madimack

USER'S MANUAL

ECO

Pool Heat Pump

INDEX

03

a. foreword
1) cover the basics

05

b. Safety precautins
1) Warning
2) Attention
3) Safety

08

c. About your heat pump
1) Transportation
2) Accessories
3) Features
4) operation range
5)into of different modes
6) technical parameters
7)DImension

13

d. Installation guidance
1) Installation reminder
2) Placing the unit and water connections
3) wiring requirements
4) Electric wiring diagram
5)References for protecting device and cable specification
6) Installation options
7)Control socket connection

27

e. operation guidance
1) Display functions
2) Operation instructions

37

f. testing
1) heat pump checks before use
2)refrigerant leak detection
3)Trial
4)Running status check

41

g. commissioning

43

h. Maintenance

45

i. troubleshooting for common faults

52

l. Product purchase Warranty Registration

a. FOREWORD

Thank you for choosing the **Madimack** high efficiency inverter pool heat pump!

All our heat pumps are built and designed to the highest standard and are protected by our extended warranty service for peace of mind.

Warranty registration is required to be submitted online in conjunction with the commissioning page and warranty registration page in the Appendix section at the back of the booklet www.madimack.com.au/warranty-registration.

Please read and fully understand all information provided before attempting to install the pool heat pump.

For technical questions and further information please contact support@madimack.com.au.

We hope you enjoy using our heat pumps.

Thank you!

COVER THE BASICS:

1. Check that you have received the package in good condition
2. Every residential heat pump comes with two accessory boxes and the manual. The manual will mention all the parts and where they belong to make sure that the unit is commissioned, as per the 'commissioning' section, and that adequate water flow rate is provided
3. Keep the surroundings of the unit clear of any debris, tree branches, and anything that can affect the ventilation of the unit
4. Keep the invoice/packing slip in a safe place.
5. Register the unit for warranty as per the warranty section in this manual
6. Ensure that the unit is installed in an outdoor area, if it has to be indoors the unit will need to be ducted to the outside
7. The condensate drain will need regular check-ups for any blockages or debris build ups, Keeping it clean allows the condensate drain to escape easily to drainage
8. For Wi-Fi control make sure that you have full Wi-Fi strength in the heat pump area, more than -50 DB is recommended for strong connection
9. Make sure that the unit is installed as per the ventilation diagrams to ensure efficient heating rates

b.

Safety Precautions

We have provided important safety messages in this manual for the installation, maintenance and repair of your heater.

Please read thoroughly and obey all safety messages.

Environmentally friendly R32 Refrigerant is used in this heat pump.

1.Warning

This WARNING sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury or injury to a third party. These signs are rare, but are extremely important.

	a. Keep the heat pump away from fire source.
	b. Unit must be placed in a well-ventilated area; indoor or enclosed areas are not allowed.
	c. Repair and disposal must be carried out by trained service personnel
	d. Vacuum the system completely before welding. Welding should only be carried out by professional trained personnel.

2.Attention

a. Please read the following instructions before installation, use and maintenance.
b. Installation, must be completed only by competent persons only, and in accordance with this manual.
c. Check all water connections are sealed and tested before operating the machine
d. Except for the methods recommended by the manufacturer, do not use any methods to accelerate the defrosting process or clean the frosted parts.
e. If a repair is required, please contact the nearest after-sales service center. The repair process must be strictly in accordance with this manual. Repairs made by unauthorized persons may void the warranty.
f. Correctly set temperature required for personal preference making sure to avoid overheating or overcooling.
g. Please do use or stack substances or other materials which may block the air flows to the inlet or outlet areas. This causes the efficiency of the heater to be reduced, and may damage the machine.
h. Do not use or stock combustible gas or liquids such as thinners, paint and fuel, to avoid fire!
i. In order to optimize the heating effect, please install heat preservation insulation on pipes between swimming pool and the heater, and please use a recommended cover on the swimming pool.
j. Connecting pipes of the swimming pool and the heater should be less than 10m.

3.Safety

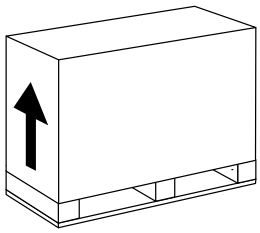
a. Please keep the main power supply switch out of reach from the children.
b. If power is suddenly disconnected during operation, and later the power is restored, the heater will start up automatically.
c. Please switch off the main power supply in high storm weather to prevent the machine from damage that could be caused by lightning strikes.
d. Any repairs should be carried out in a well-ventilated area. Any source of ignition is prohibited during the inspection.
e. Safety inspection must be carried before the maintenance or repair for heat pumps with R32 gas in order to minimize the risk.
f. If R32 gas leaks during the installation process, all operations must be stopped immediately and call your local service center.

C.

About your heat pump

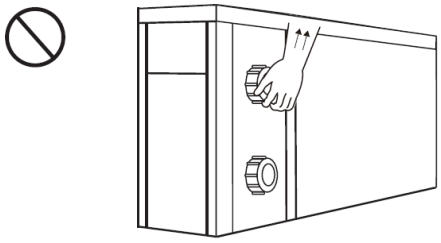
1. Transportation

a. Always keep upright

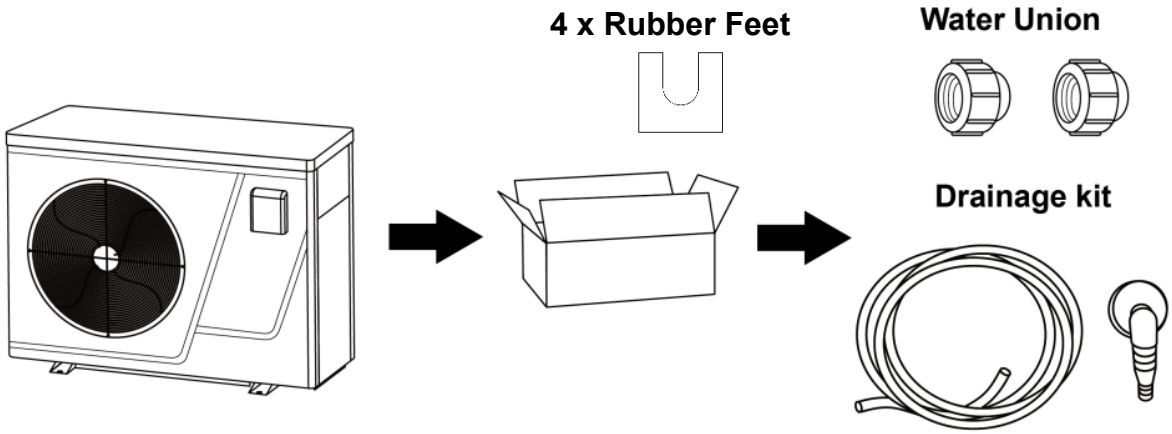


b. Do not lift the water union

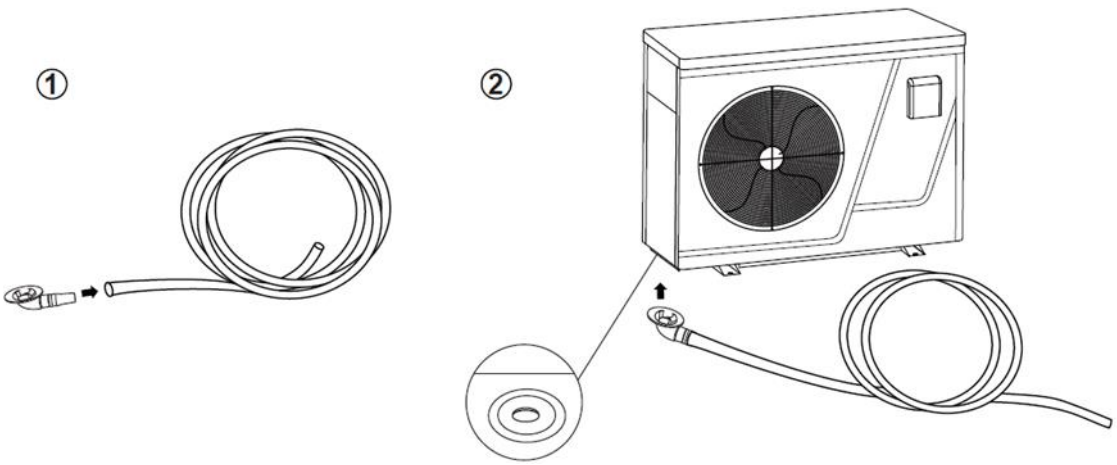
(Otherwise, the titanium heat exchanger may be damaged)



2. Accessories



Connection of the condensate drainage kit:



3. Features

a. Stable DC inverter compressor

b. EEV Technology

c. High-efficiency twisted titanium heat exchanger

d. High pressure and low pressure protection

e. Soft start & wide voltage application

f. Stable inverter control system

4. Operating range

To provide you comfort and pleasure, please set swimming pool water temperature efficiently and economically.

a. The heat pump can work between air-5°C～43°C,

b. Temperature of heating 18℃～40℃

Ideal operation range is between air 15°C ~ 25°C.

5. Introduction of different modes

a. The heat pump has two modes: Boost and Silence.

b. They have different strengths under different conditions.

