



## E-SUN INSTALLATION INSTRUCTIONS FOR MODELS 200 O LP AND 300 O LP

### Model Number Explanation.

#### Model 200 O LP –

The first two numbers (20) indicate the storage tank capacity is 200 Litres  
The third number (2) indicates the solar collector area is nominally 2 m<sup>2</sup>  
O indicates an Open circuit system  
LP indicates Limited Pressure tank

#### Model 300 O LP –

The first two numbers (30) indicate the storage tank capacity is 300 Litres  
The third number (4) indicates the solar collector area is nominally 4 m<sup>2</sup>  
O indicates an Open circuit system  
LP indicates Limited Pressure tank

### Important Note:

Models 200 O LP and 300 O LP are designed for locations where the ambient temperature does not fall below freezing point (0°C or 32°F) and where the water quality is good – less than 600 ppm Total Dissolved Solids (TDS).  
If the proposed location does not meet these criteria, closed circuit models 202 C LP or 304 C LP must be installed.

### Location Selection

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 and in the Northern hemisphere this is South). 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 should be located as close as possible to the location which uses the most hot water eg 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 8° and less than 30°. 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 8° the system will require a mounting frame to increase the pitch above 8°. Installations below 8° do not thermosyphon effectively and the collector glass will not self clean during rainy periods.
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 can not support the load additional bracing must be installed before the solar water heater is installed.

### System Installation

*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 E-Sun instructions and local regulations are in conflict, local regulations must prevail.*

Refer to the assembly drawing on the following pages for component interconnection details.

The starting point for the installation is the storage tank front foot. The storage tank front foot must be located over a tile batten or purlin for maximum strength. The batten or purlin selected must be located at least 2.4 metres up from the roofs lower edge and 1 metre down from the roofs ridge line.

Place the two tank mounting straps (A) under the tank and in line with the roof rafters. Now push the angled end of the strap back against the tank front foot (B). At the rear of the tank, bolt a tank clamp (C) to each of the tank straps so that the tank is securely fixed to the tank straps. Finally adjust the tanks position such that there is a 10 mm rise up the roof from the left to right (toward the collector hot connection) then screw fix the tanks two straps to the rafters securing the tank to the roof. The 10 mm rise is to assist with air elimination from the collectors during operation. Check that the tank front foot is still located over a tile batten or purlin.

Take a collector and position it down the roof so that the collector's top edge is pressed up against the tank front foot (B) Mark the location of the bottom edge of the collector on the roof then remove the collector. Position the collector rail (D) in the location marked as the collector bottom edge. Using the two collector straps (E) fix the collector rail in position, central to the tank, by screw fixing the collector straps to the roof rafters as done with the tank straps. For model 200 O LP place the collector centrally into the collector rail. Check that the collector top is still against tank front foot. Once this is confirmed fix the collector to the collector rail and collector strap using 3mm diameter self drilling screws not longer than 15mm. There is a pre drilled locating hole in each collector strap. For model 300 O LP where two collectors are used the same mounting procedure is used. The two collectors are connected together using two collector connectors (F). To fit the collector connectors disassemble the connectors and screw one half of each connector into the two inside sockets of the left hand collector. Now screw the second half of the collector connectors to the two inside sockets of the right hand collector. Place the two collectors into the bottom collector rail with the collector connectors about 100 mm apart. Centralise the two collectors and slide them together until the two collector connectors meet. Finally tighten the flange nut on each collector connector.

Insert a male flare fitting (G) into the bottom left collector socket and female flare fitting (H) the bottom socket on the storage tank. Take long cold pipe (I) and fix into position between the two flare nuts.

Insert a flare fitting (G) into the top right collector socket and a female flare fitting (H) to the centre socket on the storage tank. Take the short hot pipe (J) and fix into position between the two flare nuts.

Finally fit a blank plug (K) to the top left and bottom right collector sockets.

### Plumbing Connections

Connect the cold water supply to the ¾" BSP nipple (L) mounted to the collector cold pipe. It is mandatory that a check valve and stop cock are fitted to the cold water supply pipe work. Where the water supply pressure is greater than 300 kPa a 300 kPa Pressure Control Valve must be fitted to limit the supply pressure. It is recommended that a 350 kPa pressure relief valve is fitted in the cold water supply pipe after the check valve, stop cock and (if required) pressure reduction valve assembly.

To connect the hot water supply, insert the tee piece (M) onto the top socket of the storage tank. Insert the Pressure and Temperature relief valve (N) into the tee end. The household hot water reticulation pipe is connected to the ¾" female thread of the hot water tee piece (M). Finally ensure that the drain line from the Pressure and Temperature relief is plumbed to a safe location. Remember this pipe can discharge very hot water carefully consider its location.



### Electrical Connections

The electrical booster requires a 220 – 250 volt single phase ac power supply with a capacity of 6 amps for a 1 kW element, 10 amps for a 1.8 kW element, 12 amps for a 2.4 kW element or 18 amps for a 3.6 kW 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.

