swimmax



Swimming Pool Heat Pump User and Service Manual

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ATTENTION: This manual includes all the necessary information regarding the use and the

installation of your heat pump.

The installer must read the manual and attentively follow the instructions in implementation and maintenance.

The installer is responsible for the installation of the product and should follow all the instructions of the manufacturer and the regulations in application. Incorrect installation against the manual implies the exclusion of the entire guarantee and warranty.

The manufacturer declines any responsibility for the damage caused to people, objects and errors due to incorrect installation. It is the owners responsibility to ensure that the pool or spa water maintains correct water chemistry balance as bad water chemistry can damage the heat pump internal components which will not be covered under this warranty. Any usage outside of what is stated within this manual or its designed purpose of manufacturing will be regarded as dangerous and is not recommended.

WARNING: Please always shut off the power supply if you need to open the heat pump cabinet to work inside the heat pump. As this is an electrical product there is high voltage electricity inside. Any electrical connections and/or repairs should be conducted by a licensed electrician.

WARNING: When using the 10mtr external control panel extension please ensure the display controller is located in a dry area. Also keep the insulation cover closed to protect the display on the controller from being damaged by humidity and possible rain.

1. Specifications

CE Standard, R32, ABS Cabinet

MODEL		Swimmax 07	Swimmax 09	Swimmax 13.5
* Performance at Air 28°C. Water 28°C. Humidity 80%				
Heating capacity	kW	7.5	9.5	13.5
Power consummation	kW	1.34	1.70	2.33
COP		5.6	5.6	5.8
* Performance at Air 24°C	, Water 2	6℃, Humidity 70%		
Heating capacity	kW	7.35	9.31	13.23
Power consummation	kW	1.33	1.69	2.32
COP		5.49	5.49	5.68
* Performance at Air 15°C	. Water 2	6°C. Humidity 70%		
Heating capacity	kW	4.9	6.7	9.2
Power consummation	kW	1.14	1.56	2.14
C.O.P.		4.3	4.3	4.3
* General data				
Compressor type		Rotary / R32		
Voltage	V		220~240V/50Hz/1PH	
Rate current (A)	A	5.9	7.5	10.3
Minimum fuse	A	15	15	20
Advised pool volume *	m³	15-26	25-32	40-68
Advised water flow	m3/h	2.5~3.7	2.6~5.1	4~7.9
Water pressure drop	Кра	12	12	15
Condenser		Twist-titanium tube in PVC		С
Water connection	mm	40mm/1.5"HP		
Fan quantity		1		
Fan speed	RPM	830~870		650
Power input of fan motor	W	80	80	120
Noise level at 10m	dB(A)	41	42	44
Noise level at 1m	dB(A)	50	51	54
* Dimension / Weight				
Net weight	kg	45	50	79
Gross weight	kg	52	57	94
Net dimension	mm	1000*380*580 1045*440*710		
Packaging dimension	mm	1072*420*590		1121*510*740

* Above data are subjects to modification without notice.

*With pool cover

2. Dimensions





2.2 Model: Swimmax 13.5





3. Installation and connection

3.1 Notes

Upon purchase you will receive your complete Heat Pump. All other components, including a bypass if necessary, must be provided by the user or the installer.

Attention:

Please observe the following rules when installing the heat pump:

- 1. Any addition of automated chemicals must take place in the piping located <u>downstream</u> from the heat pump.
- 2. Install a bypass if the water flow from the swimming pool pump is more than 20% greater than the allowable flow through the heat exchanger of the heat pump.
- 3. Install the heat pump above the water level of the swimming pool.
- 4. Always place the heat pump on a solid foundation and use the included rubber mounts to avoid vibration and noise.
- 5. Always hold the heat pump upright. If the unit has been held at an angle, wait at least 24 hours before starting the heat pump.

3.2 Heat pump location

The unit will work properly in any desired location as long as the following three items are present:

1. Fresh air – 2. Electricity – 3. Swimming pool filtration

The unit may be installed in virtually any **<u>outdoor</u>** location as long as the specified minimum distances to other objects are maintained (see drawing below). Please consult your installer for installation with an indoor pool. Installation in a windy location does not present any problem at all, unlike the situation with a gas heater (including pilot flame problems).

