider or to or from the installation site. All of the foregoing costs and expenses are your responsibility, unless applicable state law provides otherwise.

WARRANTY EXCLUSIONS

This Limited Warranty does **NOT** apply:

1. if the Heater has been moved from its original place of installation, or if the original owner no longer owns the property where the original installation was made;
2. if the Heater is not properly installed with a pool or spa by a qualified licensed installer in accordance with applicable local codes and ordinances, good trade practices, and the manufacturer's installation instructions;
3. if the rating plate(s) or serial number(s) are altered or removed;
4. if the Heater is modified in any way, or if non-factory authorized accessories or other components are used in conjunction with the product;

5. to damage, malfunctions or failures resulting from failure to properly install, operate or maintain the Heater in accordance with the manufacturer's instructions;
6. to damage, malfunctions or failures resulting from abuse, act of nature, accident, fire, flood, freeze, lightning or the like;
7. to damage, malfunctions or failures resulting from connected system control devices, including improperly installed salt chlorine generators;
8. to performance problems caused by improper sizing of the Heater or electric service voltage, wiring or fusing;
9. to damage, malfunctions or failures resulting from any alteration, including the use of any attachment, including without limitation any energy saving device, not authorized by the manufacturer;
10. to damage, malfunctions or failures resulting from misuse or neglect, including but not limited to, freeze-ups, operating the Heater with the cabinet door off, having flow restrictions or obstructions between the Heater outlet and the pool/spa.

HOW TO MAKE A WARRANTY CLAIM

You should immediately notify Raypak at 800-260-2758, supplying model number, serial number, date of original installation and a description of the problem. **Proper authorization MUST be obtained PRIOR to any repairs for the Limited Warranty to apply. This Limited Warranty is VOID if the product is repaired or altered in any way by ANY persons or agencies other than those authorized by Raypak.** Raypak reserves the right at all times to inspect, or require the return of, the defective Heater or component part and to verify warranty coverage at its factory. **Warranty service CANNOT be initiated until the status of the warranty coverage has been established.**

EXCLUSIVE WARRANTY - LIMITATION OF LIABILITY

THE LIMITED WARRANTY IS THE ONLY WARRANTY PROVIDED BY RAYPAK IN CONNECTION WITH THE HEATER AND ITS COMPONENT PARTS. NO ONE IS AUTHORIZED TO MAKE ANY OTHER WARRANTIES ON RAYPAK'S BEHALF. ANY IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, SHALL NOT EXTEND BEYOND THE APPLICABLE WARRANTY PERIODS SPECIFIED IN THIS LIMITED WARRANTY.

RAYPAK'S SOLE LIABILITY WITH RESPECT TO ANY DEFECT SHALL BE AS SET FORTH IN THIS LIMITED WARRANTY. IT IS AGREED THAT RAYPAK SHALL HAVE NO LIABILITY WHETHER UNDER THIS LIMITED WARRANTY OR IN CONTRACT, TORT OR NEGLIGENCE OR OTHERWISE FOR CLAIMS FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING NO LIABILITY FOR DAMAGE FROM WATER LEAKAGE), ALL OF WHICH ARE EXPRESSLY EXCLUDED, NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, OR FOR THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

We suggest you immediately record the model, serial number, and date of original installation and retain this Limited Warranty Certificate in the event warranty service is needed.

DO NOT RETURN THIS DOCUMENT TO RAYPAK. KEEP IT WITH YOUR POOL HEATER OR BUSINESS RECORDS.

Register your product at www.raypak.com/warranty

