Owners Guide, Warranty and Installation Instruction

SUMMER TX SERIES SOLAR HOT WATER SYSTEM

10 YEAR LIMITED WARRANTY

FULL FROST PROTECTED SYSTEM

CONTENTS

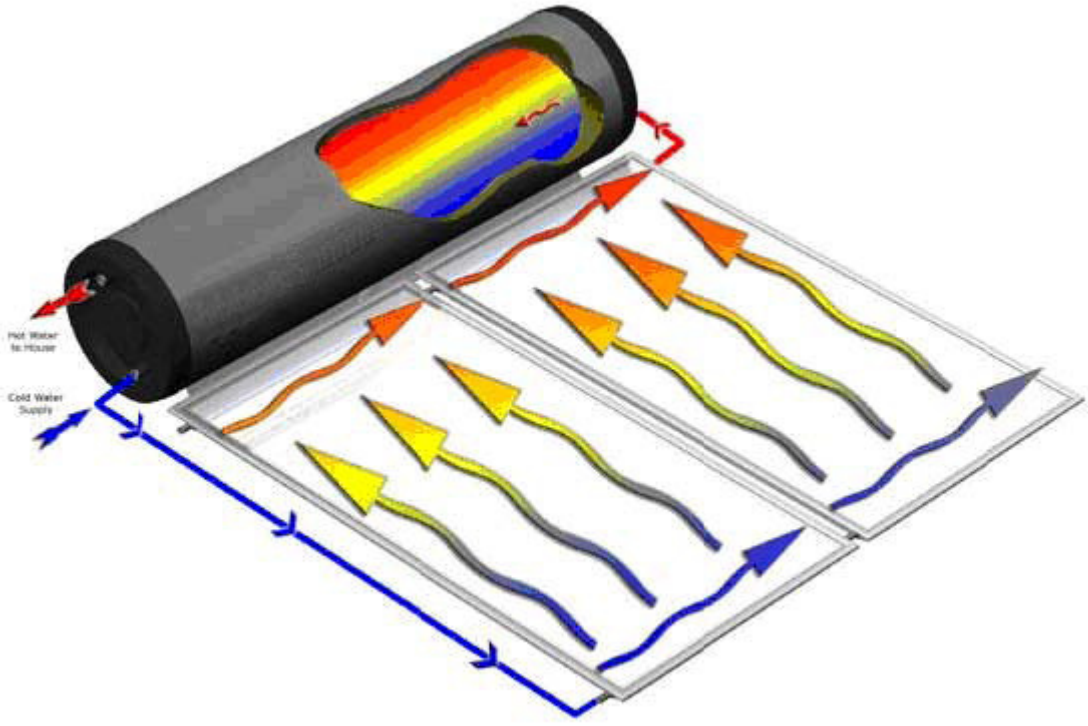
ABOUT YOUR WATER HEATER

Congratulations. You are now the proud owner of the Award winning Thermotec SUMMER Solar Hot Water system, an advanced German design solar hot water system sold and distributed in Australia by Thermotec Australia Pty Ltd.

Owners Information
As the owner of a Thermotec SUMMER solar water heater there are some questions you may have about the system and how it operates. Your solar water heater model is commonly referred to as a close coupled, Thermosiphon system and is one of the most efficient solar water heater types available worldwide.

What is a Thermosiphon System?
A Thermosiphon system is a system where the heated water in the solar collectors rises up into the storage tank by natural Thermosiphon action. Thermosiphon action occurs when water which is heated in the collectors expands becoming lighter allowing colder heavier water to fall by gravitational force to the bottom of the collector. The cold water falling to the bottom of the collector pushes the hotter lighter water back up into the storage tank. This natural action commonly known as Thermosiphon action occurs without any moving parts or electrical energy contribution to the system

What is a Close Coupled System?
A close coupled system is one where the household hot water storage tank and solar collectors are both mounted on the roof. Typically the tank is above but in close proximity to the collectors. The tank and collectors are connected together with 15mm or 20mm copper tube, which is used to transfer heated water from the collectors to the storage tank.



What is a Direct System?
A Direct System is a system where the water used in the household (hot water) circulates through the solar collector panels transferring solar energy into the storage tank. This system type is used in locations where the ambient temperature never falls below freezing point (0℃) and where the water quality is good – less than 300 ppm Total Dissolved Solids (TDS).

What is a Closed Indirect System?
A Closed Indirect System is a system where cold water is supplied to the inner storage tank. The outer storage tank and the solar collectors are then pre-charged indirectly with SUMMER RED, a specially formulated Glycol mix which circulates within the closed circuit.
When the heat energy from the Sun is absorbed by the solar collector, the SUMMER RED becomes hot and rises to the storage tank. The heated SUMMER RED will then transfer its heat to the cold water stored inside the inner tank. This system uses a harmless food grade Glycol and is ideal for all areas, especially where lower temperatures and frosts are experienced.

Your SUMMER TX Solar Hot Water System is a <u>Closed Indirect System</u> and can be used in frost areas where frosts exceed minus 20 degrees C.

How does my system work?
The three main components of your solar water heater system are the potable water storage tank, the solar collector(s) and the ancillary water temperature boost system. This can be either electric or gas, dependant on the model purchased.

The potable water storage tank is used to store the heated water ready for household use. It is constructed using high quality stainless steel to provide long life and is insulated with a high density polyurethane material to ensure minimal heat losses and maximized structural strength.

The solar collectors contain multi-tube copper risers that are ultrasonically welded to a full copper solar absorber plate, the combination of which collects solar energy and transfers it to the fluid within the riser tubes. The absorber plate is coated with a special Titanium Blue (TINOX) selective surface ensuring maximum solar absorbance. The system is enclosed in an insulated marine grade aluminium casing covered with a high strength, low iron, tempered glass sheet that protects the absorber system from physical damage.

An Electric boost system uses an electric element to heat part of the stored household water on those occasions when there is reduced solar energy available. (e.g. cloudy days). The electric element is thermostatically controlled so it only delivers the top up energy required then turns off automatically.

A Gas boost system uses a remotely mounted gas continuous flow water heater connected in series with the hot water supply line to your house hot water pipe work. As the hot water from the solar storage tank passes through the gas heater, its temperature is automatically monitored. If the temperature is below 60℃ the gas heater will add the degrees required to deliver hot water of at least 60℃. If the water temperature is above 60℃ the gas heater will not ignite and provide any boost. A tempering valve should be fitted to reduce water temperature to 50℃ for bathroom use.

For gas boost a Bosch continuous flow is supplied with this system.

Bosch Highflow 21e

The Bosch Highflow range are continuous flow hot water systems that heat water only as required. All units deliver a minimum of 5.5+ star energy performance by offering an efficient alternative to traditional gas and electric storage units. With the maximum efficiency of the all new Bosch Highflow, you are ensured of continuous hot water while saving money and caring for the environment.

USER OPERATING INSTRUCTIONS

Please carefully read the following.

You have selected the Bosch Electronic computer controlled hot water unit. The following instructions will assist you to obtain the best performance from your Bosch water heater. *Your unit has a pre-set temperature and cannot be manually adjusted*

SAFETY

1. Always check water temperature by hand before entering the shower or bath. The temperature may have been changed.
2. Do not touch cover or flue outlet when the Bosch water heater is in operation.
3. Keep flammable materials, trees, shrubs etc. away from the Bosch water heater
4. Water flow needs to be more than 2.5L/min. to operate these Bosch Water Heaters. Hot water temperature may vary at low water flows, or the Water Heater may go out without warning.
5 Warning - If the appliance does not operate, burns with yellow flame, leaks water or a gas smell is evident, turn off and contact the local gas authority, the manufacturer or an authorized service person.

