Haier

Heat Pump Water Heater
Operation and Installation Manual

Model

HP330M1U1

SAA-230239-EA
AS/NZS 2712 SMK41331
AS 3498 WMK26822

WaterMark

Please read this manual carefully prior to the installation and use of this appliance.
The appearance of the water heater given in this manual is for reference only.
This product must be installed outdoors.

Contents

Dear users of Haier,

Thank you for choosing Haier products.

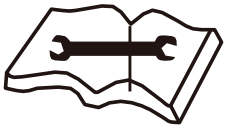
Please read this manual carefully and follow the operation and safety instruction to ensure best installation and utilisation of the product.

Product safety statement:

1. This appliance is not intended for use by persons with reduced physical, sensory or mental capabilities, persons with a lack of experience and knowledge, or children under the age of 8 years. Persons in this group must be supervised while using the appliance by a person responsible for their safety.
2. Children should be supervised to ensure that they do not play with the appliance.
3. Installation must be carried out by qualified professionals. Do not open the cover or panel unless qualified to undertake this work. Contact Haier Customer Service if service or repair work is required.
4. This appliance must be permanently connected to mains water supply and continuous electrical supply.

Warning: flammable hazard!

1. Please read the instructions carefully before installation and use of this appliance.
2. Do not puncture or ignite this product.
3. The environment-friendly refrigerant R290 used in this product is odorless.
4. This product must be installed outdoors.
5. This product cannot be discarded or scrapped without correct retrieval of the refrigerant.



a. If necessary, please contact Haier Customer Service to obtain the correct disposal method.

6. The product must not be stored in an area containing an open flame such as an open fire, gas appliance or electric heater.
7. Before the refrigeration system is repaired, the refrigerant must be removed by a qualified professional.

8. Do not use any method to accelerate the defrosting process or clean frosted components of the appliance.

Warning: Risk of damage to the environment

This heat pump contains R290 refrigerant.This refrigerant must not escape into the atmosphere.

Refrigerant must be removed and disposed of by aqualified professional.

The valve or drain valve outlet pipe must not be sealed or blocked.

If the hot water system is not used for two weeks or more, a quantity of highly flammable hydrogen gas may accumulate in the water heater. To dissipate this gas safely, it is recommended that a hot tap be turned on for several minutes or until discharge of gas ceases. Use a sink, basin, or bath outlet, but not a dishwasher, clothes washer, or other appliance. During this procedure, there must be no smoking, open flame, or any electrical appliance operating nearby. If hydrogen is discharged through the tap, it will probably make an unusual sound similar to air escaping.

Safety warnings – To be followed at all times

Servicing and Decommissioning Warnings

- Please follow this manual for installation and operation to avoid excessive vibration or pulsation to refrigerating piping.
- Workplace safety procedures must be followed to minimise the risk caused by flammable refrigerant.
- All maintenance staff and others working in the surrounding area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.
- If any brazing is required for repair of the applaince, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher close by.
- No person carrying out work on the refrigerant system must use any sources of ignition in a manner that create a fire or explosion risk.
- All possible ignition sources, including cigarette smoking, must be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space.
- Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs displayed.
- Ensure that the area is adequately ventilated before disconnecting the refrigerant system or conducting any brazing. This must be continued while work is carried out.
- The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.
- When replacing electrical components, ensure that they are the correctly specified parts supplied by Haier / Fisher & Paykel.
- At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer’s technical department for assistance.
- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
- If a fault exists that could compromise safety, then disconnect the electricity supply until the fault is satisfactorily.

Safety warnings – To be followed at all times

- Initial safety checks shall include:
    - that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking.
    - that no live electrical components and wiring are exposed while charging, recovering or purging the system.
    - that there is continuity of earth bonding.
- Sealed electrical components must not be repaired.
- Under no circumstances shall potential ignition sources be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.
- Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, their sensitivity can be inadequate, or can need re-calibration.
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the refrigerant's LFL, and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25% maximum) is confirmed.
- Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine must be avoided as the chlorine can react with the refrigerant and corrode the copper pipework.
- If a leak is suspected, all naked flames shall be extinguished.
- If a refrigerant leak is found which requires brazing, all refrigerant must be recovered from the system, or isolated by means of shut off valves. Removal of refrigerant shall be according to Clause 60335-2-40 DD.8.
- When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures used. However, for flammable refrigerants it is important that best practice is followed since flammability is a consideration. The following procedure adhered to:
    - safely remove refrigerant following local and national regulations.
    - purge the circuit with inert gas evacuate.
    - continuously flush with inert gas when using flame to open circuit.
    - open the circuit.
    - This process repeated until no refrigerant is within the system
    - The system vented down to atmospheric pressure to enable work to take place.
    - Ensure that the outlet of the vacuum pump is not close to any potential ignition sources and that ventilation is available.

Safety warnings – To be followed at all times

Servicing and Decommissioning Warnings

In addition to conventional charging procedures, the following requirements shall be followed.

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already labelled). Extreme care shall be taken not to overfill the refrigerating system.
- Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas.
- Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely.
- Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant.
- It is essential that electrical power is available before the task is commenced.
- Become familiar with the equipment and its operation.
- Isolate the electrical supply to the appliance.

Before attempting the procedure, ensure that:

- mechanical handling equipment is available, if required, for handling refrigerant cylinders.
- all personal protective equipment is available and being used correctly.
- the recovery process is supervised at all times by a competent person.
- recovery equipment and cylinders conform to the appropriate standards.

Safety warnings – To be followed at all times

Pump down refrigerant system, if possible.

In addition to conventional charging procedures, the following requirements shall be followed.

- If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- Make sure that the cylinder is situated on the scales before recovery takes place.
- Start the recovery machine and operate in accordance with instructions.
- Do not overfill cylinders (no more than 80% volume liquid charge).
- Do not exceed the maximum working pressure of the cylinder, even temporarily.
- When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
- Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.
- Equipment shall be labelled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.
- When removing refrigerant from a system, either for servicing or decommissioning, it is required to follow good practice so that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order.

Safety warnings – To be followed at all times

- Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs. The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant.
- Consult manufacturer if in doubt. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.
- The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. Draining of oil from a system shall be carried out safely.

Safety warnings – To be followed at all times

Interpretation of marks and symbols

Failure to follow these instructions may lead to serious malfunctions of the device and danger to the user.

	Instructions marked with this symbol must befollowed. Failure to do so may lead to product damage and harm to the user.
	Information marked with this symbol are forbidden. Failure to follow this instruction may lead to product damage and harm to the user.

 The water heater shall be installed in strict accordance with local wiring regulations. The power supply must have a grounding line. Ensure an effective ground connection.	 Ground and neutral lines of the power supply must not be connected. The ground line shall not be connected to gas or water pipes, lightning arresters or telephone lines.
 The water heater must be installed in a location where suitable water drainage is possible.	 The water heater must be installed outside.
 This appliance must be fitted with the pressure temperature relief valve (PTR valve) supplied with the appliance. The PTR valve must be fitted directly to the appliance.	 While bathing, children must be under guidance of an adult. Children must not play with the appliance.

Safety warnings – To be followed at all times

ⓘ The outlet water temperature of a water heater is typically higher than the temperature indicated on the display. Ensure that contact to hot water directly leaving the appliance cannot occur.	ⓘ This appliance must be installed with an isolation switch to the power supply. This switch must ensure full disconnection and be in accordance with local wiring regulations.
ⓘ Install the water heater in strict accordance with these installation instructions.	ⓘ A qualified tradesperson must replace the power cord if it is damaged.
ⓘ Do not put hands or other items into the air grid. This may cause injury or damage to the appliance.	ⓘ As this appliance contains R290 refrigerant, environmental damage may occur if it is incorrectly transported, installed or used.
ⓘ The PTR valve drain must be installed in a continuously downward direction, be open to the atmosphere, be free from blockages and frosting potential.	ⓘ The PTR valve must be operated every 6 months to remove debris and lime scale deposits, and to ensure it is free from blockages.

