Siddons
SOLARSTREAM

AIR TO WATER

HEAT PUMP WATER HEATER

Owner's Manual

BOLT-ON split system models:

MAHRW010ZB/P	without storage tank
MAHRW010ZB-250SS	stainless steel tank
MAHRW010ZB-315SS	stainless steel tank
MAHRW010ZB-250VEO	vitreous enamel tank
MAHRW010ZB-315VED	vitreous enamel tank

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SIDDONS SOLARSTREAM Pty Ltd

Contents

Contents

Contents

1. One of the World's Most Efficient Ways to Heat Water

1.1 Introduction

Congratulations on purchasing a Siddons Solarstream energy efficient Heat Pump Water Heater, designed for Australian conditions to produce many years of low energy hot water. This water heater typically uses up to 75% less energy than a conventional electric element water heater by absorbing heat from the surrounding air of between -5 and 45 degrees C, night and day. It works in hail, rain and shine and becomes more efficient as the air temperature and humidity rise. You can expect around 20 to 25% greater efficiency per 10 degree rise in the ambient air temperature.

Siddons, with its partners, designs and manufactures energy efficient Heat Pump Water Heaters for global markets using the best quality components sourced from Australia, Germany, Japan and China.

Heat Pump Water Heaters can be used for factories, schools, hotels, motels, restaurants, hospitals, beauty salons, spas, laundries, etc.

1.2 Dynamic Cycle Flow Heating System

The Dynamic Cycle flow heating system is used to convert an average of 1 kW of input electrical energy into 3.5 kW of heat energy, more or less, depending on ambient air temperature and humidity. Cold water from the bottom of the storage tank is cycled through the heat exchanger in the Heat Pump outdoor unit then back to the storage tank until all the water is completely heated.

As the name implies, an air to water Heat Pump Water Heater is a machine that pumps or transfers heat absorbed from the ambient air into the water. Even at - 5 deg C, there is enough heat in the air to boil the liquid refrigerant into a gas. Once in the form of a gas, it can be compressed to superheat up to 95 deg C; this heat is then pumped into the water through a double layered, tube inside tube heat exchanger. One tube takes the hot compressed gas whilst the other takes the cold water from the tank so the heat from the hot gas is transferred to the cold water, heating up the whole storage tank. This gives:

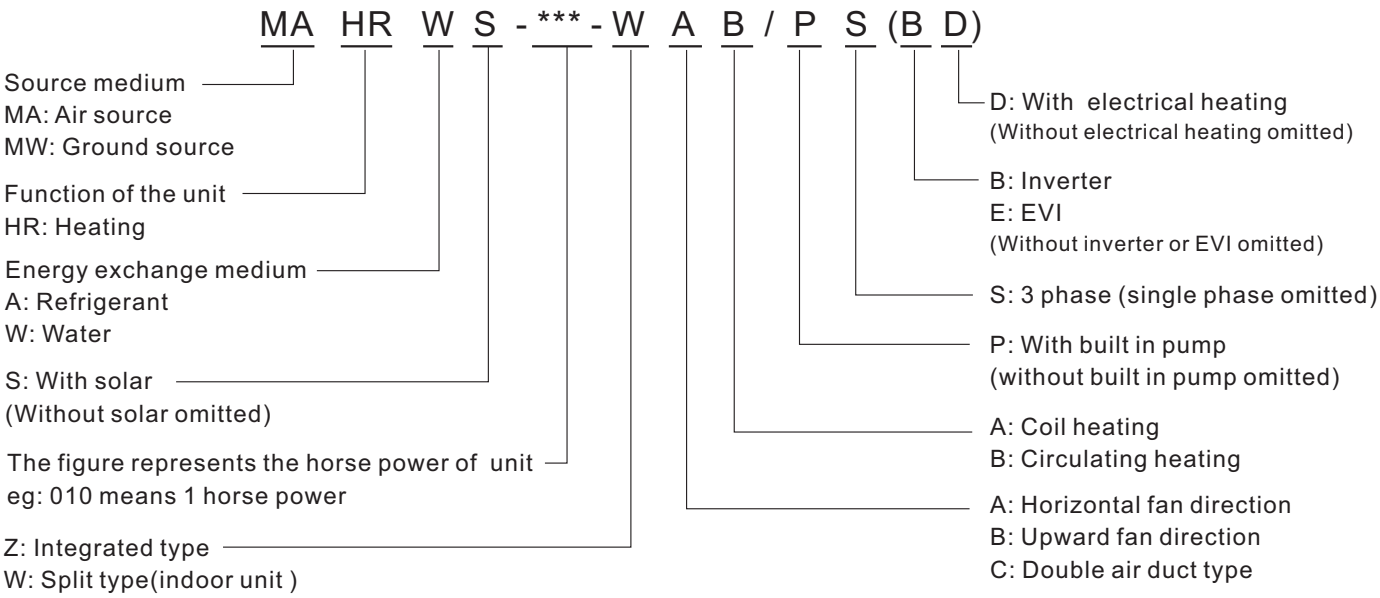
- Excellent heating efficiency
- Stable hot water without over heating at the top or under heating at the bottom
- All of the tank water is heated with no cold cone at the bottom

1.3 Reduce Greenhouse Emissions

With a Siddons Solarstream, you are greatly assisting the reduction of global greenhouse gas emissions if you can replace bottled gas, wood fired or a conventional electric element water heater, the latter typically consumes 1/4 to 1/3 of a household's power usage. If you want your water heater to be completely carbon neutral, then also install a renewable electricity generating system such as Photo Voltaic solar panels and/or wind power.

1.4 Specifications

Model Nomenclature

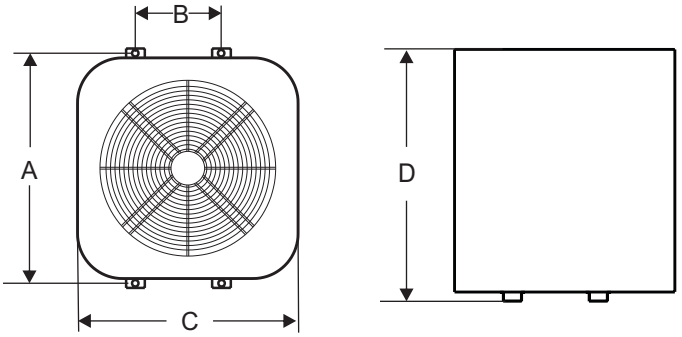


Model Number	MAHRW010ZB/P	
Rated Heating Capacity (1)	kW	3.5
Rated Input Power (1)	kW	0.97
Rated Input Current (1)	A	4.4
Rated COP (1)	W/W	3.6
Rated Heating Capacity (2)	kW	2.8
Rated Input Power (2)	kW	0.84
Rated Input Current (2)	A	3.8
Rated COP (2)	W/W	3.3
Hot Water Recovery Rate (average)	L/h	75
Maximum input current	A	6.6
Power Supply	V/Ph/Hz	220~240/1/50
Maximum water inlet temperature	deg C	55
Maximum water outlet temperature	deg C	60
Noise	dB(A)	48
Compressor type		Rotary
Water Outlet/Water Inlet	Inch	3/4
Water Flow Volume	m^3/h	0.6
Refrigerant type		R134A
Heat Pump Dimensions (L/M/H)	mm	590/540/690
Shipping Dimensions (L/M/H)	mm	640/590/725
Heat Pump Weight	kg	55
Shipping Weight	kg	60

Notes:
Scenario (1): Outdoor air temp Dry Bulb 20 / Wet Bulb 15 deg C
Scenario (2): Outdoor air temp Dry Bulb 7 / Wet Bulb 6 deg C
Water tank temp rise 40 deg C

1.5 Schematic

Appearance and Mounting Dimensions



Units: mm

Size \ MAHRW	010ZB/(P)
A	566
B	180
C	540
D	690

Note: For water pipe connection instructions, refer section 2.5 below.

2. Installation Details

2.1 General Installation Requirements

This water heater must be installed by a licensed trades person in accordance with:

1). AS 3500.4, National Plumbing And Drainage Code, Part 4: Hot Water Supply Systems

2). AS 3500.4.2, National Plumbing And Drainage Code, Part 4.2: Hot Water Supply Systems Acceptable Solutions

3). Other relevant Australian Standards, Industry or Local Water Supply regulations or codes for mains pressure storage tanks

Note: This water heater is not suitable for pool heating or building heating.

2.2 Not suitable for Pools and Spas

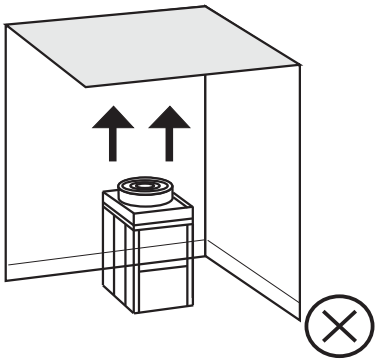
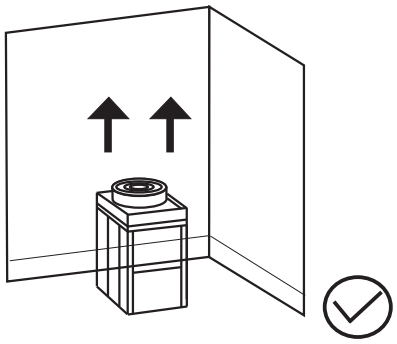
Note, this heat pump is not suitable for pool or spa heating due to the high levels of salt and/or chlorine used and volume of water to be heated. If used for such applications, your warranty will be void.

2.3 Heat Pump Positioning

The heat pump extracts heat from the air being drawn through the fin coils of the evaporator. This produces cold outlet air as a by-product. In order for the heat pump to operate efficiently, good ventilation is required to extract the heat from the air easily and therefore the heat pump is best located outside.

The cold exhaust air should not be allowed to feed back into the inlet or operational efficiency will be reduced. The heat pump should not facing into a prevailing wind. However, alternate locations may be used such as a large double garage (minimum of 120 cubic metres).

