

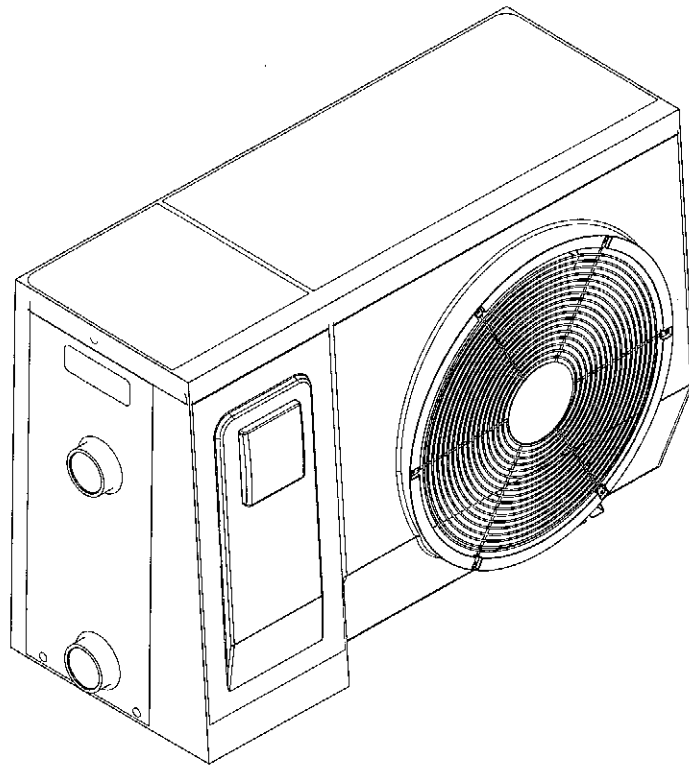
Doheny's

Pool Supplies FAST!

53K BTU SIDE VENT HEAT PUMP

Item #s 90400

INSTALLATION, OPERATION & PARTS



To prevent potential injury and to avoid unnecessary service calls, read this manual carefully and completely.

SAVE THIS INSTRUCTION MANUAL Use of aftermarket replacement parts voids warranty.

ATTENTION INSTALLER – THIS MANUAL CONTAINS IMPORTANT INFORMATION ABOUT THE INSTALLATION, OPERATION, AND SAFE USE OF THIS PUMP THAT MUST BE PROVIDED TO THE END USER OF THIS PRODUCT. FAILURE TO READ AND FOLLOW ALL INSTRUCTIONS COULD RESULT IN SERIOUS INJURY.

Contents

1. Introduction.....	3
2. Heat Pump Technical Specifications.....	4
3. Structure of Heat Pump.....	5
4. Installation Instructions.....	7
4.1 Location.....	7
4.2 Water Piping.....	8
5. Electrical Connections.....	12
5.1 Electrical.....	12
5.2 Bonding.....	12
6. Wiring Diagram.....	14
7. Service Analyzer Control.....	15
7.1 Panel description.....	15
7.2 Operation.....	16
8. Service Analyzer Codes.....	17
9. Troubleshooting.....	18
10. Initial Startup.....	20
11. Requesting Assistance or Service.....	21
12. Maintenance.....	21
13. Winterizing.....	21
Please read carefully.....	22
Notes.....	23

1. Introduction

The pool heat pump is a self-contained unit designed specifically for pool heating. Each component has been selected with care to achieve a high-quality product in an effort to exceed all industry standards.

All pool heat pumps have an electronic board with service analyzer, a titanium heat exchanger tube warranted for 10 years against corrosion and PVC plastic cabinet that eliminates all maintenance for life. All components are of superior quality, which presents you with an effective heat pump.

Compared to other types of pool heaters, such as gas or oil-fired, the pool heat pump has a lower heating capacity on a BTU/h basis. Therefore, it needs to operate for a longer time to accomplish the desired results. Occasionally, it may be necessary to run the heat pump for up to 24 hours per day. However, this should not be of concern to the owner because the heater is designed to operate continuously. What's more, despite continuous operation, it will still heat the pool far more economically than other types of heaters.

As with all pool heaters, you are advised to use a pool cover at night and when the pool is not in use. The pool cover should be used if night temperatures are 15°F less than desired pool temperature. This will keep evaporation, the greatest source of heat loss, to a minimum, thus greatly reducing the overall pool heating costs. During warmer weather, the pool cover may not be required.

2.Heat Pump Technical Specifications

Leakage protection circuit breaker		25A
		16A
Model	Test Conditions	SHAS50H
Input / (kW)	80.6°F Air, 80% RH, 80°F Water	2.2
Output / (BTU/h)		51000
COP		6.6
Input / (kW)	80.6°F Air, 63% RH, 80°F Water	2.2
Output/ (BTU/h)		47800
COP		6.3
Input / (kW)	50°F Air, 63% RH, 80°F Water	2.1
Output / (BTU/h)		28000
COP		3.9
Minimum-Maximum Water Flow/(GPM)		10-35
ADVISED VOLUME	SPA	9
(m ³)	POOL	34
Refrigerant		R410A
Voltage		230V/1PH/60Hz
Rated Load Amperes / (A)		9.6
Compressor		Rotary
Heat Exchanger		Titanium
Fan Direction		Side
Fan Rotation Speed / (RPM)		860
Fan Power Input / (W)		220
Fan Blade Dimension / (mm)		500
Water Connection / (mm/in)		48/1.5"
Optional Water Flow / (GPM)		21
Noise Level / (dB(A)) (1M)		55
Net Dimension (L / W / H mm)		1010*400*640
Packing Dimension (L / W / H mm)		1125*460*805
Net Weight/ Gross Weight (kg)		70/81.5