Safety warnings – To be followed at all times

1. Installation, service, or maintenance of this appliance must be carried out by a qualified professional. Failure to adhere to this may result in damage to the appliance or other property, or cause injury.

2. Fit the appliance in accordance with this installation manual.

3. Be sure to use only certified parts and accessories when installing or servicing this appliance.

4. Install the appliance on a base suitable for its filled weight.

5. Electrical work must be performed in accordance with all local standards and regulations, including AS/NZS3000, and the instructions in this manual.

6. Plumbing work must be performed in accordance with all local standards and regulations including AS/NZS 3500.4 and the instructions in this manual.

7. This appliance must be connected to a dedicated electrical circuit.

8. During installation, ensure that the earth wire is disconnected last.

9. If a refrigerant leak occurs, ventilate the area immediately. The refrigerant is flammable, so damage or injury is possible if it reaches an open flame.

10. Be aware that the refrigerant contained in this appliance is odourless.

11. Do not accelerate the defrosting process or clean the evaporator when frosted. Only a qualified person should clean the evaporator.

12. Do not pierce or burn this appliance.

13. This appliance must be installed outside in a well-ventilated area. A gas leak in a poorly ventilated area could create an explosion risk. The refrigerant gas in this appliance is heavier than air.

14. Prevent insects and small animals entering the appliance. This may cause electrical shorts, malfunctions or fire.

15. Only qualified personnel can handle, fill, purge and dispose of the refrigerant in this appliance.

16. Installing this appliance in a coastal or high sulphur gas region without additional protection will shorten the life of the appliance. Additional protective coatings should be applied to exposed components within the heat pump module cover.

Safety warnings – To be followed at all times

Warning: National and state regulations for the storage, handling, and transport of hazardous goods (including R290 flammable gases) must be followed at all times. Local regulations will determine the maximum number of pieces of equipment or the configuration of the equipment permitted to be transported or stored together.

Loading and unloading requirements

1. This appliance shall be carefully handled during transport loading and unloading.
2. Ensure that the appliance is not dropped, bumped, or rolled during transportation. Failure to comply with this could damage the appliance and potentially cause a refrigerant leak.

Transport requirements

1. This appliance must be transported to warehouses or stores in a vertical position. This is to prevent damage to anodes or the internal enamel lining of the appliance.
2. Tradespeople may carefully transport the appliance to the site in a horizontal position. The time taken should be one hour or less, and the appliance must be laid down on the side indicated on the packaging.
3. Local transportation regulations around transporting R290 must be followed at all times.
4. During transport or storage, the appliance should remain undamaged within its packaging.

Storage requirements

1. As this appliance contains a flammable refrigerant R290, its storage must be in accordance with local regulations.
2. The method of storage should ensure that there is no potential for damage to the appliance. Any damage could result in a refrigerant leak, creating an explosion risk.

Scrapping and recovery requirements

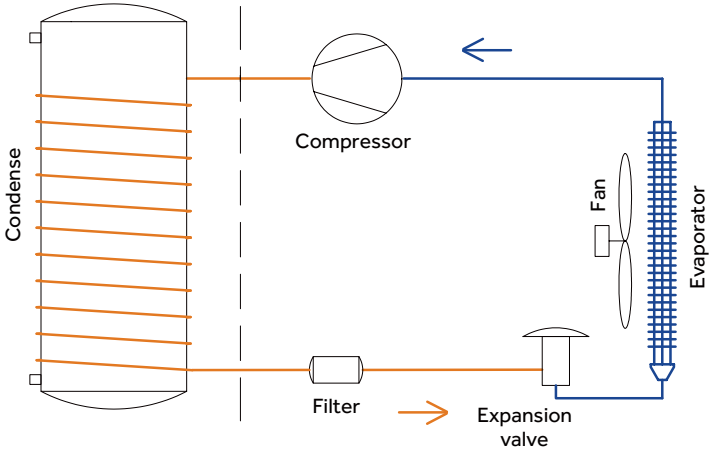
1. Scrapping must only be carried out by a qualified professional. This professional must safely recover the appliance's refrigerant before the appliance is scrapped. Contact Haier Customer Service to correctly dispose of this appliance.

Technical specifications

Functioning principles of heat pump water heaters

An air-sourced heat pump water heater mainly consists of a compressor, expansion valve, filter, evaporator, condenser, fan and water storage tank.

Powered by electricity, the compressor absorbs low-temperature and low-pressure refrigerant gas from the evaporator. It compresses the gas into high-temperature, high-pressure gas, which is passed through the condenser. Heat is transferred to the water from the condenser through the cylinder walls. The condensed refrigerant is then depressurised by the expansion valve, allowing it to absorb heat from the surrounding air in the evaporator.



Technical specifications

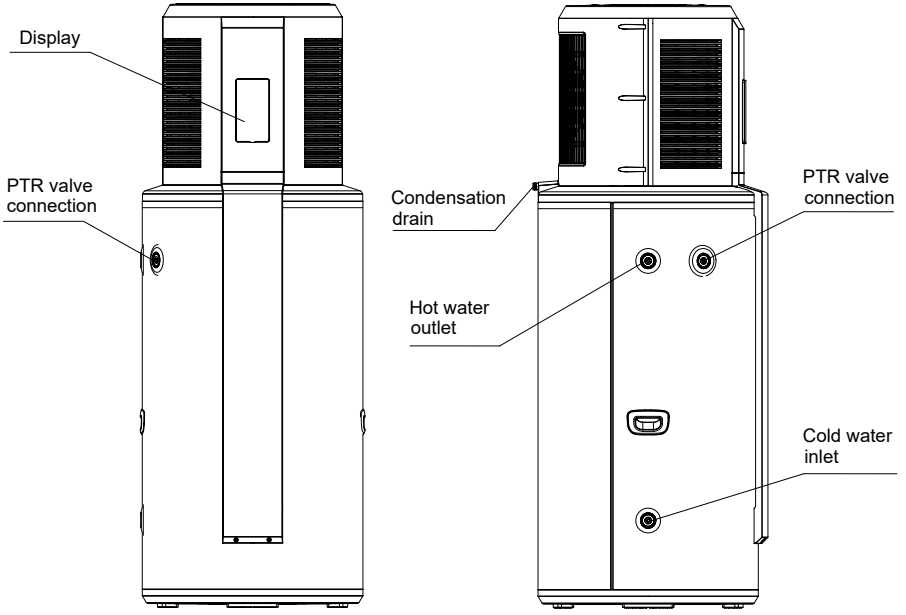
Model	HP330M1U1
Tank	
Total water capacity	330L
Rated voltage/ frequency	220-240V/50Hz
Tank max pressure	850kPa
Corrosion protection	Magnesium rod
Waterproof grade	IP24
Performance (20°C/15°C Ambient air temperature, 15°C -55°C water temperature)	
COP*@20°C/15°C	4.00
Power input of electric element	2.2kW
Rated power input of compressor	0.7kW
Power input range of compressor	0.2 to 1.2 kW
Maximum power input (total appliance)	3.4kW
Rated heating capacity (compressor)	2.8kW
Heating water capacity	60L/h
Heating up time *	5.5h
Default temperature setting	60°C
Temperature setting range - with heater	35°C - 75°C
Max temperature of the heat pump only	65°C
Max working pressure of refrigerant	1.0/3.3MPa
Refrigerant type / weight	R290/0.47kg
Sound pressure level *@ 1m	47dB(A)
Ambient temperature range for appliance	-7°C~45°C
Ambient temperature range of heat pump	-7°C~45°C
Dimension and connections	
Water inlet and outlet connection	Rp ¾"
TPR valve connection	Rp ¾"
Drain & Water inlet connection	Rp ¾"
Product Dimensions	(710*758*1941)mm
Packing dimension with pallet	(745*745*2263)mm
Net/Gross weight	122/150kg
Filled weight of the appliance	452kg

* The COP was measured under test conditions with an ambient air temperature of 20˚C/15˚C (Dry Bulb/Wet Bulb) and heating of the water from 15˚C to 55˚C during water heater operation.