The R134a refrigerant used has a boiling point of minus 26 deg C so there is no risk of damage to the heat pump from frost. Performance may be reduced in very low temperatures but the system will not be damaged by such climatic conditions.

Wrong	Right
	

Notice:

1) Keep enough space around the unit for maintenance access with at least 200mm of clear space for evaporator coils so there is good air flow into the evaporator.
2) Ensure the heat pump is sited onto a flat, level surface. Use a 600mm x 600mm concrete slab if the installation base is not solid.
3) Install the metal feet of the heat pump onto the rubber feet supplied and bolt it onto the base.
4) It is a good idea to install the heat pump with some weather protection such as an eave to protect against direct sunlight which may make the fan blade brittle over time.
5) Protect the heat pump from salt spray if near the coast as this will reduce its operating life.
6) Ensure there is space above the heat pump for the outlet air to blow upwards unimpeded.
7) The heat pump and storage tank may be installed on a balcony, roof, floor or other convenient place but you must ensure your site has load-bearing to cope with the weight as specified plus the weight of the water inside the storage tank (1kg per litre).
8) During operation, condensate water will flow from the evaporator so use a length of hose connected to the drain hole elbow to take the condensate water to a drain.
9) If your only option is to locate the heat pump inside a large internal space such as a garage, this space should be well ventilated or the heat pump will turn it into a cool room and your heating efficiency will decrease (keep in mind that a 10 degree C reduction in air temperature will cause approximately 20-25% lower efficiency).

2.4 Evaporator Drain

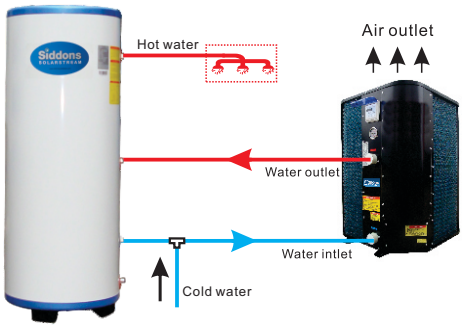
During operation, considerable amounts of condensate water will flow from the evaporator drain. If allowed to simply flow out of the outlet, this water may pool below the unit and can cause problems to both the water heater and area around it. The evaporator drain should be properly drained using a length of hose or pipe in accordance with regulations but must not be connected directly to the PTR valve or expansion valve drain.

2.5 Water Pipe Connections

1) Water pipe connections should be heat-resistant, rust-proof, resist fouling and conform to national health and safety standards. The water pipe can be stainless steel pipe, copper pipe, aluminium water pipe, hot water PPR pipes, etc.
2) Ensure all water pipes are clean and rust free to prevent pipe blockage.
3) The water circulating pipes from the heat pump should be installed with the least amount of bending and distance from the water storage tank for optimum efficiency. We recommend between 2m to 5m as an ideal distance for the water circulating pipes.

4) The water outlet of the heat pump should connect to the hot water outlet port of the storage tank.
5) Ensure that all the pipes are tightly connected and test for leaks.
6) Apply insulation onto the pipes and plumbing fittings to minimise heat loss.

Water Circulating Pipe Connection Instructions:



Option A: Single set of water inlet/outlet ports plus ring main return port or removable electric element

Use a Tee Piece and one-way valve on inlet cold water pipe from the water storage tank to add the water circulating inlet pipe to the heat pump with return water flowing back to the middle ring main or solar return port on the hot water storage tank.

Alternately, if you are retrofitting to an existing electric element storage tank, the electric element can be removed and replaced with a snorkel fitting from Siddons to create a solar return port returning the heated water to the middle of the storage tank.

Option B: Double set of water inlet/outlet ports plus ring main or sensor port for solar return from the heat pump

Connect the heat pump water circulating inlet pipe to the spare cold water inlet port on the water storage tank with return water flowing back to the middle ring main port.

Alternately, Siddons can supply a dual sensor probe pocket and solar return port fitting to be retrofitted into this sensor port socket.

2.6 Electrical Connection

The Bolt-on heat pump has been tested to AS/NZS 60335-2-40 for electrical safety. A certified electrician must carry out all electrical work in accordance with all regulations including AS3000.

A 15-amp circuit breaker is recommended with dedicated line to the heat pump. An approved, standard 240V 15A On / Off isolating switch or Junction Box must be installed within eyesight of the Bolt-on heat pump.

Key points:
1) The heat pump should be supplied with a dedicated 240 Volt 15 Amp power supply
2) The heat pump power supply circuit must have a grounding wire
3) Power lines and signal lines should be neat and rational, with strong and weak lines separated so they cannot interfere with each other, with good distance between lines
4) Electrical maintenance must be done by qualified electrician (circuit diagram below)
5) The Bolt-on heat pump must be installed in accordance with AS3000 and all regulations.
6) Printed circuit board code MK4068
7) Fuse specifications: 5A/240V

Electric wire selection:

Mode	Host Power	Phase line	Zero line	Ground line	Max.line length (m)	Signal line	Tem. sensor assistance line	Max.line length (m)
010ZB/(P)	220V/1PH/50Hz	1.0mm^2	1.0mm^2	1.0mm^2	15	0.5mm^2	0.5mm^2	50

2.7. Storage Tank Positioning

For all models, it is best to install the storage tank close to the water outlet that has the greatest usage of hot water, such as the kitchen, laundry or bathroom. Ensure adequate access for service to the sensor and Pressure and Temperature Relief (PTR) valve. Ensure the specification label is visible.

For glass/enamel storage tank models, leave adequate clearance above the appliance, preferably the length of the water heater, for inspection or service to the anode through the top of the tank. If adequate room is unavailable, this appliance must be disconnected and removed for service.

For stainless steel storage tank models, this requirement isn't important as there is no anode to change.

It is recommended that hot water outlet pipes are fully insulated with weather proof insulation such as Armaflex. The hot water outlet pipe should be angled down at about 15¡ minimum for the first 250mm after exiting from the storage tank outlet. This will create a heat trap that will avoid any thermal siphoning from the storage tank.

It is normal for the PTR valve to discharge water, especially after the heating cycle has completed and this should be discharged into a drain, clear of paved areas to prevent possible damage or injury, in accordance with regulations.

2.8. Outdoor Installations

For outdoor (external) installations, a 100mm thick plinth or concrete base pad is recommended in accordance with Australian Standard AS/NZS 3500.4 to properly support the storage tank such that the storage tank is assured of remaining in a vertical position throughout its usable life and not lean over due to possible erosion of soil under the plinth, or such risk.

2.9. Indoor Installations

For indoor (internal) installations, the storage tank should be installed onto a safe tray with drain hose connected to a drain, in accordance with regulations.

2.10. Siesmic Restraint

If you live in an area subject to seismic building code, you must restrain the tank to a wall using Stainless Steel bands that do not pierce the tank.

2.11. Filling the Storage Tank

Fill the water storage tank by opening all hot water taps and also the isolating valve on the water inlet pipe. Let the cold water flow into the storage tank until it is full. The air in the water pipes will be expelled through the opened hot water taps. Let the water flow out of the hot water taps for a few minutes to completely expel all of the air in the water pipes then close each of the hot water taps. Check the pipes and plumbing fittings for any water leaks. If no water leaks, then the water heater is ready to be turned on.

If the heat pump continues operating for approximately 5 minutes, then it is functioning satisfactorily.

If the heat pump stops operating within 5 minutes, then air is still likely trapped in the water pipes. Power off the heat pump and open the hot water taps again for a few more minutes to let the water flow out, then power up the heat pump again.

Follow the above process again if the heat pump does continue operating.

Alternately, remove the flat base plate from the heat pump underneath the curved corner plate to reveal the water pump. Turn the centre screw to release air, then re-tighten and replace the base plate.

2.12. Legionella
To kill legionella bacteria that may grow in potable water, AS 3498 requires that a storage type water heater raise the water temperature at the hot water outlet to at least 60 degree C. Therefore, we recommend that you leave your Solarstream switched on when you are away, where it will typically turn on for a short run every several days to raise the water temperature in the tank back to 60 degree C.

2.13. Scalding
To minimize scalding, especially for those people in high scald risk categories such as young children, people with potentially incapacitating medical conditions and elderly people, the Solarstream must be installed in accordance with the Australian Standard AS/NZS3500.5. This will ensure that new hot water installations deliver tempered water not exceeding 50 degree C to bathrooms and other locations used primarily for personal hygiene purposes.

2.14. Pressure Limiting Valve
This water heater is designed for connection to a maximum water supply pressure of 500kPa. Where the mains pressure can exceed or fluctuate beyond this pressure, a Pressure Limiting Valve complying with AS1357 must be fitted to the cold-water supply line. This device must be installed after the stop / isolating valve and set at 500kPa. Failure to install this device correctly will void your warranty and likely cause damage to your water storage tank, plumbing components and fittings. It will also cause malfunctioning of the PTR and ECV valves.

2.15. Cold Water Expansion Control Valve
A Cold Water Expansion Control Valve (ECV) should be fitted when the water supply has a tendency to form scale. This type of water is referred to as hard water or scaling water because calcium carbonate is deposited out of the water onto any hot metallic surface. The fitting of an ECV is mandatory in WA, SA and some other areas of Australia for this reason as per local regulations. If you don't have a water supply from a mountain reservoir, then check this point with your plumber. The ECV should be rated at 700kPa, 200kPa more than the Pressure Limiting Valve, and 150kPa less than the PTR Valve.

2.16. Stop / Isolating Valve
An approved stop / isolating valve, non-return valve, line strainer (optional but recommended), and union must be fitted between the main supply and the inlet socket of the water storage tank.

2.17 Pressure and Temperature Relief Valve
The Pressure and Temperature Relief (PTR) valve is designed to relieve the increased water pressure during the normal heating cycle of the water heater.