ATTENTION: Never install the unit in a closed room with limited air volume in which the air expelled from the unit will be reused, or close to shrubbery/plant life that could block the air inlet. Such locations impair the continuous supply of fresh air, resulting in reduced efficiency and possibly preventing sufficient heat output. Heat Pumps require fresh air & maximum ventilation to be more productive. See the drawing below for minimum dimensions.



3.3 Distance from your swimming pool

The heat pump is normally installed within a perimeter area extending 7.5 m from the swimming pool. The greater the distance from the pool, the greater the heat loss in the pipes. As the pipes are mostly underground, the heat loss is low for distances up to 30 m (15 m from and to the pump; 30 m in total) unless the ground is wet or the groundwater level is high. A rough estimate of the heat loss per 30 m is 0.6 kWh (2,000 BTU) for every 5 °C difference between the water temperature in the pool and the temperature of the soil surrounding the pipe. This increases the operating time by 3% to 5%.

3.4 Check-valve installation

Note: If automatic dosing equipment for chlorine and acid (pH) is used, it is essential to protect the heat pump against excessively high chemical concentrations which may corrode the heat exchanger. For this reason, equipment of this sort must always be fitted in the piping on the **downstream** side of the heat pump, and it is recommended to install a check-valve to prevent reverse flow in the absence of water circulation.

Damage to the heat pump caused by failure to observe this instruction is not covered by the warranty.



3.5 Typical arrangement



Note: This arrangement is only an illustrative example.



3.6 Adjusting the bypass

Use the following procedure to adjust the bypass:

1. Valve 1 wide open. Valve 2 & valve 3 closed.

2. Slowly open valve 2 & valve 3 by half, then close the valve 1 slowly to increase the water flow to valve 2 & valve 3.

3. If it shows 'ON' or 'EE3' on display, it means the water flow into heat pump is not enough, then you need adjust the valves to increase the water flow through the heat pump.

Note: Operation without a bypass or with improper bypass adjustment may result in sub-optimal heat pump operation and possibly damage to the heat pump, which renders the warranty null and void.

3.7 Electrical connection

Note: Although the heat pump is electrically isolated from the rest of the swimming pool system, this only prevents the flow of electrical current to or from the water in the pool. Earthing is still required for protection against short-circuits inside the unit. Always provide a good earth connection.

We also recommend that electrical installation is conducted by a licensed electrician.

Before connecting the unit, verify that the supply voltage matches the operating voltage of the heat pump. It is recommended to connect the heat pump to a circuit with its own fuse or circuit breaker and adequate wiring.

Connection: Open the terminal box on the side panel.

Connect the electrical wires to the terminal block marked 'POWER SUPPLY'

A second terminal block marked 'WATER PUMP ' is located next to the first one. If you are using a secondary pump to circulate water from the pool to the heat pump this pump can be connected to the second terminal block here. This allows the filter pump operation to be controlled by the heat pump.

3.8 Initial operation

Note: In order to heat the water in the pool (or spa), the filtration pump must be running to cause the water to circulate through the heat pump. The heat pump will not start up if the water is not circulating through it.

After all connections have been made and checked, carry out the following procedure:

- 1. Switch on the filtration pump. Check for leaks and verify that water is flowing from and to the swimming pool.
- 2. Connect power to the heat pump and press the On/Off button \cup on the electronic control panel. The unit will start up after the time delay expires (see below).
- 3. After a few minutes, check whether the air blowing out of the unit is cooler.
- 4. When turning off the filtration pump , the unit should also turn off automatically , if not, then adjust the flow switch.
- 5. Allow the heat pump and the filtration pump to run 24 hours a day until the desired water temperature is reached. The heat pump will stop running at this point. After this, it will restart automatically (as long as the filter pump is running) whenever the swimming pool water temperature drops 2 degrees below the set temperature.

Depending on the initial temperature of the water in the swimming pool and the air temperature, it may take several days to heat the water to the desired temperature. A good swimming pool cover can dramatically reduce the required length of heating time & is highly recommended as standard.

Water Flow Switch:

The heat pump is fitted with an automatic flow switch to protect the heat pump from inadequate water flow. If the pool water level is

higher than 1m above or below the heat pump's automatic adjustment knob, your dealer may need to adjust its initial startup.

Time delay:

The heat pump has a built-in 3-minute start-up delay to protect the circuitry and avoid excessive contact wear. The unit will restart automatically after this time delay expires. Even a brief power interruption will trigger this time delay and prevent the unit from restarting immediately. Additional power interruptions during this delay period do not affect the 3-minute duration of the delay.