* The noise level was measured at 1 m from the water heater during a Noise Test conducted to Standard GB/T 23137 in a hemi-anechoic chamber within a laboratory.
The voltage that these figures are calculated at 230V.

Description of parts and components

Heat pump layout

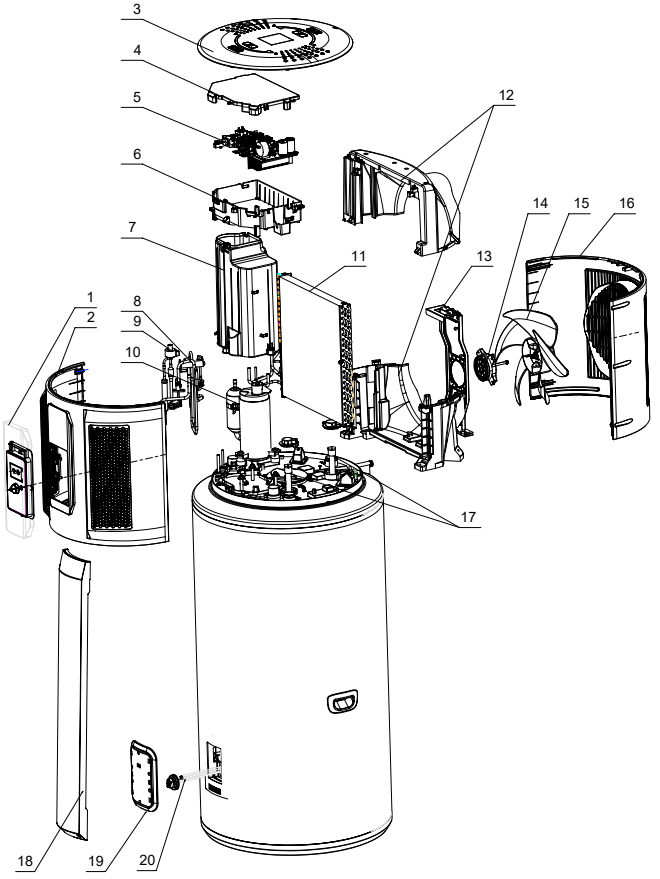


Carton contents

Part name	Heat pump water heater	TPR valve	Instruction manual	Conduit for Supply Cable	Condensate drain Hose
Quantity	1	1	1	1	1

Description of parts and components

Exploded view of the heat pump



S/N	Description	S/N	Description
1	Display panel & Cover	11	Evaporator
2	Front shell	12	Diversion air duct
3	Top cover	13	Support
4	Electrical box cover	14	DC motor
5	Control panel	15	Fan blade
6	Electrical box	16	Rear shell
7	Compressor cover	17	Magnesium anode
8	Four-way valve	18	Decorative cover
9	Electronic expansion valve	19	Waterproof cover
10	Compressor	20	Heating element

Installation instructions

Transporting the appliance

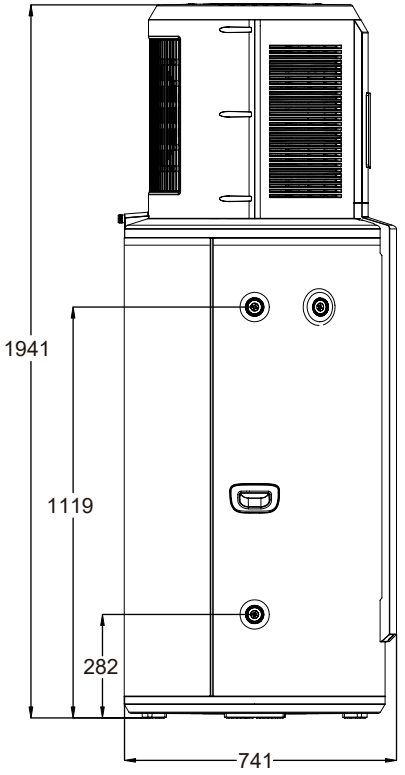
1. During transport or storage, the heat pump water heater should remain in undamaged packaging to prevent damage to the appliance.
2. During long periods of transport or storage, the heat pump water heater must be in an upright position.
3. For short distance transportation (under one hour), this product may be laid down within 1 hour as per indication on packaging. If laid down, the appliance must be at an upright position for 4 hours prior to its initial startup.

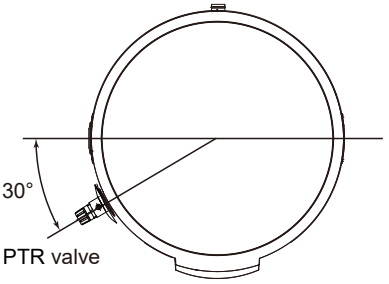
Selection of installation site

1. Ensure the install location is stable and level, and that air can flow in and out freely, and will be minimally affected by wind.
2. The base or surface can support the filled weight of the appliance and the condensate water can drain freely.
3. If installed on a base, ensure that this base is level to allow correct drainage via the condensate drain at the rear of the appliance.
4. The location or position of the appliance will not create nuisance noise for the homeowners or neighbors, especially through proximity to noise-sensitive areas such as bedrooms.
5. Ensure that the location allows condensate and PTR valves to be drained into an area that will not cause damage to the surrounding area.
6. There is sufficient space left for installation and maintenance of the appliance.
7. There is no strong electromagnetic interference around the appliance that may affect its control functions.
8. There are no corrosive vapors such as aerosol sprays, stain removers or household chemicals near the install location. These vapors may corrode the appliance and its fittings.
9. Considerations have been made to prevent water pipes from freezing in colder regions.

Installation instructions

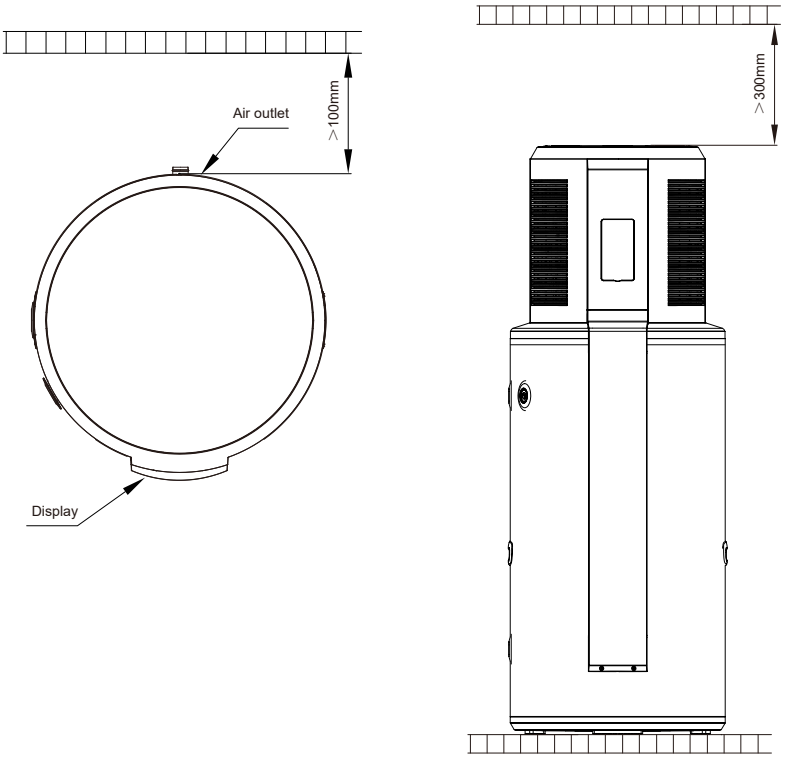
Installation dimensions





Installation instructions

Installation clearances



Note: This appliance must be installed in a location where it can be quickly and easily drained and moved to a location with 1000mm clearance above the appliance. This is so the anode to be removed for checking and replacing during the 5 yearly service.