The Pressure and Temperature relief valve, which is supplied with the unit, must be fitted and made accessible so that the release mechanism can be operated and, if required through malfunction / wear and tear, the PTR valve should be replaced. The outlet of the PTR valve must be suitably drained to remove the water discharged during the normal heating cycle in accordance with regulations.

Warning:
A separate drain line must be run for the PTR valve. It is not permitted to couple the drain lines from the PTR valve and evaporator into a single common line. It is acceptable to use a tundish under the evaporator drain connected to the drain of the PTR valve.

2.18. Hot Water Connection
The hot water pipe be connection is to a G3/4 / 25mm socket as shown in the Installation Diagram. NOTE: Plugs are supplied with the water heater to plug off the inlet / outlet ports that are not required. Ensure that adequate sealing tape is applied to the plugs for a tight, leak proof seal. We recommend insulating the unused inlet / outlet ports.

2.19. Tempering Valves
We recommend high quality, solar rated tempering valves fitted onto the hot water outlet for supply of tempered water to 50 degrees C, as per regulations, to bathrooms, etc.

2.20. Plumbing Components QIK Kit
The components of the QIK Kit have been designed to meet Australian plumbing regulations including insulating gloves on components.

SIDDONS recommends the Siddons Solarstream QIK Kit (QIK15-SHP) or equivalent for quality plumbing components for longer life of your Solarstream Water Heater and better installation.

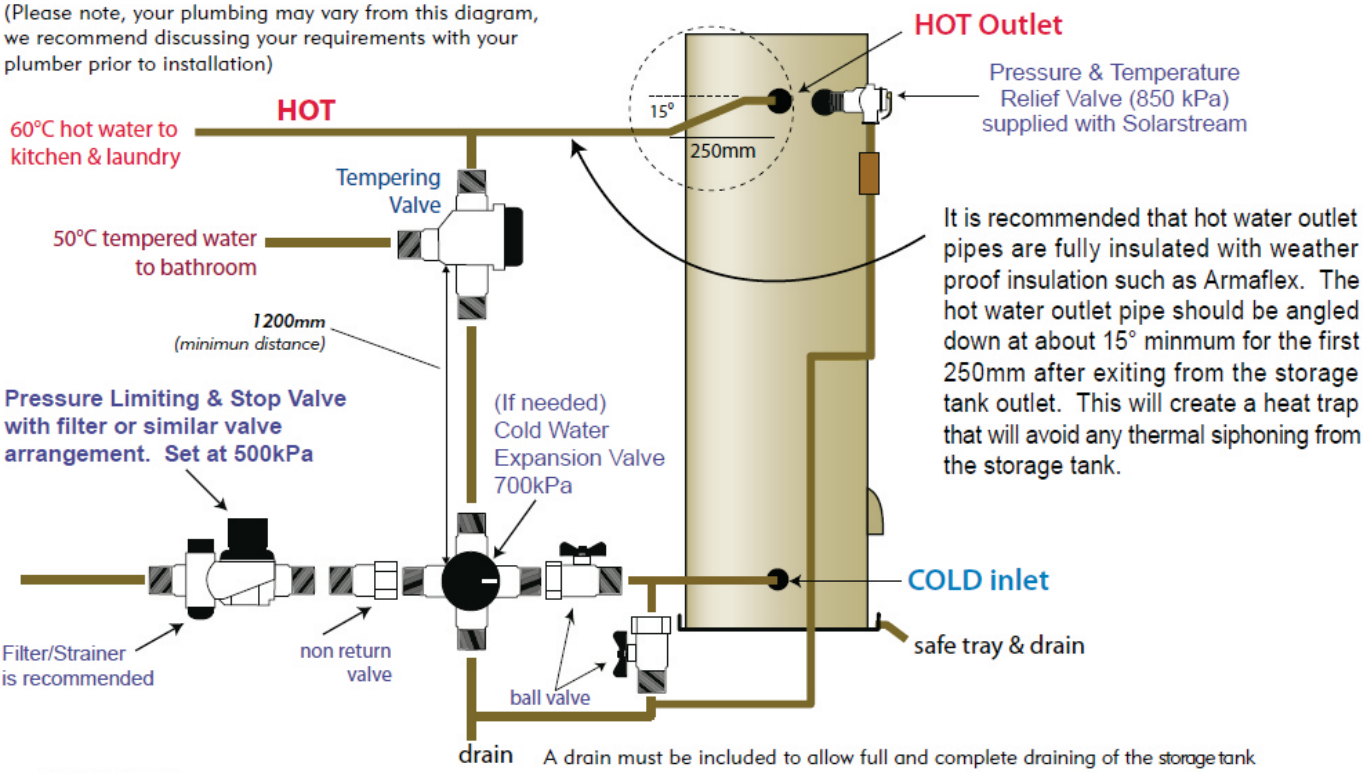
Water contains minerals which can cause problems especially when heated. Also, high water pressure will reduce tank life so the QIK Kit contains a pressure limiting valve rated to 2,000 kPa that will deliver water to the storage tank at an easy 500kPa. This will deliver good water pressure but not excessive pressure that will waste water and shorten tank life.

The 3 way Tee is designed to supply both cold and hot water to the Tempering Valve.

The inlet Tee is designed to incorporate the Pressure Limiting Valve, the Non-return Isolating Valve and the cold water Expansion Control Valve as well as supplying cold water to the cold side of the Tempering Valve.

EXAMPLE OF TYPICAL MAINS PRESSURE HOT WATER SYSTEM INSTALLATION

(Please note, your plumbing may vary from this diagram, we recommend discussing your requirements with your plumber prior to installation)



WARNING

A Pressure Limiting and Stop Valve with filter must be set at 500kPa. Failure to install this will void your tank warranty.

DO NOT DRILL ANY HOLES INTO THE STORAGE TANK CASING. IT MAY CAUSE DAMAGE OR LEAKAGE TO THE STORAGE WATER TANK INSIDE AND VOID YOUR WARRANTY

2.21 Corrosion Protection

Fittings to the casing in contact with the water must be galvanically compatible. Sealants and / or Teflon plumbing tape should be used on potentially galvanically incompatible fittings. This is to protect against possible electrolytic corrosion between the metals (where moisture penetration could occur due to incorrectly or poorly sealed fittings).

3. Operating Instructions

3.1. Powering Up

Use the ON/OFF button on the digital controller to power up the unit. If the heat pump continues operating for approximately 5 minutes, then it is functioning satisfactorily. If the heat pump stops operating within 5 minutes, then air is still likely to be trapped in the water pipes. Power off the heat pump and open the hot water taps again for a few more minutes to let the water flow out, then power up the unit again following the above process.

3.2. Pressure and Temperature Relief Valve Maintenance

The Pressure and Temperature Relief (PTR) valve lever should be operated at least once a year to ensure that the water-ways are clear and to remove any mineral deposits from the valve seat that may cause the PTR valve to leak. When manually operating the lever, water will discharge. Avoid contact with the hot water to avoid potential scalding.

If no water flows, the PTR valve is inoperative. Turn off the water heater and call a plumber immediately.

The PTR valve is designed for emergency safety relief only.

3.3. Water Quality

Your Solarstream has been manufactured to suit the water conditions of Australia, which is the driest continent on Earth and subject to extended periods of drought.

This can cause water supplies to become mineralised, which can have a detrimental effect on your storage tank and its life expectancy. Additionally, if you use a rain water supply, this may be acidic and therefore require pH balancing for longer life.

In general, we recommend a stainless steel storage tank for pure water coming from mountain fed reservoirs and a glass/enamel lined steel tank for all other areas. Our warranty policy sets out the water quality limits for stainless steel and glass/enamel lined steel storage tanks. Refer section 13.4 Water Quality Limits - Warranty Exclusion

3.4. Anode

For glass/enamel storage tank versions, your Solarstream is fitted with a magnesium (cap colour code 'Black') anode as standard. For hard /scaling water areas, we recommend an aluminium alloy anode for hard water (cap colour code 'Blue'). The anode should be examined or replaced once every 5 years by a licensed plumber to ensure its ongoing protection of your storage tank.

Your Solarstream should always be switched on to avoid possible accumulation of hydrogen gas which is flammable and may accumulate in the system. This may be observed as 'spluttering' when a hot tap is opened initially. To dissipate this gas safely, we recommend that a hot tap be turned on for several minutes or until the gas discharge ceases. Use a sink, basin or bath outlet, but not at 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.

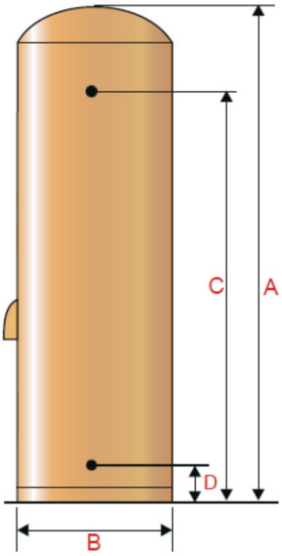
3.5. Draining the tank

Consideration should be given to draining the tank occasionally, particularly if your water supply is mineralised or hard/scaling. To do this, connect a hose to the cold water inlet and run it to a suitable drain. It will be necessary to disconnect the hot water outlet or PTR valve to relieve any partial vacuum created as the water flows out.

