Installation and Operation Manual:
Close Coupled / Thermosiphon Solar Hot Water

Rev 3.0

IMACA PTY LTD
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IMPORTANT INFORMATION & WARNINGS

Congratulations on purchasing a Neopower Solar Water Heater. This system has been designed in Australia for Australian conditions. This water heater must be installed and serviced by a qualified installer.

WARRANTY / SERVICE – Contact Imaca Pty Ltd ("Neopower") via email:

info@neopower.com.au

Note to Installer - Following Installation please:

1. Complete the installer checklist (P 29) and return to Neopower; and

2. Hand this manual to the homeowner for future reference. Note – the Warranty page requires your signature for future reference.

THIS UNIT IS NOT SUITABLE FOR USE AS A POOL OR SPA HEATER

WARNING: Plumber - Note Carefully:

- Plastic pipe must not be used on a solar water heater installation due to the effects of high water temperature and pressure.

  USE COPPER PIPE ONLY

- All compression fittings must use brass or copper olives.

Notice to Victorian Customers from the Victorian Building Authority (VBA)

This water heater must be installed by a licensed person as required by the Victorian Building Act 1993. Only a licensed person will give you a Compliance Certificate, showing that the work complies with all relevant Standards. Only a licensed person will have insurance protecting their workmanship for six years. Make sure you use a licensed person to install this water heater and ask for your Compliance Certificate.

Installation and service must be performed by an authorized and qualified person. This water heater must be installed in accordance with:

1. Manufacturer's Installation Instructions
2. AS/NZS 3500.4 "National Plumbing & Drainage Code"
3. AS/NZS 3000 "Wiring Rules"
4. Relevant Occupational Health & Safety Regulations
5. Municipal Building Codes (including NZ Building Code if installed in New Zealand)
6. All other relevant Local, State or Federal Statutory Regulations

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Congratulations on purchasing a Neopower Thermosiphon solar water heater. This system is fitted with a long-life stainless-steel tank and leading global technology highly selective coating flat plate collectors.

This Owner / Installer manual provides you and your installer with valuable information regarding installation, commissioning, ongoing service and maintenance and warranty information and should be thoroughly read prior to installation. Please note that it is a requirement that your installer be correctly accredited to undertake this installation.

Thermosiphon water heaters work on the basic principal of heat rising. Cold water is pushed down to the bottom of the high-performance collector where it is heated. The heated water then returns to the solar return water inlet of the tank.

WARNING: PLUMBER

- This brief instruction is to be read in conjunction with other plumbing and electrical installation requirements contained within this Installation Instruction and Owner's Manual
- All installation work must be carried out by an appropriately qualified Tradesperson/s.
- The installation and commissioning must be performed by Qualified and Authorised Persons and comply with the requirements of AS/NZS 3500.4, AS/NZS 3000, and all local codes and regulatory authority requirements.
- This water heater is designed to be mounted on a roof top. It is the responsibility of the installer to ensure the roof top structure will be suitable to accommodate the weight of the water heater filled with water in addition to the weight of the installer.
- This water heater is not suitable for Pool Heating
- Plastic pipe must not be used on a solar water heater installation due to the effects of high-water temperatures and pressures. USE COPPER PIPE ONLY. All compression fittings must use brass or copper olives.
- Hot and cold copper pipes to and from the tank must be completely insulated with a suitably temperature rated insulation that is UV rated and weatherproof with minimum thickness of 19mm.
- Valves and fittings supplied with this water heater are supplied with insulation covers which must be fitted as part of the solar installation. Failure to fully insulate pipework and fittings increases the risk of freeze damage and will void warranty
- Valves and fittings supplied with this solar water heater form part of the installation and must be fitted in accordance with this manual.
- Working on roofs should always be considered a hazardous activity; by law you must observe certain minimum safety precautions. These safety precautions are outlined in the Work Cover Code of practice "Safe work on roofs" Part 1 and 2 and in the Occupation Health and Safety Act 2011.
- The responsibility for all OH&S issues relating to the installation of the system resides with the installing tradesperson/s.

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- The system should only be connected to water supply of acceptable quality otherwise the warranty provided for the system may become void. Refer to Warranty conditions and section entitled “Water Supply” contained within this manual.

- The PTR valves must be fitted with a drain to legal discharge points where the water discharge will be clear of any paved areas and will not cause damage or injury. Do not block or seal these drain lines.

- Please refer any queries relating to the design and/or installation of Neopower products or components to the Technical Services Department in writing.

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PART A - HOUSEHOLD GUIDE

1) IMPORTANT INFORMATION

These Water Heater Models have roof mounted stainless steel tank and high-performance solar collectors to maximize energy savings and reduce electricity costs.

1.1 It is important for the householder to become familiar with the contents of this manual to ensure safety and to optimize the performance and longevity of this water heater.

1.2 This water heater is designed for use by a single-family domestic dwelling to provide hot potable water.

1.3 This water heater is not fitted with freeze protection and is not suitable for installation in areas subject to frost or freeze conditions (below 6°C). The system has no warranty for freeze conditions.

1.4 Do not operate this water heater until all operating instructions have been read and understood by the homeowner.

1.5 These water heaters are NOT recommended for connection to Bore Water Supplies and warranty may be void in such installations.

1.6 If you live in an area that experiences frost in winter months or freezing occurs (below 5°C), split system models using evacuated tube technology should be installed for maximum protection against frost conditions. Damage to flat plate panels caused by freeze conditions which occur below 6° Celsius is not covered by warranty.

1.7 Do not activate the power supply to this water heater unless the cylinder is filled with water and a satisfactory Megger reading is obtained by a qualified tradesperson.

1.8 Do not block or seal the Pressure & Temperature Relief (PTR) safety valve or drain pipe. Never fit a PTR or Expansion Control Valve (ECV) with a pressure rating greater than that indicated on the product-rating label.

1.9 The water heater warranty can become void if relief valves or other safety devices are tampered with or if the installation is not in accordance with these instructions.

1.10 Do not place any articles, chemicals or flammable materials on or near the water heater

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1.11 Removal of access covers will expose 240V wiring. Do not remove the terminal box cover or gain access to this water heater unless the power supply has been effectively disconnected by a qualified tradesperson only.

1.12 Do not operate this water heater with the terminal box cover removed or loose.

1.13 This water heater is not intended to be operated or adjusted by young children or infirm persons. Young children must be supervised to ensure they do not interfere with the water heater.

1.14 This water heater can deliver water at temperatures which can cause scolding. Check the water temperature before use, such as when entering a shower or filling a bath or basin.

1.15 Take care not to touch copper pipes connected to the water heater as high temperatures in the pipework may be present.

1.16 If the power supply cord, plug or electrical conduit to the water heater is damaged, it must be replaced by a qualified tradesperson in order to avoid a hazard. The power supply cord and plug must be replaced with a genuine replacement part available from Neopower

1.17 In times of low solar energy contribution, water stored in the solar tank can be heated by an electric booster consisting of an element and an automatic thermostat located on the tank. It is recommended that the electric boost be connected to a continuous electrical supply; however, if connected to an Off-Peak Tariff, a night rate tariff is NOT RECOMMENDED. Note that the thermostat must only be adjusted by a qualified tradesperson.

