



## Swimming Pool Heat Pump



### INSTALLATION AND OPERATION MANUAL

#### **IMPORTANT**

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## **1. Application**

Set swimming pool water temp efficiently and economically to provide you comfort and pleasure

## **2. Features**

- High efficient titanium heat exchanger
- Sensitive and accurate temp control and water temp display
- High pressure, low pressure & water flow protection system
- Exceeding low outdoor temp auto stop protection
- Temp control compulsory defrosting
- International brand compressor
- Easy installation and operation

### 3. TECHNICAL PARAMETERS

Model	ECOLO 40	ECOLO 50	ECOLO 65	ECOLO 80	ECOLO 100
Heating capacity	40000 BTU	50000 BTU	65000 BTU	80000 BTU	100000 BTU
Breaker	20A	20A	30A	40A	40A
Voltage	230V				
Frequency/phase	60Hz/1Ph				
Current*	6.2 A	8.7A	10.4 A	14.6 A	20 A
Heating power*	1.5 KW	2.1 kW	2.7 kW	3.6 kW	4.5 kW
Current**	6.9 A	9.5A	11.4 A	15.9 A	21.6 A
Heating power**	1.7 KW	2.4 kW	3.2 kW	4.3 kW	5.4 kW
Compressor RLA/LRA	7.8A/43.5A	10.7A/57.5A	13.4A/75A	17.9A/90A	38.4A/139A
Fan motor rating	0.43 A	0.58 A	0.74 A	0.92 A	1.8 A
Design pressure (High)	≥500 PSIG	≥500 PSIG	≥500 PSIG	≥500 PSIG	≥500 PSIG
Design pressure (Low)	≤250 PSIG	≤250 PSIG	≤250 PSIG	≤250 PSIG	≤250 PSIG
Refrigerant (R410A)	40 oz (1.13 kg)	48oz (1.36 kg)	56oz (1.59 kg)	64oz (1.81 kg)	88 oz (2.49 kg)
Net weight	45 KG	60 kg	65 kg	75 kg	85 kg
Water circulation flow	15-45 GPM	15-45 GPM	15-45 GPM	15-45 GPM	15-45 GPM

Test conditions: All tests were performed at a 700M altitude.

\*Air temperature: 80°F, Water temperature: 80°F, Humidity: 80%

\*\*Air temperature: 80°F, Water temperature: 95°F, Humidity: 80%

#### 3.1 Remarks:

- This product can work well with temperatures between 7°C to 35°C (45°F-95°F). Efficiency will not be guaranteed out of this range and parameters are different under various conditions.
- Related parameters are subject to adjustment periodically for technical improvement without further notice. For details please refer to nameplate.
- Machine has heat function only

**Note: The swimming pool heater must be grounded well.**

#### 3.2 Options for protecting devices.

Model		ECOLO 40	ECOLO 50	ECOLO 65	ECOLO 80	ECOLO 100
Breaker	Rated current (A)	20	20	30	40	40
Fuse (A)		20	20	30	40	40

## 4. POSITIONING

Choosing the area where your heat pump will be installed is extremely important. You must respect the following guidelines.

### 4.1 Ventilation and accessibility

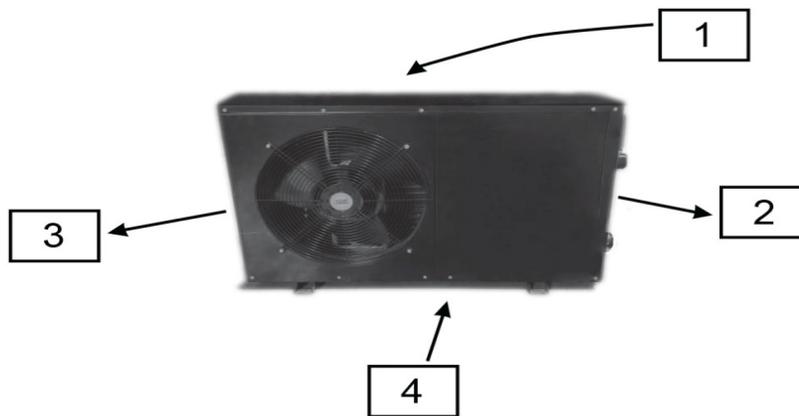
Your heat pump works, in large part, in symbiosis with the surrounding air: it is important that there be adequate ventilation all around the heat pump. Therefore, the device **should not** be installed in a closed space such as a garden shed or a basement.