4. Storage Tank Specifications

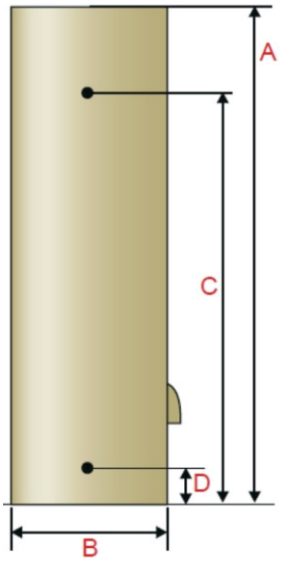
4.1 Stainless Steel Storage Tank Models

Model		MAHRW010ZB-250SS	MAHRW010ZB-315SS
Capacity	Litres	264	327
A Height	mm	1620	1980
B Diameter	mm	580	580
C Hot Water Outlet	mm	1136	1491
D Cold Water Inlet	mm	168	186
Dry Weight	Kg	62	73
Inlet Water Pressure	kPa	500	
PTR Valve (supplied)	kPa	850	
Cold Water Expansion Valve	kPa	700	
Water Connections		20mm, 3/4 inch BSP	
Material Type		Stainless steel (316 marine grade)	



4.2 Glass Lined / Vitreous Enamel Storage Tank Models

Model		MAHRW010ZB-250VEO	MAHRW010ZB-315VED
Capacity	Litres	270	340
A Height	mm	1388	1700
B Diameter	mm	648	648
C Hot Water Outlet	mm	1167	1464
D Cold Water Inlet	mm	74	74
Dry Weight	Kg	75	90
Inlet Water Pressure	kPa	500	
PTR Valve (supplied)	kPa	850	
Cold Water Expansion Valve	kPa	700	
Water Connections		20mm, 3/4 inch BSP	
Material Type		Vitreous Enamel / Glass Lined Steel	



5. Safety Information

5.1 Safety Devices

WARNING: This water heater is fitted with the following safety devices:
1. Digital Controller
2. A thermostat (connected to the digital controller) to manage water temperature
3. A thermostat (connected to the digital controller) to manage compressor temperature
4. A non self-setting thermal cut-out switch (incorporated into the digital controller)
5. Combination Pressure and Temperature Relief (PTR) valve

These devices must not be tampered with or removed.
The water heater must not be operated unless each of these devices is fitted and in working order. This appliance is not intended for use by young children and should be supervised to ensure that they do not play with the appliance.

Note :
If the supply cord is damaged, the local service agent or other similarly qualified person must replace it in order to avoid hazard.

5.2 Water Heater Unused for Long Periods

For glass/enamel models, where the water heater left operating but unused for two weeks or more, a quantity of hydrogen gas (which is flammable) may accumulate in the top of the water cylinder. To dissipate this gas safely, it is recommended that a hot tap be turned on for several minutes at a sink, basin or bath, but not a dishwasher, clothes washer or other appliance. During this procedure, there must be no smoking, open flame or any other electrical appliance operating nearby. If hydrogen gas is discharged through the tap, it will make an unusual sound similar to air escaping.

Caution: The water heater must be filled with water before turning on the electricity.
Caution: Do not drill holes in the outer metal jacket to avoid possible damage to water lines within the tank.
Caution: The water heater must be filled with water before turning on the electricity.

6. Maintainance & Service Information

The SIDDONS water heater is a completely sealed refrigeration system, similar to a household refrigerator. The maintenance program to be employed is not much different to that required for the maintenance of a refrigerator. However, the SIDDONS warranty may be void if any of the following conditions are not met or if the refrigeration lines or components are damaged or altered in any unauthorised way.
Refer Section 13 Warranty Policy for further information.

6.1 No Puncturing the Water Tank

The water tank must not be drilled or punctured. Drilled holes or punctures, may damage the water pipes located in the water tank.

6.2 Cleaning the Evaporator Coils

The water heater uses evaporator coils to extract heat from the air. The coil is extremely efficent in warm humid weather; however, as temperatures drop to 10 deg C or less the coil will begin to collect ice. The coil has been designed to auto-defrost under such conditions.

The defrost is automatic and is managed by the digital controller. It is important that the air inlet vents are kept clean. Restriction of air-inlet or air outlet vents may void your warranty if the system has been damaged because of insufficient airflow.

6.3 Sacrificial Anode

A sacrificial anode is fitted inside the vitreous enamel lined cylinder. Its purpose is to help protect the cylinder from the corrosive effects of water. Normally, the sacrificial anode should be inspected every fifth year and replaced if necessary.

In areas where hard water or poor quality water conditions exist, the sacrificial anode must be inspected ever y second year. Replacement anodes must meet SIDDONS' quality specifications and be appropriate for local water conditions. The anode socket in the top of the tank has a G1/2 /20mm thread and a socket wrench is required to unscrew it.

Before any electrical components are inspected the system MUST be turned off at the power switch/hot water circuit breaker. Do not touch wiring or any electrical components without supervision or training to Australian standards.

6.4 Capacitors

Capacitors are fitted to the heat pump to start the compressor, fan and circulating pump. These will wear over time and cause higher current draw. For preventative maintenance, we recommend all 3 Capacitors be changed after 4-5 years.

The specifications of these capacitors are as follows:

- Compressor capacitor: 30 uF, 450 VAC, 50/60 Hz.
- Fan capacitor: 2 uF, 450 VAC, 50/60 Hz.
- Circulating pump capacitor: 2.5 uF, 400 VAC, 50/60 Hz.

7.Routine Service

7.1 Access and removal of Sacrifical Anode

The anode can be accessed via the heat pump section for removal:
1. Turn off power to the unit, close the water isolating valve, open PTR valve to release pressure in the system.
2. The anode head can be unscrewed with a suitable socket wrench.
3. Once unscrewed, the anode can be drawn out through the top of the tank.
4. The new anode can then be fitted and the heater reassembled.

7.2 Flushing of Water Tank

As with other hot water heater tanks, dissolved solids in the water or scale may accumulate in the bottom of the water tank forming sludge. This is generally less a problem with SIDDONS units as no internal elements or burners are used. If such sludge buildup does occur, the following procedure can be followed to clean out the tank.

1. Turn off power to the unit.
2. Turn off water supply to the unit.
3. Remove the blanking plug (brass fitting) from the unused inlet (normally on the right hand side for left hand connected tanks). The inlets are at the bottom of the tank about 300mm up from the base.
4. Remove the blanking plug from the unused hot water outlet (normally on the right hand side for left hand connected tanks). The outlets are at the top of the tank.
5. Allow the water to drain from the tank. While the water is draining a non-metalic rod may be inserted through the open cold water inlet and used to break up any sludge and assist in its removal.
6. Care should be exercised during this procedure so as not tho damage the glass lining of the tank. The use of metal rods should be avoided and plastic or wooden rods used instead.
7. Turning the cold water supply back on while the tank is emptying or after the tank has drained and continuing with the mechanical agitation will further assist with the removal of the sludge.

7.3 Thermal Overload (Incorporated in Digital Controller)

All models are fitted with a digital controller for heat pump management. One function of the digital controller is to initiate a shut down and lockout if the compressor reaches a temperature of 105 deg C. The system will not automatically restart from this. Turning the power off then back on will also perform a reset. If the compressor shuts down again shortly afterwards, you may have a persistent problem with the refrigeration system, call a local refrigeration mechanic or SIDDONS for service.

8. Operation & Adjustment of the Digital Controller

Caution:
Alteration of the Digital Controller's programming and settings without authorisation from Siddons may void your warranty.

This following section is provided ONLY for qualified technicians to assist in installation, servicing, repairs or trouble shooting.

8.1 Optional Mounting and Fixing of the Remote Controller:

The remote controller is designed for standard wiring and to fit a standard electrical box with dimensions 86 x 86mm, fixed hole distance 60mm. The illustration below shows how to open and fix the controller and base box. You may request from SIDDONS extension wiring for the remote controller and a blank panel to fit onto the casing after relocating the controller.

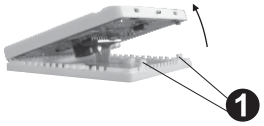


Illustration 1

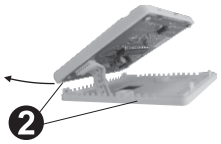


Illustration 2

❶ Use a flat screwdriver to press down the two tabs and lift open the face covering.

❷ Remove the top covering leftwards to disengage two top tabs.

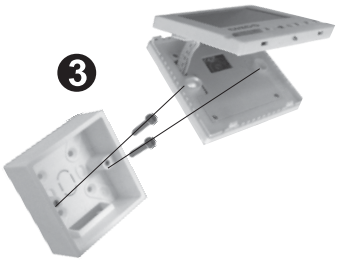


Illustration 3

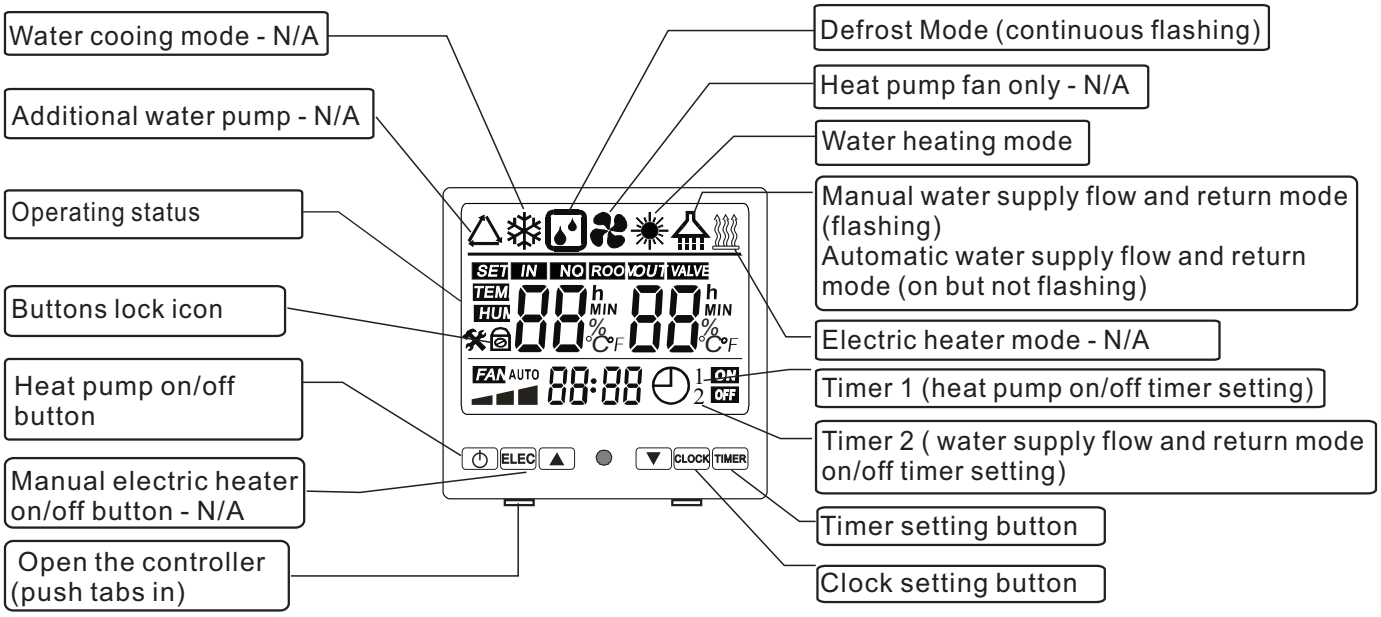
Illustration 4

❸ Put the digital controller into the base box and tighten the two setting screws.