1.18 Danger: failure to operate the relief valve easing gear at least once every six months may result in the water heater rupturing. it is important that the easing gear on the valve be raised and lowered very gently. failure to do so may result in the water heater cylinder failing, or under certain circumstances, exploding.

1.19 It is normal for small quantities of water (up to around 15 Litres in a 24 hour period) to be released by the ECV or PTR valve in the heating cycle. continuous leakage of water from the valve may indicate a problem. if the valve does not discharge water when the easing gear is operated, or does not seal again, a service call should be made without delay. the PTR valve is not serviceable.

1.20 The thermostat in the electric boost is equipped with an over-temperature cut-out. if the over temperature cut-out activates, it must not be reset and the water heater must be serviced by an authorized and qualified person.

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1.21 Warning: if the solar system is not used for two weeks or more, a quantity of hydrogen gas, which is highly flammable, may accumulate in the system. This may be observed as violent 'spluttering' when a hot tap is opened initially. 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 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 has formed and is discharged through the tap it will probably make a sound similar to air escaping.

2) INSTRUCTIONS & MAINTAINENCE

Warning: This appliance not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge.
Children should be supervised by a person responsible for their safety to ensure that they do not play with the appliance.

2.1 OPERATION

Ensure that your solar hot water system is always filled with water. If drained at any time, then the solar panels should be covered as prolonged exposure to sun without a supply of coolant water may cause damage.

2.2 ELECTRIC BOOSTED SYSTEM

Water stored in the storage tank is heated automatically by an electric booster element which is controlled by an automatic thermostat. The booster element heats the water during very cloudy or rainy weather, during the winter months, or during periods of unusually high demand. Although it is recommended to connect the electric element to continuous power, it can be connected to an off peak tariff but NIGHT RATE OFF PEAK IS NOT RECOMMENDED as the available power may not be sufficient during inclement weather and you may run short of hot water during these periods.
The electric booster heating element is controlled by an automatic electric thermostat. The thermostat and element are mounted on the solar storage tank. The boosted water temperature is automatically controlled to the thermostat setting when the booster heating element switch is in the on position.

The thermostat is tradesperson adjustable. It has a minimum temperature setting of 60ºC and a recommended maximum temperature setting of 75ºC. It must only be adjusted by an authorised person. Automatic safety controls are fitted to the water heater to provide safe and efficient operation.

The electric booster element will automatically heat the water in the upper section of the tank. An isolating switch can be installed which will allow manual control however be aware that if this switch is turned off, a shortage of hot water can occur during periods of low solar radiation and water temperatures below 60 ºC can give rise to bacterial breeding including Legionella bacteria. Australian Standards therefore stipulate that this switch be left continuously on and the automatic thermostat be set to a minimum temperature of 60 ºC.

2.3 GAS BOOSTED SYSTEM

For gas booster system, there is no electric booster element in the tank. Instead, there is a continuous flow gas booster on the hot water line before it goes to the house.

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Water stored in the storage tank is heated automatically and controlled by an automatic thermostat. The booster element heats the water during very cloudy or rainy weather, during the winter months, or during periods of unusually high demand. Although it is recommended to connect the electric element to continuous power, it can be connected to an off peak tariff but NIGHT RATE OFF PEAK IS NOT RECOMMENDED as the available power may not be sufficient during inclement weather and you may run short of hot water during these periods.

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2.4 SAFETY VALVES & FROST VALVES

Never fit a Pressure and Temperature Relief Valve (PTR) or Expansion Control Valve (ECV) with a pressure rating greater than that indicated on the product-rating label.

It is normal for the ECV fitted to the cold mains water supply to dribble as either the solar panels or water heater heats water within the system. The expansion valve releases water from the system so that the system will be maintained at its design pressure.

The PTR valve fitted to the solar storage tank should not dribble during normal operation as they are fitted as safety valves. If the PTR valve dribbles, operate the easing mechanism on the valve and allow water to discharge through the drainpipe. Remember this water may be HOT and ensure that the discharge does not come in contact with anyone. Release the easing lever SLOWLY and reseat the valve. If the valve is still dribbling 24 hours after reseating contact Neopower.

If no water is drawn from the system for several days in hot weather conditions the ECV on the solar storage tank may open and freely discharge water in order to discard the excess solar energy collected. This should happen only infrequently but it is considered normal operation.

If the PTR valve on the storage water heater freely discharges hot water and steam, turn off the electricity supply to the storage unit and contact Neopower.

Frost Protection Valves

The use of flat plate collectors in frost or freeze prone areas is not recommended and warranty can be void. It is recommended that Neopower evacuated tube split system models be installed in frost prove areas.

Where AVG frost valves are fitted to Neopower flat plate collectors in accordance with manufacturer's instructions, limited frost protection can be achieved. It is important that two frost valves be fitted per water heater in diametrically opposite locations and frost valves must be replaced with new AVG frost valves every two years for warranty to be considered. No other brand of frost valve is considered as a means of frost protection. Any damage to the water heater or collectors due to failure of frost valves or contributory failure will not be covered by warranty.

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3) MAINTENANCE / HOUSEHOLD FAULT FINDING

Prior to contacting Neopower for a service call, there are some basic checks that can be made by the householder. Please note that you will be liable for all charges where the fault is not related to manufacture or failure of a part or out of warranty.

Not Enough or No Hot Water?

If the collectors are facing north and shade-free, the weather is fine and warm and the solar storage tank contents are definitely cold, check the following:

1 Is there 240 volts at the power outlet? Is there a blown circuit breaker, RCD or fuse?
2 Has your hot water usage changed?
3 Is the thermostat setting sufficient to recover from hot water usage?
4 Scale formation in the tank and collector can limit the heating ability of the solar collectors.

Pressure and Temperature Relief (PTR) Valve Leaking?

It is usual for a pressure and temperature relief valve to release a small quantity of water during the heating cycle; up to around 15 Litres over a 24 hour period is acceptable. If the discharge is noticeably more than this, a service call may be required.

Cold Expansion Control Valve (ECV) Leaking?

The ECV may discharge a small amount of cold water to prevent the PTR valve from potentially discharging water that has been heated, thereby saving energy. This is norma

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PART B – INSTALLERS GUIDE

1) SOLAR WATER HEATER INSTALLATION

1.1 IMPORTANT INFORMATION

Installer – Please Note the Following

1. **This Water Heater Is Not Suitable for Pool Heating**

2. All work associated with the installation of this water heater must be carried out by properly trained and accredited tradespersons and be strictly in accordance with relevant Australian Standards including AS/NZS 3500.4 and AS/NZS 3000, local, State and Federal Regulations including, but not limited to, Occupational Health, Safety and Welfare Regulations (OH&S)

3. If this installation is taking place in an area subject to frost conditions or freezing conditions (below 5° Celsius), it is recommended that only split system evacuated tube models be installed.

4. **NOTE** - Copper pipe for use between the solar tank and collectors must be used.

