hidrotermal®

SPA HEATER

USER MANUAL

BEFORE YOU BEGIN

CHECK ALL ELECTRICAL CONNECTIONS TO ALL COMPONENTS WITHIN THE HEATER FOR TIGHTNESS. CONNECTIONS CAN BECOME LOOSE DURING SHIPMENT AND HANDLING.

WARNING

Only qualified personnel should install and maintain this equipment. Unauthorized alteration or improper maintenance of this unit may release the manufacturer from any warranty claims. The installation must be in accordance with the instructions in this manual and applicable local plumbing and electrical codes.

SPA Heater Model List

Photo	Model	Specification
Heaters with manual thermostat		
	**Hidro-H5.5**	5.5KW/220V/50Hz or 60Hz
	Hidro-H7.5	7.5KW/220V/50Hz or 60Hz
	Hidro-H8	8KW/220V/50Hz or 60Hz
	Hidro-H9	9KW/220V/50Hz or 60Hz
	Hidro-H11	11KW/380V/50Hz or 60Hz
	Hidro-H15	15KW/380V/50Hz or 60Hz
	Hidro-H18	18KW/380V/50Hz or 60Hz
	**Hidro-H18Pro**	18KW/380V/50Hz or 60Hz
	Hidro-H24Pro	24KW/380V/50Hz or 60Hz
	Hidro-H32Pro	32KW/380V/50Hz or 60Hz
	Hidro-H36Pro	36KW/380V/50Hz or 60Hz
Heaters with Digital Thermostat Control		
	**Hidro-HS5.5**	5.5KW/220V/50Hz or 60Hz
	Hidro-HS7.5	7.5KW/220V/50Hz or 60Hz
	Hidro-HS8	8KW/220V/50Hz or 60Hz
	Hidro-HS9	9KW/220V/50Hz or 60Hz
	Hidro-HS11	11KW/380V/50Hz or 60Hz
	Hidro-HS15	15KW/380V/50Hz or 60Hz
	Hidro-HS18	18KW/380V/50Hz or 60Hz
	**Hidro-HS18Pro**	18KW/380V/50Hz or 60Hz
	Hidro-HS24Pro	24KW/380V/50Hz or 60Hz
	Hidro-HS32Pro	32KW/380V/50Hz or 60Hz
	Hidro-HS36Pro	36KW/380V/50Hz or 60Hz

SPA Water Heater-when the rate of recovery and the spa heat-up time are important, or when the spa is used infrequently, determine the proper heater size with the following calculations:

$$kw = 0.05678 * A * (T_{diff} + 17.78)$$

A : = Surface area of pool/spa (m^2)
Length x Width

T_{diff} : = Difference between average air temp and desired water temp (C^o)

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SAFETY INSTRUCTIONS

When using this electrical equipment, basic safety precautions should always be followed, including the following.

1. READ AND FOLLOW ALL INSTRUCTIONS.

2. To reduce the risk of injury.

A. The water in a pool or tub should never exceed 104℉(40℃). A water temperature in excess of 104℉ is considered unsafe for all persons. Lower water temperatures are recommended for extended use (exceeding 10-15 minutes) and for young children.
B. Since excessive water temperatures have a high potential for causing fetal damage during the early months of pregnancy, pregnant or possibly pregnant women should limit pool or tub water temperatures to 100° F (38℃).
C. Before entering a pool or tub, the user should measure the water temperature at several occupant locations using an accurate thermometer since the tolerance of water temperature-regulating devices may vary as much as ± 5℉ (± 3℃).
D. Alcohol, drugs or medications should not be used before or during pool or tub use since their use may lead to unconsciousness with the possibility of drowning.
E. Obese persons and persons with a medical history of heart disease, low or high blood pressure, circulatory system problems, or diabetes should consult a physician before using a pool or tub.
F. Persons using medication should consult a physician before using a pool or tub since some medication may induce drowsiness while other medication may affect heart rate, blood pressure, and circulation.