3. Structure of Heat Pump

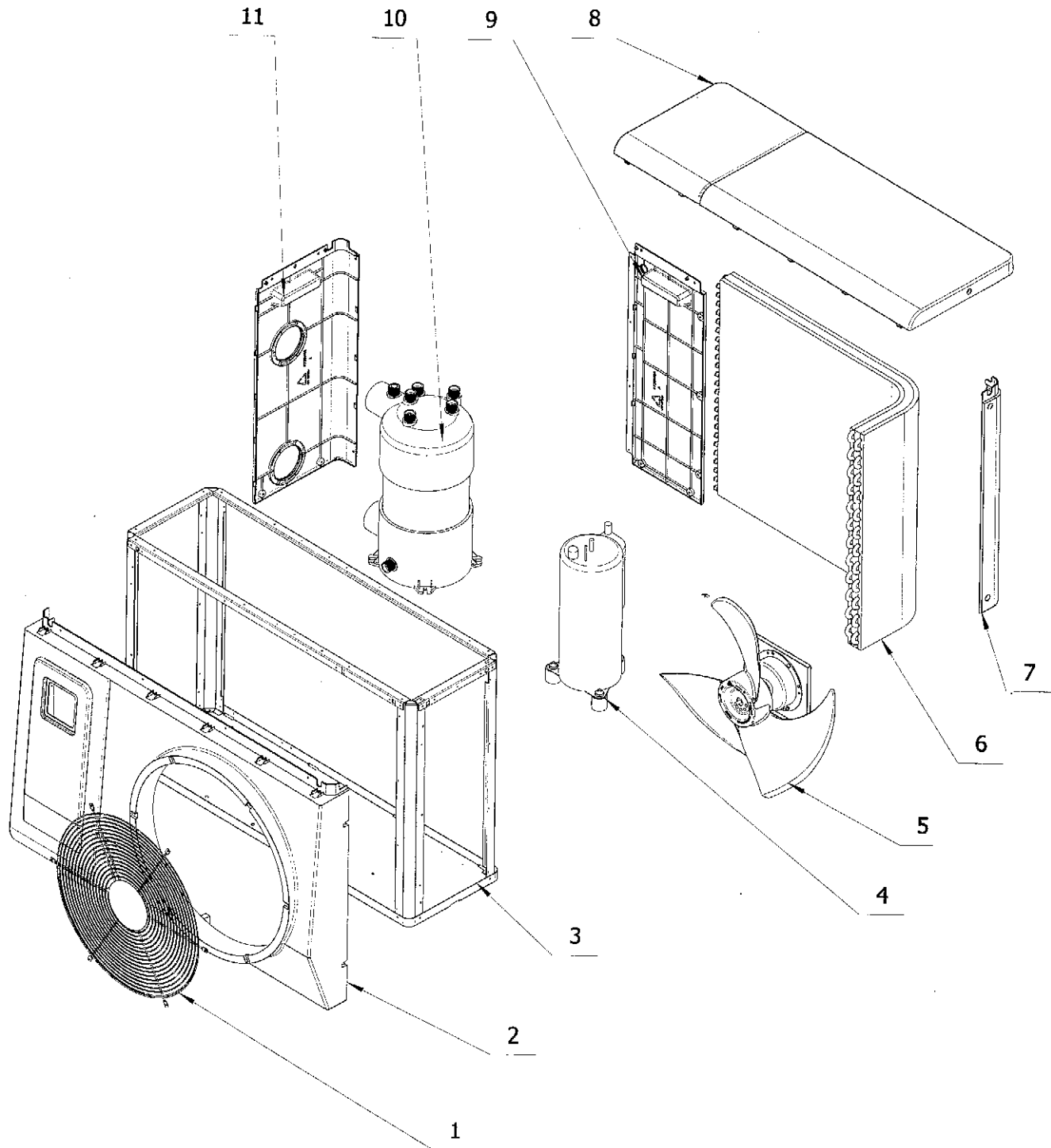


Figure 1. SHAS-50-SL Heat Pump Exploded View

As the picture shows, the components of the heat pump is listed in the form.

Table1. Parts of Heat Pump

NO.	Parts of Heat Pump
1	Fan Guard
2	Front Cover
3	Sheet Metal Support
4	Compressor
5	Fan & Motor
6	Evaporator
7	Right Support
8	Top Cover
9	Leftback Support
10	Condenser
11	Left Support

4. Installation Instructions

4.1 Location

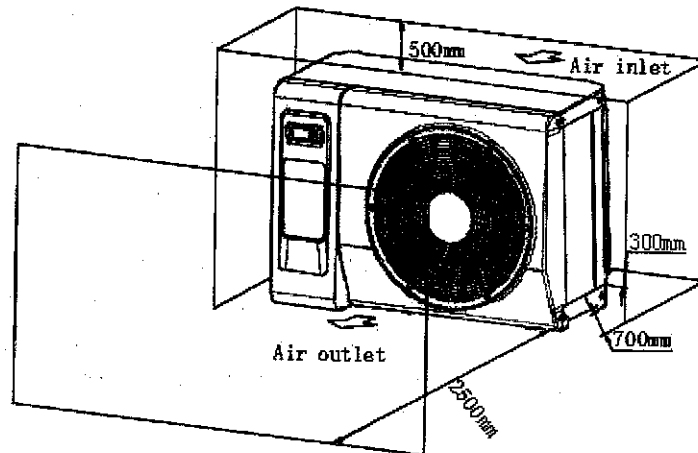
The placement of the pool heater is very important in keeping installation costs to a minimum while providing for maximum efficiency of operation, as well as allowing adequate access for service and maintenance.