**Important:** Your heat pump must have sufficient free space around it to function properly.

You should also clear any obstructions surrounding the heat pump, as indicated in the table below:

	<b>ALL MODELS</b>
(1) in front of the evaporation coil	60 cm = 2 feet
(2) in front of all other surfaces	120 cm = 4 feet
(3) in front of the fan*	120 cm = 4 feet
(4) in front of the service panel	120 cm = 4 feet

\*Objects should be placed as far away as possible from the area where air is evacuated.



### 4.2 Other recommendations

You should not install the device below a roof, so that your heat pump becomes buried under snow or receives too much water if the roof is not fitted with gutters. Do not install your heat so that the sun directly hits the regulator. This will not cause damages, but the display will be harder to read.

Similarly, you should not install automatic sprinkler near your pool heat pump. The device must be installed on a flat, firm and level surface. A concrete slab or equivalent is preferred. Consider that your device will produce condensation, so there will be water leaking around the unit.

**It is highly recommended to use a solar blanket to cover the pool in order to reduce the heat and loss, mainly during colder nights**

### 4.3 Water supply and backflow plumbing connections

All ECOLO model connections have a 1 ½' diameter.

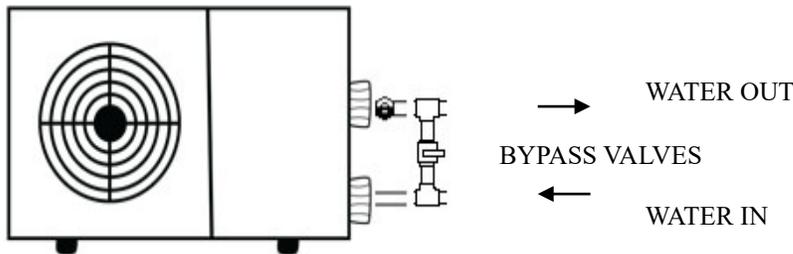
### 4.4 Minimum and maximum water flows

For maximum efficiency, your heat pump must operate with water flows between 57 liters per minute (15 U.S. gallons per minute) and 170 liters per minute (45 U.S. gallons per minute). With a water flow of less than 57 lpm (15 U.S. GPM) and greater than 170 lpm (45 U.S. GPM), the heat pump will not work properly and will suffer damage. (See table below).

**A set of valves (Fig. A) to isolate the heat pump and adjust the water flow must be installed.**

We recommend installing this set of valves (Fig. A) in order to be able to adjust the optimal water flow circulating in the heat exchanger (condenser). An adjustable automatic bypass valve must be installed when a water pump of 2 HP or more is used to circulate the pool water.

**WARNING** *If the above-prescribed water flows are not respected, damage will ensue and your warranty will be void.*



By-pass valve closed during operation

Your water pump must be able to supply each heat pump with a water flow within the limits listed below.

MODEL	MINIMUM	IDEAL	MAXIMUM
ECOLO 40-50-65-80-100	57 l/m (15 GPM US)	170 l/m (45 GPM US)	170 l/m (45 GPM US)