5. **NOTE** – A non-return valve must be installed on the cold water line to the solar storage tank after the cold water branch to a temperature limiting device.

6. Ensure occupants are aware of the installation process and warn against falling tools or other materials or fittings.

7. The solar water heater should be installed in close proximity to the most frequently used hot water outlet and its position chosen with safety and service in mind. Also consider servicing, PTR valve, thermostat and booster element must be able to be removed and nameplate data must be able to be read. Other considerations include:

- Weight of the heater filled with water
- Dimensions of the heater and size and location of connection points
- Water supply pressure limitations

Roof Structure

Attention is drawn to the weight of the water heater tank when full (up to approximately 400kg depending on model plus weight of installer) and the installer should ensure the roof structure is engineered to satisfy this loading requirement for all weather conditions. It is the responsibility of the owner to seek professional engineering advice regarding roof structure. **It is the responsibility of the installer to ensure the homeowner is aware of this requirement.**

Allow adequate room to work with tools. A minimum of 500mm clearance around the water heater is required.

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Adequate provision must be made to dispose of any water escaping from heater or adjacent plumbing that might result in damage to property including guttering.

The water heater must be connected in such a way that:

- Space is allowed for the removal of the heating element.
- Complete removal of the unit can be easily affected if necessary

Confined Spaces

If the thermostat fails the unit may produce excessive steam.
It is strongly recommended that the heater should be installed in a well-ventilated space to avoid condensation build up.
If installed in confined areas, make provision for Service Access.
Vent safely to open air and carry hot water overflow pipework to drain.

Water Supply

If the water heater is installed to a tank water supply, a minimum 350kPa water supply pressure must be available or a pressure pump must be installed to allow operation of the system.

This water heater has been constructed to meet water quality conditions in most Australian water supply locations. However, harsh water quality does exist in some locations and, if in doubt, contact your local council or water supplier. Only potable water should be used in this water heater. If you are unsure of the water chemistry in your area, you may find additional information by contacting your local water supply authority.

The **Saturation Index** is a measure of the water's corrosiveness. Corrosion may result in early failure of copper parts such as solar collectors and copper sheathed electric components. Water is considered corrosive should the saturation index be below -1.0. Scaling, which is the build-up of calcium carbonate

in the tank, can occur where the Saturation Index is above +0.4. In these instances where the Saturation Index exceeds +0.4, ensure the expansion control valve (ECV) is fitted according to instructions contained within this manual. Should the saturation Index exceed +0.8, a low Watts density element must be fitted.

Water heaters installed in locations where the water is corrosive or considered scaling will not be covered by this warranty.

Pipework, Valves and Fittings

Valves and fittings for connecting the solar panels and storage tank on the roof are supplied.

The temperature of the water at the outlet connection on the panels may reach 150°C or more and therefore only copper pipe can be used between the panels and storage tank.

Class B copper pipe should be used and the runs should be as short as possible to reduce heat losses.

The pipes MUST be lagged using thick-walled foam of at least 19mm thickness, RO.6 and should be weather proofed and UV stabilized.

If insulation is not UV stabilized, it must be protected by a suitable UV resistant paint.

Pre-formed insulation gloves and cable ties are provided to insulate fittings. The areas to be insulated

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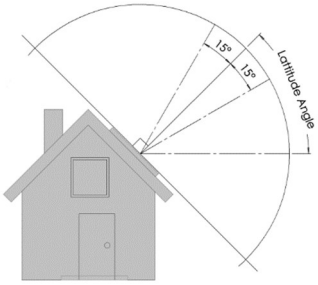
are: inlet pipework fittings to the panel, the outlet pipework fittings, and on 2 & 3 panel systems the joiners between the panels. These fittings must be insulated to protect them from freezing in cold areas. Warranty may be void if not fitted. Refer to the Solar Panel Layout drawings for location and

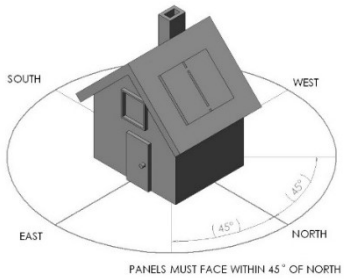
installation detail. Water may drip from the pipe of the pressure-relief device. This pipe must be left open to the atmosphere

1.2 SOLAR INSTALLATION

To achieve maximum solar performance, the solar collectors should be installed facing as close to **North** as possible. The following are guidelines for the installation of solar collectors:

Solar collectors should be positioned to face the equator which is **North** facing in Australia. The further away from **North**, the greater the loss in solar efficiency. If the above guidelines cannot be achieved, consideration should be given to increasing the solar collection area by adding an extra solar panel, particularly if the direction is further than 45 degree either side of **North**. In any case, no direction should be chosen that has any inclination towards South.





Location of Water Heater

The roof top storage tank should be located as close as possible to the bathroom or kitchen, areas that typically use the most hot water to reduce unnecessary energy losses between the tank and outlets.

Shading of Collectors

The location of the solar water heater should be in an area least subject to shading, particularly between the hours of 9.00am and 3.00pm. Note that shading can result from both trees and structures such as adjacent buildings. Consideration must also be given to the fact that winter and summer shadows differ and there may be winter shadows where there are no shadows in summer.

Collector Inclination

The best roof inclination for optimum performance of FPC solar collectors is between 10° and 30°. Above 30°, additional tank support is required to prevent movement of the tank on the roof structure during and following installation. Below 10°, a roof top pitching frame is required as Thermosiphon activity is limited.

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Roof Top Loading and Structure

It is the responsibility of the installer to ensure the roof structure can fully and effectively support the full weight of the water heater filed with water and the installer / maintenance mechanic. If this is not the case, additional roof bracing will be required. Consult a structural engineer should this be the case.

Roof Top Area Requirement

Ensure an area of not less than 500mm, preferably 1m is left on all four sides of the water heater for ease of installation and maintenance.

1.3 INSTALL THERMOSIPHON WATER HEATER

Installation and service must be performed by an authorised and qualified person. This water heater must be installed in accordance with:

1. Manufacturer's Installation Instructions
2. AS/NZS 3500.4 "National Plumbing & Drainage Code"
3. AS/NZS 3000 "Wiring Rules"
4. Relevant Occupational Health & Safety Regulations
5. Municipal Building Codes (including NZ Building Code if installed in New Zealand)
6. Any other relevant Local, State or Federal Statutory Regulations

Note - Before placing thermosiphon mounting frame on roof:

1. Repair or replace any damaged roof iron or tiles
2. Roof kit can be fitted to panels including all brass fittings

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METHOD 1 – Standard Mounting System (Non-cyclonic)

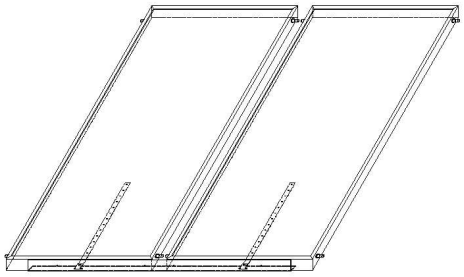
Your Neopower Thermosiphon solar water heater is supplied with the following standard components for roof mounting:

Item	Qty	Description	Application
FPTS Tank	1	Thermosiphon Solar Water Heater Tank	Stainless Steel Thermosiphon Solar Tank
FPC Collector	2	Flat Plate Collector	FPC1200-D solar collector with high performance selective coating
QIK15-SOLAR-IMA4	1	Valves and Brass-ware kit	Includes all required valves and brassware for normal installations.
NP125	1	Aluminum Angle Rail	Mounting rail for solar collector base (1.8m)
NP126	7	Stainless Steel Straps (See picture below)	4 off for solar collector. 3 off for Thermosiphon tank skirt.
Roof Zips	1	8 off 65mm and 8 off 25mm Roof Zips	For fastening SR1102 straps to trusses
NP371	1	Installation Instructions	

Type FPC Panel Assembly

1 Bend the two Lower stainless steel straps through 180º approximately 30mm from the end of the strap with the largest hole and slide through the purpose made slots in the rail with suitable spacing. The strap must be placed in the slots so that the 30mm bent over section of the strap finally sits between the rail and the panel – See Below

2 Fit the annodised aluminium rail to the roof trusses / battens. Locate the horizontal rail provided onto the roof with the stainless steel straps permanently fasted to the roof supporting frame-work using the 65mm roof zips provided (for timber battens and trusses).



3 Bend 2 Upper rail straps through 90º and fasten to panels using only the 25mm Roof Zips supplied in the roof kit. No other screws are to be used.

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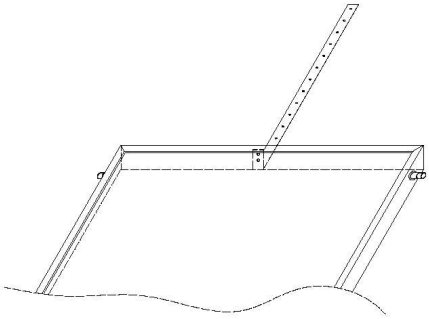

4 Secure the stainless steel straps to roof trusses using 65mm roof zips provided (8 off in total for timber battens and trusses). NOTE – Raise the right side of the black anodised aluminium frame by around 15mm to assist in the Thermosiphon action of the water heater. NOTE – This racking system not suitable for installation in cyclonic zones (see section on cyclonic racking systems). For metal roof tops, remove the screws along the batten line where the stainless steel strap is to be fastened. Ensure the rail will be at least 500mm up from the gutter. For tiled roofs, the bottom collector rail should be positioned on the front edge of a tile ensuring no less than 500mm from the gutter. Remove the tiles above the rail strap and secure the rail strap to the trusses using the 65mm Roof Zip screws provided and replace tiles.

5 Position the two solar collectors evenly across the rail. Connect the panels using the 22mm couplings and tighten carefully using two spanners to avoid and damage to the copper tubes of the collectors.

6 Where damage to property can occur in the event of the water heater leaking, the water heater must be installed in a safe tray complying with AS/NZS3500.4 and all local codes and regulatory requirements.

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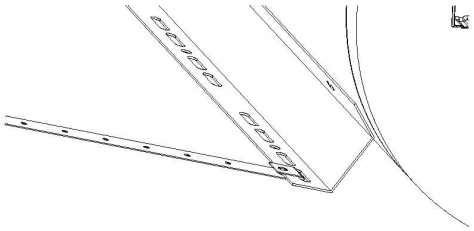
Stainless Steel Thermosiphon Tank (Non Cyclone Rated Installation)

1 Open the tank packaging and using the 2 lifting handles provided at each end of the tank, lift the tank from the packaging and remove polystyrene. The tank is fitted with a full-length 316 grade stainless steel skirt to be fastened to the roof structure with the stainless steel straps provided.

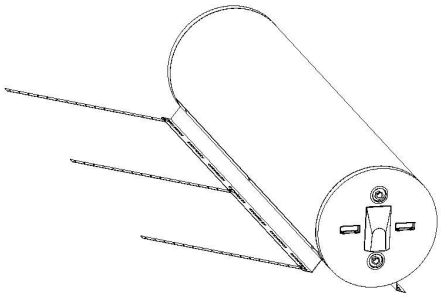
2 The package contains 7 stainless steel straps, 3 of which will be used for the tank and 4 for the solar collectors. Take 3 of these and fold through 180 degrees as per the drawing below:

3 Carefully, and in accordance with all State and Federal workplace health and safety requirements, and only using authorised personnel, lift the tank onto the roof-top and position equally above the two mounted collectors.

4 The 3 folded stainless steel straps can then be positioned on the tank skirt structure as shown below (Note: the weight of the tank rests on the stainless steel strap):



5 Fasten the 3 stainless steel straps to the roof batten/truss structure using the 65mm Roof Zip Screws provided (for timber battens and trusses). Three straps are required to be fitted to the thermosiphon tank



6 When the 3 stainless steel straps are connected to the tank and fastened to the roof in accordance with these guidelines, the tank mount procedure is complete.

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7 Fit the P&T valve provided to the Thermosiphon tank valve port

8 Fit the hot water and cold water copper pipes to the tank and collectors using parts provided. Be sure not to twist the pipes. Cold water pipe must be insulated if on metal roof.

9 Should the roof top be flat, a pitching kit is available to ensure the angle of the collectors is greater than 8° (minimum pitch required) See section below regarding pitching kits for non-cyclonic areas. Consult with the manufacturer for roof pitches in excess of 30°.

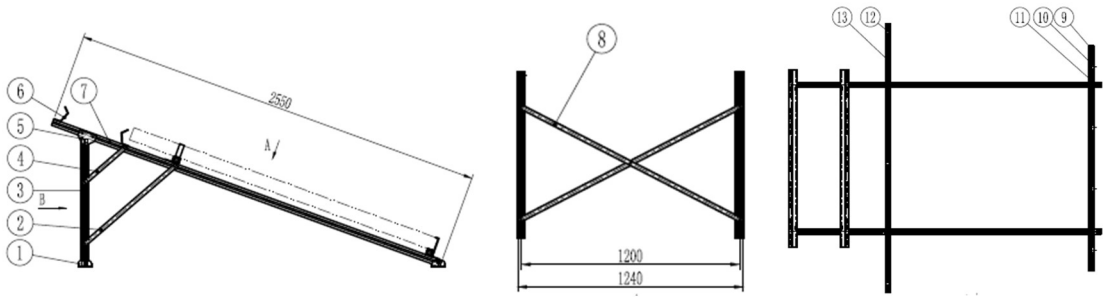
10 Finally, check all bolts are tightened correctly and racking frame is secured correctly to the roof top.

METHOD 2 – Rail Mounting for Cyclonic Regions

Please refer to Neopower solar hot water on 03 8740 3556. Fully Engineered and approved cyclone kits designed, manufactured and approved in Australia to relevant Australian Standards are available for tanks and collectors and must be fitted in cyclone rated areas.