Installation instructions

Plumbing installation

WARNING — FOR CONTINUED SAFETY OF THIS APPLIANCE IT MUST BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTUCTIONS.

WARNING — THIS APPLIANCE MAY DELIVER WATER AT HIGH TEMPERATURES. REFER TO THE PLUMBING CODE OF AUSTRALIA (PCA), AND ALL LOCAL REGLATIONS ON ADDITIONAL DELIVERY TEMPERATURE CONTROL MUST BE FOLLOWED.

1. The water heater must be installed:
   a. by licensed trades people.
   b. in accordance with all local codes and regulations and standards including AS/NZS3500.4, AS/NZS 3000, and the Plumbing Code of Australia (PCA).
2. The inlet water pressure of water supply must be between 100kPa and 500kPa.
3. Water inlet Connections: An isolating and non-return valve and line filter (or a combination) must be installed on the inlet of the appliance. A pressure limiting valve must be installed if the inlet supply pressure exceeds 500kPa.
4. If a cold-water expansion control valve (ECV) is required by regulation, a valve of a maximum of 600kPa should be fitted. The correctly sized pressure limiting valve should also be fitted as per the ECV manufacturer's specifications. If no ECV is fitted, the pressure limiting valve should have a maximum pressure of 500kPa.
5. Water outlet connections: A thermostatic mixing valve or tempering valve must be used when hot water is supplied to fixtures used for sanitary use (i.e. bathrooms) in accordance with the requirements of AS/NZS 3500.4.
6. For ease of assembly and disassembly of the appliance, it is recommended that mechanical joints are used to connect the plumbing pipework to the water heater.
7. The water inlet, outlet and PTR/TPR valve must be fitted as per the labels at the hot, cold and PTR connections.

Installation instructions

Plumbing installation continued

8. To avoid damage to the appliance, the inlet water temperature should remain between 5°C - 40°C.

9. Before filling the tank, make sure that the cold-water inlet and hotwater outlet of the appliance are open, along with the farthest hot water fixture are opened. The appliance will be correctly filled once water flows continuously from this fixture without air bubbles. Venting through the PTR/TPR valve may cause premature failure of this valve.

10. If there is a risk of the hot water line, cold water line or PTR/TPR valve drain freezing, the pipework must be insulated with an appropriate 20mm thick insulation material. Failure to adhere to this requirement may result in a voided warranty if the damage is due to freezing.

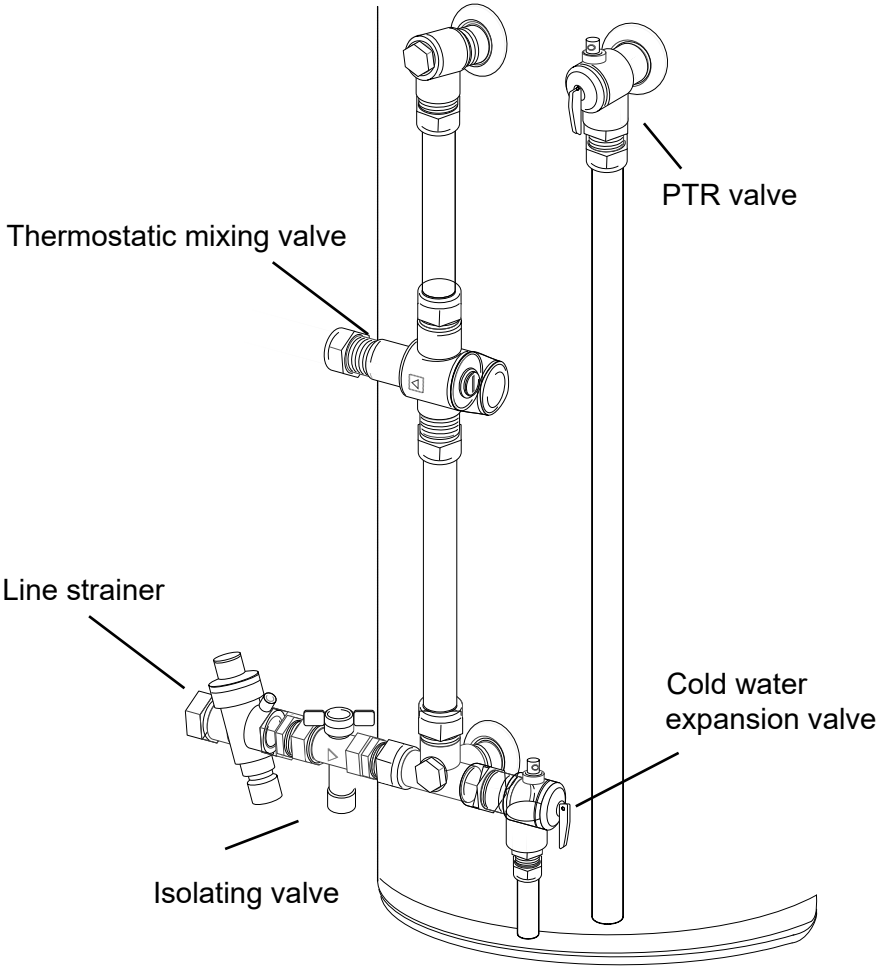
11. In accordance with the safety rules, a PTR/TPR valve must be installed directly into the appliance's PTR/TPR valve connection. (This valve is rated at a maximum pressure of 850kPa, a maximum operating temperature of 99°C, and a connection size of 3/4”). Never block the outlet of the PTR/TPR valve, the ECV, or their drain lines for any reason.

Installation instructions

Supply valve configurations

Although the plumbing inlet and outlet layouts can differ between New Zealand and Australia, they effectively carry out the same functions.

