

Swimming Pool Heat Pump

INSTALLATION AND USER MANUAL

Thank you for choosing our product and trusting our company.

This manual is to provide you with necessary information for optimal use and maintenance, please read it carefully and keep it for subsequent use.



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I. Introduction

Safety precaution

Caution: Danger of electric shock

Always switch off power supply before working on the heat pump and stop the hydraulic circuit.

- The swimming pool heat pump must be installed by a qualified electrician.
- Always install a differential protective device with a sensitivity of 30 mA on the distribution unit before the electrical box.
- Always fit a circuit breaker for all active conductors on the power supply of the box.
- In case of abnormal behavior (noise, smell, smoke), cut off the power supply immediately and contact your reseller. Do not attempt to repair the system yourself.
- Keep the main power supply switch beyond the reach of children.
- Rotating parts: Never remove the grid from the fan. Never place your hand or any other object in the air inlet or outlet of the heat pump.

Important features of this product

This swimming pool heat pump is equipped with safeguards that will stop operation to protect your unit automatically and display error code on the LED controller in case of some events as following:

Water Flow Switch

The water flow switch contacts are closed when pressure is applied as pool water flows through the titanium heat exchanger. Low flow rates as well as no flow will let these contacts open and this will cause the unit to shut down. The LED display will read “EE3” if the water pressure is not sufficient.

High / Low Refrigerant Pressure Switches

- The high-pressure switch senses the refrigerant pressure in the sealed refrigeration system and shuts the heat pump down in the event unsafe operating pressures are reached. The heat pump will automatically reset after the system pressure drops back to normal operating pressures. When this switch is tripped, digital displays will read “EE1”
- The low-pressure switch senses the refrigerant pressure in the sealed refrigeration system to protect against certain conditions that could be detrimental to compressor life. The switch shuts the unit down in the event of loss of refrigerant or not enough refrigerants. The switch automatically resets when the pressure rises to normal operating pressures. The display will show “EE2” if this switch is tripped.

Low Ambient Temperature

If the air outside the heat pump is not warm enough to produce heat, the system will shut down. The actual point at which your unit will shut down due to low temperature varies depending on current weather conditions and on the amount of sunlight reaching the heat pump. The shutdown can occur anywhere within a wide range of temperatures, usually below 0 degrees. A shutdown occurs when the air temperature sensor detects the ambient temperature is lower than 0 degree (digital controller will display a code “PP7”). The unit will start up again when the temperature has raised enough to reset this switch.

Time Delay

All models use a 3-minute time delay to prevent repeated tripping of the compressor thermal overload, which is caused by attempting startup before system pressures are equalized. Any interruptions, outside of power loss, will result in a 3-minute time delay.

Parameters of product range

Specification

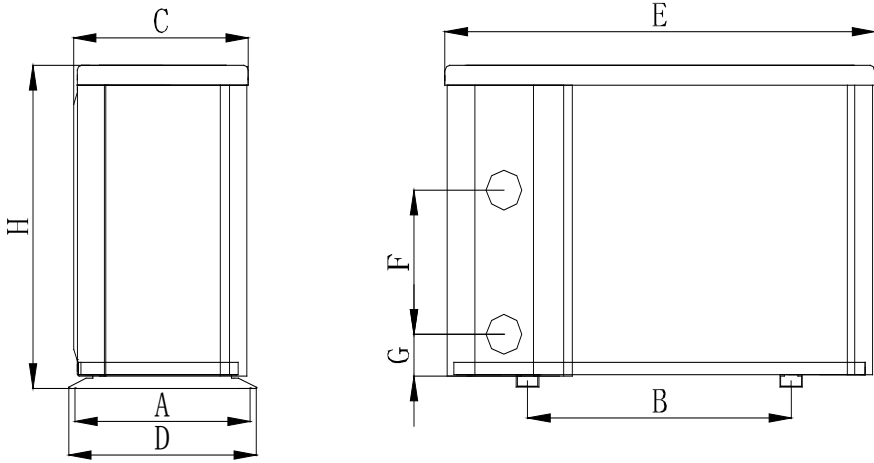
Model		THP10L	THP13L	THP17L	THP25L	THP25Ls	THP33Ls
Function	Heating capacity kW (air 26°C, water 26°C)	10	13.5	17.5	25	25	33
	C.O.P. (air 26°C, water 26°C)	6.6	7	6.7	6.92	6.92	6.8
	Heating capacity kW (air 15°C, water 26°C)	6.6	9.9	11.4	16.0	16.0	22.2
	C.O.P.(air 15°C, water 26°C)	4.64	4.78	4.68	4.51	4.60	5.16
	Power supply	230V/1Ph/50Hz				400V/3Ph/50Hz	
	Rated Input power kW	1.4	2.1	2.4	3.5	3.5	4.3
	Rated Input current A	6.5	9.5	11.4	16.0	5.5	9.2
Advised water flux m ³ /h	4-6	5-7	6.5-8.5	7-9	7-9	10-12	
Water pipe in-out spec mm	50	50	50	50	50	50	
Net weight /Gross weight Kg	55/63	70/80	75/84	105/117	105/117	123/138	