---WARNING---
DANGER OF HYPERTHERMIA

Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6℉(36℃). The symptoms of hyperthermia include dizziness, fainting, drowsiness, lethargy and an increase in the internal temperature of the body. The effects of hyperthermia include:

a) Unawareness of impending hazard;
b) Failure to perceive heat;
c) Failure to recognize the need to exit pool or tub;.
d) Physical inability to exit pool or tub;
e) Fetal damage in pregnant women;
f) Unconsciousness resulting in a danger of drowning.

WARNING--- The use of alcohol, drugs or medications can greatly increase the risk of fatal hyperthermia in pools and tubs.

INSTALLATION

1. Description

The Swimming Pool SPA Heater consists of a heating tank with external enclosure, and the electrical heating and control system. In order to help maintain the heater in a satisfactory manner, a brief description of its components and their operation is included for the customer's convenience.

The pressure vessel and its enclosure comprise the main mechanical portion of the pool heater.

The pressure vessel, in conjunction with the flow switch and heating element are the only portions of this equipment in contact with the water.

The external enclosure is a sheet steel case totally enclosing the pressure vessel and electrical components. The enclosure is coated with a rust inhibiting, powder coat finish.

The electrical system, which is the heart of this unit, can be considered as three separate systems engineered to provide optimum use of energy. They are as follows:

(1) The heating elements; mounted on a four-bolt flange. There are 2, 3 or 4 elements.

(2) The control system; consists of the pilot switch, high limit thermostat, flow switch, temperature control. These controls are wired into a control circuit designed to control the temperature of the water leaving the heater. The high-limit thermostat is designed to open the control circuit and cut off the power in the event of excessive temperature.

A flow switch is built-in to prevent the pool heater from operating without water flow. The flow switch will activate at flow rates of 76 LPM (20 GPM) or greater.

2. Location

Hidrotermal SPA Heaters are quiet, do not expel exhaust fumes, and may be conveniently located in a shed or basement. It should be securely mounted to a smooth, flat surface.

Normal positioning of the pool heater should be in close proximity to the pool filtration. Select a location conveniently close to incoming electrical service and where excessively long piping runs are not required. Leave minimum clearance of 9 inches/ 230mm on the lift, 12 inches /310mm both above and to the front and 6 inches / 153mm on the back for service entrances and access.

3. Plumbing

Pipe the heater as shown in Figure 1 to the inlet and outlet openings on the right side.