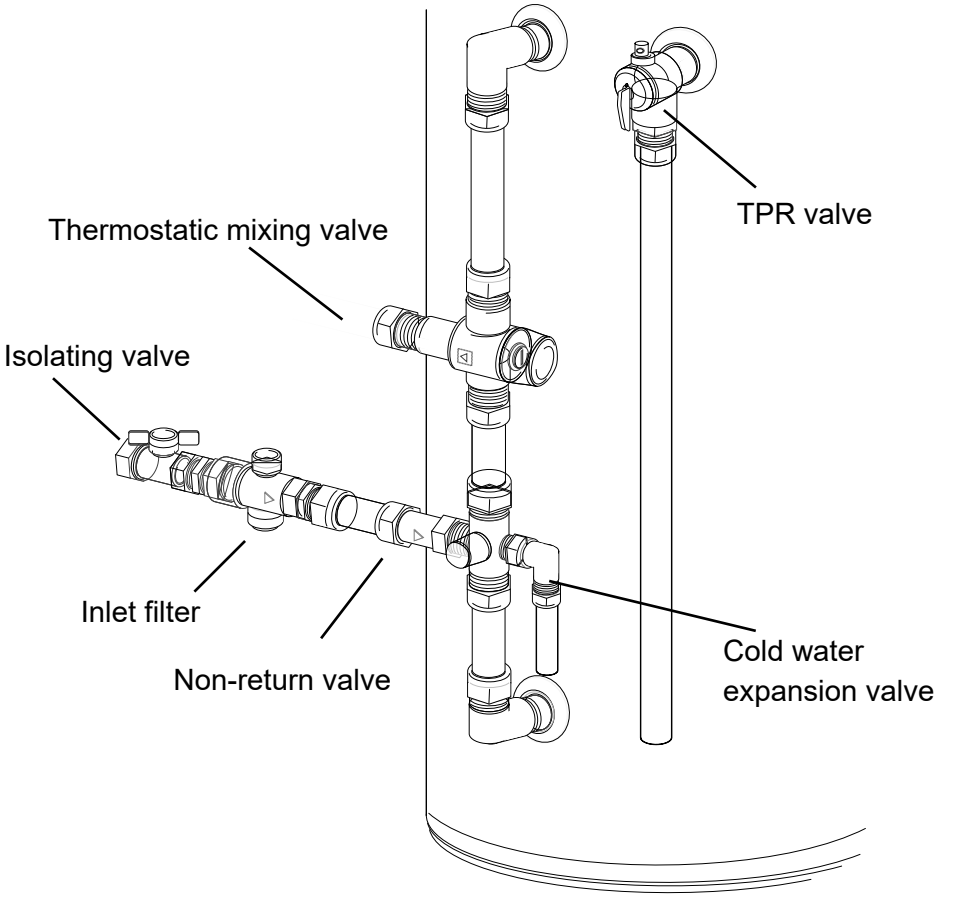
Typical Australian Pipework Valve



Installation instructions

Supply valve configurations

Typical New Zealand Pipework Valve



Installation instructions

Condensate drain

Warning: Ensure the condensate drain cannot become blocked and flood condensate tray.

- Ensure the condensate drain is a minimum 20mm in diameter.
- Ensure that drainpipe has continuous downward fall to allow it to drain freely.
- Make sure the condensate drain is open to the atmosphere to prevent airlocks.

Installing the condensate drain

A flexible condensate drain is supplied as an accessory to this appliance. This drain hose is connectable to the condensate drain hose connection located at the rear of the appliance.

Note: The condensate from this appliance is pure water. It should be drained to a gully trap or to a location such as a garden bed, in a way that won't cause and damage or nuisance to the surrounding area.

Installation instructions

Electrical installation

CAUTION: In order to avoid inadvertent resetting of the thermal cut-out, this appliance must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility (off-peak electrical line).

Electrical Safety Requirements

The installation, service or repair of the electrical components of this appliance must be completed:

- By a qualified and licensed electrical trades person.
- By the local electrical codes and regulations and standard AS/NZS 3000.
- During the electrical wiring of this appliance, the surrounding conditions (ambient temperature, direct sunlight, wind, and rainwater) shall be considered. Effective protective measures shall be taken to suit the installation's environment.
- Must use materials certified to local standards for local conditions.
- The appliance must be correctly and reliably earthed.
- The appliance must be connected to a dedicated circuit. This Circuit must be fitted with a circuit breaker no greater than 20 Amps. A residual current device (RCD) is also recommended.
- The circuit to the appliance should be a minimum of 2.5mm²2-core and earth.
- The communication Cable (Part number 23 on Page 9) is for use with a Photovoltaic power system is used. When not used, this cable can be coiled up and located neatly outside the cylinder or inside the Heat pump casing in a safe location.

Installation instructions

Seismic strapping

FOR NEW ZEALAND INSTALLS ONLY

In New Zealand, the appliance must be seismically restrained with three seismic straps in accordance with the NZBC (G12/AS1) and AS/NZS3500.4.

The appliance must have adequate airflow at the rear of the appliance, as this is where the outlet to the heat pump is located. When seismically strapped, the appliance can be braced 100mm from the wall or be installed at a 45°C angle with 50mm braces to allow sufficient airflow.

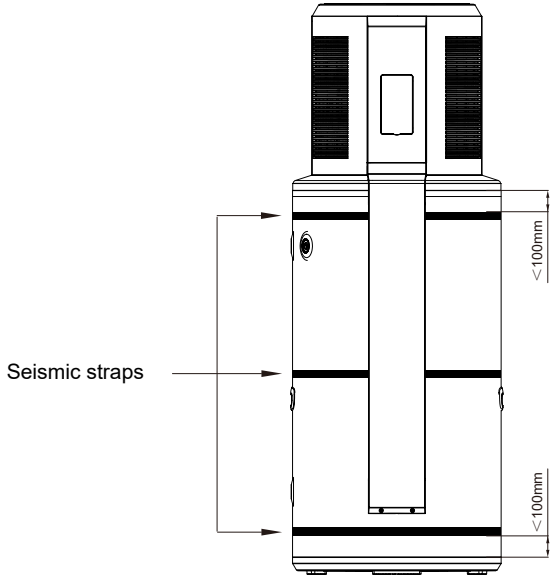
To meet this requirement this appliance should be fitted with three stainless steel straps, 25mm wide x 1mm thick.

These straps should be fitted as per the following instructions:

Top strap: Under the front cover, and no more than 100mm from the top the painted cylinder section of the appliance.

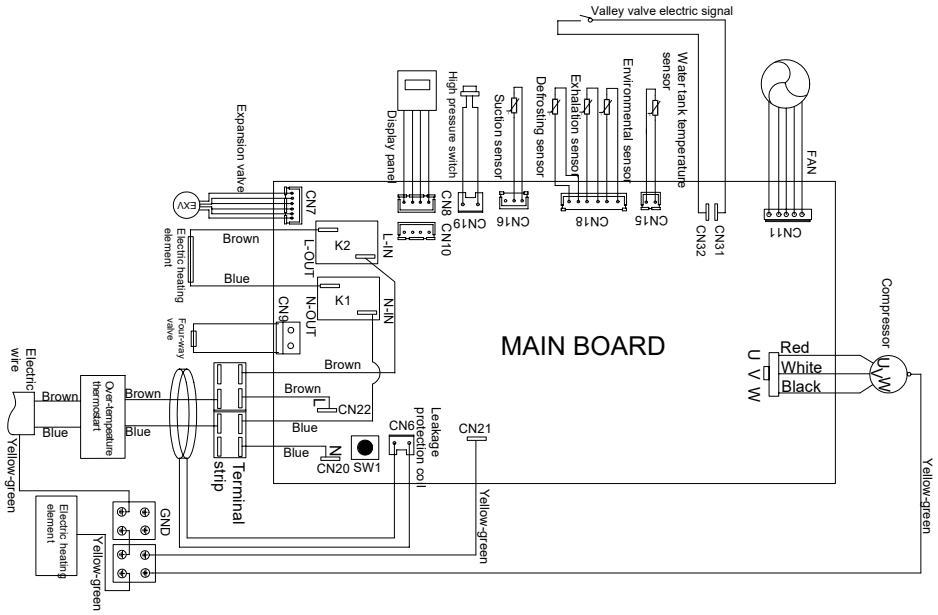
Middle strap: Under the front cover, at the center of the painted cylinder section of the appliance.

Bottom strap: Below the front cover, and no more than 100mm from the bottom the painted cylinder section of the appliance.