*C.O.P: Coefficient of performance

Note:

1. Machine can work well under air temp +0°C~43°C. Performance cannot be guaranteed outside the operating ranges and depend on the exterior conditions of use, identified to select suitable mode (such as location, area of swimming pool, and numbers of swimmer.)
2. Above parameters are subjected to adjustment periodically for technical improvement with further notice. Please refer to nameplate on each machine for accurate information.

Dimension:



Size(mm) / Name / Model	A	B	C	D	E	F	G	H
THP10L	315	590	312	340	961	280	77	658
THP13L	395	590	392	420	961	310	77	658
THP17L	395	590	392	420	961	380	77	758
THP25L	395	720	391	420	1092	600	77	958
THP25Ls	395	720	391	420	1092	600	77	958
THP33Ls	505	790	496	530	1161	620	77	958

- Above data is subject to modification without notice

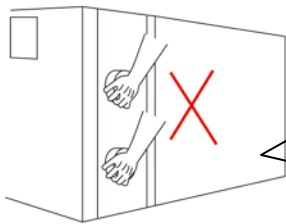
II. Installation Guide

Attention!

This swimming pool heat pump must be installed by a skilled team.

Transport it in proper manner

1. Transport it in original package.
2. When moving the machine, do not lift the water nozzle since the titanium heat exchanger in side the machine will be damaged. Please refer to the following wrong operation picture:



!!Warning:

Because the machine is very heavy, the water nozzle can not bear to be lifted during transit or installation

The manufacturer cannot accept responsibility for damage incurred or repairs necessitated due to improper handling of our equipment.

Determining Optimum installation position

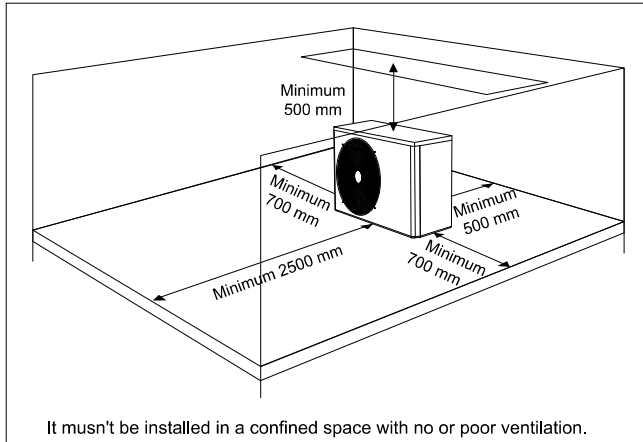
The location of the swimming pool heat pump is very important for efficient operation, think about the following factors when choose the proper place:

- ✧ Avoidance of air recirculation
- ✧ Easy for wire and pipe connection and Water pipe line of long water lines (not longer than 10m.) from heater to pool.
- ✧ Easy for maintenance.
- ✧ Drainage of condensation.