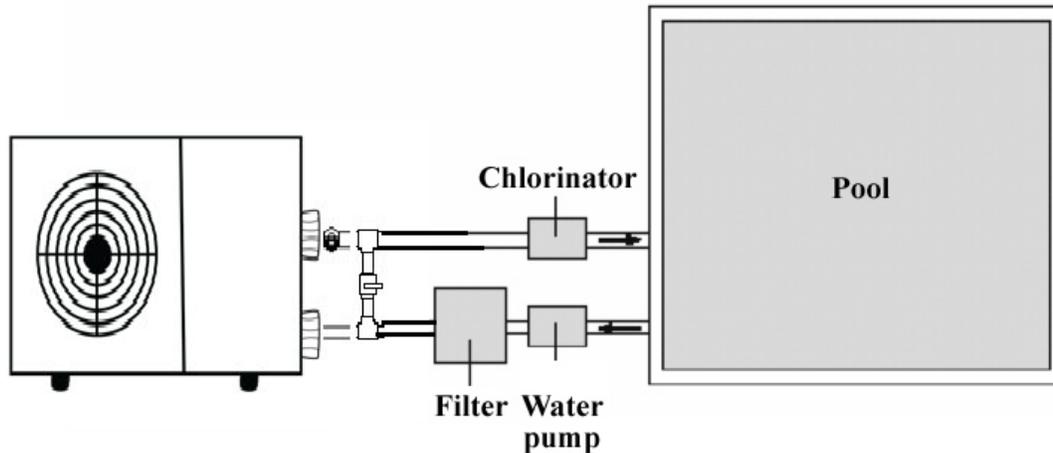
1 U.S. gallon per minute (1GPM US) = 3.78 liters per minute (3.78 l/m)

**WARNING** *Pool heat pumps normally operate with (12-15 PSI) water pressure. The maximum operating water pressure is 2.0 bars (30 PSI). Failure to respect the prescribed water pressures will void the warranty of your heat pump.*

## 5. CHLORINATORS, BROMINATORS AND OTHER AUTOMATIC SYSTEMS

### 5.1 Basic connections, inline chlorinator or brominator

This connection is mandatory to ensure the long working life of your pool heat pump.



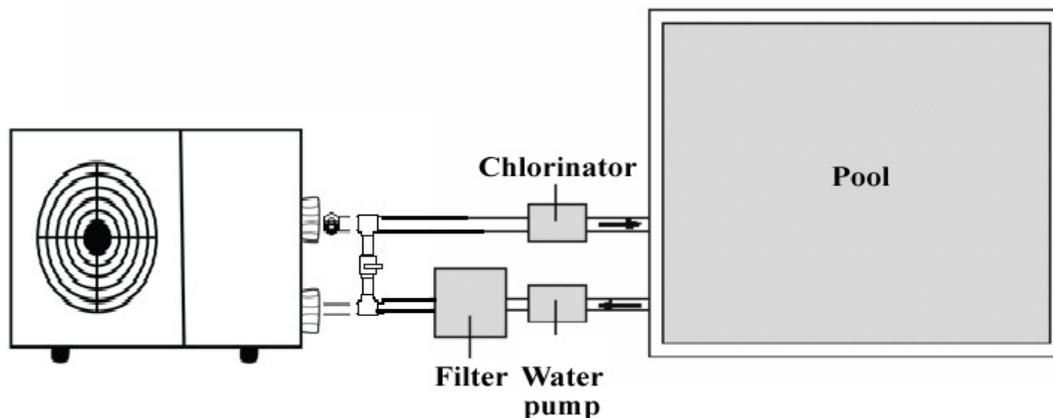
Any automatic distribution system for chemicals, chlorine, bromine or other, must be installed so that the distribution system's water output is located after the pool's heat pump. The heat pump's warranty will be void if the installation is not compliant to this rule.

### 5.2 Salt chlorinators

Salt chlorinators are made to be installed as inline chlorinators. Therefore, they must be installed as prescribed in the section above ("inline chlorinator or brominator").

### 5.3 Pressurized chlorinator or brominator

Pressurized chlorinators or brominators start by using a small quantity of water as it exits the filter, then add chemicals and forward this highly concentrated solution into the pool. Check valves must therefore be extremely resistant to corrosion. Only use the valves that have been supplied or recommended by the manufacturer of your chlorinator or brominator.