Installation instructions

Wiring diagram



Commissioning checklist

Installers should check that the following tasks have been completed correctly during the commissioning of this appliance.

- The appliance is placed on a level surface that can hold its filled weight.
- The electrical connections are correctly made to local installation standards.
- The water connections have been correctly fitted and are leak-free after the appliance has been filled and pressurised.
- The control panel is operational (the display is active).
- The supplied PTR / TPR valve has been correctly fitted to the appliance and releases water when the lever is activated.
- All hot water pipework is insulated.
- All cold water and drain pipework is insulated if required.
- Check to make sure the water is heating.

Description of the icons

Functions & Protections

A. **Electrical leakage protection**
This appliance features an electricity leakage protection function.

B. **Compressor protection**
Whenswitchedon, theappliance willtake approximately 3minutes to start the compressor for heat pump heating.

C. **Automatic defrosting function**
The defrosting mode is automatically activated if the outdoor temperature is low and the compressor has run for some time.

D. **Overload protection**
The working load of the compressor will be high in warm ambient air temperatures. To meet hot water requirements and to lengthen appliance life, this product automatically adjusts the fan speed to ensure reliable operation of the compressor.

E. **Anti-freezing function**
The heat pump maintains a minimum temperature to avoid damage to the appliance caused by freezing.

Description of the icons

Symbol	Description
	Power ON/OFF switch
	Working mode selection
	Confirming the selection
	Timer adjustment
	Boost mode. Heat pump and backupelement heat simultaneously to speed up hot water recovery
	Auto mode - Heats primarily via theheat pumpas hot water is required. The back-up element is activated if expected heating times are exceeded.
	ECO (off-peak) mode - Prioritizes heatpumpheating to match either 1 - User programmed timer settings 2 - Smart Grid (SG) mode via comms signal. 3 - Solar PV (PV) mode via comms signal.
	Electric heating mode - A service menu, for use when the heat pump module is faulty. Uses only the backup element for heating.
	Vacation mode - Maintains a minimum temperature to prevent freezing, then heats to the set temperature for the owners return. The number of days is programmed by the owner.

Description of the icons

Symbol	Description
	Boost mode. Heat pump and backup element are activated at the same time.
	Icon indicating that the heat pump is activated.
	Icon indicating that the back-up heating element is activated.
	PV Mode. When the PV signal is received, the appliance will revert to pre-set PV mode settings.
	Smart Grid (SG) mode. In Time of peak/off-peak hours mode, the symbol corresponding to the mode is displayed. When receiving the signal, the HC icon will illuminate.
	Anti- legionella - Anti-legionella function will be activated every 7 days to heat the tank to 61°C automatically.
	Hot water volume display. Shows heating required to get to the maximum set temperature of 65°C.
	WIFI signal icon
	Lock screen display icon 1. Enter: In the power-on state, press and hold TIMER+BOOST (combination key) for 6s at the same time, the lock sign will be on, and the screen lock mode will be turned on. 2. After the screen lock mode is turned on, the device will not respond when the user touches any key. 3. Exit: press and hold TIMER+BOOST (combination key) for 6s at the same time, the lock sign is closed, and the screen lock mode is exited.

Note: Under certain conditions, ECO mode may result in shortages of hot water if the ambient air temperature is low.

Operating functions

Installer settings & WIFI connection

- To open the installer settings, press ⏻ switch off the system, then press + and SET at the same time for 10 seconds.
- When menu is open, press + or — to change the value of the settings.
- Press SET to confirm the settings.
- Press ⏻ to close the menu.

Parameters	Description	Factory setting	Adjustment range
LP 01, 02 03	Eco mode type - Sets the applaince to the Eco mode options. -01: User programmed timer function. -02: Smart Grid (SG) mode via comms signal. -03: Solar PV (PV) mode via comms signal.	01	01 , 02 , 03
LL no,nc	Comms signal type When using the SG or PV comms signal line, sets to match the relay/dry contact signal received. - NO corresponds to Normally Open Signal. - NC corresponds to Normally Close Signal.	NO	NO , NC
LA on, oFF	PV function can be executed in AUTO mode (when 03 is selected in LP) -ON allows PV mode activation in Auto mode. -OFF prevents PV mode activation in Auto mode.	ON	OFF
Lb 65-75	Temperature setting in PV function (when 03 is selected in LP) The temperature setting is adjustable between 65°C and 75°C.	65	65-75
LC 01, 02 03	Heat source selection in PV function (03 isselected in LP) -01 Heat pump and element work simultaneously. -02 Heat pump heating. -03 Element only heating.	01	01 , 02 , 03

Operating functions

Installer settings & WIFI connection

Parameters	Description	Factory setting	Adjustment range
	Compressor maximum continuous working time - If themaximum continuous working timeof the compressor more than Set Time, start auxiliary power.	10h	5-15h
	Set the day of the week - Set the day of theweek, d1 to d7 for Monday to Sunday, and remember the day of the week.	/	d1-d7
	Reheat differential temperature setting - Reheating will start in the 330L at 10°C below the set temperature. The adjustment range is 5-15°C.	10	5-15

Operating functions

Connecting to WIFI & SmartHQ

Step one: Make sure the appliance is connected to power but is switched off using the (On/Off) button. The actual temperature of the appliance should be visible.

Step two: Ensure your home Wi-Fi network is switched on and has good signal strength from the appliance location.

Step three: Ensure that your smartphone has Wi-Fi and Bluetooth switched on.

Step four: Press and hold the (-) button on the appliance to enter 'pairing mode'. The Wi-Fi icon will flash when the pairing mode is activated. Once a successful connection to the SmartHQ app is made, the Wi-Fi will stay illuminated.

Step five: Download the SmartHQ app from the Apple Store or Play Store. A direct link to the SmartHQ app can also be found at www.fisherpaykel.com/connect.

Step six: Open the SmartHQ app, register and create an account.

Step seven: Add the Monoblock by clicking the "Add an appliance button" on the app, then select the 'water heater' option. From there, select the water heater by working through the qualifying questions on the app.

Step eight: Once the correct appliance is selected, it may take up to 10 minutes for the appliance to connect and for the app to start functioning.

For more information on setting up SmartHQ visit https://support.fisherpaykel.com/s/article/Setting-up-with-SmartHQ.

Operating functions

Programming the timer function

1. **Step 1:** Ensure the Eco Mode is set to ‘timer mode’.
    a. Open the service menu, press (**+**) and (**SET**) with the appliance in standby and hold for 10 seconds.
    b. Press ‘SET’ until LP (LP – Eco Mode Setting) is visible.
    c. With LP visible, if “01” is shown then the timer function is set. If not, press (+) or (-) until the screen shows “01”, and then press set.
2. **Step 2:** Ensure the ‘day of the week’ is set correctly.
    a. Still in the service menu, press (**SET**) to until ‘Ct’ is displayed. (Ct – Set the day of the week).
    b. Press (+) to change the displayed value (d1 to d7) to program the day of the week. This sets the day where 01 is Monday, and 07 is Sunday. Press set to confirm.
    c. Press the (SET) button until the service menu is exited. The screen should now display the ‘actual temperature’ of the water inside the cylinder.
3. **Step 3:** Set the heating periods (2 periods for weekdays and 2 periods for weekends).