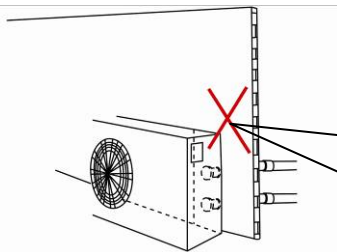
Pay attention to the following points:

1. The heat pump must be installed **OUTSIDE** in a well ventilated place to avoid air recirculation or in a place with adequate room area both for installation and maintenance. Please refer to the following illustration:

A minimum of 500mm of clearance from walls, shrubbery, equipment, etc. is required around the entire pump circumference. This allows for ample air intake. No less than 2500mm clearance on the air outlet is required to prevent recirculation of air. We recommend not to place the unit underneath eaves, decks, or porches, as this causes recirculation of discharged air, or the efficiency of the heater will be reduced or even stopped.

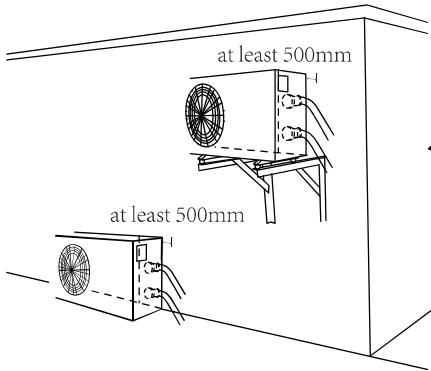


Wrong installation

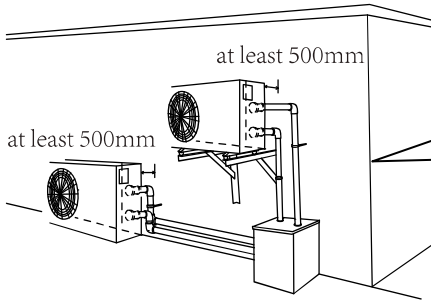


!!Warning:
Don't install the heat pump close to a wall or plants. And Never inside a closed building!

2. The heater should be located on a solid, level and non-corrodible structure that is capable of supporting the weight of the heat pump. It must be fixed by bolts (M10) to concrete foundation.



!!Warning:
*The machine must not be hung onto the wall **with soft pipe** since the inlet/outlet union on the machine can't hold weight.*



*The machine must always be connected **with hard pipe!***

3. The heat pump should be far from any source of combustibles and corrosive material to avoid any damage to this unit.

Never place heat pump near sprinkler systems, evaporation of acid or alkaline gas. If you live in an oceanfront area, the heat pump should be placed out of direct spray of sand and salt, since this will also clog, damage, and corrode the unit. You may consider protecting your heat pump by planting shrubbery or a privacy fence between the unit and the prevailing beachfront wind.

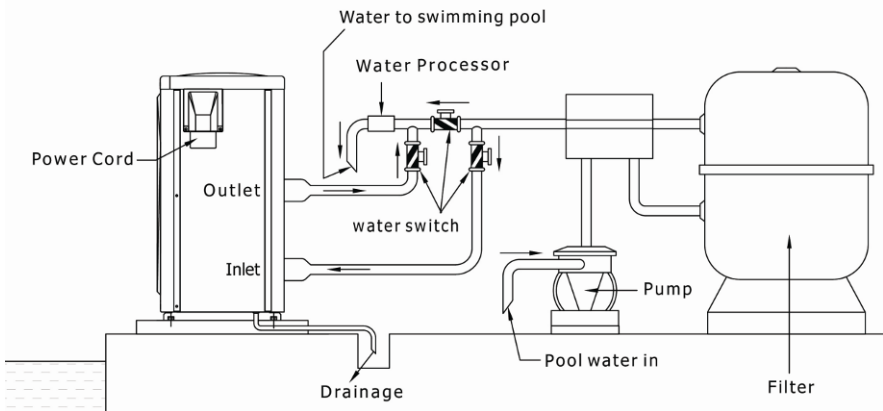
4. When the machine is running, there will be condensation water discharged from the bottom. Make sure there is enough space for water drainage.