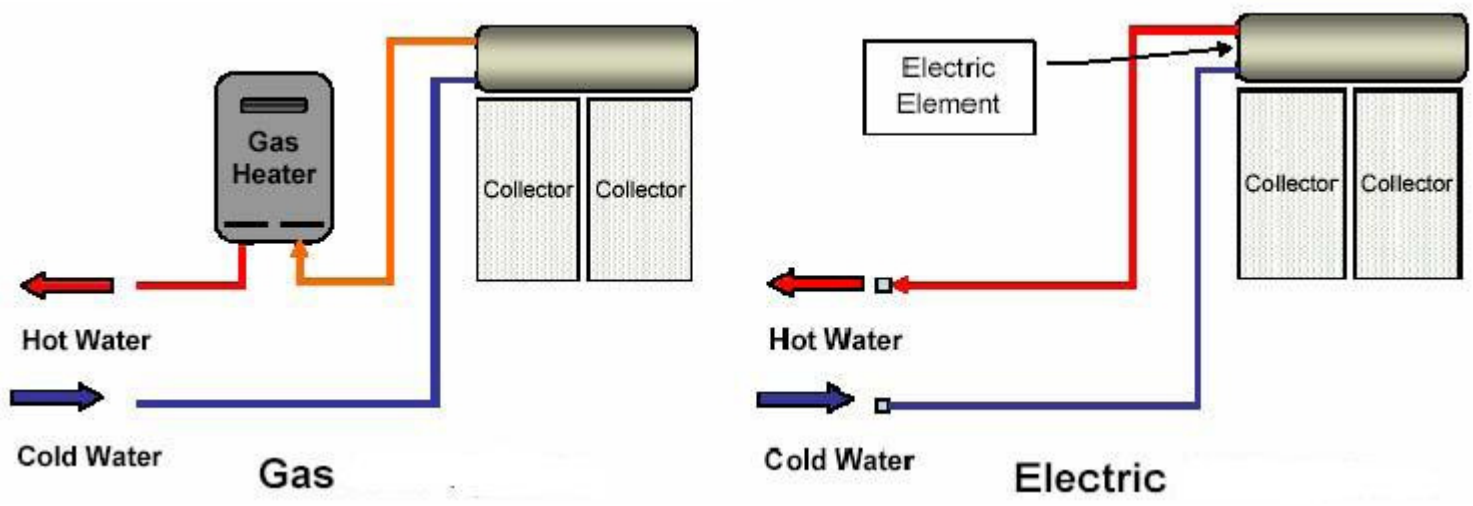
IN CASE OF DIFFICULTIES

If the Bosch water heater ceases to operate, please check that the electricity supply is available. (Check for display of temperature at control pad or plug in a portable appliance.) Also check that the gas supply is turned on. If a fault develops there are no user adjustments or serviceable components contained in this appliance. Please contact an authorized service person.

SERVICING AND MAINTENANCE

These gas water systems should be serviced at intervals not exceeding two years in domestic applications and in commercial applications intervals not exceeding one year.
For information on how to locate service and parts for your Bosch21E please phone 1300 30 70 37

System Schematic Drawing



What system do I have?
The model number of the system will provide this information.
The model number is broken into sections to describe the system which you have installed. For example TX 300 2E (TX3002E)
The prefix letter(s) indicate the system type. e.g. TX (Indirect System Close Coupled SS tank, Tinox Collectors), 300 (300 litre tank) 2E (2 panel with electric boost) or 2G (2 panel gas boost)

How do I operate the system?
A Thermotec SUMMER solar water heater is designed for fully automatic operation, so there is nothing you need to do for day to day system operation. If the electrical boost system has been fitted with a remote switch or time-clock, you may decide when and if you use the electrical boost element. As a guide you may like to isolate the electrical boost system during the summer months, you may use a time clock to permit boosting after sunset or any other combination, which suits your usage pattern. Careful use of these options can further reduce your energy costs for hot water supply to the household. Talk to your installer if you require a time switch or manual switch.

CAUTION

All water heaters have the ability to produce hot water very quickly. To reduce the risk of scald injury it is recommended that a temperature control (tempering) valve be fitted to the hot water supply pipe work. This valve should be checked at regular intervals to ensure its operation and settings remain correct. Also ensure that the pressure & temperature relief valve relief pipe is not located where it can cause damage if hot water is discharged.

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

If cold water pressure exceeds 550 kPa, a pressure reduction valve must be fitted. Failure to install a pressure reduction valve, where required, will void the warranty

FREEZE PROTECTION
Your Thermotec SUMMER Solar Hot Water unit is a “closed circuit” solar water heater. It consists of three main components: the inner stainless steel cylinder, the outer stainless steel heat exchanger and the solar collectors.

The heat exchanger and collectors are filled with heat transfer fluid that has a lower freezing point than water, but at the same time, still has excellent thermosiphon properties. The inner cylinder is filled with potable mains pressure water. During periods of solar contribution the solar collectors heat the heat transfer fluid and, through natural thermosiphon, the fluid circulates through the heat exchanger. During installation, the pre-mixed heat transfer fluid is filled into your system. The heat transfer fluid supplied with this water heater provides protection in frost prone areas to a temperature of -20^{o}C to -25^{o}C.

<u>The system has NO WARRANTY for freeze damage if genuine SUMMER Red fluid has not been used or if the fluid has had water added to the mix.</u>

Non use of system
If you are going to be away for a period of a week or more during the summer months it is advisable to turn off the electricity supply to the booster. It is a possibility that the high temperature valve in the storage tank may open for a short period to reduce the storage tank temperature while you are away. This is a normal function and does not harm the system.

Why a pressure temperature valve?
All Thermotec SUMMER solar water heaters have a high pressure relief safety valve in the hot water storage tank. This is required by law for all hot water storage appliances.
For solar water heaters that only have a pressure & temperature valve located on the storage tank it is normal for a small water discharge to occur during the heating cycle of the system. The water discharge is water expanding due to the heating process. Normally the discharge will be less than 9 litres per day.
For systems that have both a Pressure & Temperature valve and a Cold Water Expansion valve located in the cold water supply pipe work, the expansion discharge will occur through the Cold Water Expansion valve.

<u>Before making a service call</u>
If there is not enough hot water it is recommended that the following points are considered before making a service call.

Low Solar Energy Input
If there have been prolonged periods of cloud or winter is approaching, it may be necessary to reconsider the permitted boosting time for time-clock controlled systems or to turn on the booster for systems with a booster isolation switch.

Solar collector shading
Often trees or other buildings can shade the solar collectors or there can be a dirt build-up on the glass cover. Trees should be cut back if possible or the system relocated if removal of the shading is not possible in the present location. If the glass is dirty this should be cleaned with any normal domestic glass cleaner.

Booster System not operating
For electric systems, the fuse, circuit breaker supplying the system should be checked. If the time clock (where fitted) and the fuse or circuit breaker are operational and the water is cold, you can turn the booster isolator on and off to see if the electricity meter speed changes. If there is no change in speed, it indicates there may be a booster problem and a service call will be necessary. It is important to remember – ***Do not open or adjust any electrical covers or devices yourself.***

For gas systems the gas and electric supplies to the gas heater should be checked to ensure they are both on. If water temperature from the gas heater is below 60℃ and both supplies are on and the gas heater does not ignite there may be a problem and a service call will be necessary

Is there excessive water discharge for the Valves?
If there is a discharge of more than 9 litres per day from any of the systems valves, it indicates there is a problem that requires a service call.

Are you using more hot water than you think?
Often the hot water usage of showers, washing machines and dishwashers is under estimated. Review these appliances to determine if your daily usage is greater than the storage volume of your water heater. If the system contains 300 litres of hot water and your usage is greater than 300 litres there may be periods where the water temperature is slightly lower than normal. It is also advisable to inspect tap washers etc. for leakage and replace if necessary.