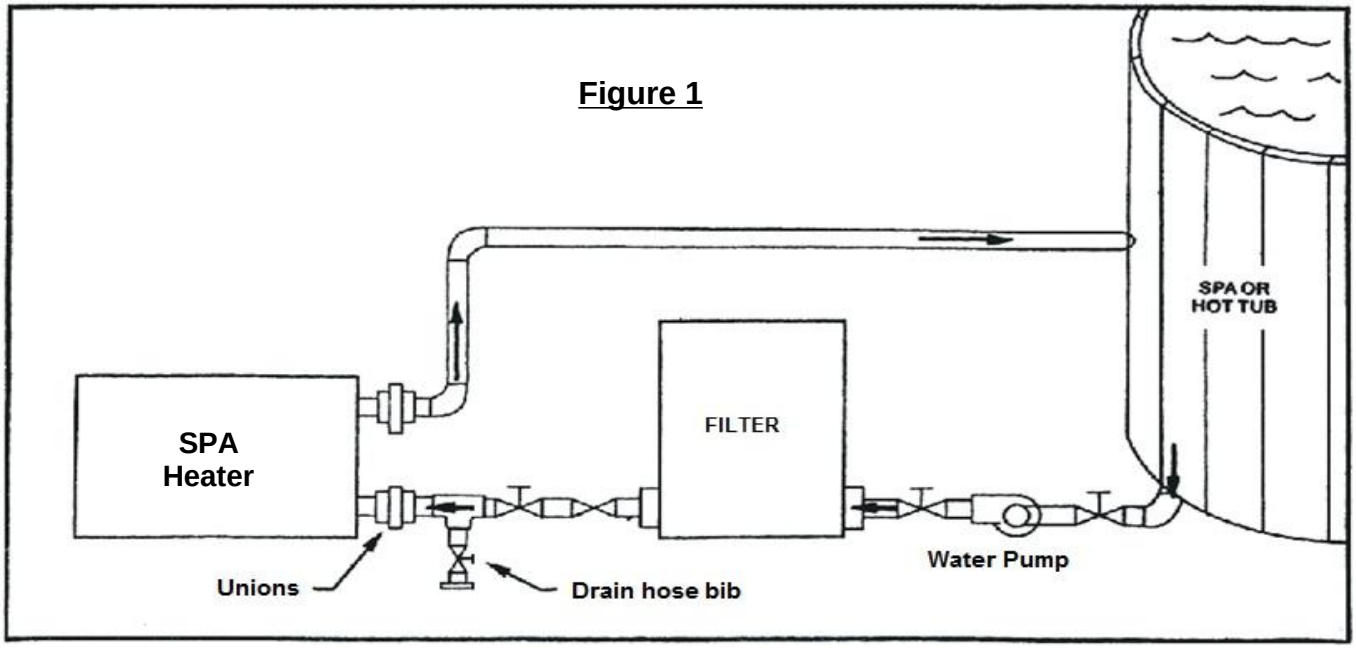
Connect the heater in line between the filter discharge and pool. The water line coming from the filter should be connected to the heater inlet, and the discharge line to the pool should be connected to the outlet. The pool will not heat properly unless it is plumbed correctly. If plastic pipe is used, it should be suitable for at least 120℉(49 ℃).

A plumbing bypass around the pool heater is not necessary unless flow rate though the heater exceeds 303 LPM(80 GPM). A minimum flow rate of 76 LPM(20 GPM) is required. Lack of sufficient flow will not allow the flow switch to activate the heater.

It may be necessary, in larger Olympic-sized or public pools, to use two or more heaters to obtain sufficient KW capacity. If so, the heaters must be placed in parallel, so that each heater takes equal flow.

DRAINAGE: A method of draining water away from the heater and other equipment is to be provided. The heater should be flushed at the end of each swimming season. During flushing or service, water may be spilled and could cause damage to the floor or other equipment. A drain valve is to be installed in the INLET plumbing.

Figure 1



4. Electrical Installation

A. Check Specification Plate rating to insure the heater matches your electrical supply.
B. CHECK ELECTRICAL CONNECTIONS TO ALL COMPONENTS within the heater for tightness. These can become loose during shipment and handling.
C. Check components for any moisture, rust, or dust which may have accumulated during shipping, and clean or dry where necessary.
D. Do not connect the pool heater to, or operate at, a voltage other than the voltage rated on the nameplate.
E. The power supply must be protected by a circuit breaker or a fused disconnect switch. An insulated ground conductor must be provided.
F. Suggested wire sizes for insulated copper conductor wires are shown in follow table.
G. Connect the power according to the Figure 2.

Heaters with manual thermostat	Heaters with Digital Thermostat Control	KW	Voltage	Suggested Wire Size
Hidro-H5.5	Hidro-HS5.5	5.5	220V	3*6mm²
Hidro-H7.5	Hidro-HS7.5	7.5	220V	3*10mm²
Hidro-H8	Hidro-HS8	8	220V	3*10mm²
Hidro-H9	Hidro-HS9	9	220V	3*10mm²
Hidro-H11	Hidro-HS11	11	380V	5*4mm²
Hidro-H15	Hidro-HS15	15	380V	5*6mm²
Hidro-H18	Hidro-HS18	18	380V	5*6mm²
Hidro-H18Pro	Hidro-HS18Pro	18	380V	5*6mm²
Hidro-H24Pro	Hidro-HS24Pro	24	380V	5*10mm²
Hidro-H32Pro	Hidro-HS32Pro	32	380V	5*10mm²
Hidro-H36Pro	Hidro-HS36Pro	36	380V	5*16mm²

Remark:
It is based on 125% correction factor for wire with 75℃ insulation.