3.9 Condensation

The air drawn into the heat pump is strongly cooled by the operation of the heat pump for heating the pool water, this may cause condensation on the fins of the evaporator. The amount of condensation may be as much as several liters per hour at high relative humidity. This is sometimes mistakenly regarded as a water leak. If there is excessive water coming from your heat pump please see your installer.

4. Accessories

4.1 Accessories list



4.2 Accessories installation





Water pump wiring

1. With the connector 1 and 2 you can pilot the water filtration through the timer of the filtration (dry contact)

4.3 Connection to pilot the water pump Dry contact timer connection



Dry contact pump connection



5. Electrical Wiring

5.1 Electrical wiring diagram Model Swimmax 07 / Swimmax 09



Model Swimmax 13.5



NOTE:

(1)Above electrical wiring diagram is only for your reference, please consult the manufacturer for repair advice.

(2)The swimming pool heat pump must be connected to earth, although the units heat exchanger is electrically isolated from the rest of the unit. Grounding the unit is still required to protect you against short circuits inside the unit .Bonding is also required.

Disconnect: A disconnect means (circuit breaker, fused or un-fused switch) should be located within sight of and readily accessible from the unit .This is common practice on commercial and residential heat pumps. It prevents remotely-energizing unattended equipment and permits turning off power at the unit while the unit is being serviced.

5.2 Installation of the display



- Disassembling of and degrafage control board of the connector (photo1)

- Installation of the provided cable (photo 2)

- To pass the cable by the press pack (photo 3) and to connect the sons directly

6. Display Controller Operation

6.1 The buttons of LED wire controller



When the heat pump is running, the LED display shows the inlet water temperature.

6.2 Start or stop the heat pump.

Press U to start the heat pump unit, the LED display shows the desired water temperature for 5 seconds, then shows the inlet water temperature.

Press U to stop the heat pump unit.

6.3 Choose heating or cooling mode:

Press until "heat" or "Cool" light is on.

6.4 Setting the real time

On standby or running mode, press " 🞯 ", then press 💌 or 💽 to adjust hour/minute.
Then press the " log" again to store the new data.
When setting the time, 🔯 and 🔯 cannot work.
6.5 Water temperature setting:
On standby or running mode, press and and to adjust the desired water temperature
Note : the heat pump can running only if the water circle/filtration system is running.
6.6 Automatic start/stop the heat pump



It is important to program the heat pump link the time program of the water filtration system.

For restart the heat pump, turn off and turn on the electrical power supply to restart the unit.

7. Running data setting





Please kindly noted:

- A) Press "MODE" to choose mode (Mode only be changed for "1" or "2" setting of parameter 6)
- B) Mode can be changed while running
- C) Auxiliary electrical heating is not applicable to these modes.

7.3 How to know the current status





Parameter	Meaning	Range	Default	Remarks
0	To set the entering water temp. under cooling mode	15-35 ℃	28 ℃	Adjustable
1	To set the entering water temp. under heating mode	15-40 ℃	28 ℃	Adjustable
2	Entry into defrosting time period	30-90MIN	40MIN	Adjustable
3	Terms of Entry defrosting function	- 30℃to0℃	-7℃	Adjustable
4	Terms of Exit defrosting	2 to 30℃	20 °C	Adjustable
5	Time of Exit defrosting	1 to 12MIN	12MIN	Adjustable
6	Mode: 0 Heat 1 Heat and Cool	0-1	1(Heat and Cool)	Adjustable
7	Mode selection of Electronic expansion valve	0-1	1(auto)	Adjustable
8	Superheat for heating target	-15℃-15℃	3 ℃	Adjustable
9	Superheat for cooling target	-15℃-15℃	-2 °C	Adjustable
А	Manual adjustment steps of electronic expansion valve	18-94	70	Adjustable
В	Inlet water temperature	-9-99 ℃		Exact testing by value
С	Outlet water temperature	-9-99 ℃		Exact testing by value
D	Condenser temperature under heating mode	-9-99 ℃		Exact testing by value
E	Gas return temperature	-9-99 ℃		Exact testing by value
F	Ambient temperature	-9-99℃		Exact testing by value
G	Condenser temperature under Cooling mode	-9-99 ℃		Exact testing by value
н	Actual steps of electronic expansion valve	N*5		Exact testing by value
L	Entering water temperature calibration	-9.9-9.9℃	0°C	Adjustable

Remarks:

(1) When HP stop running in 30 seconds, water pump will shut off automatically

(2) LED wire controller can operate the water pump after connected additional cable to the pump device in the position of "PUMP" terminal accurately.