Mode	Modes	Strength
	Boost mode	Heating capacity: 20% to 100% capacity Intelligent optimization Fast heating
	Silent mode	Heating capacity: 20% to 80% capacity Sound level: 3dB (A) lower than Boost mode

6. Technical parameter

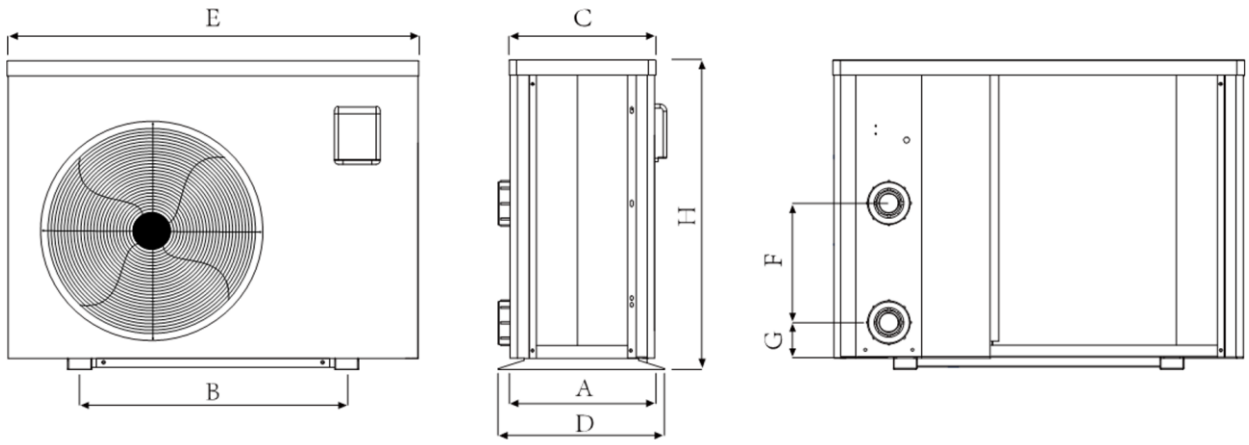
Model	MM-ECO 90	MM-ECO 130	MM-ECO 160	MM-ECO 200	MM-ECO 240
PERFORMANCE CONDITION: Air 27°C/ Water 27°C/ Humid. 80%					
Heating capacity (kW)	9.0	13.0	16.1	20.4	24.4
COP Range	10.7~6.2	11.0~6.3	10.9~6.2	10.8~6.2	10.9~6.3
PERFORMANCE CONDITION: Air 15°C/ Water 26°C/ Humid. 70%					
Heating capacity (kW)	6.5	9.0	11.0	14.0	16.0
COP Range	6.5~4.2	6.2~4.5	6.6~4.3	6.5~4.2	6.6~4.5
TECHNICAL SPECIFICATIONS					
Operating air temperature（℃）	-5℃~43℃				
Rated input power (kW)	0.28 ~ 1.55	0.41 ~ 2.01	0.50 ~ 2.56	0.60 ~ 3.26	0.72 ~ 3.81
Rated input current (A)	8	12.0	17.0	19.0	20.0
Sound level at 10m dB(A)	21.6~33.5	23.9~34	26.2~37.3	26.3~38.1	26.9~38.7
Advised water flow (L/min) ± 20%	50	75	90	120	150
Water connection (mm)	40				

Remarks:

This heat pump is able to perform normal within air temp -5°C～43°C, efficiency will not be guaranteed out of this range. Please take into consideration that the pool heat pump performance 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.

7.Dimension



	A	B	C	D	E	F	G	H
MM-ECO 90	324	560	347	349	872	250	74	654
MM-ECO 130	324	560	347	349	872	320	74	654
MM-ECO 160	324	590	347	349	962	350	74	654
MM-ECO 200	324	590	347	349	962	350	74	754
MM-ECO 240	395	590	415	420	962	460	74	757

※ *Above data is subject to modification without notice.*

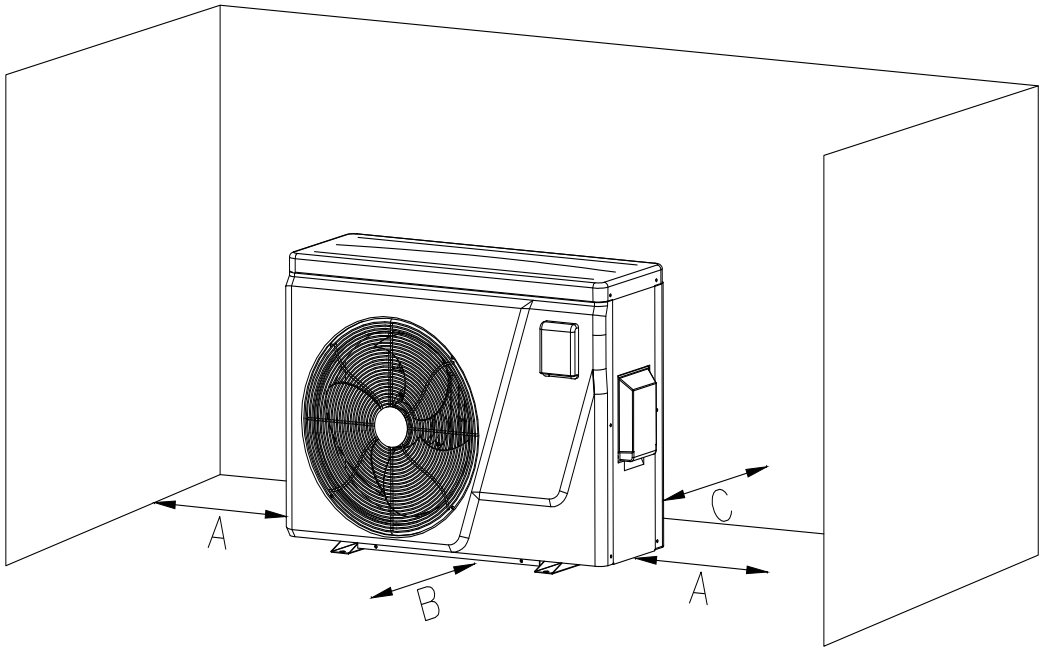
Please note the picture above and specification diagram of the pool heater is for the technician's installation and layout reference only. The product is subject to adjustment periodically for improvement without further notice.

d.

Installation Guidance

Ventilation requirements

1st case: Single unit – 3 obstacles



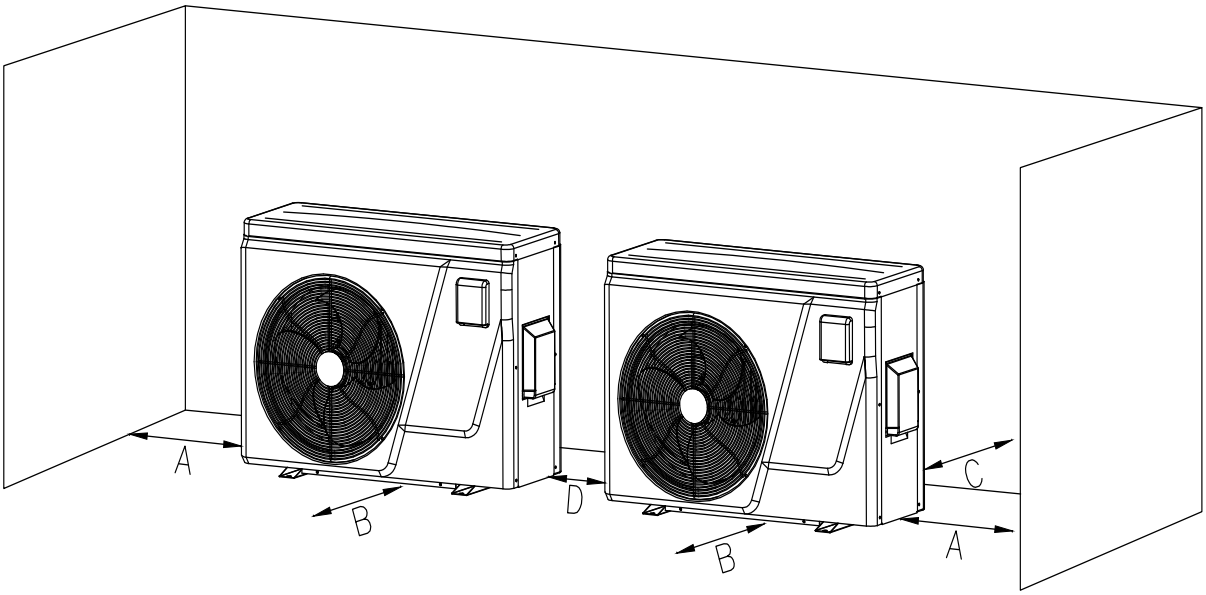
1.5m clearance above

Model number	ECO90	ECO130	ECO160	ECO200	ECO240
Distance A (mm)	300	300	300	300	300
Distance B (mm)	750	750	1000	1000	1000
Distance C (mm)	300	300	300	300	300

Please note that these are absolute minimum distances and where possible should always have a greater difference. Under no circumstances should any of the distances be reduced as performance will be affected. More ventilation is better.

These units must be installed outdoors in a well-ventilated area, its recommended not to be installed in decks, under houses, in sheds, or any sorts of indoor locations.

2nd case: Multiple units – 3 obstacles



1.5m clearance above

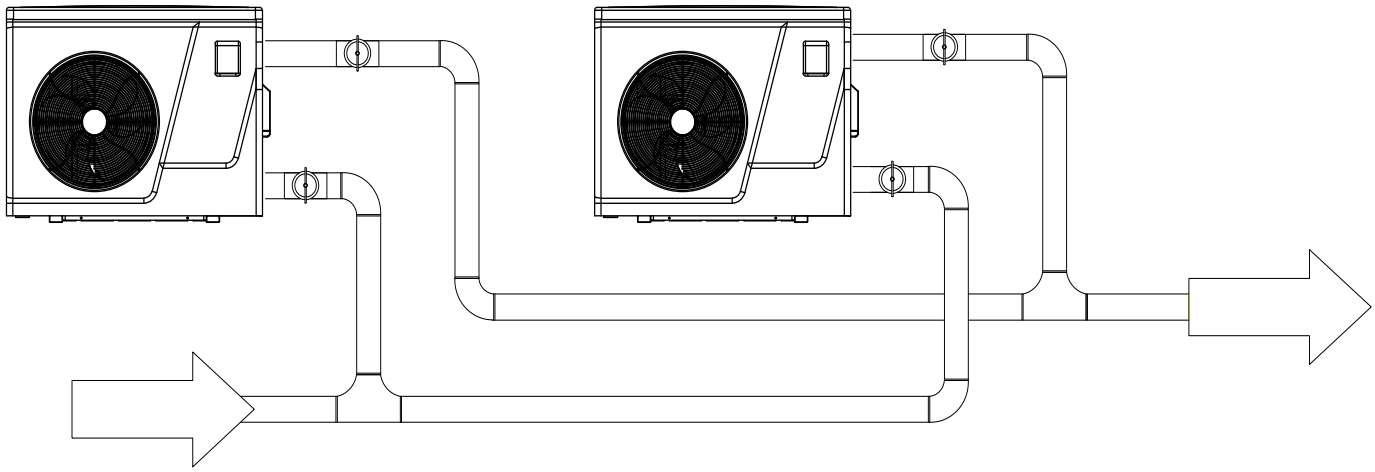
Model number	ECO90	ECO130	ECO160	ECO200	ECO240
Distance A (mm)	300	300	300	300	300
Distance B (mm)	750	750	1000	1000	1000
Distance C (mm)	300	300	300	300	300
Distance D (mm)	600	600	600	600	600

Please note that these are absolute minimum distances and where possible should always have a greater difference. Under no circumstances should any of the distances be reduced as performance will be affected. More ventilation is better.