TIPS: HEAT PUMPS GENERATE WATER CONDENSATION DURING NORMAL OPERATION. THIS SHOULD NOT BE MISTAKEN FOR A LEAK IN THE UNIT.

Water pipe connection

- The water flow through this machine needs to be driven by an appended water pump (Prepared by the user). The recommended pump specification-flux is shown on the product specification and Max. lift $\geq 10\text{m}$;
- Pipe length between heat pump and swimming pool should not be longer than 10m.

Swimming Pool Heat Pump Piping Diagram

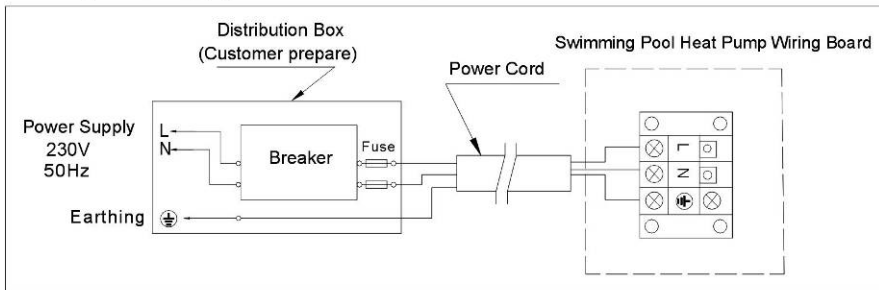


Noted: The drawing is just for demonstration, and layout of the pipes for reference.

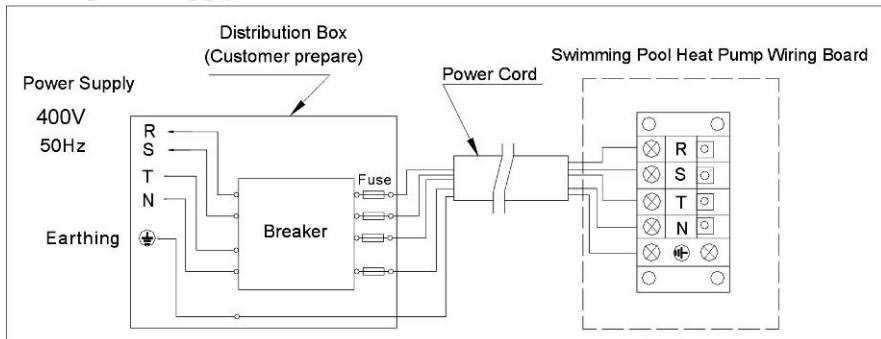
Electric connection

- Wiring must be handled by a professional technician according to the circuit diagram as following.
- Connect the heat pump to appropriate power supply and the voltage should comply with the rated voltage of each model stated on the specification.
- Make sure the machine is ground well.
- Always put leakage protector according to the local code for wiring (leakage operating current $\leq 30\text{mA}$).
- Protect the circuit with a suitable circuit breaker or fuse.

A.For power supply: 230V 50Hz



B.For power supply:400V 50Hz



Attention: The swimming pool heater must be earthed well.

Recommendation for protecting devices and cable specification

MODEL		THP10L	THP13L	THP17L	THP25L	THP25Ls	THP33Ls
Breaker	Rated Current A	15	20	25	32	15	20
	Rated Residual Action Current mA	30	30	30	30	30	30
Fuse A		15	20	25	32	15	20
Power Cord (mm ²)		3×2.5	3×2.5	3×4	3×6	5×2.5	5×4
Signal cable (mm ²)		3×0.5	3×0.5	3×0.5	3×0.5	3×0.5	3×0.5

※ Above data is subject to modification without notice.

Note: The above data is adapted to power cord ≤ 10m. If power cord is >10m, wire diameter must be increased. The signal cable can be extended to 50m at most.

Attention:

Always Start the water pump **before** turning on this machine
Turn off this machine **before** turning off the water pump.