200L & 300L Pitching Frames (Roof pitch <8°) Non-cyclonic

TS Pitching Frames are available for use in Non-Cyclonic regions on roof tops where roof inclination is less than 8 degrees). These Pitching frames are constructed entirely from stainless steel bolts and nuts and sturdy extruded 40mm aluminium frames. Assembly of the popular 200L Pitching Frame is shown below:



Number	Description
1&9	316 Stainless Steel Roof Mounting Plate – Fasten to frame with T-Bolts and to roof with 65mm minimum roof-zips or equivalent for metal battens and trusses (6 off)
2&4	Aluminium support struts – Fasten to frame with T-Bolts provided
3&7	40mm x 40mm Annodised Aluminium support Frame
5	Vertical Frame to Inclined Support fastening brackets – Fasten using T-Bolts provided
6	316 Stainless Steel tank skirt (2 off attached to tank) – Fasten using T-bolts provided to 3 off Inclined Support rails
8	6063 Grade Aluminium Cross Braces – Fasten using T-Bolts provided
10	Stainless Steel "L-Bracket" fastened to aluminium rail using T-Bolts provided. Used to fasten panel bottom edge to 40mm Aluminium Rail (4 off)
11&13	Horizontal Aluminium Support Frame 40mm x 40mm (2 off)
12	Stainless Steel "Z-Bracket" secures the FPC Panel to the 40mm x 40mm Aluminium Rail – Fasten with T-Bolts provided

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Plumbing Connections:

1. A stop cock and check valve must be fitted at the cold water supply
2. NOTE – A non-return valve must be installed on the cold water line to the solar storage tank after the cold water branch to a temperature limiting device.
3. Where water pressure is greater than or likely to exceed 550kPa, a 500kPa PLV is required to be installed. Failure to install a PLV if required may void warranty.
4. Fit the 600kPa ECV (Cold Water Expansion relief valve) after the check valve, stop cock and (if required) PLV. NOTE – Where an expansion control valve is installed, it must be installed after the non-return valve and be the last valve before the storage tank.
5. Where a combination isolation valve and non-return (Duo or Trio) valve is fitted, a second non-return valve must be fitted between the branch to the temperature limiting valve and the tank.
6. Ensure that the drain line from the P&T valve has continuous fall away from the valve, terminating above ground level as per AS3500.
7. Note: ¾" Couplings are provided in Installation Kits where tank fittings are ¾" MI fittings.

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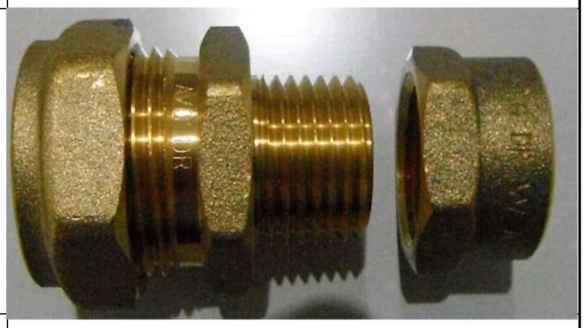
Neopower Thermosiphon Brass-ware Installation Kits

Neopower Thermosiphon Installation Kits provide all brassware fittings and valves required for a standard installation excluding brassware fittings required for fitting of valves provided in the kit. The photographs below show the fittings included.

COLD WATER INLET Connect the Thermal Arrestor Valve (TAV) (carefully noting flow direction) to the tank using the 20mm socket provided	
FPC SOLAR PANEL COLD INLET AND HOT OUTLET CONNECTIONS Each connection (2 off in total) is made using a 22mm C to ¾" FI adaptor (provided) on the panel outlet copper fitting and then a ¾" MI to ¾" C elbow (not provided)	
FPC SOLAR PANEL UNUSED MANIFOLD CONNECTIONS Use the 2 off 22mm C to 15mm MI fittings supplied in conjunction with the 15mm brass caps provided to cap off the two unused manifolds. Generally this will be the top left of the left hand collector and the bottom right of the right hand collector	
SOLAR TANK HOT WATER OUTLET TO HOT WATER SUPPLY Use the ¾" tee provided to connect to the tank. Hot water outlet is then via 20mm socket provided. The Tee connect the 850kPa PTR Valve as shown in the diagram	

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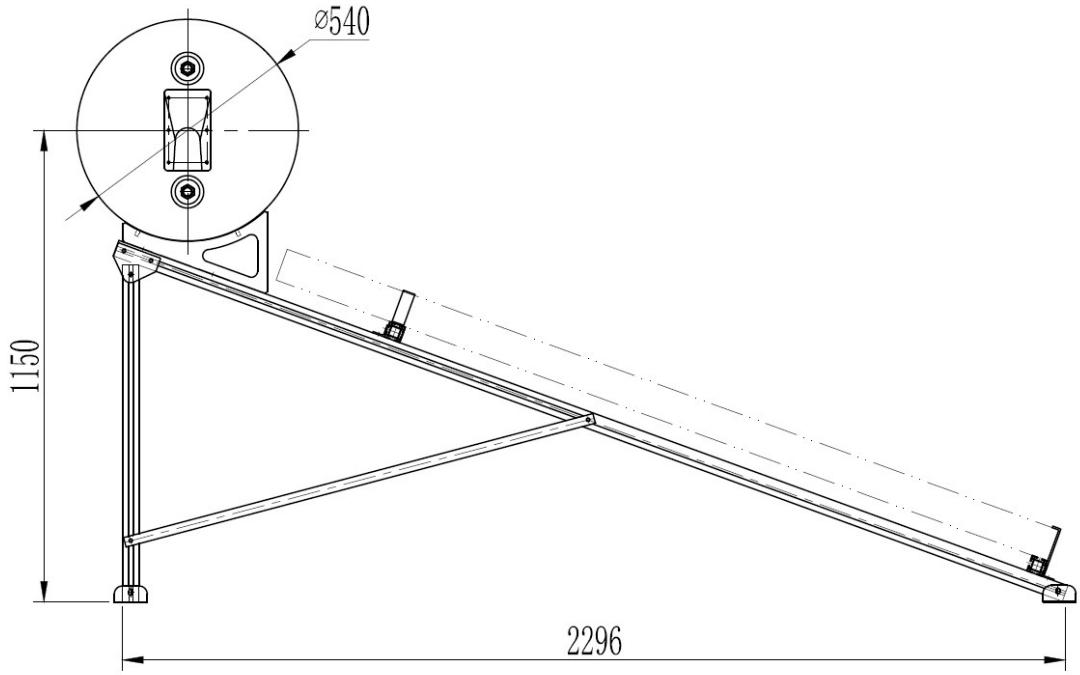
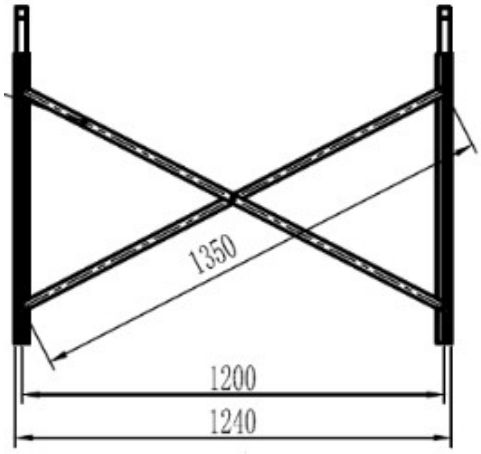
2) SYSTEM DIMENSIONS