These units must be installed outdoors in a well-ventilated area, its recommended not to be installed in decks, under houses, in sheds, or any sorts of indoor locations.

Plumbing Multiple units:

Multiple heat pumps acting as one system should be connected in Cascade (Parallel Connection). Adequate flowrate should be provided to all the units in the system to ensure efficient heating (Please refer to the commissioning section in the manual to learn about heat pumps commissioning). The diagram below represents the cascade connection



1. Installation reminder

Only competent persons are authorized to install the heat pump and should be educated with the relevant building codes and standards of their current state or local governing body for all electrical, mechanical and water services to prevent danger or damage to the unit.

a. Location and clearances

The inverter pool heat pump should be installed in a good ventilation place.

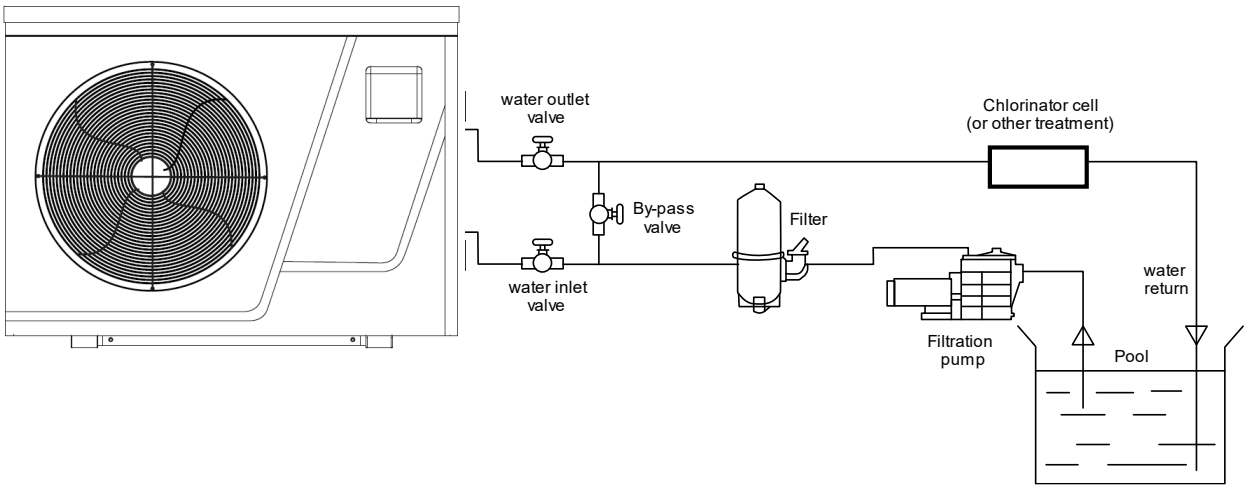
Please consult with your local service centre for indoor installation requirements

b. Typical installation diagram

Installations can differ dependent on-site conditions below is only a representation of one possibility.

Note: the inlet and outlet positions for the pipework is a representation only and can be positioned differently.

Please see section: Installation options for more information of accessories available and different plumbing layouts



2. Placing the unit and water connections

1) The frame must be fixed by bolts (M10) to concrete foundation or brackets. The concrete foundation must be solid and fastened; the bracket must be strong enough and antirust treated;

2) Please don't stack substances that will block air flow near inlet or outlet area, and there is no barrier within 50cm behind the machine, or it will affect the efficiency of the heat pump and even stop the machine;

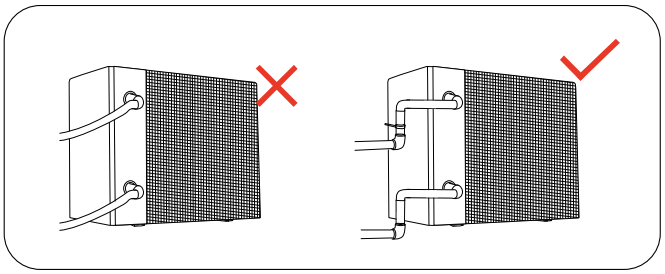
3) The machine needs an appended pump (Supplied by the user). The recommended pump specification-flux: refer to Technical Parameter, Max lift ≥10m;

4) When the machine is running, there will be condensation water discharged from the bottom, please pay attention to it. Please hold the drainage nozzle (accessory) into the hole and clip it well, and then connect a pipe to drain the condensation water out.

5) Please consult with your local service centre for indoor installation requirements.

3.Water pipe connection

The inlet and outlet water unions can't stand the weight of soft pipes. The heat pump must be connected by hard pipes!



4. Wiring requirements

a. Connect the heat pump to an appropriate power supply, the voltage should comply with the rated voltage of the product.

b. The machine **must** be earthed

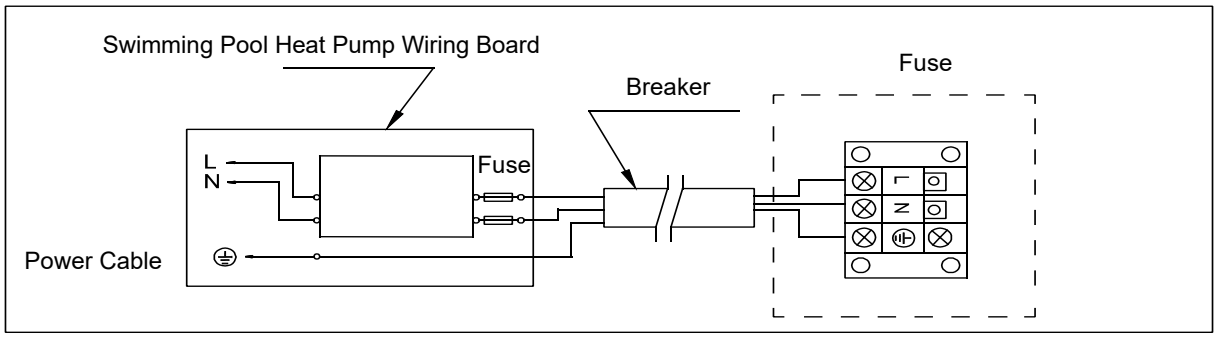
c. Wiring must be handled by a professional technician according to the circuit diagram.

d. Install electrical protection device according to local code for wiring

e. The layout of power cable and signal cable should be orderly and not affecting each other.

5. Electric wiring diagram

a. For power supply: 230V 50Hz



Note:

1) Must be hard wired, plug is not allowed.

2) The swimming pool heat pump must be earthed well.

6. References for protecting devices and cable specification

MODEL		ECO90/ 240MM	ECO130/ 240MM	ECO160/ 240MM	ECO200/ 240MM	ECO240/ 240MM
Breaker	Rated Current A	10	16	20	20	25
	Rated Residual Action Current mA	30	30	30	30	30

※ Above data is subject to modification without notice.

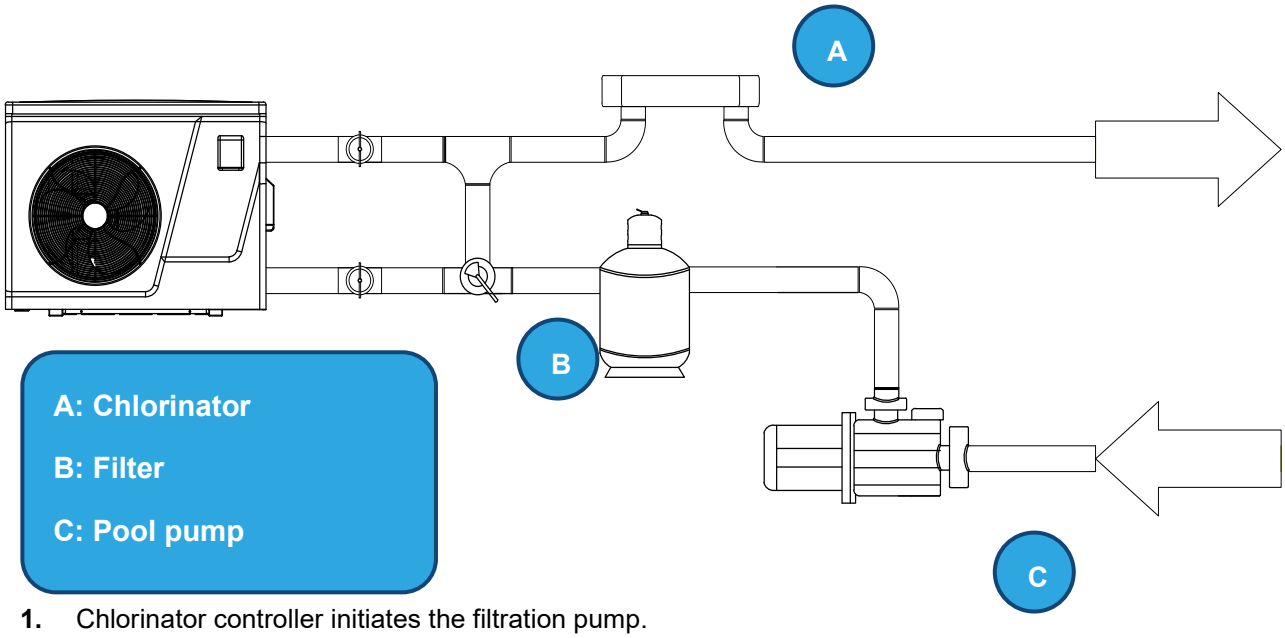
Note: Above data is adapted to power cord < 10m. If power cord is 10m ~ 40m, the wire diameter must be increased. The signal cable can be extended to 50m maximum.