The pool heat pump is designed for outdoor installation and should not be installed in a fully enclosed area, such as a shed, garage, etc. Recirculation of cold discharged air back into the evaporator coil will greatly reduce unit heating capacity and efficiency.

The unit should be located as close as practical to the existing pool pump and filter to minimize water piping. However, do not forget to provide a clearance (Table 6) at the very least all around your heat pump. The use of 90 degree bends and short radius elbows in the water piping should be kept to a minimum.

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

Figure 2. heat pump clearances



☆ **Important**

- ☆ **Air is pulled through the evaporator coil and discharged through the top grille. A minimum clearance of 60 inches should be allowed above the unit for unrestricted air discharge. The unit must not be installed under a porch. Any side of the unit should be located at least 24 inches from a wall or from any other obstruction for unrestricted air intake and service access.**

4.2 Water Piping

☆ Single Unit Installation

Figure 6 illustrates the standard plumbing layout with a single heat pump unit. Following the diagram from right to left, the plumbing sequence is as follows: Pool > Pool Pump > Filter > Heat Pump > Check Valve > Chemical Feeder > Pool. Note For normal installations, do not install a shutoff valve or any kind of variable restriction in the water piping between the heat pump outlet and the pool/spa.

Filtered water is plumbed to the inlet, located on the right side of the heat pump front panel. Heated water flows through the outlet, located on the left side of the heat pump front. Two inch unions are provided.

Automated chlorine distribution systems, if used, must be placed downstream of the heater to minimize harm to the pool equipment. Use rigid PVC piping if possible. All joints should be glued with PVC glue. When the piping installation is complete, operate the pool pump and check the system for leaks. Then, check the filter pressure gauge to verify that there isn't any indication of excessive pump head pressure. You can also make the connections using high-pressure flexible hose, but make sure the hose can withstand high pressure. The installation of a heat pump bypass is not necessary unless the water flow exceeds 75 GPM.

☆ Multiple Unit Installation

Heat Pump and Heater Combination

In certain regions of the country it may be more economical to run a heat pump during the warmer months and a gas heater during the cooler months. In some situations it may be desirable to run the heat pump in the "Chiller" mode during the hottest portion of the year and a heater during the cooler months. The heat pump may be plumbed with a gas or electric heater or any combination of heat sources including solar. All heat sources must be plumbed in series to work correctly and efficiently.

Figure 7 illustrates a recommended plumbing layout for a heat pump / heater / solar combination heating system for a pool / spa combination. Your system may not contain all of these components, but the basic plumbing will apply by eliminating the component in the illustration that is not a part of your system.

Multiple Heat Pump Connections

All plumbing on multiple heat pump installations must be done in parallel (see Figures 8 and 9). An equal flow of water to each heat pump is important for optimum operation.

Note: It may be necessary to adjust water pressure switch if a unit is installed below the water level. See Section 5.6 for details on when and how to adjust the pressure switch. Each heat pump allows a maximum flow rate of 70 gpm (265 lpm) and requires a minimum of 20 gpm (76 lpm).

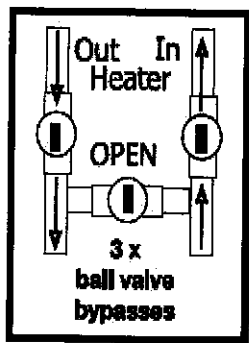
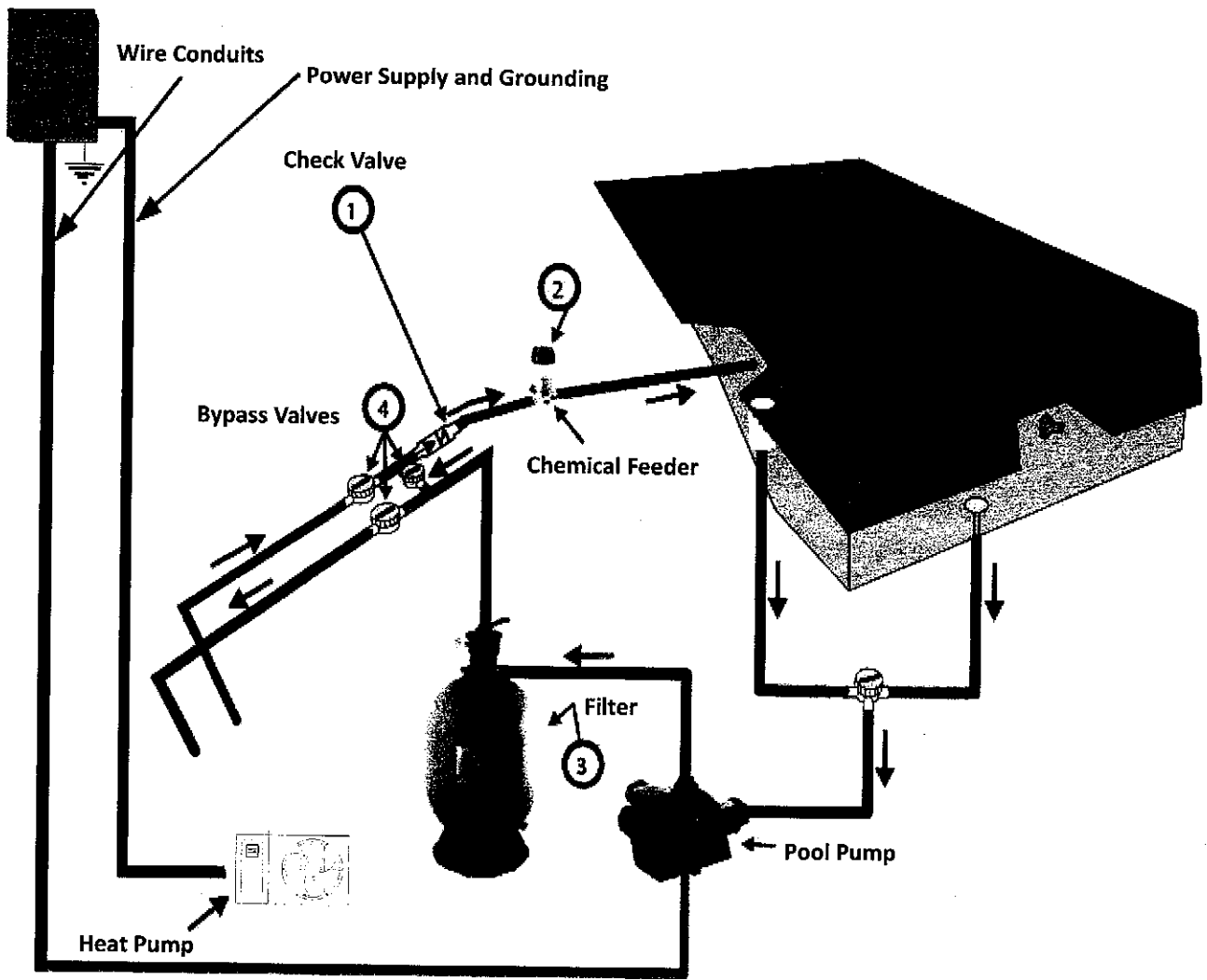