(3) It is necessary to put an extra 3-phase transfer device for 3 phase water pump.

8.Troubleshooting

8.1 Error code display on controller

Malfunction	Error code	Reason	Solution
Inlet water temperature	PP1	The sensor in open or short	Check or change the sensor
sensor failure		circuit	
Outlet water temperature	PP2	The sensor in open or short	Check or change the sensor
sensor failure		circuit	
Heating condenser sensor	PP3	The sensor in open or short	Check or change the sensor
failure		circuit	
Gas return sensor failure	PP4	The sensor in open or short	Check or change the sensor
		circuit	
Ambient temperature	PP5	The sensor in open or short	Check or change the sensor
sensor failure		circuit	
Temperature difference	PP6	Water flow volume not	Check the water flow volume,
between water inlet and		enough ,water pressure	backwash filter & check baskets
outlet is too much		difference is too low	
Cooling outlet water	PP7	Water flow volume is not	Check the water flow, backwash
temperature is too low		enough	filter & check baskets
First grade antifreeze	PP7	Ambient temperature or water	Water pump will run
protection in Winter		inlet temperature is too low	automatically for first grade
			antifreeze
Second grade antifreeze	PP7	Ambient temperature or water	Heat pump will start heating for
protection in Winter		inlet temperature is too low	second grade antifreeze
Cooling condenser sensor	PP8	The sensor in open or short	Check or change the sensor
failure		circuit	
High pressure protection	EE1	1. Refrigerant is too high	1. Discharge redundant
		2. Air flow is not enough	refrigerant from HP gas
			system
			2. Clean the air exchanger
Low pressure protection	EE2	1. Refrigerant is low	1. Check if there is any gas
		2. Water flow is not enough	leakage ,re-fill the refrigerant
		3. Filter jammed or pump	2. Clean the air exchanger
		jammed	3. Check filter & pump
Flow switch closed	EE3 or 'ON'	Low water flow, wrong flow	Check if the water flow is enough
		direction, or flow switch failure.	and flow in right direction, or
			check flow switch itself.
Power supply connections	EE4	Wrong connection	Check the connection of power
wrong (for 3 phase unit)			cable
Inlet and outlet water	EE5	Water flow volume is not	Check the water flow rate,
temperature difference		enough ,water pressure	backwash filter & empty baskets
malfunction		difference is too low	
Communication failure	EE8	Wire connection is not good	Check the wire connection

Malfunctions	Observing	Reasons	Solution
LED controller shows			Check cable and circuit
	no display.		breaker if it is connected
	LED wire controller. displays the actual time.	Heat pump under standby status	Startup heat pump to run.
not running/ compressor is on but fan is off	LED wire controller displays the actual water temperature.	 Water temperature is reaching to setting value, HP under constant temperature status. Heat pump just starts to run. 	 Verify water temperature setting. Startup heat pump after a few minutes. LED wire controller
		3. Under defrosting.	should display
Water temperature is cooling when HP runs under heating mode	LED wire controller displays actual water temperature and no error code displays.	 Chosen the wrong mode. Figures show defects. Controller defect. 	"Defrosting". 1. Adjust the mode to proper running mode. 2. Replace the defect LED controller, and then check the status after changing the running mode, verifying the water inlet and outlet temperature. 3. Replace or repair the heat pump unit
Short running	LED displays actual water temperature, no error code displays.	 Fan NOT running. Air ventilation is not enough. Refrigerant is not enough. 	 Check the cable connections between the motor and fan, if necessary, it should be replaced. Check the location of heat pump unit, and eliminate all obstacles to make good air ventilation. Replace or repair the heat pump unit.
water stains	Water stains on heat pump unit.	1. Concreting. 2. Water leakage.	 No action. Check the titanium heat exchanger carefully for any leaks.
Too much ice on evaporator	Too much ice on evaporator.		 Check the location of heat pump unit, and eliminate all obstacles to make good air ventilation. Replace or repair the heat pump unit.