Please see appendix for further wiring information including pump control and auxiliary input

7. Installation options:

a. Flow switch activated heating

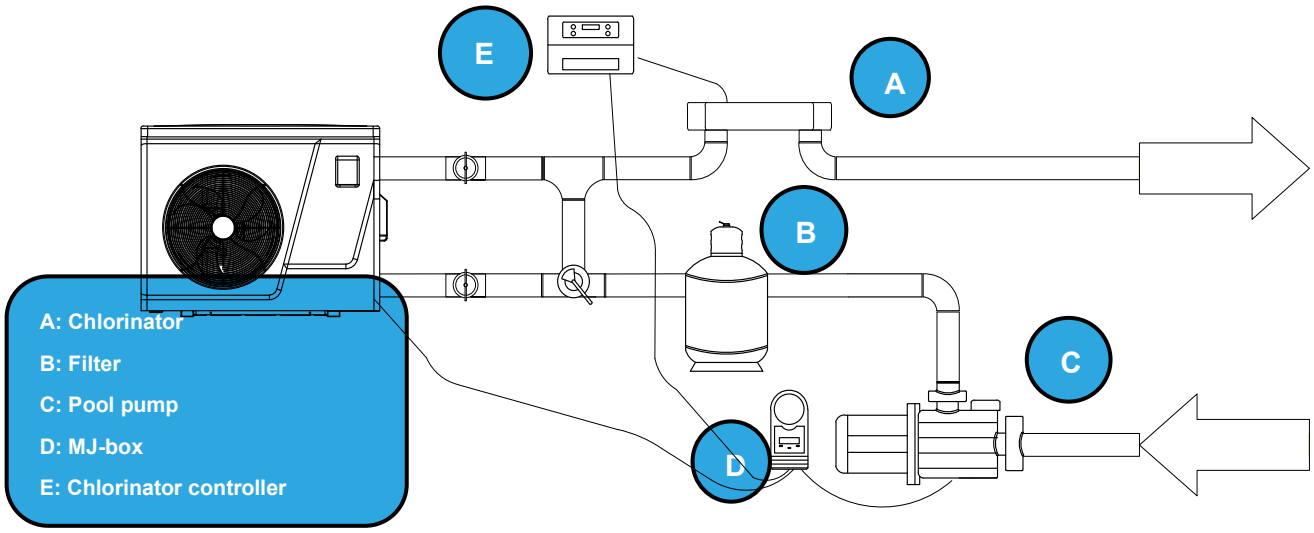
The heat pump is activated by the flow of water initiated from the filtration/circulation pump, if the heater gets to temperature within the timers the unit will first start to use the inverter technology to slow the machine down to maintain the temperature and eventually to a stop.



1. Chlorinator controller initiates the filtration pump.
2. Heat pump's flow switch senses the water flowing through the heat pump.
3. Heat pump starts and will run until temperature is reached or filtration pump switches off
4. No additional internal wiring to the heat pump is required in this set up
5. No additional settings needed to be changed
6. If circulation pump is not running and no flow is detected unit will display E3 – this is normal and an indication the unit is sitting idle waiting for the filtration pump to start again.
7. If the pool temperature is not reached within the filtration times you may need to extend the timers to match the heating requirement.

b. Heat pump activation without using the chlorinator controller and using the one pump used for filtration (additional controller required)

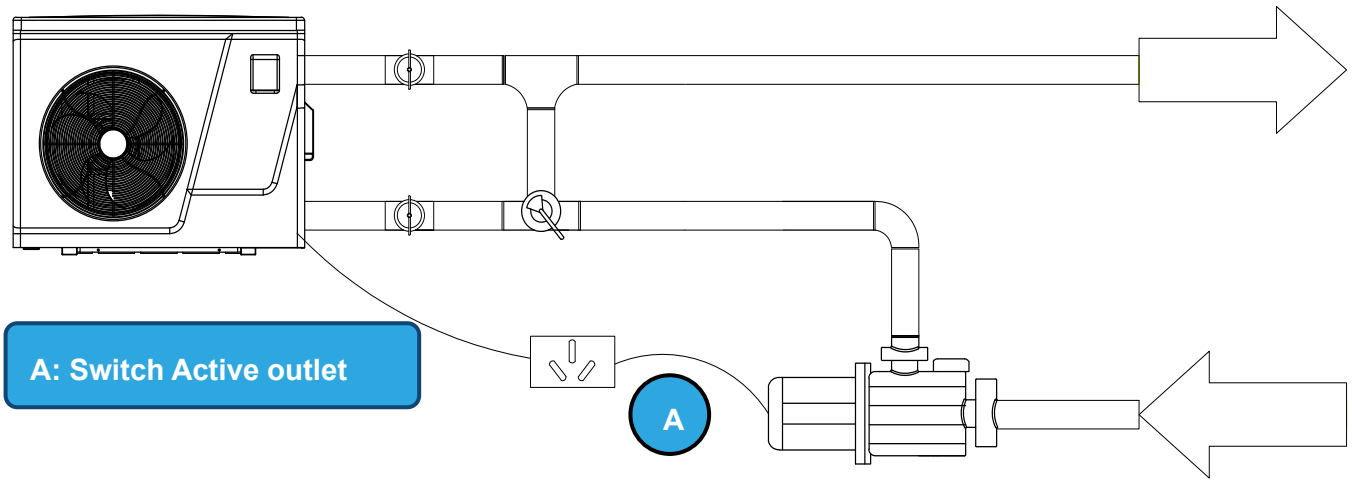
An on-board pump output relay can activate the main filtration pump by using it in combination with a "single pump controller" without using the chlorinator timers needing to be activated which will stop over chlorination but still use a single supply pipework for the pool. This set-up is best when only single pipework is available from pool and doesn't have individual heating pipework. Efficient with only one pump working.



1. Termination socket is labelled (Pump control output) found on the side of heat pump, and connects to P1 – P2 on the on-board relay and is activated by the timers and pool temperature.
2. Once temperature is reached or the timer is finished the heat pump will switch off the relay output stopping the circulation pump.
3. If the pool reaches temperature but the timer is still active the heat pump will switch off relay to stop the circulation pump. Whilst the timer is still active every hour it will run the circulation pump for 2 minutes to test the water temperature. If the temperature is 1 degree below set point the heat pump will continue to run the circulation pump and start the heating process again.
4. Pump control socket only to be used with low voltage cable and devices
5. Heat Pump timers are set through the mobile application and required a Wi-Fi connection. If no Wi-Fi is present, then additional external timer may be required (sold separately)
6. On the single pump controller, connect the black power cable to a 240V GPO, connect the piggyback cord into the chlorinator, and plug the pump into the bottom of the controller.
7. Connect the Fig 8 wire from the single pump controller to the pump control output terminals. (See single pump controller manual for more information
8. Adjust parameter "P6" to 100 as per section E

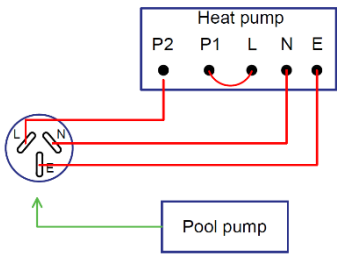
c. Individual circulation pump installation

An onboard output initiates the circulation pump to start and stop from the heat pump itself based on temperature and timers. For use when there are dedicated heating pipes and to separate from the filtration timers.



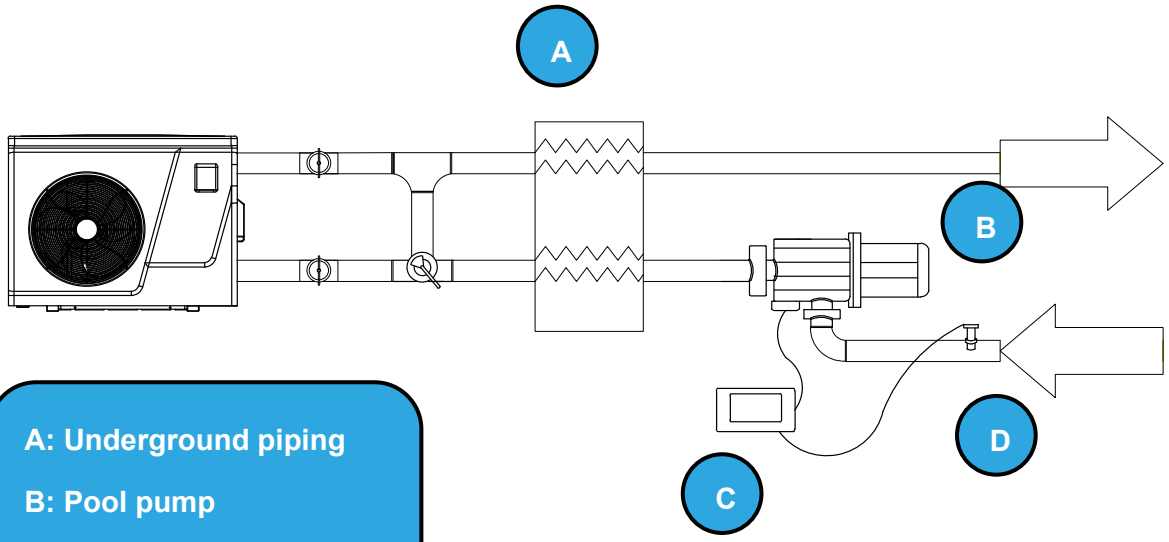
1. Must be completed by a qualified electrician
2. Termination points are labelled P1-P2 inside the electrical compartment Relay is activated by timers and pool temperature.
3. Once temperature is reached or the timer is finished the heat pump will switch off the relay output stopping the circulation pump.
4. If the pool reaches temperature but the timer is still active the heat pump will switch off relay to stop the circulation pump. Whilst the timer is still active every hour it will run the circulation pump for 2 minutes to test the water temperature. If the temperature is 1 degree below set point the heat pump will continue to run the circulation pump and start the heating process again.
5. Please remove any terminals within P1-P2 before connecting 230V.
6. P1 – P2 relay up to 10A output for circulation pump (check total load on circuit when combined) (P1 and P2 is an output relay switch not active neutral terminals, please see wiring diagram for further information.)
7. Heat Pump timers are set through the mobile application and required a Wi-Fi connection. If no Wi-Fi is present then additional external timer may be required (sold separately)
8. It is recommended to install a power point for the pump to plug into for any future service work to the pump which may be required.
9. Circulation pump should be sized accordingly to suit the site conditions and flow required.

Adjust parameter “P6” to 100 as per section E



d. Solar retro

In some situations, when a heat pump is replacing a solar heating system, the pipework is available to be used next to the house but there is no way of adding a new electrical circuit to the pool equipment. With the use of an additional temperature sensor, you can use the in-built flow switch to activate the heating. Allowing you to use the existing solar pump and to install the heater closer to the switch board.