Figure 6. Standard Plumbing Layout

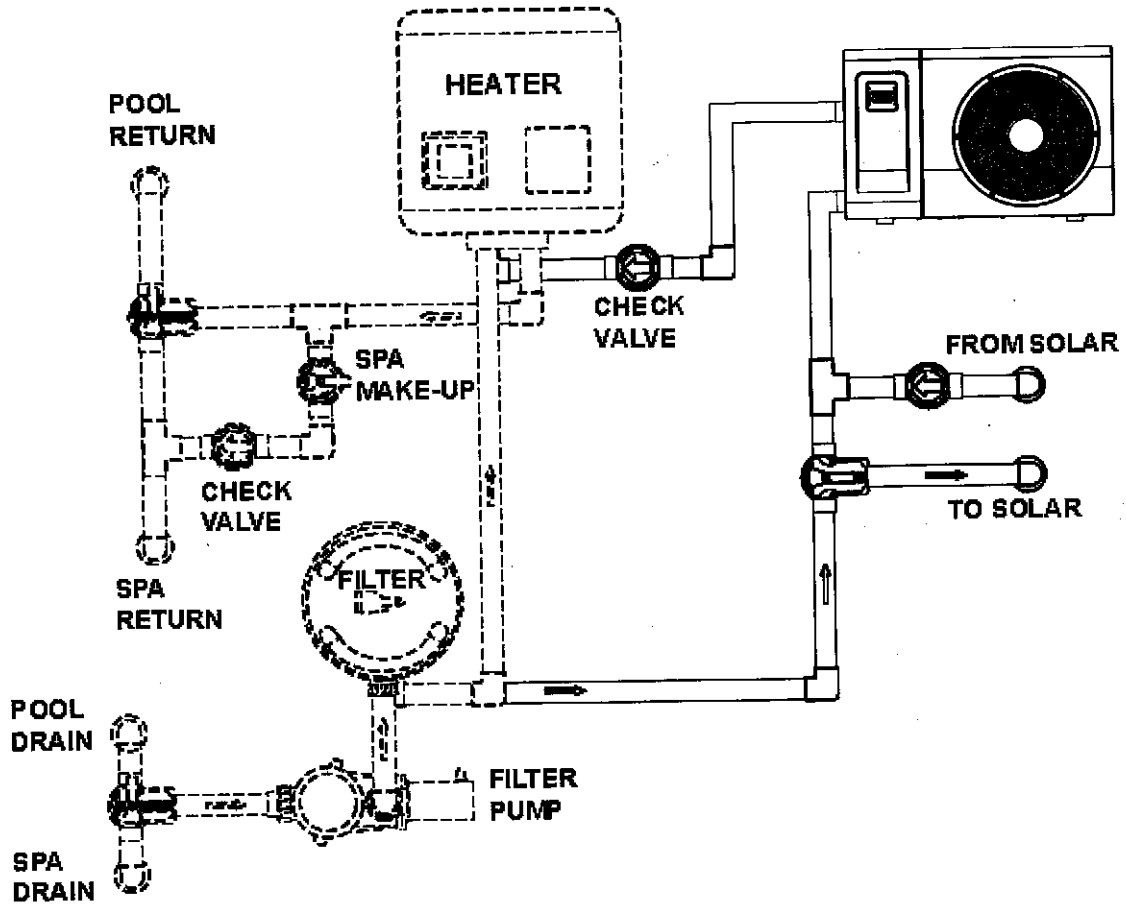


Figure 7. Plumbing For Heating System Combinations

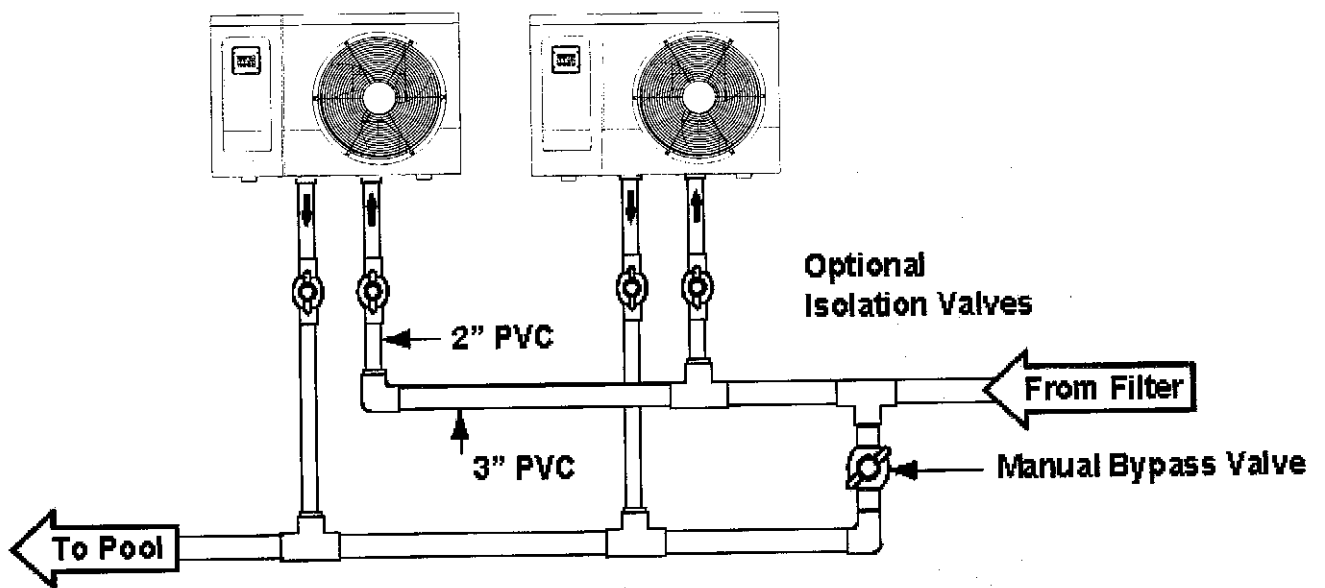


Figure 8. Two(2) Heat Pump Plumbing Layout

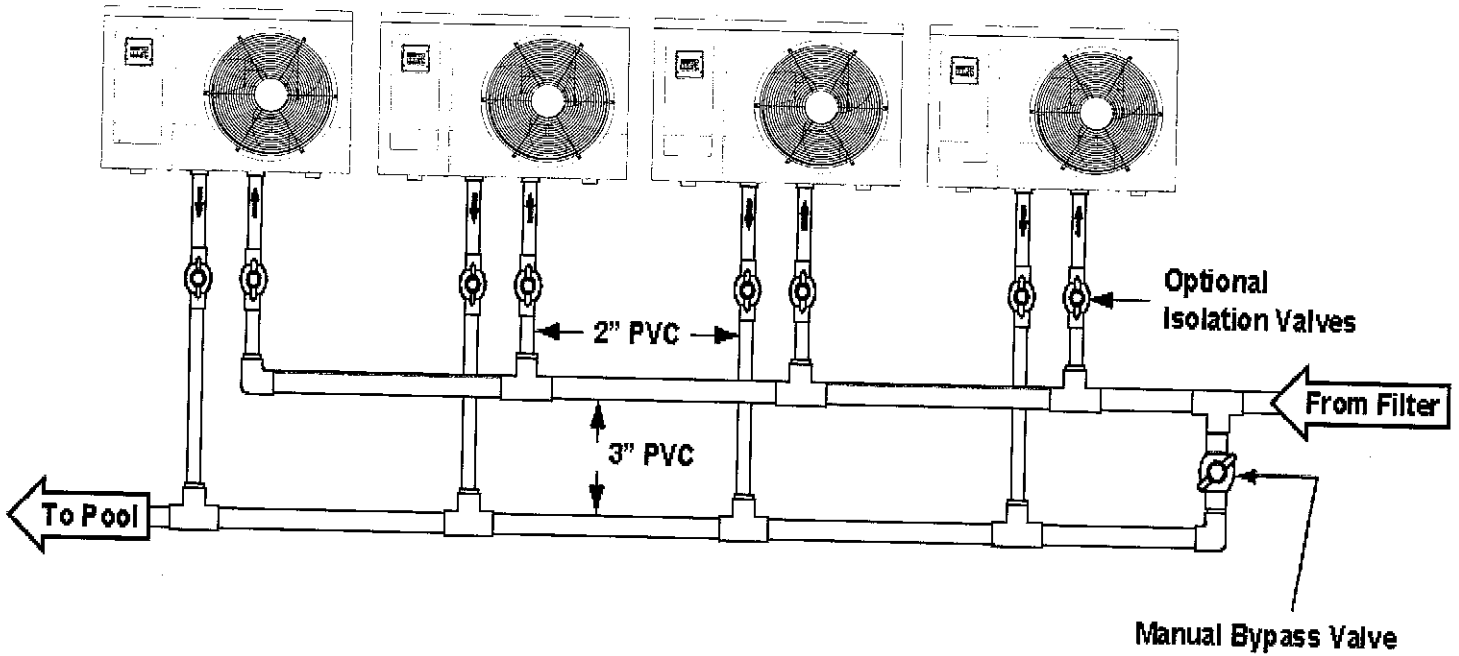


Figure 9. Four(4) Heat Pump Plumbing Layout

☆ **Important**

Certain installations have valves which isolate the heat pump from the water circuit. If the heat exchanger is deprived of water circulation for several days, high chlorine gas could cause excessive corrosion. If the disconnect switch is turned off, be sure that the pool water is allowed to circulate through the unit, or is drained out of it.