## 6. CONNECTION TO ELECTRICAL POWER



### ***WARNING***

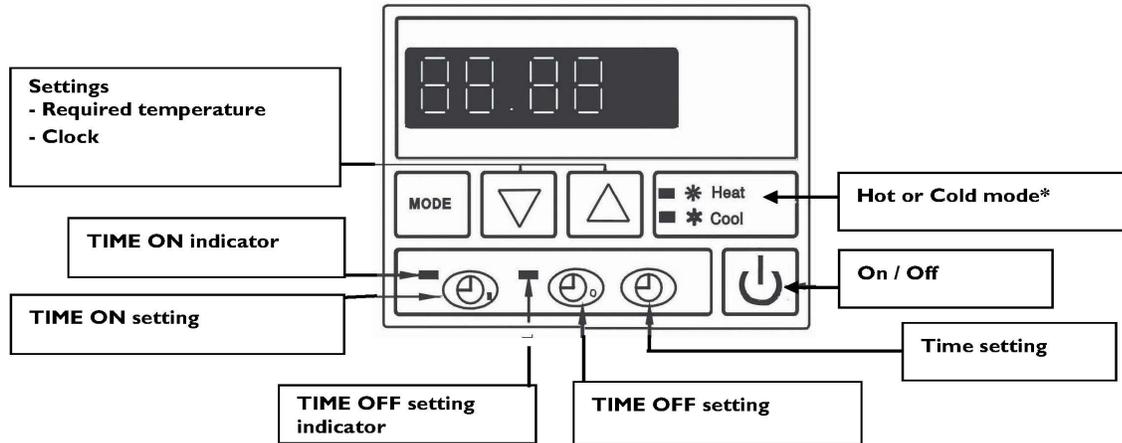
To ensure your safety and the proper functioning of the device, the electrical connections must be performed by a qualified electrician according to national codes, provincial and local regulations.

A circuit breaker must be installed close to the heat pump, in an accessible location.

Never open the electrical box without shutting off the power to all sources used for the operation of the heat pump. If your heat pump has a pool pump control option, remember to close the circuit breaker to this pump.

The spec sheet for the heat pump contains all the requirements for voltage and amps. If the power cord is damaged, it must be replaced by a qualified electrician.

## 7. OPERATION INSTRUCTIONS



### PICTOGRAMS



### 7.1 Operation Display

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

### 7.2 Water temperature setting

- Press the key or to set water temperature. The controller indicates flashing temp.
- Press or to adjust to your desired water temp.
- 5 seconds later, the controller display will back to the normal mode.
- Switching between F° and C°, hold for 10 seconds

### 7.3. Time setting

- Available no matter whether the machine is on or off. Press key to set time, when the clock on the screen is flashing, press again to set hour. Use or to adjust hour.
- Before the flashing stops, press to set minute. Use or to adjust. After adjusting, press and water temperature will be displayed. 30 seconds later, the controller display will be back to the normal mode.

#### 7.4. Timer on and off

- Press  set timer on. When the indicator light is on and the time is flashing, press  again to set hour.  
Use  or  to adjust. Before the flashing stops, press  to set minute.  
Use  or  to adjust. After adjusting, press  and water temperature will be seen.
- 30 seconds later, the controller display will be back to the normal mode.
- Press  to set timer off. When the indicator light is on and the time is flashing, press   
again to set hour. Use  or  to adjust before flashing stop, press  to set minute.  
Use  or  to adjust. After adjusting, press  and water temperature will be seen.  
30 seconds later, the controller display will be back to the normal mode.

#### 7.5. Cancel timer on and off

- Press  or  to cancel timer on and off. When the number is flashing, press  when timer indicator light is off and LED shows water temperature, the timer on and off is canceled. 30 seconds later, the controller display will be back to the normal mode.

## 8. TESTING

### 8.1 Inspection before use

- Check installation of the whole machine and the pipe connections according to the pipe connecting drawing; (Blue water IN / Red water OUT)
- Check the electric wiring according to the electric wiring diagram; and grounding connection.
- Make sure that the main machine power switch is off
- Check the temperature setting.
- Check the air inlet and outlet.