System Maintenance
The Thermotec SUMMER system is designed so that there is little to do regarding system maintenance. Personally inspecting or servicing the system is not recommended. Should you decide to personally inspect the roof mounted system it is essential that you use all safety devices required to ensure your safety. *Glass cleaning usually occurs by natural rainfall, however if the installation is in an industrial (or similar) area with high levels of airborne particles then a qualified person can clean the collector glass with normal window cleaning chemicals and equipment.*
The glass in your collectors is a low iron toughened safety glass and cannot be replaced once broken. Attempting to replace the glass could result in personal injury and will void your system warranty

Every five years you should contact the local service agent to replace all safety valves to ensure continued life and operational safety of the system. In locations where the potable water has a Total Dissolved Solids (TDS) of greater than 300 ppm this service is recommended every 3 years.

Where straps, frames etc. are secured to roof timbers all fittings must be of an appropriate type to suit the type of timber. Inadequate or inappropriate fixings may result in straps becoming unsecured and the installation of the solar hot water system becoming unsafe.

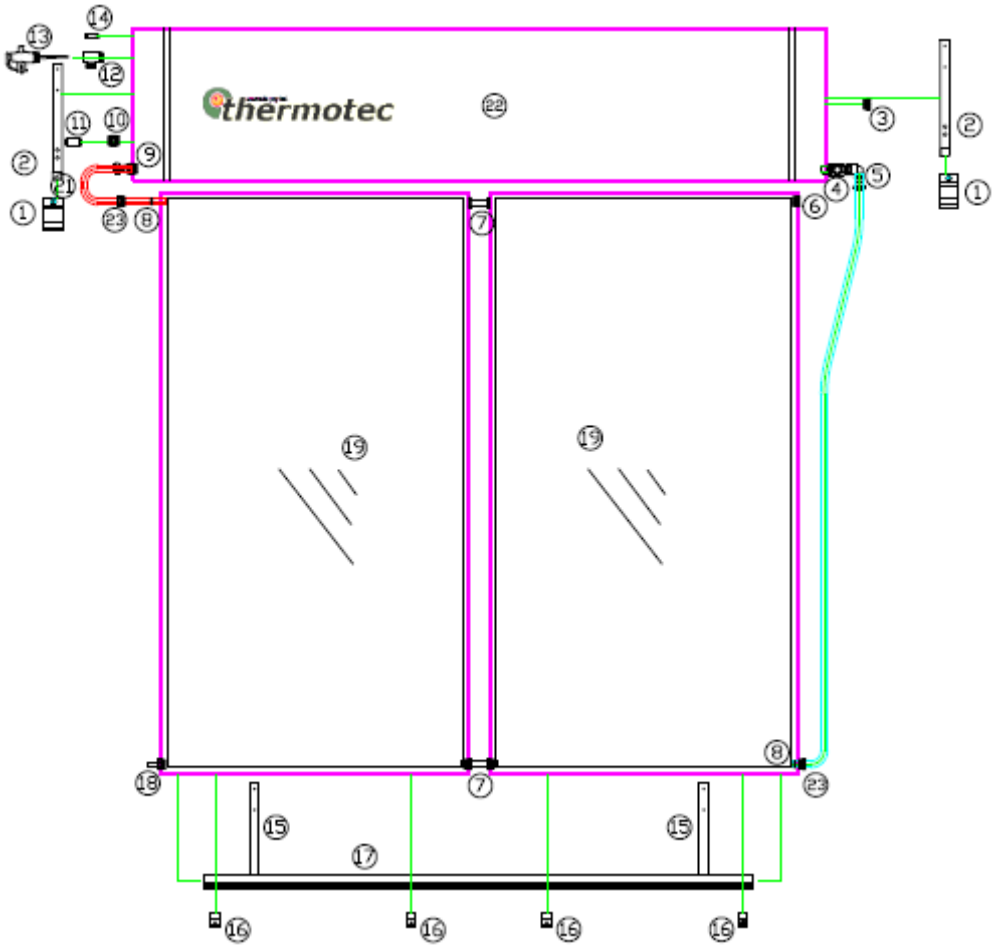
The installation must comply with the requirements of AS/NZS 3500.4, AS/NZS 3000, and all local codes and regulatory authority requirements. In New Zealand, the installation must conform to the New Zealand Building Code G12.

WARNING: Plumber – Be Aware

Use copper pipe ONLY. Plastic pipe MUST NOT be used.

It is a requirement of a solar water heater installation that all pipe work be in copper and not plastic, due to the effects of high water pressures and temperature. 25mm wall E-flex Solar insulation should be used on all exposed pipe to ensure system efficiency. (E-flex is available from the Supplier of this unit)

TX SYSTEM TYPICAL SCHEMATIC & BILL OF MATERIALS – (TX3002E shown))



ITEM	PART NO.	DESCRIPTION (TX300)	QTY	DWG
1	CO-PK-049	TANK CLAMP	2	
2	CO-PK-052	TANK STRAP	2	
3	CO-PF-011	TAIL END PLUG	1	
4	-	THERMOSYPHON ARRESTOR	1	
5	CO-PF-017	ELBOW 3/4"F x 22mm	1	
6	CO-PF-011	COLLECTOR PLUG	1	
7	CO-PK-010	COLLECTOR UNION	2	
8	CO-PF-009	COLLECTOR OLIVE	2	
9	CO-PF-030	TANK ADAPTOR 22MM	2	
10	CO-PF-087	1/2" x 3/4" REDUCER NIPPLE	1	(OPTIONAL)
11	CO-SD-002	NON RETURN VALVE	1	
12	CO-PF-032	TEE ADAPTOR	1	
13	CO-SD-010	PT VALVE 700kpa	1	
14	CO-SD-015	PR6	1	
15	CO-PK-007	COLLECTOR STRAP	2	
16	CO-PK-001	COLLECTOR CLAMP	4	
17	CO-PK-004	COLLECTOR RAIL	1	
18	CO-PF-021	FILL ASSEMBLY 3/4"	1	
19	SC-CA-01	COMPLETE PANEL	2	
20	CO-PK-026	DOWN PIPE	1	
21	CO-PK-044	HOT PIPE	1	
22	ST-300-T03	COMPLETE TANK	1	
23	CO-PF-007	COLLECTOR NUT	2	
24	CO-BN-031	BOLTS M8	6	
25	CO-BN-033	NUTS M8	6	
26	CO-BN-028	WASHER M8	4	
25	CO-PK-053	SUMMER RED	2	

INSTALLATION INSTRUCTIONS

Important Note:

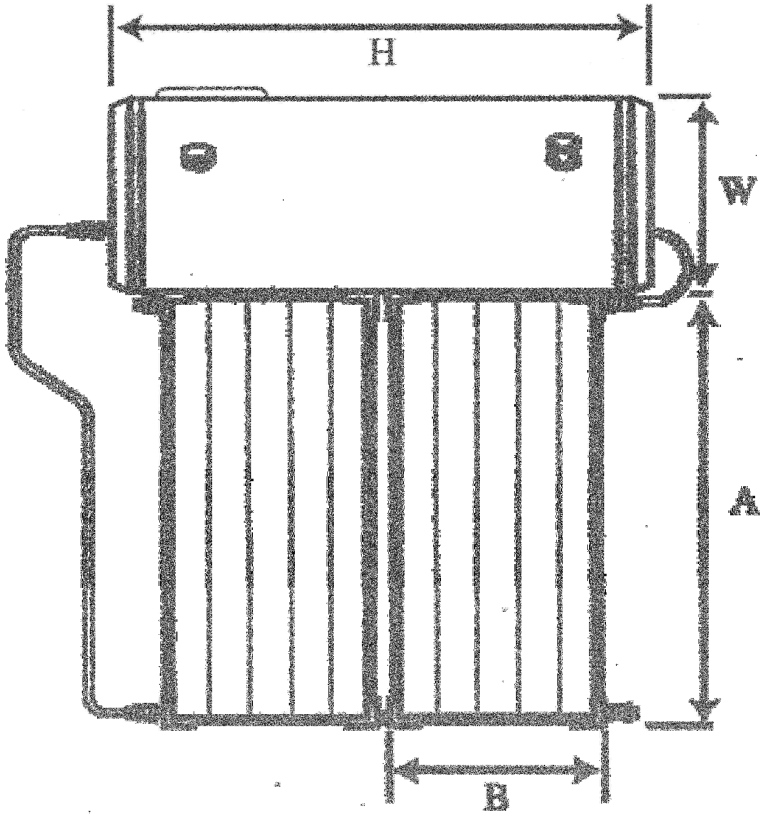
Do not commence an installation until you have satisfied yourself that all Occupational Health and Safety issues associated with working on and lifting components onto a roof have been addressed. All work associated with the installation must comply with local authority regulations. Where these installation instructions and local regulations are in conflict, local regulations must prevail.