5. Electrical Connections

5.1 Electrical

The wiring of your pool heat pump should be performed by a qualified electrician in accordance with local requirements. A properly-sized breaker and copper wire must be used. Check the heat pump data label for required maximum breaker size

☆ Important

The unit must always be powered off before opening the access panel.

5.2 Bonding

Because all metals have different electrical potentials, all metal and electrical components of the pool system must be bonded together. This includes the metal framework of the pool, the light, the pump, the filter (if made out of metal), the heater, any automatic chlorine generator, and any other metal or electrical equipment. On some older pools, this substructure bond wire may not exist. In these cases, a 6 to 8 foot solid copper rod must be driven into the ground near the equipment. All electric and metal components must then be bonded to each other, and then to the copper rod.

☆ Important

☆ **Check valve must be installed between the heater and any automatic chlorine distribution system (if used);**

☆ **Any kind of automatic chlorine distribution system must be installed after or downstream of the heat pump;**

☆ **The filter must be placed before or upstream from the heat pump;**

☆ **A bypass and shut-off should be installed on all systems for ease of service, maintenance and to balance the water flow. Bypasses must be installed on any system with over a 3/4 HP pool pump.**

The installation of the pool heater should be performed by a certified electrician. To connect the electricity, you must unscrew a few screws from the top panel, then slide the electric cable through the hole of the back-base, and tight to the terminal.