❹ Complete the installation by pressing the digital controller down firmly to reengage the tabs.

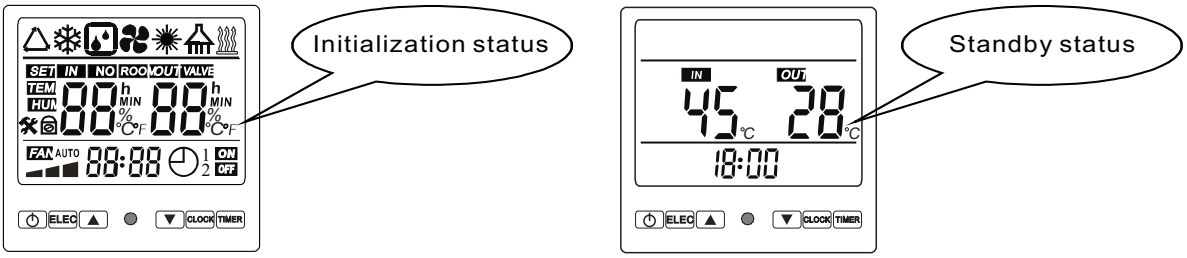
8.2 Use of Remote Controller

8.2a User Interface and Functions:



8.2b Initial Power On and Standby Status

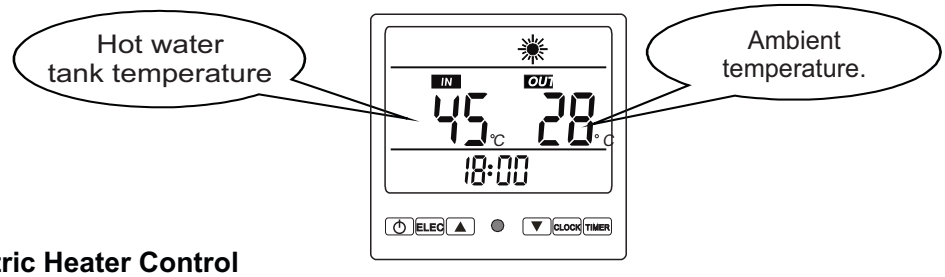
After first powering on, the remote controller will show the full screen display. After 10 seconds, it will show the Standby status with storage tank temperature, ambient air temperature and clock showing.



8.2c ON/OFF Control

ON/OFF ⏻ button. Press this button to power on and off. In the ON mode, the remote controller displays the operation mode, clock, timing status, bottom of water tank temperature and ambient temperature.

Notice: When the heat pump is turned on for the first time, the default 3 minute delay is not operational, but will revert from the second time it is turned on.

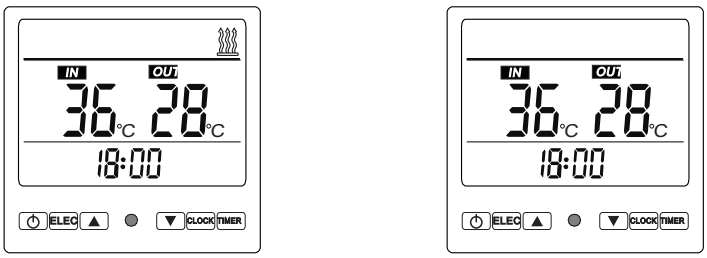


8.2d Electric Heater Control

NOTE: The electric heater control is not applicable to Australian BOLT-ON Heat Pump models.

A: Independent electric heater mode:

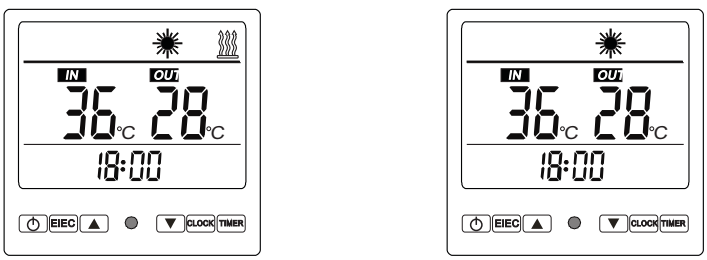
Under the turn off status, press the ELEC button, you can turn on the independent electric heater mode the sign of display on the interface like the picture 1. press the ELEC button again turn off the independent electric heater mode like the picture 2.



picture 1 picture 2

B: Auxiliary electric heater mode:

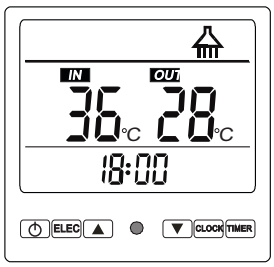
Under the turn on status, press the ELEC button, you can turn on the auxiliary electric heater mode, the sign of display on the interface like the picture 1. When the delay time which is begin when you turn on the unit is longer than the parameter of 3 setting, the electric heater signal will output. Press the ELEC button again turn off the auxiliary electric heater mode like the picture 2.



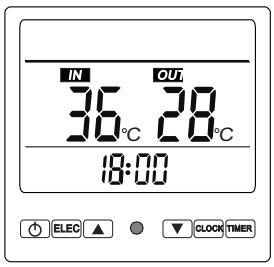
picture 1 picture 2

8.2e Turning On/Off the Ring Main Water Circulating Pump Manually.

Press the CLOCK button for 5s to turn on the water supply pump. The sign will display on the interface as in picture 1. Press the CLOCK button again to turn off the water supply pump as in picture 2.



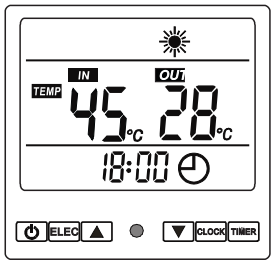
picture 1

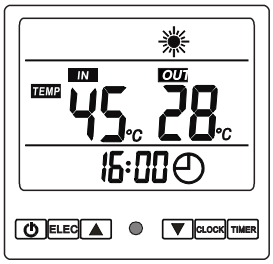


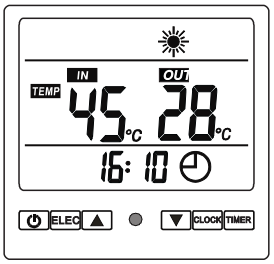
picture 2

8.2f Clock Setting

Under power-on or stand by status, press CLOCK to adjust the clock. The hour and minute display flickers. Press CLOCK again and the hour display flickers. Use ▲ ▼ to adjust the hour. Press CLOCK again. The minute display flickers. Use ▲ ▼ to adjust the minutes. Press CLOCK again to quit clock adjustment.

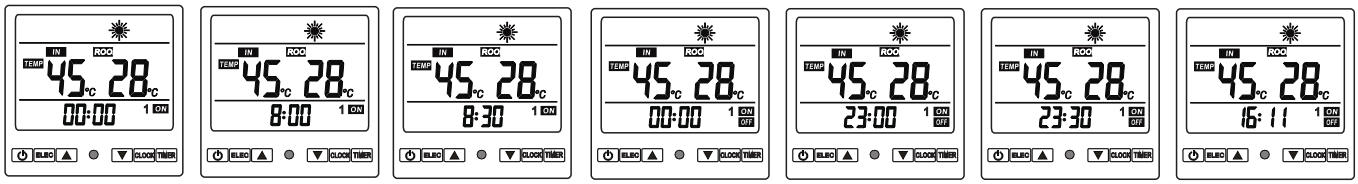






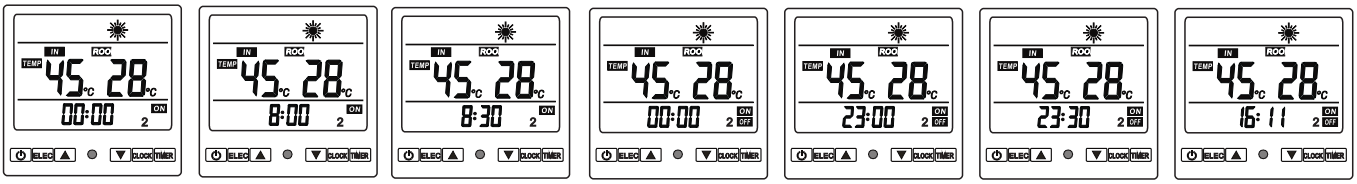
8.2g Timer1 ON/OFF Setting

Press TIMER button for hour, minutes and timing. The ON symbol flickers. Press TIMER again, the hour display flickers. Press the ▲ ▼ button to adjust the setting of the hour. Press TIMER button again, and the minute display flickers. Press ▲ ▼ buttons to adjust the minutes. Press TIMER button again and the hour and timer OFF symbol flickers. Press TIMER again and the hour display flickers, press ▲ ▼ button to adjust the hour setting. Press TIMER button again, and the minute display flickers. Press ▲ ▼ buttons to adjust the minute setting. Press TIMER button to exit the timer ON/OFF setting. The following example shows the heat pump set to turn on at 8:30 every morning, and turn off at 23:30 every night (Timer 1 turns the heat pump ON/OFF).