Inspection before connecting power supply

- Check the installation of the whole machine and the pipe connections according to the pipe connecting drawing.
- Check the electric wiring according to the electric wiring diagram, and ground well.
- Make sure no blockage on the air inlet and outlet, or the efficiency of the heater will be reduced or cause machine to stop operation.

Trial after connecting power supply

- Connect the machine with electric power supply, then relative information will display on the LED controller.

(For Detail operation of LED controller, please refer to Chapter “Operation guide”).

- Start the water pump before turning on the Machine to avoid any damage.
- Press power on/off on LED controller to turn on/off machine.
- During the first start of machine, please check if there is any water leakage in the piping connection system. Then set suitable temperature.
- After the swimming pool heater runs, check if there is any abnormal noise or smell.

In any abnormal situation, such as serious noise, smell or smoking, please cut the power supply immediately and inform resellers, never try to repair it by yourself.

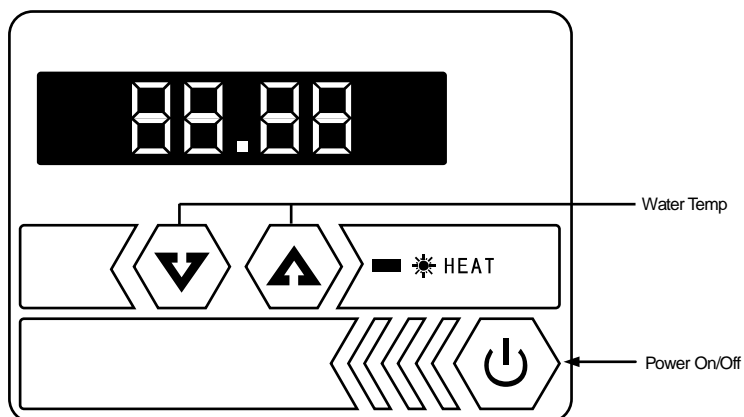
Special cases:

- In the event of an unexpected power cut, the heat pump will automatically restart. Check the setting and adjust if necessary.
- In the event of an expected power cut, switch off the heat pump. When power is restored, switch on the pump, check the settings and adjust if necessary.
- Always switch off the machine in stormy weather.

III. Operation guide

LED controller

Picture for keys



Power on/off



HEAT

Shows the heat mode has been set



Down-ALLOW

Set required temperature



UP-ALLOW

Set required temperature



LED screen





Display temperature and machine failure code

1. Operation Display



The display shows Temperature of the swimming pool water when the machine is on.

2. Water temperature setting

A. Available no matter the machine is on or off;

B. Press the key  or  to set water temperature. The controller indicates twinkling temp. Press  or  adjust to your required water temp;

C. 5 seconds later, the controller display will back to the normal mode.

- D. When you want to check setting temperature, press  or  to see the current setting.

Testing

1 . Inspection before use

- A. Check installation of the whole machine and the pipe connections according to the pipe connecting drawing;
- B. Check the electric wiring according to the electric wiring diagram and earthing connection;
- C. Make sure that the main machine power switch is off;
- D. Check the temperature setting;
- E. Check the air inlet and outlet.

2 . Trial

- A. The user must “Start the Pump before the Machine, and Turn off the Machine before the Pump”, or the machine will be damaged;
- B. The user should start the pump, check for any leakage of water; and then set suitable temperature in the thermostat, and then switch on power supply;
- C. In order to protect the swimming pool heater, the machine is equipped with a time lag starting function, when starting the machine, the blower will run 1 minutes earlier than the compressor;
- D. After the swimming pool heater starts up, check for any abnormal noise from the machine.