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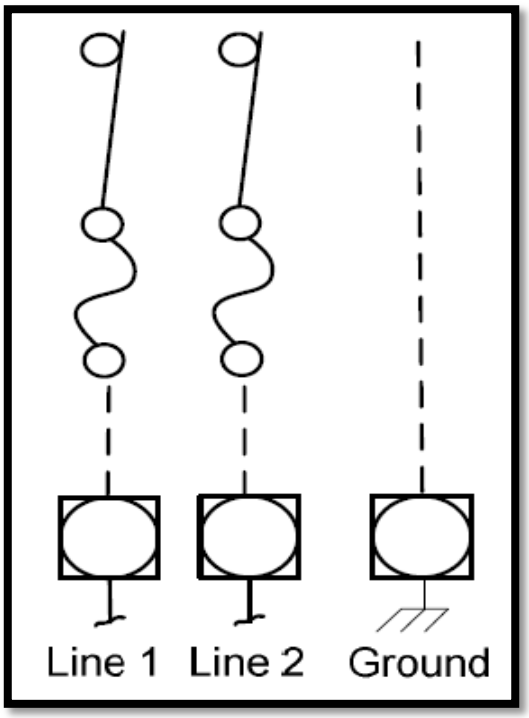
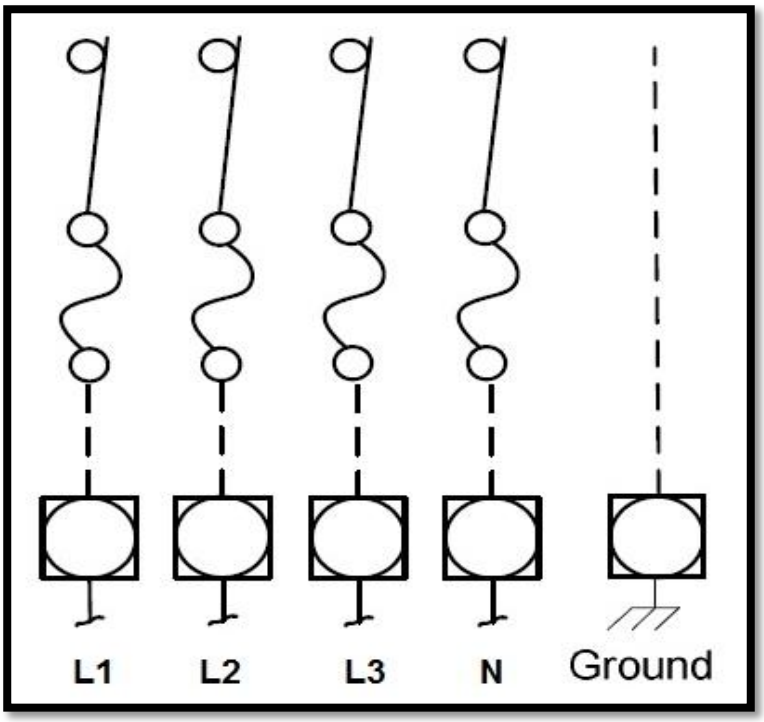
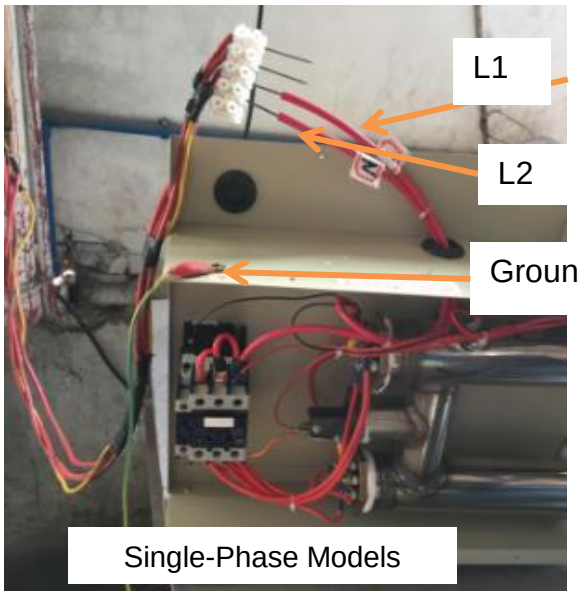