Note: The weekday heating periods are labelled L1 & L2, and the weekend heating periods are labelled L3 & L4.
Note: Ensure that a sufficient heating periods are allowed per each 24 hour period. Failure to do this may result in insufficient hot water supplied. Please see the heating time chart on page xx. (add the heating chart).
Note: Programming one heating period time per day is sufficient. If the second period isn’t required, leave both the start and stop times at: for the second period (i.e. L2 and L4).

    a. Ensure that the appliance is switched on using the on/off button.
    b. Ensure the product is set to ECO mode. Press the MODE button until the Eco mode symbol is displayed.
    c. Press the SET button until the display shows the hour and minute section flashing “00:00” along with “L1” displayed. Hours will flash first, set the desired time then press SET. The minutes will flash, prog.

Operating functions

Programming the timer function

d. Press the + or – buttons to move the time to the START time of the L1 heating period. Press SET to confirm this time. Then, move the time to the STOP time of the L1 heating period and press SET to confirm.

e. If a second weekday heating period is required, adjust the times for L2 using the same process as step 2.c. If no additional weekday heating period is needed, press SET at 00:00 for both the start and finish times of L2. Repeat steps 2.c and 2.d for the weekend heating times.

WARNING: For the appliance to heat on weekends, at least one weekend heating time (either L3 or L4) must be set.

Installing the PV communication cable

Warning: Installation must be carried out only by a licensed electrician
This appliance is fitted with a communications cable for connecting to solar PV and smart grid systems. This cable is designed for connecting to dry contact connections from these systems.

Note: Each solar PV and smart-grid communications system can be set up using a different method. To understand how each inverter or smart grid comms unit is set up, please contact the manufacturer of the solar PV inverter or smart grid comms module.

1. **Step one:** With the appliance off The Haier heat pump comms cable comes fitted inside the appliance module. To find this cable, remove the cover of the appliance by removing the 8 x screws of the module cover. You will need to unplug the IU/controller.

2. **Step two:** Connect a communications cable to the correct standard (2 x1.5mm). Make the connection inside the module. The connection should remain inside the module, with the communications cable fed through the cover to the inverter or dry contact fitting.

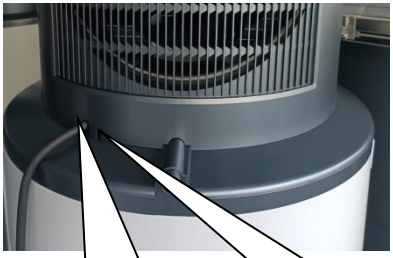
3. **Step three:** Wire the other end of the comms cable into the dry contact of the solar PV inverter or its communications accessory.

Operating functions

Programming the timer function

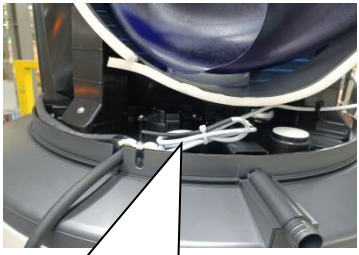
Note: The power supply cable and the communications cable need to be run in separate conduit pipes. Preparation should be taken to keep these lines separated from each other.

Communication cable location:



Power line out of the box position

Location of the signal line out of the box



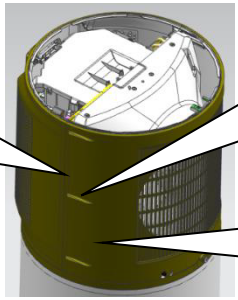
The signal wire bundle is positioned near the wire clamp clip the hood

Cover shell disassembly:

Maintenance cover

Service cover fixing screws

Front over shell



Cover shell fixed screw

The rear cover shell

Remove the service cover fixing screws. The service cover rotates counterclockwise to be removed. Remove the 6 cover shell fixed screw to remove the front & rear shell.

Operating functions

Programming the PV Mode

Note: The solar PV inverter or comms box should have the ability to program a power export threshold at which the dry contact switch will be activated. It may also allow programming for ‘closed’ for activated or ‘open’ for activated. Take note of which option the relay is set for.

1. **Step 1:** Program the threshold setting in the inverter or comms module, understanding if it will be signaled by an open or closed switch.

2. **Step 2:** Ensure the PV comms signal type is set.
    a. Open the service menu, Press (+) and (SET) with the appliance in standby and hold for 10 seconds.
    b. The screen should show LL, indicating the PV comms signal type adjustment. Change this to NO (normally open) or NC (normally closed) to match the signal setting on the inverter or comms module.
3. **Step 3:** Ensure the Eco Mode is set to ‘PV mode’.
    a. Still in the service mode, Press (**SET**) to change the displayed value to (LP – Eco Mode Setting).
    b. Press (+) or (-) until the screen shows “03 – PV mode”, and then press SET.

4. **Step 4:** Program the PV mode settings to suit the application.
    a. Use the table on page 34 to understand the setting requirements for the application.
    b. In the service mode, program the settings shown in the table for LA (PV function activation in Auto mode), Lb (Temperature setting in PV mode), and LC (Heating selection in PV mode).

5. **Step 5:** Change the user settings of the appliance.
    a. With the appliance switched on, press the MODE button until the appliance is in ECO mode. The ECO symbol with the leaf should be illuminated.
    b. Change the standard set temperature (i.e. the set temperature for when the appliance isn’t receiving a PV signal) to match the requirement in the table on page 34.

						User Settings	
	PV comms signal type	Eco mode setting	PV function activation in Auto mode	Temperature setting in PV mode	Heating selection in PV mode	User Mode	Set Temperature (AUTO w no PV Supply)
Displayed code	LL	LP	LA	Lb	LC	AUTO, ECO, ELEC	35 - 75
Factory Setting	NO	01	ON	65	01		60
Code option	NO, NC	01, 02, 03	ON, OFF	65 - 75	01, 02, 03		35 - 75
Description	NO = Normally open NC = normally closed	01 = Timer mode 02 = Smart Grid mode 03 = Solar PV mode	ON = PV mode will activate in AUTO mode. OFF= PV will not activate in AUTO mode.	Adjusts the set temperature when PV mode is activated	01 = Heats via HP & element similtaniously. 02 = Heats via the HP, then element above 65°C. 03 = Heats via the HP only.	AUTO = Auto mode Eco = Eco mode for PV. ELECT = Electric only mode for servicing	35-75
Programming method							
The most efficent use of energy	PV System Dependant	03	ON	65		AUTO	35
Heats only when Solar PV electricity is available	PV System Dependant	03	OFF	75		ECO	-
Highest assurance that hot water will be available.	PV System Dependant	03	ON	75		AUTO	50
Storing the highest volume of hot water	PV System Dependant	03	ON	75		AUTO	35
The fastest recovery of hot water/ using PV energy quickly	PV System Dependant	03	ON	75		ECO	35

Operating functions

Hot water recovery & heating times

Ambient air temp (dry/wet) (°C)	Start water temp (°C)	Finishing water temp (°C)	Heating time (h)
2/1	9	60	13.48
9/8	9	60	9.58
19/15	9	60	5.82
33/26	9	60	5.17

As the ambient air temperature decreases, the efficiency and heat output of the heat pump also decreases. Lower air temperatures mean that there is less heat to be extracted from the air, which directly leads to the reduction of heat production from the heat pump unit.

In a low temperature environment, the surface of the evaporator can easily frost. This increases the heat transfer resistance and the time taken to transfer the heat to the water. In frost conditions, the heat pump will periodically switch to a defrosting mode in place of heating, which also extends the heating time.

Checking and maintenance

- Installation and maintenance of the appliance must be undertaken by a qualified professional.
- Before working on the appliance, shut down the machine and cut off the power supply at the switch.
- Do not touch with wet hands.
- Maintenance operations are important to guarantee optimal performance and extend the life of the appliance.