A: Underground piping

B: Pool pump

C: Dontek Controller

D: Temperature sensor

1. In may be impractical to get a new power cable from the house switch board to the pool equipment area due to finished flooring etc., in this case It may be possible to use the existing pipework which connects to the house and install a power cable from there.
2. An external thermostat controller can initiate the existing circulation pump, thus running the heat pump through the flow switch for full temperature control.

Please speak to your installer for more information.

3. No additional wiring to the heat pump is needed internally
4. Timers are set on the external thermostatic controller
5. Set heat pump a couple of degrees above the set point temperature of the external temperature controller.

e. Automation systems and additional controls

For 230V auxiliary outputs, please see Madimack automation bridge (sold separately)
www.madimack.com.au/brochures

The heat pump comes with easy to connect socket labelled as control input

The unit comes prewired with a bridge cab le connected. To add an external control to activate the heat pump, remove the bridge and add in a volt free terminal connection. Please check with the automation system provider that the connection is volt free and the best way to install with their set-up.

please see control socket connection diagram for further information around connecting to the socket.)

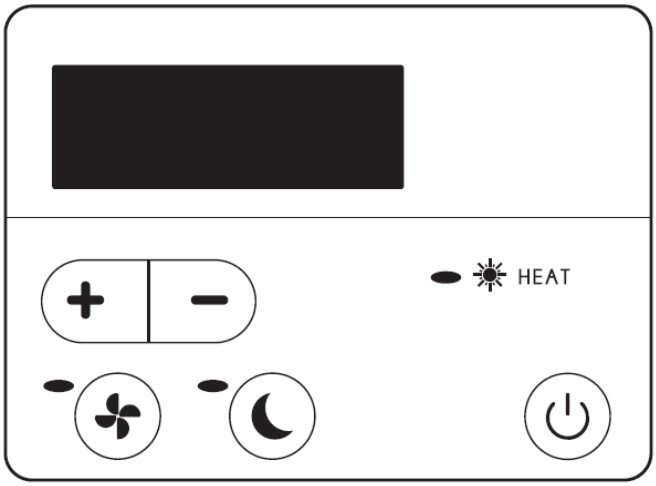
If the external controller is not initiating the heat pump to operate the display with show the word “OFF”

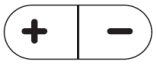
e.

Operation Guidance

1.Key Function

1. Controller overview and key functions



Symbol	Designation	Function
	ON/OFF	Power On/Off
	Boost Mode	Press to start Boost mode
	Silence Mode	Press to start Silence mode
	UP/DOWN	Temperature Setting & Displaying

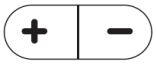
a) Attention:

i. The controller has a built-in memory so all parameters are saved in the event of power loss

b) Controller functions and settings

i. Switching the unit on and mode selection

a. Power On & Power Off: Press to power on or power off machine.

b. Temperature Setting:  Press to display and adjust set temperature.

c. Mode Selection: Press to start boost mode, and light will turn on.

Press to start silence mode, and light will turn on.

d. Default mode is set to full power boost mode.

c) **Defrosting**

i. Automatic active defrosting: When the machine is operating in low temperatures it is very common for ice to build up on the external coil. The heat pump has a built in defrost protection program which will activate when it senses ice starting to form.

When machine is defrosting, ☼ starts flashing; after defrosting ☼ is on continuously

ii. Forced defrosting: : If the heat pump requires manually defrosting for testing or a sensor is faulty please follow these instructions, the machine must be in heating mode and the compressor is working continuously for more than ten minutes, Whilst the unit is running, press and on the controller simultaneously and hold for 5 seconds. When the ☼ symbol is flashing, defrost has started, and will continue until the external coil temperature reaches a certain temperature adequate for continued operation. If the ☼ symbol stops flashing forced defrost has stopped.

Note 1: the interval between forced defrosting should be more than 30 minutes apart.

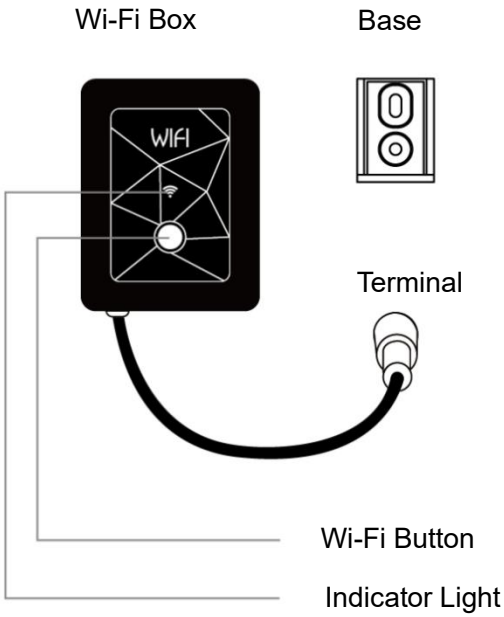
Note 2: Defrost mode usually last for around 15 minutes, during this period, the heat pump fan will stop running, and relatively louder noise will be heard. The heat pump will reverse the refrigeration cycle in an attempt to melt any frost that have formed on the internal components, therefore its totally normal to witness higher condensation rate around the unit (Frost melting) and white smoke coming out of the unit (Water Vapor).

2.WiFi Operation

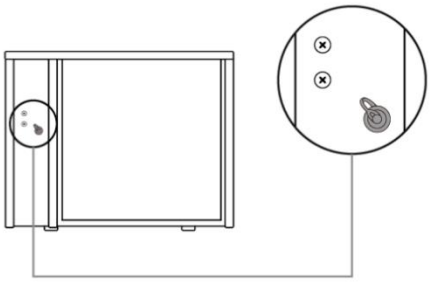
For video tutorials and further help please visit www.Madimack.com.au FAQ for all you need to do and full walkthrough. It is crucial that the WiFi is over the machine and is of a high power, the WiFi is a cloud based solution and needs the WiFi to be active on the machine for it to receive a signal.

a. Make sure to switch off your data package on your phone prior pairing the heater, Mobile data can interrupt the connection process in some cases therefore failing to connect the unit.
b. Your phone should be displaying full Wi-Fi strength with -50 DB > to ensure that you have enough signal strength for the heater to connect
c. To reset the Wi-Fi settings on the heater, do the following:
    I. Unlock the controller by holding the lock button on the far left for 3 seconds, the buttons will illuminate indicating that the controller is unlocked.
    II. Hold The power button (for about 10 seconds) till you see the Wi-Fi signal on the controller flashing slowly
    III. Slow Wi-Fi signal blinking means that the settings have been reset, follow the same instructions below to pair the heater with your mobile device