Mounting and Connection Kits

There is an installation parts kits supplied with your Thermotec SUMMER Thermosiphon system. A mounting kit containing mounting clips with stainless steel panel straps and a connection kit containing the parts required to plumb the system. The mounting kit does not include the fasteners required to secure the system to the roof structure.The connection kit contains all of the plumbing components required to connect the solar collector to the roof mounted water heater storage tank.

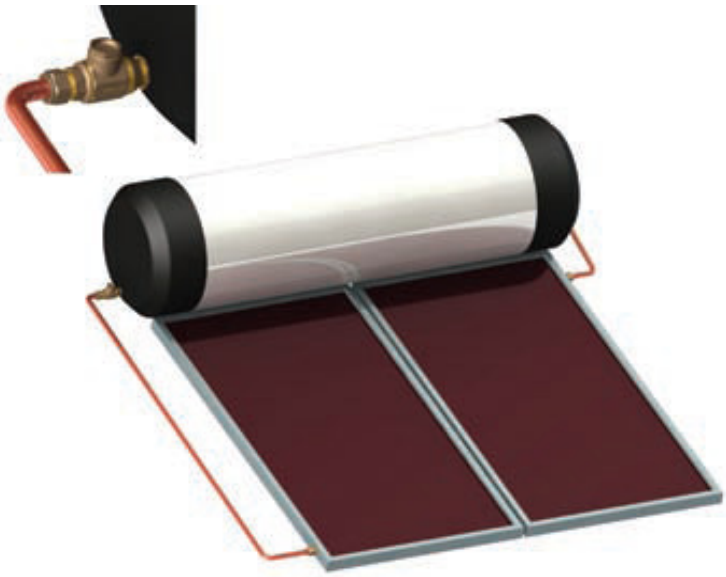
Typical Assembly Diagram

TX300	**A=1940mm**	**B=1016mm**	**H=2290mm**	**W=510mm**
TX180	**A=1940mm**	**B=1016mm**	**H=1490mm**	**W=510mm**



How hot will the stored water be?

Generally, a correctly selected solar water heater can attain an average of twice the ambient day time temperature from Solar contribution alone. This means that, on a clear cloudless day of 25℃, solar contribution will raise the stored water to roughly 50-60℃. The electric booster (on electric boost system) will add boost if your temperature falls below 50℃
During the warmer months, where daytime temperatures can exceed 40℃, hot water temperatures can exceed 85℃. As thermosiphon systems have no ability to control temperature gained from Solar input, **your Thermotec SUMMER TX Solar HW system is fitted with a 'thermosiphon arrestor valve' (TA Valve). In areas subject to high solar energy conditions and in instances where more than one solar collector is installed, the TA valve will stop circulation once the tank temperature reaches approximately 80℃**



THERMOSYPHON ARRESTOR VALVE OPERATION
The thermosyphon arrestor valve (TA valve) is fitted to a thermosyphon solar hot water system to limit the water temperature in the storage cylinder to approximately 80℃.

The valve is located at the cold return to the collectors and closes automatically when water from the bottom of the storage cylinder, passing through the valve, reaches 60℃ - 65℃. This prevents any further thermosypon action from taking place until the temperature in the storage cylinder reduces. When the water temperature in the storage cylinder reduces the valve opens automatically, allowing the thermosyphon action to resume.

TECHNICAL SPECIFICATIONS
Models: TA – 20. Without cold water inlet connection.
TA – 20 – 15 With 15mm (½") copper compression cold water inlet connection.
Material : DR BRASS
End Connections : R ¾" X ¾" copper compression.
Cold Water Inlet : 15mm (1/2") copper compression.
Seal Material : High temperature silicone rubber.
Seat Material : DR BRASS.
Spring Material : 304 Stainless steel.
Maximum working pressure : 1400 kPa.
Maximum temperature : 99℃.
Wax Element : VERNET.
Activation Temperature : 60℃-65℃.

Expansion Control Valve (ECV) if fitted

The ECV valve is located on the cold water inlet piping to the cylinder. The water discharging from the valve is normal and ensures correct functioning. The discharge will be in the form of drips and it is possible to lose about 3% of the total storage capacity of the tank per day. Operate the easing lever on the "expansion control valve" once every six months. It is important that the lever is eased up and down carefully by a qualified person..

Location of your Solar Hot Water System

There are five major factors to consider when selecting the solar water heater installation location;

1. For optimum performance the solar collectors need to face the equator (in Southern hemisphere this is north). Installation on angles of up to 45° away from the equator do not have a major effect on the annual solar output, consequently roof locations which face less than 45° away from the equator are acceptable. If the collectors are installed with an east facing bias the best solar input is achieved in the morning and if there is a west facing bias the best solar input is in the afternoon.

2. Careful site inspection is required to ensure the selected location is not subjected to shading from adjacent trees or buildings throughout the day but particularly between 9am and 3pm the highest solar input times. Shadows are longer in winter than in summer so a site that is free of shadows from adjacent objects in summer may have some shadows in winter.

3. The solar water heater is to be located a minimum of 500mm up from the roofs lower edge, 1 metre in from either side of the roof, and 500mm down from the roofs ridge line and should be located as close as possible to the location which uses the most hot water e.g. bathroom or kitchen. This is to reduce energy losses which may occur if the pipe work between the solar water heater and the point of usage is too long.

4. To achieve optimum performance the solar water heater should be installed on a roof pitch of greater than 12° and less than 35°. Installations on a roof where the roof pitch is greater than 30° will require additional support at the storage tank to prevent it moving downward after installation. If the roof pitch is less than 12° the system will require a mounting frame to increase the pitch above 12°. Installations below 12° do not thermosiphon effectively and the collector glass will not self clean during rainy periods.

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5. Careful inspection of the roof truss system is essential to ensure it can support the systems weight once filled with water. Particular care must be taken where the front foot of the storage tank is located. Typically the tank front foot should be located over a tile batten, purlin or similar for maximum strength. If the roof cannot support the load additional bracing must be installed before the solar water heater is installed.

MINIMUM INCLINATION ANGLE

Minimum inclination angle for locations south of the tropic of Capricorn (23.5o).

ADELAIDE	**15o**	**ALICE SPRINGS**	**10o**
BRISBANE	**10o**	**MELBOURNE**	**18o**
PERTH	**15o**	**SYDNEY**	**15o**

Mounting Fasteners

NOTE: All mounting bolts, washers, split-lock washers & nuts are to be stainless steel.

Mounting the Collector(s)

Roof area required: 300 L x 2 collectors – 2.4 m wide x 2.5 m deep. Weight (full) 510 kg approx
. 180 L x 1 collector – 1.5 m wide x 2.5 m deep. Weight (full) 270 kg approx.

The collector installation procedure is as follows (tiled roof):

1. From the inside of the roof, in the attic crawl space, measure the centre-to-centre distance between the roof trusses. This distance is required to secure the mount clips to the collector prior to attaching the collector to the roof structure.

2. Position two (*2*) mount clips along each end of the collector a distance apart equal to the centre-to-centre roof truss spacing. Insure the mounts are centred across the collector ends and secure them with the locking bolts (*multiple collector installations will require the mount clips to be slightly off centre, this allows for the spacing between collectors*).

3. Place the collector on the roof in the area selected for install.

4. Starting in the upper left-hand quadrant of the selected install area, locate the position of the nearest roof truss. Measure down from the peak of the roof, a distance of 1 metre and make a mark on the roof tile or the metal surface. This will be the position of the top left mounting hole of the collector mount clip.