8.2h Timer2 ON/OFF Setting

Press TIMER for 5s to adjust the hours and minutes setting. The ON symbol flickers. Press TIMER again, the hour display flickers. Press the ▲ ▼ button to adjust the setting of the hour. Press TIMER button again, the minute display flickers. Press ▲ ▼ buttons to adjust the minutes. Press TIMER button again and the hour and timer OFF symbol flickers. Press TIMER again and the hour display flickers, press ▲ ▼ button to adjust the hours. Press TIMER button again and the minute display flickers. Press ▲ ▼ buttons to adjust the minutes. Then press TIMER button to exit the timer ON/OFF setting. The following example shows the heat pump set to turn on at 8:30 every morning, and turn off at 23:30 every night (Timer 1 turns the heat pump ON/OFF).



8.2i Cancellation of Timer Setting Operation

Press TIMER button, then press CLOCK button to cancel Timer 1.

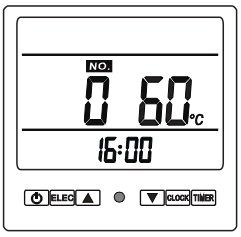
Press TIMER for 5 seconds, then press CLOCK button to cancel Timer 2.

8.2j Parameter Setting

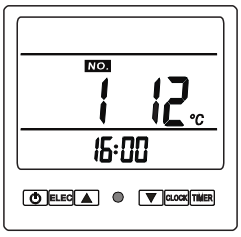
In the standby mode, press ▲ ▼ at the same time to interface with the parameters 0-17 and A-G. Choose the parameter you want to modify, then press ⏻ and ELEC at the same time to change the parameter setting, then press ▲ ▼ at the same time to modify the parameter value, then press ⏻ and ELEC at the same time to confirm the modification.

Note: 1. The parameters can not be modified in boot-up mode. They need to be modified in standby mode.

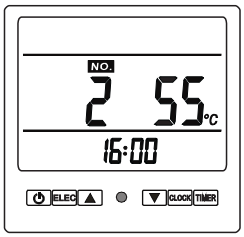
2. If you stop operations for 10 seconds, you will quit the parameter setting mode.



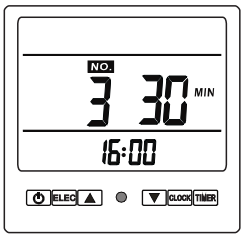
Parameter 0
Hot water tank temperature
Range: 10_i to 60_i.
Default: 60_i
Note: temperature rise above sensor probe approx 5_i



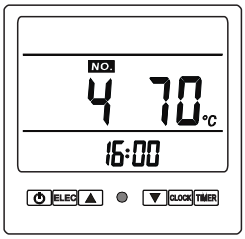
Parameter 1
Compressor restart dead-band differential temperature range.
Range: 2_i to 15_i.
Default: 12_i



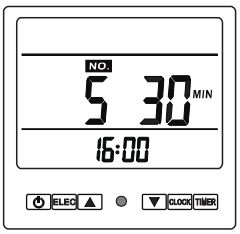
Parameter 2
Not applicable on this model



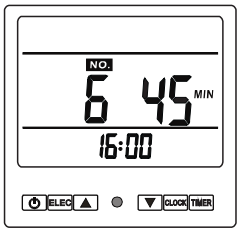
Parameter 3
Not applicable on this model



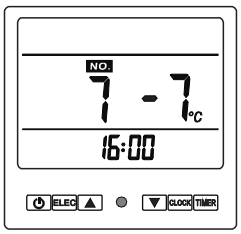
Parameter 4
Not applicable on this model



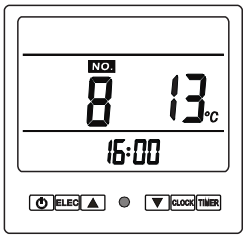
Parameter 5
Not applicable on this model



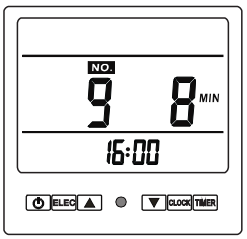
Parameter 6
Defrost cycle time out
Range: 30 to 90 min.
Default: 45 min



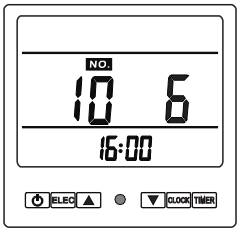
Parameter 7
Defrost enter temperature
Range: -30_i to 0_i.
Default: -7_i



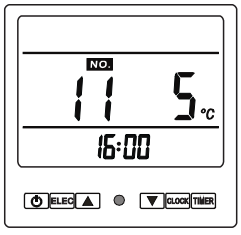
Parameter 8
Defrost exit temperature
Range: 2_i to 30_i.
Default: 13_i



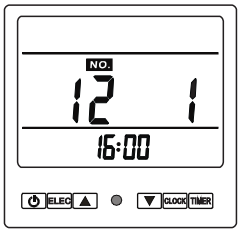
Parameter 9
Defrost time maximum time
Range: 1 to 12 min.
Default: 8 min



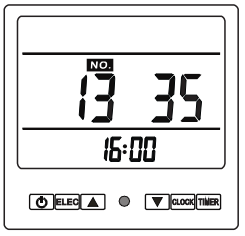
Parameter 10
Not applicable on this model



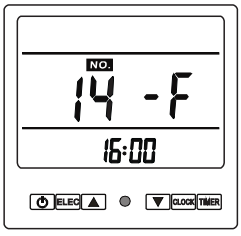
Parameter 11
The Target superheat temp. Alternative range:$-F(-15)_i$ to $F(15)_i$.
default setting:5_i



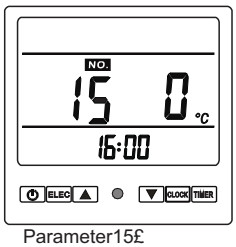
Parameter 12
Electronic expansion valves control the selection
0:mannual control
1:automatic control
default setting:1



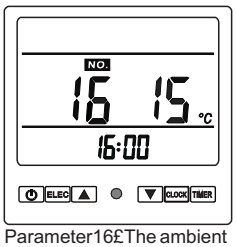
Parameter 13
The electric expansion valve operation step setting for the manual control style
default setting :35
(measure valve=35*10)



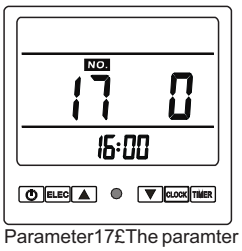
Parameter 14
Unloading valve type
Alternative range:-15(-F) to -14(-E)
Default: -F



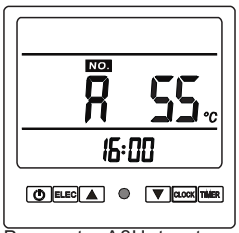
Parameter15£
Water tank temp.
Supplement setting



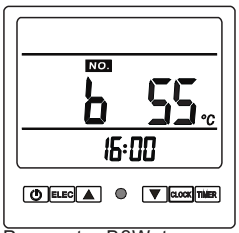
Parameter16£The ambient temp.setting for the unit enter the ambient temp.
Too low protection
Alternative range:
-30¡ to 0¡Default: -15¡
(The minus sign can not display)



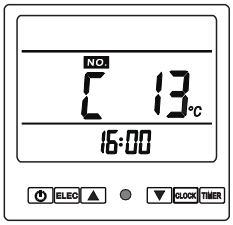
Parameter17£The paramter is set for recovering refrigerant or adding refrigerant
0:The unit normal running
1:The unit enter recovering or adding refrigerant mode
Default: 0 ¢



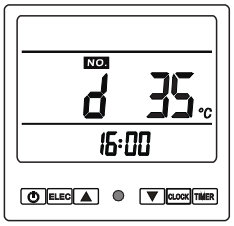
Parameter A£Hot water tank temperature
Range: -9¡ to 99¡
Actual testing value



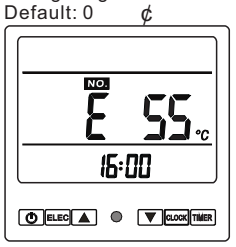
Parameter B£Water outlet temperature
Alternative range: -9¡ to 99¡
Actual testing value



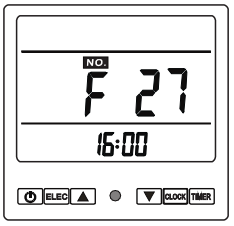
Parameter C£
System coil temperature
Range: -9¡ to 99¡
Actual testing value



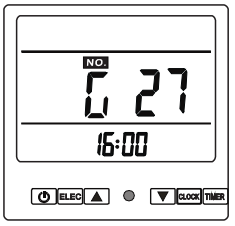
Parameter D£
System suction temperature
Range: -9¡ to 99¡
Actual testing value



Parameter E£
Not applicable on this model



Parameter F£
Ambient temperature
Range: -9¡ to 99¡
Actual testing value



Parameter G£
The electric expansion valve opening Range: 15*10¡35*10
Actual testing value

Note:¢ After recovering refrigerant or adding refrigerant,you must reset the paramter 17 to 0,or else the unit can not heating.

8.3 Operation Data Setting

The unit's operation data can be set on the wire controller.
Please set according to the table below.