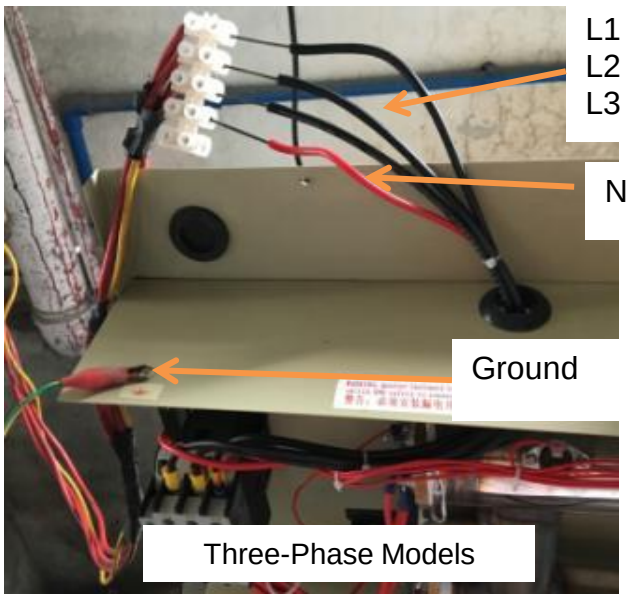
Wiring Diagram
Single-Phase Models



Wiring Diagram
Three-Phase Models

Figure 2





Wiring Status for Testing

USAGE

1. Startup Procedure

A. Make sure that the pump is on and that there is at least 76 LPM(20 GPM) flow through the pool heater. The heating elements will fail prematurely if allowed to operate with insufficient water flow.
B. Check temperature control setting, also, examine wiring for loose connections, etc.
C. Turn on power at main disconnect switch.
D. Turn on the water heater by pressing ON/OFF button on the heater.

WARNING: The thermal protector will shut off the heater when the system water overheates. If that occures should disconnect the power at the breaker switch and determine the cause before resetting.

2. INDICATOR LIGHTS

The control has two indicator lights of HEAT and POWER.
POWER: Light on means heater has power to control circuit.
HEAT: Light on means Heating elements are powered.

3. Control Panel: Heaters with manual thermostat

Switch the thermostat knob to set the desired temperature. If the heater is calling for heat the HEAT light will be illuminated.

4. Control Panel: Heaters with Digital Thermostat Control

For heaters equipped with a digital thermostat. The digital thermostat control which measures the temperature of the water as it enters the heater has a MENU button, up and down adjustment buttons, and an LED display.
The desired water temperature (set point) is controllable between 40° F and 100° F (5℃ and 40 ℃). The set point may different from the actual water temperature at the pool or spa due to heat loss in the piping.

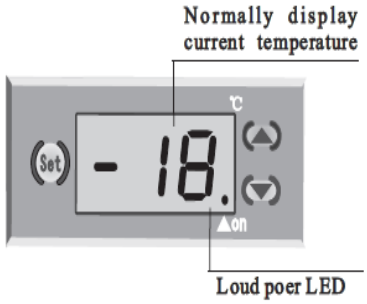
In the measured temperature mode, the water temperature in the heater is displayed. The LED corresponding to the current temperature scale will be illuminated. If the heater is calling for heat the HEATING Light will be illuminated.