5. Using silicone caulk or roofing mastic, coat the underside of a roof mount flashing. Place the flashing into position centred over the proposed mounting hole, insuring that the top of the flashing is under the upper roof tiles and the bottom of the flashing laps over the lower roof tiles. Secure the flashing using a couple of roofing nails under the upper roof tiles.

6. Drill an appropriately sized hole into the roofing structure.

7. Place the collector into position with the upper-left mounting foot centred over the newly drilled hole and align the collector to be square with the roof.

8. Using the installed mount clips as a template, mark the position of the remaining mount holes on the roof tiles then set the collector aside.

9. Secure flashings and drill holes for the remaining mount clips.

10. Using a fit for purpose rubber boot, silicone caulk or roofing mastic, apply a liberal amount of sealant around the openings to all of the newly drilled holes then place the collector into position and secure using the supplied hardware selected for the install method.

11. Check to insure that all mount connections are tight and prepare to mount the tank.

Note: Guards may be necessary to prevent damage by hail, accident or vandalism..

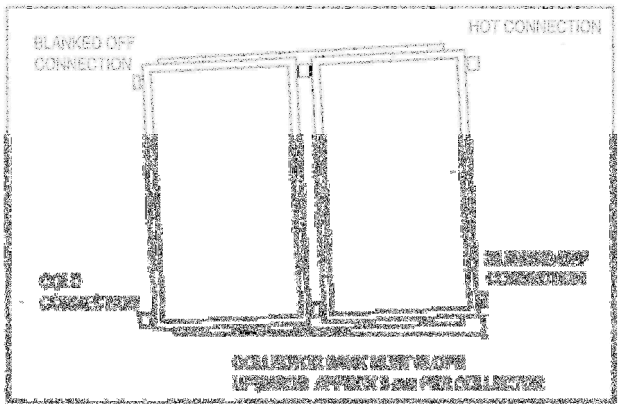
METAL ROOFS

Procedure will be as for tiled roofs except for the following:
1. Tank position should be above a purlin roof support.
2. Measurement for collectors support angle is taken from the future position of the tank.

3. Straps for collector support angle and tank should be secured to Purlin using TEK screws
4. Hook the collector straps to the collector rail(s), one strap to each collector. Once in position, fix the collector straps to the rafters, through the metal roofing material, using suitable screws or anchors. Care should be taken to mark Colorbond® or other metal roof sheet with a marking pen and to remove all swarf from the metal roof as these can cause deterioration of the metal roofing material.

Asbestos Roofs
All Occupational Health and Safety matters/procedures must be adhered to in relation to asbestos material. If safety procedures are not adhered to then terminal illness may result from the handling of asbestos. Care needs to be taken when fixing straps to asbestos roofs. It is suggested that longer tek screws are used to fit securely into purlins.

NOTE: For thermosiphon to work, the panels must be inclined so that the cold return corner of the first panel is at least 8mm lower than the opposing corner. On a multi-panel system, this incline must be progressive through all panels. Amount of inclination should be between 8-20mm to prevent reverse thermosiphon. It should be noted that the cold/hot pipes can be fitted to either side of the tank but in all cases the cold side should be lower than the hot side. Cold connection shown below at bottom of panel.



Mounting the Thermosiphon Tank
The procedure for mounting the Thermosiphon tank is as follows:

1. Using the collector mounts as a reference, measure from the centre of the upper mount bolts a distance of 100mm. Pop a chalk line connecting the two points and extending outward approximately 300mm on either side of the collector.

2. Position the Thermosiphon tank into place above and centred to the collector. Line up the mounting holes (*on the tank mount rail closest to the collector*) centred on the marked chalk line. Mark the position of the mount holes and set the tank aside.

3. As with the collectors, secure flashings and drill holes for each of the mount locations. Apply a liberal amount of sealant around the newly drilled holes.

4. Position the tank into place over the mount holes and secure using the appropriate suppliedl hardware.

5. Check to insure that all mount connections are tight. Apply a liberal amount of sealant over all of the mount hardware heads/threads (*tank and collectors*).

CYCLONIC AREAS
If the system is to be used in a Cyclonic zone, we recommended that the system is fitted onto a special mounting frame. Your local Council will advise if this is a mandatory requirement for your area. Your system should then be ordered with a factory supplied Cyclone installation frame.

Plumbing Connections
Assemble the hot/cold interface plumbing to the collector as shown . Various lengths of copper tubing are supplied, ready to install, as part of the fitting kit. Service connections to the Thermosiphon system should include isolation and drain valves (*not included*) internal to the residence. Ensure that the drain line from the Temperature and Pressure relief is plumbed to a safe location. Remember this pipe can discharge very hot water. Carefully consider its location.

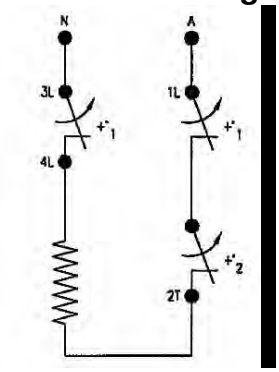
ELECTRICAL INSTALLATION INSTRUCTIONS
Note:
1. Electrical connection must be installed in accordance with AS3000 wiring rules (in Australia) and local electrical and building regulations.
2. All electrical work must be conducted by a licensed electrician.

Electrical Connection for Electric Boost Systems
The electric element is only connected in models using an electric boost system. No connection is made to the electric element for gas boost systems.
The electrical booster requires a 220 – 250 volt single phase ac power supply with a capacity of 15 amps for a 3 kW or 3.6kW element,
The power supply must be protected by an individual fuse or circuit breaker at the main electrical supply switchboard and rated to suit the booster size. The supply to the solar water heater can be operated directly from the switchboard or via a remotely mounted switch or time clock as requested by the customer. The heater must be provided with a suitable means for disconnecting the power supply. An on-off switch (2 pole & 3mm separation type) should be installed in the meter box.
An existing unused on-off switch may be used provided it is of the correct rating/type and is in sound condition. In addition to the switch in the meter box, an internal switch may be installed in series between the meter box and the booster element and can be positioned in the laundry or kitchen. This can be arranged with the Electrician at time or installation.

Final electrical connection at solar water heater tank is made as follows:

The Earth wire is connected to the earth stud marked with an earth symbol, the active wire connected to the thermostat inlet terminal marked (A) and the neutral wire is connected to the thermostat inlet terminal marked (N).
Important
Do not turn on the power supply until the solar water heater has been filled with water and pressurized.