Precautions

1 . Attention

- A. Set proper temperature in order to get comfortable water temperature to avoid overheating or overcooling;
- B. Please don't stack substances that can block air flow near inlet or outlet area, or the efficiency of the heater will be reduced or even stopped;
- C. Please don't put hands into outlet of the swimming pool heater, and don't remove the screen of the fan at any time;
- D. If there are abnormal conditions such as noise, smell, smoke and electrical leakage, please switch off the machine immediately and contact the local dealer. Don't try to repair it yourself;
- E. Don't use or stock combustible gas or liquid such as thinners, paint and fuel to avoid fire;
- F. In order to optimize the heating effect, please install heat preservation insulation on pipes between swimming pool and the heater. During running period of the swimming pool heater, please use a recommended cover on the swimming pool;
- G. Connecting pipes of the swimming pool and the heater should be $\leq 10\text{m}$, or the heating effect of the heater cannot be ensured;
- H. This series of machines can achieve high efficiency under air temperature of $+15^{\circ}\text{C} \sim +25^{\circ}\text{C}$.

2 . Safety

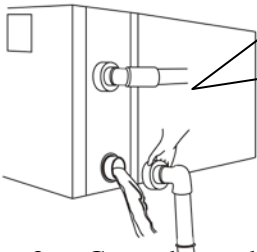
- A. Please keep the main power supply switch far away from the children;
- B. When a power cut happens during running, and later the power is restored, the heater will start up automatically. So please switch off the power supply when there is a power cut, and reset temp when power is restored;
- C. Please switch off the main power supply in lightning and storm weather to prevent from machine damage that caused by lightning;
- D. If the machine is stopped for a long time, please cut off the power supply and drain water clear of the machine by opening the tap of inlet pipe.

IV. Maintenance

Caution: Danger of electric shock

“Cut off” power supply of the heater before cleaning, examination and repairing

- A. In winter season when you don't swim:
1. Cut off power supply to prevent any machine damage.
 2. Drain water clear of the machine.



!!Important:

Unscrew the water nozzle of inlet pipe to let the water flow out.

When the water in machine freezes in winter season, the titanium heat exchanger may be damaged.

3. Cover the machine body when not in use.
- B. Please clean this machine with household detergents or clean water, NEVER use gasoline, thinners or any similar fuel.
- C. Check bolts, cables and connections regularly.

V. Trouble shooting

Common faults

	Phenomenon	Possible reason
Not failure	A. Noticeable White vaporous cold air or water. B. Popping sound	A. The fan motor stops automatically for defrost. B. There will be sound from the solenoid valve when machine starts or ends to defrost. C. During machine working or just stopping, a sound like water flow, in 2~3 minutes of starting the machine. This sound comes from refrigerant flowing or water drainage during dehumidification. D. The popping sound during the operation is caused by expand on heating and contract on cooling of the heat exchanger when temperature varies.
	Automatic start or stop	Check whether there is mal-function on the timer.
Recheck	Heat pump does not run	A. Power supply failure B. Check manual power supply switch to make sure it is on. C. Fuse burned. D. If machine auto- protector has started (check failure code display on controller).
	Running but not heating	Check if there is blockage on air inlet and outlet of the unit.

Note: If the following conditions happen, please stop the machine and cut off the power supply immediately, then contact your dealer:

- a) Inaccurate switch action;
- b) The fuse is frequently broken or leakage circuit breaker jumped.

Failure code

NO.	Failure code	Failure description	Action
1	EE 1	High pressure protection	Contact your dealer.
2	EE 2	Low pressure protection	Contact your dealer.
3	EE 3	Low water pressure protection	1. Check if there is no water through the machine; make sure the pump is on. 2. Or contact your dealer.
4	EE 4	A. Single phase machine: failure connection due to loose wire terminal of PROT2 on the PC board B. Three phase machine: 3 phase sequence protection	Contact your dealer.
5	PP 1	Pool water temp sensor failure	Contact your dealer.
6	PP 2	Heat only type: Exhaust temp sensor failure	Contact your dealer.
7	PP 3	Heating coil pipe temp sensor failure	Contact your dealer.
8	PP 4	Gas return temp sensor failure	Contact your dealer.
9	PP 5	Air temp sensor failure	Contact your dealer.
10	PP 6	Compressor exhaust overload protection	Contact your dealer.
11	PP 7	When the temperature $< 0^{\circ}\text{C}$ auto stop for protection (Not Failure);	Machine Auto-protection
12	EE8/888 /Messy Code	Communication Failures	Contact your dealer.