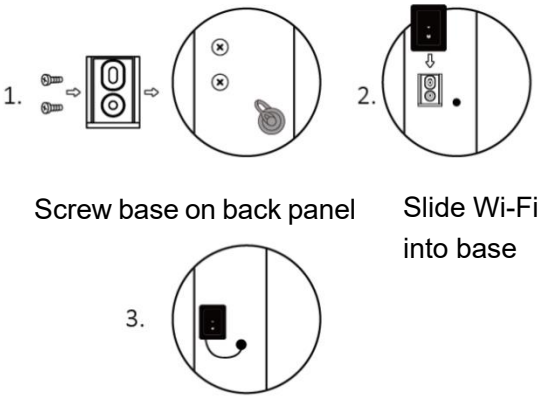
Components



Install position



Installation



Screw base on back panel

Slide Wi-Fi box into base

Connect cable

1 InverGo Download

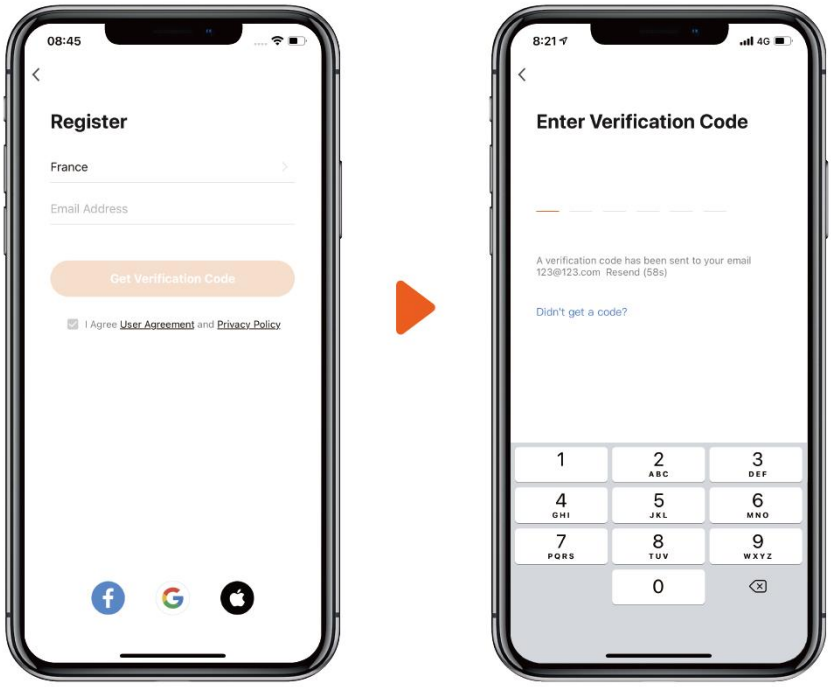
Android

iOS

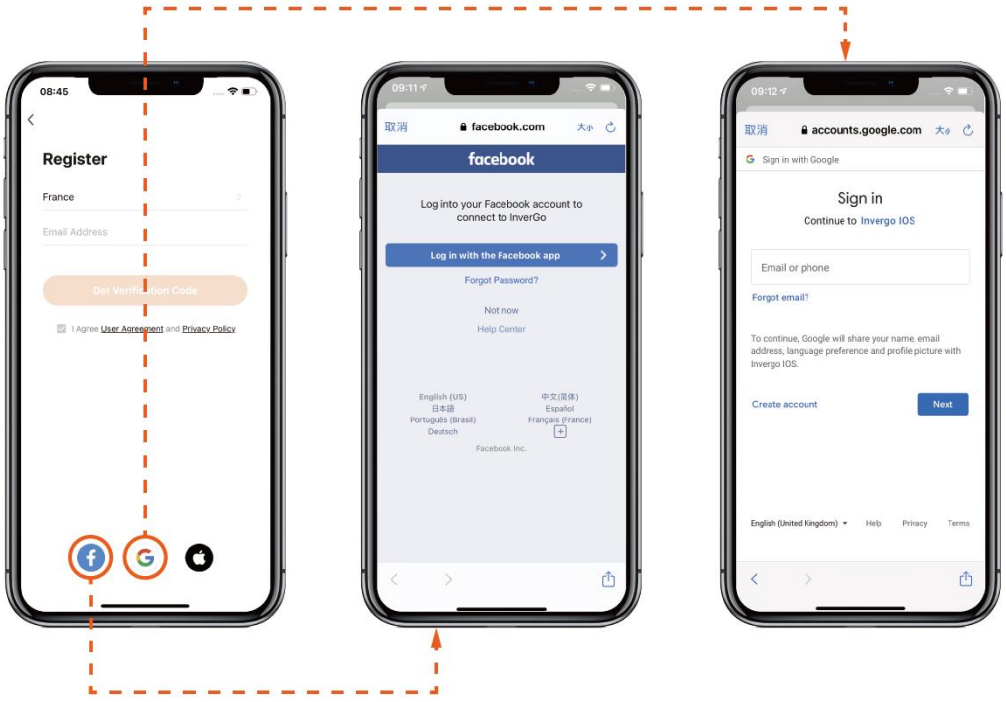
2 Account Registration

Register by e-mail or third-party application

a. Email registration



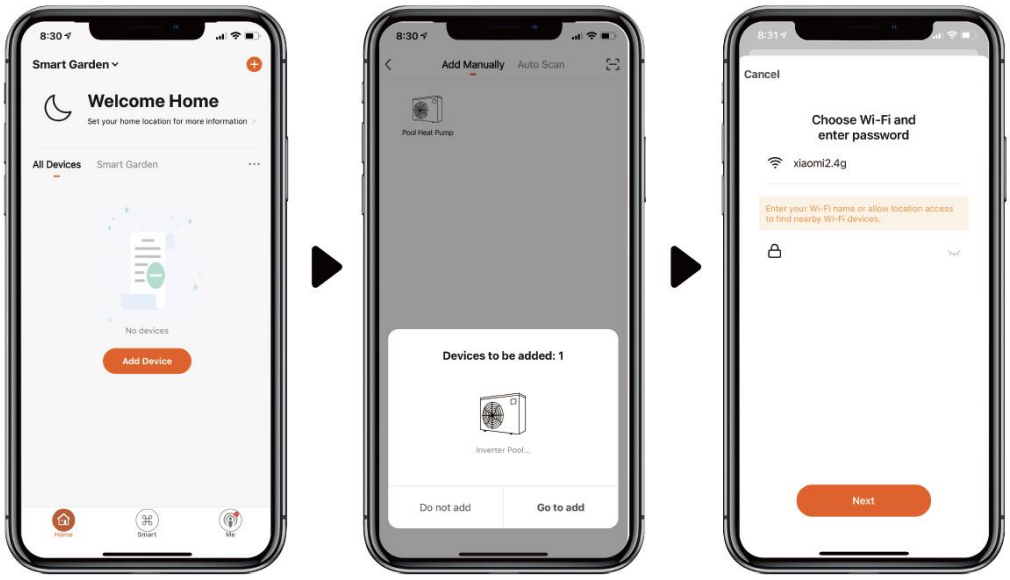
b. Third-party application registration

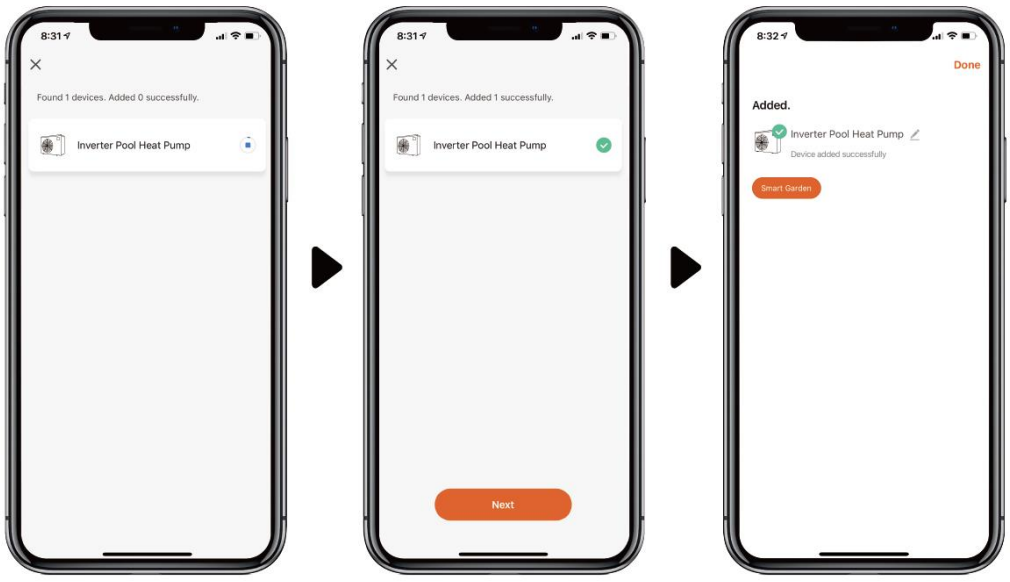


③ APP Pairing

a. With Bluetooth

1. Please confirm that you're connected to Wi-Fi and your Bluetooth is on.
2. Click "Add Device", and then follow the instructions to pair device.



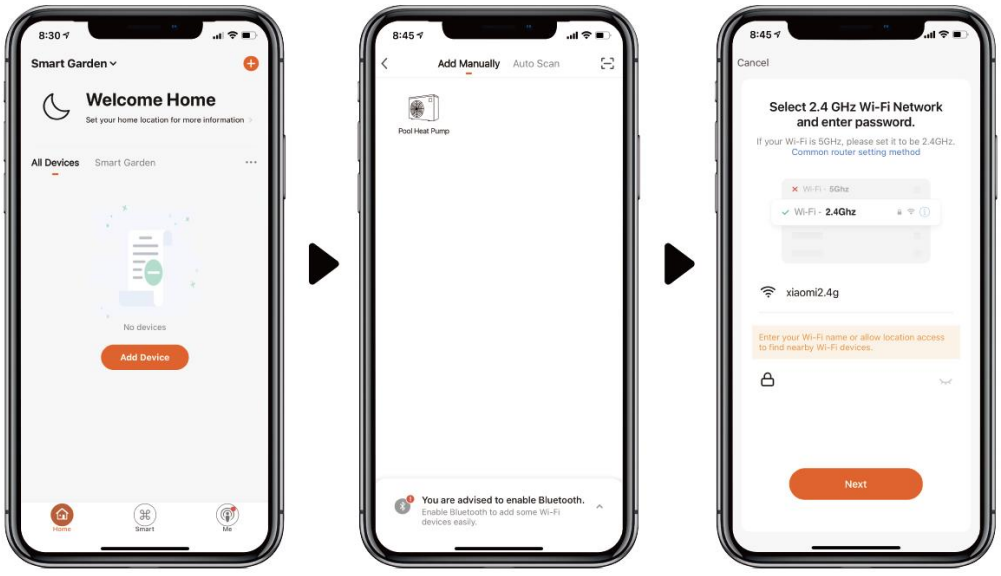


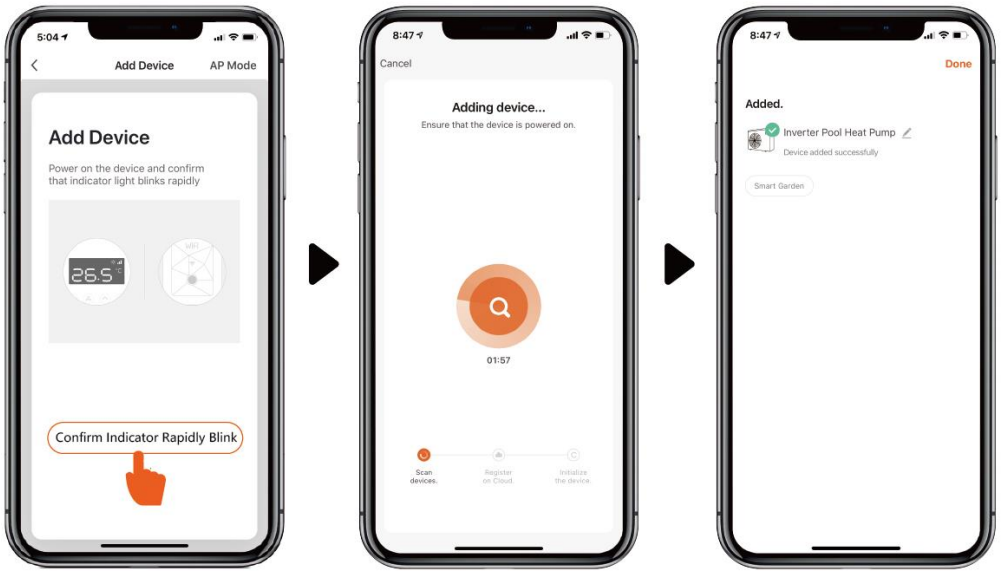
b. With Wi-Fi

1. Please make sure you are connected to Wi-Fi.
2. Press Wi-Fi button for 3 seconds and release to start pairing, light will flash.