Pitching Frame Dimensions – 200L & 300L Thermosiphon



200 & 300L Pitching Frame – Side View



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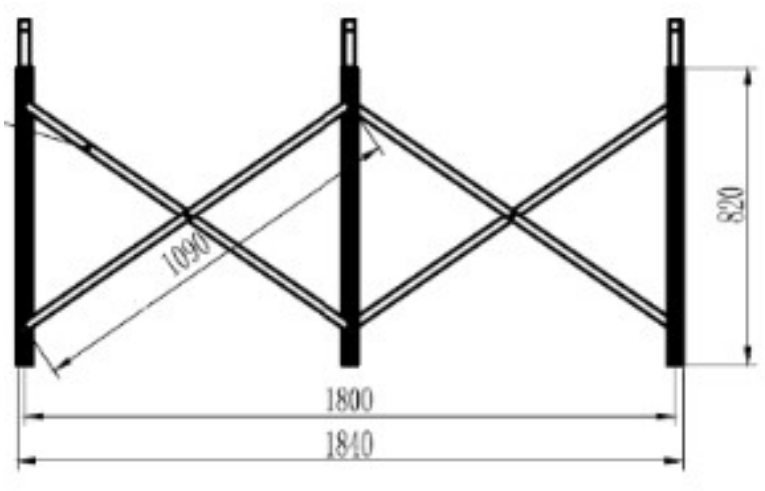

200L Pitching Frame– Rare View

300L Pitching Frame– Rare View

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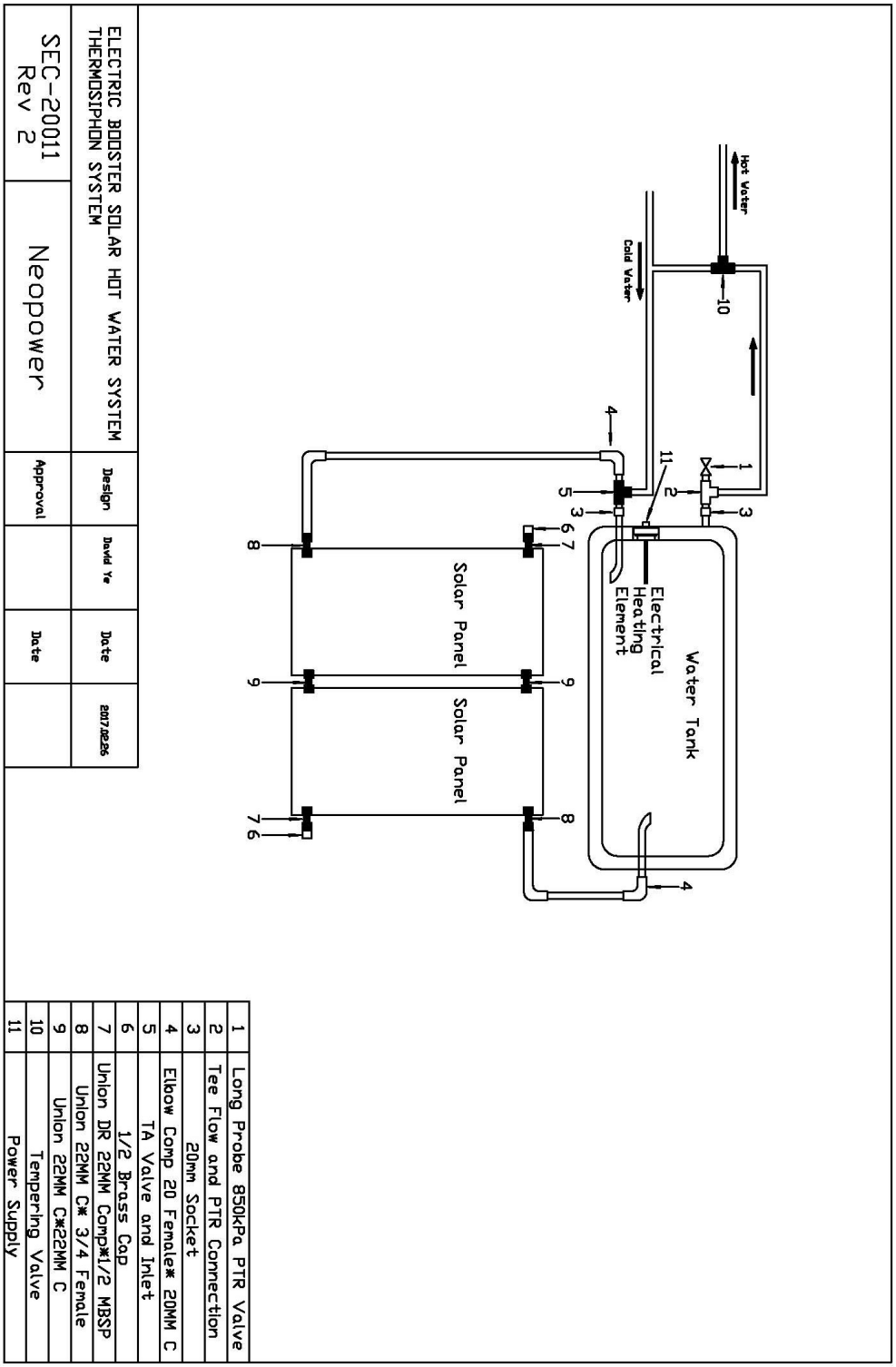
3) TYPICAL PLUMBING LAYOUT



1	Long Probe 850kPa PTR Valve
2	Tee Flow and PTR Connection
3	20mm Socket
4	Elbow Comp 20 Female* 20MM C
5	TA Valve and Inlet
6	1/2 Brass Cap
7	Union DR 22MM Comp*1/2 MBSP
8	Union 22MM C* 3/4 Female
9	Union 22MM C*22MM C
10	Tempering Valve
11	Power Supply

ELECTRIC BOOSTER SOLAR HOT WATER SYSTEM THERMOSIPHON SYSTEM			
Neopower	Design		
	Approval	David Ye	
		Date	
SEC-20011 Rev 2		Date	20072226