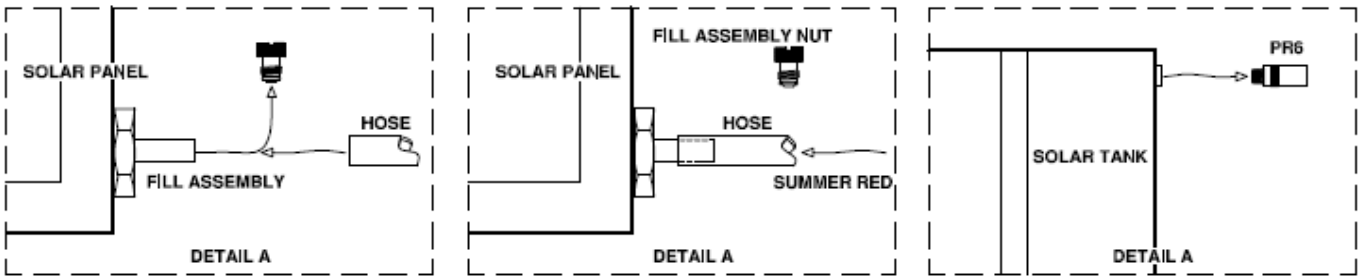
Electrical Circuit Diagram

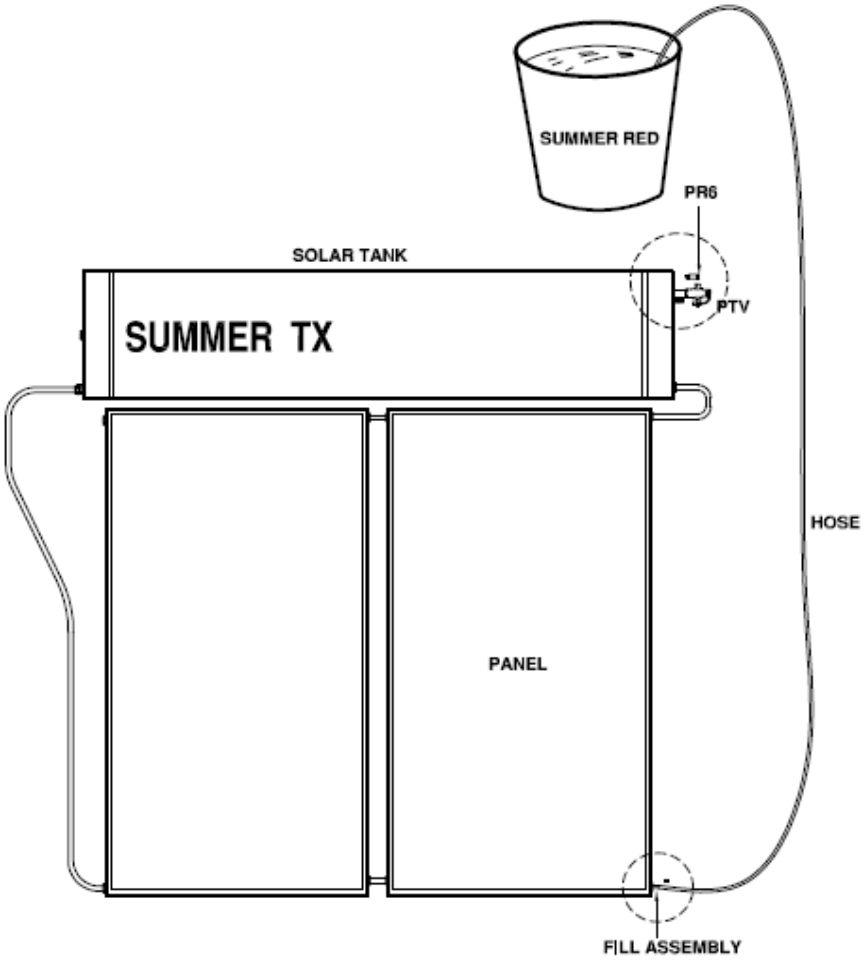


Electrical Connection for Gas Boost Systems:
For models using a gas boost system the electrician is required to install a domestic electrical outlet socket adjacent the gas heater location. The gas heater requires a 220-240 volt 60 Hz power supply and is rated at 0.47 amperes

THERMOSTAT SETTING
The thermostat is adjustable from 60℃ to 70℃. The thermostat is adjusted by turning the adjuster anticlockwise to decrease the temperature setting and clockwise to increase the temperature setting. Only adjust the temperature setting when the isolating switch is switched off at the switchboard. Adjustment should only be made by a registered electrician.

Filling the panels and heat transfer jacket with SUMMER Red Glycol





Filling the panels and heat transfer jacket with SUMMER Red Glycol

When filling the jacket with SUMMER Red glycol it is essential that the main tank is filled with water prior to commencing.

FAILURE TO DO SO MAY CAUSE DAMAGE AND VOID YOUR SYSTEM WARRANTY

SUMMER RED GLYCOL MIXTURE

SUMMER RED Heat Transfer fluid is pre-mixed and should not be diluted with water. The system will withstand frost temperatures in excess of minus 20 degrees Celsius.

Fill the TX system as follows:

(1) Remove PR6 plug from the vent socket. This will allow air to escape during filling.

(2) With the aid of a funnel, and or bucket and hose connected to the fill assembly valve, pour / syphon the contents of the heat transfer fluid container into the hose until the level of fluid reaches the bottom of the vent socket.

(3) Screw PR6 vent back into the vent socket using thread seal tape.

(4) It is strongly recommended that the SUMMER Red fluid level is checked three (3) months after installation of the system to ensure fluid has not been lost due to any system leaks, air traps or incorrect filling.

(5) The SUMMER Red fluid should be checked every three (3) years and changed every five (5 years). Failure to carry out the three (3 year) inspection and five (5 year) fluid replacement, will void your warranty

NOTE: The SUMMER Red heat transfer fluid is of food grade and non toxic. However, care should be taken at all times when handling not to spill or accidentally consume.

DRAINING AND FILLING THE WATER HEATING SYSTEM

• Draining or filling normally occur only during installation or servicing and must be carried out by an authorised Service person/Plumber

DRAINING THE SOLAR COLLECTORS

To drain the solar collector(s):

• It is recommended to change the heat exchange fluid every five years and have levels checked every three years.

• Draining the collectors should be conducted within two to three hours of sunrise, when the water temperature inside the solar collector(s) is still at a low point

• Before starting, ensure that panels are covered with a suitable material such as blankets, canvas or similar to prevent solar heating.

• Open the service valve at the bottom right of the collectors. Remove the vent socket plug on the right side of the solar storage tank.

• Allow fluid to drain into a container and dispose of in accordance with the relevant local disposal recommendations for glycol anti-freeze products. **CAUTION: The fluid being drained can be very hot. All care must be taken to prevent burning to skin or spillage**

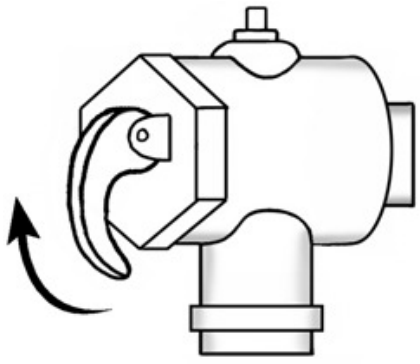
• Refill the system in accordance to the filling instructions on page 17 of this manual. Ensure that the correct SUMMER Red is used to suit local climatic minimum temperatures

TANK DRAINING INSTRUCTIONS

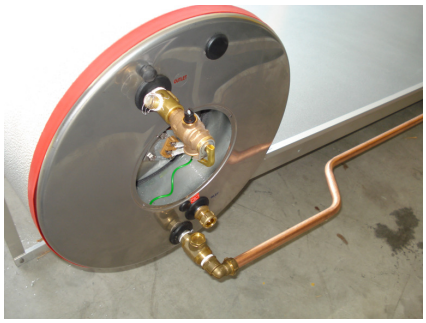
1. Ensure that panels have been correctly drained before draining tank
2. The power supply to the electric booster must be switched off.
3. Close the cold water mains supply stop cock.
4. Open a hot tap to relieve pressure.
5. Disconnect the cold water inlet connection
6. Your tank will now drain
7. Please ensure that precautions are taken as this water could be hot

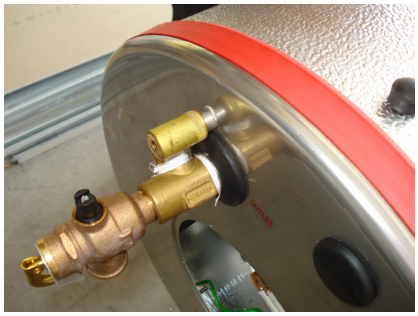
Pressure and Temperature Relief (PTR) Valve

This valve is located near the top of the water heater and is essential for safe operation. It is normal for the valve to release a small quantity of water through the drain line during heating. However, continuous leakage of water from the valve and its drain line may indicate a problem with the water heater. **Never block the outlet of the PTR valve or the drain line for any reason. The easing lever must be operated at least once every six months. It is very important you raise and lower the easing gear gently. Failure to do this periodically may result in the water heater cylinder failing or in some cases rupturing due to blockage.**



The P/T relief valve should be fitted with a downwards facing discharge pipe.
Continuous leakage of water from the valve may indicate a problem with the water heater.