   - Green: Network connected
   - Orange: No network
   - Red: Failure
   - Red (flash): Waiting for connection

3. Click “Add Device”, and then follow the instructions to pair device.





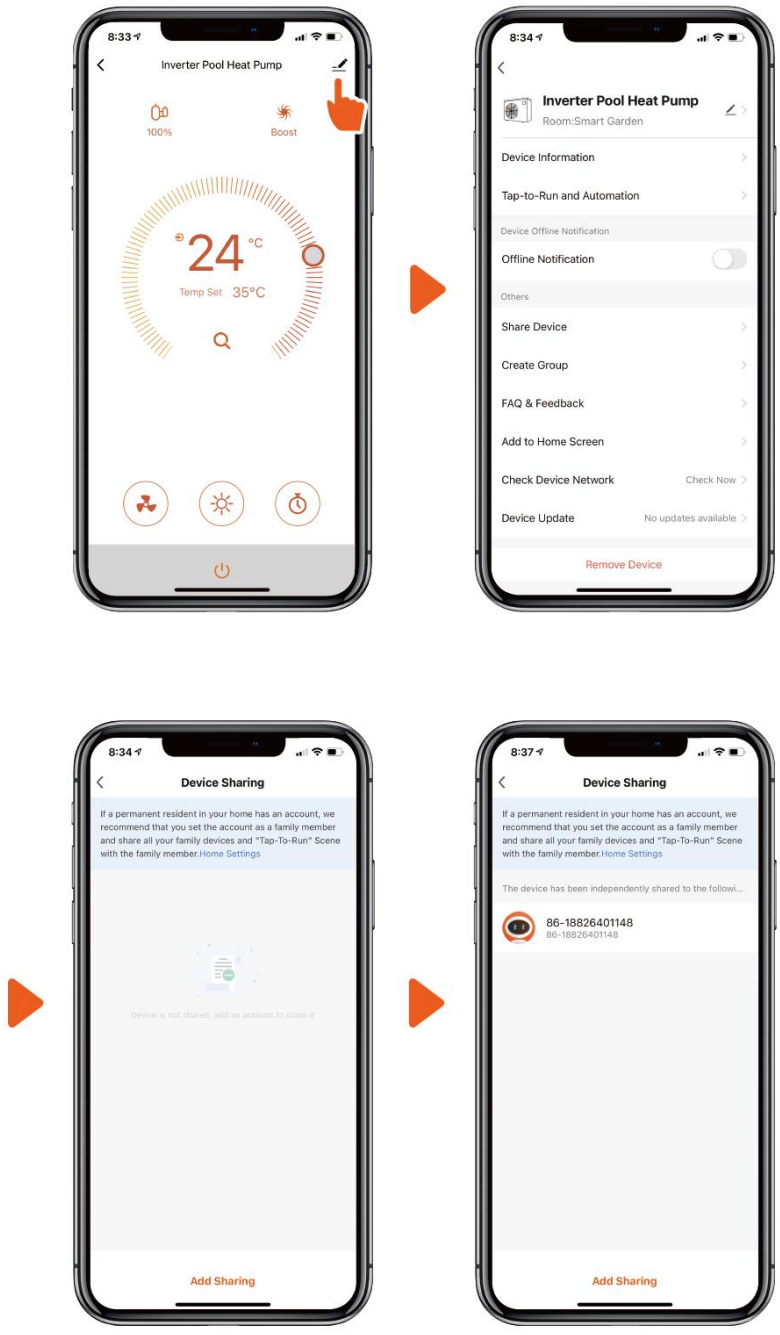
4 Operation

1. For heat pump with Heating function only:

2. For heat pump with Heating & Cooling function:

5 Share Devices to Your Family Members

After pairing, if your family members also want to control the device, please let your family members register “InverGo” first, and then the administrator can operate as below:



Notice:
1. Weather forecast is just for reference.
2. App is subject to updates without notice.

f.

Testing

1. Heat pump checks before use

a. The air inlets and outlets are free of any debris and are not obstructed.
b. Refrigeration pipes or components are not installed in a corrosive environment.
c. Check electric wiring connections are tight and adhere to the electrical schematic
d. Check for water leaks around the machine and all new water connections

2. Refrigerant leak detection

a. Leak testing is prohibited in enclosed areas
b. Any source of ignition is prohibited during leak checks.
c. Leak detection fluids can be used with most refrigerants but the use of products containing chlorine should be avoided as the chlorine may react with the refrigerant and corrode the copper pipe.
d. Vacuum the machine completely before welding. Welding should only be carried out by a professional person in a service center.
e. Please stop immediately if a gas leak occurs, and contact your local service center.

3. Trial Run

a. The circulation pump must start before the heat pump and stop after the heat pump to avoid any damage occurring to the machine.
b. In order to protect the heat pump, the machine is equipped with a time lag start function, the fan will run 1 minute earlier than the compressor when starting the machine, and it will stop running 1 minute later than the compressor when power off the machine.
c. After the heat pump starts, check for any abnormal noises from the machine

4. Running status check

a. Press and hold symbol for 10 seconds, to enter running status mode.

b. After five seconds the display will show status code C0 and a corresponding value

c. Change status code by pressing + or −

d. Press to quit running status mode

Code	Content	Unit
C0	Inlet water temperature	℃
C1	Outlet water temperature	℃
C2	Ambient air temperature	℃
C3	Exhaust air temperature	℃
C4	Outer coil pipe temperature	℃
C5	Refrigerant gas suction temperature	℃
C6	Inner coil pipe temperature	℃
C9	Radiator temperature	℃
C10	Electronic expansion valve opening	P

5. Parameters Checking

1. Parameters Checking

1.1 Press“ ”and “ + ” together for 5seconds to enter “parameter checking” status, parameter code No. "P0” and default parameter value “2” will display. Example:"P0 2"

1.2 Press “ + ” Key and “ − ” Key to check the parameters.

2. Modify parameters

2.1 In "parameter checking" status, press “ ” to enter "parameter setting" status.

2.2 In "parameter setting" state, press “ + ” and “ − ” to change the parameters value

2.3. Press “ ”to confirm and return to the previous status; Or press “ ” key to quit and return to the previous status.

6.Parameters Table

NO.	Content	Adjust range	Step length	Default
P0	Water pump running way	0：Continuation 1：Water temp control 2：time/water temp control	1	2
P1	Time setting (only available when the water pump running way is set to “2”	10 ~ 120min	5 min	60 min
P2	Compressor continuously running time in defrosting mode	30 ~ 90min	1min	30min
P3	Defrosting start temp	-17 ~ 0℃	1℃	-7℃
P4	Defrosting running time	1 ~ 12min	1min	12 min
P5	Defrosting quit temp	8 ~ 30℃	1℃	13℃
P6	Single pump option	On/off 50 ~ 100	1	off
P10	Compressor speed control	0：Auto，1：Manual	1	0
P12	Electronic expansion valve overheat level（heating）	-10 ~ 20	1	3
P13	Electronic expansion valve overheat level（cooling ）	-10 ~ 20	1	5
P14	Electronic expansion valve manual/auto	0：Auto，1：Manual	1	0
P15	Electronic expansion valve opening setting（heating）	50 ~ 240	2P	175（H5）
P16	Electronic expansion valve opening setting（cooling）	50 ~ 240	2P	175（H5）
P20	Power off memory function	0 — NO，1 — YES	1	1

g.

Commissioning

Flow Rates

OPTIMUM FLOW RATE DIFFERENTIAL FROM INLET TO OUTLET IS BETWEEN 2-3 DEGREES

Each Pool Heat Pump has a minimum flow rate requirement please check the specification table to ensure the circulation pump in use is adequately sized.

Calibrating the flow rate

By using the running status function on the touch controller, it is easy to calibrate the check valves installed for optimum flow rates through the heat pump.

Madimack Heat Pumps have a built-in flow switch which will deactivate the heating function if not enough water flow is detected. The Heat Pump has a large range operation up to a seven-degree differential. If the temperature differential is above 7 degrees, the built-in flow switch or E6 Error will be displayed indicating not enough flow detected.

Recommended procedure

1. Open all isolating valves
2. Fully close the by-pass and switch the unit on to max temp.
3. Wait 3-4 minutes until heat pump is at 100% Capacity
4. Check inlet and outlet temperature through on-screen controller (Check “Running status check” in the previous section to obtain C0 and C1 values)
5. Open the by-pass valve to increase temperature differential (The difference between C0 and C1 values)
6. Close the by-pass valve to decrease temperature differential (The difference between C0 and C1 values)
7. Once optimum temperature difference (2-3 C) achieved lock position of by-pass if possible.

Checklist:

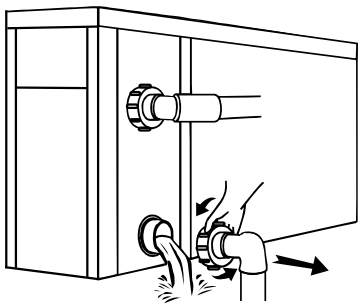
- ☐ Unit has been installed level
- ☐ Minimum ventilation requirements are correct to standards show in appendix K
- ☐ Condensation drain pipe has been connected and drains away from unit
- ☐ Rubber feet have been placed underneath unit
- ☐ Warranty registration details have been filled out in section L
- ☐ Temperature differential has been calibrated between 2-3

h.

Maintenance

“SWITCH OFF” power supply to the heater before cleaning, examination or repairing supply of the heater before cleaning, examination and repairing.

1) In the winter season, when you don’t swim:
   a. Cut off power supply to prevent any machine damage.
   b. Drain water clear of the machine.
   c. Cover the machine body when not in use.



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.

2) Please clean this machine with household detergents or clean water, NEVER use gasoline, thinners, or any similar fuel.
3) Check bolts, cables, and connections regularly.
4) If repair or scrap is required, please contact authorized service center nearby.
5) Do not attempt to work on the equipment by yourself. Improper operation may cause danger.
6) In case of risking, safety inspection must be carried before the maintenance or repairing for heat pumps with R32 gas.

WINTERISATION

The unit must be properly winterised to prevent damage to internal components during winter season before temperatures hit 32°F, 0°C. winterisation should be performed by a professional. Please see FAQ on website for proper winterisation steps.

Warranty Notice

Damage caused by freezing temperatures, residual water left inside the unit, improper drainage, or failure to follow the winterisation procedure is considered maintenance-related damage and is not covered under the Madimack warranty.

If the heat pump will not be used during winter or if freezing temperatures are expected, the unit must be properly winterised to prevent damage to internal components.

Failure to correctly winterize the heat pump may result in freezing damage to the titanium heat exchanger, water circuit, and internal pipework. Damage caused by improper winterisation or freeze damage is not covered under warranty.

Step 1: Disconnect Power

Turn the heat pump OFF using the controller and switch OFF the dedicated circuit breaker or disconnect supplying power to the unit.

Step 2: Shut Off the Pump

Turn OFF the filtration pump and stop all water flow through the heat pump.

If a bypass kit is installed, place the valves into the bypass position to isolate the heat pump from the circulation system.

Step 3: Drain Water

Disconnect the unions from both the water inlet and outlet connections and allow all water to completely drain from the heat pump.

Important: Water remaining inside the heat exchanger may freeze and expand, causing damage to internal components.

Step 4: Blow Out Remaining Water

Using a low-pressure air compressor or wet-dry/ shop vac, blow air through the outlet then inlet connections to remove all remaining water from the heat exchanger and internal pipework. Continue until no water remains in the unit.

Step 5: Secure and Plug Connections

Install protective plugs or caps on the inlet and outlet ports to prevent moisture, insects, critters, and debris from entering the heat pump during storage.