### 8.2 Trial

- The user must “Start the Pump before the Machine, And Turn off the Machine before the Pump”, or the machine will be damaged.;
- 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.
- 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 3 minutes earlier than the compressor.
- After the swimming pool heater starts up, check for any abnormal noise from the machine.

## 9. PRECAUTIONS

### 9.1 Attention

- Set proper temperature in order to get comfortable water temperature; to avoid overheating.
- 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.
- Please don't put hands into outlet of the swimming pool heater, and don't remove the screen of the fan at any time.
- 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.
- Don't use or stock combustible gas or liquid such as thinners, paint and fuel to avoid fire.
- 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.
- 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.



### **WARNING**

Do not use means to accelerate the defrosting process or to clean, other than those recommended in this manual

## 9.2 Safety

- Please keep the main power supply switch far away from the children.
- 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.
- Please switch off the main power supply in lightning and storm weather to prevent from machine damage that caused by lightning.
- If the machine is stopped for a long time, please cut off the power supply and drain water out of the exchanger by disconnecting the inlet/outlet pipe.

## 9.3 Warning

- DO NOT use this unit for any other purpose than to regulate swimming pool water temperature. Utilization for any other application will void warranty.
- The inlet & outlet connection joint cannot support any other piping system's weight.
- Make sure outlet air cannot injure any person, animal & plant.
- Please make sure to switch off the power before any examination and/or repair.

## 9.4 Precautions

- The unit must be installed & maintained by a professional technician; the Power layout must comply with local concerned regulation. Please read the manual carefully.
- Set proper temperature in order to get desired water temperature.
- Please do not stack substances that can block air flow near inlet or outlet area.
- If the unit shuts off during a power shortage, it will automatically start up when power returns.
- If the machine is stopped for a long time or in winter season, please cut off the power supply and drain water clear of the machine by disconnecting the water inlet and outlet.
- Do not put your hand or objects into air outlet of evaporator, forbidden to disassemble unit with the working fan.
- If any abnormal status occurs such as abnormal noise, smell, smoke, electricity leakage, please switch off power immediately and contact your local dealer, please do not check the unit by yourself.
- Do not store combustible or flammable material near unit.
- Replace components only with parts recommended by the manufacturer



### **WARNING**

To ensure your safety and the proper functioning of the device, all the maintenance, service and repair operations must be performed by a qualified person

## 10. MAINTENANCE

- “Cut off” power supply of the heater before any examination and/or repair.
- Please clean this machine with household detergents or clean water, NEVER use gasoline, thinners or any similar fuel.



### **WARNING**

In winter season or when machine is stopped for a long period of time please “cut off” power supply, open tap of inlet pipe and drain water of the machine by disconnecting the water pipes from the machine.

## 11. TROUBLE SHOOTING FOR COMMON FAULTS

<b>Faulty</b>	<b>Reason</b>	<b>Solutions</b>
<b>Not starting</b>	Main power is off	Wait for power to be reinstated
	Switch off	Switch on
	Burnt out fuse	Replace it
	Circuit breaker drops out	Switch Circuit Breaker back on
<b>There is air outlet but the heating is not satisfactory</b>	Blocked air inlet	Clean out the stem
	Blocked air outlet	Clean out the stem
	3 minute time lag protection	Please wait
	Temperature set too low	Increase temperature setting accordingly

**Attn: Please don't disassemble and repair the swimming pool heater by yourself, please leave it to the professionals.**

## 12. FAILURE CODES

E 1	High pressure protection
E 2	Low pressure protection
E 3	Low water pressure protection
E 4	Over current (3 phase machine)
E 6	Compressor exhaust overload protection
PP 1	Pool ( SPA )heater sensor failure
PP 2	Exhaust sensor failure
PP 3	Coil pipe sensor failure
PP 4	Intake pipe sensor failure
PP 5	Air temp sensor failure
PP 7	When the temperature<+45°F , auto stop protection ( not Failure )



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