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 terminal marked (L) and the neutral wire is connected to the thermostat terminal marked (N).

### Important

*Do not turn on the power supply until the solar water heater has been filled with water and pressurised.*

### Commissioning

When all connections have been completed the solar water heater can be filled with water. Before turning on the cold water supply open one hot tap within the household to release air from the system during the filling process. Do not leave the open tap unattended during the filling process. Turn on the cold water supply and wait for the system to fill. When water flows without air bursts from the open hot tap the hot tap it can be closed which will pressurise the solar water heater system.

Once the system is pressurised all connections on the water heater must be checked for leaks and repaired if necessary.

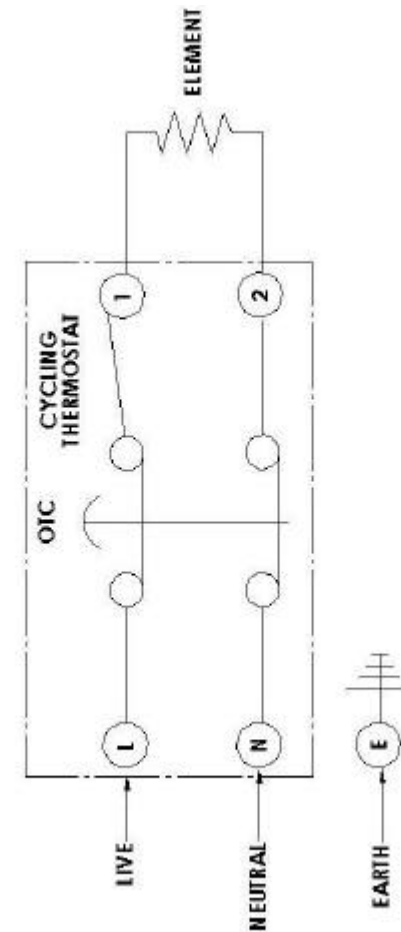
When the system is proven water tight, power can be applied to the electric booster element. To test that the booster is operational turn the circuit breaker in the switch board on and off, you should see the power meters speed change during this action.

The solar water heater is now fully operational.