Brief on Controlling Procedure

1.Temperature setting: Press "Set" gently to display controlling temperature. Press ▲or ▼ to indicate your desired temperature, that will be saved after 6sec. The water heater will automatically control the temperature of pool water.

2. Data setting: Press "set" for 6 seconds for setting . On entering setting, HC will be displayed. Then Press ▼ or▲ to set
HC-L5-H5-PE-CR-d.

Brief on Operation



Code	Function	Setting Range	Default Value	Unit
HC	Heating/Cooling	H/C	H	_
L5	Alarm on low limit Temperature	-1 to -45℃	No Function	℃
H5	Alarm on high limit Temperature	+1℃ to 80℃	45	℃
PE	Delayed Time	0~5	1	Min
CR	Temperature Correction	-15~15	00	℃
d	Temperature Return Difference	1~15	2	℃

Hold "set", then press ▲or ▼ simultaneously. Choose **HC,** **H** represents Warm Mode, **C** represent Cold Mode.

Note:
Cooling Capabilities are Not Provided with this equipment.

Hold "set", then press ▲or ▼ simultaneously. Choose lowest temperature limits: Temperature control +1℃to 80℃

Hold "set", then press ▲or ▼simultaneously. Choose temperature correction: -15℃ to 15℃

Hold "set", then press ▲or ▼ simultaneously. Choose highest temperature limits: Temperature control +1℃to 80℃

Hold "set", then press ▲or ▼simultaneously. Choose return difference: 1℃ to 15℃

Hold "set", then press ▲or ▼ simultaneously to set delayed star time from 0 to 5 minutes.

Error symbol: when the sensor in opened or shorted circuit. Code **EI** will be displayed.

Trouble Shooting

Failure	Causes	Solution
No display when power is on.	1. Check if the power is open or the thermostat failture.	1.Check power supply and change fuse. 2.Check if the input voltage is right or change the thermostat with our distributor.
Displaying but machine doesn't work	1.The setting temperature is higher than the present temperature. 2.The flow switch is open circuit because of low water pressure.	1.Reset the desired temperature. 2.Check the reasons for overheating and less pressure. 3.After the trouble is solved, restart to work.
Display the temperature is unstable or there exists misplay	1. The sensor is interfered; 2. Poor wiring; 3. Wire damage.	1. Sparate sensor wire with power cables 2. Change shielded lines 3. Check if the terminal is tight.
Big tolorance between current temperature and displayed.	1. The installation position of the sensor is not correct; 2. The sensor's wiring is too long 3. The wire connected poor; 4. The sensor is damaged.	1. The sensor should be set up correctly 2. Enlarge the expanded wire size if any. 3. Make sure the wires sealed is good. 4. Change the sensor.
Machine does not stop when reach the desired temperature.	1. The sensor is not correctly installed to detect the correct temperature. 2. Contactor fails.	1.Check if the sensor has accurately measured the temperature or not. 2.Change contactor.
"EI" is displayed	1.The sensor is opened or shorted circuit.	1. Check to see if the connection of sensor and coupling are good.

MAINTENANCE

Element Inspection and Replacement:

1. Turn off power at main disconnect switch and turn off pump.
2. Drain pool heater.
3. Remove service access panel opposite inlet/outlet.
4. Disconnect element wires.
5. Remove element flange retaining nuts and extract element.
6. Installation is the reverse of steps 1 through 5.
   (Reinstall element with new gasket)

When closing down the pool for any length of time, shut off the power at the main disconnect switch and drain the water from the system. Water must not be allowed to freeze in the heater, as this will cause severe damage.

Annual Cleaning:

Yearly, before winter, the pool heater should be drained and cleaned to remove any scale or sludge. More frequent cleaning may be required if pool water contains sediment or any amount of foreign matter.

1. Turn off heater at main disconnect switch.
2. Open drain valve.
3. Permit water to run until it is clear.
4. Close valve and restart normally.