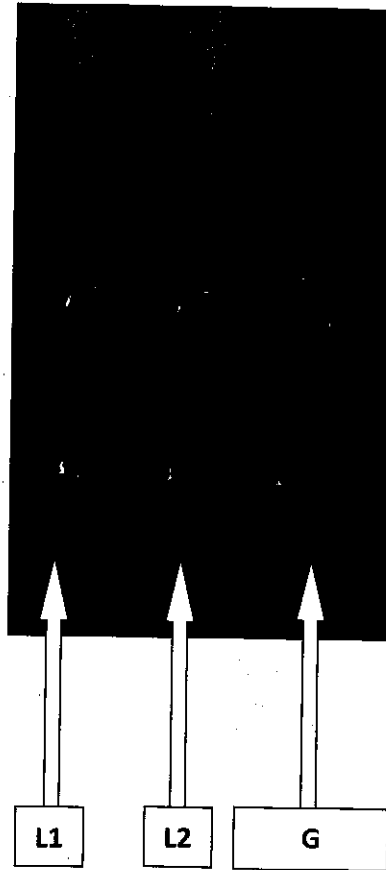


Figure 10. Electrical Supply of Electrical Box

Power requirements : 230VAC ,1PH, 60Hz

Look at the nameplate located on the heat pump to know the required amperage

Please refer to your local electrical code for additional wiring requirements

6. Wiring Diagram

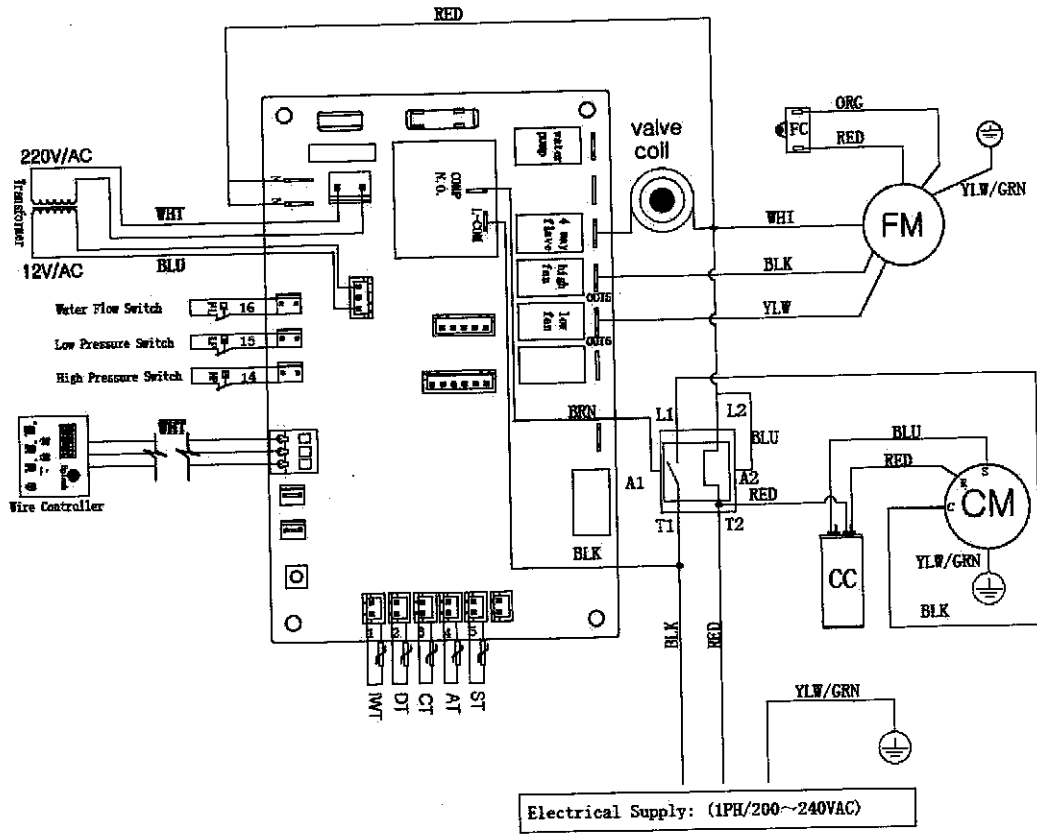


Figure 11. SHAS-50H-SL Wiring Diagram

7. Service Analyzer Control

The control panel is factory set to display the temperature in Fahrenheit degrees, it can also be displayed as degree centigrade.

7.1 Panel Description

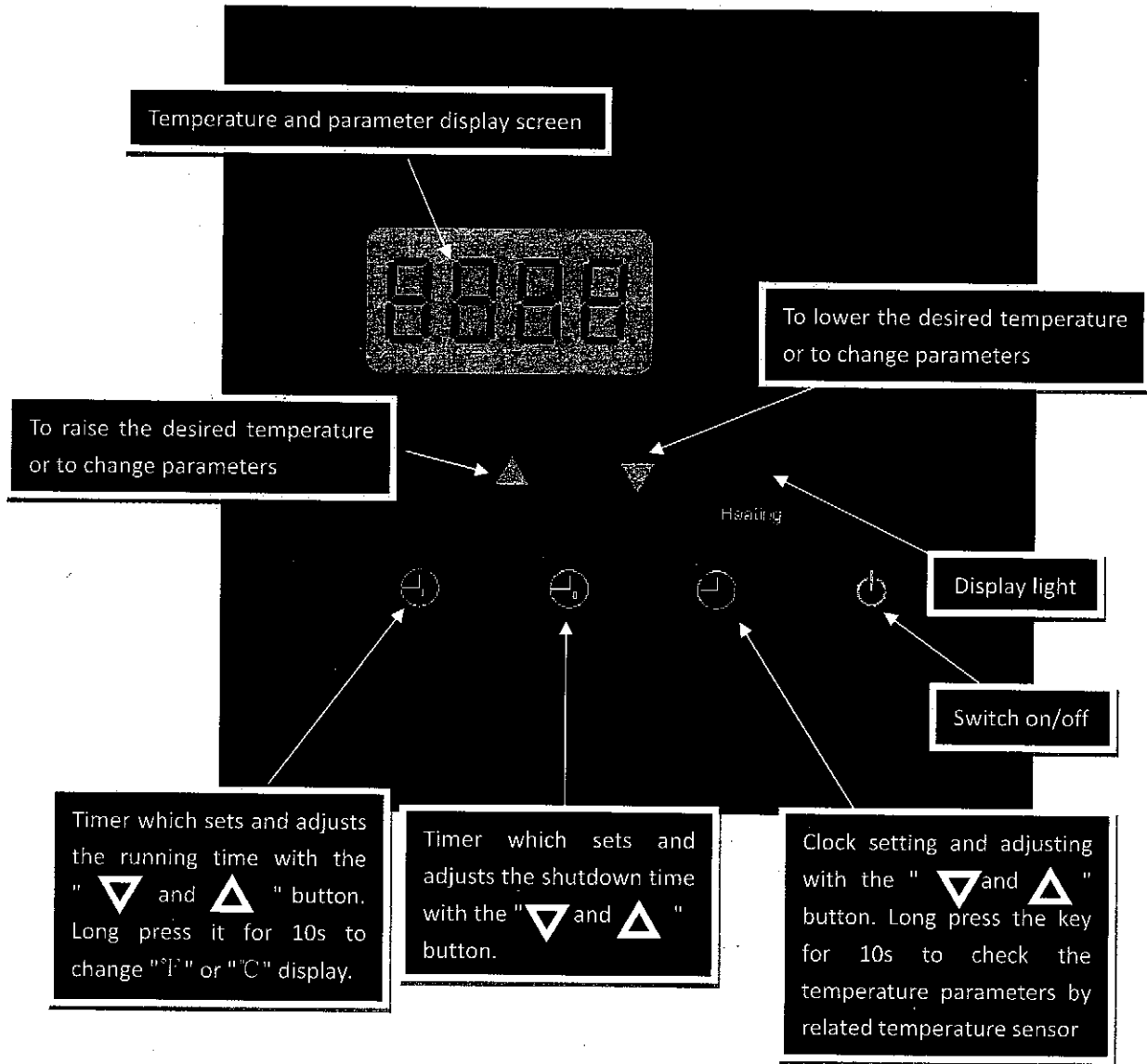





Figure 15. Panel Description













Long press the "  " button for 10s to examine the running parameter, change the item with the "  and  " button to check the measure value.

parameter table			
("***"display the measure value)			
item	display	meaning	range
0	0***	inlet water temperature	-9 ~ 99 C
1	1***	discharge temperature	0 ~ 127 C
2	2***	coil temperature	-9 ~ 99 C
3	3***	suction temperature	-9 ~ 99 C
4	4***	ambient temperature	-9 ~ 99 C
5	5***	valve opening degree	0 ~ 50