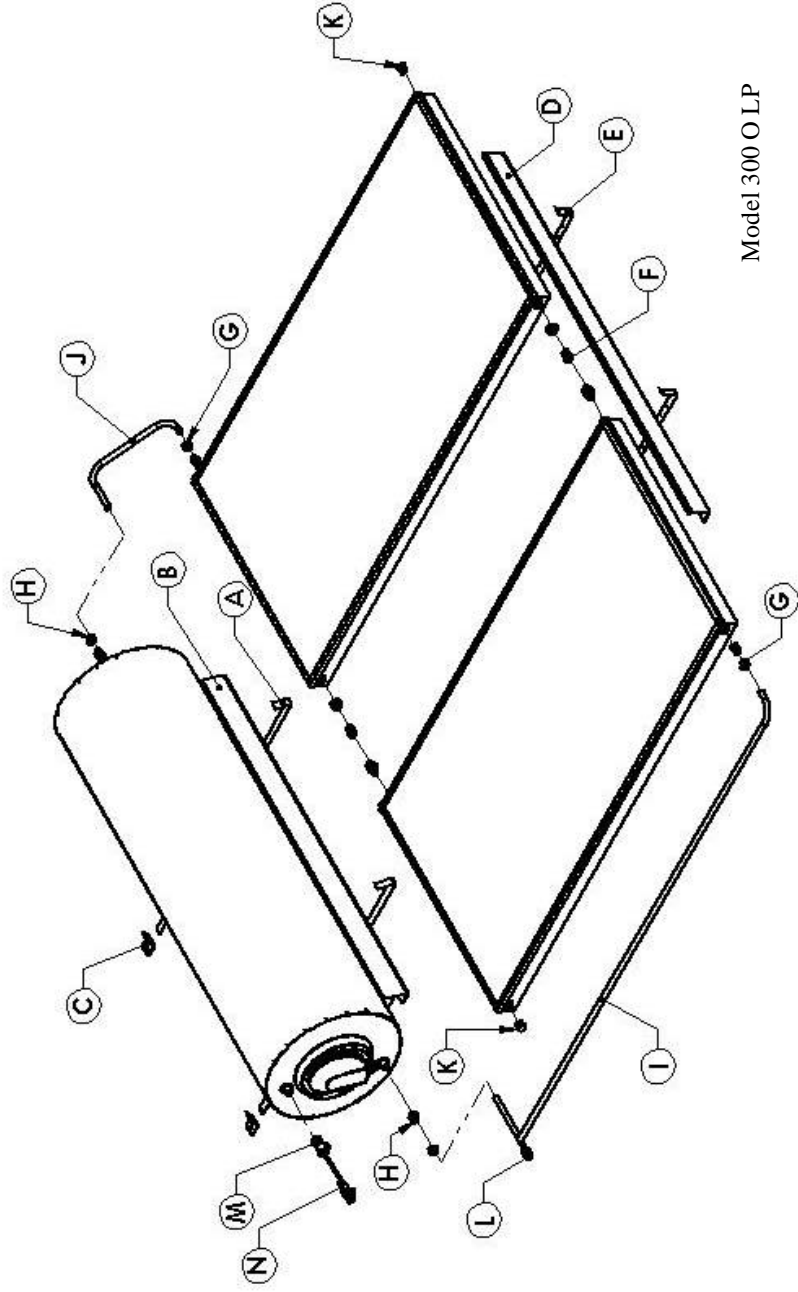
### Customer Hand Over

Once the solar water heater is commissioned and you are confident it is operating correctly complete the installation details in the Owners Instructions section of this manual and pass the manual to the customer.

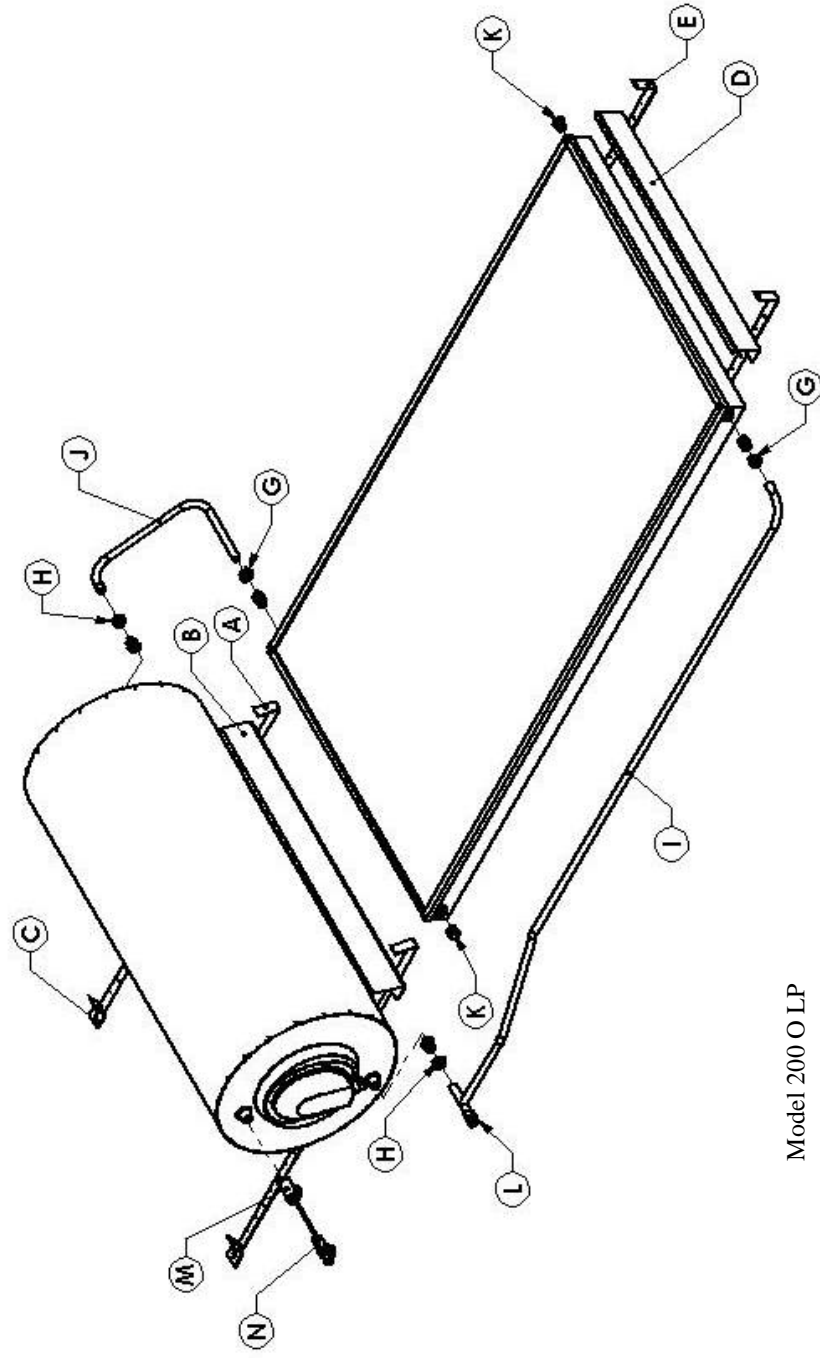
Before leaving the installation ensure that the customer is fully aware of the systems operation and whom to contact should there be any questions in the future.



Electrical Circuit Diagram



Model 300 O LP



Model 200 O LP