Parameter	Content description	range	default	Adjust
0	Domestic hot water tank temperature setting	10 - 65C	60C	Adjustable
1	Tank temperature difference value for the compressor restart setting	2-15C	12C	Adjusted by technicians
2	The hot water tank temperature setting of auxiliary electric heater mode ①	10-90C	55C	Not applicable
3	Electric heating start time delay the time after the unit turn on ①	0 - 90 min	30 min	Not applicable
4	The temp. of start high-temperature disinfection per week setting ①	60 - 90C	70C	Not applicable
5	High-temperature disinfection maintain time	0 - 90 min	30 min	Not applicable
6	Defrost cycle setting	30 - 90 min	45 min	Adjusted by technicians
7	Enter defrost temperature setting	-30 - 0C	-7C	Adjusted by technicians
8	Exit defrost temperature setting	2 - 30C	13C	Adjusted by technicians
9	Exit defrost max. time cycle setting	1 - 12 min	8 min	Adjusted by technicians
10	Difference temp. Value between solar and tank for Solar pump start setting ¢	1~20C	6	Not applicable
11	The target superheat temperature setting for the electric expansion valve.	-F(15) ~ +F(15)C	5C	Adjusted by technicians
12	The control style selection of the electronic expansion valve	0: manual control 1: auto control	1	Adjusted by technicians
13	The electric expansion operation step setting for the electric expansion manual control style	15*10 - 35*10	(35*10)	Adjusted by technicians

14	The ambient setting for the ele.c expansion valve turn back to the manual control style	-15(-F) ~ -14(-E)	-F	Adjusted by technicians
15	Water tank temp. supplement setting	-F(15) ~ 30C	0C	Not applicable
16	The ambient temp.setting for the unit enter the ambient temp.too low protection	-30 ~ 0C	15C ③	Adjusted by technicians
17	The paramteris set for recovering old refrigerant or adding new refrigerant	0: normal running 1: recover or add refrigerant	0	Adjusted by technicians
A	Hot water tank temperature	-9 ~ 99C		Actual testing value
B	Water outlet temperature	-9 ~ 99C		Actual testing value
C	System coil temperature	-9 ~ 99C		Actual testing value
D	System suction temperature	-9 ~ 99C		Actual testing value
E	Solar collector temperature	-9 ~ 99C		Not applicable
F	Ambient temperature	-9 ~ 99C		Actual testing value
G	The electric expansion valve opening	15*10 ~ 35*10		Actual testing value

Note:
①: Applies to the heat pump with Aux. electric heater.
②: Applies to the heat pump with Solar collector. Not applicable.
③: The minus sign can t display.

If you stop operating the controller for 10 seconds, it will log out automatically.

9. Recognition of Abnormal Operation

9.1 Pressure & Temperature Relief Valve Running

It is normal for the Pressure & Temperature Relief valve to discharge a small quantity of water during the heating cycle. The amount of discharge will depend on hot water usage. As a guide, if it discharges more than 20 litres of water in 24 hours then there may be a problem. Check with your plumber or SIDDONS.

9.1a Continuous Trickle

Likely cause is a build up of foreign matter. Try gently operating the release mechanism on the Pressure & Temperature Relief valve for a few seconds. This may dislodge any small particles of foreign matter and rectify the fault.

9.1b Steady Flow

Likely causes are excessive water supply pressure (500kPa Pressure Limiting valve should be fitted), a faulty Pressure & Temperature Relief valve, a faulty or non-existent pressure limiting valve or a faulty Thermostat / Digital Controller. Turn off the electricity supply and contact your plumber or SIDDONS.

9.2 No Hot Water

1) Is the Electricity switched on? Check that the isolating switch on the cold water supply to the hot water storage tank is open. Check that the switch marked Water Heater on the switchboard is turned on. Are all circuit breakers on? If your Solarstream is connected to Off Peak, is the meter switching on when it should?
2) Check that the thermal overload (on the digital controller) has not tripped. Turn the power off then back on to perform a reset.
3) Is the Pressure & Temperature Relief valve discharging too much water? Refer section 3.2 Pressure and Temperature Relief Valve Maintenance.
4) Do you have the correct size water heater for your requirements? Sizing details are available from your Dealer or SIDDONS.
5) Is one outlet (such as the shower) using more hot water than you think? Carefully review your family's hot water usage and if necessary check the shower flow rates with a bucket and watch. If it is not possible to adjust water usage patterns, we recommend you fit a flow control valve to the shower head.

10. System Malfunction Schedule

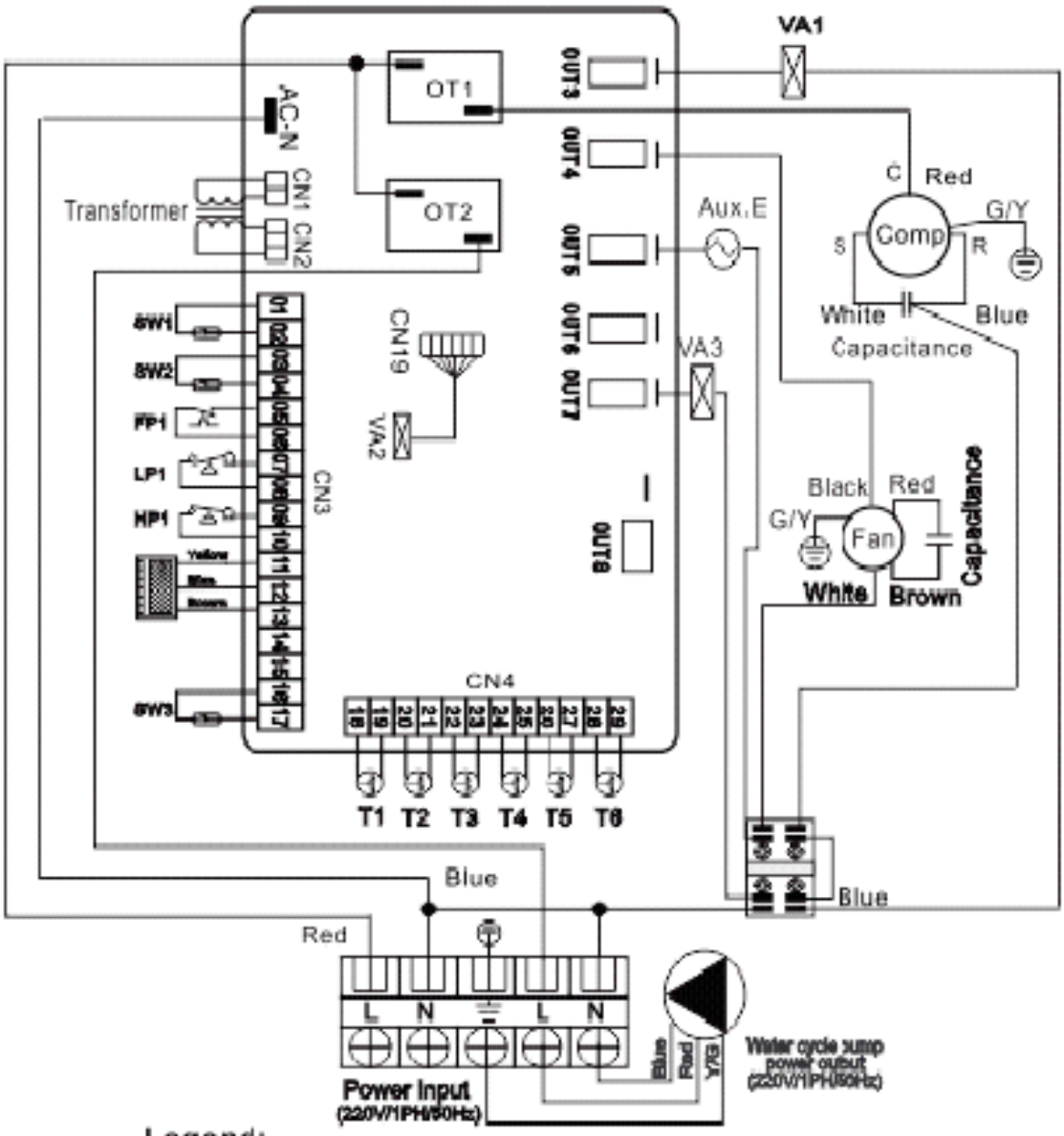
Fault code	Malfunction and Protection Name	Solution
	Standby	
	Normal start	
PP1	Hot water tank temp. Sensor failure	1: Check whether the temperature thermistor of the bottom of the water tank is connected loose or not . 2: Connect temperature thermistor of the bottom of the water tank tight or change the temperature thermistor.
PP2	Water outlet temp.Sensor failure	1: Check whether the temperature thermistor of the upper part of the water tank is connected loose or not . 2: Connect temperature thermistor of the upper part of the water tank tight or change the temperature thermistor.
PP3	System coil temp. Sensor failure	1: Check whether the temperature thermistor of the coil is connected loose or not . 2: Connect temperature thermistor of coil tight or change the temperature thermistor.
PP4	System suction temp. sensor failure	1: Check whether the exhaust temperature thermistor is connected loose or not . 2: Connect exhaust temperature thermistor tight or change the exhaust temperature thermistor.
PP5	Solar collector temp. sensor failure	1: Check whether the temperature thermistor of the solar collector is connected loose or not . 2: Connect temperature thermistor of the solar collector tight or change the temperature thermistor.
PP6	Ambient temp. sensor failure	1: Check whether the ambient temperature thermistor is connected loose or not . 2: Connect ambient temperature thermistor tight or change the ambient temperature thermistor
PP7	Water flow protection	1: Check for lack of water or air in the cycle heating system heat exchanger and discharge the air. 2: Check whether the Grundfos water pump is working.
EE1	System high pressure protection	Check for lack of water or air in the cycle heating system heat exchanger and discharge the air. Check if the water temperature is too high. Check if the refrigerant charge is too great. Check whether the high pressure switch has been damaged.
EE2	System low pressure protection	Check for lack of refrigerant. Check whether the low pressure switch has been damaged or wire has become disconnected.
EE3	Aux.electric heater overheat protection	Not applicable
EE4	Power phase sequence protection	Check whether the power supply is normal. Check whether the current is greater than normal. Check whether the a/c contactor connection is normal.
	Unit defrosting status	System is running in defrost mode.
EE8	Communication failure	Check whether communication wires have been disconnected or there is a connection error.