Figure 16. Parameter Table

- ☆ For Example: Display "026.5", it means the inlet water temperature is 26.5°C;
Display "146.5", it means discharge temperature is 46.5°C

7.2 Operation

- ☆ **To increase the temperature**
Proceed as explained above using the up arrow  to increase the temperature setting 0.5 degree at a time.
- ☆ **To lower the temperature**
Proceed as explained above using the down arrow .
- ☆ **To display the temperature in °F or in °C**
Long press the  for 10s to switch °F or °C
- ☆ **To set running time**
Press the  key to enter setting mode, adjusting the value with the up arrow key  and the down arrow key .
- ☆ **To set shutdown time**
Press the  key to enter setting mode, adjusting the value with the up arrow key  and the down arrow key .
- ☆ **To set the clock**
Press the  key to enter setting mode, adjusting the value with the up arrow key  and the down arrow key .

8. Service Analyzer Codes

Most problems will be detected by the service analyzer and a code will be displayed on the digital display of your heater. The meaning of Display Codes are as follows:

Codes Meaning Table	
Code	Description
P1	Inlet water Temp.Sensor Failure
P2	Discharge Temp. Sensor Failure
P3	Coil Temp. Sensor Failure
P4	Suction Temp. Sensor Failure
P5	Ambient Temp. Sensor Failure
P7	Ambient Temp. Too Low Protection
P8	Anti-freeze Protection
P9	Liquid Impact Protection
E1	Highest Presure Fault
E2	Lowest Presure Fault
E3	Water Flow Fault
E4	Power/Phase Fault
E6	Highest Temperature Fault
E8	Comunication Fault

Figure 17. Codes Meaning Table

9. Troubleshooting

The pool heater is not running

Heat pump control set to OFF	⇒	Turn the heat pump on
Desired water temperature is reached	⇒	Unit will automatically restart when the water temperature goes below the set point
Main breaker is tripped	⇒	Reset main breaker and restart heat pump
Filter is dirty, restricting the water flow.	⇒	Backwash and clean filter

The fan is running, but the compressor is not

The heat pump is in protection mode	⇒	In this case, there may be a delay before restarting.
The unit is on defrost cycle	⇒	The compressor will automatically start again a few minutes until it has stopped three times continuously.

There is no display and the fan is not running but the compressor is running

⇒ Ask your electrician to verify your heat pump's power supply by checking over the L1/L2/L3 connections in the unit's service box

There is water around the unit

While your pool heater is in the heating mode, a large quantity of warm and humid air passes over the evaporator and causes condensation. It is normal to see condensation dripping under the heater.	⇒	To check if the water really is a leak, you must stop the heater and leave the pool pump running for over 5 hours. If water is still coming out of your heater after this period, then call your dealer for service.
---	---	--

The heater is running but desired water temperature cannot be reached.

⇒ Heat loss is too much for heater; cover your pool as often as you can.

⇒ Evaporator restricted due to improper location

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.
Restricted water flow	⇒	Adjust water flow

☆ Important

If your pool heater does not operate for reasons other than those mentioned above, please contact Consumer Assistance Center to obtain the proper authorization for the warranty to apply.

10. Initial Startup

- ☆ Before starting the pool heater for the first time, it is important to verify that the breaker is in the ON position.
- ☆ Also make sure that the water circulates freely and that the pool pump is activated.
- ☆ Then, you will need to set the water temperature you desire. The fan will immediately start. The compressor will start after a 3 to 4-minute delay.
- ☆ When the compressor is running, the "heating" indicator located on the right (see "Service Analyzer Control," p. 13) should be lit. At initial startup, it is normal for the unit to run 24 hours a day.
- ☆ It is also normal to see water dripping from the holes at the base of the unit. This is just condensation.

11. Requesting Assistance or Service

- ☆ All service will be handled by the dealer that you bought the unit from. Do not return the heater to your dealer, give them a call and they will schedule a service call.
- ☆ Before calling for assistance or service, please check the "Troubleshooting" (pp. 16-17) and "Warranty" (pp. 21) sections or call your dealer. It may save you the cost of a service call. If you still need help, follow the instructions below.
- ☆ When asking for help, please provide a detailed description of the problem, your heater's complete model and serial number, and the purchase date (see p.23). This information will help us respond properly to your request.
- ☆ Keep a copy of the sales receipt showing the date of purchase. Proof of purchase will assure you warranty service.

12. Maintenance

- ☆ Dirt can accumulate on the evaporator. You can easily remove it by using a non-pressured water spray without damaging the small aluminum fins.
- ☆ The cleaning of the plastic cabinet can be done with the help of a brush and soap.

13. Winterizing

- ☆ First, you must turn the breaker off. The unit must be drained of all its water. You will need to disconnect the IN and OUT water connections. Then the unit must be tilted or blown out with air until all water is out.
- ☆ The next step is to reconnect your IN and OUT water connections that will have previously been drained.
- ☆ It is recommended to cover the heat pump to prevent snow from getting inside, so a protective winter cover is also needed.

Please read carefully

Record your model's information

Please complete and mail in the ownership registration card provided with this guide. The return address is displayed on the front of your registration card. Simply mail it as you would a postcard. The card helps us notify you about any new information about your heater.

Whenever you call to request service for your heater, you must know your complete model and serial numbers. You can find this information on the plate located at the base of your heater.

Please also record the purchase date of your device and your dealer's name, address, and telephone number.

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

Keep this book and the sales slip together in a safe place for future reference.