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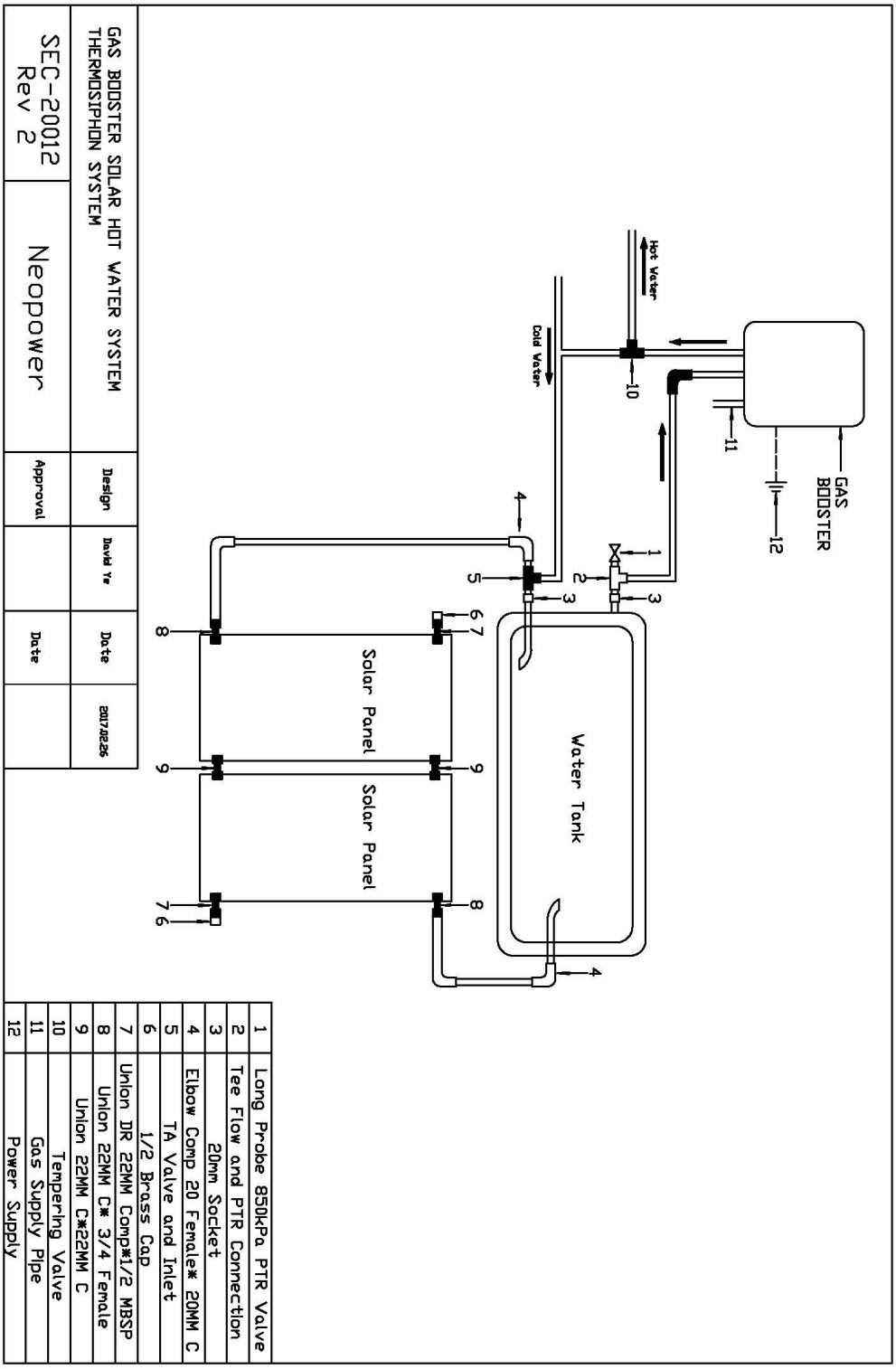

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4) FILLING & COMMISSIONING THE SYSTEM

Do not turn on electric power until the whole system has been filled with water and a satisfactory Megger reading is obtained by a qualified person.

Turn on a hot water outlet tap, preferably the one furthest from the heater. DO NOT purge through the PTR valves. Open the mains cold water supply valve so that air is displaced from the water heater and replaced with water. The hot water outlet tap should be left on until the water flowing from it flows steadily without spurts. Turn off the hot water tap and allow the system to pressurize. Check the system for leaks. Repair if required.

Solar Panels

The solar panels must only be filled when they are cold, so it is important to ensure that the panels are fully covered for a suitable time beforehand. Filling hot panels may cause injury by scalding.

Turn on the mains water supply and ensure the water heater is full of water and all of the hot taps are turned off.

How to Turn Off the Water Heater

Should it be necessary to turn off the water heater following commissioning, then:

- Switch off or isolate the electrical supplies to the water heater
- Close the cold water valve at the water heater inlet

Note: If the water heater is located in a frost area and freeze protection valves are not fitted, damage to the panels may result if the water heater is switched off. Damage to the panels where no frost protection valves have been fitted is not covered by warranty

DRAINING AND FLUSHING THE SYSTEM

It is recommended that the Neopower Thermosiphon system be drained and flushed every 5 years during a major service of the water heater.

The system must be completely drained of any water prior to the commencement of any plumbing work to prevent damage to the tank should a vacuum or excessive pressure form in the tank. **NOTE: Extreme care must be exercised as water discharged from the solar collectors may be at a very high temperature.**

- Ensure power is switched off
- Turn off the water supply to the water heater
- Carefully open the lever of the pressure and temperature relief valve to release excess pressure
- Disconnect the cold water supply pipe connection at the tank
- Safely drain away the water from the tank using a flexible drain pipe. Be careful as the water will be hot. Manually open the pressure and temperature relief valve to allow air into the tank and to allow water to freely flow out of the tank via the flexible drain pipe.
- To drain water from the collectors, disconnect cold pipe from bottom of the collectors.

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5) MAINTENANCE & TROUBLESHOOTING

Broken Collector Glass
In the unlikely event that the collector glass breaks, the entire collector should be removed by an authorised person and replaced with a new collector. Replacement collectors due to hail damage or other impact are to be covered by householder insurance policy.

Cleaning Collectors
Whilst collectors are largely self-cleaning due to rainfall, some airborne particles can collect in some areas that must be removed manually. Note that chemicals should not be used where the water run-off from the roof top fills a rain water tank to avoid contamination.

Pressure & Temperature Relief (PTR) Valve Operation and Replacement
The PTR valve lever should be opened manually at least every six months to prevent the possibility of tank failure. It is usual that some discharge of water can occur during the heating cycle. Should water not discharge freely when the relief valve is operated or if the drain line is blocked, ensure an authorised person is called to inspect the water heater.

Troubleshooting Guide

Problem	Possible Cause	Possible Remedy
Not enough hot water	Electric booster not connected to mains power	Ensure mains breaker (remote internal booster switch also if installed) is turned on for electric booster. Check if connected to off peak tariff, if connected to off peak tariff ensure that it is connected to tariff 33. If once all of the above is checked and booster still does not operate, please contact your supplier.
Banging noise in pipes when hot water tap is opened.	Steam formation in collector when hot water tap is opened after a period of collector stagnation. Often occurs when inlet cold pressure is low (<400kPa).	Check cold supply water pressure. Install pressure pump to raise cold supply pressure above 400kPa.
Insufficient Sunlight	Extended periods of cloudy weather	Extended periods of cloudy weather or winter months will require the electric boost element to work for longer periods to boost hot water supply
Shaded collectors	Trees that have grown or new structures that reduce the amount of solar contribution time	Have trees regularly trimmed and if necessary have the collectors repositioned on the roof top if the obstruction is permanent.
Hot water leaking from pressure temperature relief valve	Water temperature stored in tank is nominal	It is normal operation for the system to discharge up to 5 litres per day from the pressure temperature relief valve.