11. Judgement and Solution of Malfunctions

Malfunction	Reason	Solution
Unit does not work	1.Power failure 2.Loose power wire connection 3.Fuse of controller burn-out	1.Turn off power and inspect power supply 2.Identify the cause and rectify 3.Identify the cause and replace with new fuse
The pump is operating, but water isn't circulatory or the noise of pump is too loud	1.Shortage of water or air in the water system 2.Water pump damage 3.Water supply valve not fully open 4.Water filter is blocked	1.Check water supply equipment and replenish water remove the air of the water system 2.Change anther pump. 3.Open the valve of the water system 4.Clean the water filter and the pump
Unit heating capacity is low or compressor working too long	1.Shortage of refrigerant or leakage 2.Poor thermal insulation of water system 3.Poor air flow into the air heat exchanger 4.Shortage of water flow	1.Check the system for leakage, fix leak and re-gas 2.Improve thermal insulation of the system pipeline 3.Clean the fin coil with water and improve air flow 4.Check the line strainer on the water inlet and clean it
Compressor discharge pressure too high	1. Water pump is not working 2. There is air in the water system 3. Excessive refrigerant (from repair / re-gas) 4.Heat exchanger not working properly	1. Check / fix power supply to the water pump 2. Open hot water taps, run water until all air expelled 3. Call refrigeration mechanic to reduce refrigerant 4. Call Siddons Service Centre
Compressor suction pressure too low	1.Shortage of refrigerant or leakage 2.Filter or capillary blocked 3.Poor condenser heat dissipation	1.Call refrigeration mechanic to check the system for leakage, fix the leak and re-gas the heat pump 2.Replace capillary tube or filter 3.Clean the heat exchanger.
Compressor will not turn on	1.Power failure 2.Compressor contactor malfunctions 3.Loose connection 4.Overload protection of compressor activates 5.Incorrect setting of the return water temperature in the water tank 6.Compressor capacitor malfunctions	1.Check the power supply and restore 2.Replace the contactor 3.Check for loose wires and re-connect 4.Check that the current / Amp draw of compressor is within specification, may require replacement of the compressor 5.Reset the return water temperature 6.Replace the capacitor
Loud compressor noise	1.Liquid refrigerant enters the compressor 2.Compressor breaks down	1.Check the cause for flooding of the compresspr and solve the problem 2.Replace the compressor
Blower is out of operation	1.The relay or capacitor of the blower breaks down 2.The Blower motor seizes or burns out	1.Replace the blower relay or capacitance 2.Replace the blower motor
The compressor is in operation but the unit does not heat	1.The refrigerant has leaked out 2.Compressor breaks down	1.Check the system for refrigerant leakage and tell tale signs of oil, repair leak and re-gas 2. Check the reason and replace the compressor

12.Wiring Diagram for Printed Circuit Board MK4068

Wiring diagram JXT-MK4068-EG-02 for Bolt-on Heat Pump model MAHRW010ZB/P
Printed circuit board code MK4068
Fuse specifications: 5A/240V



Legend:

: Wire controller
: 4 way valve coil
VA1: 4-way valve
VA2: Electric expansion valve
VA3: Unloader valve
LP1: System low pressure switch
HP1: System high pressure switch
SW1: Power phase sequence protection switch(close circuit)
SW2:Water flow switch(close circuit)
SW3:Unit turn on/off switch(close circuit)
Fp1: Auxiliary electric heater overload protection switch(close circuit)
T1 : Hot water tank temperature
T2 : 5K resistor
T3 : System coil temperature
T4 : System suction temperature
T5 : System discharge temperature
T6 : Ambient temperature

AUX.E: Auxiliary electric heater(only effective for the unit with electric heater)
NOTE1: Water cycle pump effective for the unit with water cycle pump.
NOTE2: Unloader valve effective for the unit with unloader valve.

13. Warranty Policy (Australia Only)

13.1 Warranty Terms

Cover Period

The following warranty policy for your Solarstream Heat Pump Water Heater applies from the date of despatch from Siddons. The warranty for the various components of your Solarstream is as follows.

NOTE: We recommend the use of glass/vitreous enamel lined steel storage tanks in areas of Australia west of the Great Dividing Range where water is drawn from rivers, bores or ground sourced aquifers and/or if your water supply is mineralised or chlorinated. This includes WA, SA and NT, and most of the regional locations of QLD, NSW and VIC. If you are not sure, check with your plumber, local council or test your water against the water limitations set out in Section 13.4. In such areas, we recommend the use of Tanamet Crystal Water Filters to help soften and stabilise mineralised or chlorinated water supplies, refer Section 13.6.

10 years warranty on the stainless steel water storage tank with PURE WATER supply (refer below).

5 years warranty on the glass/enamel lined water storage tank.

3 years warranty on the Bolt-on heat pump and all parts.

1 Year warranty on labour with a transport costs with a travel allowance limited to two hours in total.

13.2 Warranty Conditions

1. Your Solarstream is installed by a licensed plumber or authorised technician in accordance with the above installation instructions.
2. All relevant statutory requirements applicable to the installation are observed.
3. Your Solarstream must be installed, operated and maintained in accordance with instructions supplied in this Owner's Manual.
4. The warranty only applies to your Solarstream and does not apply to any additional modifications not specifically endorsed by Siddons nor any electrical or plumbing parts supplied by your installer.
5. The system is covered for the indicated period from the date of delivery from Siddons.
6. Should your Solarstream be replaced in part or whole during the warranty period, only thebalance of the original warranty will continue to be effective.
7. Proof of purchase or warranty registration may be required to validate your warranty claim. We recommend online registration of your Solarstream at www.siddonssolarstream.com after installation for warranty purposes.
8. Your Solarstream is used only for its intended purpose.
9. Should your water supply require regular flushing to clear sediment build-up, then the drain cock for flushing must be fitted at the time of installation (consult your plumber).
10. Regarding a site investigation for warranty purposes, travel is limited to two hours maximum, time only, for the first year and only for legitimate warranty claims relating to your Solarstream.
11. Siddons is excluded to the extent allowable by law from responsibility for any consequential loss including: injury to persons, injury to property, economic loss, pain and suffering or legal or other damages flowing from any manufacturing fault/defect.

12. The Heat Pump may operate in weather conditions lying within the range of -5 deg C cold weather and 45 deg C hot weather temperature. Operation outside of this range may void your warranty.
13. A Pressure Limiting Valve must be installed in the water inlet line and set to 500kPa (refer Section 2.17).

13.3 Exclusions

The following warranty exclusions may cause your Solarstream warranty to become void, and which may incur a service charge and cost for parts should this become necessary:

1. Where service is required to reconnect the operation of the Solarstream due to problems related with abnormal water supply such as high water pressure, faulty plumbing and/or electrical wiring, or major variations in electricity supply;
2. Where the system fails due to misuse, accidental damage, flood, acts of God, incorrect installation or unlicensed service repair work attempts;
3. Where water stored in the tank is exceeds our water quality limits (refer below) or is excessively acidic (eg some water from rain water supply may exceed the pH limits);
4. Where there are claims for damage to wall foundations (outside), furnishings (inside), rooves or other losses, directly or indirectly due to leakage of water from your Solarstream;
5. Corrosion due to sea water or salt spray;
6. Where damage or breakage is not covered by this warranty, and should be added separately to your general household insurance policy;
7. Where the claim is due to an extraneous cause beyond the normal operation and fair wear and tear of the heat pump, including: blocking the air inlet or outlet, leaking water pipes, defective PTR valve causing continual dripping or running water for more than 3 months, etc;
8. Where benefits conferred by this warranty are additional to other rights and remedies in respect of this product, which the purchaser has under relevant Australian Laws.

13.4 Water Quality Limits - Warranty Exclusions

Your Solarstream warranty will be voided if your water quality exceeds the following quality limits:

Stainless Steel Storage Tanks:

- Total dissolved solids 600 mg/litre or parts per million
- Total hardness 200 mg/litre or parts per million
- Chloride 250 mg/litre or parts per million
- Magnesium 10 mg/litre or parts per million
- Sodium 150 mg/litre or parts per million
- Electrical conductivity 850 S/cm (micro siemens per centimetre)
- Iron 1 mg/litre
- pH Min 6.5 and Max 8.5

Glass/Enamel Storage Tanks:

- Total dissolved solids 600 mg/litre or parts per million
- Total hardness 200 mg/litre or parts per million
- Chloride 300 mg/litre or parts per million
- Magnesium 10 mg/litre or parts per million
- Sodium 150 mg/litre or parts per million
- Electrical conductivity 850 S/cm (micro siemens per centimetre)
- Iron 1 mg/litre
- pH Min 6.5 and Max 8.5

13.5 How to make a Warranty Claim
We recommend online registration of your Solarstream at www.siddonssolarstream.com after installation to assist processing of any warranty claims. Alternately, you can post your registration details to us. When making a warranty claim, you will need to quote your serial number, model number, installation date and owner details. We will advise the process to investigate and resolve your issue.

13.6 Tanamet Crystal Water Filters
For longer storage tank life, particularly in areas with mineralised, chlorinated or hard/scaling water, we recommend Tanamet XD50 crystals which are a slowly dissolving "glassy" polyphosphate specifically designed for domestic hot water systems designed to soften water and lengthen the life of all appliances and tap ware that use hot water. The crystals are applied by means of a cartridge placed in a filter housing installed into the water supply inlet before entering the hot water storage tank. The crystals dissolve very slowly at the rate of a few parts per million into the inlet water flow to prevent scale formation and corrosion. Apart from water softening, they reduce scaling, reduce corrosion, reduce copper staining, stabilise dissolved iron (red water) and stabilise manganese.

The Tanamet XD50 filter has a life of approximately 8 years after which time we recommend you replace the filter. Other similar crystal water treatment systems dissolve much more quickly which is why we recommend Tanamet XD50 crystals, available from SIDDONS.

Tanamet XD50 crystals do not have any adverse effect on the quality of water consumption for humans and as at 2013 their use has been approved by Water Authorities in Australia and France.

13.7 Australian Consumer Law
In addition to this warranty policy, you also have rights and remedies under the Australian Consumer Law including replacement or refund for a major failure or repair for a minor failure.

AIR TO WATER HEAT PUMP WATER HEATER