MATERIAL SAFETY DATA SHEET
Propylene Glycol (SUMMER Red)

Not classified as hazardous according to criteria of Worksafe Australia.

Thermotec Australia Pty Ltd 168 Carrington St, Revesby, NSW 2212 AUSTRALIA

TRADE NAME :	Propylene Glycol
OTHER NAMES :	SUMMER Red Heat Transfer Fluid
U.N. NO. :	None Allocated
DG CLASS :	None Allocated
SUB RISK :	None Allocated
PACKAGING GROUP :	None Allocated
HAZCHEM :	None Allocated
POISON SCHEDULE :	None Allocated
USES :	Humectant, Refrigerants, Fragrance.

PHYSICAL DESCRIPTION/ PROPERTIES

Appearance, odour : Red clear liquid, odourless
Melting Point : -59℃
Boiling Point : 188℃
Specific Gravity (20℃) : 1.04
Vapour Density (air=1) : 2.6
Vapour Pressure (20℃) : Not Available
Flash Point (Closed cup) : 99℃
Flammability Limits (%) : lower limit: 2.6, upper limit: 12.5
Solubility in water (g/L) : Soluble
Autoignition Temp (℃) : 400℃

INGREDIENTS

Chemical Name CAS Number Proportion
Propylene Glycol 57-55-6 >99.5%
Other ingredients are not considered hazardous by Worksafe Australia to 100%

HEALTH HAZARD INFORMATION

HEALTH EFFECTS

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms that may arise if the product is mishandled are:

ACUTE EFFECTS:

SWALLOWED: Non toxic. Ingestion of large amounts may cause some gastrointestinal disturbances.

EYE: May cause stinging and tearing.

SKIN: May cause mild irritation on prolonged contact.

INHALED: No adverse effects expected.

CHRONIC EFFECTS

No data available.

FIRST AID

SWALLOWED: If large amounts ingested give water to drink. Seek medical advice.

EYE: Immediately irrigate with copious quantities of water for at least 15 minutes. Eyelids to be held open. Seek medical advice.

SKIN: Wash with soap & water. Remove contaminated clothing, launder clothes before reuse. If irritation develops seek medical advice.

INHALED: Remove victim from exposure - avoid becoming a casualty. Rest, half upright position, remove contaminated clothing and loosen remaining clothing. Keep at rest until fully recovered. If breathing laboured ensure airways are clear. If breathing has stopped apply artificial respiration at once. Seek medical advice.

ADVICE TO DOCTOR: Treat symptomatically.

TOXICITY : **ORAL LD50 (rat):** 20g/kg. **LD50 SKIN (rabbit):** 20.8g/kg.

PRECAUTIONS FOR USE

EXPOSURE STANDARDS: No value assigned for this specific material by the National Occupational Health and Safety Commission (Worksafe Australia).

ENGINEERING CONTROLS: Ensure ventilation is adequate. Use a system of local or general exhaust ventilation to keep vapour or mist levels as low as possible.

PERSONAL PROTECTION: Avoid skin and eye contact and inhalation of vapour or mist spray. Wear overalls, eye protection & gloves. Use with adequate ventilation. If airborne concentration is high, use an approved respirator. Always wash hands before smoking, eating, drinking or using the toilet.

FLAMABILITY Combustible Liquid.

SAFE HANDLING INFORMATION

STORAGE AND TRANSPORT: Not defined as a Dangerous Good by the Australian Code for the Transport of Dangerous Goods by Road and Rail. Store in a cool place away from sources of heat or ignition. Store in well ventilated area. Store away from oxidizing agents.

SPILLS: Wear protective equipment to prevent skin and eye contamination and inhalation of vapours. Contain and recover liquid where possible. Use absorbent such as earth, sand or other non-combustible material. Collect and place into suitably labelled containers for disposal.

DISPOSAL: Refer to State Land Waste Management Authority.

FIRE/EXPLOSION HAZARDS: Combustible liquid. On burning will emit toxic fumes. Containers may explode in heat or fire. Use water to keep fire-exposed containers cool. Fire fighters to wear self-contained breathing apparatus if risk of exposure to vapour or products of combustion.

EXTINGUISHING MEDIA: Water spray, foam, dry chemical powder or carbon dioxide.

ENVIRONMENTAL IMPACT : **Biodegradability:** Product is biodegradable.

COMMISSIONING THE TX SOLAR Hot Water SYSTEM

After the system is installed, the system must be started and tested. Testing is necessary to detect leaks, check operation of the booster, identify and ensure that the installation is correct

a. Turn on a hot water outlet.

b. Turn on water supply

c. Turn on stopcock and allow water to fill system.

d. Air will be dispelled through the open hot water outlet.

e. When water flows freely from the open hot water outlet turn on one other hot water outlet to ensure there is no drop in pressure (mains pressure only). Shut off taps and allow system to pressurise.

f. Check all other hot water outlets, including showers, to ensure all air is expelled and all outlets have been reconnected.

g. Inspect all plumbing joints and solar system connections, especially between collectors and storage tank. If system leaks, system must be shut down, drained and leaks repaired. Ensure jacket is emptied before tank is emptied and refill the tank before the jacket is filled.

h. After leaks have been repaired, retest.

i. Turn on electric power and test terminals on storage tank to ensure power is present on active terminal.

WARNING: Ensure tank is full of water before turning on electric power.

j. Raise the pressure/temperature relief valve easing lever to ensure valve is functioning.

Once the above steps have been completed, the system should now be ready to operate.

WARNING: SCALDING OCCURS AT 50℃. THIS APPLIANCE IS CAPABLE OF PRODUCING HOT WATER AT ABOVE THIS TEMPERATURE. A TEMPERING VALVE SHOULD BE INSTALLED AS PER YOUR LOCAL GOVERNMENT REQUIREMENTS

MAINS WATER SUPPLY

Where the mains water supply pressure exceeds that shown in the table below, an approved pressure limiting valve is required and should be fitted by a qualified Plumber

Valve Settings

Model	TX180, TX300
Relief valve setting	700 kPa
Expansion control valve setting	700 kPa
Max. mains supply pressure	550 kPa

Your Thermotec SUMMER solar water heater is manufactured to suit the water quality of most Australian town water supplies. There are, however, some known water qualities that can have detrimental effects on the water heater and its operation and/or life expectancy. If you are unsure of your water quality, you can obtain information from your local water supply authority. This water heater can be used in areas where the total dissolved solids (TDS) content in the water is up to 600ppm and the Saturation Index (SI) is between -1 to +2. If the water supply has a chloride level greater than 250mg/L, the warranty does not apply to the storage cylinder.

SATURATION INDEX

The saturation index is used as a measure of the water supply's corrosive or scaling properties. In a corrosive water supply, the water can attack copper parts and failure will occur. Where the saturation index is less than –1.0, the water is corrosive and a corrosion resistant heating unit should be used, and the warranty does not apply to the storage cylinder.

In a scaling water supply calcium carbonate is deposited out of the water onto any hot metallic surface. Where the saturation index exceeds +0.40, the water is scaling and an expansion control valve must be fitted on the cold water line after the non-return valve. Where the saturation index exceeds +0.80, the SUMMER TX series should not be used

TECHNICAL SPECIFICATIONS

Model	TX1801E	TX3002E
Capacity (L)	180	300
Tank Weight		
Empty (kg)	50	77
Full (kg)	232	379
Collector Weight		
Empty (kg)	32	64
Full (kg)	34	68
Installation Dimensions		
Width (mm)	1490	2290
Depth (mm)	2430	2430
Height (mm)	510	510
Cold Water Inlet	DN 20	DN 20
Hot Water Outlet	G¾B	G¾B
Titanium Blue Selective surface	panel	panel
Marine grade aluminium casing	panel	panel
All fittings and pipe work supplied in the installation kit are brass and copper		
Storage Tank	316SS	316SS
HD Pressure Injected PU Foam	yes	Yes
End cover material	316SS	316SS
Electric Boost Element	3kW	3kW
Panel Glass material is 3mm low iron tempered		
Riser material	copper	Copper
Number of risers	8	16
Absorption coefficients	0.96 +/-0.02	0.96 +/-0.02
Glass tensile stress	10,000psi	10,000psi
Glass compressive strength	80,000psi	80,000psi

SUMMER TX SOLAR HOT WATER SYSTEM

10 Year Limited Warranty - Domestic

The warranty applies to systems installed in a single family domestic dwelling. The company has recorded the serial number of your SUMMER solar hot water system, however it is important that you send us the completed warranty card along with your completed installation report which must be signed by your installer.