8.2 Other Malfunctions and Solutions (no display on LED controller)

9.Exploded Diagram

9.1 Model: Swimmax 07 / Swimmax 09





Model: Swimmax 07 / Swimmax 09

Name of parts	No.	Name of parts
Ambient temp. sensor clip	31	Low pressure switch
Ambient temp. sensor	32	4-way valve coil
Evaporator	33	4-way valve to exchanger
Top frame	34	Capillary
Pillar	35	Exchanger to capillary
Fan motor bracket	36	4-way valve to evaporator piping
Left panel	37	High pressure switch
Fan motor	38	Four-way valve
Fan blade	39	Discharge pipe
Evaporator bracket	40	Pipe
Ventilation arid		Exchanger temperature sensor
	41	clip
Controller box cover	42	Water outlet temp. sensor
Controller	43	Sealing ring
Waterproof controller box	44	water switch
Panel support		Rubber ring on water
	45	connection
Isolation panel	46	Red rubber ring
Compressor	47	Water connection sets
Front panel	48	Blue rubber ring
Base tray	49	Titanium heat exchanger
Terminal box	50	Water inlet temp. sensor
Right panel	51	drainage plug
clip	52	Electrical box cover
5- ways terminal block	53	Compressor capacitor
Wiring cover	54	Capacitor clip
Clip	55	transformer
Evaporator temperature 26 sensor		
		Fair capacitor
High pressure gauge	57	РСВ
Back panel	58	Liner
Top cover	59	Electrical box
Gas return piping		
	Name of partsAmbient temp. sensor clipAmbient temp. sensorEvaporatorTop framePillarFan motor bracketLeft panelFan motorFan bladeEvaporator bracketVentilation gridController box coverControllerWaterproof controller boxPanel supportIsolation panelCompressorFront panelBase trayTerminal boxRight panelclip5- ways terminal blockWiring coverClipEvaporator temperaturesensorHigh pressure gaugeBack panelTop coverGas return piping	Name of partsNo.Ambient temp. sensor clip31Ambient temp. sensor32Evaporator33Top frame34Pillar35Fan motor bracket36Left panel37Fan motor38Fan blade39Evaporator bracket40Ventilation grid41Controller box cover42Controller box cover42Controller box cover44Panel support45Isolation panel46Compressor47Front panel48Base tray49Terminal box50Right panel51clip525- ways terminal block53Wiring cover54Clip55Evaporator temperature sensor56High pressure gauge57Back panel58Top cover59Gas return piping59

9.2 Model Swimmax 13.5





Model Swimmax 13.5

No.	Name of parts	No.	Name of parts
1	Evaporator	31	4-way valve coil
2	Top frame	32	Four-way valve
3	Pillar	33	High pressure switch
4	Evaporator bracket	34	Pipe
5	Fan motor bracket	35	Low pressure switch
6	Fan motor	36	Gas return piping
7	Fan blade	37	4-way valve to exchanger
8	Left panel	38	Exchanger to capillary
9	Ventilation grid	39	Capillary
10	Controller box cover	40	4-way valve to evaporator piping
	Controllor	41	Exchanger temperature sensor
11	Controller		clip
12	Waterproof controller box	42	Water outlet temp. sensor
13	Front panel	43	Sealing ring
14	Panel support	44	water flow switch
	Base tray		Rubber ring on water
15	Dase tray	45	connection
16	Compressor	46	Red rubber ring
17	Terminal board	47	Water connection sets
18	High pressure gauge	48	Blue rubber ring
19	Clip	49	Titanium heat exchanger
20	5- ways terminal block	50	Water inlet temp. sensor
21	Wiring cover	51	drainage plug
22	Right panel	52	Electrical box cover
23	Isolation panel	53	Capacitor clip
24	Clip	54	Compressor capacitor
	Evaporator temperature		DCB
25	sensor	55	PCB
26	Ambient temp. sensor	56	Fan capacitor
27	Ambient temp. sensor clip	57	transformer
28	Back panel	58	AC contactor
29	Top cover	59	Liner
30	Discharge pipe	60	Electrical box

10. Maintenance

(1) You should check the water supply system regularly to avoid any air entering the system and occurrence of low water flow, because it would reduce the performance and reliability of HP unit.

(2) Clean your pools and filtration system regularly to avoid damage of the unit as a result of a clogged/dirty filter causing reduction in water flow.

(3) You should discharge the water from bottom of water pump if HP unit is intended to be shut down for a long period (during the winter season).

(4) Upon start up after a long period of having the HP switched off, you should check the unit is full of water before the unit starts to run again.

(5) When the unit is running, there will always be a little water discharge under the unit – this is normal.

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