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PART C – PRODUCT WARRANTY

This warranty is offered by Neopower and full contact details are shown at the end of this document.

In addition to the guarantees under the Australian Consumer Law (ACL), Neopower provides consumers (i.e. retail customers, not trade customers) a warranty that all products in its product range (products) will be free from defects in materials and workmanship under normal use for the period of time applicable to particular components of each product as set out in the table below.

If a product fails to conform to this warranty during the applicable warranty period, Neopower will either replace any failed component of the product or replace the product free of charge (which Neopower will determine at its absolute discretion).

Warranty Periods

Hot Water Storage Cylinder	10 years
Solar Collectors	7 Years
All electrical parts, e.g. element, thermostat	2 years
Associated AVG valves supplied by Neopower including Frost Valves	1 year
Labour to replace or repair defect	1 year

- The failure of the original storage tank or solar collector panel must be certified by Neopower.

Exclusions

1. This warranty only applies to defects which have arisen solely from faulty materials or workmanship in the product and does not apply to other defects which may have arisen as a result of, without limitation, the following:

    - Installation by a non-authorized person or installation that is not strictly in accordance with the manufacturer's installation instructions as described in the Installation and Owner's Manual;

    - Accidental damage, abuse, misuse, maltreatment, abnormal stress or strain of the products;

    - Tarnishing and damage to or deterioration of finishes as a result of harsh or adverse conditions (including corrosive environments such as coastal locations, and inadequate ventilation and drainage of installation locations);

    - Fair wear and tear;

    - Excessive water pressure, blocked pipework, faulty plumbing, restricted flow or excessive temperature;

    - Scale formation or the effects of corrosive water where the product has been connected to a water supply that is outside the parameters outlined in the Installation & Owner's Manual;

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- Failure to replace frost valves (if fitted) every two years.

2. Alterations or repair of the product other than approved by Neopower are not covered (for the avoidance of doubt, the attachment of accessories or use of non-genuine replacement parts other than those manufactured or approved by Neopower are not covered).

3. Where the water heater is installed in a position that does not allow easy and safe access, the cost of accessing the water heater safely, including the cost of additional materials, handling and/or safety equipment, is not covered.

4. Personal injury, property damage or economic loss, howsoever caused, will not be covered.

5. The warranty is restricted to residential installations only. A separate warranty applies to commercial installations.

6. Freight and travelling costs associated with the repair or replacement of the product in accordance with this warranty is not covered except where the product is installed inside a 50 kilometer radius of the business premises of Neopower or its appointed Distributor.

7. Where a failed component or system is replaced under warranty, the balance of the original warranty period shall remain effective. The replaced part or system does not carry a new warranty.

8. Solar collector glass damage or breakage is not covered under this warranty. Your household insurance policy should be extended to include damage or breakage of the solar collector glass.

9. Freezing and frost damage is not covered under this warranty except where adequate precautions are taken in accordance with the instructions contained in this "Installation Instructions and Owner's Manual" and then only in accordance with the separate warranty coverage provided for any frost protection devices fitted.

Australian Consumer Law (ACL)

In addition to this warranty, certain legislation (including the ACL) may give you rights which cannot be excluded, restricted or modified. This warranty must be read subject to such legislation and nothing in this warranty has the effect of excluding, restricting or modifying those rights.

If Neopower fails to meet a guarantee under the ACL, your remedy for such failure may be limited to any one or more of the following:

- replacement of the product;
- repair of the product;
- refunding the cost of the product;
- payment of reasonable costs of having the product repaired;
- payment in respect of the reduced value of the product.

As required by legislation, including the ACL, any claims for damage, or any consequential loss either directly or indirectly due to defects of any kind in a product will only be met by Neopower where the damage or loss was reasonably foreseeable by Neopower.

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Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

HOW TO MAKE A WARRANTY CLAIM

At the time of purchasing your water heater, you should ensure you receive an owner's manual and that details of your purchase, including the date of purchase and the serial number of the storage tank, are recorded therein. You should keep those documents in a safe place in case of a warranty claim as documentary proof of purchase or other tangible evidence will be required to make your claim. Claims can be made at the point of sale or by posting, faxing, or emailing a written claim to Neopower (contact details listed below) within 3 months of the appearance of a defect. Claims must include the following details:

- Date of purchase;
- Location of purchase;
- Proof of purchase; and
- Contact details including name, address, telephone numbers, and email address.

Please note: When making a service call, it is imperative that the 6-digit water heater serial number, located on the technical label, is quoted.

Neopower contact details are as follows:

Imaca Pty Ltd
1 Jellico Drive
Scoresby VIC 3179
P: 1300 062 788
E: info@neopower.com.au

Note: Whilst every care has been taken to ensure the accuracy in preparation of this document, no liability can be accepted for errors or omissions and any subsequent consequences that may arise. Specifications and materials may change without notice.

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1) WARRANTY FORM

Please complete details and retain this warranty together with your purchase invoice, which must be presented when making a warranty claim.

HOMEOWNER NAME	
STREET NUMBER & NAME	
SUBURB STATE POSTCODE	
DATE OF INSTALLATION	
SYSTEM MODEL NUMBER	
NUMBER OF COLLECTORS	
TANK SERIAL NUMBER	
PLUMBER NAME	
LICENCE NUMBER	
PLUMBER SIGNATURE	

This warranty does not exclude, limit or modify any warranty, condition or liability which is or may be implied or imposed on the Company by virtue of the Trade Practices Act, 1974, or any other statute, law, rule or regulation except for the extent to which the Company is lawfully entitled. Note that Neopower is not liable for any expenses associated with making a warranty claim.

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2) SOLAR WATER HEATER – INSTALLER CHECKLIST

Attention: Installer - upon Commissioning; This Form *must* be completed and returned to Neopower. Failure to do so can void homeowner warranty.

The Installer is responsible for Commissioning & Testing

✓= "Yes" / x = "No"

- Has the installation been installed in accordance with Workplace Health & Safety regulations?
- Is the Contractor Solar accredited?
- Has this system been installed to Australian standards AS3500.4 –1994, AS/NZS 2712 including water tightness test and Wiring Rules AS/NZS 3000?
- Has the contractor located solar collectors where site drawing / order nominates. Collectors should be facing North for optimum efficiency. If not, indicate orientation _____
- Has the system been installed as per this Owner & Installer Manual?
- Have the tempering valve, cold water expansion valve, pressure reducing valve and high temperature non-return valves been installed?
- Are Solar Flow & Return lines installed using Copper pipe provided (Plastic Pipe or similar not acceptable)?
- Has the air been purged from system?

I certify that the solar hot water system is installed at the address shown below and has been installed to the manufacturer's requirements and in accordance with this installation manual.

PLUMBER NAME	_____
LICENCE NUMBER	_____
PLUMBER SIGNATURE	_____

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