Checking the PTR valve

- Operate the PTR valve at least once every six months to ensure it functions correctly. Lift the lever on the PTR valve. It should release water for 5 seconds. Gently lower the lever until the water stops. Do not let the lever go, as this could damage the valve. If water is not released, contact Haier Customer Care or a qualified plumbing tradesperson to resolve the issue.

Excessive discharge from the PTR valve

- A small quantity of water is expected to be released from the PTR valve during each heating cycle of a storage water heater. If the volume is greater than a bucket of water every 24 hours or there is continuous running or dripping of water from the valve, there may be an issue with the valve.

- If there is a continuous run from the valve, gently activate the valve lever for a few seconds. If the discharge stops, foreign matter may have been dislodged from the valve. If the PTR valve continues to run at a high rate, the water pressure exceeds the design pressure of the water heater. This issue can be resolved by a plumber fitting a Pressure Limiting Valve (PLV). Alternatively, the valve might be faulty and need replacing.

Checking the expansion control valve

- The cold water expansion control valve is expected to allow a small quantity of water to be discharged during the heating cycle. If it discharges more than a bucket of water per day or continuously, there may be another issue. If the valve leaks continuously, try easing the lever for a few seconds. This will dislodge any foreign matter that could cause the issue.

- Operate the valve’s lever often to remove foreign matter and check for a blockage in the valve’s drain line.

Checking and maintenance

Checking the pipework

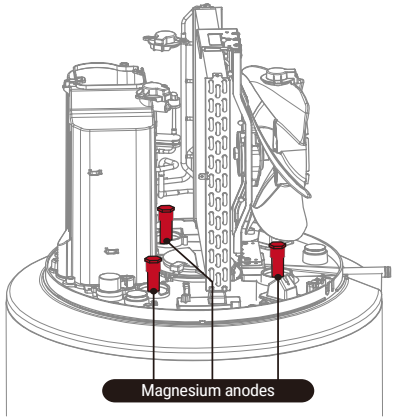
- Check the water tightness of the water pipework connections and pipework. Drainpipes should drip occasionally, but they should not run.

Checking the condensate drain

- Check the condensate drain on the appliance. If it blocks, it may cause the heat pump to flood.
- Also, check the drainpipes from the PTR valve and CWEV. They should flow freely and should not be blocked.

Checkingthe anode

- Checking and replacing the anode must be carried out by a qualified plumbing tradesperson.
- To avoid irreversible corrosion of the cylinder, it is recommended to check the anode every five years and replaced if required.



Cleaning the fan & evaporator

- The fan should be checked annually for dust buildup. If cleaning is required, contact Haier Customer Care or a qualified professional.
- Checking and cleaning the evaporator must be completed by a qualified professional.
- It is recommended that the evaporator is cleaned every two years.
- Clean the evaporator with a soft brush and water if required. Do not use cleaners on the evaporator fins.

Scrapping and refrigerant recovery requirements

Only a qualified professional can scrap the appliance, safely recovering the appliance's refrigerant. Contact Haier Customer Services for advice on correctly disposing of this appliance.

Faults and protection

Water Quality

A breach of this condition may void the warranty if exceeding these characteristics causes damage to the water heater.

Water supply from an unfiltered source that is highly conductive or has a high mineral content may void the system warranty.

The following characteristics should be within the warranty conditions not to be breached.

Water Properties	Acceptable Levels
Total hardness	200 mg/litre or ppm
Total Dissolved Solids (TDS)	600 mg/litre or ppm
Chloride	250 mg/litre or ppm
Magnesium	10 mg/litre or ppm
Sodium	150 mg/litre or ppm
pH	Min 6.5 to Max 8.5
Electrical conductivity	850 µS/cm

Please be advised that in areas of geothermal activity where sulphur or salt contamination or corrosion may occur, additional protection to your appliance's copper pipework will be required.

Please contact Haier Customer Services for appropriate advice.

Faults and protection

Fault type	Action	Digital indication	Release
Communication fault	Communication failure between Wi-Fi module and control board	F0	Please call Haier CustomerService to resolve the issue.
Compressor protection	Operating temperature protection	F2	
	Air exhaust temperature protection	F3	
	Evaporation high temperature protection	F5	
Compressor over-current protection	Over-current protection	F6	
Electricity leakage alarming	Automatic disconnection of power supply due to line fault	E1	Please call Haier CustomerService to resolve the issue.
Over temperature alarming	The actual water temperature≥85°C	E2	
Fault of the inner temperature sensor	If short circuit or circuit break occurs to the sensor	E3	
Fault of the ambient temperature sensor	If short circuit or circuit break occurs to the sensor	E4	
Fault of the evaporation temperature sensor	If short circuit or circuit break occurs to the sensor	E5	
Fault of the air-exhaust temperature sensor	If short circuit or circuit break occurs to the sensor	E6	
Fault of the air intake temperature sensor	If short circuit or circuit break occurs to the sensor	ED	
Communication fault	Abnormal communication of main control panel and display panel	E7	
Pressure switch protection	Action of the pressure switch at the exhaust outlet	E8	
Ambient temperature protection	Ambient or outdoor temperature <-7°C or>45°C	E9	
Fault of the Off-peak power switching signal	If not received the Off-peak signal when selecting switch signals by power companies	EF	
Fault of the fan	Fan blade is stuck or fan and control panel communication failure	L7	
Transient hardware overcurrent of the compressor phase current	The MCU detects a low level input at the FO port or a bus current greater than the 19.4A peak threshold set by the MCU internal comparator	P1	Switch the appliance off then on again.
Compressor phase current software transient overcurrent	The instantaneous output current is greater than 17A	P2	Appliance auto corrects. Please call Haier Customer Services if the fault remains\
The heat sink (IPM) temperature is too hig	IPM module temperature > 100 ° C	P3	

Faults and protection

Fault type	Action	Digital indication	Release
Input overflow load	The input current RMS exceeds 18A or peak output current is ＞17A	P4	Appliance auto corrects. Please call Haier Customer Services if the fault remains\
undervoltage protection	Bus voltage below 200V lasts for 5ms	P5	
Over Voltage Protection	PFC voltage or bus voltage VDC greater than 390V for 5ms	P6	
The communication between the main control chip and the driver chip is abnormal	The master control and driver cannot receive data or a data error persists for 2 minutes	P7	
The current detection on the frequency conversion side is abnormal	Before the compressor is in operation, there is a 10%-20% deviation between the AD value of the incoming voltage detected by the sampling circuit and the AD value of 1.65V	P8	
Compressor out of step	The actual running speed of the compressor is less than 50% or more than 120% of the target speed of the drive for more than 5S	PB	
Instantaneous Software Overflow on the rectifier Side	The instantaneous value of the input current is greater than 30A for 3 times, and each PWM cycle is detected once	PD	Switch the appliance off then on again.
Transient hardware overcurrent on the rectifier side	The instantaneous input current is greater than 31A for four times	PF	

Faults and protection

The  symbol on the product or on its packaging indicates that this product is not to be treated as regular household waste. It must be taken to a recycling collection point for electronic equipment. By properly disposing of this product, you are contributing to the preservation of the environment and the wellbeing of your fellow citizens. Improper disposal is hazardous to health and environment. You can obtain further information on how to dispose of this product correctly by calling Haier Customer Service.

Haier

Haier Appliances
Australia 1300 729 948 | haierhome.com.au
New Zealand 0800 424 372 | haierhome.co.nz

Fisher & Paykel Australia Pty Ltd, Level 1, 1 Eden Park Drive, Macquarie Park, NSW 2113.
Phone Customer Care: 1300 729 948.

Fisher & Paykel Australia Pty Ltd, 78 Springs Road, East Tamaki, Auckland 2013.
Phone Customer Care: 0800 424 372.

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