Step 6: Cover the Unit

If desired, cover the heat pump using a loose-fitting, breathable, weather-resistant cover. Do not use plastic wrap or airtight covers, as trapped moisture may cause corrosion or damage to electrical components.

Returning the Heat Pump to Service

Before restarting the heat pump after winter:

1. Remove any plugs or protective covers from the water connections.
2. Reconnect and tighten the inlet and outlet unions.
3. Return bypass valves to their normal operating position.
4. Start the filtration pump and check for leaks.
5. Restore electrical power to the heat pump.
6. Verify normal operation before use.

i.

Troubleshooting for common faults

1. Repairing Guidance

WARNING!
If repairs or removal is required, contact authorized service center.

Requirements for Service Personnel

a. Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry recognized assessment specification.
b. Do not attempt to work on the equipment by yourself. Improper operation may cause danger.
c. Strictly comply with the manufacturer's requirements when charging R32 gas and equipment maintenance. This chapter focuses on special maintenance requirements for swimming pool heat pump with R32 gas. Please refer to the technical service manual for detailed maintenance operation.
d. Vacuum system completely before welding. Welding should only be carried out by professional person in a service center.

2. Problems without an error code

Failure	Reason	Solution
Heat pump doesn't run	No power	Wait until the power recovers
	Power switch is off	Switch on the power
	Fuse is broken	Check and change the fuse
	The breaker is off	Check and turn on the breaker
Fan running but with insufficient heating	Evaporator blocked	Remove the obstacles
	Air outlet blocked	Remove the obstacles
	3-minute start delay	Wait patiently
Display normal, but no heating	Set temperature too low	Set proper heating temp.
	3-minute start delay	Wait patiently
****If above solutions don't work, please contact your installer with detailed information and your model number. Please don't try to repair it yourself. ****		

Note
If the unit frequently trips please stop the machine immediately, and cut off the power supply immediately, then contact your dealer:

Protection & Failure Code

Error	Component corresponding	What did the error detect?	Solution
E1	High pressure protection	High gas pressure switch	1. Check the water flow from the filtration pump and ventilation clearances. 2. Check high pressure switch is closed circuit 3. Replace PCB 4. replace inverter board
E2	Low pressure protection	Low gas pressure switch	1. Check the water flow from the filtration pump and ventilation clearances. 2. Check low pressure switch is open circuit 3. Replace PCB 4. replace inverter board
E3	No water protection	Low water flowrate	Check the water flow in pipes, and filtration pump is running. Check filters, skimmer basket, back wash Check the bypass or valves have not been adjusted since commissioned Check the Water flow switch
E4	3 phases sequence protection	Electrical power connection	Check the power connection to the pump
E5	Power supply excesses operation range (Not failure)		1). Recover when back to the normal power 2). Replace PCB
E6	Excessive temp difference between inlet and outlet water (Insufficient waterflow protection)	High temperature difference	Check the water flow in pipes, and filtration pump is running. Check the bypass is opened and unit is commissioned Check the Water flow switch
E7	Water outlet temp too high or too low protection	Water flowrate in pipes	Check if there is any blockage in the inlets, outlets, and through the pipe
E8	High exhaust temp protection	Compressor overheating	Check if refrigerant gas is leaking, check the connection of the sensor, might need to change if faulty, check the compressor of the pump
Eb	Ambient temperature too high or too low protection (not failure)	Out of the heat pump's capacity to withdraw heat from the atmosphere	Out of application range
Ed	Anti-freezing reminder (not failure)		Wait for automatic recovery
F1	Compressor drive module failure	Lack of phase	Check the voltage and the frequency conversion
F2	PFC module failure	PFC circuit	Check the PFC switch circuit if short or not
F3	Compressor start failure	Compressor circuit	Check the compressor wiring if its correct or if there is any short circuit
F4	Compressor running failure	Compressor circuit	Check the compressor wiring if its correct or if there is any short circuit
F5	Inverter board over current protection		1). Wiring 2). Inverter board 3). PCB
F6	Inverter board overheat protection	Inverter board high temp	Check the current flowing it might need to
F7	Current protection		1). Power off and restart 2). Inverter board 3). Compressor
F8	Cooling plate overheat protection		1). Power off and restart 2). Check fan motor 3). Check cooling plate
F9	Fan motor failure	Fan motor	Check the fan motor wiring, check if the fan is broken or loose
Fb	Power filter plate No-power protection	Power filter not working	Single Phase Model 1). Replace Inverter board 3 Phases Model 1). Replace power filter plate
FA	PFC module over current protection	Solar inverter voltage change Power black out Power surge	1). Initial power testing has completed. Power off and restart (happens install with solar PV) 2). Replace Inverter board

P1	Water inlet temp sensor failure	The water inlet temperature sensor is either damaged or running a short circuit	Check the Temperature sensor at the water inlet, might need to be changed
P2	Water outlet temp sensor failure	The water outlet temperature sensor is either damaged or running a short circuit	Check the Temperature sensor at the water outlet, might need to be changed
P3	Gas exhaust temp sensor failure	The sensor is running a short circuit, damaged, or not fixed properly	Check the gas exhaust Temperature sensor, might need a replacement
P4	Evaporator coil pipe temp sensor failure	The sensor is running a short circuit, damaged, or not fixed properly	Check the evaporative coil pipe Temperature sensor, might need a replacement
P5	Gas return temp sensor failure	The sensor is running a short circuit, damaged, or not fixed properly	Check the Gas return Temperature sensor, might need a replacement
P6	Cooling coil pipe temp sensor failure	The sensor is running a short circuit, damaged, or not fixed properly	Check the cooling coil pipe Temperature sensor, might need a replacement
P7	Ambient temp sensor failure	The sensor is running a short circuit, damaged, or not fixed properly	Check the Ambient Temperature sensor, might need a replacement
P8	Cooling plate temp sensor failure	The sensor is running a short circuit, damaged, or not fixed properly	Replace inverter board
P9	Current sensor failure	The sensor is running a short circuit, damaged	1). Replace inverter board for single phase model 2). Replace power filter plate for 3 phases model

WINTERISATION

The unit must be properly winterised to prevent damage to internal components during winter season before temperatures hit 32°F, 0°C. winterisation should be performed by a professional. Please see FAQ on website for proper winterisation steps.

Warranty Notice

Damage caused by freezing temperatures, residual water left inside the unit, improper drainage, or failure to follow the winterisation procedure is considered maintenance-related damage and is not covered under the Madimack warranty.

If the heat pump will not be used during winter or if freezing temperatures are expected, the unit must be properly winterised to prevent damage to internal components.

Failure to correctly winterize the heat pump may result in freezing damage to the titanium heat exchanger, water circuit, and internal pipework. Damage caused by improper winterisation or freeze damage is not covered under warranty.

Step 1: Disconnect Power

Turn the heat pump OFF using the controller and switch OFF the dedicated circuit breaker or disconnect supplying power to the unit.

Step 2: Shut Off the Pump

Turn OFF the filtration pump and stop all water flow through the heat pump.

If a bypass kit is installed, place the valves into the bypass position to isolate the heat pump from the circulation system.

Step 3: Drain Water

Disconnect the unions from both the water inlet and outlet connections and allow all water to completely drain from the heat pump.

Important: Water remaining inside the heat exchanger may freeze and expand, causing damage to internal components.

Step 4: Blow Out Remaining Water

Using a low-pressure air compressor or wet-dry/ shop vac, blow air through the outlet then inlet connections to remove all remaining water from the heat exchanger and internal pipework. Continue until no water remains in the unit.

Step 5: Secure and Plug Connections

Install protective plugs or caps on the inlet and outlet ports to prevent moisture, insects, critters, and debris from entering the heat pump during storage.

Step 6: Cover the Unit

If desired, cover the heat pump using a loose-fitting, breathable, weather-resistant cover. Do not use plastic wrap or airtight covers, as trapped moisture may cause corrosion or damage to electrical components.

Returning the Heat Pump to Service

Before restarting the heat pump after winter:

1. Remove any plugs or protective covers from the water connections.
2. Reconnect and tighten the inlet and outlet unions.
3. Return bypass valves to their normal operating position.
4. Start the filtration pump and check for leaks.
5. Restore electrical power to the heat pump.
6. Verify normal operation before use.

Limited Warranty

Standard Conditions: Madimack Pty Ltd (Australia) provide the following limited warranties. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state or province to province.

IMPORTANT - Full Terms and Durations:
For a complete list of warranty periods and product-specific terms, please visit the warranty section at www.madimack.com

Statutory Rights: This document sets forth the comprehensive terms and conditions governing the warranty provided by Madimack. These terms are in addition to, and not a modification of or subtraction from, the statutory warranties and other rights and remedies contained in applicable local legislation, including the Australian Consumer Law where applicable.

Limited Warranty Coverage: Please visit www.madimack.com for full duration and product-specific terms. Madimack will, at its discretion, repair or replace any product proven to be defective in materials or manufacture during the warranty period. This warranty applies to domestic installations only, is personal to the original purchaser, and is non-transferable.

Exclusions: To the extent permitted by law, Madimack excludes all statutory or implied conditions and warranties. Madimack shall not be liable for any incidental or consequential damages (such as water loss or damage to surrounding structures). The following exclusions apply:

- Incorrect installation or operation resulting from failure to follow provided instructions.
- Damage caused by misuse, neglect, or "acts of God."
- Repairs or servicing performed by unauthorized dealers.
- Faults caused by the use of non-specified accessories or chemicals.
- General wear and tear of consumable items (e.g., seals, O-rings).

Procedure for Warranty Claims:

1. Initial Contact: Owners must contact Madimack via the online portal at www.madimack.com or the support numbers listed below.
2. Remote Troubleshooting: A service agent will attempt to resolve the issue via phone or email.
3. Service Type Determination:
    a. Return-to-Base: For portable or shippable units, you are responsible for disconnecting and transporting the product to an authorized service center. You are responsible for all freight and insurance costs to and from the supplier.
    b. On-Site Service: For fixed equipment, Madimack may coordinate an on-site technician. You are responsible for providing clear and safe access to the unit.
    c. Labor & Removal: You are responsible for the costs of removing the defective product and reinstalling the repaired/replacement product.

Required Documentation: All claims must include:

1. Proof of original purchase (Invoice with owner name and address).
2. A "Goods Return Authorization" or Service Ticket number provided by Madimack.

Australia
+61 1300 899 737
support@madimack.com
https://madimack.com/au

madimack