PLEASE ENSURE YOU AND YOUR INSTALLER COMPLETE, SIGN AND RETURN TO THERMOTEC AUSTRALIA PTY LTD, THE INSTALLATION REPORT FORM AS THIS IS YOUR WARRANTY REGISTRATION.

THIS WARRANTY IS VOID IF THE SYSTEM IS INSTALLED BY ANY PERSON OTHER THAN AN APPROVED AND AUTHORISED INSTALLER. DIY INSTALLATION VOIDS ANY PART OF THIS WARRANTY

This warranty offers protection against manufacturing defects, faulty materials and/or workmanship, leakage from corrosion, upon the following terms.

A. A 12-months comprehensive warranty which covers parts and labour. Travelling outside of metropolitan areas will incur a charge for travel time.

B. 10 years parts guarantee on collector and tank against corrosion and leakage, providing the operating conditions of the warranty are met, from the date of installation at purchaser's site.

C. 1 year for electrical components – heating elements and thermostats.(parts only) subject to conditions of electrical component manufacturer. 1 year warranty for all valves as per the valve manufacturers terms and conditions.

Warranty Conditions

A licensed gasfitter/plumber and/or electrician in accordance with all installation instructions and all relevant statutory and local requirements of the State in which the system is installed must install the system.

The water heater must be installed in accordance with Thermotecs installation instructions along with relevant local and statutory requirements. Damage to buildings, chattels or any other consequential damage caused either directly or indirectly due to leakage of the water heater and breakage of collector glass due to vandalism or storms including hail are not within the scope of this warranty.

This warranty only applies to the solar system/electric water heater product and does not apply to any additional electrical and/or plumbing parts supplied by the installer or the installation. The warranty for the gas boost system is covered by the gas boost manufacturer.

The system is covered for the indicated period from the date of the original installation and payment for the system. Should a part of the complete solar system/water heater product be replaced during this period, then only the balance of the original warranty will continue to remain effective.

The system is installed in a domestic household. This Warranty does not cover any type of Commercial/Industrial installation or operation.

The Warranty shall be limited to the replacement or repair, at the option of Thermotec Australia Pty Ltd, of any defective part, and of such parts as have been damaged in consequence of the defect. Thermotec Australia Pty Ltd is excluded to the extent allowable by Law from responsibility for any consequential loss including:

- Damage to property
- Economic or financial loss;
- Pain and suffering; and
- Any legal or other damages resulting from any manufacturing fault or defect. Thermotec Australia Pty Ltd shall be under no obligation to return parts replaced at its option under this Warranty
- Injury to person or persons

Warranty Exclusions

THE FOLLOWING EXCLUSIONS SHALL CAUSE THE SYSTEM WARRANTY TO BECOME VOID. THIS MAY INCUR A SERVICE CHARGE AND COSTS FOR PARTS IF REQUIRED TO EFECT THE REPAIR.

Where service is required to reconnect the water heater operation due to problems related with abnormal water supply (i.e. high water pressure), faulty gas fitting, plumbing and/or electrical wiring, or major variations in gas or electrical energy supply.

Where an overpressure limiting valve, check valve and strainer are not fitted in areas where the mains pressure is likely to exceed 550kPa (80psi)

If the system is sold, repaired or altered by any third party without the consent of Thermotec Australia Pty Ltd or their appointed Distributor or Sales Agent.

Claims for damage to walls foundations (outside), furnishings (inside), roofs or other losses, directly or indirectly due to leakage from the water heater.

Where the system has been drained for a period without the solar collector being covered / protected, resulting in damage to collector from overheating.

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Accidental glass breakage is not covered by this warranty, and should be added separately to your general household insurance policy under the glass breakage section.

This warranty does not cover the effects of sludge/sediment, scale or any corrosive elements, as a result of connection to a water supply with low quality water or from unfiltered sources such as spring, dam, bore, river or other.

This warranty does not cover the effects resulting from the use of bore waters and highly mineralized waters or when water exceeds or is outside the following criteria:

Total dissolved solids 600 ppm
Total hardness 200 mg/litre
Chloride 200ppm.
Sodium 150 mg/litre.
Magnesium 10 mg/litre or 10ppm
pH Levels 6.5 – 8.5
Electrical Conductivity 850 uS/cm

This warranty does not cover damage to the storage tank or panels as a result of overheating. A working Thermosyhon Arrestor valve must be fitted and operational at all times. This valve is supplied with your system and is fitted at time of installation.

Warranty of the system is void if payment is not received in full.

WARRANTY & INSTALLATION REPORT – Owners Copy

Owner _____ Address : _____

Suburb:_____ State:_____ Postcode: _____

Ph:_____ Date Purchased: _____ Purchased From: _____

Model: TX180 TX300 (circle one) No. Of Panels: _____ Panel Serial #: _____

Panel Serial 2: _____ 3:_____ Tank Serial #:_____

SUMMER RED GLYCOL LITRES: _____

Installer: _____ Licence No:_____

Address: _____ Ph: _____

Date Installed: _____ New Install/ Replacement (circle one)

Electrician:_____ Contact Ph:_____

CHECKLIST:

- ☐ **Roof sealed & watertight**
- ☐ **P/T valve set and easing lever OK**
- ☐ **P/T valve drain pipe safe/unobstructed**
- ☐ **Ensure tank full**
- ☐ **Check system for visible leaks**
- ☐ **Bleed air from system (via taps etc)**
- ☐ **Check thermostat setting**
- ☐ **Mains water turned on**
- ☐ **T/A valve installed**
- ☐ **Insulation on pipework**
- ☐ **Panel thermosiphon angle OK**
- ☐ **Turn on power**
- ☐ **Check power at element**
- ☐ **Check all joints for visible leaks**
- ☐ **Hand over and instruction to owner**

Installed by:_____ Signed:_____ Date: _____

WARRANTY & INSTALLATION REPORT – Thermotec Copy
Return within 14 days of install to:Thermotec Aust.P/L PO Box 350, Revesby Nth, NSW 2212

Owner _____ Address : _____

Suburb:_____ State:_____ Postcode: _____

Ph:_____ Date Purchased: _____ Purchased From: _____

Model: TX180 TX300 (circle one) No. Of Panels: _____ Panel Serial #: _____

Panel Serial 2: _____ 3:_____ Tank Serial #:_____

SUMMER RED GLYCOL LITRES: _____

Installer: _____ Licence No:_____

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- ☐ **Check all joints for visible leaks**
- ☐ **Hand over and instruction to owner**

Installed by:_____ Signed:_____ Date: _____

SERVICE RECORD

DATE OF SERVICE: _____ BY (COMPANY) _____

COMMENTS:

_____

_____

TECHNICIAN SIGNATURE:_____

DATE OF SERVICE:_____ BY (COMPANY) _____

COMMENTS:

_____

_____

TECHNICIANS SIGNATURE:_____

DATE OF SERVICE:_____ BY (COMPANY) _____

COMMENTS:

_____

_____

TECHNICIANS SIGNATURE:_____

SUPPLIED BY: Thermotec Australia Pty Ltd
PO Box 5085, Milperra
NSW 1891, AUSTRALIA
Local Ph: 1300 727 083
Int.Ph: +61 2 9771 6400

Email: info@thermotec.com.au

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